



KCGM

FIMISTON AIR QUALITY MANAGEMENT PLAN

FIMISTON GOLD MINE OPERATIONS EXTENSION (STAGE 3)
FIMISTON SOUTH PROJECT

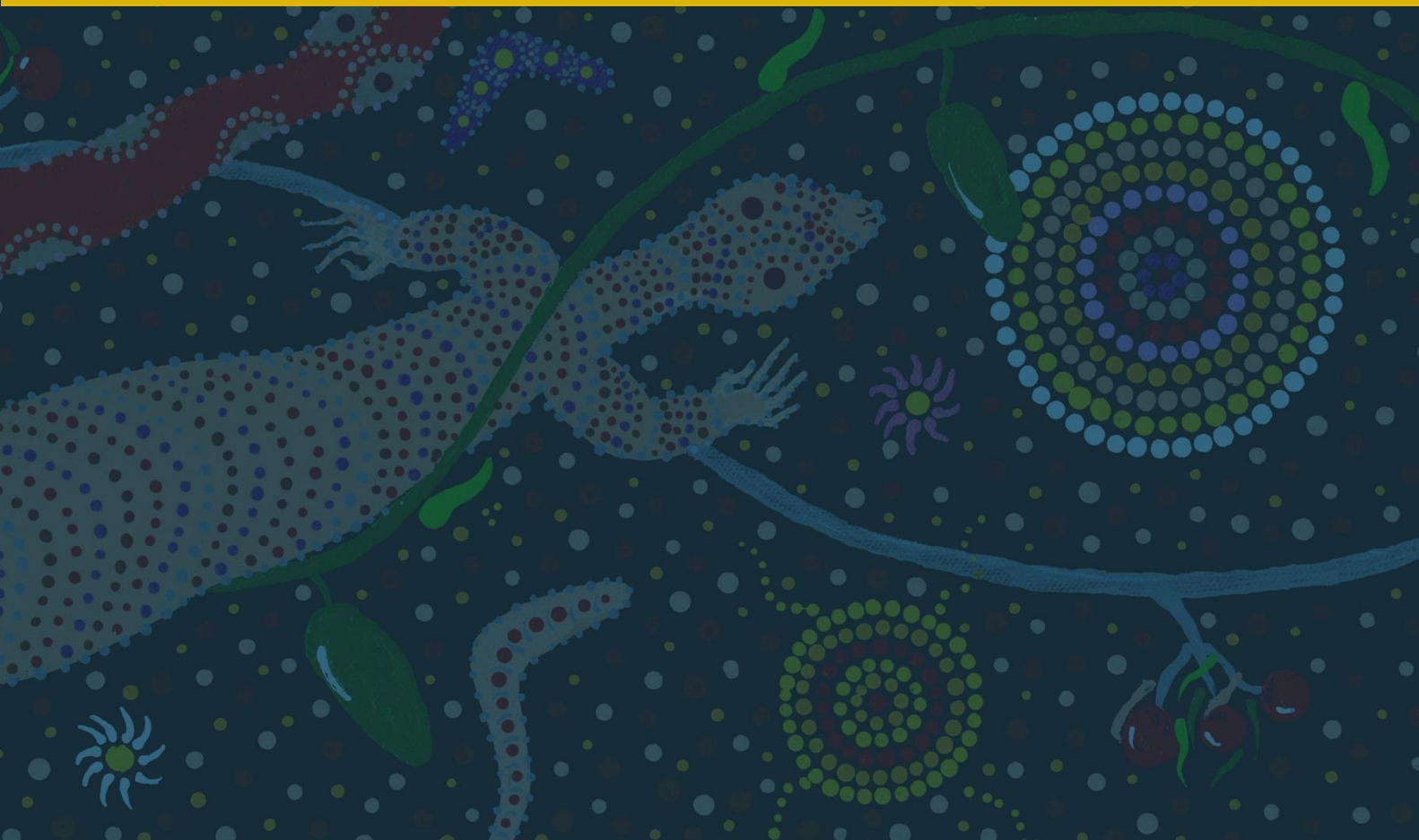


TABLE OF CONTENTS

1.	Summary	1
2.	Context, Scope, and Rationale	3
2.1	The Project	3
2.1.1	Location of Fimiston Operations	3
2.2	The Revised Proposal – FS Project	3
2.3	Key Environmental Factors	4
2.3.1	Activities Affecting Key Environmental Factor – Air Quality	4
2.3.2	Activities Affecting Key Environmental Factor – Social Surroundings	5
2.3.3	Activities Affecting Key Environmental Factor – Human Health	7
2.4	Condition Requirements	8
2.5	Potential Impacts	8
2.5.1	Public Health	8
2.5.2	Impacts on Vegetation and Flora	9
2.5.3	Fauna Displacement.....	10
2.6	Rationale and Approach	10
2.6.1	Survey and Studies Undertaken	12
2.6.2	Key Assumptions and Uncertainties	14
2.6.3	Management Approach	15
2.7	Fimiston Environmental Management Programmes	16
2.7.1	Dust Monitoring and Maintenance Procedure	16
2.7.2	Blasting Dust Management Plan.....	16
2.7.3	Mercury Emissions Management Plan.....	18
2.8	Particulate Monitoring Programmes	18
2.8.1	PM ₁₀ Monitoring.....	18
2.8.2	Blast Monitoring.....	20
2.8.3	Mercury Emissions Monitoring.....	21
2.8.4	Ambient Air Quality Trigger Values	22
2.9	Rationale, Indicators, and/or Management Actions.....	22
2.9.1	Monitoring Location Selection.....	23
2.9.2	Predicted Control Strategy.....	23
2.9.3	Reactive Component	23
2.9.4	Pro-active Alarm System	23
2.10	Implementing Monitoring and Reporting.....	24
2.10.1	Website Reporting.....	24

2.10.2	Weekly Data Validation.....	24
2.10.3	Alarm Workflow Process.....	25
2.10.4	Determining Significant Contributor	25
2.10.5	Reporting a Confirmed Exceedance Event	27
2.10.6	Annual Environmental Report.....	27
3.	EMP Provisions.....	28
3.1.1	Outcome-based Provisions.....	29
3.1.2	Objective-based Environmental Management Plans (EMP).....	32
4.	Continuous Improvement	36
4.1	Adaptive Management and Review of the FAQMP.....	36
5.	Stakeholder Consultation.....	39
5.1	Complaint Management.....	41
6.	Changes to the EMP	43
7.	References	45

TABLES

Table 1:	Management Plan Summary.....	2
Table 2:	Summary of Proposed Conditions.....	8
Table 3:	Summary of Emission Source and Types.....	11
Table 4:	PM ₁₀ Monitoring Performance Targets	20
Table 5:	KCGM Dust Programme – Required Conditions for Wind Dependent Blasting.....	21
Table 6:	Blast Restrictions for Wind Direction Dependent Blasts.....	21
Table 7:	Currently Implemented Trigger and Action Levels for PM ₁₀ Particulate Loading.....	22
Table 8:	Proposed Amended Trigger and Action Levels for PM ₁₀ Particulate Loading (pending approval).....	22
Table 9:	Summary of Current Particulate Monitoring Equipment by Location	24
Table 10:	Outcome-based Provisions: Air Quality	29
Table 11:	Objective-based Conditions for Air Quality	32
Table 12:	Summary of Considerations for Continuous Improvement.....	37
Table 13:	Results from Stakeholder Consultation	39

FIGURES

Figure 1:	Particulate (Dust) Monitoring Network Locations	17
Figure 2:	Particulate Alert and Alarm Process Workflow	26

VERSION CONTROL

Version	Date	Document Changes
1	SEP 2007	New Document. An integrated air quality management plan was developed to incorporate a number of management plans including: Blasting Dust Management Plan (BDMP), Dust Monitoring and Management Programme (DMMP) and the Carbon Kiln Mercury Emissions Reduction Programme (CKMERP) as recommended by the Department of Health (DoH) and included feedback received from the [then] Department of Environment and Conservation (DEC) following submission of the Public Environmental Review (PER) for the Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning in September 2006.
2	MAY 2009	Revised and implemented to meet requirements of Ministerial Statement 782.
3	DEC 2009	Annual Review
4	DEC 2010	Annual Review
5	DEC 2011	Annual Review
6	MAR 2012	Revised to include DoH and DEC comments
7	DEC 2012	Revision to Ambient Mercury Monitoring Programme
8	DEC 2015	First Triennial Review. Reviewed PM ₁₀ dust monitoring data and updated the trigger levels (Table 5) of DMMP, included an additional performance target for DMMP, removed the ambient mercury monitoring programme as it has been completed, and updated the notification/reporting requirements. Addressed issues that the [then] Office of the Environmental Protection Authority (OEPA) asked to consider in this review in a letter dated 14 August 2013.
	JUN 2016	Inserted methodology for determining a significant contribution following a request by the OEPA via email dated 14 June 2016.
9	JUN 2019	Triennial Review. Format updated to align with the EPA's template for Environmental Management Plans. Updated information regarding implementation of the Fimiston Emissions Reduction Project.
	NOV 2019	Inserted additional information to further clarify the use of back trajectories following a request by the EPA via email/letter dated 11 October 2019.
10	AUG 2022	The 2022 FAQMP is submitted as provisional to support the Revised Proposal. Finalisation of the 2022 FAQMP is dependent on the outcomes of the assessment of the Project by the EPA and the triennial review of the 2019 FAQMP.
11	MAY 2023	Update "Table 5– Trigger Levels of PM ₁₀ Dust Monitors" following 2023 Triennial Review of the FAQMP (November 2019) FAQMP in March 2023. Alignment to "Instructions on how to prepare <i>Environmental Protection Act 1986 - Part IV Environmental Management Plans</i> ", (version 2.0; 2021) guidance and templated format in response to formal EPA RFI received in February 2023. Also, support revised FS Project submission package for the Fimiston South Expansion (s38).
12	FEB 2024	Update to new EPA format

GLOSSARY AND ABBREVIATIONS

Term	Definition
BAM	Beta Attenuation Monitor
BSY	Dust Monitoring Location – Boulder Shire Yard
CAS	Weather Monitoring Location – Cassidy Headframe
CIL	Carbon in Leach
CLY	Dust Monitoring Location – Clancy Street
CKB	City of Kalgoorlie-Boulder
DBCA	Department of Biodiversity, Conservation and Attractions
DMMP	Dust Monitoring and Management Programme
DOH	Department of Health
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority (Western Australian)
EP Act	<i>Environmental Protection Act 1986</i> (Western Australian)
ERP	Emissions Reduction Project
FAQMP	Fimiston Air Quality Management Plan
FS	Fimiston South
FS Project	Fimiston South Project
HEW	Dust Monitoring Location – Hewitt Street
HGC	Dust Monitoring Location – Hannan’s Golf Course
HI	Hazard Indices
HOP	Dust Monitoring Location – Hopkins Street
HRA	Health risk assessments
ICR	Incremental Carcinogenic Risk
KCGM	Kalgoorlie Consolidated Gold Mines Pty Ltd
Km	Kilometre
MEX	Dust/Weather Monitoring Location - Metals Exploration Yard
MS 782	Ministerial Statement 782
Mt	Million tonnes
MTC	Dust Monitoring Location – Mt Charlotte
NEPM	National Environmental Protection Measure
OEPA	Office of the Environmental Protection Authority
PIL	Public Interaction Line
PM ₁₀	Particles with a diameter of 10 micrometres or less
ROM	Run of mine
RTO	Regenerative thermal oxidiser
TSF	Tailings Storage Facility
TSP	Total Suspended Particulate
µg/m ₃	micrograms per cubic metre

Term	Definition
WHO	World Health Organization
WRD	Waste rock dump

1. SUMMARY

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) is the proponent for the Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Fimiston South Project (FS Project). The FS Project is important to ensure ongoing operations at Fimiston until approximately 2034. The Revised Proposal is summarised within Section 2.2 of this Fimiston Air Quality Management Plan (FAQMP) for ease of reference.

The currently approved FAQMP (2019, v9) implemented across site was originally prepared by KCGM to satisfy Condition 7-1 of Ministerial Statement 782 (MS782), originally approved on 29 January 2009 by the Minister for Environment.

The 2023 revised FAQMP (v11; this document) has been developed to satisfy submission requirements inclusive of the proposed Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Fimiston South Project (Proposal) and Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans (EPA 2021 (v2.0)); and is included in the 2023 re-submission. This revised Management Plan will become active on site when/if the project is approved under the EP Act.

Version 11 of the FAQMP has been updated to:

- be presented in accordance with the '*Instructions on how to prepare Environmental Protection Act 1986 - Part IV Environmental Management Plans, (version 2.0; 2021)*' published by the Western Australian (WA) Environment Protection Authority (EPA).
- to respond to a formal EPA request for information (RFI) received in February 2023.
- details the measures that are required to manage potential impacts to conservation significant species and social surrounds from the current and proposed continuation of approved activities under KCGM's ministerial statements.
- include any additional activities required to deliver the FS Project and future operations as described within the Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Fimiston South Project (FS Project) proposal.

Following approval of FAQMP (v11,2023), internal KCGM document control processes will be implemented to ensure the current FAQMP (v9, 2019) is formally archived and v11 (2023) version becomes the approved guiding document. Table 1 below contains an executive summary of the information relevant to this 2023 revised version of the FAQMP.

Table 1: Management Plan Summary

Title of Proposal	Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Fimiston South Project (FS Project)
Proponent	Kalgoorlie Consolidated Gold Mines Pty Ltd
Ministerial Statement Number	TBA
Purpose of the FAQMP	<p>The purpose of this Air Quality Management Plan is to meet specified document type for an Environmental Management Plan, and to enable the continued and effective (operationally derived) air quality monitoring and reporting regime.</p> <p>This version AQMP supports the FS Project submission package for the Ivanhoe cut back proposal.</p>
Key Environmental Factor/s and Objective/s	<p>Key Environmental Factors: Air Quality, Social Surroundings and Human Health</p> <p>EPA Objectives: <u>Air Quality</u> 'To maintain air quality and minimise emissions so that environmental values are protected' (EPA, 2022). <u>Social Surroundings</u> 'To protect social surroundings from significant harm' (EPA, 2022). <u>Human Health</u> 'To protect human health from significant harm' (EPA, 2022).</p>
Condition Clauses	Conditions 7-1 to 7-7 of the current Ministerial Statement 782 are set out in Table 2 of this document.
Proposed Construction Date	Continuation of existing operations.
EMP Required Pre-construction?	Yes – this document.

