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Public Environmental Review Fimiston Operations Extension (Stage 3) and Mine Closure Planning

Response to Public Submissions

Greening the Golden Mile

Prepared by: KCGM
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	Project Approvals Co-ordination Unit
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	Department of Industry and Resources
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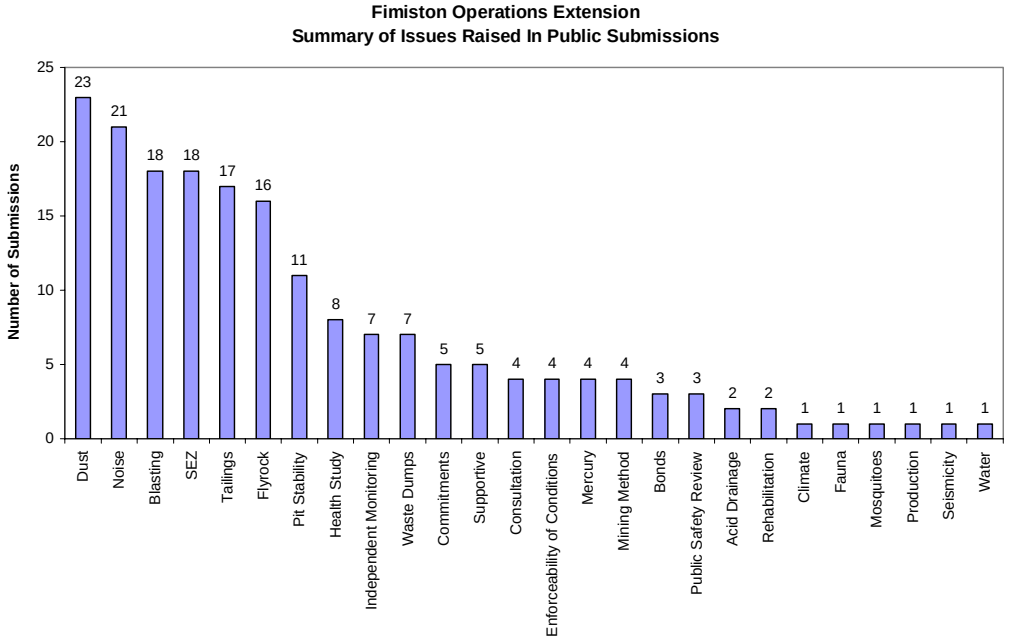
	Environmental Protection Authority

KCGM PER Fimiston Operations Extension Response to Public Submissions

Purpose of Document

This document has been developed as part of our consultation and approval process to provide further information and clarification to key stakeholders regarding the potential extension of the Kalgoorlie Consolidated Gold Mines (KCGM) Fimiston operations as outlined in the Public Environmental Review: Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning, September 2006.

The Public Environmental Review (PER) document was available for a public review period of 8 weeks from 4 September 2006, closing on 30 October 2006. A total of 35 submissions were received for this project by the Department of Environment and Conservation - Environmental Protection Authority (EPA) Service Unit and these have been provided to KCGM (with the names of private individuals removed). The graph below depicts the number of submissions that referred to specific issues.



This document is a summary of the pertinent issues and matters raised in the submissions and includes KCGM's response. In addition, in responding to submissions and matters raised by the EPA, a number of additional documents have been produced after the public review period. These documents include:

- Independent Reviews of KCGM's Flyrock and Pit Wall Stability Studies;
- KCGM Ambient Particulate Metals Report;
- KCGM Revised Dust Modelling Assumptions;
- KCGM Mercury Modelling Report 2006;
- KCGM Fimiston Air Quality Management Plan (Revised);
- KCGM Conceptual Mine Closure Strategy (Revised); and the
- KCGM Draft Rehabilitation Management Plan.

The above documents are available on KCGM's website (www.superpit.com.au) and hard copies are available on request from KCGM.

1 Acid Rock Drainage

1.1 Management of Acid Rock Drainage

Further assessment of the geochemistry of mining wastes and of potential groundwater and environmental impacts is required.

1.1.1 Submissions Reference

This issue was raised in submissions 11 and 23.

1.1.2 KCGM Response

Management of acid rock drainage is outlined in Section 10.10.2 and Appendix F3 of the Public Environmental Review.

Geochemistry
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 Beds as the lithological unit at KCGM most likely to oxidise and potentially generate acid. The volume of waste rock within the remaining pit shell that can be classified as Black Flag Bed represents about 7% of the total waste rock within the 0.5g/t gold cut-off. Given that the Black Flag Bed material appears to have the greatest potential for acid generation, any impacts from acid drainage from waste rock mined for the remainder of the mine life are expected to be manageable.

An acid drainage risk evaluation study undertaken concluded that the risk of acid drainage formation in the Fimiston waste rock dumps is in general low, although a slightly higher risk of localised acid drainage resulting from past management of waste rock, in particular the Black Flag Bed waste rock. The anticipated quantities of Black Flag Bed waste rock in the remaining life of the mine are relatively low, but as a precautionary measure, these will be managed as if they are acid forming.

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 Beds waste rock within 50m of the final face of a waste rock dump.

Even though the risk of acid generation is considered low, KCGM will undertake 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 may identify if additional procedures are required to respond to potential issues before they occur. This involves undertaking static and kinetic test work on waste rock lithologies. Some long-term kinetic tests are underway with Black Flag Bed. 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.

Groundwater Characteristics
It should be noted that acidic groundwater is characteristic of the goldfields region with pH generally less than 4. The Fimiston I and Fimiston II TSFs and waste rock dumps are located in a catchment of Hannans Lake. The shallow stratigraphic sequence within the catchment consists of sedimentary deposits and underlying weathered bedrock. The main aquifer of interest lies within the shallow sedimentary deposits above the bedrock.

Most of the bedrock sequence within the northern and central parts of the catchment is Black Flag Beds, which is a formation composed of very fine grained and dense sedimentary deposits. In boreholes around the Fimiston I and Fimiston II TSFs the Black Flag Beds is typically very weathered with most samples appearing as very fine sand, silt, and talcy clay. Mafic and ultramafic volcanic rocks occur on the ridges which form the western and eastern divides of the catchment. The Black Flag Beds typically has a very low hydraulic conductivity and does not form a significant aquifer. The mafic and ultramafic rocks on the ridges bounding the catchment are also not known to be significant aquifers.

The sedimentary deposits which overlie weathered bedrock in the catchment correlate with similar deposits around Hannans Lake and elsewhere in the Eastern Goldfields. Near the Fimiston I and Fimiston II TSFs these deposits have a maximum thickness of about 30m and pinch out to the east and west towards the bedrock ridges which form the catchment divides. These units consist of varying mixtures of clays, sands, and gravels. Secondary ferruginous deposits (ferricrete) often occur as layers above more massive and dense clay.

In the vicinity of the Fimiston I and Fimiston II TSFs, the layers of sand, gravel and ferricrete often have moderate hydraulic conductivities and can form an aquifer when saturated with groundwater. The combined thickness of these layers generally ranges between about 2m and 10m.

Natural groundwater in the catchment is saline, with total dissolved salts (TDS) concentrations in the range of 20,000 mg/L to 60,000 mg/L. TDS concentrations in excess of 100,000 mg/L occur in some areas adjacent to the TSF walls where seepage has occurred. The natural groundwater is very acidic, with pH generally less than 4.

The hypersaline nature of the natural groundwater reduces the risk of wildlife using the water for drinking or food resources when it is brought to the surface. Bird monitoring at the Fimiston tailings storage facilities indicates that although the animals have access to the water body they are not utilising the water as its salinity makes it unpalatable and no food resources appear to be present within the water body.

2 Blasting

2.1 Blast Monitoring

Blasting monitoring stations are not adequately located to ensure the most effective monitoring.

2.1.1 Submissions Reference

This issue was raised in submission 30.

2.1.2 KCGM Response

Ground vibration and air blast overpressure are currently monitored using Blastronics µMX Remote Blast Monitors (this equipment is currently being progressively upgraded). There are monitors permanently installed at sites between the Fimiston Open Pit and the City of Kalgoorlie-Boulder as shown in the figure below. These monitors are considered to be adequately located to measure blasting emissions from the Golden Pike Cutback.

The trigger levels for the µMX monitors are set at 0.2 mm/sec geophone vibration. If this level is exceeded then a result is recorded for the blast event. Due to excessive wind noise recorded in the past, the microphone trigger has been disabled, however a blast of any magnitude will trigger by vibration (if greater than 0.2 mm/s).

Blast Monitoring Network Location Plan

2.2 Vibration and Overpressure

Blast vibration or overpressure from KCGM is unacceptable.

2.2.1 Submissions Reference

This issue was raised in submissions 2, 9, 13, 14, 15, 16, 19, 20, 25, 26, 27, 28, 30, 31 and 33.

2.2.2 KCGM Response

Management of blasting vibration and overpressure is outlined in Section 10.7 and Appendix E2 of the Public Environmental Review.

The ground vibration assessment has shown that with worst case assumptions, the maximum ground vibration levels resulting at privately owned houses from blasting at the pit perimeter will not exceed 5 mm/s. The average levels resulting at privately owned houses will not exceed 2 mm/s. Maximum ground vibration levels resulting at the closest industrial/caretaker buildings will not exceed 10 mm/s. The average levels resulting at the closest industrial/caretaker buildings will be around 2 mm/s. These predicted ground vibration levels from blasting of the Golden Pike Cutback comply with the current vibration standards and limits specified in the *KCGM Revised Noise and Vibration Monitoring and Management Programme.*

The airblast assessment shows that for blasts at the pit perimeter, airblast levels at the closest privately owned houses will generally not exceed 115 dBL, with less than 1 in 10 blasts resulting in airblast levels in the range 115 to 120 dBL. Airblast levels resulting from blasting at the pit perimeter at nearby industrial/caretaker premises will generally be in the range 115 to 120 dBL, with levels at the closest industrial/caretaker buildings reaching the range 120 to 125 dBL on occasions.

Blasting of the Golden Pike Cutback is expected to comply with the airblast limits specified in the KCGM Revised Noise and Vibration Monitoring and Management Programme. The presence of the Environmental Noise Bund will also further reduce the predicted airblast impacts. Specific blasts in closer proximity to the industrial/caretaker buildings (which modeling indicates could reach the range 120 to 125 dBL on occasions) may require redesign or delay if they are scheduled or favourable wind conditions occur (for dust management) on a Sunday or Public Holiday.

Airblast and ground vibration impacts will be less for blasts located at greater distances and lower depths from the pit perimeter of the Golden Pike Cutback. The accuracy of the models and the assumptions made in this investigation will be assessed by the continuation of the blast vibration monitoring programme, with continual review of the results and modification of the blasting specifications (and loading controls) as required.

The investigation into airblast and ground vibration levels resulting from blasting in the Golden Pike Cutback has shown that the maximum levels will not exceed the limits specified in the *Revised Noise and Vibration Monitoring and Management Programme*, and that average levels will generally be well below these limits.

To minimise adverse impacts on the surrounding area it will be necessary to control blast noise and vibration during blasting of the Golden Pike Cutback by adequate blast design, execution and monitoring. KCGM will ensure quality assurance procedures and practices are implemented for blasting of the Golden Pike cutback to control flyrock, overpressure and vibration.

2.3 Property Damage

Numerous buildings have been damaged as a result of blasting and no action is taken or compensation available.

2.3.1 Submissions Reference

This issue was raised in submissions 2, 9, 11, 17, 20, and 25.

2.3.2 KCGM Response

Australian Standard 2187.2 – 2006 '*Explosives – Storage and Use; Part 2 – Use of Explosives*' outlines in Appendix J the present recommendations for both human comfort limits and damage limits that reflects current best practice globally. The Australian Standard refers to property damage levels which are described in both British Standard BS 7385-2 and the United States Bureau of Mines (USBM) RI 8507.

British Standard 7385 - 2:1993 '*Evaluation and measurement for vibration in buildings: Guide to damage levels from ground-borne vibration'* recommends higher ground vibration levels on the basis of protection of structural integrity alone. Whilst the impacts of blasting on important buildings such as heritage listed buildings may require special consideration on a case-by-case basis, generally the British Standard does not recommend reduction in guidance values unless these buildings are structurally unsound.

It must be noted however, that damage can also occur to buildings for many reasons unrelated to blasting including:

- temperature expansion and contracting cycles;
- shrinking of concrete and concrete products during ageing;
- expansion and contraction of reactive clay soils with moisture content;
- shrinking of plaster sheet and filling products with age;
- poor building practice; and
- shrinking of timber in the drying process.

A number of standards have attempted to address the issue of whole body response to vibration in buildings (American National Standards Institution S3.18-1979) and annoyance of vibration from blasting (Australia and New Zealand Environment Conservation Council Guidelines *Technical Basis for Guidelines to Minimise Annoyance due to Blasting and Ground Vibration*).

The investigation into airblast and ground vibration levels resulting from blasting in the Golden Pike Cutback has shown that the maximum levels will not exceed the limits specified in the *Revised Noise and Vibration Monitoring and Management Programme*, and that average levels will generally be well below these limits. These limits take into consideration human response criteria, they are considered conservative for the protection of structural integrity. Buildings exposed to the levels of vibration permitted by the operating condition limits should not be damaged by the vibration from blasting.

Feedback received from community members reporting damage to buildings suspected to be related to KCGM's mining activities are entered into KCGM's Public Interaction Line (PIL) register. From this register an action is assigned to a KCGM representative to visit the property to discuss and review the concerns of the property owner. In some cases KCGM will engage a civil engineering consultant to provide an independent assessment of the reported damage. Feedback from this independent report is provided to the property owner. If repair work is deemed necessary each case is evaluated and treated on an individual basis.

2.4 Old Workings Stability

There is concern regarding the effects of ground vibration and overpressure on the stability of abandoned underground mine workings.

2.4.1 Submissions Reference

This issue was raised in submissions 15 and 17.

2.4.2 KCGM Response

While there are old underground workings around the Johnston (East) Street area, it is unlikely that ground vibrations will have any impact on their stability.

During its history the Fimiston open pit has been mined in a series of cut-backs, progressively widening and deepening the overall pit. As the extent of the underground workings has always been larger than the open pit footprint, there has always been the chance of nearby workings opening up due to mining operations. In practice this does not occur. KCGM Operations personnel are regularly inspecting the extremities of the operations and to date have not discovered any underground workings adversely affected by blasting vibrations.

