



Government of **Western Australia**  
Department of **Environment Regulation**

REPORT

# Noise Regulation 17 Application for Fimiston Gold Mine Kalgoorlie

*Assessment Outcomes*

Regulation 17 Report 27

**Version: Final**

August 2015

## Document Control

### Document Version History

Date	Author	Version	Approved by
26/8/14	Jingnan Guo Senior Noise Regulation Officer	1 <sup>st</sup> draft	
5/2/15	Jingnan Guo Senior Noise Regulation Officer	Final	

  

Date	Reviewer	Version	Approved by
4/8/15	Peter Popoff-Asotoff Senior Manager Noise Regulation	Final	

### Corporate File Information

File number and/or name	File owner or custodian	File location
2013/000196-1	Jingnan Guo Senior Noise Regulation Officer	Atrium, L7

**Produced and published by**

Department of Environment Regulation  
168 St Georges Terrace, Perth, Western Australia

August 2015

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## 1. Introduction and Summary

The Fimiston Open Pit is managed by Kalgoorlie Consolidated Gold Mines (KCGM) and located immediately east of the city of Kalgoorlie-Boulder in the Goldfields Region of Western Australia. The Fimiston Open Pit operations commenced in 1991, prior to the proclamation of the *Environmental Protection (Noise) Regulations 1997* (noise regulations). Consequently, noise emissions had been regulated through the conditions set in the Ministerial Statement 188 until 14 July 2009, when the Minister for Environment granted KCGM the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2009* (2009 Approval) under regulation 17 of the noise regulations.

The 2009 Approval was based on the Environmental Protection Authority's (EPA) assessment that the noise emissions from this gold mine operation could not reasonably and practicably be managed to comply with the prescribed standards in the noise regulations. The 2009 Approval was designed to provide clear and enforceable noise limits for the Fimiston Mine operations. The 2009 Approval was granted for five years until 14 July 2014, and provided for KCGM to apply for ongoing approval on or before 14 July 2013, in which case the 2009 Approval would continue in force until the Minister for Environment either granted or refused that application. KCGM so applied to the Minister for Environment on 21 June 2013.

Blasting activity has been regularly conducted on KCGM's Fimiston Mine site, and the maximum airblast levels are regulated under regulation 11 of the noise regulations. The noise regulations were amended on 5 December 2013, resulting in new limits for airblast levels received at a sensitive site. The maximum airblast levels have been reduced by 5 dB when received at a sensitive site for weekdays (Monday to Saturday). KCGM indicated during the consultation period for the noise regulations amendments in 2013, that it would not reasonably or practicably be capable of modifying its blasting activity at Fimiston Mine site to meet these new airblast standards for a sensitive site, due to the proximity of its Fimiston Mine site to the town of Kalgoorlie-Boulder. Consequently, KCGM applied to the Minister for Environment, on 6 March 2014, for a regulation 17 approval for airblast levels generated by its Fimiston Mine operations to vary from the new airblast standards.

This report represents the Department of Environment Regulation's (DER) assessment of KCGM's applications to the Minister for Environment under regulation 17 of the noise regulations for further approval of the noise emissions from the mining operations, and for retaining the original airblast standards for the blasting activity at Fimiston Mine site. This report constitutes the report to the Minister by DER's Chief Executive Officer (CEO) under regulation 18A(1)(b)(ii) of the noise regulations.

DER is of the view that current noise emissions from KCGM's Fimiston Gold Mine operations exceed the prescribed standard in the noise regulations, and that it is not reasonably practicable for KCGM to comply. DER is also of the view that it is not reasonably practicable for KCGM to meet the new airblast standards for sensitive sites. DER therefore recommends the granting of a new regulation 17 approval in relation to the mining operations and blasting activity at Fimiston Gold Mine.

## 2. The Application

Noise regulation 17(1) provides that *“If a person is of the opinion that the person cannot reasonably or practicably comply with a standard prescribed under these regulations ... that person may apply to the Minister for approval to allow the emission of noise in that case to exceed or vary from the standard.”*

KCGM applied to the Minister for Environment for extension of the 2009 Approval until 2019, based on the fact that the current Life of Mine Plan predicts that mining in the Fimiston Open Pit would continue until 2019. The basis of the application is that although several noise reduction measures have been implemented and ongoing investigation of novel noise reduction technology has been conducted since 2009, noise emission levels are still not able to achieve compliance with the noise regulations. To support this application, in November 2013 KCGM submitted a report - Fimiston Operations: Regulation 17 Application Supporting Information.

