INTERNATIONAL CYANIDE MANAGEMENT CODE
GOLD MINING

Kalgoorlie Consolidated Gold Mines

KCGM Gold Operations Recertification Audit – Summary Audit Findings Report

February 2019
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SUMMARY AUDIT REPORT

Name of Mine
Kalgoorlie Consolidated Gold Mines (Fimiston and Gidji)

Name of Mine Owner
Kalgoorlie Consolidated Gold Mines Pty Ltd, a joint venture project owned by Newmont Australia Ltd (50%) and Barrick Gold corporation (50%).

Name of Mine Operator
Kalgoorlie Consolidated Gold Mines (KCGM) Pty Ltd

Name of Responsible Manager
Mathew Leske, Processing Manager

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LOCATION DETAIL AND DESCRIPTION OF OPERATION
Kalgoorlie Consolidated Gold Mines (KCGM) manages the Fimiston Open Pit (the Super Pit), Mt Charlotte Underground Mine, Fimiston Mill and Gidji process facility for Newmont Australia Limited and Barrick Gold of Australia Ltd who both own a 50% stake in KCGM. Cyanide is used at the Fimiston and Gidji sites.

The Fimiston Mill is located immediately east of the City of Kalgoorlie-Boulder and comprises two parallel circuits for processing refractory sulphide ore from the Fimiston open pit and ore from the Mt Charlotte underground mine. Ore produced by KCGM is treated through crushing, grinding, flotation and carbon-in-leach circuits. In the flotation circuit, the gold bearing refractory sulphide is separated and referred to as concentrate. The concentrate is de-slimed and slimes are leached to the Fimiston mill and the coarse fraction separated into two streams.
• One stream is washed, filtered and transferred to the Gidji Facility, located 17km north of Kalgoorlie-Boulder, where the concentrate is re-pulped and processed by Ultrafine Grinding Mills followed by conventional carbon in pulp (CIP) circuit, where gold is absorbed onto activated carbon. The loaded carbon is the transported to the Fimiston Mill elution circuit for stripping, electrowinning and smelting.

• The other stream is transferred to the ultra-fine grinding mill at Fimiston for professing via the carbon in leach circuit.

The Fimiston Mill also comprises elution, electrowinning circuits and facilities for smelting, pouring and the production of gold bullion.

A cyanide destruction plant is used at Gidji to treat tailings dam return and seepage water prior to re-use as process water at Gidji and Fimiston.

Tailings produced at the Fimiston Mill are discharged into the Fimiston and Kaltails paddock impoundment TSF’s. The tailings generated at the Gidji Facility is discharged to paddock impoundment TSF’s located at Gidji.

Australian Gold Reagents (AGR) delivers liquid sodium cyanide to both the Gidji and Fimiston sites.

**AUDITOR’S FINDING**

This operation is:

☑ in full compliance

☐ in substantial compliance

☐ not in compliance

with the International Cyanide Management Code Gold Mine Operations Verification Protocol. This operation has not experienced compliance problems during the previous three-year audit cycle.

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Kalgoorlie Consolidated Gold Mine
Name of Mine
Auditor
Date

22 February 2019
Signature of Lead
Audit Team Leader and Technical Specialist

John Miragliotta (john.miragliotta@sustainability.net.au)

22 February 2019

Names and Signatures of Other Auditors

Chris Coutinho (Auditor)

22 February 2019

Date(s) of Audit

Inclusive of the period from 1-3 August 2018.

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.
PRINCIPLE 1 – PRODUCTION

Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

Standard of Practice 1.1

Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

☑ in full compliance with

The operation is ☐ in substantial compliance with ☐ not in compliance with Standard of Practice 1.1

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

KCGM purchases its cyanide reagent from AGR under a Sodium Cyanide Solution Supply Agreement (Agreement effective from 1 July 2015 until 30 June 2020). The agreement states that AGR is a signatory to the ICMI Code for the production and transport of cyanide. Cyanide purchased by KCGM is manufactured at a facility certified as complying with the Code. AGR has its production facilities at Kwinana, Western Australia. The facility was recertified on 03 August 2017.
PRINCIPLE 2 – TRANSPORTATION

Protect communities and the environment during cyanide transport.

