

KALGOORLIE CONSOLIDATED GOLD MINES PTY LTD



ANNUAL NOISE MONITORING REPORT

***Environmental Protection (Fimiston Gold Mine
Noise Emissions) Approval 2016***

APRIL 2018

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1. PURPOSE

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) is required to submit an Annual Noise Monitoring Report to the CEO of the Department of Water and Environmental Regulation (DWER) within one month from the end of the reporting year in accordance with Condition 10 of the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2016* (2016 Fimiston Noise Approval). The Report is required to include:

- (a) a summary of the 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 submitted or revised under clause 9.

This report covers the period from 22 March 2017 to 21 March 2018. In accordance with the approved KCGM Noise and Vibration Monitoring and Management Plan (June 2016) (NVMMP) the data presented in the annual report is for the twelve month period from 1 April 2017 to 31 March 2018 in order to align with the quarterly reporting periods.

2. SUMMARY OF KCGM OPERATIONS

KCGM operates the Fimiston Open Pit, Mt Charlotte Underground Mine and the Fimiston and Gidji Processing Plants on behalf of joint venture owners; Barrick (Australia Pacific) Pty Limited (Barrick; 50%) and Newmont Australia Pty Ltd (Newmont; 50%).

The Fimiston Operations and Mt Charlotte Underground Mine are located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, Western Australia, whilst the Gidji Processing Plant is located approximately 17 km north of Kalgoorlie-Boulder.

KCGM comprises many facets of mining and mineral processing including:

- Open pit mining (Fimiston);
- Waste rock disposal (Fimiston);
- Underground mining (Mt Charlotte);
- Mineral processing (Fimiston and Gidji);
- Tailings disposal (Fimiston and Gidji);
- Ultra-fine grinding (Fimiston and Gidji);
- Electrowinning and refining (Fimiston); and
- Exploration.

KCGM produces up to 800,000 ounces of gold each year and has a gold reserve of approximately 5 million ounces. The estimated Life of Mine (LOM) for KCGM's operations will see mining continue until around 2026, and an extension of the mineral processing operations until around 2034 through the processing of low-grade stockpiles. On completion, the Fimiston Open Pit will measure 3.5 km in length, 1.5 km in width and up to 700 metres in depth.

3. NOISE MONITORING

In accordance with Condition 8 of the 2016 Fimiston Noise Approval, KCGM undertakes the following noise monitoring programmes:

- Continuous Environmental Noise Monitoring;
- Compliance Environmental Noise Monitoring; and
- Airblast Monitoring.

Each of these monitoring programmes are outlined in the NVMMP; approved by the DWER (then DER) on 19 September 2016 and the DWER (then (OEPA) on the 01 November 2016.

3.1 Continuous Environmental Noise Monitoring

During the reporting period, continuous environmental noise monitoring was undertaken, as far as practicable, at Metal Exploration Premises (MEP) and Boulder Primary School (BPS) in accordance with Condition 8(1) of the 2016 Fimiston Noise Approval.

Results of the continuous environmental noise monitoring programme are provided in the Quarterly Noise and Blast Monitoring Report submitted to the DWER. The quarterly report also contains the following:

- Information on any data loss; and
- Graphs of continuous noise levels recorded at the MEP and BPS monitoring sites.

To avoid duplication of data, the Report does not include the detailed results as previously submitted in the quarterly reports, but provides a summary of the noise levels recorded at MEP and BPS during the period 1 April 2017 to 31 March 2018.

The noise generated from the Fimiston Operations is considered to be very constant and stable. The average noise levels are summarised for day (0700 to 1900 hours), evening (1900 to 2200 hours) and night (2200 to 0700 hours) periods in Figure 1 (BPS) and Figure 2 (MEP). Noise data from BPS is recorded as L_{10} , L_{50} and L_{90} , and noise data from MEP is recorded as Leq due to different configurations of the sound level meters. Noise levels are consistent with previous years.