The primary reason for old underground workings to open to surface is the effects of rainfall events. Most of the reports of subsidences outside the pit limits are received directly after heavy rain, when the water has found it's way through the unconsolidated fill and eroded it away, exposing the working to surface.

Prior to the construction of the Goldfields Highway, a detailed geotechnical investigation was undertaken. This identified any potential underground workings along the length of the new highway, allowing construction teams to manage them.

2.5 Blasting Management Plan

Clarification is required regarding blasting times and the communication programme to inform residents and visitors of the blasting programme, this could include strategies which will inform of potential road closures and risk regions with a particular focus on tourist facilities.

2.5.1 Submissions Reference

This issue was raised in submission 12 and 23.

2.5.2 KCGM Response

Blasting times are regulated by the *Mines Safety and Inspection Regulations 1995 – Part 8 Explosives.* Blasting operations at the Fimiston Open Pit are restricted to daytime hours in accordance with the regulations which require that surface mining blasting must not occur at night (except if conditions outlined in subregulations apply).

The frequency and duration of road closures is dependent upon a number of factors that need to be determined before establishing the required level of communication programme for informing residents.

However, KCGM would utilise existing communication channels such as The Super Pit Shop, the blasting notification board at the Super Pit Lookout, the Blast notification system in conjunction with the physical presence of blast guards controlling traffic on the ground. No road closure is expected to exceed a period of 15 minutes.

KCGM successfully communicates with tourists and key tourism operators on current lookout closures related to blasting activities, and would develop a similar method of communication with a wider audience if required.

3 Bonds

3.1 Financial Assurance

A financial assurance bond should be set for future indemnity against any damage to public or private property caused by wall failure and for security and monitoring.

3.1.1 Submissions Reference

This issue was raised in submissions 11 and 27.

3.1.2 KCGM Response

The concept of a future indemnity should be further discussed with State and Local government and the community during the development of the final closure plans.

3.2 Closure Liability

The financial assurance bond should be increased to reflect the estimated mine closure cost.

3.2.1 Submissions Reference

This issue was raised in submission 20.

3.2.2 KCGM Response

The Department of Industry and Resources (DoIR) are currently undertaking a review of the environmental performance bond system to consider the adequacy of current regulatory policies and processes.

Environmental performance bonds or mining securities serve to protect a State from financial liability should a mineral tenement owner fail to comply with mine site rehabilitation requirements. The review will determine whether alternate financial instruments such as insurance could optimise flexibility for the minerals industry whilst maintaining acceptable levels of financial risk for the State and the Minister.

During the last five years, the Western Australian Minister for Resources “called in” A$2.3 million to enable the State to fund the rehabilitation of several sites where tenement holders have been unable to comply or complete mine site rehabilitation requirements. This $2.3 million equates to a failure rate of around 0.5% in that period.

Since 1985 the failure rate has averaged less than 1.0%. This 21 year period included several economic cycles of significant mineral price variation indicating that industry failure rates have been consistently low. The failure rate history in Western Australia indicates that the likelihood of a significant number of mining companies failing to complete their rehabilitation requirements within a short period is very low.

It also suggests that Western Australian regulatory policy and security amounts have been adequate in the past. However Western Australia is currently experiencing very high levels of mining activity as a result of market demand from growing Asian economies. Future regulatory policy settings should take into consideration eventual change in mining activity levels, a possible higher failure rate and the rising cost of rehabilitation.

The review will consider whether the current regulatory policy provides the State with adequate financial protection. A working group of industry, government and community representatives has been formed to provide recommendations to the Minister. The review is scheduled for completion in 2007.

4 Climate

4.1 Kalgoorlie-Boulder Trends

Kalgoorlie-Boulder temperature and rainfall trends have changed over 15 years, this may be a result of global warming but the variation seems to be greater than other areas of Australia.

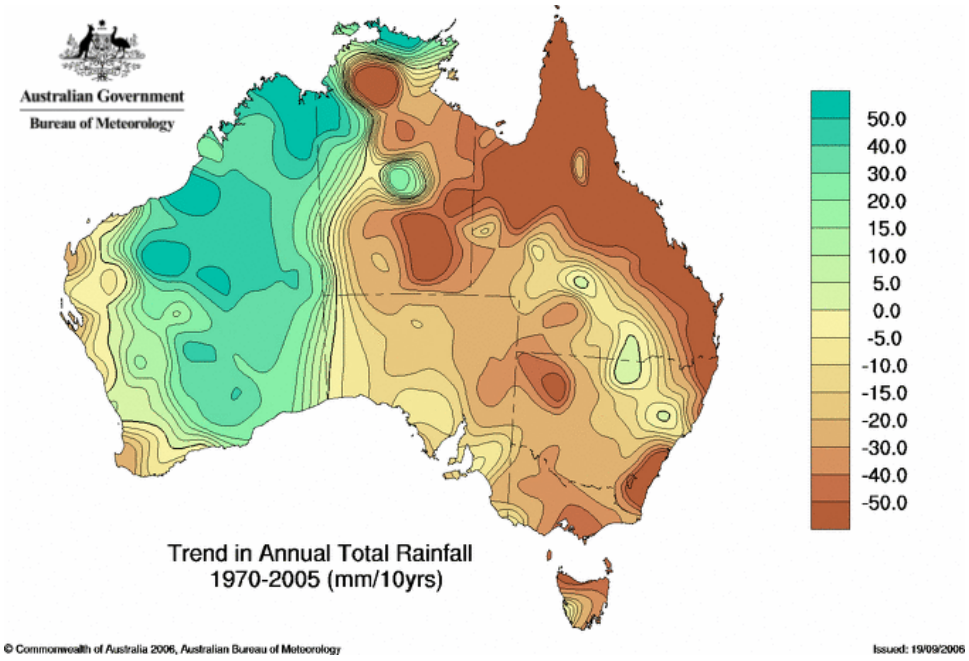
4.1.1 Submissions Reference

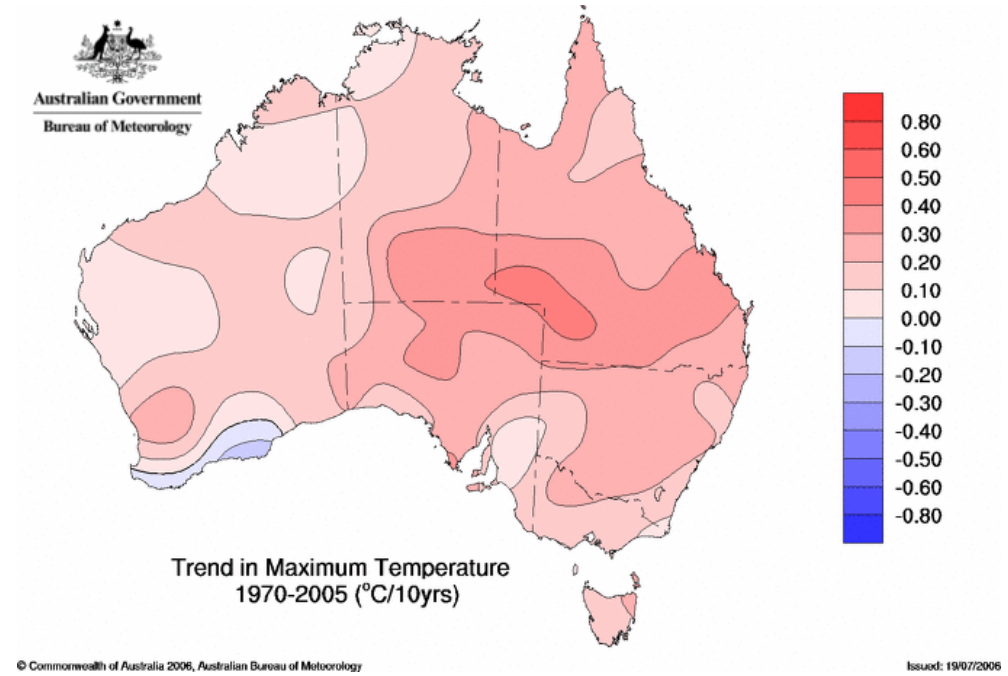
This issue was raised in submission 17.

4.1.2 KCGM Response

The Bureau of Meteorology Climate Services Centre advised that long term trend data and discussion regarding climate change is available on the BoM website. Data from the BoM presented in Section 7.2 of the PER are current to 2004. According to the website *"Australia and the globe are experiencing rapid climate change. Since the middle of the 20th century, Australian temperatures have, on average, risen by about 1°C with an increase in the frequency of heatwaves and a decrease in the numbers of frosts and cold days. Rainfall patterns have also changed - the northwest has seen an increase in rainfall over the last 50 years while much of eastern Australia and the far southwest have experienced a decline."*

Trend maps on Australian Climate Variability and Change (shown following) do not indicate that the temperature and rainfall trends in Kalgoorlie-Boulder are significantly different to other areas of Western Australia. An article also appeared in the Kalgoorlie Miner on 30 September 2006 in response to KCGM's contact with the BoM to find more information regarding the question raised.

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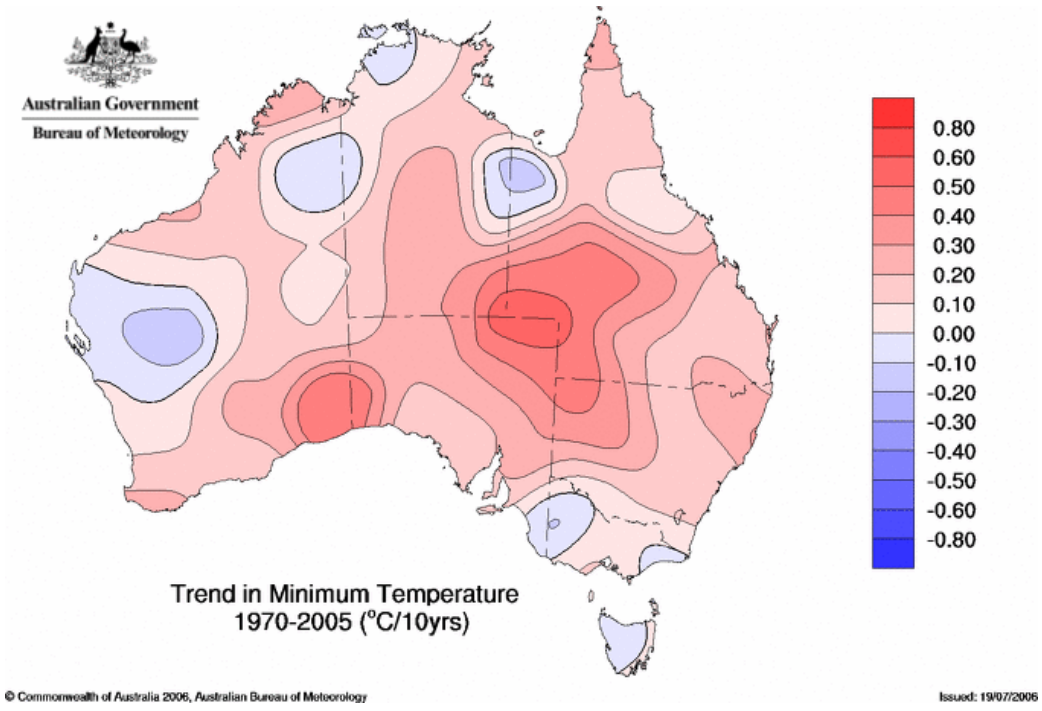
Trend in Maximum Temperature
1970-2005 (°C/10yrs)
© Commonwealth of Australia 2006, Australian Bureau of Meteorology
Issued: 19/07/2006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Trend in Minimum Temperature
1970-2005 (°C/10yrs)
© Commonwealth of Australia 2006, Australian Bureau of Meteorology
Issued: 19/07/2006

Super Pit rain rumour untrue

By Paul Simpson

THE Super Pit does not influence local weather despite ongoing rumours to the contrary.

Rumours have been rife around the city that the Super Pit stops rain from falling in Kalgoorlie-Boulder but it's not true.

The theory is that the growing size of the Super Pit sends up increasingly hot air into the atmosphere which dissipates any clouds overhead, thereby scuttling any impending rain.

However, it's all just a falsehood according to the Bureau of Meteorology.

Kalgoorlie weather bureau officer-in-charge Al Morgan, who has lived here for the past 10 years, says he has heard the story many times.

"We often get phone calls from people asking if the Super Pit stops rain," he said.

"Just the other day someone from KCGM called to ask the same thing. They were planning an expansion of the Pit and were concerned it might further reduce rain over the city.

"I told them the same thing I tell everyone, it has no effect. As large as the Super Pit is, it is simply not large enough to have an impact."

Kalgoorlie-Boulder comes under the influence of high pressure systems which have a trend of pushing any fronts to the southern land mass.

"While the Super Pit is undoubtedly quite a hot place inside, possibly one or two degrees warmer than the surrounding surface, it cannot effect the weather."

"We often get phone calls from people asking if the Super Pit stops rain."

– Al Morgan

Another urban myth floating around the city is that the new storage dam on the corner of Piccadilly and Throssell Streets is also effecting the weather.

Mr Morgan said this is also untrue.

"When the dam eventually is filled up with water, at certain times of the year there may be an increase in local fog in the immediate area but that would be all," he said.

Weather records have been kept in Kalgoorlie-Boulder since 1939.

"We have a very low average rainfall, approximately 260mm," Mr Morgan said.

"This is enough to support the salmon gums, the gimlets and the vegetation."

Rain clouds which come over Kalgoorlie-Boulder sometimes break up when they hit the city and re-form after they pass. However this is not caused by the heat from the city but is just a random natural occurrence.

"This happens in all areas," Mr Morgan said.

"Rain will sometimes approach in large clouds of up to five or 10km diameter and if you are under them sometimes you will get rain.

"But at other times the clouds will seem to break up over the city and re-form once they go past us."

The weather bureau records its rain from one gauge at the Kalgoorlie-Boulder airport.

This year there has been just 158mm of rain which is 38 per cent below average.

The odds are not good for a booster downpour in December.

The mean December average is 16.2mm and last year the city received just 2mm.

Mr Morgan said tropical cyclones tend to push low troughs down to the Goldfields at the end of the cyclone season, not in December.

Since 1939, the highest December rainfall was in 1988 with 88.6mm and the lowest was zero in 1964.

The most rain the city has ever received in one month was February 1948 with 307.8mm.

Rainfall has decreased over the last four years since a total of 318.6mm in 2003.