KCGM also applied to the Minister for Environment to allow the airblast levels generated by the blasting activity at Fimiston Pit to meet the previous airblast standards prescribed by the noise regulations, instead of the new limits from the recent noise regulations amendments. The basis of this application is that due to the short Safety Exclusive Zone (SEZ) available for the blasting activity at Fimiston Pit, it is not practicable for the blasting activity at Fimiston Pit to meet the new airblast standards for sensitive site. To support this application, in July 2014 KCGM submitted a report - Fimiston Operations: Airblast Regulation 17 Application Supporting Information.

## 3. Summary of Fimiston’s Operations

KCGM is the management company of the Kalgoorlie operations for the Joint Venture Owners, Barrick Australia Pacific Ltd (Barrick: 50%) and Newmont Asia Pacific Ltd (Newmont: 50%). It is the second largest gold producing operation in Australia producing up to 800,000 ounces of gold every year, and currently it has an estimated gold reserve of around 8 million ounces.

KCGM’s current operations include the Fimiston Open Pit, Mt Charlotte Underground Mine, and the Fimiston and Gidji Processing Plants. While the Fimiston and Mt Charlotte Operations are located adjacent to the City of Kalgoorlie-Boulder, the Gidji Processing Plant is located approximately 20 kilometres north of Kalgoorlie-Boulder.

Fimiston’s operation comprises many facets of mining and mineral processing including:

- open pit mining;
- waste rock disposal;
- mineral processing, electrowinning and refining;
- tailings disposal; and
- exploration.

Mining at the Fimiston Open Pit is primarily undertaken using conventional open pit mining methods and both oxide and refractory sulfide ores are mined. The ore

is treated at the Fimiston Mill. In the flotation circuit, the gold bearing refractory sulfide is separated and referred to as concentrate. Following further processing at Fimiston, the concentrate is transported to the Gidji Processing Plant for processing, which includes entering a carbon adsorption circuit. The loaded carbon is then transported back to the Fimiston Mill for final gold recovery.

KCGM predicts that the mining in the Fimiston Open Pit would continue until 2019. However, KCGM does not exclude the possibility that it may identify opportunities to extend the life of the mining operations beyond 2019.

## 4. Noise Management

### 4.1 Noise Emissions

Noise sources at the KCGM Fimiston Operations include drill rigs, excavators, dozers, loaders, watercarts, conveyors, and haul trucks. It has been identified that the haul truck fleet, which consists of 34 mining trucks, is the primary source of noise from Fimiston operations. Previous investigation into these heavy mining trucks in 2008 indicated that it was not practicable to reduce the noise emission level from these haul trucks by contemporary noise control technology. Noise from these trucks has demonstrated a stable nature with low variability: a recent measurement of haul truck noise has confirmed that the variation in individual truck noise is quite small over time. KCGM has been focusing on reducing noise emission levels of the existing haul trucks and ensuring they do not deteriorate and become noisier over time.

Haul truck noise monitoring is undertaken using six measurements within a 16 metre (m) spherical radius from the centre of the equipment being tested. Two of these measurement locations are situated at a distance of 11.36 m above the horizontal plane. Noise levels are recorded with the machine at stationary high idle (full rpm).

Haul truck noise monitoring conducted biannually over the last four years demonstrates haul truck noise levels have not increased over time. The results show the periodic service performed on haul trucks is effective in maintaining the equipment and therefore reducing the likelihood for elevated noise emissions.

Other findings from the haul truck monitoring are:

- Comparison of the cumulative noise of the entire fleet indicates that in general there is only a 1 dB variation between measurement periods. Although this is the sum value of all trucks, it shows that there would need to be a significant change in over 50% or more of the fleet to create a variation in the cumulative noise level.
- Individual noise levels of a haul truck can fluctuate up to  $\pm 2$  dB(A) depending on the ambient temperature. Observations indicate this may be due to the engine cooling fan, as these fans are a variable speed system, dependent on engine and ambient temperature. KCGM requests that the ongoing requirement for this monitoring program is considered, given the stable nature and low variability of haul truck noise monitoring results. The 2010 Noise and Vibration Monitoring and Management Plan identified that "If over time the variation in individual truck noise is quite small the percentage of trucks measured may be reviewed."