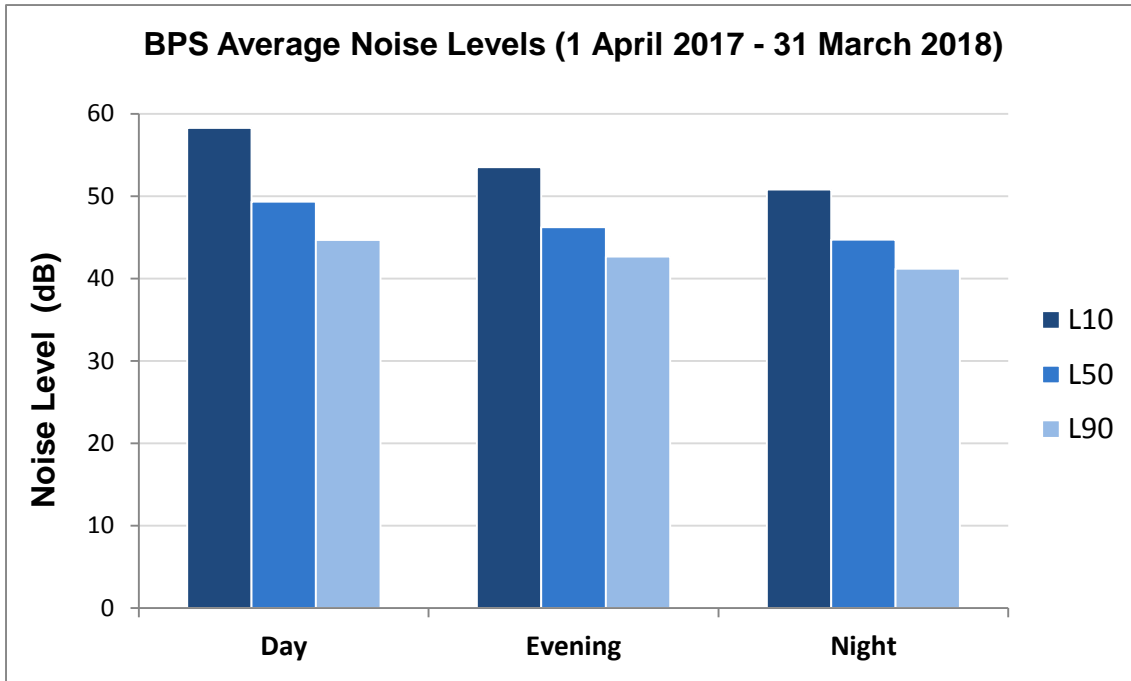


Figure 1: BPS Noise Level Summary

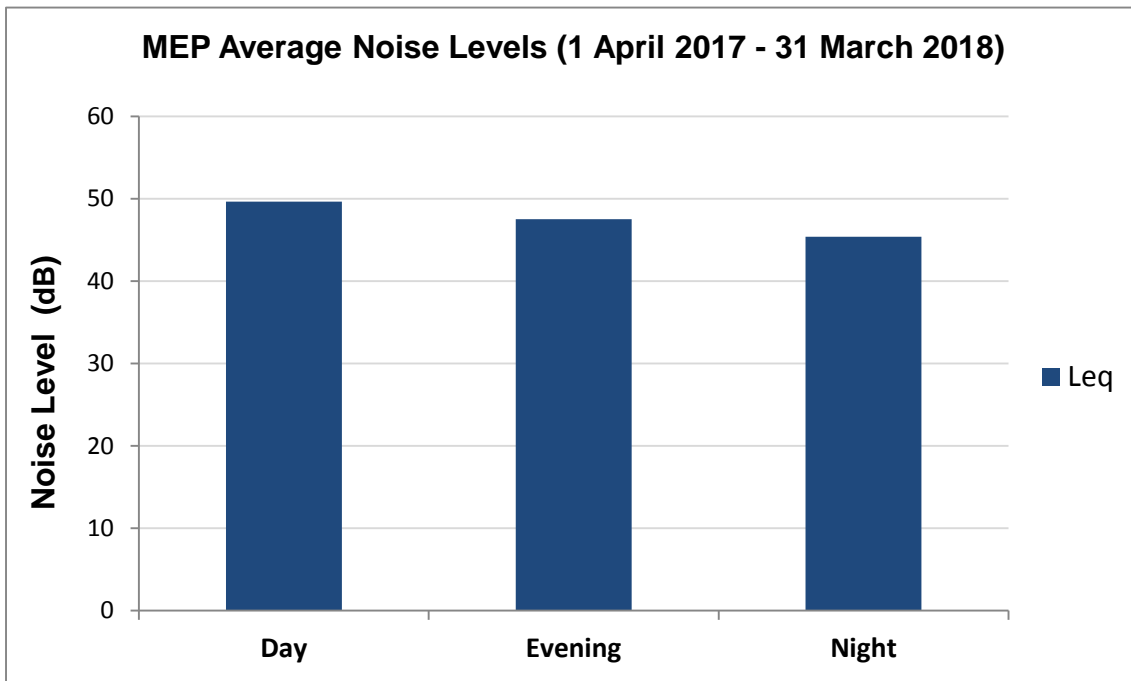


Figure 2: MEP Noise Level Summary

3.2 Quarterly Compliance Environmental Noise Monitoring

Approved noise levels for KCGM's Fimiston Operations are stipulated in Condition 4 of the 2016 Fimiston Noise Approval. During the reporting period, quarterly compliance noise monitoring was undertaken at each of the five reference locations (Figure 3) in accordance with Condition 8(2) of the 2016 Fimiston Noise Approval.