Standard of Practice 2.1

Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 2.1

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

KCGM purchases its cyanide reagent from AGR under an Agreement. The Agreement notes that AGR is responsible for the transportation of the sodium cyanide solution to each site (along AGR’s West Australian Supply Chain) and subsequent unloading in accordance with the requirements of the ICMC and Australian Code for the Transportation and Storage of Dangerous Goods by Road and Rail. The agreement defines the supplier’s relationship with the purchaser. The agreement specifies that designated responsibilities extend to any subcontractors used by the producer, distributor, transporter or the operation for transportation-related activities. AGR’s West Australian Supply Chain was re-certified under the Code on 26 September 2016.

Standard of Practice 2.2

Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 2.2

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:
Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 2.2. Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

KCGM purchases its cyanide reagent from AGR under an Agreement. The Agreement requires AGR implement and comply with the ICMI’s requirements for the production and transportation of sodium cyanide, including but not limited to carrying out certification audits. The agreement defines the delivery requirements for the supply of cyanide to KCGM. The operation maintains delivery doockets identifying all elements of the supply chain. The delivery doockets conform to the elements of AGR’s West Australian Supply Chain. AGR’s West Australian Supply Chain was re-certified under the Code on 26 September 2016.
PRINCIPLE 3 – HANDLING AND STORAGE

Protect workers and the environment during cyanide handling and storage.

Standard of Practice 3.1

Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 3.1

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 3.1. Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

KCGM cyanide unloading storage and mixing facilities have been in place for 15 years. They were designed and constructed in accordance with sound engineering practices, industry standards and statutory requirements. Recent temporary tanks at Fimiston have also been demonstrated as having been designed and constructed in accordance with sound engineering practices, industry standards and statutory requirements.

The design has ensured that

- The facilities are located away from people and water bodies;
- Access is controlled via physical barrier that only allow authorised access;
- Measurement via level indicators and engineering control via the control system to prevent over filling;
- Concrete and or HDPE liners to prevent seepage into the subsurface;
- Secondary containment that provides a competent barrier to leakage and has sufficient capacity for potential events; and,
- Separation from incompatible materials.

In the case of a loss of primary containment there is secondary containment to ensure that the consequence of the spill is mitigated.
The cyanide unloading areas are designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck. The cyanide unloading areas are concrete, bunded and the fall of the surface is towards containment sumps, the contents of which are pumped to the process containment areas, in particular the CIL tanks. The unloading area provides sufficient catchment area to contain drips and spills that may occur during cyanide unloading.

Liquid cyanide is stored with adequate ventilation to prevent the build-up of hydrogen cyanide gas. The liquid cyanide storage tanks are enclosed tanks, vented via goose neck pipes and located in open areas exposed to the atmosphere to prevent localised build-up of hydrogen cyanide gas.
Standard of Practice 3.2

Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 3.2

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 3.2 requiring it to operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The facilities are subject to continual inspection and maintained to ensure that their integrity has been maintained. This includes internal 12 hourly inspections scheduled and controlled by a computer based preventative maintenance system. The maintenance system also drives regular calibrations and detailed inspection. In addition to this, there is an annual facility inspection by AGR.

Delivery is bulk liquid form. There is no handling of solid cyanide and no management of containers. Delivery and unloading responsibility is shared between the supplier AGR and KCGM. Each have a documented system that has been developed so that they align to each other and contribute to successful safe delivery. AGRs controls are articulated within the Vehicle Operator Handbook for Sodium Cyanide Solution. KCGMs controls are articulated within cyanide unloading procedures and reagent unloading checklists for both Gidji and Fimiston Operations.