KCGM has undertaken a program of passive property acquisition and now owns all residential properties within 400 m of the Golden Pike Cutback. The blasting assessment showed that for blasts at the Golden Pike Cutback perimeter of the Fimiston Open Pit, airblast levels generally did not exceed 115 dB  $L_{Z\text{ peak}}$ , with less than 1 in 10 blasts resulting in airblast levels in the range 115 to 120 dB  $L_{Z\text{ peak}}$  at the location outside the 400 m buffer. This indicates that the airblast levels generated from the blasting activities within the Fimiston Open Pit actually comply with not only the previous airblast standards prescribed by the noise regulations, but also the new limits from the recent noise regulations amendments, at the closest privately owned houses.

However, there are 19 residential properties owned by KCGM located within 400 m of the Golden Pike Cutback, which have been rented with individual property tenancy agreements which include the written consent of the renters to the potential noise impact. Due to the short buffer distance, KCGM indicated that it is difficult for the airblast levels to comply with the new airblast limits at these KCGM-owned residential properties. KCGM indicated that it would prefer not to have to vacate these premises in order to meet the new airblast standards for residential buildings. KCGM also indicated that *Australian Standard 2187 Explosives – Storage, transport and use* allows higher airblast limits if an agreement with the occupier can be reached. KCGM has proposed that individual property tenancy agreements would include this agreement regarding higher airblast levels.

## 4.2 Noise Reduction Since 2009

A summary of operational noise controls carried out since 2009 is provided below:

1. KCGM has replaced six of its CAT 789 haul trucks with CAT 793F haul trucks, at a cost of approximately \$3.15 million each. The CAT 793F belongs to a new series of CAT 'F' models that Caterpillar has recently developed, which have been found to be 1-2 dB quieter than the CAT 789.
2. In addition to upgrading its fleet, KCGM also commissioned the University of Western Australia (UWA) to conduct a research program on how to reduce the humming noise from the KCGM haul trucks: "*Noise from KCGM Haul Trucks*". During Q2 2012, KCGM agreed on the project parameters with UWA and a formal agreement between the parties was finalised during Q3 2012. The project was divided into two phases: Phase 1 was completely funded by KCGM (\$230,000 plus in-kind support) and for Phase 2 KCGM and UWA would pursue a Government grant from the Australian Research Council (ARC) Linkage Projects.
3. Despite the ARC grant outcome, KCGM has provided additional interim funding to UWA for the project (\$60,000). KCGM and UWA's application for funding to the ARC has been successful. Based on the project budget and the ARC funding, ARC will commit \$250,000 and KCGM has committed a further \$122,500 over three years plus \$70,000 in-kind support per year for Stage 2. This research is considered significant as the outcomes could reduce the environmental noise impact on residents from KCGM's haul trucks, and provide a technical solution to reducing haul truck noise at mining sites across Australia.



It can be expected that the outcome of this research will make significant contributions to the noise control areas, as the concept of an integrated passive and active noise control system may also find application in controlling other environmental noise sources, such as power transformers, road trains and other heavy haulage equipment.

4. Noise emissions from mobile plant tonal reversing beepers have been identified as a source of annoyance. Since the successful trial of broadband reversing alarms in 2009, KCGM has started a roll-out program to install the broadband reversing alarms on all its mobile equipment. Currently, all mobile equipment (except the PC 8000 Shovels) permanently located onsite at the Fimiston Operation has had its tonal reversing beepers replaced by broadband reversing alarms.
5. The conveyor belt of the Mt Charlotte Conveyor was replaced in 2010 to reduce its noise emissions.
6. Sea containers have been used as noise walls for the operating drill rig; this has provided a significant improvement in noise reduction.
7. An acoustic shield was designed and installed in 2012 on the Southern Ore Body fan, which is one of three ventilation fans installed for the Mt Charlotte Underground Mine. Results indicated that noise from the drive motor and gearbox of the fan had been significantly reduced.

In granting the 2009 Approval, the then Minister indicated that KCGM should aim to achieve a noise reduction of 3dB for the noise emitted from the Fimiston Gold Mine by the expiry of the approval (2014). The noise control measures that KCGM has implemented so far may have resulted in some noise reductions. However, due to the large operation scale and the technical difficulties in reducing noise from the haul truck fleet, which are the major noise sources, it has been demonstrated that this desired goal of overall noise reduction by 3 dB has not been achieved. The jointly funded ARC research project that KCGM set up with UWA has entered Stage 2, which is to investigate the innovative noise control technology for reducing haul truck noise. It is expected that noise from the haul truck fleet will be mitigated with the success of this research project. Hence the overall noise emission level from Fimiston Gold Mine will also be reduced.