The approved noise levels also take into account a Weather Influencing Factor (WIF). Data from the weather monitoring equipment at KCGM's weather station MEX (Figure 3) is used to determine the WIF based on measured weather conditions prevailing at the time the noise is received.

During the reporting period, the measured levels at all locations complied with the approved noise levels for the night time period. A summary of the measured noise levels and the approved noise levels by location are shown in Figures 4, 5, 6, and 7.

Results of the quarterly compliance noise monitoring programme are provided in the Quarterly Noise and Blast Monitoring Reports submitted to the DWER and are provided on KCGM's website (www.superpit.com.au).



Figure 3: Compliance Noise Monitoring and Weather Station Locations

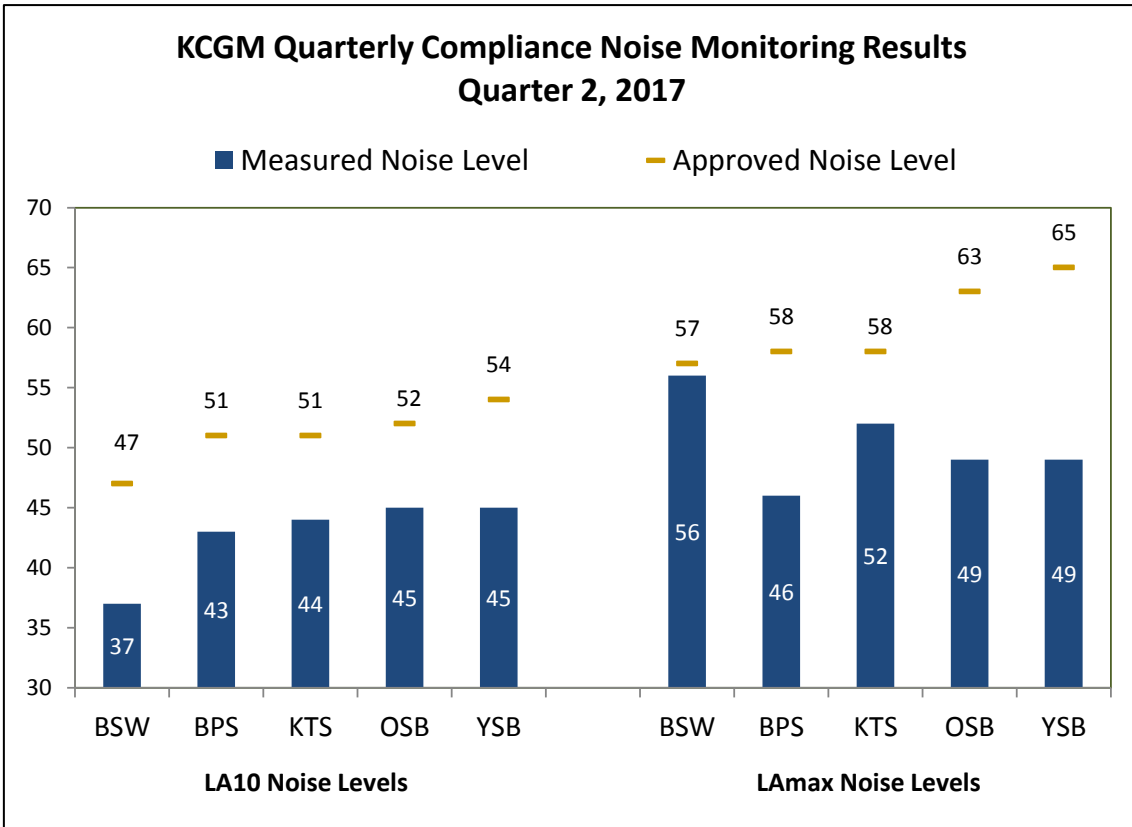


Figure 4: Compliance Noise Monitoring Q2 2017

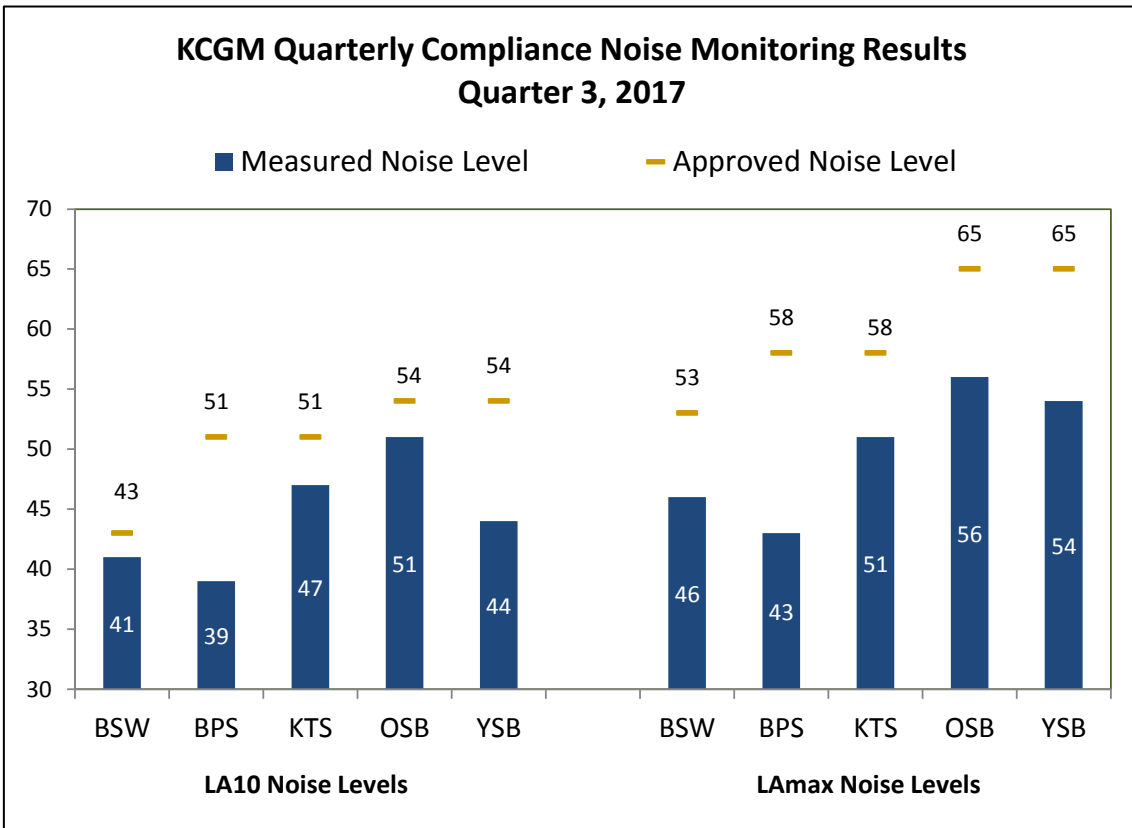


Figure 5: Compliance Noise Monitoring Q3 2017