In 2004 the annual total was 279.6mm, last year 170.2mm and this year it has been just 158mm so far. However in 1999 Kalgoorlie-Boulder had 386mm and in 2000 a whopping 445.2mm fell.

5 Commitments

5.1 Bypass Road

KCGM previously committed to the establishment of entry statements for Boulder and Ivanhoe Park and the establishment of a park at Dart Street as part of the Bypass Road Realignment and this has not been completed.

5.1.1 Submissions Reference

This issue was raised in submissions 17 and 33.

5.1.2 KCGM Response

KCGM, at the request of the CEO of Kalgoorlie-Boulder, has already investigated this issue and discovered that the plans, as indicated in the same letter were concept drawings to "*form the basis for a joint planning initiative between the local residents, the Council, Main Roads and KCGM.*" *Letter to City of Kalgoorlie-Boulder Council 23 April 2001 from Gary Lye, Project Manager, KCGM Strategic Mine Development.*

After meeting with Council staff on the 15th November 2006, it was also clear that subsequent to the presentation of the proposed concept drawings, the City of Kalgoorlie-Boulder was not supportive of the development of Dart Street as a Park due not only to maintenance issues, but also local residents' concerns over possible inappropriate use of the area.

KCGM, in conjunction with the City of Kalgoorlie-Boulder and Main Roads, are investigating opportunities to improve the area in a cooperative project involving the local environment organisation, Kalgoorlie-Boulder Urban Landcare Group.

5.2 Mining

KCGM previously indicated that there were no plans to mine on the west side of the old Bypass Road.

5.2.1 Submissions Reference

This issue was raised in submission 27.

5.2.2 KCGM Response

KCGM is unaware of this communication and is not sure when, where, why and how this would have been communicated. KCGM has previously indicated that the old Bypass Road was virtually on the edge of current pit limits, and would therefore need to be moved in order to mine the current approved pit limit. It was indicated that any further expansion would need to undergo the rigorous approvals process of the EPA. This is the process we are currently undertaking.

5.3 Noise Management

KCGM breached a commitment regarding working hours for construction of the bund.

5.3.1 Submissions Reference

This issue was raised in submission 27.

5.3.2 KCGM Response

On Monday 26 March 2001, KCGM received a complaint at 10:41pm from a nearby resident regarding noise that appeared to be coming from the Croesus Rehabilitation project area. The DEP Goldfields Region Office also requested feedback on 27 March 2001 from KCGM to determine if work was occurring in that area on the prior evening.

On the evening of 26 March 2001 KCGM trucks were not operating on top of the Croesus noise bund. The trucks were operating behind the noise bund as it was thought that this would provide the required noise attenuation. This control measure lets trucks enter the area up to 10pm. Thereafter operations may continue under favorable wind conditions. Wind data for that evening indicates that the trucks operated in the area about one hour longer than otherwise recommended.

The Foreman on shift that night indicated that the decision to run the trucks behind the noise bund that evening was based on a safety issue. A shovel working in the Paringa area of the pit was found to be blocking access to a single lane haul road. It was considered by the Foreman to be a safety concern for trucks to travel past the operating shovel within the restricted area. Safe access past the shovel was reinstated by about 11 pm.

On 27 April 2001 KCGM was issued with a *"Warning Pursuant to Department of Environmental Protection Enforcement and Prosecution Guidelines January 2001"* regarding the non-compliance with a ministerial condition. It was determined that the Noise Complaint Investigation Report adequately described the remedial actions to be undertaken by KCGM and no further enforcement action was considered necessary by the DEP nor would be recommended to the Minister.

KCGM continues to undertake awareness sessions with Shift Supervisors and Operational Personnel to reinforce the potential dust and noise issues that specific projects may create including the southern noise bund extension and geology drilling projects.

6 Consultation

6.1 Projects

There has not been enough consultation on the project.

6.1.1 Submissions Reference

This issue was raised in submissions 17 and 22.

6.1.2 KCGM Response

KCGM has an established community consultation network and utilises a range of mechanisms to facilitate consultation and capture community input on an ongoing basis including the Community Reference Group; Public Inquiry Line; KCGM Super Pit Shop; media management; and public speaking opportunities.

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.

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

Project Consultation	Date
Presentations at the Mine Expo "What's Down the Track" Forum	October 2004 October 2005 October 2006
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 1,500 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 4,800 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 Kalgoorlie Boulder Community Fair	 April 2005 May 2005 March 2006
"News & Views" Newsletter to Kalgoorlie-Boulder households (approximately 12,000) Issue 1 – Social Impact Assessment and Fimiston TSFs Issue 2 – Blasting and Approvals Issue 3 – Approvals Consultation Update Issue 4 – Public Environmental Review Summary	 December 2004 June 2005 March 2006 October 2006
The Dirt Newsletter Issue 18 - Approvals Update Issue 19 – Environmental Noise Bund and Loopline Issue 20 – Super Pit Model at Super Pit Shop Issue 25 – Golden Pike Update	 July 2005 September 2005 December 2005 November 2006
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
Public Environmental Review Released *With approximately 3,900 downloads from the KCGM website* *151 copies distributed to government agencies and community*	September 2006

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 the following Table.

Project Consultation through the Media	Date
Kalgoorlie Miner *"KCGM looks to go under Super Pit"*	22 October 2004
046*KG 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
Kalgoorlie Miner *"Rail on Track"*	9 February 2006
Kalgoorlie Miner *"Super Site has Mine of information"*	21 February 2006
Western Australian Advertisement *"Fimiston Operations PER 4 Sept to 30 Oct 06"*	4 September 2006
Kalgoorlie Miner Advertisement *"Fimiston Operations PER 4 Sept to 30 Oct 06"*	4 September 2006 16 October 2006
ABC Radio *"KCGM Seeks Input"*	5 September 2006
Kalgoorlie Miner *"KCGM Seeks Input"*	5 September 2006
Kalgoorlie Miner *"Hearsay – Interested in Having a Say on KCGM's Plans"*	6 September 2006
Kalgoorlie Miner *"The Week that Was – Residents Asked for Input"*	9 September 2006
Kalgoorlie Miner *"Support for Expansion"*	1 November 2006
Kalgoorlie Miner *"Funding for Study to Restore Loopline"*	10 November 2006
Kalgoorlie Miner *"Support for Expansion"*	

6.2 Public Environmental Review Document

Hard copies of the Appendices were not available

6.2.1 Submissions Reference

This issue was raised in submissions 20 and 33.

6.2.2 KCGM Response

The Kalgoorlie Office of the Department of Environment and Conservation, William Grunt Memorial Library and the Super Pit Shop held full hard copies of the report for public review. KCGM did not receive any requests for hard copies of any specific appendices of the report.

6.3 Tourism

The Super Pit Lookout provides tourists with a free experience of mining but as this is an isolated venue there is no money spent in nearby shops in Boulder.

6.3.1 Submissions Reference

This issue was raised in submission 17.

6.3.2 KCGM Response

KCGM opened the highly successful Super Pit Shop officially on July 1st 2005, which is located at 2 Burt Street Boulder. The Lookout has an electronic notice board that encourages people at the Lookout to come down to Boulder and experience the Super Pit Shop.

Additionally in 2006, the Super Pit Shop has invested in and managed the “Boulder Discovery Trail” which involves a range of Boulder businesses. This has been very successful in increasing shoppers through the area during school holidays.

On average, the Super Pit shop attracts on average more than 150 people per day, and all sales proceeds are invested back into the local community through the KCGM Community Investment Program.

6.4 Loopline Railway

What is the status of the Loopline Railway re-establishment? The Loopline Golden Gate Station is an important part of Goldfields heritage and should be relocated.

6.4.1 Submissions Reference

This issue was raised in submissions 2, 17 and 30.

6.4.2 KCGM Response

KCGM has been working closely with the Loopline Society and is currently funding the engineering report which will be handed over to the Society who can then ensure that the project proceeds.

KCGM has also set aside funding to dismantle the remains of the Loopline Golden Gate Station. These materials will be handed over the Loopline Society in order that they may be used in the construction of station on the new Loopline route.

The timing of this project will then be the responsibility of the Loopline Railway Society.

7 Dust

7.1 Dust Monitoring

Dust monitoring stations are not adequately located and the current High Volume Dust Monitors need to be replaced by new technology.

7.1.1 Submissions Reference

This issue was raised in submissions 10, 11, 15, 17, 18, 21, 30 and 33.

7.1.2 KCGM Response

KCGM currently owns and operates a network of dust monitors to measure ambient dust emissions of TSP (*Total Suspended Particulates*) and PM_{10} (*Particulates less than 10 microns in size*) arising from the operation of the Fimiston Open Pit. Three High Volume Air Samplers (HVAS) located at the Boulder Shire Yard (BSY), Hewitt Street (HEW) and Clancy Street (CLY) are used to monitor ambient TSP concentrations arising from blasting activities.

An additional HVAS is located at Hopkins St (HOP) to monitor for PM_{10} concentrations arising from noise bund construction activities. More recently KCGM installed Beta Attenuation Monitors (BAM) at BSY and the Hannans Golf Club (HGC) sites to collect real-time data for PM_{10} based on 5-minute averages.

These dust monitors have been located in areas that are representative of community exposure. In addition, parameters such as site access, topographical influences, site security and power, distance from buildings and other background sources where considered during the initial siting of the monitors. The instrument siting was based on the Australian Standard *AS, 2922-1987, Ambient Air, Guide for the Siting of Sampling Units*. The location of the samplers is presented in the following Figure.

The proposed dust management plan includes a progressive replacement of the three HVAS samplers with E-BAM samplers. The EBAM samplers are real–time dust monitors and are used to provide average PM_{10} concentrations at 10-minute intervals to help with the assessment and management of ambient dust emissions from Fimiston Operations. The existing BAM samplers currently located at BSY and HGC are configured to monitor the current mean 5-minute PM_{10} concentrations and these will continue to be operated at these sites.

Dust Monitoring Network Location Plan

7.2 Dust Emissions

Dust levels from KCGM are unacceptable, cannot be controlled and are a health risk.

7.2.1 Submissions Reference

This issue was raised in submissions 2, 5, 9, 11, 13, 14, 16, 17, 19, 20, 25, 26, 27, 29, 30, 31 and 33.

7.2.2 KCGM Response

Dust Emissions

The dust modelling study (*Appendix G1 of PER*) details the results of the predicted modelling and indicates that the predicted maximum PM_{10} dust concentrations at all nominated receptors are below the NEPM guideline value of 50 µg/m^3 with the exception of Hewitt St, due to its close proximity to the open pit.

The report also details a comparison of the predicted concentrations against monitoring data for Boulder Shire Yard (*BSY*). This location was chosen as this was one of two real time Beta Attenuation Monitors located in close proximity to KCGM operations, the other is located at Hanna's Golf Club in town. The results of the comparison indicated that there is approximately a 20% difference between the predicted vs. observed concentrations at the BSY location.

In addition, a review of the daily measured PM_{10} concentrations at the BSY location over the entire monitoring period indicates that the maximum measured concentration at BSY was below the NEPM guideline value of 50 $\mu g/m^3$ for the entire monitoring period (July 05 – April 06). These ambient monitoring results are reflected in the model predictions for the BSY location.

The proposed monitoring program includes a progressive replacement of the HVAS with real time monitors (EBAM) to measure and monitor dust emissions from current and proposed operations at the Open Pit and to behave as an early warning device to activate additional dust controls in the event that a dust alarm is triggered.

Dust emissions from the proposed construction of the Golden Pike Cutback would be controlled using the revised dust management program and will include:

1. Monitoring of current and forecast winds using daily BoM forecast data as well as monitoring data;
2. The use of the proposed early warning dust control network to minimise and control off-site impacts;
3. Progress rehabilitation to minimise exposed areas;
4. Use of water trucks and water cannons in areas that could produce dust;
5. Suspending work as deemed necessary from inspections of dust source and areas
6. Site specific inductions incorporating dust control awareness
7. Ongoing consultation with stakeholders to determine the success of the dust management measures

Heavy Metal Emissions

Heavy metal emissions from the Fimiston Mill and Gidji Roaster have been quantified and characterised by KCGM via stack sampling and solid assay analysis undertaken to ascertain mass balance for a suite of heavy metal emissions with particular focus on mercury emissions. Extensive investigations have been undertaken by KCGM with respect to effective controls for mercury emissions. Air quality controls have been implemented and the introduction of engineering controls to reduce emissions have also commenced.

Analysis of mercury concentrations from the underground and pit wall samples indicates that low concentrations of mercury exist in the Western Lodes of the Fimiston Open Pit (those west of the Golden Mile Fault) which includes the area of the Golden Pike Cutback. Investigation by KCGM shows that there is no evidence to suggest that the concentration of mercury in the ore remaining in the Fimiston Open Pit will increase with the proposed Project

In addition, the dust modelling study also includes a preliminary assessment of heavy metal speciation of the dust emissions to obtain an understanding of the presence and concentration of heavy metals in the dust. This was undertaken by selecting a number of filters and analysing the ambient dust filter samples in a laboratory.

A selected number of filter samples from the three HVAS were analysed by Geotech using AAS and ICP. The filters were selected based on the prevailing winds (blowing from KCGM) and their high dust loading. The results of metal speciation of the dust samples indicate that metal concentrations for species such as Arsenic and Mercury are below nominated guideline values. These findings indicate that the particulate fraction of heavy metals in the dust are low and well below nominated guideline values.

7.3 Management Plan

There is a need for KCGM to update its dust management plan

7.3.1 Submissions Reference

This issue was raised in submissions 12 and 23.

7.3.2 KCGM Response

As part of the Public Environmental Review (PER) for the Fimiston Extension, KCGM is revising its existing Dust Monitoring and Management Plan (DMMP) to include the construction and operation of the Fimiston Open Pit extension. The objective of this revised DMMP as stated in the PER is:

To ensure that air emissions do not adversely affect environmental values or the health, welfare and amenity of people and landuses by meeting statutory requirements and acceptable standards.

The purpose of this DMMP is to define a strategy to enable KCGM to manage fugitive ambient dust emissions from its operations, including the proposed construction and operation of the Fimiston Open Pit extension, to ensure that:

1. 24-hour average PM_{10} concentrations do not exceed National Environment Protection Measures (NEPM) guidelines at specified monitoring locations as a result of KCGM's operations; and
2. TSP emissions from KCGM's operations do not result in unacceptable amenity impacts.