2. CONTEXT, SCOPE, AND RATIONALE

2.1 The Project

KCGM manages and operates the following mining and processing operations for Owner, Northern Star Resources Limited:

- Fimiston Open Pit: open pit mining and waste rock disposal.
- Mt Charlotte Underground Mine: underground mining.
- Fimiston Processing Plant: crushing, mineral processing, refining and tailings disposal.
- Gidji Gold Processing Plant: mineral processing and tailings disposal; and
- Exploration: mineral resource definition drilling and core processing.

The FAQMP is relevant to the Fimiston Operational area within the Mine Development Envelope. The following are key facilities:

- Fimiston Open Pit.
- Fimiston Tailings Storage Facilities (TSFs).
- Fimiston Processing Plant; and
- Fimiston Waste Rock Dumps (WRDs).

2.1.1 Location of Fimiston Operations

The Fimiston Operations are located adjacent to the City of Kalgoorlie-Boulder approximately 600 kilometres (km) east of Perth, Western Australia. On average, KCGM produces 500,000 ounces of gold per annum and has a current operational mine life expectancy until 2034 (including the FS Project).

Currently, up to 80 million tonnes (Mt) of ore and waste rock material are mined from the Fimiston Open Pit per annum through traditional truck and shovel methods. Ore is then continuously processed through the Fimiston Processing Plant, whilst marginal or low-grade ore are stockpiled adjacent to the open pit area and waste rock material is transported to various Waste Rock Dumps (WRD) for permanent storage.

2.2 The Revised Proposal – FS Project

The Revised FS Project submission package supports the Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Fimiston South Project (FS Project) application which details the mining out of the Ivanhoe cutback at the southern extent of the pre-existing Fimiston Open Pit. Proposed future mining activities would continue to utilise traditional mining methods currently employed within the open pit. The cutback will amend the overall pit design by both additional widening and deepening of the pit. The works will extend the current operational life of open pit to approximately 2034.

The Revised Proposal includes:

- A cut back of the Fimiston Open Pit, the Ivanhoe cutback
- Additional Fimiston II Extension Tailings Storage Facility (TSF) cell.
- Construction of the new Fimiston III TSF.
- An extension to the existing Southern WRD; and
- Development of areas for supporting infrastructure and services are also required.

Fimiston Operations will continue to operate under currently approved Ministerial Conditions and existing FAQMP and approved management practices.

2.3 Key Environmental Factors

This FAQMP specifically addresses Air Quality, Social Surroundings and Human Health environmental factors, as defined within the EPA's *Statement of Environmental Principles, Factors and Objectives and aims of EIA* (EPA, 2023, version 5).

As defined within the EPA's Environmental Factor Guideline: Air Quality (EPA, 2020), the environmental objective of Air Quality is:

To maintain Air Quality and minimise emissions so that environmental values are protected.

As defined within the EPA's Environmental Factor Guideline: Social Surroundings (EPA, 2023), the environmental objective of Social Surroundings is:

To protect social surrounding from significant harm.

As defined within the EPA's Environmental Factor Guideline: Human Health (EPA, 2016), the environmental objective of Human Health is:

To protect human health from significant harm.

2.3.1 Activities Affecting Key Environmental Factor – Air Quality

Air quality is a key environmental factor for the FS Project due to the proximity of the Fimiston Gold Mine Operations to the City of Kalgoorlie-Boulder and surrounding areas. Identification and management of contributing factors (aspects and risk analysis) or activities which may contribute to decreased air quality are paramount for large scale operations such as the Fimiston operations. It is located in a semi-arid region of Western Australia, which unlike other sub-tropical or tropical areas of Australia, is relatively dry throughout the entire year. This climatic setting supports surface substrates to be dry, fragile, and readily susceptible to movement of individual particulates (matter), which when disturbed become mobilised (air borne) into the air column (ambient air). These processes are otherwise referred to as wind erosion, and fugitive particulate loading (concentration). Whilst the presence of particulate matter within the ambient air is a natural occurrence in Australia, many introduced activities may pose additional impact and change to the severity or occurrences.

Particulate matter (PM) consists of many particles of varying sizes (fractions); some of these particulates are very small and can be inhaled into the lungs or settle on vegetation, posing a risk of impacting the health of the recipient.

Activities known to contribute to the mobilisation of particulates include, driving on dirt roads or off roading, herd grazing or spring pollen production/release, clearing vegetation, crushing rock or grading material, blasting, excavation of material for transportation, dumping of materials and reshaping waste rock dumps or stockpiles, burning wood for heating homes, general earthworks, and off-road recreational activities.

The FS Project is a mining activity which alike the current Fimiston operational mining activities requires the fracturing and extraction of rock from a designated area, crushing of rock/ore which for further processing or relocation to WRD (tip head) for long term waste storage. As the proposed activity under the FS Project is considered like-for-like with currently approved site activities; KCGM have chosen to continue with the existing mitigation measures. These measures in the past have proven to be effective in assisting KCGM to minimise the risk likelihood of occurrence and levels of severity from the Fimiston operations (operational contribution). KCGM's particulate management approach is further detailed in Sections 2.7 and Section 2.8.

Specific aspects in addition to current site activities, which may have the potential to impact from the implementation of continued mining activities and pose a risk to decreasing air quality (increased particulates), if not managed appropriately, may include:

Potential direct impacts:

- Increased dust emissions from an expanded mining footprint and haulage of waste or ore.
- Diesel particulate matter from internal combustion engines operating closer to the surface.
- Greenhouse gas emissions from additional resources and/or supplies being brought to the Fimiston operation to complete other supporting construction activities. (This element is addressed further in the Northern Star Greenhouse Gas Management Plan.)
- Increased dust emissions from initial clearing activities, harvesting of topsoil, increase of operationally exposed areas or dry tailings.

Potential indirect or flow on impacts may include:

- Reduced public health, higher levels of hay fever or asthma irritants present within the air.
- Reduced health or loss of vegetation or flora due to clearing or clearing outside surveyed areas.
- Reduced visual amenity during site preparation works (clearing, topsoil harvesting or construction contouring), by the visual recognition of willy willy phenomenon.
- Displacement of fauna species or increased fauna interactions occurring on public roads leading to road kills and odour (short term impact during pre-construction); or:
- Adverse 24 hour or annual average air quality monitoring result/s which identify the Fimiston operation as a significant contributing factor.

2.3.2 Activities Affecting Key Environmental Factor – Social Surroundings

Air quality is a key environmental factor, and when this environmental factor is considered in tandem with social surroundings the potential for impacts on the community or individuals may be considered and investigated. The potential impacts (actual or perceived) as a direct result of the FS Project or the ongoing Fimiston operation on the physical or biological surroundings, a person's aesthetic, cultural, economic surrounds may be assessed. KCGM's management approach is detailed in Section 2.6.3.

This environmental factor is defined under the *Environment Protection Act 1986* and presented in the Environmental Factor Guideline: Social Surrounds (EPA, 2023) as:

“Environment, subject to subsection (2), means living things, their physical, biological and social surroundings, and interactions between all of these (Subsection 3(1))”.

“For the purposes of the definition of environment in subsection (1), the social surroundings of man are his aesthetic, cultural, economic and social surroundings to the extent that those surroundings directly affect or are affected by his physical or biological surroundings (Subsection 3(2))”.

Examples of social surroundings may include:

- Aesthetics of local towns (presentation of schools, parks, and playgrounds).
- Ability to attract and retain new employees (modern housing and technologies).
- Encourage new employees and their families to relocate, invest and stay regionally (economics).
- Ability for a town or regional area to provide modern amenity, services, health care (or emergency transfers to major medical facilities).

- Additional employment inside and outside of the mine (small business, sole traders, medium sized business).
- Acceptance and/or embracing of culture diversity, cultural history, provision of family friendly environments.
- Ability to maintain Aboriginal heritage and cultural knowledge, stories, artefacts.
- Ability to accept diversity of both natural and manmade historical heritage.

The Fimiston operations is located directly adjacent to the City of Kalgoorlie-Boulder urban areas (commercial, industrial, and residential) with open cut, underground and ore processing activities occurring for over 100 years. This is in part legacy from historical mining practices in and around the rural City of Kalgoorlie-Boulder and a scenario that is not unique to the Goldfields Region of Western Australia. Other examples of Australian towns located in proximity to mining activities include Port Hedland and Karratha (WA), Mount Isa (Qld), Bendigo (Vic), Lightning Ridge (NSW), Jabiru (NT) or Roxby Downs (SA).

Historically, being able to live close to where the work was provided a practical solution when the distance from work to home (and vice versa) was often restricted by how far a person could walk, ride a bike or travel by horse; in addition to completing long hours each day (example: in the 1800's people often survived in very basic living conditions (subsistence)). This scenario has gradually changed over time (century) as regional growth occurred, expectations of living conditions became a higher priority, disposable incomes became larger, and demographics of towns gradually evolved.

This is especially noticeable since the introduction of occupational health and safety standards (~1970's onwards) into workforces which assisted to guide changes to living conditions, quality of lifestyle/s and eventually a work life balance became the focus over basic survival (set basic expectations/standards). Examples of how social surroundings may influence the image of a mining town such as the City of Kalgoorlie-Boulder can be easily observed when comparing photos from previous decades or centuries to that of the current day. These influences include:

- Comparison and progression of improved living conditions over the past 100+ years.
- Analysis of population dynamics and trends over the past 100+ years.
- Recreational activities and the changes that have occurred over the past 100+ years.
- Changes to the social scene and (actual or perceived) reduction in anti-social behaviours.
- Acceptance, inclusion and recognition of new ethnic cultures, values, beliefs, or religions.
- Acceptance, inclusion, and recognition of indigenous cultures (localised and nationally), diversity of beliefs, ethnographic and anthropological connections to country.

Potential impacts to social surroundings element when considering air quality from the proposed implementation of continued mining activities might include:

- Reduced visual amenity from un-vegetated mining landforms or the presence of a haze.
- Reduced public health due to odour, diesel particulates, volumes of fly-in/fly-out personnel (colds and flu), volumes of social/recreational activities (increased antisocial activities).
- Reduced public amenity from dust emissions (excessive levels of particulates in homes or landing on cleaned vehicles).
- Reduced vegetative health or impacting on items or locations of cultural importance (ethnographic), short term or long term.
- Reduced physical and/or mental health of individuals or sensitive receptors (pre-existing conditions aggravated through reduced air quality).

Other social surrounding elements which are covered in separate KCGM management plans include:

- Reduced amenity from higher or impacted background noise or vibration levels.
- Reduced public health or potential damage to property from flyrock.

2.3.3 Activities Affecting Key Environmental Factor – Human Health

Human health is a key environment factor when considered in tandem with air quality and as an additional potential risk beyond social amenity. This human health factor has been interpreted and assessed as an additional step above personalising/individualising a direct risk aspect in addition to social surroundings which may otherwise be interpreted as in-personal/non-direct.

The human health factor is driven in part due to the location of the overall operational area, the semi-arid climatic region (natural) and the proximity of the proposed continued mining activities adjacent to the City of Kalgoorlie-Boulder; but, also supported by the fact that KCGMs employees, contractors, families, and friends have the right to be safe whilst at work and whilst outside of the workplace. For the purposes of this FAQMP, the World Health Organization (WHO) defines human health as:

“a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (EPA, 2016).”

KCGM’s management approach is detailed in Section 2.5.1. Additional human health management is managed and implemented under the Work Health and Safety Act 2020 *and Work Health and Safety (General) Regulations 2022*; by additional KCGM departments.

Potential risks to human health when incorporating an air quality element to the proposed implementation of the continuing mining activities might include:

- Reduced individual or public health (acute or chronic), including but not limited to sensitive receptors such as children and elderly through inhalation of air emissions over an extended amount of time (long term exposure).
- Reduced individual health, through inhalation of mobilised particulate emissions resulting in reactions similar to hay fever or asthma (acute short-term exposure).
- Uncontrolled release of harmful emissions into the air shed beyond regulated conditions.

Other aspects of the long-term mining activities which may pose a risk in the long term may include:

- Failure to modernise the Fimiston operation leading to excessive or unacceptable volumes of greenhouse gas emissions being released.
- Failure to maintain maintenance schedules or purchasing of suitable replacement parts or filters (sub grade materials)
- Failure to upgrade to newer technologies or improved methods if/when readily available. Considerations of human health during the environmental impact assessment phase of the FS Project included:
 - Careful consideration, planning and monitoring requirements of climatic conditions when undertaking mining activities.
 - Designing a delivery or execution plan to where possible, have near surface dust generating activities undertaken during the known cooler or wetter times of the year (land clearing).
 - Identification of a group or singular high-risk task or activity which may require additional mitigation processes to be implemented to lower the proposed significance of impact (fugitive sources), prior to the task commencing.
 - Ensure activities identified as potentially having a higher risk probability of mobilising particulates are identified early to enable the correct personal protective equipment to be selected and used (point source).
- Implement dust suppression activities (water cart) to minimise the potential for impacting on daily compliance particulate records (continuous monitors).

- Consider additional monitoring or training opportunities under the Workplace Health & Safety Act 2022, through discussions with KCGM health and hygiene teams.

2.4 Condition Requirements

This FAQMP which incorporates the proposed FS Project is submitted in accordance with Conditions 7-1 to 7-7 of Ministerial Statement 782 (MS782), as this is the currently approved method. Table 2 below summarises currently approved conditions.

The conditions can then be revised, finalised, and implemented following receipt of approval under the EP Act as a new ministerial statement, which would trigger the archiving of MS782 (Section 1, paragraph 2).