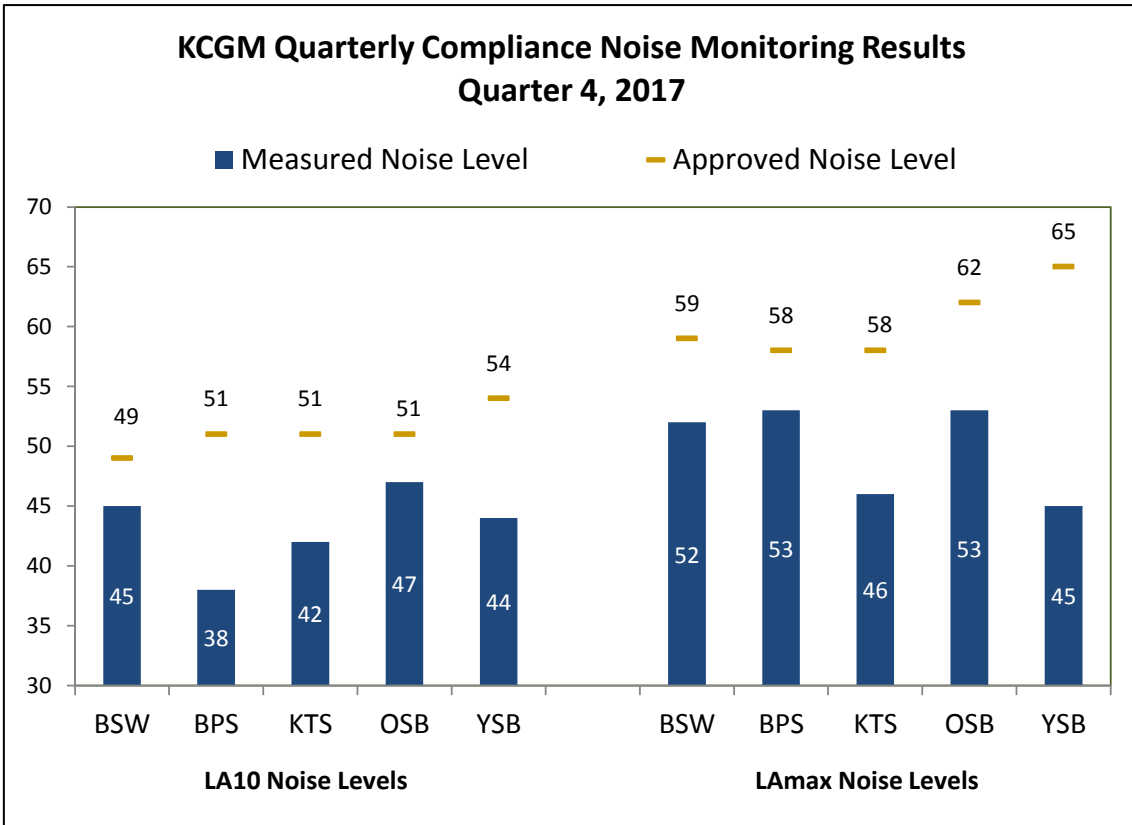


Figure 6: Compliance Noise Monitoring Q4 2017

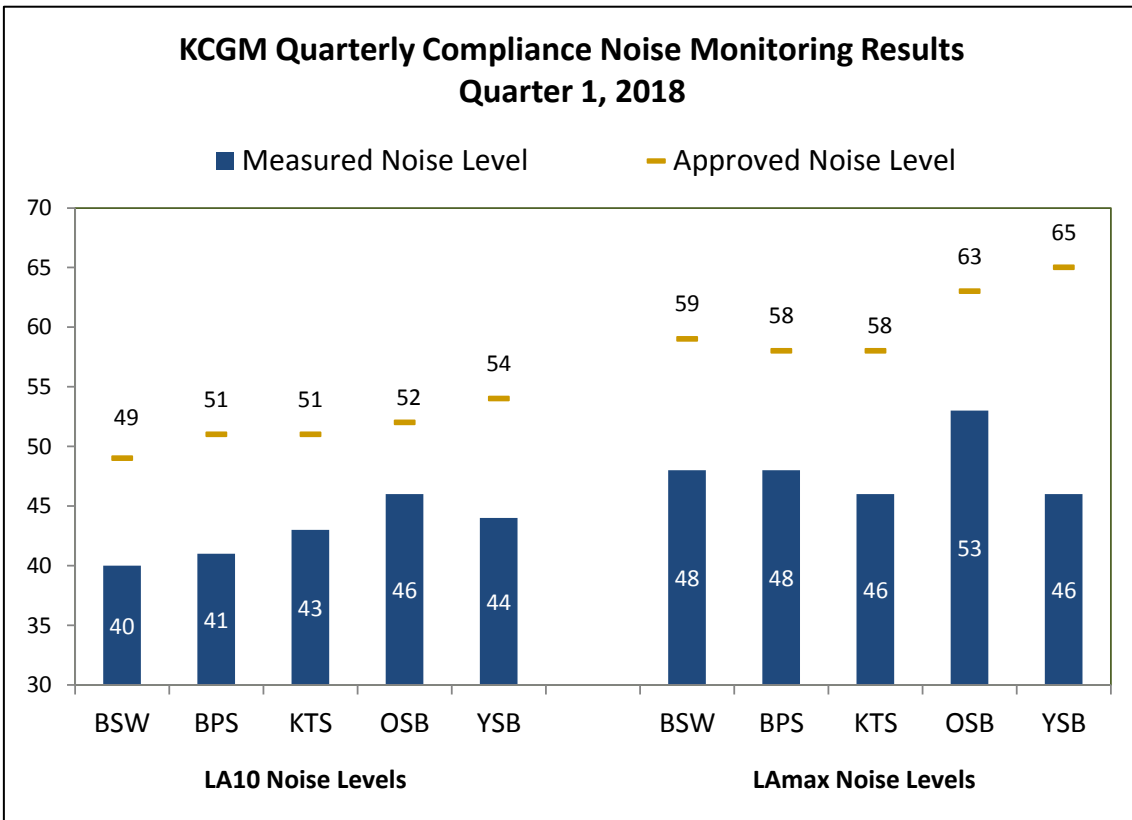


Figure 7: Compliance Noise Monitoring Q1 2018

3.3 Airblast Monitoring

Approved airblast levels for KCGM's Fimiston Operations are stipulated in Condition 4 of the 2016 Fimiston Noise Approval. During the reporting period, airblast levels received at each blast monitoring station (Figure 8) were recorded in accordance with Condition 8(3) of the 2016 Fimiston Noise Approval.