### 4.3 Noise Monitoring

KCGM has conducted extensive noise monitoring, in accordance with the noise management plan developed as a condition of the 2009 Approval. Noise levels have been continuously recorded at the two reference locations at Boulder Primary School (BPS) and Kalgoorlie Technical School (KTS). Under a recommendation made by the Appeal Committee in 2010, KCGM commissioned Herring Storer Acoustics (HSA) to explore more appropriate noise monitoring locations. It was recommended from the HSA's investigation, that BPS and another location at Metal Exploration Premises (MEX) on Holmes Street in Boulder, are the most appropriate locations for the placement of real-time noise monitors. KCGM has adopted HSA's recommendation and included MEX for real-time noise monitoring since 2011.

KCGM has also conducted compliance noise monitoring at all five reference locations, in accordance with the noise monitoring program developed under Clause 7.2 of the 2009 Approval. Both the noise levels and the weather conditions were recorded during these attended noise measurements.

Investigation would immediately be conducted by KCGM to identify the noise source, when a high level of noise emission was measured. Practicable and reasonable action would follow to reduce the noise emissions, if the source was identified to be from the mining operation.

## 5. Community Impacts and Consultation

KCGM has a well-established community engagement process by using a range of mechanisms to engage with stakeholders and capturing community input. Key consultation and engagement tools include the KCGM Community Reference Group, Public Interaction Line, website, media and advertising, community research, Super Pit Shop, and publications.

The KCGM Community Reference Group is a self-selected group of local community members. This group meets monthly to discuss current KCGM planning, operational activities and feedback from the community.

KCGM has received 50 noise complaints since 2009, which primarily related to noise from general mining operations and from exploration drilling, as well as from the conveyor and from the Southern Ore Body fan, which are not part of the Fimiston Gold Mine operations. KCGM investigated all these complaints by following the procedure specified in its noise management plan, which is required by the 2009 Approval. KCGM has also implemented remedial actions to tackle the noise problem, when the sources of the noise concerns are identified.

## 6. DER Assessment

DER is of the view that the current noise emission levels from Fimiston Gold Mine operations will continue to exceed the levels set in the prescribed standard in the noise regulations at the nearby noise sensitive locations in the town of Kalgoorlie-Boulder. Due to the proximity of the mining operation to the neighbouring residential premises, DER agrees that it is not reasonable or practicable for the noise emissions from Fimiston Gold Mine to comply with the prescribed standard in the noise regulations.

DER notes that KCGM has made significant efforts to reduce the noise emissions from its haul truck fleet, which has been identified as the major noise source of Fimiston Gold Mine operation. DER expects that the research project, supported by ARC and jointly conducted by KCGM and UWA, may result in advanced noise control technologies, which will not only benefit the neighbouring community by efficiently reducing the low-frequency humming noise from trucks, but also enrich the knowledge in the noise control field as a whole.

DER's view is that, while there are impacts on residents in the town of Kalgoorlie-Boulder associated with the exceedence of the assigned noise levels in the noise regulations (see Table 1 of Appendix A), these impacts would not be so great as to preclude the granting of an ongoing noise regulation 17 approval at the current noise levels.

DER considers that, while the blasting activities within Fimiston Gold Mine can be managed to comply with the new airblast limits specified by the recently-amended noise regulations at all private-owned neighbouring residences (see Table 2 of Appendix A), it may be difficult for KCGM to comply with the new airblast limits at some of KCGM-owned residential premises located within the 400 m buffer zone of the Fimiston Gold Mine. DER also notes that the potential exceedence over the new airblast limits is not high, as the blasting activities on Fimiston Gold Mine were able to comply with the previous airblast limits at these premises. In addition, KCGM has proposed to include a clause regarding the potential higher airblast levels in the individual property tenancy agreements for these premises.

Therefore, DER is of the view that the grounds on which the EPA's 2009 recommendations for the original noise regulation 17 approval were based, still exist and the granting of an ongoing noise regulation 17 approval for the mining operation noise and a new noise regulation 17 approval for airblast levels at those KCGM owned residential premises would be an appropriate response in this case. The noise regulation 17 approval for mining operations would contain almost identical sets of noise limits and conditions that KCGM currently must comply with, and the approval for blasting activities would allow the airblast levels generated from the blasting activities on the Fimiston Gold Mine to meet the previous airblast limits, instead of the new airblast limits, at the KCGM-owned premises. DER's view is that such a noise regulation 17 approval will allow normal operations to continue, while providing the same level and reasonable protection for the community.