This DMMP is a working document and combines the existing KCGM dust management practices with real time ambient PM_{10} monitoring and reactive management strategies designed to meet the above objectives. A summary of the revised plan is outlined below.

The current DMMP implemented by KCGM has proven to be successful and the primary management measures are:

- Monitoring current and forecast wind conditions using daily forecasts from the BoM and real time wind speed and direction monitoring data to minimise off-site dust emissions as a result of blasting;
- Use of water trucks and water cannons in areas that produce dust such as haul roads, service corridors and other active surfaces. Fresh water used on areas to be rehabilitated;
- Undertake visual inspections for dust generation on a regular basis;
- Use of additional dust control measures (i.e. a dust binding agent);
- Progressive rehabilitation to minimise exposed areas;

- Suspending work in a particular area or for a nominated activity as deemed necessary from inspections, public feedback or prevailing conditions;
- Use of alternative operational areas (e.g. use a different waste dump) if possible;
- Ensure that all contractors and staff undertake a site-specific environmental inductions to raise awareness including the importance of dust control;
- Ensure dust monitoring is undertaken and results are reviewed; and
- Ongoing consultation with stakeholders to determine the success of the dust management measures.

The revised DMMP will retain the existing management measures and include a reactive management component based on the expanded monitoring network.

Predictive Control Strategy
KCGM already has a system in place that it uses as part of its *Blast Management Plan* (BMP). The BMP uses forecast wind conditions from the BoM, to assist with the planning of the blast timing. Real time wind speed and direction monitoring data are then utilised to determine if conditions are suitable for blasting, prior to the blast being undertaken. The KCGM Blasting Dust Display provides a visual representation of potential dust dispersion based on current wind conditions and is used as part of the decision process to proceed with, or delay, a blast.

Reactive Control Strategy
The reactive component of the DMMP is based on existing management practices being implemented at targeted areas in response to short-term PM_{10} concentrations exceeding a predefined target or limit level. The goal of the DMMP is to manage KCGM's operations such that they do not cause exeedences of the NEPM 24-hour PM_{10} standard of 50 $\mu g/m^3$.

The target level will be set at a value that is indicative of the possibility of on-site activities contributing to ambient concentrations that may approach the NEPM standard (24-hour average) and where management measures could be implemented to reduce this risk.

The limit level will be set at a level where it is likely that if prompt management measures aren't implemented then there is a reasonable probability that NEPM standard (24-hour average) may be exceeded at the monitoring sites.

In the event of a predefined level being exceeded an alarm is triggered and the system will automatically notify the shift supervisor electronically (e.g. via sms and/or e-mail) providing information on the location of the boundary monitor where the exceedence has occurred and the potential emission source based on the prevailing wind conditions. Relevant information (winds, PM_{10} concentrations) can also be displayed via KCGM's Dust Monitoring Display on a real time basis to further assist with the identification of the potential source of elevated emissions.

Review and Improvement
The DMMP will be reviewed annually. Further, monitoring data associated with any exceedences of the 24-hour average PM_{10} NEPM concentration of 50ug/m^3 associated with KCGM's operations will be reviewed and any recommended management changes will be incorporated into the DMMP on an ongoing basis.

8 Enforceability of Conditions

8.1 Licences

Licences and regulations need to be enforceable.

8.1.1 Submissions Reference

This issue was raised in submissions 14, 15 16 and 25.

8.1.2 KCGM Response

The Department of Environment and Conservation's (DEC) Public Notice in Re-issue of the Fimiston Licence dated 14 September 2006 outlines the current status of KCGM's Fimiston Licence 6420 following recent Ministerial determinations regarding appeal numbers 196-199 of 2005 and to describe the Department of Environment and Conservation's (DEC) plan to update the licence as per Departmental policy.

The DEC's policy regarding licences (Policy Statement Works approvals, licences and conditions for prescribed premises, May 2006) describes the primary purpose of licences is to manage those discharges which require ongoing management, monitoring and reporting to prevent pollution and/or environmental harm. The policy further states that licences "should only be used to regulate activities or issues that fall within the current scope of the *Environmental Protection Act 1986*".

Historically, licences contained many conditions that were outside this scope that could be better managed via other means. For example, management of hydrocarbons is regulated under the Dangerous Goods Regulations by DoCEP and therefore could be removed from DEC licences. In light of the aforementioned policy, the DEC has introduced a more concise format of licences accompanied by descriptive Environmental Assessment Report for all new licences. As a result, the DEC is currently reviewing existing licences and updating them as per the new format. This process is underway for the KCGM Fimiston licence and will involve stakeholder consultation. A draft licence and accompanying Environmental Assessment Report is anticipated to be available for public comment by the end of 2006.

9 Environmental Monitoring

9.1 WA Government Independent Appointment

The WA State Government should appoint an independent entity to monitor and report on environmental impacts (noise, dust, blasting, air quality etc) in Kalgoorlie Boulder, at the expense of KCGM.

9.1.1 Submissions Reference

This issue was raised in submissions 10, 15, 18, 20, 21, 27 and 30.

9.1.2 KCGM Response

KCGM calibrates and maintains its environmental monitoring equipment (noise, dust, blasting and sulphur dioxide) in accordance with manufacturer's requirements or relevant Australian Standards and the requirements of the *Environmental Protection Act 1986*.

Environmental monitoring data is routinely reported to the Department of Environment and Conservation (DEC) and summary data for required monitoring are contained within KCGM's Annual Environmental Report.

The *Environmental Protection Regulations 1987 – Part 8 Monitoring* outline the requirements for environmental monitoring including the duty to ensure that approved monitoring equipment is accurate and the requirement for notification of any inaccurate measurement.

10 Fauna

10.1 Feral Animal Control

What measures are undertaken to eliminate rabbits and feral cat populations?

10.1.1 Submissions Reference

This issue was raised in submission 17.

10.1.2 KCGM Response

KCGM has fauna monitoring and management programmes which include reporting, feral animal trapping, fauna activity monitoring and snake handling training and awareness sessions. Experience has shown that stray cats and dogs are the primary concern on site and rabbit sightings are much less common.

KCGM works with the City of Kalgoorlie-Boulder Rangers regarding the management of stray dogs and cats. Trapping is undertaken under controlled conditions. Baiting feral animals has previously been considered, however due to the proximity to the City of Kalgoorlie-Boulder it was ruled out because it may inadvertently impact on domestic pets.

11 Flyrock

11.1 Blast Clearance Area

Flyrock can travel greater than 200m and so a reduction to the blast clearance area is not supported.

11.1.1 Submissions Reference

This issue was raised in submissions 3, 4a, 4b, 5, 10, 11, 15, 17, 18, 21, 22, 25, 26, 27, 30 and 33.

11.1.2 KCGM Response

Issues raised will be considered as part of the independent review of flyrock currently being undertaken by an independent consultant.

The scope of works for the independent review is as follows:

1. To review the reports and conclusions and report based on the following criteria:
    a. Comment on the validity of the outcomes and conclusions reached as applicable to the Golden Pike Cutback; and
    b. Comment on the level of confidence in the conclusions drawn.

2. To consider issues directly relating to flyrock or pit stability raised during the public comment period for the Public Environmental Review:
    a. Review public comments for relevance.
    b. Provide to KCGM written responses to public comments where appropriate.

12 Health Study

12.1 Public Risk

A health study should be undertaken to prove that the community has not, and will not, be adversely affected (respiratory and allergic illnesses) by dust (i.e. acidity, silica and heavy metals) from KCGM mining operations.

12.1.1 Submissions Reference

This issue was raised in submissions 10, 11, 15, 17, 18, 20, 21 and 30.

12.1.2 KCGM Response

In June 2005 a pilot health study on urine metal concentrations was conducted for KCGM by former federal government environmental health toxicologist Dr Keith Bentley who now works for the Centre for Environmental Health in Canberra.

The pilot health study analysed randomly collected spot urine (and creatinine corrected urine) samples for 34 healthy adult non-occupationally-exposed individuals. Criteria for participation were adults between 18 and 65 years of age, with a minimum residence period in Kalgoorlie of not less than 12 months.

For this survey the suite of metals analysed were arsenic, cadmium, cobalt, mercury, nickel and selenium. The results showed that there were no concentrations of these elements that were of concern for human health.

Additionally in July 2005 free mercury testing was also offered to residents of Kalgoorlie-Boulder through Dr Charles Douglas with Population Health. It is understood that one person undertook testing and that the concentrations were within normal levels.

There has been no specific testing of dust for pH levels, however there has been sampling of open pit rock types for acid generation potential and soil testing undertaken at KCGM. Both the soils and open pit rocks can be considered to be the main source of any potential dust generated from the Fimiston operation. The majority (95%) of the Fimiston Open Pit waste and ore contains natural acid neutralising minerals which buffer the sulphide minerals in the material (refer to Section 1.1).

Sampling of the pH of soils on 12 rehabilitated waste rock dump and noise bund sites was undertaken in 2005. Results indicate a pH range of the soils (primarily oxide material sourced from the Fimiston Open Pit) between 5.84 and 9.34. Eight of the 12 sites were between 8.36 and 8.87. These results do not indicate any issues with high acidity (or alkalinity) of the soil (and any potential dust generated from the exposed areas).

Long term (from 1989 to 2005) surface soil testing at 20 sites up to 8km from the Gidji Roaster also indicate that the Goldfields surface soils are generally neutral (around pH 7) and do not have high acidity (or alkalinity) levels.

To clarify for the reader the pH scale with examples in each category is outlined below:

	Acid							Neutral	Alkaline						
pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
eg	Battery Acid	Stomach Acid	Vinegar	Lemon Juice	Wine	Coffee	Cows Milk	Pure Water	Sea Water	Baking Soda	Toothpaste	Washing Powder	Soapy Water	Oven Cleaner	Drain Cleaner
	Most Acidic	+++++	++++	+++	++	+	Least Acidic	Neutral	Least Alkaline	-	--	---	-----	------	Most Alkaline

KCGM undertakes quarterly occupational health and safety dust monitoring in accordance with requirements of the *Mines Safety and Inspection Regulations 1995*. The National Occupational Health and Safety Commission exposure standard for silica changed to 0.1 mg/m^3 as of the 1 January 2005. The Time Weighted Average (TWA) concentration calculated for an 8 hour working period during a 5 day week is 0.07 mg/m^3.

For the Fimiston Open Pit operation between the period of March 2004 to June 2006, 166 dust samples have been undertaken for various occupations. Of these samples 113 had silica levels below the detection limit of 0.01 mg/m^3, 38 samples were between 0.01 and 0.07 mg/m^3 and 15 samples were above the 0.07 mg/m^3 exposure standard.

For those levels recorded above the standard, in most cases employees were wearing appropriate personal protective equipment (PPE). In the cases where no PPE was recorded as being worn further investigation into the work being undertaken and controls to minimise exposure were investigated and implemented as appropriate.

Monitoring results indicate that most levels are below the detection limit of 0.01 mg/m^3 and in 2002 the Department of Minerals and Petroleum Resources (now DoIR) reported that neither the silica nor respirable dust levels on the mine site are therefore of health concern. Other mineral and organic components of the dust have been measured at levels that are below health criteria and the level of respirable dust is also an order of magnitude lower than the Time Weight Limit. Therefore, the dust emanating from the Fimiston Open Pit is considered to have a low toxicity to humans and there is no concern either on-site or off-site with either silica or respirable dust levels.

In 1998 the National Environment Protection (Ambient Air Quality) Measure (NEPM), developed by the National Environmental Protection Council was introduced. This Air Quality NEPM covers emissions such as carbon monoxide, sulphur dioxide, lead and dust (PM_{10}). The desired environmental outcome of the NEPM is ambient air quality that allows for the adequate protection of human health and well-being.

The NEPM Standard values are generally designed to protect those who are most susceptible to experiencing health effects. All the values are based on health effects, and have been derived from epidemiological studies, international guidelines and, in some cases, laboratory research.

Performance against the NEPM Guideline for Particles as PM_{10} was considered as part of the Dust Modelling study undertaken for the PER. The dust modelling study (*Appendix G1 of PER*) details the results of the predicted modelling and indicates that the predicted maximum PM_{10} dust concentrations at all nominated receptors are below the NEPM guideline value of 50 µg/m^3 with the exception of Hewitt St, due to its close proximity to the open pit. Further real-time monitoring will be undertaken at Hewitt St to obtain a better understanding of actual dust impacts and to facilitate improved management of activities that may result in dust generation.

The proposed dust management plan includes a progressive replacement of the three HVAS samplers with E-BAM samplers. The EBAM samplers are real–time dust monitors and are used to provide average PM_{10} concentrations at 10-minute intervals to help with the assessment and management of ambient dust emissions from Fimiston Operations. The existing BAM samplers currently located at BSY and HGC are configured to monitor the current mean 5-minute PM_{10} concentrations and these will continue to be operated at these sites.

Results from the existing BAM samples at the BSY and HGC sites in 2006 indicate that the NEPM Goal of a maximum of 5 days above 50 µg/m^3 was not exceeded at either site. The HGC site is north of KCGM and considered to be outside the influence of the operation and so indicative of background levels. At the HGC site 4 days were recorded above the NEPM guideline value. The BSY site is to the south east and in close proximity to the KCGM operations. At the BSY site 5 days were recorded above the NEPM guideline value. A review of wind data indicates that on 4 of the 5 days the source was unlikely to be KCGM (westerly or southerly winds).

This dust monitoring data highlights that KCGM is not the only source of particulate dust in the Kalgoorlie-Boulder area and there are many regional or localised sources contributing to dust levels in the region. However 2006 monitoring data indicates that levels meet the NEPM guidelines that are set to ensure the adequate protection of human health and well-being.

13 Mercury

13.1 Management Actions Update

Further information is requested on the modeling and mercury mitigation plans at KCGM.

13.1.1 Submissions Reference

This issue was raised in submissions 11, 12, 17 and 23.

13.1.2 KCGM Response

Air dispersion modelling of mercury emissions for the Gidji Roaster and Fimiston carbon kilns was undertaken and the complete report is presented in Appendix F2 of the PER. The configuration files used for the modelling were provided to the Department of Environment and Conservation on 20 October 2005 and are also available to the Department of Health (clarification on who these should be sent to is required).