Unloading of liquid cyanide is controlled via the use of unloading procedures which prescribe the requirements for safe unloading of liquid cyanide including

- the operation of valves and couplings;
- the requirement for the use of personnel protective equipment; and
- the requirement for a second individual observer from a safe area (observation shelter).

Evidence of compliance with the procedure is evident in the use of unloading checklists that are completed by both the KCGM observer and the AGR truck driver.

Kalgoorlie Consolidated Gold Mine
Name of Mine
Auditor

Date

22 February 2019
Signature of Lead
PRINCIPLE 4 – OPERATIONS

Manage cyanide process solutions and waste streams to protect human health and the environment.

Standard of Practice 4.1

Implement management and operating systems designed to protect human health and the environment utilizing contingency planning and inspection and preventive maintenance procedures.

☐ in full compliance with

☐ not in compliance with

☐ in substantial compliance with

The operation is

Standard of Practice 4.1

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures. KCGM continues to implement a written management system including operating plans and procedures for both Fimiston and Gidji cyanide facilities including unloading and storage facilities, leach plants, tailings impoundments, and cyanide destruct systems. The operation is being operated in compliance with the statutory obligations as stated in licenses and tenement conditions and maintains plans that identify the facility design assumptions and standards. The Hypersaline Tailings Management Plan is implemented at the Fimiston operations and prescribes the operating parameters required for compliance with the Code. The operations have plans and procedures for cyanide management including specific measures for compliance with the Code, inspections and preventative maintenance. KCGM has implemented a Management of Change process to identify when changes to site processes, equipment or practices may impact KCGM’s operations, plant or equipment, people, and the environment. The Management of Change process scope is sufficient to assess changes that may impact compliance with the Code or that may increase the risk of cyanide release. The operation has developed a range of contingency procedures, plans and manuals to address situations when there is an upset in a facility’s water balance, when inspections and monitoring identify a deviation from design or standard operating procedures and/or when a temporary closure or cessation of operations may be necessary. KCGM undertakes regular inspections and verifications of cyanide facilities at appropriate frequencies sufficient to assure and document that they are functioning within design parameters. The operation’s inspections of cyanide facilities include:

Kalgoorlie Consolidated Gold Mine

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• Cyanide process and destruct tank containment integrity, signs of corrosion, leak detection and condition and capacity of secondary containment;

• Pipelines containing cyanide solutions for evidence of leaks, periodical corrosion and integrity testing;

• Pumps within cyanide facilities for evidence of leaks, maintenance of pump capacity and reliability, and;

• Tailings facilities, ponds impoundments inspected against freeboard requirements, leak detection systems, integrity of containments, maintenance of water balance, evidence of leaks and overflows.

Inspection records that include names of inspector, date of inspection, deficiencies, and actions taken are retained in a combination of hard copy and electronically for area inspections, programmed preventative maintenance inspections and external integrity tests. Scheduled monthly area inspections, preventative maintenance inspections, scheduled cyanide facility integrity tests and daily shift inspections are implemented and actions are documented at Gidji and Fimiston and include specific checks of devices and equipment to ensure appropriate functionality.

The operations at Fimiston and Gidji have necessary emergency power resources, including alternate power supplies, to operate pumps and other equipment to prevent unintentional releases and exposures in the event its primary source of power is interrupted.

**Standard of Practice 4.2**

Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

☐ in full compliance with

☐ in substantial compliance with Standard of Practice 4.2

☐ not in compliance with
Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.2: Introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings. KCGM has a program to determine appropriate cyanide addition rates in the processing plants at Gidji and Fimiston and evaluate and adjust addition rates as necessary when ore types and processing practices change cyanide requirements. The operations undertake ongoing evaluation of cyanide addition control options and continue to analyse test results for the optimisation of cyanide. Both Gidji and Fimiston have effectively implemented the strategies described in operational plans to control cyanide additions.