## 7. Outline of Noise Regulation 17 Approval

DER's view is that, should a new approval be granted, the approval should in essence be a continuation of the 2009 Approval, with the addition of air blasting levels applicable to KCGM owned residences within the 400 m buffer zone of the Golden Pike Cutback. The new approval should contain the following features of, and changes from, the 2009 Approval:

### 7.1 The Approved Noise Limits at Five Reference Locations

The 2009 Approval granted the approved noise levels at five reference locations surrounding the Fimiston Open Pit. These five reference locations are appropriate representative locations for the noise sensitive premises most affected by the operational noise from the Fimiston Open Pit. As such, a new approval would also be based on these five reference locations.

### 7.2 The Approved $L_{A\ 10}$ and $L_{A\ max}$ Noise Limits

As the noise emission level from the Fimiston Gold Mine is relatively stable, the 2009 Approval specified only two noise limits –  $L_{A\ 10}$  approved level and  $L_{A\ max}$  approved level.

While both are measured as  $L_{A\ Slow}$  values, the  $L_{A\ 10}$  approved level refers to a level which is not to be exceeded for more than 10% of the representative assessment period, and the  $L_{A\ max}$  approved level is a level not to be exceeded at any time. These two noise levels would continue to be set as the noise metrics in a new approval.

### 7.3 Adjustment for Weather Conditions

It has been found that the weather conditions in the area can contribute significantly to the noise levels received in the town. To ensure that the normal mining operation in the Fimiston Open Pit can be conducted in all weather conditions, an adjustment to the 'weather influencing factor' (WIF) was introduced into the approved noise levels in the 2009 Approval. DER is of the view that the WIF adjustment is still required for the approved operational noise levels in a new approval.

### 7.4 Remove the 'Free of Intrusive Characteristics' Clause in the Noise Regulations

The noise regulations require that a noise emission be free of the annoying characteristics of tonality (humming, whining), modulation (regular variation in loudness or tone) and impulsiveness (banging). The regulations provide that, where these characteristics cannot practicably be removed, adjustments be made to the measured noise level. This requirement was removed in the 2009 Approval, hence no adjustments for noise characteristics are made to the measured noise emission levels.

DER notes that low-frequency humming noise from haul trucks does exist in the noise emissions from Fimiston Open Pit (this would normally attract a 5 dB adjustment for tonality). As the low-frequency humming noise is difficult to mitigate using conventional noise control technologies, and the recommended noise approved levels do not include any allowance for an adjustment for tonality, DER recommends that the current provision in the 2009 Approval be retained in a new approval, that is, no adjustment for tonality should be made. Instead, as outlined below, the noise management plan should contain measures to minimise tonality. DER understands that the ARC-supported research program described above aims to achieve this outcome.

### 7.5 The Approved Airblast Levels

KCGM should be granted an approval for the airblast level generated from its blasting activities to comply with the previous weekday airblast standards specified in the noise regulations at the residential properties owned by KCGM and located within 400 m of the Golden Pike Cutback, under the condition that the leading industry practices of conducting blasting are used.

### 7.6 Five-year Approval Period

KCGM originally requested that a new regulation 17 approval be granted for the period until 2019, to match the life of Fimiston Open Pit predicted at the time of the application. KCGM recently advised DER that according to the Life of Mine Plan that is under development, Fimiston mining operations are scheduled to extend beyond 2019.

As such, KCGM requested a five-year period for the new approval. DER supports this request and therefore recommends a five-year approval from the date that the new approval is gazetted. KCGM should be entitled to apply for a further regulation 17 approval before the end of this approval period, in the event that the life of Fimiston Open Pit is extended further.

## 7.7 Develop a Noise Management Plan

The purpose of requiring a noise management plan is to ensure leading industry practices are used at all times. DER notes that KCGM has already developed a noise management plan under a condition of the 2009 Approval. KCGM should be required to update its noise management plan for the Fimiston Open Pit operation under a new approval. The noise management plan should include –

- an updated noise monitoring program which should be able to demonstrate compliance with the approved noise levels;
- updated noise control measures that will be implemented to minimise the noise emission levels from the Fimiston Open Pit;
- control measures that will be implemented to minimise the airblast levels from the Fimiston Open Pit blasting operations; and
- updated procedures to ensure that noise complaints and enquiries from the community will be recorded, including the actions KCGM will take accordingly.