Table 2: Summary of Proposed Conditions

Proposed Condition	Section of this EMP
XX Air Quality XX-1 Within three months following the issuing of the notice to the decision-making authorities under section 45(7) of the <i>Environmental Protection Act 1986</i> , the proponent shall implement the Air Quality Management Plan to the requirements of the Minister for Environment on advice of the DWER and the DoH.	Section 2.3, Section 3.1.2 and Section 4
XX-2 The proponent shall review the Air Quality Management Plan referred to in condition XX-1 as required by the EPA and shall amend the Plan to the requirements of the Minister for Environment on advice of the DWER and the DoH.	Table 1, Section 4,
XX-3 The proponent shall implement the amended Air Quality Management Plan required by condition XX-2.	Section 2.3, Section 3.1.2 and Section 4
XX-4 The proponent shall only detonate explosives at surface level on the premises when wind directions favour the carriage of dust away from the residential areas of Kalgoorlie-Boulder, unless undertaken in accordance with regulation 8.28 (4) of the <i>Mines Safety and Inspection Regulations 1995*</i> .	Section 2.6.3, Section 2.7.2 and Section 2.8.2
XX-5 The proponent shall make available continuous dust monitoring data on their website within 24 hrs of the recording of that data.	Section 2.10.1
XX-6 The proponent shall keep and make publicly available a register of complaints regarding air emissions; investigate those complaints; and keep a record of the investigations and actions taken about the complaint.	Section 5.1

**Mines Safety and Inspection Regulations 1995 has been repealed and replaced by the Work Health and Safety (Mines) Regulations 2022.*

2.5 Potential Impacts

2.5.1 Public Health

The main transport pathway for particulate emissions associated with the FS Project would be through atmospheric dispersion (fugitive), and therefore inhalation is expected to remain the most significant risk exposure route that may impact human health (Health protective guidelines include the National Environment Protection Council (NEPC), National Environment Protection Measure for Ambient Air Quality as amended 2015 (as amended)).

Air dispersion modelling from carbon regeneration kilns to assess the potential health risks posed by mercury emissions has historically indicated that the levels being emitted from Fimiston pose no risk to workers or the community. Ramboll (2022a) conducted a screening health risk assessment (HRA) to determine if the projected FS Project fugitive particulate loadings may have potential to result in

unacceptable impacts to human health (workforce or public). This involved a review of the previous screening HRA (Golden Pike and the 2006 HRA) and then re-assessment of potential health risks, taking into consideration additional ambient monitoring data from 2020 to 2021 to the historical data.

The HRA also compared the expected change in potential health risks from the current operations to include the proposed changes of the FS Project. Similar health risk conclusions that were reached in the Ramboll (2022a) as in this review and HRA update which included PM₁₀ data collected during 2010 to 2019. A review of ambient PM₁₀ data collected across KCGM's seven ambient PM₁₀ monitoring stations was undertaken to identify the maximum short-term and long-term PM₁₀ concentrations for use in the screening HRA.

This was completed by identifying:

- The historic maximum metals concentrations in ambient particulate samples (were calculated utilising historic metals concentration data and applied bioavailability factors based on analysis of regional soil samples).
- Identification of the maximum recorded 1-hour and 24-hour average PM₁₀ concentration (where KCGM was identified as a potential contributor).
- Highest annual average PM₁₀ concentrations measured at each monitoring site, were used as inputs to the screening HRA.
- Inclusion of air dispersion modelling data presented in Ramboll (2022a) to assess the potential health impacts (FS project implementation).
- Modelled PM₁₀ concentrations were calculated from 2019 to 2025.
- Estimated PM₁₀ concentrations in 2025 were calculated utilising monitored data from 2019 (worst case scenario).
- Historic maximum metals concentration data was then used to estimate current (2019) and future (2025) PM₁₀ metal concentrations.
- Acute HIs were calculated to be between 0.5 and 2.6, and chronic HIs were well below one. Values below 10 generally do not represent cause for concern. National Environment Protection Measure for Ambient Air Quality as amended 2015 (as amended).
- Maximum ICRs from the estimated metals concentrations were above the target of 1E-05 (i.e., 0.00001). However, these estimates are considered highly conservative because they are calculated using the maximum recorded metal concentrations in any 24-hour period, rather than the average metals concentrations, which would be more representative of actual conditions.
- Once bioavailability factors from historical soils samples were accounted for, the ICRs were below 1E-05 (Ramboll 2022b).
- No unacceptable acute or chronic non-carcinogenic or carcinogenic risks were found at any of the sampling locations.

2.5.2 Impacts on Vegetation and Flora

Accumulation of dust particulates on leaf surfaces may occur as a result of exposure to excessive particulates being generated (mobilised) nearby settling on vegetation. This may result in a reduced ability for plants to photosynthesise and transpire, leading to a decline in plant health and may increase the potential to lead to dieback, if the situation is prolonged. Sources of particulate emissions are localised, consisting of dust lift-off from mining vehicle traffic and minor quantities from blasting. Direct and indirect impacts to vegetation and flora are likely to be limited to areas that directly surround the FS Project activities (construction footprint).

Vegetation within these areas comprises of vegetation communities that are well represented in the local and greater region. Most of this vegetation has previously been degraded and/or highly modified by historical land use practices, which includes urban development, mining (some early rehabilitation) and

pastoralism. The potential impacts are therefore considered not likely to have a significant impact on the representation of these vegetation types in the local area or the greater region.

Flora surveys conducted by Phoenix (2019a, 2020b and 2022a) indicate that 90 individuals of Priority 2 Flora species *Eremophila praecox* identified in both disturbed and rehabilitated areas. However, indirect impacts from dust emissions are considered not likely to have a significant impact on the conservation status of this species because:

- Documented distribution for the species is broader than was previously known; with records supporting the notion that the species may in fact be widespread, but infrequently recorded.
- *E. praecox* is currently listed as a Priority 2 flora species by Department of Biodiversity, Conservation and Attractions (DBCAs).
 - This change in status to Priority 2 was approved following the 2019 regional survey.
 - Additional regional records support the likelihood the species may represent a Priority 3 species (now known from multiple records).
- In excess of one third of plants recorded are in conservation estate, e.g., Karrawang Nature Reserve and Bullock Holes Timber Reserve (non KCGM leases).

2.5.3 Fauna Displacement

Excessive dust has the potential to result in temporary displacement of local fauna populations for short durations of time. This can take place as fauna move to avoid inhalation of dust, relocate after vegetation providing habitat is damaged or relocate away from dust producing activities (noise) such as clearing or construction.

Results from recent fauna survey suggest that it is unlikely that there are any conservation significant fauna species inhabiting the area intended for the FS Project cut back due to the overall positioning being located near a busy major by-pass and developed industrial areas. It is therefore unlikely that emissions to air would result in any significant impacts to fauna or significant fauna species (displacement of local populations) as a result of cut back activities being implemented.

2.6 Rationale and Approach

The continued mining activities have been designed to avoid and minimise impacts to key environmental factors (refer to Sections 2.3.1, 2.3.2, and 2.3.3). This includes identifying activities that may cause or contribute to particulate emissions or otherwise enable mobilisation of particulate material into the air shed/ambient background.

KCGM's approach to managing particulate emissions are based on the identification of likely major emission sources by applying conventional risk assessment methodologies, predictive air quality modelling, air quality monitoring results, operational experience and feedback drawn from community feedback.

Risk mitigation measures identified during the risk assessment process are to be implemented as part of the task/activity being implemented to reduce the overall residual risk of particulates (KCGM becoming identified as a significant contributing factor) following a recorded event (exceedance) of greater than $>50 \mu\text{g}/\text{m}^3$ of 24-hour average volumes.

This enabled KCGM to identify and summarise both the activity, source and type of emission/s and assign a management plan to aid monitoring and reporting, as summarised in Table 3. contribute to particulate emissions or otherwise enable mobilisation of particulate material into the air shed/ambient background.

KCGM's approach to managing particulate emissions are based on the identification of likely major emission sources by applying conventional risk assessment methodologies, predictive air quality modelling, air quality monitoring results, operational experience and feedback drawn from community feedback.

Risk mitigation measures identified during the risk assessment process are to be implemented as part of the task/activity being implemented to reduce the overall residual risk of particulates (KCGM becoming identified as a significant contributing factor) following a recorded event (exceedance) of greater than >50 µg/m₃ of 24-hour average volumes.

This enabled KCGM to identify and summarise both the activity, source and type of emission/s and assign a management plan to aid monitoring and reporting, as summarised in Table 3.

Table 3: Summary of Emission Source and Types

Activity	Emission Source Summary	Air Emission Type	Management Plan/Programme
Ore Processing	The Fimiston Processing Plant treats ore mined from the Fimiston Open Pit and the Mt Charlotte Underground Mine. Crushing activities and conveyor transfer points have the potential to create fugitive dust emissions.	Fugitive Dust	Dust Monitoring and Management Programme
	During the gold recovery process there is potential for atmospheric emissions of mercury from the carbon regeneration kilns (fugitive) or the gold room (point source). <i>Note: Gold room activities are supported by additional PPE and safety procedures outside the scope of the FAQMP.</i>	Fugitive Dust and point source depending on the situation.	Mercury Emissions Management Plan
Tailings Storage Facilities	KCGM operates three Tailings Storage Facilities (TSFs) which support the Fimiston Processing Plant waste storage. These are the Fimiston I TSF, Fimiston II TSF and the Kaltails TSF. Fugitive dust from the TSFs is generally caused by strong winds resulting in surface wind erosion of deposited tailings waste.	Fugitive Dust	Dust Monitoring and Management Programme
Drilling and Blasting	Drilling and blasting are undertaken to fracture rock for extraction within pit, underground and occasionally near the surface. Blasting activities have the potential to cause high loading but short-term fugitive dust emissions and therefore need to be carefully managed and planned, particularly for blasts that occur near the surface. Example being no blasting during red winds is implemented by blast crews (wind direction predominantly towards town).	Fugitive Dust and point source depending on the situation.	Blasting Dust Management Plan
Mining	Mining is undertaken utilising hydraulic shovels that load ore/waste rock into haul trucks which transport ore to the ROM pad or stockpile as low grade to be subsequently processed at a later time. These activities involve the handling, transporting, and dumping of material; use of earth moving equipment; vehicle movement on unsealed roads.	Fugitive Dust	Dust Monitoring and Management Programme
Waste Rock Dumps	Waste rock and overburden which is of no economical processing value or value to rehabilitation activities, is removed from active mining areas and placed on WRD for long term storage and eventual final landform formation.	Fugitive Dust	Dust Monitoring and Management Programme

Activity	Emission Source Summary	Air Emission Type	Management Plan/Programme
Topsoil stockpiles	Generally consisting of topsoil and vegetative material (seed bank). Are generally stable and settle following rainfall which forms a crust reasonably resistant to wind erosion.	Fugitive Dust	Dust Monitoring and Management Programme

2.6.1 Survey and Studies Undertaken

2.6.1.1 Studies Completed

KCGM has a long history of monitoring air quality at Fimiston Operations, and numerous additional studies have been conducted to analyse air quality and identify potential emissions sources.

Past completed air quality studies include:

- CSIRO Australia (Mine Site Rehabilitation Research Programme), Dust Generation from Tailings.
- Development of the Micro Wind Tunnel and preliminary investigations in tailings surfaces.
- CSIRO Dust Management System for Blasting.
- Coffey (1999) National Pollutants Inventory Kalgoorlie Mining Trial Aggregated Emission Study.
- DEP (1999) Kalgoorlie NPI Trial.
- SKM (2005) Airborne Contaminants or Emissions of Significance in the Kalgoorlie-Boulder.
- Coolgardie and Kambalda Area, Kalgoorlie Gap Emissions Study.
- ENVIRON (2006) Dust modelling study – Fimiston operations extension.
- RAMBOLL (2018) Review of PM10 Monitoring Data and Assessment of the Potential Particulate Impacts of Proposed Project Changes at the Fimiston Operations.
- RAMBOLL (2022, revised in 2023) Appendix H Fimiston South Project: Air Quality Impact Assessment; and
- RAMBOLL (2022) Appendix I Fimiston South Project Screening Health Risk Assessment.

Ramboll (2022) was commissioned to conduct an air quality impact assessment (revised in 2023) to determine if the proposed additional works under the FS Project may result in any significant impacts under the current KCGM monitoring programme. Following this assessment and complete review of current mitigation measures (as currently implemented), these measures would be appropriate for managing any identified new risks associated with the FS Project.

This assessment was updated in April/May 2023 following the receipt of a request for further information from the Environment Protection authority (EPA) in February 2023.

2.6.1.2 Increased Dust Emission Modelling

Air dispersion modelling was undertaken (refer to Appendix H Air Quality Impact Assessment of the Referral package, 2022) to provide a comparative analysis proposed worst case scenario following FS Project implementation. Analysis of the predicted scenario presented within the air quality impact assessment were based on the results of this air dispersion modelling.

The modelling analysis highlighted:

- That the most significant changes to air quality are expected to occur within the open pit; however, impacts at sensitive receptor locations are not expected to change significantly (Ramboll, 2023).
- This risk potential will primarily be a slightly elevated during construction works to realign the Environmental Noise Bund (ENB) and during initial surface cut back activities (short term).
- The FS Project includes addition of new open operation supporting areas, including WRD which will need to be adequately managed during and following the projects implementation.

- As operational future growth continues there is opportunity to review the existing equipment and holistic monitoring system/s (emerging and material risk assessment), to drive identification of risk severity changes and promote self-sustaining continuous improvement (Section 4).
- In-pit dumping of waste rock material as cut back activities progress may result in a reduction of wheel-generated dust emissions (reduced haulage distance).
 - However, this may increase the in-pit dust loading through the action of dumping waste rock; although this dust is expected to remain and settle back into the open-pit.
 - Lower likelihood of being transported away from within the open pit than if activity was located at the surface.
 - As the in-pit WRD grows closer to the surface there will be a requirement to increase dust suppression activities to offset the change of risk probability.

2.6.1.3 FS Project Particulate Modelling

The modelling results indicate that peak 24-hour average concentrations of PM₁₀ exceed the ambient air quality guidelines (>50 µg/m₃). An analysis of the results indicates that the peak concentrations were associated with wind erosion from exposed areas rather than from the proposed cut back activities (Ramboll, 2023).