The highest risk receptor in the vicinity of the mercury sources is the City of Kalgoorlie-Boulder. The model predicted that the highest ground level concentrations (which are well below the World Health Organisation guideline) would occur to the west and north-west of the sources. The model indicates that the levels at the Ninga Mia Community, Kurrawang Community and other rural residences are lower than the levels in the City of Kalgoorlie-Boulder. Potential exposure of workers is covered under monitoring required by the *Mines Safety and Inspection Regulations 1995.*

Air dispersion modelling undertaken by ENVIRON in July 2005 indicated that ground level mercury concentrations from the Gidji Roaster and Fimiston carbon kilns are well below World Health Organisation guideline level of 1 µg/m^3 (annual average). This assessment used estimates of total mercury in excess of the mercury emission levels measured or anticipated at KCGM. The modelling also did not take into consideration the air quality control strategy and so provides an overestimate of mercury emissions and exposure results. Therefore it is expected that the actual mercury emissions and the annual average concentrations are much lower than the modeled results.

KCGM has already installed a hypersaline wet scrubber system in the duct circuit between the carbon kilns and the emission stack to capture mercury and enable it to be encapsulated within the tailings stream. Feasibility studies are also being undertaken by various specialist consultants in Australia and North America, into a range of abatement and engineering controls to further reduce emissions.

KCGM has undertaken extensive investigations regarding effective controls for reducing mercury emissions. KCGM understands that there is considerable difficultly in accurately measuring ambient mercury levels and so has taken the conservative approach of overestimating the potential mercury emissions (which are still well below the World Health Organisation Guideline). The focus of KCGM's management continues to be on emissions control rather than emissions monitoring.

KCGM will continue to liaise with relevant stakeholders to ensure that mercury emissions are being effectively managed to the satisfaction of the regulatory authorities and the community.

14 Mining Method

14.1 Alternatives

Other options for mining the Golden Pike Cutback should be investigated such as underground/decline.

14.1.1 Submissions Reference

This issue was raised in submissions 17, 22, 25 and 26.

14.1.2 KCGM Response

As part of the optimisation process, both open cut and underground mining methods are evaluated. In the case of the Golden Pike ore body, the open cut mining method is the only economically viable method.

Should KCGM be required to mine the Golden Pike orebody through conventional underground methods, the project would not proceed. This would have adverse effects on the lifespan of the operation and indeed the continued economic benefits that the Kalgoorlie Boulder community currently enjoys.

While open cut mining is the only viable general option, there are refinements to this option that are being considered. These include the use of Surface Miner equipment for the upper benches, reducing the need for blasting in these areas. Unfortunately the rock mass may exclude these machines, however alternatives such as these are always considered.

It should be pointed out that mining of the Golden Pike ore body through underground methods would not substantially increase the employment within the region. In fact the opposite would probably occur. Open pit mining requires considerably more personnel than underground mining due to the larger volumes of material that require to be moved. Therefore if the underground option was undertaken, the overall workforce at KCGM would actually be forced to reduce.

15 Mosquitoes

15.1 Management Plan

The project should be designed and maintained so as to minimise mosquito-breeding opportunities and a mosquito management plan developed.

15.1.1 Submissions Reference

This issue was raised in submission 12.

15.1.2 KCGM Response

Historically KCGM has not had significant issues with large numbers of mosquitoes at the site and so a formal documented mosquito management plan has not been required to be developed. However when issues have been identified appropriate action has been taken.

Approaches to mosquito management have been both direct and indirect. Direct interventions include the removal of breeding habitat by physical modification. A large disused fish pond was identified as a breeding area and was subsequently removed. Although there are a number of water holding facilities on site these contain hyper-saline water and have large flows of water in and out of the facilities. It is understood that mosquito breeding sites are preferentially in standing water and so the risk from these facilities becoming mosquito breeding areas is low.

Indirect approaches reduce human-mosquito conflict and are also used at KCGM. The site protective clothing standard requires that all personnel wear long sleeves and long trousers and supplied sunscreen includes an insect repellant. There are further opportunities that could be explored to increase the awareness and to educate employees and contractors. It is important not only to consider mosquitoes while at work but also what potential actions can be taken at home to reduce breeding environments.

KCGM has contacted the Department of Health's Mosquito-Borne Disease Control Branch and the City of Kalgoorlie-Boulder regarding further information about mosquito management and where applicable this information will be used to further develop mosquito management practices at KCGM.

16 Noise

16.1 Noise Monitoring

Noise monitoring stations are not adequately located and additional sites need to be installed.

16.1.1 Submissions Reference

This issue was raised in submissions 10, 15, 17, 18, 20, 25, 27 and 30.

16.1.2 KCGM Response

The noise monitoring locations were determined over 10 years ago in consultation with the Department of Environment and Conservation (DEC) in accordance with requirements of Ministerial Conditions. The monitoring sites and equipment used were approved by the Environmental Protection Authority in December 1992. However, given the time the noise monitors have been in there current locations, KCGM would be happy to review these locations in conjunction with the DEC.

The monitoring is carried out to evaluate noise emissions from the mine relative to background noise levels and to calibrate noise modelling work. It would be impracticable to measure noise at every location and so noise modelling is an important tool that can be used to determine noise level at other locations.

Locating the noise monitors closer to the mining operation could move them into the acoustic shadow of the noise bund and closer to other noise sources such as the Bypass Road, thus reducing the relevance of any data. The influence of noise sources (including mining) for continuous monitoring will always be a consideration for any noise monitoring in a large community such as the City of Kalgoorlie Boulder.

In order to establish the contribution of mining noise at the noise monitoring sites a trigger recording mechanism is used. Between 7pm and 7am, an event is recorded when the noise exceeds a set level for more than two minutes. A maximum of 49 events can be recorded on any day between 7pm and 7am. With around 91 days each quarter, a maximum of 4,460 noise events could be recorded at each site. For each trigger the dominant noise is identified and classified as "mining, traffic or other".

The trigger events are published quarterly in the Kalgoorlie Miner and reported to the DEC.

16.2 Noise Emissions

Noise levels from KCGM are unacceptable.

16.2.1 Submissions Reference

This issue was raised in submissions 2, 5, 11, 13, 14, 16, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31 and 33.

16.2.2 KCGM Response

Environmental noise as a result of the Fimiston Open Pit Extension is addressed in Section 10.6 of the PER. KCGM currently has a Noise and Vibration Monitoring and Management Programme in place for its present operations. A noise assessment and modelling study by Herring Storer Acoustics (PER Appendix E3) found that mining of the Golden Pike Cutback both at the ground surface and 20m below the ground surface comply with daytime Assigned Noise Levels in the *Environmental Protection (Noise) Regulations 1997*. Although cumulative noise levels from KCGM and other sources are already above night time assigned noise levels, it was predicted that noise as a result of the Golden Pike Cutback would not significantly influence the overall noise in the Kalgoorlie town site.

KCGM's operations commenced prior to the development of the *Environmental Protection (Noise) Regulations 1997* and as such the Project was not designed to meet the requirements of the noise regulations. KCGM has been operating in accordance with the 1992 Ministerial Conditions for the project but will require a Regulation 17 approval to replace the Ministerial Conditions. It is likely the Regulations will have conditions attached that are more stringent than the current Ministerial Conditions.

The exceedance of 13 dB(A) relates to the construction of the noise bunds of the Northern Waste Rock Dumps. These bunds are being constructed to minimise noise emissions from normal operations to ensure that compliance with the set noise criteria are complied with. It is acknowledged construction of the noise bunds will for a period of time result in increased noise levels received at Williamstown and Ninga Mia. However, once constructed, they will provide a significant noise barrier for the operations behind the bund. Additionally, the construction activity will be limited to the day period, as required under the Regulations for construction activity.

KCGM has implemented a number of control measures through its Noise and Vibration Monitoring and Management Programme including:

- use of quietest equipment available;
- mobile equipment being fitted with “smart alarms” which adjust the level of the alarm depending on background noise to reduce unnecessary noise impacts;
- ongoing consultation of stakeholders to determine the success of noise management practices;
- site specific inductions for all contractors and staff to raise awareness of noise management;
- restricting hours of certain operational activities; and
- continuous noise monitoring.

This plan is to be revised and further improved as part of the Public Environmental Review (PER) for the Fimiston Gold Mine Extension.

Some concern was raised regarding the placement of the northern waste rock dumps creating a channelling effect for noise from the power station. KCGM noise consultants have advised that the height of the waste rock dump will not cause an increase in noise levels from the power station.

16.3 Regulation 17 Application

There was a lack of support from the public regarding the Regulation 17 Application. However the DEC recognises that the Regulation 17 Application needs to progress including the need for KCGM to demonstrate what actions are being taken to practically reduce noise.

16.3.1 Submissions Reference

This issue was raised in submissions 14, 15, 16, 17, 22, 23, 26, 27, 29, 31 and 33.

16.3.2 KCGM Response

KCGM's operations commenced prior to the development of the *Environmental Protection (Noise) Regulations 1997* and as such the Project was not designed to meet the requirements of the noise regulations. KCGM has been operating in accordance with the 1992 Ministerial Conditions for the project but will require a Regulation 17 approval to replace the Ministerial Conditions. It is likely the Regulations will have conditions attached that are more stringent than the current Ministerial Conditions.

KCGM is in a unique situation that was recognised by the Minister for the Environment in 1992 where it was stated, *"mining and ore processing activities have occurred very close to these residential areas for almost one hundred years. Thus the residential and mineral processing land uses impact adversely on each other. This makes it impracticable and unreasonable for KCGM to achieve fully desirable noise levels at all residences as it is not feasible to move either the ore body or all the closer residences. Additionally, some locations in Kalgoorlie-Boulder currently have ambient noise levels, which exceed fully desirable levels in the absence of noise from the proponent's (KCGM's) mining and mineral processing activities".* The Minister issued a statement outlining KCGM's current Ministerial noise levels accordingly. The difficulty still remains to determine and quantify ambient noise levels and the contribution of sources of noise, other than those from KCGM.

The *Environmental Protection (Noise) Regulations 1997* Summary of the Regulations notes that there will be genuine cases where the assigned levels cannot reasonably or practicably be met. This could be an existing industry or mine site which is very close to residences. Or it could be a proposed industry or mine site which cannot be located far enough away from residences.

In such cases, the person who believes they cannot reasonably or practicably meet the assigned levels can apply to the Environment Minister for approval (under Regulation 17) to allow the noise emission to exceed or vary from the assigned level.

The Noise Variation Application will go through a very fair public process, as follows -

- The Minister will refer the application to the EPA for assessment;
- The EPA will assess the application with the assistance of the Department of Environment and Conservation and report back to the Minister, who will make the decision;
- The EPA will determine the form, content, timing and procedure of the assessment, and can require any person to provide it with information to assist in the assessment;
- The Minister's approval can be for a set period and may include conditions or restrictions;

- The Minister can amend or revoke an approval, but must first ask the EPA to report on the matter;
- Notice of an approval, amendment or revocation of an approval will be published in the WA Government Gazette;
- If a condition of an approval is breached, the approval ceases, and the assigned levels apply; and
- Any person, either the applicant or another person, who disagrees with the Minister's decision may appeal within 14 days of the gazettal.

16.4 Modelling

Further clarification is required on the noise modeling.

16.4.1 Submissions Reference

This issue was raised in submission 23.

16.4.2 KCGM Response

Some specific technical queries were raised by the DEC regarding the noise modeling, it is intended that these will be discussed and clarified directly with the DEC noise management branch.

17 Pit Stability

17.1 Depth Increase

There is concern that there is an increase in the potential of pit wall failure as the open pit gets deeper.

17.1.1 Submissions Reference

This issue was raised in submissions 10, 11, 13, 15 17, 18, 21, 27, 30 and 33.

17.1.2 KCGM Response

Issues raised will be considered as part of the independent review of pit stability to be undertaken by an independent consultant.

The scope of works for the independent review will be as follows:

1. To review the reports and conclusions and report based on the following criteria:
    a. Comment on the validity of the outcomes and conclusions reached as applicable to the Golden Pike Cutback; and
    b. Comment on the level of confidence in the conclusions drawn.

2. To consider issues directly relating to flyrock or pit stability raised during the public comment period for the Public Environmental Review:
    c. Review public comments for relevance.
    d. Provide to KCGM written responses to public comments where appropriate.

17.2 Abandonment

The DoIR Guidelines for Pit Abandonment should be adhered to.

17.2.1 Submissions Reference

This issue was raised in submissions 11, 17 and 21.

17.2.2 KCGM Response

Issues raised will be considered as part of the independent review of pit stability to be undertaken by an independent consultant.

17.3 Pit Water

There is concern that water in the pit will impact on stability especially the old workings.

17.3.1 Submissions Reference

This issue was raised in submissions 10, 11, 18 and 21.

17.3.2 KCGM Response

Issues raised will be considered as part of the independent review of pit stability to be undertaken by an independent consultant.

17.4 Old Workings

There is concern that old underground workings will impact on stability of the open pit.

17.4.1 Submissions Reference

This issue was raised in submissions 10, 15, 18 and 21.

17.4.2 KCGM Response

Issues raised will be considered as part of the independent review of pit stability to be undertaken by an independent consultant.

18 Production

18.1 Ore Processing

Clarification is needed on whether the extension of the mine will increase production rates or not.

18.1.1 Submissions Reference

This issue was raised in submission 23.

18.1.2 KCGM Response

The extension of the extension will extend the life of the operation; however it will not result in an increase in current rates of production.

18.2 Waste Rock

Clarification is needed on the volumes of waste rock to be generated by the proposal and the fate of the waste.

18.2.1 Submissions Reference

This issue was raised in submission 23.

18.2.2 KCGM Response

It appears that the volumes provided in the key characteristics table in the PER are incorrect. This table shows that 14.6 million m^3 of material would be placed in the northern waste rock dumps which is equivalent to approximately 30Mt. This table also shows that 26.8 million m^3 of material would be placed in the northern backfill which is equivalent to approximately 55Mt. The 908Mt of waste rock referred to in the PER is the estimated total volume to be removed from the entire Fimiston Open Pit from 2005 until 2017.

The current mining plan indicates that approximately 300Mt (or 150 million m^3) of waste rock will be generated from the Golden Pike Cutback. The northern waste rock dumps will provide capacity for around 140Mt of waste rock (NE = 100Mt and NW = 40Mt). The proposed in pit backfill may provide capacity for 40Mt but it must be considered that this backfilling may not be undertaken if it is determined in the future to be potential sterilisation of an economic resource. The remaining waste rock (120-160Mt depending on backfilling) will be placed in the existing waste rock dump areas to the south and east of the operation.