## 7.8 Noise Monitoring Requirement

KCGM should be required to continue monitoring noise emissions from the Fimiston Open Pit operation. Real-time continuous noise monitoring should be required to be conducted at the two most appropriate locations – BPS and MEX. KCGM should be required to conduct the compliance noise monitoring at all five reference locations, in accordance with the noise monitoring program.

KCGM should also be required to record levels of airblast at all the blast monitoring stations, in accordance with the airblast monitoring program.

## 7.9 Reporting Requirement

KCGM should be required to report annually to the CEO of DER on noise and weather monitoring results and progress with implementation of its noise management plan. The report should include –

1. noise levels at the five reference locations that have been monitored/measured in accordance with the noise monitoring program;
2. weather conditions which may have influenced sound propagation, e.g. incidence of temperature inversions;
3. sound power levels of the major equipment items that have been collected through the equipment maintenance program;
4. noise reduction measures which have been implemented at the mine site;
5. the progress of the ARC-supported research on haul truck noise control; and
6. noise complaints from the community and the actions taken by KCGM.

## 8. Conclusions and Recommendations

DER concludes that –

1. The current noise emission levels exceed the levels set in the prescribed standard in the noise regulations, when determined in the town of Kalgoorlie-Boulder.
2. While noise reduction measures have been implemented, the proximity of the residences and the nature of KCGM's mining operations indicate that it is unlikely to be reasonably practicable for KCGM to further reduce noise emissions and achieve compliance with the prescribed standard.
3. The noise emissions from the Fimiston Open Pit can be managed so as not to increase the current noise emissions from the mining operation to the nearby residences.
4. Due to the close proximity, airblast levels from blasting at the Fimiston Open Pit are likely to exceed new airblast limits at nearby residences owned by KCGM within the 400 m buffer zone of the Golden Pike Cutback, and it is unlikely that airblast levels can practicably be reduced further to meet these new limits at these locations.

DER is of the view that the granting of an ongoing noise regulation 17 approval would be an appropriate response in this case, in that a noise regulation 17 approval would contain a legally-drafted set of noise limits within which the Fimiston Open Pit is allowed to continue its normal operations, while providing reasonable ongoing protection for the community.

### 8.1 Recommendations

DER recommends that a variation to the prescribed standard in the noise regulations be granted in accordance with the attached preliminary drafting instructions (see Appendix B).

## References

1. KCGM: Regulation 17 Application Supporting Information – Fimiston Operations, November 2013.
2. KCGM: Airblast Regulation 17 Application Supporting Information – Fimiston Operations, July 2013.
3. KCGM: Annual Noise Monitoring and Management Report – 14 July 2013-13 July 2014, 14 August 2014.

## Appendix A

### Noise Level Standards

#### **Assigned noise levels and airblast level standards in *Environmental Protection (Noise) Regulations 1997***



**Table 1 - Assigned Levels derived from Table 1 of Regulation 8 of the Environmental Protection (Noise) Regulations 1997**

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L <sub>A 10</sub>	L <sub>A 1</sub>	L <sub>A max</sub>
Noise sensitive premises: highly sensitive area	0700 to 1900 hours Monday to Saturday	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial Premises	All hours	60	75	80
Industrial and utility premises other than those in the Kwinana Industrial Area	All hours	65	80	90
Industrial and utility premises in Kwinana Industrial Area	All hours	75	85	90

**Table 2 – Airblast Level Standards derived from Regulation 11 of the Environmental Protection (Noise) Regulations 1997 (as amended December 2013)**

Time of day	Type of premises receiving noise	Airblast level standards (dB L <sub>Z peak</sub> )	
		Not to be exceeded anytime	Not to be exceeded for 9 in any 10 consecutive blasts
0700 to 1800 hours on any day	Sensitive site at a noise sensitive premises	120	115
	Other locations at a noise sensitive premises and any other premises	125	120
Other times	All locations	90	--

## Appendix B

### **Drafting Instructions for *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2015***

## Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2015

Approval of the Minister under the *Environmental Protection (Noise) Regulations 1997* regulation 18B.

### 1. Citation

This approval is the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2015*.

### 2. Commencement

This approval comes into operation on the day on which it is published in the *Gazette*.