Standard of Practice 4.3

Implement a comprehensive water management program to protect against unintentional releases.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 4.3

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases. KCGM has developed and implemented a comprehensive water balance model that considers the facility design, operating plans/strategies, climatic conditions and physical geographic conditions. The water balance is implemented through procedures and manuals that include inspection and maintenance activities so as to prevent overtopping and unplanned discharges to the environment. The operational water balance considers measured precipitation from nearby weather stations and revised its water balance inputs to reflect measured data.

Standard of Practice 4.4

Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 4.4

☐ not in compliance with
Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.4: requiring the operation to implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions. Since the 5 July 2016 the Fimiston operation has implemented alternative mechanisms for the prevention of impacts to wildlife on tailings dams where WAD cyanide exceeds 50 mg/L. All tailings dams are fenced to prevent access by livestock. The Fimiston operation implements a hypersaline tailings management plan that is consistent with the recommendations of a peer reviewed scientific study. The operation has been operating in full compliance with its hypersaline tailings management plan.

Prior to the 5 July the Fimiston operation maintained all surface waters <50 mg/L WAD CN. The Gidji operations tailings ponds and other associated surface waters contain WAD CN concentration >50 mg/L and are both fenced and netted to prevent access by livestock and wildlife.

The Gidji and Fimiston operations undertake regular inspections and wildlife observations that demonstrate that the management of cyanide containing surface water ponds and impoundments is effective in preventing significant wildlife mortality.

There is no heap leach at KCGM’s operations.

**Standard of Practice 4.5**

Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

- ☑ in full compliance with
- □ in substantial compliance with
- □ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

KCGM is in full compliance with Standard of Practice 4.5 requiring the operation implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water. KCGM does not have a direct or indirect discharge to surface water at Fimiston or Gidji. The nearest surface water body to Fimiston is Hannans Lake, an ephemeral salt lake located approximately 6 km to the south. The lake catchment is about 18 km long and between 8 km and 13 km wide. The nearest water body to Gidji is the King of the West Lake; an ephemeral salt lake located approximately 10 km to the north-east.
Standard of Practice 4.6

Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.

☑ in full compliance with

☐ in substantial compliance with ☐ not in compliance with

Standard of Practice 4.6

Summarize the basis for this Finding/Deficiencies Identified:

KCGM is in full compliance with Standard of Practice 4.6 requiring the operation to Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water. The operation implements seepage and groundwater management plans to protect beneficial users (mining users) of groundwater. WAD CN concentrations in groundwater at compliance points or down gradient of the Fimiston and Gidji tailings facilities are maintained below KCGM's internal targets. There is no established numeric standard or regulatory limit for WAD CN or other forms of CN in groundwater for the KCGM operations. KCGM does not use tailings for underground paste backfill.

Standard of Practice 4.7

Provide spill prevention or containment measures for process tanks and pipelines.

☑ in full compliance with

☐ in substantial compliance with ☐ not in compliance with

Standard of Practice 4.7

Summarize the basis for this Finding/Deficiencies Identified:

KCGM is in full compliance with Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.
Spill prevention or containment measures have been provided for all cyanide unloading, storage and process solution and cyanide destruction tanks at KCGM operations. Secondary containment has been designed and capacity maintained to ensure collection of the volume of the largest tank or volume contained in interconnected pipes, plus the rainfall inflow a design specified rainfall event. Procedures at Fimiston and Gidji are in place and being implemented to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment areas. All tanks at both Fimiston and Gidji within the process area have secondary containment for external spills. Fimiston and Gidji have containment systems that allow collection of spilled process liquors in lined tertiary collection sumps should secondary containment systems overflow. If there was a cyanide spill outside of the bunded area on unsealed ground, KCGM operations have procedures for neutralisation of any contaminated soil with ferrous sulfate. In a manner that protects surface and groundwater.

All cyanide process solution pipelines are contained within the process plant secondary containment area. The Fimiston and Gidji high strength cyanide delivery pipes are fully welded stainless steel lines that have been painted for ease of identification. Cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions. Cyanide pipelines are inspected for leaks or damage through scheduled preventative maintenance inspections. The tailings pipelines and return water pipelines are in an earthen bunds with spill collection sumps and are equipped with flow meters at each end to detect leaks. The cyanide containing pipelines do not cross any surface water features and do not present a risk to surface or groundwater.