- The modelling completed as part of an impact assessment (FS Project, 2023) is predicting negligible changes (increases at some locations, decreases at others) in the short term.
- It is important to note that although there is a level of uncertainty present when utilising any modelling program, they are considered an effective tool to establish a basis for risk assessment prior to any works commencing.
- Given the proximity of Fimiston operations and the proposed FS Project/NB to the City of Kalgoorlie-Boulder, the south-western open-pit expansion and noise bund construction is likely to have the greatest potential for impact on daily recorded PM₁₀ concentrations at nearby monitoring locations.
 - Monitoring locations HOP, BSY, and CLY would be the most sensitive to any additional particulate loading.
 - Current FAQMP standard practice includes early warning notifications (trigger alarms) to enable additional dust suppression activities to be applied quickly.

2.6.1.4 Emerging Risk: Exposed Area Particulates

As mentioned above, a key finding of recent predictive modelling suggests an emerging risk (section 2.6.1.2). This emerging risk relates to future growth and the requirement of the site to support continued operational mining, processing, and long-term waste management. The Air Quality Impact Assessment (Ramboll, as revised in 2023) highlighted through additional analysis of the recent modelling of a predicted emerging change to the current air quality risk profile (severity and likelihood). Analysis also highlighted this change may originate from exposed areas not from the proposed FS Project works.

Common mining industry exposed areas include:

- Unsealed haul roads and light vehicle monitoring or service tracks.
- Boundary fence lines and areas surrounding buildings and offices.
- Monitoring locations, supporting infrastructure corridors and open pipeline bunds.
- Dry Tailing Storage Facilities (TSF).
- Waste Rock Dumps (WRD's).

Through early identification of this emerging risk, this will assist KCGM to further investigate and assess potential contributing sources, such as:

- Currently exposed areas.
- Future placement and design of new exposed operational areas.
- Future exposed area growth/rate – short term (e.g.: <5 years).
- Mine life planning – long term (e.g.: >10+ years).

By implementing a risk assessment/environmental impact assessment approach into the investigation, KCGM will be able to assess the robustness of the current air quality monitoring system or identify any areas of concern or areas for improvement, for example:

- Ability to provide a representative sampling system.
- Early identification of if/when the emerging risk tipping point may be most likely to occur.
- Identify if external seasonal/climatic changes may impact in addition, beyond the predictive model (extended drought conditions).
- Provide basis for business case development.

This approach is supported by the following points raised in the revised Impact Assessment by Ramboll, (2023):

- The cumulative results from the modelling highlighted the importance of the effective implementation of mitigation controls and the ongoing management and review (risk identification and assessment).
- An analysis of the revised impact assessment indicates that the peak concentrations of Particulates were associated with wind erosion from exposed areas.
- Long term particulate management and the supporting monitoring system upgrades may be needed to support future growth.

2.6.2 Key Assumptions and Uncertainties

Assumptions and uncertainties are based on surveys undertaken to date to form the basis of the proposed management approach, as listed below:

2.6.2.1 Assumptions

- Utilising areas of existing disturbance and minimising additional clearing and implementing progressive rehabilitation throughout the life of the project will minimise the impacts of dust emissions (reduce the potential for particulate mobilisation).
- Modelling provides a suitable representation of the particulate emissions from the Fimiston Operations.
- Surveys to date provide sufficient information to confirm the presence of flora and fauna and suggest healthy populations exist within the Fimiston area. Additional surveys have been completed to determine the likely extent of local population(s) beyond the FS Project area; and
- The Mine Development Envelope (MDE) and broader regional area have been adequately surveyed for terrestrial flora and fauna and no other conservation significant species are likely to be affected by the FS Project.

2.6.2.2 Uncertainties

- The extent to which climatic factors outside of KCGM control, including dust and fire, may impact on the health and extent of populations of individual species.
- The extent to which disturbed and airborne particulates generated from the implementation of the FS Project cut back may travel from the source to receptor.
- Occurrence of extreme rainfall events, drought or fire events occurring during the life of mine and post-closure; and

- If located, the resilience of conservation significant flora species to particulate deposition.

2.6.3 Management Approach

Management measures considered to minimise the intensity of the effects (actual or perceived) of the FS Project are necessary to ensure the activities will not have a significant detrimental impact on key environmental factors.

Specific application of the risk mitigation hierarchy for the FS Project has been summarised below.

2.6.3.1 Avoid

- Blasting operations will continue to be restricted and will not be undertaken when wind conditions are unfavourable (red winds).
- Work in a particular area will be suspended for a nominated activity, if necessary, based on visual inspections, particulate loading trigger alarms, public feedback or prevailing wind conditions being unfavourable (red winds).
- Alternative operational area/s will be utilised if possible (e.g., use a different waste dump, or wheeled transports to remain in pit) to mitigate the generation of a point source which may lead to excessive fugitive loading overall.
- Redesigning of WRD (reduced footprint) to avoid potential impacts of particulates or clearing, refer to Significant Species Management Plan.

2.6.3.2 Minimise

- Restricting dumping of material for the realignment of the Noise Bund, pending on wind direction.
- Restricting near surface mining activities (e.g., handling of oxide material, blasting) as a function of wind direction.
- Use of water trucks and water cannons in areas that could produce dust (service corridors and other active surfaces).
- Watering down ore / waste rock material prior to load and haul activities as/if required.
- Watering down the surface of the blast prior to firing as/if required.
- Water sprays on crushers turned on when needed.
- Plan activities in high-risk areas (e.g., digging / loading) during day shift when fugitive dust can be seen and managed more easily than at night.
- Air Quality Monitoring trigger alarm/s system notifying of a potential to exceed 24hr daily average if work modes not amended or additional dust suppression activities not implemented, (external reporting of air quality exceedance/s).
- Ensure all contractors and staff undertake site species inductions which include raising awareness of the importance of dust control.
- Investigate the use of fences covered in shade cloth or similar structure (non-permanent) for periods where high dust transportation risk has the potential for direct impact on neighbouring premises. For example, during realignment and construction of Noise Bund.
- Ensure continuous compliance dust monitoring is undertaken in line with acceptable methods, that the data is assessed in real time, and the results of the monitoring are reviewed and reported on in a timely manner (includes publishing of data to website).
- Ongoing consultation with internal and external stakeholders to determine success or short comings of particulate management measures.
- Consider working with the City of Kalgoorlie-Boulder with additional dust management measures (e.g., preventing vehicular access, or rehabilitation) of open areas on the eastern side of the City of Kalgoorlie-Boulder.

2.6.3.3 Remediate

- Progressive rehabilitation of bare ground areas to minimise the potential for particulates to become airborne as fugitive dust emissions from wind erosion.
- Encourage the development of landforms which support natural seeding and establishment of flora or long-term surface coverage.
- Encourage the design of open areas to be resistant to (sheet) wind erosion.

2.7 Fimiston Environmental Management Programmes

2.7.1 Dust Monitoring and Maintenance Procedure

Particulate emissions are monitored via the implementation of the KCGM-ENV-010 Dust Monitoring and Management Procedure (DMMP), a subcomponent of the FAQMP. A key performance target of the DMMP is to manage KCGM's operations to ensure as far as reasonably practical that there are no more than five events above the 24-hour PM_{10} fraction limit of not greater than $50 \mu\text{g}/\text{m}^3$ (micrograms per cubic metre) at any compliance monitoring site per annum. This limit is also conditioned to where KCGM is identified as a significant contributor to any event (this allows for naturally occurring climatic events to be identified and recorded).

The DMMP utilises a network of seven ambient PM_{10} monitoring stations, six of which are established within the residential and light industrial areas of Kalgoorlie-Boulder (Figure 1) and are representative as compliance monitoring locations. Refer to section 2.8 Particulate Monitoring for further detail.

Additional documents:

- KCGM-ENV-053-PRO - Dispatch - Responding to Dust Alarms Procedure.
- KCGM-ENV-017-PRO – MET EQUIP Service and Calibration Procedure.
- KCGM-ENV-001-PRO - Fimiston Air Emissions Procedure.

2.7.2 Blasting Dust Management Plan

Blasting activities are defined as a pattern of charged holes that are fired in a sequence to fracture the rock to enable excavation by hydraulic shovels and subsequent load and haul activities to ore stockpiles, crusher or to waste rock dumps. The action of drilling and charging blast hole does not contribute greatly to ambient air particulate loading. However, the firing of the blast field, resulting in a displacement of energy causing the fracturing of rock, vast volumes of short-term particulates and gases (by products) are released into the area surrounding the blast field.

Both open pit and underground blasting have the potential to cause fugitive dust resulting in short-term high particulate loading emissions. As the Fimiston operational area is physically positioned near the City of Kalgoorlie-Boulder and the FS Project is proposing a cut back to the west, understanding and implementing mitigation controls is paramount. Current near surface blasting considers the potential for the likelihood of dispersal of particulate matter towards urban areas. These are managed through Wind Direction Dependent blasts (red winds and green winds) and are primarily related to surface blasting undertaken on the upper benches of the open pit. As a mitigating control, if the location of a blast is near surface and has a higher risk probability of post blast particulates being dispersed over urban areas (red winds) the blast is delayed until more suitable climatic conditions are present (green winds). Refer to section 2.8.2 Blast Monitoring for further detail.

Additional documents:

- KCGM-ENV-097 Quick Guide - Blast and Airblast levels.
- KCGM-ENV-001-PRO - Fimiston Air Emissions Procedure.

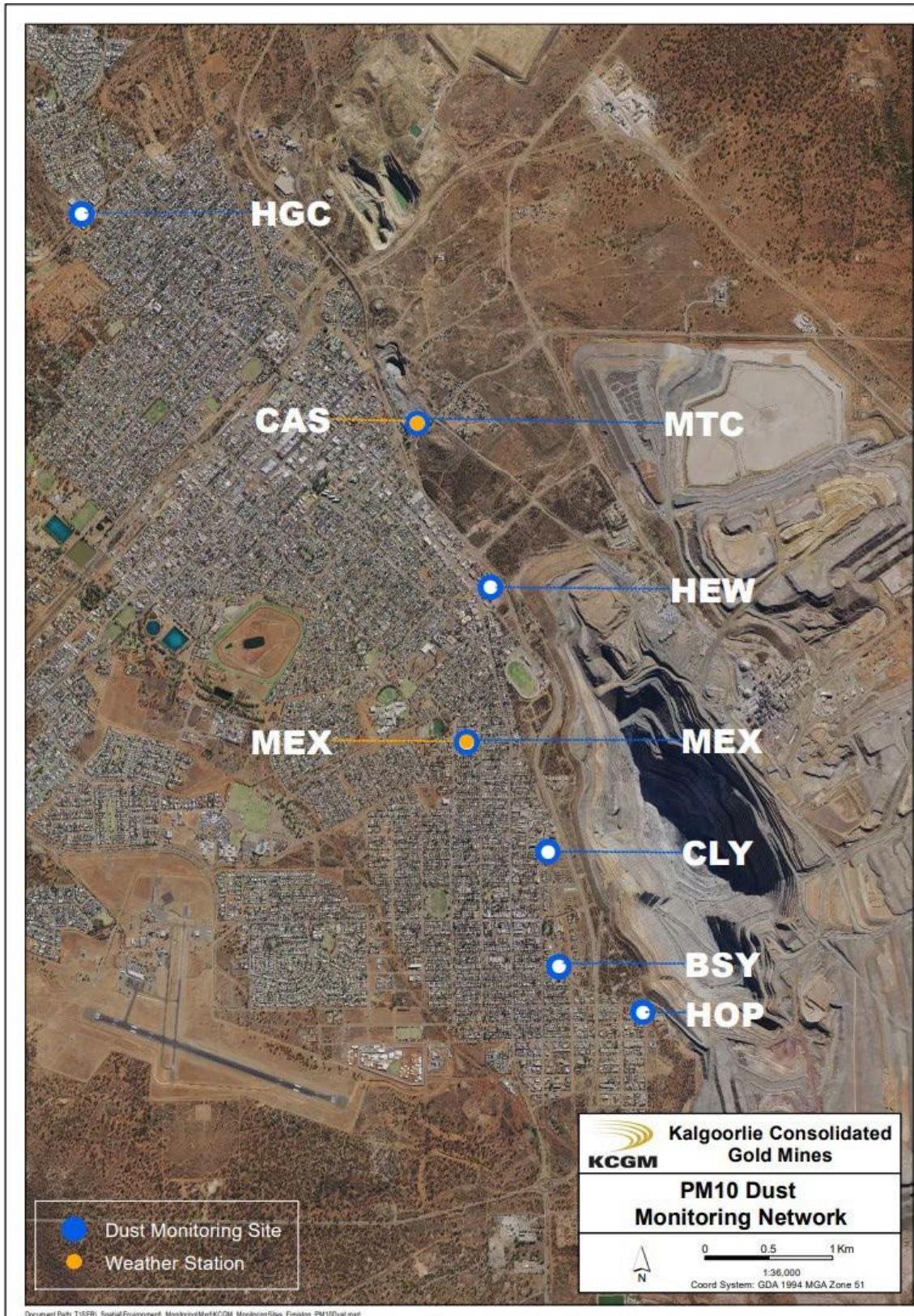


Figure 1: Particulate (Dust) Monitoring Network Locations

2.7.3 Mercury Emissions Management Plan

During 2015, KCGM commenced implementation of the Fimiston Emissions Reduction Project (ERP) which has been designed to capture greater than 90% of the atmospheric mercury emissions associated with mineral processing activities at the Fimiston Processing Plant. The Fimiston ERP involved the installation of an exhaust off-gas scrubber, a regenerative thermal oxidiser (RTO), and a sulphur impregnated carbon scrubber to capture mercury from the carbon regeneration kilns off-gas prior to release. A mercury retort unit was also installed in the gold room to capture mercury emissions from the furnace along with mercury storage facility, until these can be removed off-site to an approved facility for final treatment / disposal.

The Commissioning Report for the ERP was submitted to Department of Water and Environmental Regulation (DWER) on 15 October 2020. The Delegated Officer considered the Commissioning Report and found the data adequately demonstrates that the project design criteria in terms of mercury capture and volatile organic compound destruction had been achieved. Licence L6420/1988/14 now incorporates the Fimiston ERP.