Extensions to or increases in the height of the existing waste rock dumps to cater for the 140Mt proposed for the northern waste dumps is restricted by airport regulations and geographic constraints of the eastern and southern drainage lines associated with Hannan's Lake.

19 Public Safety

19.1 Independent Review Process

The public safety review process for flyrock and pit stability is not supported.

19.1.1 Submissions Reference

This issue was raised in submissions 20, 27 and 31.

19.1.2 KCGM Response

Public Safety issues are of critical importance to KCGM due to the proximity of mining operations to the City of Kalgoorlie-Boulder. KCGM has operated with a Safety Exclusion Zone (SEZ) of 400m since the commencement of operations in 1991. This 400m 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 stability.

KCGM believes that based on over 14 years mining experience and the availability of advanced mining technology, it can demonstrate that risks of flyrock from blasting and pit wall instability can be reduced sufficiently for KCGM to operate with a reduced SEZ of 200m, without comprising the safety of the community.

Following the release of the Project Definition Document in April 2005, discussions with government agencies commenced regarding the approval process for any potential modification the SEZ. These meetings were facilitated by the Office of Development Approvals Coordination and included representatives from the KCGM, City of Kalgoorlie-Boulder, Department of Industry and Resources, Department of Consumer and Employment Protection and the Department of Environment and Conservation Environmental Protection Authority Service Unit.

It was determined at these meetings that an independent consultant would be engaged by the DoIR to review KCGM's flyrock and pit stability technical studies and provide advice to Local and State Government. The City of Kalgoorlie-Boulder Council indicated their support of the independent consultant review with the results provided to DoIR, as it considers that the State Government bears primary protection for public safety in this instance.

In September 2006 a representative from the DoIR (responsible for management of the independent review process) attended the KCGM Community Reference Group (CRG) meeting to discuss the proposed way forward with the flyrock review. At this meeting two possible reviewers were discussed it was agreed to approach Dr Peter Lilly from the CSIRO in the first instance to confirm availability. Dr Lilly has since agreed to undertake the review (at the expense of KCGM). It is intended that a similar process will be undertaken to identify a potential reviewer for pit stability.

Dr Peter Lilly PhD RPEQ FIEAust CPEng FAusIMM(CP) brings 30 years of experience in industry and academia to his position as Chief of CSIRO Exploration & Mining. He has published numerous articles and lectured in the fields of: geotechnical risk analysis; rock slope engineering; underground excavation engineering; blast engineering and mine planning and design.

The scope of works for the independent reviews will be as follows:

1. To review the reports and conclusions and report based on the following criteria:
    a. Comment on the validity of the outcomes and conclusions reached as applicable to the Golden Pike Cutback; and
    b. Comment on the level of confidence in the conclusions drawn.
2. To consider issues directly relating to flyrock or pit stability raised during the public comment period for the Public Environmental Review:
    c. Review public comments for relevance.
    d. Provide to KCGM written responses to public comments where appropriate.

It is anticipated that the flyrock review will be completed in mid December and will be provided to relevant government agencies for consideration.

20 Rehabilitation

20.1 Clearing

There will be significant clearing of the Green Belt for this project are there plans to establish further vegetation to the west of the Eastern Bypass Road.

20.1.1 Submissions Reference

This issue was raised in submission 17.

20.1.2 KCGM Response

The project footprint area and resulting vegetation clearing will be minimised wherever practicable. KCGM, in conjunction with the City of Kalgoorlie-Boulder and Main Roads, are investigating opportunities to improve the area on the western side of the Bypass Road in a cooperative project involving the local environment organisation, Kalgoorlie-Boulder Urban Landcare Group.

20.2 Methodology

Topsoil depth on waste rock is important to ensure successful revegetation and is it possible to use native flowering species to rehabilitate the environmental noise bund.

20.2.1 Submissions Reference

This issue was raised in submission 17.

20.2.2 KCGM Response

The management and replacement of growth medium onto rehabilitation areas is important for successful revegetation. While the integrity of growth medium is best retained through immediate respreading this is not always possible given construction and progressive rehabilitation schedules.

KCGM stockpiles growth material to cover the surface of primary rock waste dumps and tailings storage facilities and assist in the revegetation of the outer embankments. Due to this historical nature of the site this material is primarily oxide although some topsoil has been reclaimed from some areas.

KCGM is currently investigating the potential for differential growth medium use in rehabilitation. This basically means that where practicable the higher quality growth medium will be used in the areas that are highly visible to the City of Kalgoorlie-Boulder.

Growth medium is generally spread over rehabilitation areas at a rate of about 200-250mm. It has been recognised that historically some waste rock dump faces at KCGM have been layered with too great a thickness of growth medium (500mm or greater).

Some sites have been corrected through the scalping of the growth medium. Other sites are being monitored via LFA and observation and remedial works are occurring where appropriate to correct water flows. Scarping, re-sheeting with aggregate or deeper ripping methods are also being considered. These methods must be weighed against disturbing the existing vegetation and if the change is potential harmful to slope stability, soil loss or visual amenity. In the interim these sites will be monitored over time and if rehabilitation success is limited then KCGM is committed to undertaking further remedial works.

The noise bund will be revegetated using a mixture of seeds and tube trees. Seeds and trees will consist of local native species. Every effort will be made to increase the visual appearance of the noise bund, however it will depend on availability and whether the species selected are suitable to grow on slopes.

KCGM is also considering reticulation to the trees to assist with their establishment. Reticulation is only used for a short period after which watering is progressively reduced to limit the reliance on reticulated water supply.

Water management techniques to control erosion and water runoff will be incorporated into the design of the noise bund. The design is to capture water rather than release it. This design not only provides effective water management but harvests and holds water which will subsequently benefit vegetation growth.

20.3 Management Plan

The Rehabilitation Management Plan being developed should be finalised in consultation with the DEC Environmental Management Branch.

20.3.1 Submissions Reference

This issue was raised in submission 23.

20.3.2 KCGM Response

The Rehabilitation Management Plan is currently being developed and finalised in conjunction with the Department of Industry and Resources Environment Division Minerals Branch in Kalgoorlie. It is understood that the DoIR is the key decision making authority with respect to mine site rehabilitation.

While KCGM is happy to consult with the DEC Environmental Management Branch further clarification is required regarding the contacts and whether this consultation can be done locally via the DEC Swan Goldfields Agricultural Region Kalgoorlie Office.

21 Seismicity

21.1 Underground

The claim regarding no damaging seismic events affecting the pit is untrue, as a seismic event at the Mt Charlotte operations caused damage to buildings.

21.1.1 Submissions Reference

This issue was raised in submission 11.

21.1.2 KCGM Response

The statement regarding seismicity (shown below) appears to have been misunderstood as it refers to the potential impact on pit wall stability and not damage to buildings.

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.

22 Safety Exclusion Zone

22.1 Reduction

The proposal to reduce the Safety Exclusion Zone from 400 metres to 200 metres is strongly opposed.

22.1.1 Submissions Reference

This issue was raised in submissions 3, 10, 14, 16, 17, 18, 21, 25, 27, 28, 29, 30, and 31.

22.1.2 KCGM Response

During 1991, the Golden Mile Mining Development Planning Committee developed the concept of a Safety Exclusion Zone (SEZ) to be maintained between open pit activities at KCGM and residential properties. In 1992, KCGM was advised by the Department of Minerals and Energy (now DoIR) that they had determined that a 400m 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 to provide protection from possible subsidence.

The SEZ restricts the development of residential properties in close proximity to the open pit operation. 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 400m zone is variable (effectively extending or contracting in accordance with where primarily blasting occurs). However, to enable the SEZ to be incorporated into the Town Planning Scheme (TPS), a standard 400m SEZ was defined from the projected maximum extent of the pit based on the orebody and pit plan knowledge at the time, as shown on Figure 12.

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. 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.

In essence, the effect of the SEZ in the TPS is to control development within the identified area. Residential development is prohibited and as such the City of Kalgoorlie-Boulder supports and encourages KCGM to acquire land upon which residential development is situated. Since 1992, KCGM has undertaken a programme of passive property acquisition and now owns all residential properties within 400m of the proposed Golden Pike development.

Some commercial properties not owned by KCGM exist within 400m from the Golden Pike pit outline. However through an amendment passed in August 2002, other commercial activity within the SEZ is permitted subject to the endorsement of KCGM and the City of Kalgoorlie-Boulder.

Based on discussions with KCGM, the DoIR and the EPA and the review of available Project information, the City of Kalgoorlie-Boulder is of the view that a potential expansion of the SEZ is not considered necessary. The Council is supportive of an independent consultant to undertake a review of the technical studies undertaken by KCGM with the results provided to DoIR, as it considers that the State Government bears primary protection for public safety in this instance. The City of Kalgoorlie Boulder will also be reviewing this documentation in association with the PER.

22.2 Purchase of Properties

Due to the risk posed to public safety, KCGM should purchase all privately-owned residential and commercial property within the 400m SEZ and relocate occupants.

22.2.1 Submissions Reference

This issue was raised in submissions 3, 10, 15, 18, 20, 21, 22, 27, 31 and 33.

22.2.2 KCGM Response

The SEZ was gazetted in April 1997 in the City of Kalgoorlie-Boulder Town Planning Scheme No 1 - Section 3.16. In essence, the effect of the SEZ in the TPS is to control development within the identified area. Residential development is prohibited and as such the City of Kalgoorlie-Boulder supports and encourages KCGM to acquire land upon which residential development is situated. Since 1992, KCGM has undertaken a programme of passive property acquisition and now owns all residential properties within 400m of the proposed Golden Pike development.

Some commercial properties not owned by KCGM exist within 400m from the Golden Pike pit outline. However through an amendment passed in August 2002, other commercial activity within the SEZ is permitted subject to the endorsement of KCGM and the City of Kalgoorlie-Boulder.

22.3 Evacuation of Properties

Businesses and residences may need to be evacuated during times of blasting resulting in a loss of time and productivity to businesses and the potential refusal to evacuate prior to a blast.

22.3.1 Submissions Reference

This issue was raised in submissions 10, 15, 17, 18, 21 and 31.

22.3.2 KCGM Response

It should be noted that it is KCGM's intention to ensure blasting practices are such that this evacuation will not be required. KCGM will adopt the practices recommended by specialist consultants to minimise the potential impacts from flyrock generated during blasting. Modified blasting practices will be introduced during blasting particularly in the area identified near the pit perimeter. This will ensure that the throw of flyrock is limited to 50m and that a safety factor of '4' is maintained.

If it is deemed that a blast clearance area greater than 200m is required then Industrial and KCGM owned residential properties within the Blast Clearance Area may also be evacuated during a blast. This will require KCGM to reach agreement with property owners regarding any potential evacuations.

Preliminary blast designs for the Golden Pike Cutback indicate a total of 86 separate blasts will be required for the first four benches which according to the current schedule will be mined over around 18 months. Of these 86 blasts, 58 will have a potential Blast Clearance Area of less than 400m. The location of the blast will determine which properties may require evacuation and it is important to note that not all properties will require evacuation at the same time.

22.4 Separation Distance

The EPA has set a guidance statement of 1500-3000m based on impacts of noise and dust so KCGM should not receive a reduction in the SEZ.

22.4.1 Submissions Reference

This issue was raised in submission 27.

22.4.2 KCGM Response

The KCGM Fimiston Open Pit has been operating since 1990 with a buffer framework and environmental management regime that has produced minimal environmental impacts considering the scale and location of the operation. KCGM's operations would never have been viable or permitted, having a major economic impact on the City of Kalgoorlie-Boulder, if the separation of 1500m to 3000m between open pit mining and sensitive land uses applied.

There are a myriad of site specific factors which can affect the compatibility between land uses. Many of these are relevant to the Kalgoorlie context including:

- Implementation of environmental management programmes;
- Changes to available technology and mining methods;
- History of open pit mining in the area;
- Successful implementation of current buffer mechanisms; and
- Size of the open pit operation and the scale of activities.

The proximity of the operation to the City of Kalgoorlie-Boulder drives KCGM towards improved transparency and continuous improvement in its environmental management. KCGM will continue to consult with stakeholders and to review plans or management practices based on feedback.

KCGM believes that the performance of its operation and management programmes show that a mining operation of this nature can operate in close proximity to a community without adverse impact or the need for a large buffer zone.

One of the key tenets of the Guidance Statement states that ideally buffer distances for each industrial use should be agreed through the assessment of a specific scientific study based on site and industry specific information. As such scientific studies regarding the potential impact and management of dust, noise, blasting and flyrock emissions have been provided for consideration in the Public Environmental Review document

23 Tailings Storage Facilities

23.1 Seepage

There are concerns regarding seepage impacting on groundwater levels and vegetation.

23.1.1 Submissions Reference

This issue was raised in submissions 11, 13, 14, 16, 21, 22, 24, 26, 27, 28, 29, 32 and 34.

23.1.2 KCGM Response

Concerns regarding seepage from the Fimiston tailings storage facilities have been the subject of numerous appeals and parliamentary questions over recent years. In response to community concerns the Minister for the Environment and the Department of Environment and Conservation have requested KCGM to develop and implement a Seepage and Groundwater Management Plan.

Seepage from Tailing Storage Facilities (TSFs) is managed in accordance with KCGM's Seepage and Groundwater Management Plan (SGMP), and in compliance with the DEC Licence to Operate.

Natural groundwater in the vicinity of the Fimiston TSFs is saline with total dissolved solids (TDS) concentrations from >20,000-50,000 mg/L. The quality of the groundwater is not suitable for potable or agricultural use. The Beneficial Use of the groundwater is recognised by the DoE as that defined by the Goldfields Groundwater Area Management Plan (Water Authority, 1994). Based on this Plan, the primary Beneficial Use is for the purpose of mining and mineral processing.

The primary objective of the SGMP is to operate, monitor and develop the Eastern Borefield so as to minimise environmental impact to the local habitat. This is particularly in relation to the prevention of harm to vegetation as a consequence of rising groundwater levels. The secondary objective of the SGMP is to ultimately restore groundwater levels to agreed targets based upon the historical groundwater levels for the region. These targets have been developed in consultation with the Department of Environment and Conservation and are based upon an assessment of the historical data, reasonable hydrogeological estimations, practicability and intent.