**Standard of Practice 4.8**

Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

☑ in full compliance with

The operation is ☐ in substantial compliance with ☐ not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

KCGM is in full compliance with Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.
KCGM has retained records that demonstrate quality assurance programs have been implemented for all new cyanide facilities and modifications to existing facilities. The initial Code certification and subsequent recertification documented that QA/QC programs were implemented for cyanide facilities in existence at that time. The QA QC records reviewed have addressed the suitability of materials, the adequacy of soil compaction for earthworks and the installation of HDPE membrane liners. QA/QC records have been retained for the cyanide facilities at both Gidji and Fimiston by the relevant engineering departments. The initial Code certification audit documentation for KCGM includes records of appropriately qualified personnel review of cyanide facility construction and provided documentation that the facility has been built as proposed and approved. The hand-over of new engineering projects at KCGM includes appropriately qualified engineering verification of new facilities being compliance with design.

**Standard of Practice 4.9**

Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 4.9

☐ not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Based on the finding of the audit KCGM are in full compliance with Standard of Practice 4.9, implementing monitoring programs to evaluate the effects of cyanide use on wildlife and surface and ground water quality. Written procedures have been developed by appropriately qualified professionals and implemented for monitoring of wildlife and cyanide in waters including process liquors, tailings, groundwater and collected rainwater. The procedures specify how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analysed. The written procedures specify the recording of sampling conditions at the time of sampling. KCGM monitors for cyanide in process water discharges via seepage to groundwater down gradient of the site. The operation inspects and records wildlife mortalities related to contact with and ingestion of cyanide solutions. The frequency of monitoring is adequate to identify changes in a timely manner.
PRINCIPLE 5 – DECOMMISSIONING

Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.

Standard of Practice 5.1

Plan and implement procedures for effective decommissioning of the cyanide facilities to protect human health, wildlife and livestock.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 5.1

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 5.1: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities. KCGM has developed a cyanide decommissioning plan that details the process to be undertaken at the cessation of operations. The decommissioning plan covers the cyanide processing, storage, unloading and destruct facilities at Fimiston and Gidji and the connecting infrastructure. Tailings storage facility closure planning for Gidji and Fimiston operations is included in the KCGM Mine Closure Plan. The decommissioning and closure plans include schedules for decommissioning activities and the plans are reviewed every three years.

Standard of Practice 5.2

Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 5.2

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:
Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 5.2: KCGM’s cyanide decommissioning plans and mine closure plans include estimates of the cost to fully fund the decommissioning activities for all cyanide facilities. The operation has reviewed and updated the cost estimate for implementation of the cyanide decommissioning plan in 2017 and the cost estimate for the tailings storage facility closure management in 2018. These are scheduled for revision every three years. KCGM contributes annual payments to the Mine Rehabilitation Fund, the applicable regulatory framework in Western Australia, managed by the Department of Mines, Industry and Resource Safety (DMIRS).
PRINCIPLE 6 – WORKER SAFETY

Protect workers’ health and safety from exposure to cyanide.

Standard of Practice 6.1

Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

☐ in full compliance with

The operation is  □ in substantial compliance with  Standard of Practice 6.1

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 6.1.

The operation’s safety management systems are effective in identifying potential cyanide hazards and has developed effective hazard control measures. The KCGM integrated management system (KIMS) consisting of 15 Management Standards that follow the plan-do-check-act model and provide the basis for managing safety, environment and community aspects for the operation. These standards are complimented by procedures and local work instructions, which provide detailed information on how to perform tasks including unloading, plant operations, entry into confined spaces and equipment decontamination prior to maintenance.

The operation has a three level isolation process based on positive isolation and a detailed confined space entry and permit to work procedure. The dedicated permit hut and Officer provides good control.