On 24 November 2020, KCGM applied to the DWER to amend Licence L6420/1988/14 under section 59 and 59B of the (EP Act), seeking the following amendments:

- Operation of infrastructure constructed and commissioned under works approval W5532/2013/1 for the Fimiston ERP including installation of new emissions control equipment including a Retort Oven in the Gold Room, a Wet Scrubber, RTO and Carbon Filter Beds to treat the off-gas from the Carbon Regeneration Kilns;
- Amending authorised emission points to air in Table 2.2.1 of to reflect the new abatement system; and
- amending Table 1.3.1 containment infrastructure of Licence L6420/1988/14 to include retort room liquid mercury store and mercury storage facility.

KCGM considers that ambient mercury monitoring is not required given that:

- The ambient mercury monitoring programme produced results that were consistent with those expected, and below the ambient guidelines; and
- That the Fimiston ERP has resulted in a significant reduction in the release of atmospheric emissions of mercury.

This FAQMP supersedes the Carbon Kiln Mercury Emissions Reduction Programme. Refer to Mercury Emission Monitoring for further information.

Additional document:

- KCGM-FIM-PRO-MET-009-PRO - Mercury data collation procedure.

2.8 Particulate Monitoring Programmes

2.8.1 PM₁₀ Monitoring

The primary objective is to proactively manage the Fimiston operations to ensure that the ambient PM₁₀ concentrations remain below <50 µg/m₃ in any 24 hr period, at compliance monitoring locations. This performance target is based on the National Environmental Protection (Ambient Air Quality) Measure (Variation 2021, as amended) (NEPM 2021), an additional target of not recording more than five events above the >50 µg/m₃ in any 24 hr period performance target at any dust monitoring location per annum (where following investigation KCGM is shown to be a significant contributor).

To ensure the particulate monitoring network is adequately maintained, more than 90% availability of the continuous PM₁₀ data from each particulate monitoring location is required on an annual basis. Refer to Table 7.

Particulate monitoring locations include:

- Boulder Shire Yard (BSY).
- Hewitt Street (HEW).
- Clancy Street (CLY).
- Hopkins Street (HOP); (to be replaced with HOP2 under FS Project).
- Mt Charlotte (MTC).
- Metals Exploration Yard (MEX).

Provision of background particulate monitoring:

- Hannan's Golf Course (HGC).

Supporting meteorological monitoring stations:

- Metals Exploration Yard (MEX); and
- Cassidy Headframe (CAS).

The design of KCGM's DMMP has evolved over time in response to regulatory requirements, technological advancements, and operational practices at Fimiston. The current network utilises Beta Attenuation Monitors (BAM) at each of the seven monitoring locations (historically Hi-Vols), measuring real-time ambient PM₁₀ concentrations. The real-time data are compared to site-specific Alert and Action levels:

- Alert levels are set at values that are indicative of the possibility of on-site activities contributing to ambient concentrations that may approach the NEPM standard and where reasonable and practicable management measures could be implemented to reduce this risk; and
- Action levels are set at values that indicate it is likely that on-site activities are contributing to ambient concentrations that may result in an exceedance of the DMMP target concentration and where reasonable and practicable, immediate management measures should be implemented to reduce this potential.

The real time data collected at each monitoring location is subjected to formulas which are site specific and ensure climatic variation is also applied (wind speed, direction) as contributing factors. Any day where a 24Hr ambient PM₁₀ concentration of greater than >50 µg/m³ is recorded, KCGM reviews the recorded data to determine if the Fimiston operations may have been a significant contributor to that event.

In brief, the procedure involves a review of the 5-minute average PM₁₀ concentrations and meteorological monitoring data for the period in question to:

- Determine the daily average concentration, if any, that was associated with wind directions that were within the arcs that align with Fimiston operations and use this value to calculate the ratio of the KCGM arc.
- Based on an assessment of the winds that occurred, determine which ambient PM₁₀ monitoring station is most likely to represent the "background" monitoring site (usually the HGC site) and the daily average "background" concentration recorded at that site.
- Calculate the difference between the recorded daily average exceedance concentration and the daily average background concentration and determine the ratio of this difference and the recorded daily average exceedance concentration.
- If the ratios determined from steps 1 and 3 are both greater than 60% then it is considered in likelihood that Fimiston has potentially been a significant contributor to that event.

Table 4: PM₁₀ Monitoring Performance Targets

Monitoring locations	Daily	PM ₁₀ Monitoring Performance	
		Annual Event	Annual Data Availability
Boulder Shire Yard (BSY) Hewitt Street (HEW) Clancy Street (CLY) Hopkins Street (HOP) 2 Mt Charlotte (MTC) Metals Exploration Yard (MEX) Hannan's Golf Course (HGC)	Maintain 24-hour average PM ₁₀ <50 µg/m ³	Not more than five events >50 µg/m ³ at any dust monitoring location, per annum (where KCGM is determined a significant contributor).	Greater than 90% of data from all seven monitoring locations per annum.
Additional data management following data capture	The proponent shall make available continuous dust monitoring data on their website within 48 hrs of the recording of that data.		Annual compliance report

Continuous Particulate matter monitoring is collected via the utilisation of:

- Permanently installed Thermo Beta Attenuation Monitor (BAM) samplers, fitted with PM₁₀ inlets run continuously (Figure 1), these monitors are configured to:
 - PM₁₀ dust data are recorded in µg/m³.
 - Provide 5-minute average PM₁₀ concentrations (real time basis)
 - PM₁₀ dust data are validated on a weekly basis.
 - BAM samplers are serviced quarterly in accordance with the manufacturer's recommendations.
 - HGC site is used as a representative control monitoring site for PM₁₀, located some 4.5 km from the Fimiston operations.
- Both MTC and MEX dust monitoring locations were established in accordance with Condition 7-6 of Ministerial Statement 782; KCGM to install two additional dust monitoring stations co-located with the existing wind speed and wind direction monitoring stations.
- Wind speed and direction is recorded at two weather stations (MEX and CAS).
 - MET ONE model 50.5 sonic anemometer equipment.
 - field checked every six months.
 - wind tunnel calibrated every two years in accordance with the manufacturer's recommendations.

2.8.2 Blast Monitoring

KCGM Drill and Blast teams run a series of pre-blast checks, one which includes capturing current wind speed and direction/s over the previous 30 min from both MEX and CAS weather stations (Dust Programme). This process is repeated 15 min prior to a blast, to ensure conditions within Table 5 are met, if they are not the blast is postponed.

In the event climatic conditions are unfavourable for an extended amount of time, it may become necessary to fire the blast (even if climatic conditions are not favourable). This eventuality is to ensure the safety of personnel; example, if the sleeping shot has been in place for 14 days, at which time the explosives need to be fired for safety reasons (i.e., they may not detonate properly if left in-situ for longer periods). In this scenario MEX wind data is used to assess the conditions. If MEX data is not available, the CAS wind data is utilised.

Conditions 4 and 5 in Table 5 are relaxed (or considered not applicable) when the current winds are clearly in the ‘green arc’ and are forecast is to remain that way. Table 6 outlines the restrictions imposed on Wind Direction Dependent blasts and examples of situations which require authorisation.

Table 5: KCGM Dust Programme – Required Conditions for Wind Dependent Blasting

Condition	
1	At least four of the six 5-minute average wind direction boxes are shown as green.
2	No more than one of the last three 5-minute wind direction boxes are shown as red.
3	The 30-minute average is shown as green.
4	The variation in the measured wind direction (as depicted in yellow) is narrow (e.g. less than 60°) and not reflective of large variations in the wind directions.
5	The 30-minute average wind speed is greater than 2 m/s.

Table 6: Blast Restrictions for Wind Direction Dependent Blasts

Situation	Blasting Restriction	Authorisation Required
Normal	Blast may be fired only if the KCGM Dust Programme meets the conditions of Table 6 with relaxation of Conditions 4 and 5 if winds are clearly in the “green” arc.	No
Opportunity to blast due to dust mitigating circumstances (e.g., rain, depth in pit).	Decision to blast on a case-by-case basis.	Yes
Necessity to blast for safety reasons (e.g., sleep time for explosives is approaching 14 days, risk of lightning strike or rockfall, shot contains voids)	Decision to blast on a case-by-case basis.	Yes

2.8.3 Mercury Emissions Monitoring

Mercury is known to be contained within coloradoite, one of a suite of telluride minerals that are rare but widely distributed through the Golden Mile lodes and generally represents less than 0.00014% of the ore mined from the Fimiston Open Pit and the Mt Charlotte Underground Mine. The percentage of mercury present in the ore processed through the Fimiston Processing Plant circuit is typically less than 0.0001%; and present in waste rock (typically 0.00001%).

During the gold recovery process some of the mercury that is contained in the ore is leached and collected onto carbon via the Carbon in Leach (CIL) circuit. Whilst a small amount of mercury joins the gold in the refining process most of the mercury is retained on the carbon. Subsequently the mercury is then recovered from the carbon during the carbon regeneration process and during the gold refining process.

Mineral processing activities at the Fimiston Processing Plant may potentially result in point source emissions of mercury to the surrounding atmosphere. The highest risk probability exists from the action of carbon regeneration process (carbon regeneration kilns) which extracts captured mercury from the carbon in leach circuit (CIL) and during the gold refining process (gold room).

Additional document:

- KCGM-FIM-PRO-MET-009-PRO - Mercury data collation procedure.

2.8.4 Ambient Air Quality Trigger Values

The trigger levels for each compliance monitoring site as recommended by Ramboll Australia Pty Ltd following a review of the PM₁₀ data (2019), refer to Table 7. Revised particulate trigger and action levels have been provided in Table 8 (as per revised s38 proposal Appendix H - FS Project Air Quality Impact Assessment 2022, as revised in 2023).

Table 7: Currently Implemented Trigger and Action Levels for PM₁₀ Particulate Loading

2019 Trigger & Action Levels Particulate Monitoring (µg/m ³)						
Site	HOP	CLY	HEW	BSY	MTC	MEX
2019 Alert (Trigger) Levels						
0.5 hr Alert	160	135	155	155	175	165
1 hr Alert	140	115	135	140	155	145
6 hr Alert	75	65	75	80	90	90
2019 Action Levels						
0.5 hr Action	315	320	360	365	375	300
1 hr Action	270	250	285	285	325	235
6 hr Action	115	110	115	130	150	115

Note 1: As the HGC site is used as a control monitoring site no trigger levels have been set for this site.

Note 2: As part of the preliminary and minor works proposal, HOP monitoring station will need relocation to allow construction of the noise bund.

Table 8: Proposed Amended Trigger and Action Levels for PM₁₀ Particulate Loading (pending approval)

Revised 2023 (Pending) Trigger & Action Levels Particulate Monitoring (µg/m ³)						
Site	HOP	CLY	HEW	BSY	MTC	MEX
2023 Proposed Alert (Trigger) Levels						
0.5 hr Alert	155	130	165	160	190	170
1 hr Alert	135	110	135	140	170	160
6 hr Alert	75	65	80	80	95	85
2023 Proposed Action Levels						
0.5 hr Action	320	325	370	390	395	390
1 hr Action	270	255	290	300	340	295
6 hr Action	120	120	125	135	160	125

Note 1: As the HGC site is used as a control monitoring site no trigger levels have been set for this site.

Note 2: HOP compliance location will be replaced by HOP 2, through licence amendment following identification of suitable alternative location.

2.9 Rationale, Indicators, and/or Management Actions

Choice of monitoring indicators, trigger and action levels have been identified on the basis that they adequately measure on site activities and are considered representative of in-situ conditions; therefore, provision of trigger and action levels that focus on reducing the potential for impacts to air quality, social surrounds and/or human health. Management actions have been identified that directly relate to activities that are known to cause or promote the mobilisation of particulates on site from general day- to-day operations.

2.9.1 Monitoring Location Selection

Selection of the current and any future new monitoring location should give consideration to the requirements outlined in *AS/NZS 3580.1.1:2016 Methods for sampling and analysis of ambient air: Guide to siting air monitoring equipment*, including:

- The sampling inlet has a minimum clear sky angle of 120°.
- Avoiding sites affected by extraneous local emissions (e.g., adjacent to unsealed roads).
- The height of any nearby obstacle above the sampling unit should be less than or equal to half the distance between the sampling unit and nearest wall/supporting structure; and
- The sampling inlet should be located 10 m from any object with a height exceeding 2 m below the height of the sample inlet (for trees, the distance should be measured from the dripline).

2.9.2 Predicted Control Strategy

Fimiston operations utilises both forecasted and live weather condition information to manage potential fugitive particulate emissions associated with mining activities, achieved through implementation of the following control measures:

- Identifying activities which have a higher risk potential of mobilising particulates.
- Delaying or suspending activities which may contribute excessively to particulate loading as/if deemed necessary until climatic conditions become favourable; and
- Use of alternative operational areas if possible (e.g., use a different waste rock dump, or relocation of that shift to within pit (out of the wind)).

2.9.3 Reactive Component

KCGM has developed and implemented a Particulate loading trigger alarm system (warning notification) which actively monitors the ambient PM₁₀ data (continuous data collection and analysis). The system is based on pre-set criteria which enable the system to automatically activate and send trigger alarm/s which prompts a reactive (pro-active and preventative) response from KCGM. The pre-sent data refers to all previous operational records as a continually growing data base from previous reporting years.

This alarm system is primarily based on calculating current data (5min portions) against the likelihood of reaching or exceeding preformulated trigger levels (individual to each compliance monitoring location, as discussed in Section 2.8.4).

This assists KCGM to identify and manage:

- The occurrence of short-term/high concentration events during any given shift which may impact on the 30 minute, 1 hour or 6 hour averages, which form the basis for the 24 hour daily average.
- The identification of concentration levels which may result in a 24-hour average of >50 µg/m₃.
- Result in increased number of exceedance events recorded by the operation within a reporting year; or
- Result in an annual air quality standard not being met during the next:
 - Review of this document.
 - Review of tri-annual adaptive management measures; or
 - Review of the Fimiston Air Quality Impact Assessment.