Figure 8: Fimiston Open Pit Blast Monitoring Sites

Results of the recorded airblast levels are provided in the Quarterly Noise and Blast Monitoring Report submitted to the DWER. During the reporting period, the measured airblast levels at all locations complied with the approved noise levels (Table 1). A summary of the measured airblast levels are shown in Figure 9.

Table 1: Noise Emissions from Blasting as per Schedule 3 of the 2016 Fimiston Noise Approval

Time of Day	Approved airblast level (dB L _{Z peak})	
	Not to be exceeded anytime	Not to be exceeded for 9 in any 10 consecutive blasts
0700 to 1800 hours Monday to Saturday (excluding public holidays)	125	120
0700 to 1800 hours Sunday and public holidays	120	115

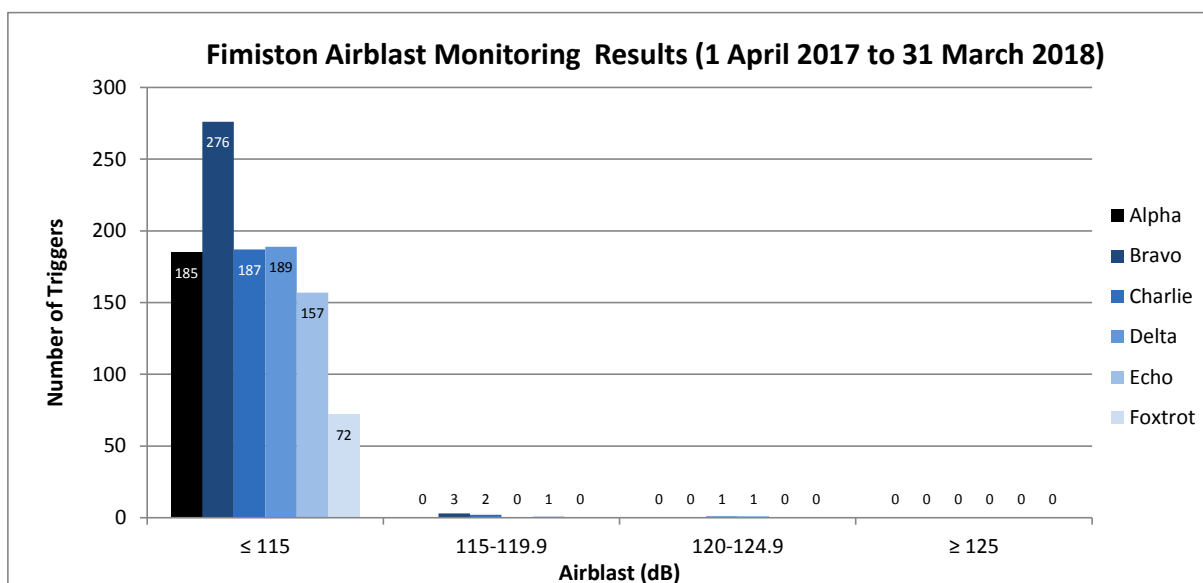


Figure 9: Summary of Fimiston Airblast Monitoring Results

4. NOISE MANAGEMENT PLAN IMPLEMENTATION

KCGM’s NVMMP has been developed and implemented by KCGM in accordance with conditions set by the Minister for Environment since the early 1990’s. The NVMMP is implemented to fulfil the requirements of Ministerial Statement No.782 Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning, and the 2016 Fimiston Noise Approval.

The objective of the NVMMP is to manage noise emissions from the Fimiston Operations to minimise potential impacts to the residents of the City of Kalgoorlie-Boulder. Through implementation of the NVMMP, KCGM commits to undertake all reasonable, practicable and safe measures to meet the relevant noise and vibration standards.

In accordance with Condition 9 of the 2016 Fimiston Noise Approval the NVMMP was updated following gazettal of the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2016* in March 2016. The revised NVMMP (June 2016) was submitted to the DWER on 22 June 2016, and was approved by the DWER (then DER) on 19 September 2016 and the DWER (then OEPA) on 1 November 2016. There were no changes to the NVMMP during the reporting period.