Work Instructions support cyanide related tasks. Equipment decontamination is addressed through the isolation procedure generally together with the procedures for flushing cyanide pumps, lines and dosing points.

KCGM procedures address the use of personal protective equipment and KCGM has implemented a pre-work inspection process. Risk tools are used by workers to assess the workplace before each task in addition to the Work Instructions specific for the task.

KCGM has a Change Management Procedure for the purpose of providing a common framework for the systematic and structured management of changes at KCGM.
KCGM actively solicits and actively considers worker input in developing and evaluating health and safety procedures. There are formalised monthly safety representative meetings, monthly superintendent safety meetings, department and sub departmental meetings that provides a mechanism for consultation with the work force.

**Standard of Practice 6.2**

Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

- ☑ in full compliance with
- ☐ in substantial compliance with
- ☐ not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 6.2. Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

Access is restricted to the processing plant areas, with no one permitted to enter the processing plant area until the necessary inductions have been completed which include cyanide awareness training or they are escorted by a fully inducted person.

KCGM provides designated facilities for eating and drinking, and these activities are restricted to areas away from cyanide. Designated smoking areas are provided away from areas where cyanide is used or stored.

Showers, low-pressure eyewash stations and dry powder fire extinguishers are located at strategic locations throughout the operation and are maintained, inspected and tested on a regular basis.

KCGM conducts an inspection program for the sites where each area is inspected by operational personnel. This inspection includes checking the operation of each emergency shower and eyewash station, and confirming that fire extinguishers are provided and are in a serviceable condition.

In addition to the rotational inspections conducted by the operators, there is a planned maintenance repetitive work order for the showers and a contract for the inspection, maintenance and servicing of fire extinguishers across the operation.

During the site inspection showers, eye wash stations and fire extinguishers were checked and found to be in working order with relevant service tags attached and in date.
The unloading, storage, mixing and process tanks, and piping containing cyanide is identified to alert workers of their contents, the direction of cyanide flow in pipes is designated.

KCGM implements a pipeline colour coding system and the key is displayed at the entrance to the processing area. The pipework observed during the site inspection had directional indications showing the direction of flow in the pipes.

All tanks possess signage indicating the presence of cyanide including statutory HAZCHEM signage. Tanks have been identified as containing cyanide utilising the colour coding system.

Material Safety Data Sheets (MSDS), first aid procedures or other informational materials on cyanide safety in the language of the workforce are available in areas where cyanide is managed. Additionally cyanide safety information is available at the unloading areas and includes information on first aid procedures.

KCGM has implemented an Accident Incident Reporting System that is used to report and record all injuries, incidents, hazards and near misses.

**Standard of Practice 6.3**

Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

- [ ] in full compliance with

The operation is

- [x] in substantial compliance with Standard of Practice 6.3
- [ ] not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 6.3.

KCGM does have water, oxygen, a resuscitator, antidote kits, a radio, telephone and alarm system as a means of communication of emergency notification readily available for use at cyanide unloading, storage and mixing locations and elsewhere throughout its operations.

The cyanide unloading procedure requires the observer to have a two-way radio to communicate with the control room as well as pre approval from the control room. There are also PA systems at both the Fimiston and Gidji plant sites allowing the observer or other personnel to raise the alarm.

There is an adequate water supply for cyanide decontamination purposes through the emergency shower system or through fire response infrastructure. The operation does have emergency oxygen equipment positioned strategically within the plant areas near where cyanide is unloaded or mixed. The oxygen equipment is subject to regular inspection and planned periodic maintenance.
KCGM inspects its first aid kits on a monthly basis with the replenishment of first aid kits facilitated by the full time onsite occupational health nurses. Cyanide antidote kits are stored at the onsite medical facility at Fimiston.

KCGM has developed specific written emergency response plans, procedures and work instructions for cyanide emergencies and exposures. The cyanide emergency procedures form part of the KCGM emergency management plan and address cyanide emergencies, exposures and environmental releases including detoxification procedures and decontamination.