2.9.4 Pro-active Alarm System

Historically, KCGM utilised a network of High-Volume Dust Samplers (Hi-Vols), primarily used to monitor fugitive dust emissions associated with blasting, these were initially located in proximity to the FOP at the BSY, CLY and HEW monitoring sites, and were only operated on days when blasting was undertaken.

From 2004-2012 these systems were upgraded and replaced with e-BAMS (Beta Attenuation Mass monitors), refer to Table 9. E-BAMs owned and maintained by KCGM are maintained (schedule quarterly calibrations) within climate-controlled enclosures or stations with heated in-lets maintained between 5 and 8°C above ambient temperature.

This technique comprises a beta source and detector separated by a filter tape. Energy is absorbed from beta particles as they pass through the particulates captured on filter, which provide an indication of the mass on the filter. The instruments in use at KCGM are Thermo FH62 continuous BAMS, which use a source of Carbon-14.

These instruments are classed as USA EPA Federal Equivalence Methods (FEM) so in accordance with Australian Standards (ASNZ 3580) are appropriate for reporting PM₁₀ for regulatory purposes (Table 10).

Table 9: Summary of Current Particulate Monitoring Equipment by Location

Summary of Monitoring Equipment by Location								
Site	HOP	CLY	HEW	BSY	MTC	HGC	MEX	CAS
Equipment currently installed	PM ₁₀ e-BAM	PM ₁₀ e-BAM	PM ₁₀ e-BAM	PM ₁₀ e-BAM	PM ₁₀ e-BAM	PM ₁₀ e-BAM	PM ₁₀ BAM, wind speed, wind direction, ambient temperature	Wind speed, wind direction

Note: Fimiston operations are considered a contributing source if both calculated arcs align with the operation; and the calculated difference between recorded daily average background and the potential exceedance location daily average are both greater than >60%.

2.10 Implementing Monitoring and Reporting

2.10.1 Website Reporting

Condition 7-5 of Ministerial Statement 782 requires KCGM to make available continuous particulate monitoring data online within 24 hours of the recording of that data. To meet this requirement a Dust Monitoring Report which is made publicly available on the KCGM website (www.superpit.com.au).

The report is updated daily at ~6 am daily, with an internal performance tracking target of having 100% of captured data available on the KCGM website within 48hours of any individual 24hour sampling record. This enables KCGM to amend any unforeseen issues, examples not limited to, regional power outages, website outages and delays due to unplanned equipment maintenance or vandalism.

If requested, recorded PM₁₀ monitoring data may be provided to DWER and/or DoH upon request.

2.10.2 Weekly Data Validation

A weekly validation process is undertaken by KCGM; this check includes:

- Checking the date.
- Reviewing the data.
- Removal of erroneous negative spikes (<-20 µg/m³).
- Removal of calibration periods; and
- Recording of errors codes.

In the event errors are identified remedial actions are implemented to rectify the error and regain representative monitoring as soon as practicable (may include mobilisation of third-party specialist).

2.10.3 Alarm Workflow Process

In the event of an alarm (Alert or Action) being activated, Open Pit Dispatch is notified via an audible and visual alarm identifying the at-risk monitoring location requiring further investigation (to be recorded in INX). If the back trajectory indicates that the Fimiston Operation has the potential to be a contributing source to the event, the Dispatch Operators, Shift Supervisor or nominated delegate will identify what activities are occurring nearby and implement additional mitigation control measures. This workflow is shown in Figure 2

2.10.4 Determining Significant Contributor

In response to an alarm indicating exceedance of the daily 24-hr average particulate threshold ($>50 \mu\text{g}/\text{m}^3$), KCGM undertakes a review of the collected PM_{10} concentrations and climatic data recorded on that day. To assess if Fimiston operations were a significant contributor the following steps are followed:

1. Determine the daily average concentration, if any, that was associated with wind directions within the arcs and use this value to calculate the ratio of the KCGM arc.
2. Based on an assessment of the winds that occurred, determine which ambient PM_{10} monitoring station is most likely to represent the “background” concentration recorded at that site (usually the HGC site).
3. Calculate the difference between the recorded exceedance daily average concentration and the background daily average concentration to determine the ratio of difference; and
4. If the ratios determined from steps 1 and 3 are both greater than $>60\%$ then KCGM is considered most likely a significant contributor.

Other contributory factors will be considered during this review include but are not limited to, the following:

- Fugitive dust caused by regional storm events which can result in significant contributions to ambient PM_{10} concentrations over a wide area. Evident if multiple monitoring locations record Action alarms around the same time on the same day from the same wind direction.
- Fugitive dust caused by an external third party (e.g., vehicle activity on unsealed roads, demolition or clearing activities outside of KCGM leases).
- Additional seasonal contributing factors such as wood smoke during winter (common heating option in Kalgoorlie); or
- When the potential source of the of the PM_{10} concentrations cannot be determined due to very low wind speeds and/or highly variable wind directions, or blocked inlet/s.

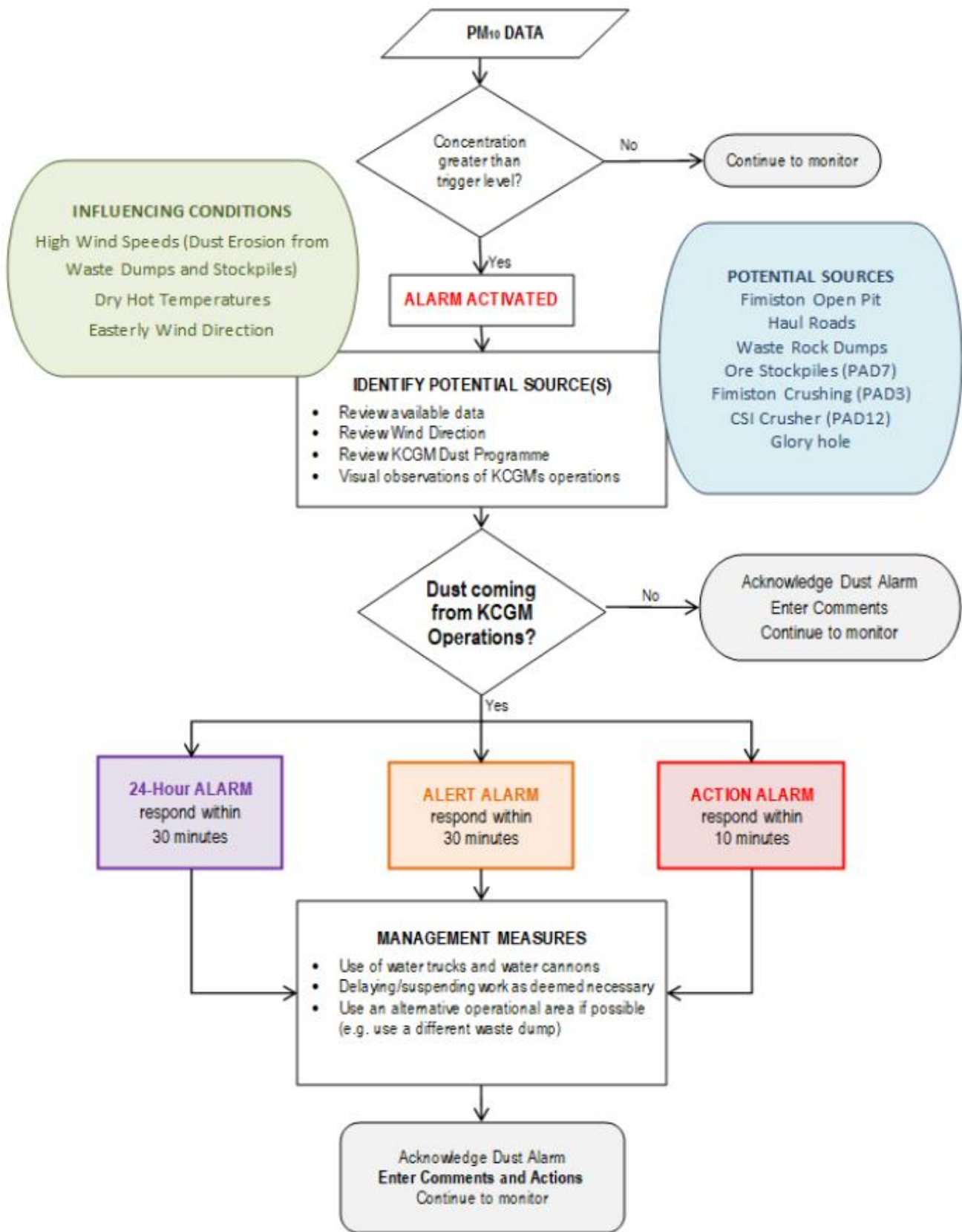


Figure 2: Particulate Alert and Alarm Process Workflow

2.10.5 Reporting a Confirmed Exceedance Event

In the event of an exceedance being confirmed and the Fimiston operations are deemed most likely a significant contributor, external reporting to regulating authorities is required. KCGM must notify DWER and Department of Health (DoH) in writing within seven days of exceedance event occurring.

The period of seven days allows for:

- The potential recovery of missing data if there have been any communication problems; and
- Data validation and analysis including time for the determination of potential source contributors and the following up with dispatch operators on dust alarm actions, taking into account shift changes and out of office periods when staff are unavailable.

The following information is included in the notification:

- A summary of the event including climatic conditions and site operations.
- Appropriate time series wind rose analysis indicating particulate concentration/s, wind speed and direction.
- Source contribution analysis; and
- Actions taken and identified mitigation measures, where appropriate.

Details of compliance against the Annual Event Target and Annual Data Availability are reported to the DWER via the Annual Compliance Assessment Report prepared for MS782.

2.10.6 Annual Environmental Report

In accordance with licencing conditions of Prescribed Premises Licence L6420/1988/14, KCGM prepares an Annual Environment Report for the Fimiston Operations that includes:

- A summary of the PM₁₀ particulate monitoring results (concentrations) for the reporting period (1 year).
- An analysis of seasonal and annual particulate loading trends to review the effectiveness of control or mitigation measures.
- Assessment of continuous improvement of air emission controls implemented through the FAQMP.

3. EMP PROVISIONS

The key objective of this FAQMP is to ensure that once approval of the FS Project is received that the impending activities of that Project will not inadvertently impact on the Fimiston operations to maintain in line with the EPA factors of Air Quality, Social Surrounds and Human Health, or supporting objectives.

To meet these objectives, management provisions have been established for identified potential impacts as summarised in Section 2.5. As environmental impacts incorporate both quantifiable and non-quantifiable impacts, outcomes-based and objective-based provisions have been included within this revised FAQMP (2023).

Early response triggers for management-based provisions are detailed in the tables below.

- Outcome-based provisions are performance-based and may be used where the part of the environment is able to be objectively measured and reported. Therefore, outcome-based provisions have been established to specify triggers and thresholds of direct impacts and to ensure the FS Project achieves acceptable environmental outcomes.
- Objective-based provisions relate to management actions and may be used where the part of the environment is not capable of being objectively measured and reported. Therefore, management-based provisions have been established to specify management actions and targets, particularly for indirect impacts that are non-quantifiable. As monitoring is undertaken and additional population data is gathered, the management targets are expected to be reviewed and quantifiable outcome-based provisions established.

3.1.1 Outcome-based Provisions

Purpose of Outcome-based provisions: EMP to comply with anticipated Ministerial Statement condition.

Table 10: Outcome-based Provisions: Air Quality

EPA factor/s and objective/s: Air Quality. To maintain air quality and minimise emissions so that environmental values are protected.

Outcome/s: To maintain air quality and minimise emissions so that environmental values are protected.

Key environmental values: Human health, flora and vegetation and terrestrial fauna.

Key impacts and risks: Impact on human health, reduction in flora and fauna presence or health.

Outcome-based				
Criteria:	Response Actions:	Monitoring	Timing / Frequency of Monitoring	Reporting
<ul style="list-style-type: none"> Trigger criteria Threshold criteria 	<ul style="list-style-type: none"> Trigger level actions Threshold contingency actions 			
<p><u>Trigger criteria</u> Daily 24Hr average for PM₁₀ concentration is exceeded more than 5 times per annum.</p> <p><u>Threshold criteria</u> Daily 24Hr average for PM₁₀ dust concentration is exceeded.</p>	<ul style="list-style-type: none"> KCGM will undertake an assessment of the ambient PM₁₀ monitoring data and review the circumstances and potential emission source. Where KCGM is identified to be a significant contributor to the event the relevant authorities (i.e., DWER and DoH) will be notified within seven days of the date of exceedance. <p>Threshold contingency actions</p> <ul style="list-style-type: none"> Report internally as an incident (INX). Investigate cause and extent of mortality and if it is likely to result in the key environmental outcome not being achieved. 	<p>Particulate monitoring is undertaken at seven monitoring locations stations (BSY, HEW, CLY, HOP MTC, MEX, and HGC).</p> <p>Utilising Thermo Beta Attenuation Monitor (e-BAM), fitted with heated PM₁₀ inlets.</p>	<p>Continuous.</p> <p>The e-BAM are configured to provide 5-minute average PM₁₀ concentrations.</p>	<p>Details of compliance against the Annual Event Target and Annual Data Availability are reported to the DWER.</p> <p>The Annual Compliance Assessment Report prepared under Ministerial Statement 782.</p> <p>Tri-annual Review of FAQMP Action and Alert Levels.</p>
<p>Trigger criteria Public Health.</p> <p>Acute and chronic non-carcinogenic Hazard Indices (HIs) and Incremental Carcinogenic Risk (ICRs) risk indicators exceeded.</p>	<ul style="list-style-type: none"> Trigger level actions. KCGM will undertake an assessment of the ambient PM₁₀ monitoring data, metals analysis and review the circumstances and potential emission source/s. If levels exceed the threshold the cause will be investigated and identified. 	<p>Particulate monitoring is undertaken at seven monitoring locations stations (BSY, HEW, CLY,</p>	<p>Continuous.</p> <p>The e-BAM are configured to provide 5-minute average PM₁₀ concentrations.</p>	<p>The Annual Environment Report (AER) to DMIRS.</p> <p>Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782).</p>