The NVMMMP covers the following aspects:

- Management Plan Summary
- Overview of the Fimiston Operations and History of Fimiston Noise Approvals
- Noise Modelling and Verification
- Management Approach (environmental noise, blast vibration and airblast)
- Environmental Criteria and Monitoring Programmes
- Complaint Management
- Reporting Provisions
- Adaptive Management and Review
- Stakeholder Consultation

KCGM believes the NVMMMP provides best practices and procedures to enable the Fimiston Operations to continue in a reasonable and practicable manner, while providing an acceptable noise environment for the residents of the City of Kalgoorlie-Boulder.

A summary of the progress of the implementation of the NVMMMP is provided in Table 2, which lists the key activities undertaken with regards to KCGM's Management Approaches as outlined in the NVMMMP.

Table 2: Summary of NVMMMP Implementation

MANAGEMENT APPROACH		PROGRESS OF IMPLEMENTATION
Mining Activities	Environmental Noise Bund	<ul style="list-style-type: none"> • A key noise management feature at KCGM has been the establishment of the Environmental Noise Bund (ENB). Major changes to the pit design take into consideration the location of the ENB and potential noise impacts on the City of Kalgoorlie-Boulder. • Noise modelling was undertaken during the reporting period with regards to a proposed modification to the Fimiston Open Pit which would require modification to a section of the existing ENB. The noise assessment showed that mining activities associated with the proposed modification would comply with the 2016 Fimiston Noise Approval. This project is pending regulatory approvals. • No modifications of the ENB were undertaken during the reporting period.
	Surface Activities	<ul style="list-style-type: none"> • Certain surface activities (e.g. rock breaking) continue to be restricted to daytime only. • One complaint was received in relation to mining surface activities during the reporting period.
	Mt Charlotte Waste Rock Conveyor	<ul style="list-style-type: none"> • KCGM continues to manage noise emissions from the Mt Charlotte Waste Rock Conveyor via routine inspections and maintenance of the conveyor belt, the rollers and related infrastructure. • Three complaints were received in relation to the Mt Charlotte Waste Rock Conveyor during the reporting period.

Haul Truck Noise	UWA Research Project	<ul style="list-style-type: none"> • KCGM has implemented a Noise Amelioration Programme by means of co-funding a Research Project entitled “<i>Integrated Passive and Active Control of Humming noise from KCGM’s Haul Trucks</i>” put forward by the University of Western Australia (UWA). • The project is aimed at achieving total sound power attenuation through development of a prototype engine enclosure as well as examining ways to reduce noise associated with the haul truck muffler. • During reporting period, UWA have continued work developing and testing a redesign of the exhaust muffler. • A report detailing the significance of the noise reduction will be completed in 2018.
	Reversing Alarms	<ul style="list-style-type: none"> • Broadband reversing alarms continue to be utilised on select mining equipment permanently located onsite.
Resource Definition Drilling		<ul style="list-style-type: none"> • KCGM’s resource definition drilling programmes often occur in close proximity to the City of Kalgoorlie-Boulder. A desktop noise assessment is undertaken for each drilling programme prior to commencement to verify compliance with the <i>Environmental Protection (Noise) Regulations 1997</i>. • During the reporting period, several desktop assessments were undertaken for proposed drilling programmes on the western side of the ENB which were in close proximity to industrial premises in Boulder. The assessments indicated that the proposed 24/7 drilling operations would comply with the <i>Environmental Protection (Noise) Regulations 1997</i>. • During the reporting period noise level measurements were conducted for a proposed drilling program at Mt Charlotte that was in close proximity to Williamstown residents. These measurements allowed subsequent assessment of the drilling to ensure compliance with the <i>Environmental Protection (Noise) Regulations 1997</i>. • Sea containers were utilised to manage noise emissions at some drilling locations. • Property owners were notified of the planned drilling activities via letter drop prior to commencement. • No issues or complaints were received in relation to KCGM’s resource definition drilling activities during the reporting period.
Surface Blasting	Blasting Times	<ul style="list-style-type: none"> • KCGM only detonated explosives on the premises between the hours of 0700 hours and 1800 hours. • All reasonable effort was taken to avoid blasting on Sundays.
	Blast Design and Modelling	<ul style="list-style-type: none"> • Each blast is carefully designed to meet internal design criteria and takes into account external factors which may potentially increase the vibration and/or airblast levels. • No issues or complaints were received in relation to airblast as a result of surface blasting activities during the reporting period.