KCGM does have on-site capability to provide first aid to workers exposed to cyanide. The emergency response team are the primary responders in the event of an emergency and have either occupational first aid or senior first aid training.

The Fimiston site has a fully equipped ambulance with an oxygen supply and a medical treatment room located at the gatehouse. The Gidji site has a small unmanned medical treatment room located adjacent to the administration area that is not manned. The emergency response team would mobilise from Fimiston to Gidji in the event of an emergency.

KCGM conducts emergency drills periodically to test response procedures for various cyanide exposure scenarios.
PRINCIPLE 7 – EMERGENCY RESPONSE

Protect communities and the environment through the development of emergency response strategies and capabilities.

Standard of Practice 7.1

Prepare detailed emergency response plans for potential cyanide releases.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 7.1

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 7.1. Prepare detailed emergency response plans for potential cyanide releases.

KCGM has developed an Emergency Response Procedure to address potential accidental releases of cyanide. The cyanide emergency response plan has been developed to address potential accidental cyanide releases and to respond to cyanide exposures; this plan sits within the emergency management framework. The plan includes a cyanide decontamination procedure, a detoxification procedure and an environmental spill procedure.

The potential for failure of tailings impoundments are addressed in the operating manuals for the Tailing Storage Facilities (TSF) and generally under the emergency response plan. The TSF manuals contain sections on emergency management in the event of TSF failures. KCGM’s cyanide supply contracts with AGR specifies the responsibilities and response actions for transport related cyanide emergencies. KCGM has developed and implemented a cyanide transport incident response work instruction for scenarios that may occur once trucks are onsite. The operation continues to have a Memorandum of Understanding between KCGM and the Department of Fire and emergency Services that outlines the roles and responsibilities for each organisation in the event of an emergency.

KCGM plans and procedures describe specific response actions (as appropriate for the anticipated emergencies), such as clearing site personnel from the exposure area, cyanide antidote use and first aid measures. The emergency response training materials provide for the establishment of exclusion zones based on the nature of the incident.

The Gidji Emergency Procedures and Fimiston Mill Emergency Procedures describe the actions taken and the responsibilities in the initial response and assessment of an incident and include specific instructions for cyanide related incidents. Evacuation protocols have been developed on the basis of modelled credible scenarios.
The Cyanide Exposure Procedure details the actions to be taken when a person is suspected of cyanide poisoning. This procedure includes instructions for the use of antidote kits and first aid equipment.

**Standard of Practice 7.2**

Involve site personnel and stakeholders in the planning process.

☑ in full compliance with

☐ in substantial compliance with  Standard of Practice 7.2

☐ not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 7.2. Involve site personnel and stakeholders in the planning process.

KCGM has involved its workforce and the external emergency responders in the cyanide emergency response planning process. KCGM implements a formal process for reviewing documents and communicating changes with crew members. KCGM involve local response agencies such as outside responders and medical facilities in the cyanide emergency planning and response process. The operation maintains formal agreements with key external emergency responders and hold regular meeting with these organisations.

The Community Reference Group (CRG) provides a mechanism for KCGM to communicate and seek input to emergency response plans. KGCM through the local emergency management committee has made potentially affected communities aware of the nature of their risks associated with accidental cyanide releases, and consulted with them through community representatives regarding appropriate communications and response.

KCGM has engaged in consultation or communication with stakeholders to keep the Emergency Response Plan current.

KCGM also conducts monthly safety meetings where the workforce can engage in safety issues including emergency response. The Safety Representatives and the Safety representative meetings are also used for communication and consultation with the workforce.

**Standard of Practice 7.3**

Designate appropriate personnel and commit necessary equipment and resources for emergency response.

☑ in full compliance with

☐ in substantial compliance with  Standard of Practice 7.3

Kalgoorlie Consolidated Gold Mine
Name of Mine
Auditor

Date

22 February 2019
Signature of Lead

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Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 7.3. Designate appropriate personnel and commit necessary equipment and resources for emergency response.