Outcome-based				
Criteria:	Response Actions:	Monitoring	Timing / Frequency of Monitoring	Reporting
<ul style="list-style-type: none"> Trigger criteria Threshold criteria 	<ul style="list-style-type: none"> Trigger level actions Threshold contingency actions 			
		HOP MTC, MEX, and HGC).		
Threshold criteria HI above 10. ICR average above 1E-05 (i.e., 0.00001).	Threshold contingency actions <ul style="list-style-type: none"> Report internally as an incident (INX). Investigate cause and extent of mortality and if it is likely to result in the key environmental outcome not being achieved. 	Utilising Thermo Beta Attenuation Monitor (e-BAM), fitted with heated PM ₁₀ inlets. 24-hour Public Interaction Line (PIL).	Continuous. The e-BAM are configured to provide 5-minute average PM ₁₀ concentrations	Event investigation DWER/EPA and DoH within seven (7) days. Tri-annual Review of FAQMP Action and Alert Levels.
Trigger criteria Vegetation condition around the mine site is declining. Threshold criteria Daily performance target for PM ₁₀ dust concentration is exceeded.	<ul style="list-style-type: none"> Review particulate, weather and weed monitoring to compare to control sites to rehabilitation. Determine whether the changes observed in the impact sites are comparable to the observations in the reference sites. Investigate potential causes for the observed decline in vegetation health which may include but are not limited to: <ul style="list-style-type: none"> Seasonal conditions (e.g., rainfall and temperatures). Effectiveness of weed control. Spatial variation (near-impact areas) versus sites located further from impact. Develop strategies to reduce particulates affecting the vegetation if it is shown to be the cause of the decline. Increase in staff training and awareness on particulate implications to vegetation health. 	Annual assessment of vegetation health, condition and weed presence. 24-hour Public Interaction Line (PIL).	Annually for the first three years. Following the development of a strong dataset over this period, the monitoring methodology and frequency will be reduced to every three years.	The Annual Environment Report (AER) to DMIRS. Includes appendix Annual Vegetation Monitoring report. Annual Compliance Assessment (CAR) Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782). Tri-annual Review of FAQMP Action and Alert Levels. The Annual Environment Report (AER) to DMIRS.
Fauna is clearly displaced from current habitat.	Threshold response: <ul style="list-style-type: none"> Report internally as an incident (INX). 	Annual assessment of fauna habitat.	Annually for the first three years. Following the development of a	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782).

Outcome-based				
Criteria:	Response Actions:	Monitoring	Timing / Frequency of Monitoring	Reporting
<ul style="list-style-type: none"> • Trigger criteria • Threshold criteria 	<ul style="list-style-type: none"> • Trigger level actions • Threshold contingency actions 			
	<ul style="list-style-type: none"> • Investigate cause and extent of mortality and if it is likely to result in the key environmental outcome not being achieved. • If necessary (deemed to be project-related), consider measures to prevent a re-occurrence of the incident and/or remediation strategies to address the impact. • Engagement with key stakeholders including DBCA, and relevant specialists where required to determine key actions. 	24-hour Public Interaction Line (PIL).	strong dataset over this period, the monitoring methodology and frequency will be reduced to every three years. Individual INX event records.	Tri-annual Review of FAQMP Action and Alert Levels. The Annual Environment Report (AER) to DMIRS. Annual reporting under the International Cyanide Code.

3.1.2 Objective-based Environmental Management Plans (EMP)

Purpose of Environmental Management Plans (EMP): EMP to comply with anticipated Ministerial Statement 782 condition.

Table 11: Objective-based Conditions for Air Quality

EPA factor/s and objective/s: Air Quality. To maintain air quality and minimise emissions so that environmental values are protected.

Objective/s: To maintain air quality and minimise emissions so that environmental values are protected.

Key environmental values: Human health, flora and vegetation and terrestrial fauna.

Key impacts and risks: Impact on human health, reduction in flora and fauna presence or health.

Objective-based				
Management targets	Management actions	Monitoring	Timing / frequency of actions	Reporting
<p><u>Condition Clause:</u> Within three months following the issuing of the notice to the decision-making authorities under section 45(7) of the <i>Environmental Protection Act 1986</i>, the proponent shall implement the Air Quality Management Plan to the requirements of the Minister for Environment on advice of the DWER and DoH.</p>				
<p>Trigger level FAQMP is not implemented.</p> <p>Threshold level N/A.</p>	<p>Management Actions</p> <ul style="list-style-type: none"> • Train staff in implementation. • Confirm FAQMP is being implemented. <p>Trigger level actions</p> <ul style="list-style-type: none"> • Report internally as an incident in accordance with internal procedures. • Review management strategies and implement changes to prevent future occurrences which may include the following: <ul style="list-style-type: none"> - Audit and review of training and staff inductions i.e., Increase in staff training and awareness to include information on legislative requirements). <p>Threshold level actions</p> <ul style="list-style-type: none"> • NA 	<p>Internal audit.</p> <p>Trigger event or Alert level event process, investigation training or programme review.</p> <p>INX event/s records of exceedances or other non-compliance.</p>	<p>Continuous.</p> <p>The e-BAM are configured to provide 5-minute average PM₁₀ concentrations.</p> <p>Daily e-BAM 24hr daily average results.</p> <p>Weekly data validation Section 2.10.2</p> <p>Quarterly e-BAM calibration.</p>	<p>Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782).</p> <p>Tri-annual Review of FAQMP Action and Alert Levels.</p> <p>The Annual Environment Report (AER) to DMIRS.</p>

Objective-based				
Management targets	Management actions	Monitoring	Timing / frequency of actions	Reporting
<u>Condition Clause:</u> The proponent shall review the Air Quality Management Plan referred to in condition XX-1 as required by the EPA and shall amend the Plan to the requirements of the Minister for Environment on advice of the DWER and the DoH.				
Trigger level FAQMP is not reviewed. Threshold level N/A.	Management Actions <ul style="list-style-type: none"> Confirm FAQMP is reviewed as required. Trigger level actions <ul style="list-style-type: none"> Report internally as an incident in accordance with internal procedures. Review management strategies and implement changes to prevent future occurrences. Threshold level actions <ul style="list-style-type: none"> N/A 	Internal audit Internal annual scheduled report delivery. INX event/s records.	Annual auditing and documentation of any contingency actions. INX event/s records. As required, initiated through Project/s.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782) and DoH.
<u>Condition Clause:</u> The proponent shall implement the amended Air Quality Management Plan required by condition XX-2.				
<u>Trigger level</u> FAQMP is not implemented.	Management Actions <ul style="list-style-type: none"> Train staff in implementation. Confirm FAQMP is being implemented. 	Internal audit.	Annual auditing and documentation of any contingency actions.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782) and DoH.
<u>Threshold level</u>	Trigger level actions			
N/A	<ul style="list-style-type: none"> Report internally as an incident in accordance with internal procedures. Review management strategies and implement changes to prevent future occurrences which may include the following: <ul style="list-style-type: none"> Audit and review of training and staff inductions i.e. Increase in staff training and awareness to include information on legislative requirements). Threshold level actions NA 		Individual event-based INX event/s records.	
<u>Condition Clause:</u> The proponent shall only detonate explosives at surface level on the premises when wind directions favour the carriage of dust away from the residential areas of Kalgoorlie-Boulder, unless undertaken in accordance with regulation 8.28 (4) of the Mines Safety and Inspection Regulations 1995.				

Objective-based				
Management targets	Management actions	Monitoring	Timing / frequency of actions	Reporting
Trigger level Wind Direction Dependent blasts are not undertaken as per the requirements of the KCGM Dust Management Plan. Threshold level	Management Actions Blasts are managed in accordance with the wind speed, direction, strength and variability as set out in Table 7 of this FAQMP. Trigger level actions <ul style="list-style-type: none"> Report internally as an incident in accordance with internal procedures. 	Continuous PM10 dust monitoring is undertaken at seven monitoring locations stations (BSY, HEW, CLY, HOP MTC, MEX and HGC), using Thermo Beta Attenuation Monitor	Continuous. The e-BAM are configured to provide 5-minute average PM10 concentrations. Individual public complaint investigation.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782), and DoH. The Annual Environment Report (AER) to DMIRS.
Ambient dust present over town	<ul style="list-style-type: none"> Review management strategies and implement changes to prevent future occurrences. Threshold level actions <ul style="list-style-type: none"> Community notification on the webpage. 	(BAM) samplers, fitted with PM ₁₀ inlets. Project initiated impact assessment. Review of internal procedure/work instruction. 24-hour Public Interaction Line (PIL).	Individual event-based INX event/s records. Updated within 48 hours, continuous cycle.	Tri-annual Review of FAQMP Action and Alert Levels.
Condition Clause: The proponent shall make available continuous dust monitoring data on their website within 24 hrs of the recording of that data.				
Trigger level Dust monitoring data is not on the website. Threshold level N/A	Management Actions <ul style="list-style-type: none"> Dust monitoring data is uploaded to the website within 48 hrs of the data being recorded. Trigger level actions <ul style="list-style-type: none"> Report internally as an incident in accordance with internal procedures. Review management strategies and implement changes to prevent future occurrences. 	Internal audit Internal IT maintenance programme/schedule. Review of internal procedure/work instruction.	Updated within 48 hours, continuous cycle. Individual public complaint investigation. Individual event-based INX event/s records.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS782), and DoH. The Annual Environment Report (AER) to DMIRS.
Condition Clause: The proponent shall keep and make publicly available a register of complaints regarding air emissions; investigate those complaints; and keep a record of the investigations and actions taken with regard to the complaint.				
Trigger level Complaints record not kept or not up to date.	Management Actions <ul style="list-style-type: none"> Register of complaints updated and made publicly available. 	24-hour Public Interaction Line (PIL).	Individual public complaint investigation.	Annual Compliance Assessment (CAR)

Objective-based				
Management targets	Management actions	Monitoring	Timing / frequency of actions	Reporting
Complaints record not publicly available. Threshold level N/A	Trigger level actions <ul style="list-style-type: none"> • Report internally as an incident in accordance with internal procedures. • Review management strategies and implement changes to prevent future occurrences. 	Community Team receive a complaint.	Individual event-based INX event/s records. Individual event discussions with supervisors, Health and Hygiene Team. Review of internal procedure/work instruction.	Report to DWER/EPA (MS782), and DoH. The Annual Environment Report (AER) to DMIRS.

4. CONTINUOUS IMPROVEMENT

This FAQMP has proven to be an effective tool for the holistic management particulate emissions within a framework of regular review (tri-annual report) and continuous improvement (projects or KCGM identified opportunities). In some sub supporting internal KCGM documents this may also be termed as adaptive management. In both cases this refers to the ability to be flexible and adapt to a changing environment.

Continuous Improvement includes:

- Review of air quality monitoring data and trigger levels for dust alarms every three years (tri-annual review of trigger and action levels) or following any high dust event.
- Review of air quality management practices following an increase/repeated complaints from the same urban geographical location/area.
- Review and implementation of amended particulate mitigation practices; or
- Revision and approval of an amended Regulation 17 exemption.

4.1 Adaptive Management and Review of the FAQMP

KCGM operations recognises the dynamic nature of both natural ecosystems, man-made work areas and changing legislative environment and supports adaptive management under this FAQMP.

Adaptive management involves:

- Monitoring and evaluation against management targets (including early response triggers) and environmental criteria (action thresholds).
- Implementing mitigation measures, reviewing, and assessing new technologies; and
- Systematically adapting management of change to assist maintaining the under pinning environmental factor objectives of the EP Act.

Any changes to a Project will instigate a review and consideration of risks, mitigation controls and management actions. Assumptions and uncertainties will be evaluated against collected monitoring data on a recurrent basis in a process of continual improvement and establishing early response indicators/criteria. Any review and consideration of management actions or additions to this plan made in relation to adaptive management will be submitted to DWER for formal review.

Examples of adaptive management throughout operations include:

- The introduction of a different / alternative monitoring initiative.
- The introduction of new dust management technology; and
- The identification of more effective trigger criteria or early response triggers in light of more comprehensive monitoring information.
- Changes to regulatory or national standards triggering a programme review; or
- Early identification of new proposal/projects which may impact on the site's emission profile or compliance to Regulation 17 exemption in a manner which could stall proposal assessment.
- Tri-annual Review Recommendations (2023).

The continued implementation of KCGM's existing particulate management measures is expected to facilitate the successful management of fugitive emissions from the proposed FS Project.

Recommendations for further consideration have also been presented, within the context of continuous improvement.

Table 12: Summary of Considerations for Continuous Improvement

Summary of Monitoring Equipment By Location		
Emission Source	Current Practice	Strategies for Consideration
Physical Mining Activities		
Blasting	Use of KCGM Dust Management Programme (visual interface) that includes location of blast, acceptable wind arc and review of wind data recorded in the last 30 minutes for blasting to proceed.	No further recommendations.
Bulldozing	Suspension of work in a particular area as deemed necessary based on visual inspections, dust alarms or prevailing wind conditions.	Use predictive forecast to plan and schedule bulldozing of material. Include minimising travel speed and distance travelled where possible.
Conveyors	Conveyors are open but have belt wash stations and belt scrapers. Material fallout is regularly cleaned.	No further recommendations
Drilling	No cyclones or fabric filters. Water sprays are used when needed.	Consider use of cyclones or fabric filters.
Haul roads	Watering when needed. The need for watering is also identified as part of the reactive strategy. The water used onsite is hyper saline enabling significantly better dust control.	Surface improvements on high-risk areas. The high-risk areas may be determined based on spatial proximity to receptors or areas with high traffic. Scheduled maintenance of haul roads should be documented within onsite management systems.
Loading and unloading of overburden	Standard practice includes watering down the face area before material handling.	Integrate standard practices including minimising drop height, irrigating benches and pre-soaking blasted overburden and restrictions around handling of more dusty ore (e.g., oxide ore) into FAQMP and/or operational procedure for excavators etc. Use predictive forecast to identify the need for additional dust controls.
Loading and unloading of ROM	Reactive strategy is used to implement additional controls such as water carts along transport routes. ROM material itself not watered.	Use predictive forecast to identify the need for additional controls such as watering.
Screening and crushing	Water sprays utilised throughout crushing circuit.	No further recommendations.
Wind erosion from open areas	Water sprays are used to suppress dust when needed – identified based on the reactive strategy.	Investigate the use of chemical suppressant in open areas particularly prior to high-risk periods (i.e., ahead of Spring and Summer periods when higher proportion of easterlies occur) or before periods of high winds (>6.3 m/s). Investigate the use of wind fences for periods with high dust transportation risk. For example, during realignment and construction of NB.