A recent study presented in Appendix D5 of the PER found groundwater levels around the Fimiston I and II TSFs have reduced as a result of the groundwater monitoring and seepage recovery programme and are approaching historic 'natural' groundwater levels (see following figures). This demonstrates that the SGMP has been effective in reducing and maintaining groundwater levels in the vicinity of the Fimiston TSFs. Continued monitoring of the groundwater levels and vegetation surrounding the TSFs through the SGMP as part of the Fimiston Gold Mine Operations Extension will identify any changes in groundwater or vegetation and additional seepage management infrastructure will be installed in accordance with the SGMP if required.

Some submissions raised the issue of controlling seepage to within the premises boundary of the Fimiston TSFs. This issue has also been raised in recent parliamentary questions and KCGM notes the following responses by the Minister for the Environment:

- *PQ 2611 22/09/2005 - Answer 6: The Environmental Protection Act 1986 does not require the Department to prevent emissions crossing premise boundaries as this is not practicable in many situations. Where a stack or pipe emits a substance then it is most likely that this will cross a premise boundary, for instance an air emission from a chimney is likely to cross a boundary. The Environmental Protection Act 1986 is designed for the "prevention, control and abatement of pollution and environmental harm". A significant portion of the Act is intended to prevent, control and abate emissions so that they do not cause pollution. So in some cases it may be practical and necessary to stop or minimise emissions crossing a boundary, such as a landfill with a fence to control wind blown litter. But in many situations it needs to be considered on a case by case basis.*

- *PQ 2609 22/09/2005 - Answer 8, PQ2612 22/09/2005 Answer 4: The option of completely preventing seepage from crossing the premise boundary is not considered practical in this situation. The Department of Environment does not consider that seepage crossing a boundary necessarily constitutes pollution or environmental harm.*

- *PQ 3636, 3637 13/06/2006 – Answer 1: The Environmental Protection Act 1986 defines "practicable" as meaning "reasonably practicable having regard to, amongst other things, local conditions and circumstances (including costs) and to the current state of technical knowledge". Even if it was possible to contain all of KCGM's seepage within their tenement boundaries the Department of Environment (DoE) considers that this would be a hugely expensive exercise and would not achieve any apparent environmental outcome. As per Questions on Notice 2612, 2610, and 2611 the DoE does not believe that seepage crossing a tenement boundary constitutes pollution or environmental harm as defined under the Environmental Protection Act 1986.*

- *PQ 3373 04/04/2006 – Answer 11: As per Question on Notice 2885 of 10 November 2005, the DoE considers that from an ecological or environmental viewpoint, retaining seepage within arbitrary boundaries of mining tenements, has no relation to preventing pollution or environmental harm (serious or material). That is the boundary of a mining tenement generally has no relationship to an environmentally significant feature, but rather delineates the area of control of a mining operation.*

- *PQ 2610 22/09/2005 – Answer 10: It is the Department of Environment's consideration that the seepage from KCGM's Fimiston operations are not causing pollution or environmental harm (material or serious) as the emissions do not adversely effect the defined beneficial use of the naturally occurring saline and hyper-saline groundwater. The groundwater levels are below a level that may impact flora and fauna and the public will not come into contact with the hyper-saline water, as when it leaves KCGM premises it is approximately 4m below ground level. A Seepage and Groundwater Management Plan is to be implemented by KCGM and the plan maps out KCGM's process to ensure that groundwater levels are maintained below 4m.*

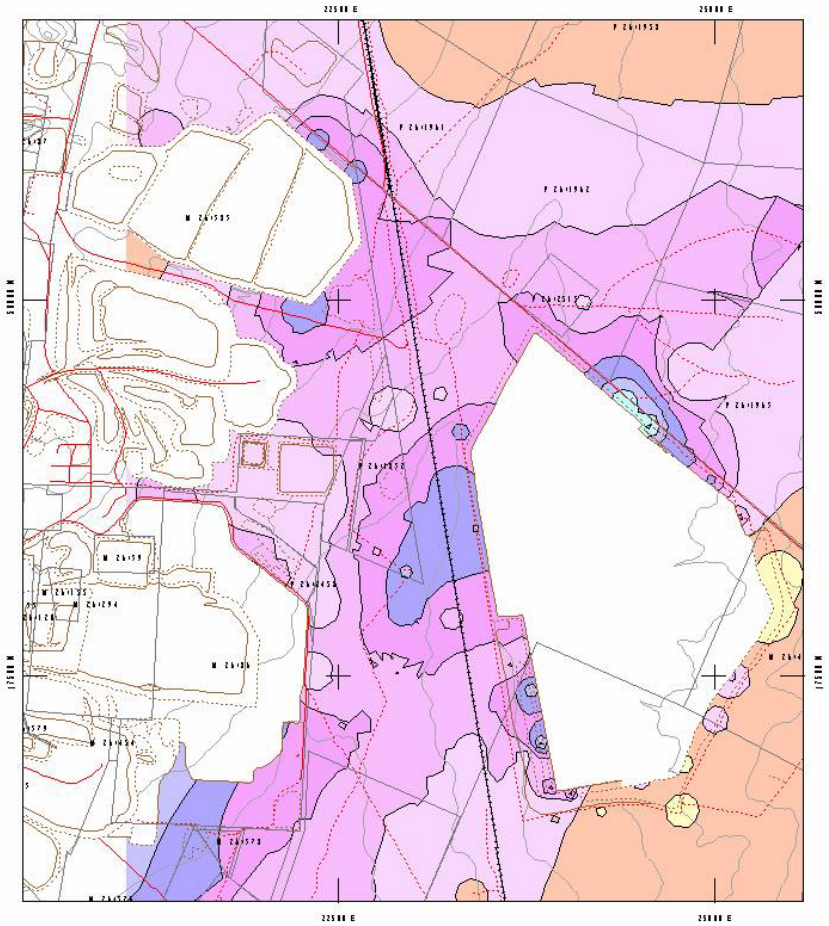
Historically the groundwater in some places between the two TSFs has been around 2m below ground surface however KCGM's extensive groundwater recovery system has increased this depth to 4-6m (or greater). The increase in depth is directly related to an increase in the volume of seepage water recovered by the system. By increasing seepage recovery near the TSFs this reduces the potential volume of seepage travelling away from the site.

While it has been reported that seepage water has travelled at least 1km and influenced groundwater levels at least 2km from the tailings storage facilities there is no evidence that this seepage water has impacted on dams and lakes down gradient from the tailings storage facilities. The Hannans Lake system is considered to be ephemeral which means it is usually dry. Surface water in this system is mainly a result of runoff following storm events rather than groundwater rising to the surface.

It is also important to reiterate the Department of Environment's response to Parliamentary Question 2610 above, that seepage from KCGM's TSFs are not causing pollution and that groundwater levels are below a level that may impact flora and fauna and the public will not come into contact with the water, as when it leaves KCGM premises it is approximately 4m below ground level.

Fimiston TSFs Groundwater Management Change in Groundwater Levels

August 2000

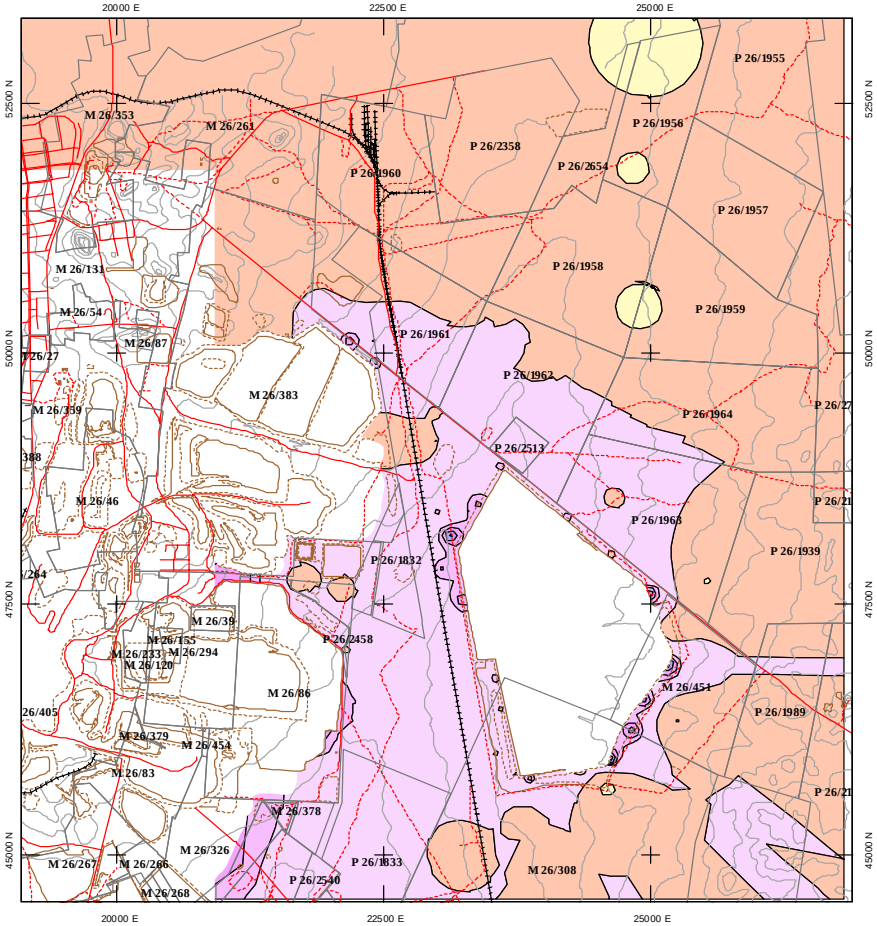


Legend

Depth to Groundwater

- < 1m
- 1 - 2m
- 2 - 3m
- 3 - 4m
- 4 - 5m
- 5 - 6m
- 6 - 10m
- 10 - 20m
- > 20m

September 2006



23.2 Kaltails TSF

The Kaltails TSF causes seepage impacting on groundwater levels, vegetation and causing pollution.

23.2.1 Submissions Reference

This issue was raised in submissions 13, 14, 16, 20 and 29.

23.2.2 KCGM Response

The proposed use of the existing Kaltails TSF is to raise the embankment height by an average of 1.4 meters annually (m/a) over the period 2008 to 2017. This equates to an average annual disposal of 5.9 Mt. This disposal would be undertaken concurrently with disposal to Fimiston I and II TSFs and at Kaltails would be non-continuous, occupying a period of around 5-6 months each year. This compares with the annual average disposal (continuous) of around 7 Mt during the previous Kaltails operation. The annual raising of the TSF averaged about 2.3m/a. Thus should KCGM receive approval to deposit tailings to the Kaltails TSF the ability for the tailings to dry will be significantly improved.

Should the option to use the Kaltails TSF be selected, the facility will be recommissioned in a manner which would ensure seepage impacts from the facility are minimised. This would include minimising the area of the decant pond and constructing seepage interception trenches in the near surface ferricrete aquifer as well as groundwater abstraction bores in the deeper semi-confined aquifer. This would be supported by a comprehensive programme of groundwater monitoring, modelling and review and extending the Seepage and Groundwater Management Plan (SGMP) southwards from Fimiston to incorporate the activities at the Kaltails TSF and surrounds.

23.3 New TSF

KCGM should build a new lined tailings storage facility.

23.3.1 Submissions Reference

This issue was raised in submissions 13, 14, 16, 20, 26, 27 and 29.

23.3.2 KCGM Response

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 there were no nearby open pits of sufficient size that would provide the required storage capacity. The construction of a new TSF (Fimiston III) was originally identified as a feasible option, however further assessment of possible opportunities for tailings storage has highlighted the alternatives that are considered to have significantly better environmental outcomes. The elimination of the new TSF option will avoid the need to clear approximately 150 ha of undisturbed native vegetation.

The fact that the TSFs are not on a plastic lined base can have positive ramifications in the Goldfields environment. When finally closing an unlined TSF water will both evaporate, stay stored to some extent in the tailings or slowly seep out of it while being controlled by pumping bores and monitoring water table levels. After a few years when the TSF is dry, this can be stopped and no further management of the water is needed. Many of these decommissioned TSFs exist around Kalgoorlie.

In a lined system, any rainfall after closure will seep down and hit the liner. From there it will have to be pumped away or treated. It also requires ongoing maintenance to ensure that the moisture content of the tailings does not increase to a point that it weakens the structure if the water is not continually pumped away. This is not the case with an unlined TSF.

23.4 Stability

Increasing the height of the Fimiston TSFs increases the level of risk of failure which could affect the railway line link to the eastern states.

23.4.1 Submissions Reference

This issue was raised in submission 26.

23.4.2 KCGM Response

Stability of the tailings storage facilities is outlined in Section 11.4.3 and Appendix D6 of the Public Environmental Review. Preliminary modelling of the stability of the Fimiston I and Fimiston II TSFs and the Kaltails TSF has been carried out for maximum embankment heights of 50m, 60m and 45m respectively. The modelling indicates the factors of safety for the raised TSFs meet the minimum factors of safety recommended by the Australian National Committee on Large Dams (ANCOLD) for both static and seismic conditions.

Option 1 (Fimiston I and Fimiston II TSFs to 50m and 60m respectively) has significantly greater rates of rise of the TSF than does Option 2 (Kaltails TSF to 45m) due to the significantly greater storage area offered by Option 2. The higher rates of rise encountered for Option 1 would be expected to result in the following responses:

- slower drying and consolidation of the deposited tailings and hence lower *in situ* tailings densities and higher moisture content of the deposited tailings;
- reduced ability to source embankment construction material from the tailings beaches and possibly resulting in the need to import construction material from alternative sources such as the old Croesus TSF or the Mount Percy TSF; and
- marginally reduced factors of safety against embankment failure.

The inherent risks associated with tailings storage Option 2, which utilises the Kaltails TSF and minimises the heights of the Fimiston I and Fimiston II TSFs, would be lower than Option 1, which only utilises the Fimiston I and Fimiston II TSFs. Option 1 is preferred because it reduces the overall environmental footprint of the operation. The risks associated with increasing the height of the Fimiston I and Fimiston II TSFs have yet to be fully quantified, and while these are not expected to be significant, KCGM feels it is appropriate to have Kaltails as a contingency.

The programmes that will be undertaken to monitor the stability of the TSFs, irrespective of the tailings storage option implemented, will include the following:

- regular monitoring of piezometers in the TSF embankments and supplementing the existing array of piezometers as the embankment heights increase;
- monitoring settlement stations installed on the TSF embankments;
- daily visual inspection of perimeter embankments, crests and beaches for possible signs of instability;
- annual review of tailings management procedures; and
- annual assessment of TSF embankment stability.