### 3. Terms used

In this approval –

**Barton Street Williamstown** means any place at or adjacent to the intersection of Barton Street and Baden Street, Williamstown;

**Boulder Primary School** means any place within the boundary of the premises known as Boulder Primary School, Brookman Street, Boulder;

**day** means any time in the period —

(a) between the hours of 0700 and 1900 on Monday to Saturday, excluding public holidays; and

(b) between the hours of 0900 and 1900 on Sunday and public holidays;

**evening** means any time in the period between the hours of 1900 and 2200;

**Fimiston Gold Mine** means the land shown in Schedule 1;

**Kalgoorlie Technical School** means any place within the boundary of the premises known as Kalgoorlie Technical School, corner Davidson Street and Wilson Street, Kalgoorlie;

**KCGM** means Kalgoorlie Consolidated Gold Mines Pty Ltd ACN 009 377 619;

**$L_{A 10}$  approved level** means an approved level which, measured as a  $L_{A \text{ Slow}}$  value, is not to be exceeded for more than 10% of the representative assessment period;

**$L_{A \text{ max}}$  approved level** means an approved level which, measured as a  $L_{A \text{ Slow}}$  value, is not to be exceeded at any time;

**$L_{A \text{ slow}}$**  has the meaning given in regulation 2(1);

**location** means a location referred to in column 1 in Table 1 in Schedule 2;

**Metal Exploration Premises** means any place within the boundary of the premises known as Metal Exploration Premises, Holmes Street, Boulder;

**night** means any time that is not day or evening;

**Outram Street Boulder** means any place at or adjacent to the intersection of Outram Street and Shannon Street, Boulder;

**representative assessment period** has the meaning given in regulation 2(1);

**sensitive site** has the meaning given in regulation 11(1);

**start day** means the day on which notice of this approval is published in the *Gazette*;

**tonality** has the same meaning as in regulation 9(1);

**York Street Boulder** means any place on York Street, between Lane Street and Hamilton Street, Boulder.

#### 4. Approval

- (1) Approval is granted to KCGM to allow the level of noise emitted from the Fimiston Gold Mine to exceed the standard prescribed under regulations 7 and 11(4)(a)(i) and (6)(a)(i) if –
  - (a) for noise emissions other than those resulting from blasting, the level of noise emitted from the Fimiston Gold Mine when received at a location set out in column 1 in Table 1 in Schedule 2, at the time of day referred to in column 2 opposite those locations does not exceed the  $L_{A 10}$  approved level referred to in column 3 or the  $L_{A max}$  approved level set out in column 4 for those locations at that that time; and
  - (b) for noise emissions resulting from blasting, the airblast level, when received at a sensitive site on a residential property owned by KCGM, does not exceed the approved airblast level set out in column 2 and column 3 in the Table in Schedule 3 at a time of day referred to in column 1.
- (2) For the purpose of subclause (1)(a), the adjustment in regulation 9(3) Table 2 column 1 where tonality is present is varied to 0 dB.

#### 5. Duration of approval

- (1) This approval has effect –
  - (a) this approval has effect for 5 years from the start day; or
  - (b) the longer period that applies under subclause (2).
- (2) If KCGM applies for a further approval under regulation 17(1) in relation to noise emissions from its Fimiston Gold Mine within the first 4 years in which this approval has effect, then this approval continues to operate until the Minister grants, or refuse to grant, the further approval.

## **6. Condition of approval**

This approval is subject to a condition that KCGM ensures that clauses 7 to 10 are complied with.

## **7. Minimisation of noise emissions and impact of noise**

- (1) KCGM must take all reasonable and practicable measures to reduce the level and minimise the tonality of noise emissions from Fimiston Gold Mine.
- (2) KCGM must utilise leading industry practices for blasting activities to minimise the airblast levels.

## **8. Noise monitoring**

- (1) KCGM is, as far as practicable, to continuously record levels of noise received at a place within each of Metals Exploration Premises and Boulder Primary School.
- (2) KCGM is to record levels of noise received at a place on each of Outram Street Boulder, York Street Boulder, Barton Street Williamstown, Kalgoorlie Technical School and Boulder Primary School in accordance with the noise monitoring program for that location in the noise and vibration management plan submitted or revised under clause 9.
- (3) KCGM is to record levels of airblast at all the blast monitoring stations, in accordance with the airblast monitoring program developed under clause 9.
- (4) KCGM is to keep the records under subclauses (1), (2) and (3) for at least 2 years.