Summary of Monitoring Equipment By Location		
Emission Source	Current Practice	Strategies for Consideration
Wind erosion from stockpiles	Water sprays are used to suppress dust when needed – identified based on the reactive strategy.	No further recommendations
Considerations for Processes		
Predictive	Weather forecast systems are used to control fugitive dust emissions from blasting and earthmoving activities. Controls implemented include delaying/suspending work and use of alternate areas if possible.	Output from forecast system be used to apply additional dust controls ahead of an event. Examples include cleaning of sealed roads, applying dust suppressants on haul routes. Document control measures by source within the FAQMP and/or operational procedures.
Reactive	Real-time monitoring data is used to set “Alert” and “Action” alarms. Back- trajectory module is used to identify potential sources and implementation of dust controls including use of water carts, suspend/delay operations, use alternative operational area, contacting appropriate personnel if dust is from crushing operations and restricting haulage speeds.	Document dust control options for each source within the FAQMP and/or operational procedures.

5. STAKEHOLDER CONSULTATION

The relevant stakeholders for this FAQMP are:

- City of Kalgoorlie-Boulder (CKB)
- Community Reference Group (CRG)
- Department of Energy, Mines, Industry Regulation and Safety (DEMIRS)
- Department of Water and Environmental Regulation (DWER)
- EPA Services
- Goldfields Esperance Development Corporation (GEDC)
- Kalgoorlie-Boulder Chamber of Commerce and Industry (KBCCI)
- Kalgoorlie-Boulder Community
- Marlinyu Ghoorlie Native Title Claimant Group (MG)

The results from the stakeholder consultation process with local groups and governing authorities are outlined in Table 13:

Table 13: Results from Stakeholder Consultation

Stakeholder	Consultation conducted	Response\outcomes\comments
City of Kalgoorlie-Boulder (CKB)	Meeting with City of Kalgoorlie-Boulder and Goldfields Esperance Development Commission held 30 March 2022 to discuss relocation of the Super Pit Lookout.	Considerations for relocation of the Super Pit Lookout were discussed, including accessibility requirements, access, and location. KCGM Operations' proximity to Boulder Camp was also discussed, and potential dust from traffic movement.
Community Reference Group (CRG)	KCGM Operations General Manager provided an overview of the Fimiston South Revised Proposal to the CRG members on the 21 April 2022, including details on KCGM's current operations and future plans in the Goldfields region. Several CRG meetings have occurred post submission of the Revised Proposal with opportunities for CRG members to provide feedback to KCGM staff regarding their operations.	CRG members were very interested in the relocation of the Super Pit Lookout, and community engagement activities undertaken by KCGM for the Revised Proposal.
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS)	KCGM General Manager hosted the DMIRS Executive Leadership Group at the Super Pit Lookout during March 2023, providing the group with an overview of the Fimiston South Revised Proposal and associated early and preliminary works.	KCGM to continue engagement with DMIRS as the Revised Proposal progresses.
Department of Water and Environmental Regulation (DWER)	Consultation on the triennial review of the FAQMP occurred during 2023. KCGM proposed that the 3-yearly review of the FAQMP, due January 2023, be extended to	Following consultation between EPA Services and the DWER, KCGM received advice from the EPA Services that "EPA Services has sought advice from the

Stakeholder	Consultation conducted	Response\outcomes\comments
	<p>enable the review to be aligned with the EPA assessment of the Fimiston South Revised Proposal. Several emails relating to dust emissions were received by KCGM during 2023 from the Pollution Watch Branch of DWER. Questions related to dust complaints received in the previous 12 months and operational changes that may have contributed to an increase in dust emissions.</p>	<p>compliance branch and consider that the next plan can be submitted as part of the revised proposal, rather than in January 2023. Responses were provided and DWER were satisfied with the detailed responses. DWER Pollution Watch Branch were happy to hear that improvements are continuously being made onsite and DWER will investigate all possible sources of dust emissions, taking into account the drier conditions and erosion.</p>
EPA Services	<p>Consultation on the triennial review of the FAQMP occurred during 2022/23. KCGM proposed that the 3-yearly review of the FAQMP, due January 2023, be extended to enable the review to be aligned with the EPA assessment of the Fimiston South Revised Proposal.</p>	<p>Following consultation between EPA Services and the DWER, KCGM received advice from the EPA Services in November 2022 confirming that the triennial review of the FAQMP can be submitted as part of the Fimiston South Revised Proposal. A revised FAQMP has been submitted for assessment.</p>
Goldfields Esperance Development Corporation (GEDC)	<p>Meeting with City of Kalgoorlie-Boulder and Goldfields Esperance Development Commission held 30 March 2022 to discuss relocation of the Super Pit Lookout.</p>	<p>Considerations for relocation of the Super Pit Lookout were discussed, including accessibility requirements, access, and location. KCGM Operations' proximity to Boulder Camp was also discussed, and potential dust from traffic movement.</p>
Kalgoorlie-Boulder Chamber of Commerce and Industry (KBCCI)	<p>The General Manager of Growth presented at the 22nd Annual KBCCI "What's Down the Track Forum & Exhibition" held on 16 November 2023 in Kalgoorlie.</p>	<p>The primary objective of the presentation was to provide a forecast into the drivers that support the growth and local economic opportunities that exist with respect to the Fimiston South Revised Proposal.</p>
Kalgoorlie-Boulder Community	<p>Local Voices Pulse Survey conducted with >200 community members in September 2022 and March 2023 - exploring KCGM's operational impacts and benefits, and the company's relationship with the Kalgoorlie-Boulder community.</p> <p>Community Information session regarding the Fimiston South Proposal (held 5 April 2022) and the Noise Bund Realignment (held 17 October 2023) hosted at the Boulder Bowls Club led by KCGM Operations' General Manager. These sessions provided an overview of the Revised Proposal</p>	<p>Survey results released publicly, with a briefing provided to KCGM Operations site leaders and employees. KCGM to continue using Local Voices to understand and respond to community sentiment.</p> <p>Community concerns raised about air quality and the impact of dust from the Fimiston Open Pit on near mine residents, particularly those in the South Boulder area, and KCGM's environmental monitoring and management processes. Short periods of closure of the Goldfields Highway during the first 12 months</p>

Stakeholder	Consultation conducted	Response\outcomes\comments
	<p>stages, anticipated impacts, and opportunities for the Kalgoorlie-Boulder community resulting from the Fimiston South Project. Session was attended by local residents and businesses in the Boulder area.</p> <p>KCGM has a 24-hour Public Interaction Line (PIL) (established in 1993) which the community can use to speak directly with KCGM representatives on specific matters they wish to discuss. It is an important avenue for capturing individual and community-based issues which may require additional follow up and action/s. The PIL is promoted regularly in print and radio advertising, radio interviews, online mediums (website) and printed materials (information sheets).</p>	<p>of the Fimiston South Project for blast activities was also raised, with details of KCGM's plans to mitigate impacts on businesses and residents shared.</p> <p>Community and stakeholder feedback on environmental aspects which are received by KCGM are recorded and where appropriate a response is provided. Recorded complaints are tabled in the KCGM Annual Compliance Assessment Reports and the Annual Environmental Report.</p>
Marlinyu Ghoorlie Native Title Claimant Group (MG)	<p>Extensive engagement and consultation have been undertaken with the Native Title Claimant Group, Marlinyu Ghoorlie, both pre and post submission of the Fimiston South Revised Proposal.</p> <p>KCGM hosted a meet and greet with Northern Star senior leaders and MG Directors to gain a greater understanding of the FS Project footprint.</p> <p>Several heritage surveys, including ethnographic and ethnobotanical surveys have been conducted with MG across KCGM's operations.</p>	<p>Feedback received related to KCGM Operations current mining activities and future plans. MG asked about KCGM's Aboriginal participation and procurement plans, as well as heritage management and survey processes. No specific feedback or concerns relating to air quality have been raised by MG during the various consultations to date.</p> <p>Refer to KCGM ACHMP (Appendix C) of the Fimiston South Revised Proposal for further details.</p>

KCGM to maintain a 24-hour Public Interaction Line (PIL) as a point of contact, this is managed by the Community Team and includes maintaining records of all comments (regardless of frivolously or founded nature). All comments received during the assessment of the FS Project proposal public comment phase or this FAQMP document, will be considered and changes made as/if required.

5.1 Complaint Management

KCGM has a 24-hour Public Interaction Line (PIL) (established in 1993) which the community can utilise to speak directly with KCGM representatives regarding the specific matters they wish to discuss. It is an important and vital avenue for capturing both individual and community-based issues which may require additional follow up and action/s. The PIL is promoted regularly through print, radio advertising, radio interviews, online mediums (website) and printed materials (information sheets).

The PIL is supported by an electronic database, which enables the categorisation of queries and the automation of subsequent action allocation and follow-up. The database is also used to record stakeholder

communications and engagement which enables data to be analysed and tracked with reference to areas of community concern.

During business hours, PIL enquiries are referred directly to the relevant department supervisor for appropriate action; whilst incoming calls received outside office business hours may be forwarded to the shift supervisor for immediate action or where appropriate will be followed up the next working day.

Once an internal review has been completed, the caller is informed of actions taken or outcomes of their enquiry or complaint. KCGM responds to all people who contact the PIL and provide contact details either by phone, in writing or meetings. Historically, complaints connected directly to particulate loading are low, with an average of four per annum between 2018 and 2021.

6. CHANGES TO THE EMP

Complexity of changes	Minor revisions <input type="checkbox"/>	Moderate revisions <input checked="" type="checkbox"/>	Major revisions <input type="checkbox"/>
Number of Key Environmental Factors	One <input type="checkbox"/>	2-3 <input checked="" type="checkbox"/>	> 3 <input type="checkbox"/>
Date revision submitted to EPA: 23/02/2024			
Proponent's operational requirement timeframe for approval of revision	< One Month <input checked="" type="checkbox"/>	< Six Months <input type="checkbox"/>	> Six Months <input type="checkbox"/> None <input type="checkbox"/>
Reason for Timeframe:			

Itemno.	EMP section no.	EMP page no.	Summary of change	Reason for change
1	General	All	Overall framework amended	Comply with 'Instructions on how to prepare Environmental Protection Act 1986 - Part IV Environmental Management Plans, (version 2.0; 2021)'
2		iv	Document History/Version control	More suitable to be at the front of the document.
3	Section 1	1	Present background of the project	
4		1	Rational for development of the document	To be developed in accordance with the EPA MP guidelines.
5	Section 2	4	Updates to KEF to include Social Surroundings and Human Health (Section 2.3)	Updated to accurately reflect KEF potentially impacted by FS Project
6		NA	Removal of 'History of the Fimiston AQMP previously Section 2.2)	Removed to more closely align with EPA guidelines
7		8	Inclusion of the discussion of Potential impacts (Section 2.5)	Included to align with EPA guidelines
8		10	Inclusion of Rationale and Approach (Section 2.6)	Section and sub-section included to describe the rationale for the management actions against the potential impacts on the environment as per EPA EMP template and guideline.

Itemno.	EMP section no.	EMP page no.	Summary of change	Reason for change
9		16	Inclusion of the Fimiston Environmental Management Programmes (Section 2.7)	Section and sub-section included to describe the rationale for the management actions against the potential impacts on the environment as per EPA EMP template and guideline.
10		18	Inclusion of Particulate Monitoring Programmes (Section 2.8)	Section and sub-section included to describe the rationale for the management actions against the potential impacts on the environment as per EPA EMP template and guideline.
11		22	Inclusion of Rationale, Indicators, and/or Management Actions (Section 2.9)	Section and sub-section included to describe rationale of the management actions against the potential impacts on the environment as per EPA EMP template and guideline.
12		24	Updates to the monitoring methodology to the 'Implementing Monitoring and Reporting (Section 2.10)	Section and sub-section included to describe rationale of the management actions against the potential impacts on the environment as per EPA EMP template and guideline.
13	Section 3	28	Updates to EMP Provisions	Amended to align with the outcome based, and the objective based EMP requirements as per the EPA EMP template and guideline.
14	Section 4	36	Provided strategies for Continuous Improvement.	Updated to identify adaptive management action for consideration, as per the EPA EMP template and guideline.
15	Section 5	39	Included reference to the hour Public Interaction Line (PIL)	Updated to more accurately reflect KCGM operations and responses.
16	Section 6	40	Inclusion of table of change	Included to align with the EPA EMP guidelines

7. REFERENCES

Coffey 1999 National Pollutants Inventory Kalgoorlie Mining Trial Aggregated Emission Study

EPA 2016, Environmental Factor Guideline: Human Health, Environmental Protection Authority

EPA 2020, Environmental Factor Guideline: Air Quality, Environmental Protection Authority, April 2020, version 2.0

EPA 2021 Instructions on how to prepare *Environmental Protection Act 1986* – Part IV Environmental Management Plans, version 2.0.

EPA 2023 Environmental Factor Guideline, Social Surroundings, Environmental Protection Authority November 2023 version 3.0

EPA 2023 Statement of Environmental Principles, Factors and Objectives and aims of EIA, Environmental Protection Authority, March 2023, version 5.0.

Phoenix 2019 Targeted flora and SRE Survey for the FIM IIE Project

RAMBOLL (2018) Review of PM10 Monitoring Data and Assessment of the Potential Particulate Impacts of Proposed Project Changes at the Fimiston Operations

RAMBOLL (2022, revised in 2023) Appendix H Fimiston South Project: Air Quality Impact Assessment

RAMBOLL (2022a) Appendix I Fimiston South Project Screening Health Risk Assessment