5. PUBLIC COMPLAINTS

KCGM's Public Interaction Line (PIL) was established in 1993 and is available 24 hours (08 9022 1100) for anyone to contact KCGM for a wide range of issues including emergencies, complaints, inquiries and feedback. KCGM has implemented a Complaints and Grievance Management Procedure to manage the actions taken to resolve complaints. Complaint Management is outlined in the NVMMP.

During the reporting period one noise complaint was received regarding noise associated with the Fimiston Mining Operations, and three complaints regarding noise associated with the Waste Rock Conveyors (Table 3).

Table 3: Summary of Complaints in the Reporting Period (22 March 2017 to 21 March 2018)

Date	Summary of Complaint
5/06/2017	Williamstown resident complaint in regards to excessive noise coming from the trucks at the waste dump. In response, the trucks were immediately redirected to a different waste dump further from the resident's house. KCGM contacted the resident the next day to follow up and they were happy that the noise issue had been resolved.
23/01/2018	Complaint from a relative of a person living near the Mt Charlotte Operations. They were concerned both about the noise emanating from the conveyor belt system, and potential damage to the house from blasting. KCGM was unable to contact the person to provide feedback after attempting to follow up with complainant on numerous occasions.
9/02/2018	Williamstown resident complaint regarding the conveyor near his house making a noise. KCGM inspected the conveyor belt, and found that some of the rollers needed to be replaced, which was completed. KCGM contacted the resident with an update, and they were happy with the outcome.
14/02/2018	Williamstown resident complaint regarding the conveyor opposite his house making a noise. KCGM ensured that the conveyor belt was inspected and repaired. KCGM then contacted the resident with an update.

Figure 10 shows a summary of noise complaints received by KCGM since 2009 (by calendar year) with respect to activities managed under the NVMMP.

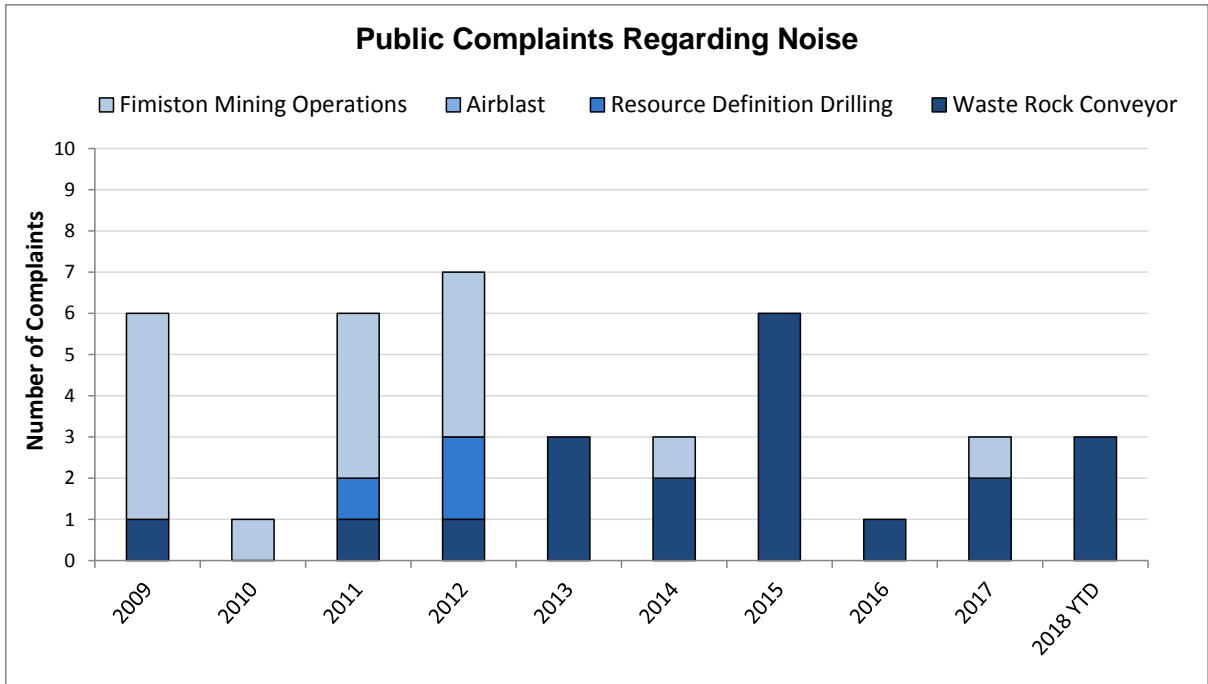


Figure 10: Summary of Noise Complaints by Calendar Year Since 2009