## **9. Noise management plan**

- (1) KCGM must submit a noise management plan to the CEO within 3 months of the start day.
- (2) The noise management plan must include the following –
  - (a) details of a noise and airblast level monitoring program;
  - (b) details of a program to monitor weather conditions relevant to the assessment of mining operation noise and airblast levels;
  - (c) details of a program for provision of information to the community regarding mining operation noise and airblast levels;
  - (d) procedures to be adopted in responding to complaints about noise emissions and identifying the major noise sources;
  - (e) procedures to be adopted for adjusting mining operations (including blasting activities) to reduce noise emissions based on the noise monitoring program or noise complaint response;
  - (f) procedures to be adopted for minimising tonality, modulation and impulsiveness in the mining operation noise emissions;

- (g) procedures to be adopted for minimising noise emissions from mining operation equipment;
  - (h) procedures to be adopted for minimising airblast levels from blasting activities;
  - (i) procedures for recording details of blasting practices utilised for any blast where the airblast level exceeds the airblast limits under regulation 11; and
  - (j) any other matter that the CEO may require.
- (3) After receiving a noise management plan the CEO may, by notice in writing, require KCGM to provide a revised noise management plan including details of any matter specified in the notice.
- (4) A revised noise management plan required under subclause (3) must be provided within 14 days from the date of the notice or by such other time as the CEO specifies in the notice.

## **10. Annual report**

- (1) KCGM must prepare a written report —
- (a) for the year beginning on the start day; and
  - (b) for each year that begins on the anniversary of that day.
- (2) The report for a year must provide —
- (a) a summary of the levels of noise and airblast levels recorded under clause 8 during the year; and
  - (b) a summary of the progress of the implementation of the noise management plan required under clause 9.
- (3) KCGM must give the report for a year to the CEO within one month after the end of the year, or by such other time as the CEO approves in writing.
- (4) On the request of the CEO, KCGM is to give the CEO any translation or other information necessary to enable the report to be understood by members of the public.

## Schedule 1 — Fimiston Gold Mine



## Schedule 2 — Noise emissions other than blasting

**Table 1**

<b>Location</b>	<b>Time of day</b>	<b>L<sub>A 10</sub> Approved level (dB)</b>	<b>L<sub>A max</sub> Approved level (dB)</b>
Barton Street Williamstown	Day	50 + WIF*	65 + WIF
	Evening	45 + WIF	55 + WIF
	Night	45 + WIF	55 + WIF
Boulder Primary School	Day	50 + WIF	62 + WIF
	Evening	45 + WIF	52 + WIF
	Night	45 + WIF	52 + WIF
Kalgoorlie Technical School	Day	50 + WIF	62 + WIF
	Evening	45 + WIF	52 + WIF
	Night	45 + WIF	52 + WIF
Outram Street, Boulder	Day	52 + WIF	65 + WIF
	Evening	49 + WIF	60 + WIF
	Night	49 + WIF	60 + WIF
York Street Boulder	Day	52 + WIF	65 + WIF
	Evening	49 + WIF	60 + WIF
	Night	49 + WIF	60 + WIF

\* WIF to be added to a figure in column 3 or 4 of Table 1 is the weather influencing factor set out in Table 2 for the weather conditions prevailing at the time the noise is received.



**Table 2**

Wind Direction	Wind Speed (km/hr)	Reference Location / Weather Influencing Factor(dB)				
		BSW <sup>1</sup>	BPS <sup>2</sup>	KTS <sup>3</sup>	OST <sup>4</sup>	YST <sup>5</sup>
Calm	< 2	3	6	6	5	4
Northerly	≥ 2	-2	6	6	5	5
North Easterly	≥ 2	2	6	6	4	5
Easterly	≥ 2	4	6	6	4	5
South Easterly	≥ 2	4	6	6	3	5
Southerly	≥ 2	4	4	6	2	5
South Westerly	≥ 2	3	2	5	2	4
Westerly	2-7	0	2	3	3	2
Westerly	> 7	-4	-3	-2	3	-3
North Westerly	2-7	-4	4	3	4	2
North Westerly	> 7	-6	3	-1	3	-1

1. *Barton Street Williamstown*
2. *Boulder Primary School*
3. *Kalgoorlie Technical School*
4. *Outram Street Boulder*
5. *York Street Boulder*

## Schedule 3 — Noise emissions for blasting

**Table**

<b>Time of day</b>	<b>Approved airblast levels (dB L<sub>Z peak</sub>)</b>	
	Not to be exceeded anytime	Not to be exceeded for 9 in any 10 consecutive blasts
0700 to 1800 hours on Monday to Saturday	125	120
0700 to 1800 hours on a Sunday or Public Holiday	120	115