KCGM will undertake further modelling of stability and a risk-based dam break assessment for the TSFs at final maximum height as part of the design evaluation process once a preferred option is chosen.

The stability evaluations carried out to date on the Fimiston and Kaltails TSFs have indicated the embankments to be stable under both static and seismic conditions. There are no grounds for assuming that the continued use, and resulting height increase, of the TSFs will lead to a diminishing of the structural integrity of the structures.

23.5 Fauna

There is no mention of protecting stygofauna, termites or honey ants.

23.5.1 Submissions Reference

This issue was raised in submissions 22 and 32.

23.5.2 KCGM Response

Stygofauna

The only known stygofauna community in the Goldfields region exist in the calcrete aquifers of the north-east. There have been no documented findings of stygofauna within the area of the Fimiston operations or in associated aquifers.

The distribution of stygofauna is related to rock and sediment types, and the geological structure. Stygofauna have been known to be found in marine caves however the water chemistry (hypersaline and acidic) and rock types surrounding these areas is significantly different to the groundwater catchment near the Fimiston TSFs.

KCGM's catchment consists of sedimentary deposits and underlying weathered rock. The main aquifer lies within the shallow sedimentary deposits above the bedrock. Most of the bedrock sequence within the northern and central parts of the catchment is Black Flag Beds, which is a formation composed of very fine grained and dense sedimentary deposits, this rock is typically very weathered with most samples appearing as very fins sand, silt and talcy clay.

Literature indicates that the stygofauna habitat is best developed in karstic aquifers. Stygofaunal habitat may also occur in non-karstic rocks, or unconsolidated sediments, if suitable water-filled voids are present. Calcrete and laterite geology appears to be the most common habitat for these creatures.

Termites
Most colonies of termites are likely to be living in tree stumps, in hollow trees, in living trees or in conical mounds above the ground. Inspections of the Fimiston TSF areas and vegetation monitoring, has not identified termite mounds or significant termite activity within these areas.

Honey Ants
Honey Ants are unlikely to be found within the TSF area as they are usually found under Mulga trees which are not located within this area. Local Aboriginal people who are involved with tourism and bush tucker tours have to travel many hundreds of kilometres to the northern goldfields to find any evidence of honey ants.

23.6 Options

Further technical investigations and assessments are required before a final decision can be made on the acceptable tailings management option.

23.6.1 Submissions Reference

This issue was raised in submissions 4b, 17 and 34.

23.6.2 KCGM Response

Tailings options were incorporated into the PER at the request of the Environmental Protection Authority. Technical assessments regarding groundwater and stability were undertaken for both options as requested by the DEC and DoCEP. It was intended that the assessments provided in the PER document would be used as the basis for a decision on the preferred option. Once direction was provided on the preferred option then the detailed design work on the preferred option (not on both options) would be undertaken.

Further clarification is required if additional investigations and assessments are required to ensure that these can be completed in a timely and cost effective manner.

24 Water

24.1 Usage

Alternative fresh water options such as desalination or from the council water re-treatment plant should be considered.

24.1.1 Submissions Reference

This issue was raised in submission 17.

24.1.2 KCGM Response

KCGM uses on average 12,175 megalitres (ML) 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.

Potable water is used mainly in:

- the elution circuit and for washing sulphide concentrate at the Fimiston Mill;
- the reslurrying of gold concentrate at Gidji Roaster;
- amenities for all sites; and
- to a minor extent in the rehabilitation programme for the irrigation of trees.

Whilst desalination is not considered feasible (as the groundwater is hypersaline), KCGM has recently commenced the use of treated effluent sourced from the South Boulder Wastewater Facility. KCGM is committed to the re-use and recycling of water and will continue our efforts to develop systems to minimise water consumption to preserve this valuable resource.

25 Waste Rock Dumps

25.1 Location

An alternative site should be selected for the northern waste rock dumps.

25.1.1 Submissions Reference

This issue was raised in submissions 17, 19, 22, 27 and 33.

25.1.2 KCGM Response

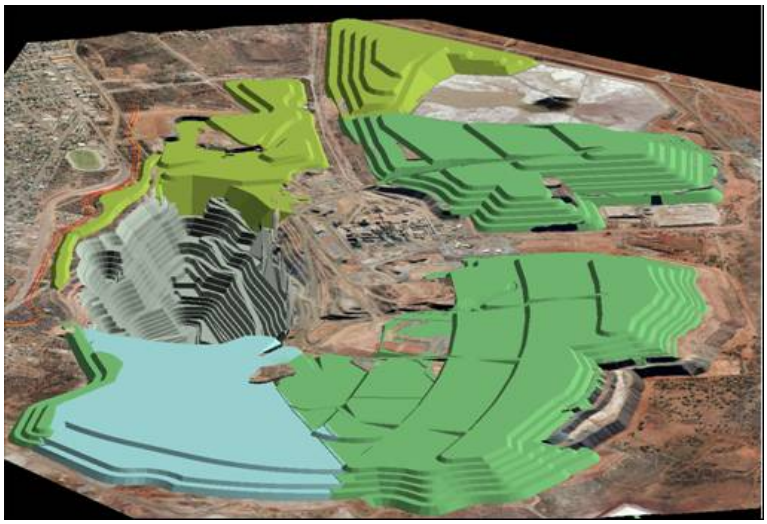
Opportunities for the location of additional waste rock dumps are limited by the existing dumps encompassing the southern and eastern surrounds of the Fimiston Open Pit (see following figure). Extensions to or increases in the height of these dumps is restricted by airport regulations and geographic constraints of the eastern and southern drainage lines associated with Hannan's Lake.

Construction of culverts over or diversion of the drainage lines located to the east of the existing waste rock dumps is not considered to be practicable. The drainage lines form part of a shallow valley, which drains south to Hannans Lake. The drainage lines are ephemeral which means they are usually dry and only experience surface water flows for short periods following storm events. These storm water flows can be many hundreds of meters wide in the drainage area making the water flow difficult to control or divert.

Any diversion or modification plans to the drainage system could also potentially impact on the other infrastructure and landowners to the east of the KCGM operation including the Readymix Plant, Trans Australian Railway Line, Fimiston II TSF and Lakewood Plant. In addition any interruption or modification to the drainage system could potentially impact on downstream vegetation and the Hannans Lake system.

The proposal to locate additional waste rock dumps in identified areas north of the operation aims to restrict KCGM's footprint area central to the existing operation. Using the northern waste dumps is considered the most environmentally sound and economically feasible option. Waste may also be backfilled into a portion of the northern end of the open pit and this will assist in reducing the overall surface footprint of the waste rock dumps.

The location of the dump and the proposal to also backfill waste into the northern end of the Fimiston Open Pit reduces truck haulage distances from the open pit. This provides environmental benefits including the minimisation of greenhouse gas emissions by reducing diesel consumption and avoids further clearing of native vegetation due to the dumps being located on historically disturbed land, rehabilitated by KCGM.



Proposed Final Waste Dump and Open Pit

25.2 Drainage

The surface of the waste rock dumps is considerable and runoff will cause issues.

25.2.1 Submissions Reference

This issue was raised in submission 11.

25.2.2 KCGM Response

As stated in Section 10.4 of the PER the location of the proposed NWRD's are not associated with any major surface drainage features.

The control of erosion and water run off is an important factor in rehabilitation. The design of the waste dumps is to capture water rather than release and water management strategies are incorporated into the design. These design structures not only provide effective water management but harvest and hold water as run on areas, which will subsequently benefit vegetation growth.

The water management strategies include (but are not limited to):

- Ripping to a nominal depth of 1m. Winged tynes will create deep rip lines along the contour to enhance soil mounding and permeability. Contour ripping also helps to control runoff and maintain moisture.
- Rock armouring of embankments. Deep ripping will also intermix the growth medium with rocks to provide stability for vegetative growth and minimise any erosion and run off that may occur from heavy rainfall.
- A berm will be installed where possible to “break” the slope when the bund is more than 15m vertical in height. These will be back sloping to control run off and promote infiltration.
- Installation of bunds on flat areas and on berms (perpendicular to the contour to compartmentalise the berm) to promote water storage and infiltration (if required).

25.3 Accessibility

The waste rock dumps will impact on indigenous users of the iron structures, located near the power station.

25.3.1 Submissions Reference

This issue was raised in submission 11.

25.3.2 KCGM Response

It is assumed that the iron structures are those located to the south of the Ninga Mia aboriginal community. The waste rock dumps are located to the south of these structures and should not restrict access. Dust and noise management measures implemented for the Ninga Mia community will also serve to protect these structures.

Submission Information

Submission Number	Submitter Details	Key Issues Raised
1	Department of Indigenous Affairs	Supportive
2	Private	Vibration and Overpressure, Property Damage, Loopline Railway, Dust Emissions, Noise Emissions
3	Private	Blast Clearance Area, SEZ Reduction, Property Purchase
4a	Department of Employment and Consumer Protection	Blast Clearance Area
4b	Department of Employment and Consumer Protection	Blast Clearance Area, TSF Options
5	Private	Dust Emissions, Blast Clearance Area, Noise Emissions, Supportive
6	Private	Supportive
7	Goldfields Esperance Area Consultative Committee Inc	Supportive
8	Chamber of Commerce and Industry	Supportive
9	Private	Vibration and Overpressure, Property Damage, Dust Emissions
10	Private	Dust Monitoring, Independent Monitoring, Blast Clearance Area, Health Study, Noise Monitoring, Stability – Pt Depth, Pit Water, Stability – Old Workings, SEZ Reduction, Property Purchase, Property Evacuation
11	Private	Acid Rock Drainage, Property Damage, Bonds, Dust Monitoring, Dust Emissions, Blast Clearance Area, Health Study, Mercury, Noise Emissions, Stability – Pt Depth, Pit Abandonment, Pit Water, Seismicity, TSF Seepage, WRD Drainage and Accessibility
12	Department of Health	Blast Management Plan, Dust Management Plan, Mercury, Mosquitoes
13	Private	Vibration and Overpressure, Dust Emissions, Noise Emissions, Stability – Pt Depth, TSF Seepage, Kaltails TSF, New TSF
14	Private	Vibration and Overpressure, Dust Emissions, Enforceability of Conditions, Noise Emissions, Regulation 17 Application, SEZ Reduction, TSF Seepage, Kaltails TSF, New TSF
15	Private	Vibration and Overpressure, Old Workings Stability, Dust Monitoring, Enforceability of Conditions, Independent Monitoring, Blast Clearance Area, Health Study, Noise Monitoring, Regulation 17 Application, Stability – Pt Depth, Stability – Old Workings, Property Purchase, Property Evacuation

Submission Number	Submitter Details	Key Issues Raised
16	Private	Vibration and Overpressure, Dust Emissions, Enforceability of Conditions, Noise Emissions, Regulation 17 Application, SEZ Reduction, TSF Seepage, Kaltails TSF, New TSF
17	Private	Property Damage, Old Workings Stability, Climate, Bypass Road Commitments, Project Consultation, Tourism, Loopline Railway, Dust Monitoring, Dust Emissions, Fauna, Blast Clearance Area, Health Study, Mercury, Mining Method, Noise Monitoring, Regulation 17 Application, Stability – Pt Depth, Pit Abandonment, Rehabilitation – Clearing and Methodology, SEZ Reduction, Property Evacuation, TSF Options, Water Usage, WRD Location
18	Private	Dust Monitoring, Independent Monitoring, Blast Clearance Area, Health Study, Noise Monitoring, Stability – Pt Depth, Pit Water, Stability – Old Workings, SEZ Reduction, Property Purchase, Property Evacuation
19	Private	Vibration and Overpressure, Dust Emissions, Noise Emissions, WRD Location
20	Private	Vibration and Overpressure, Property Damage, Bonds, PER Document, Dust Emissions, Independent Monitoring, Health Study, Noise Monitoring, Noise Emissions, Public Safety Review, Property Purchase, Kaltails TSF, New TSF
21	Private	Dust Monitoring, Independent Monitoring, Blast Clearance Area, Health Study, Noise Emissions, Stability – Pt Depth, Pit Abandonment, Pit Water, Stability – Old Workings, SEZ Reduction, Property Purchase, Property Evacuation, TSF Seepage
22	Private	Project Consultation, Blast Clearance Area, Mining Method, Regulation 17 Application, Property Purchase, TSF Seepage, TSF Fauna, WRD Location
23	Department of Environment and Conservation	Acid Rock Drainage, Blast Management Plan, Dust Management Plan, Mercury, Regulation 17 Application, Noise Modelling, Production – Ore and Waste Rock, Rehabilitation Management Plan
24	Department of Water	TSF Seepage
25	Private	Vibration and Overpressure, Property Damage, Dust Emissions, Enforceability of Conditions, Blast Clearance Area, Mining Method, Noise Monitoring, Noise Emissions, SEZ Reduction
26	Private	Vibration and Overpressure, Dust Emissions, Blast Clearance Area, Mining Method, Noise Emissions, Regulation 17 Application, TSF Seepage, New TSF, TSF Stability

Submission Number	Submitter Details	Key Issues Raised
27	Private	Vibration and Overpressure, Bonds, Mining Commitments, Noise Management Commitments, Dust Emissions, Independent Monitoring, Blast Clearance Area, Noise Monitoring, Noise Emissions, Regulation 17 Application, Stability – Pt Depth, Public Safety Review, SEZ Reduction, Property Purchase, Separation Distance, TSF Seepage, New TSF, WRD Location
28	Private	Vibration and Overpressure, Noise Emissions, SEZ Reduction, TSF Seepage
29	Private	Noise Emissions, Regulation 17 Application, SEZ Reduction, TSF Seepage, Kaltails TSF, New TSF
30	Private	Blast Monitoring, Vibration and Overpressure, Loopline Railway, Dust Monitoring, Independent Monitoring, Blast Clearance Area, Health Study, Noise Monitoring, Noise Emissions, Stability – Pt Depth, SEZ Reduction
31	Private	Vibration and Overpressure, Noise Emissions, Regulation 17 Application, Public Safety Review, SEZ Reduction, Property Purchase, Property Evacuation
32	Private	TSF Seepage, TSF Fauna
33	Private	Vibration and Overpressure, Bypass Road Commitments, PER Document, Dust Monitoring, Blast Clearance Area, Noise Emissions, Regulation 17 Application, Stability – Pt Depth, Property Purchase, WRD Location
34	Department of Industry and Resources	TSF Seepage, TSF Options