Elements of the KCGM cyanide emergency response plan and procedures:

- Designate primary and alternate emergency response coordinators whom have explicit authority to commit the resources necessary to implement the Plan;
- Identify Emergency Response Teams;
- Require appropriate training for emergency responders;
- Include call-out procedures and 24-hour contact information for the coordinators and response team members;
- Specify the duties and responsibilities of the coordinators and team members;
- List emergency response equipment, including personal protection gear, available along transportation routes and/or on-site;
- Include procedures to inspect emergency response equipment to ensure its availability; and,
- Describe the role of outside responders, medical facilities and communities in the emergency response procedures.

KCGM has confirmed that outside entities included in the emergency response plan are aware of their involvement and are included as necessary in mock drills or implementation exercises. The operation through attendance at local emergency committee meetings and through direct correspondence has confirmed that agencies listed in the plan are aware of their involvement.

Standard of Practice 7.4

Develop procedures for internal and external emergency notification and reporting.

☑ in full compliance with

The operation is ☐ in substantial compliance with ☐ not in compliance with Standard of Practice 7.4

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 7.4. Develop procedures for internal and external emergency notification and reporting.
The KCGM emergency response framework includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of a cyanide emergency.

The KCGM emergency response framework includes procedures and contact information for notifying those communities potentially affected by a cyanide-related incident and any necessary response measures, and for communication with the media.

**Standard of Practice 7.5**

Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

☑️ in full compliance with

☐ in substantial compliance with Standard of Practice 7.5

☐ not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 7.5.

Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The KCGM CERP describes specific remediation measures as appropriate for the likely cyanide release scenarios, and includes: Recovery or neutralisation of solutions or solids; decontamination of soils or other contaminated media, and; management and/or disposal of spill clean-up debris.

The provision of an alternate drinking water supply is not applicable to this KCGM operation.

When no environmental risks are identified, ferrous sulfate is used for cyanide detoxification and clean-up. The Environmental Coordinator is involved in determining containment and clean up actions.

The KCGM CERP does prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat cyanide that has been released into or near surface water.

The KCGM CERP does address the potential need for environmental monitoring to identify the extent and effects of a cyanide release, and includes sampling methods, parameters and, where practical, possible sampling locations. There are no flowing waterways in proximity to the KCGM sites and the plan covers field testing of soils and testing of cyanide in the atmosphere.
Standard of Practice 7.6

Periodically evaluate response procedures and capabilities and revise them as needed.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 7.6

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE with Standard of Practice 7.6. Periodically evaluate response procedures and capabilities and revise them as needed.

The emergency management plan specifies that emergency mock exercises will be undertaken on a regular basis and will include cyanide related emergency scenarios. The operation has scheduled and implemented the cyanide mock emergency drills. Records of mock emergency drills are maintained and improvement actions arising from the drills are tracked through to completion.
PRINCIPLE 8 – TRAINING

Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

Standard of Practice 8.1

Train workers to understand the hazards associated with cyanide use.

☑ in full compliance with

The operation is □ in substantial compliance with Standard of Practice 8.1

□ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 8.1. Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

KCGM implements the training of all personnel who may encounter cyanide in cyanide hazard recognition. Cyanide hazard training is included as part of the Mill Induction Training Program which must be completed by all persons prior to being able to access areas that may contain cyanide. All visitors must be escorted at all times by an inducted person and are not permitted to undertake work. The online induction includes a section on cyanide awareness along with an assessment. The KCGM training package includes a knowledge assessment by the participant that is marked and signed off by the trainer. In addition to the mill induction for processing, operators complete a 2 day new starter training package that provides additional detail in cyanide use in processing. Cyanide hazard recognition refresher training is periodically conducted. The training is part of the Mill Induction that is completed every two years. The Mill Induction is linked to the access control system that will prevent access to the Mill area if the training has not been completed.

KCGM training records are retained in an electronic database and on hard copy files for each employee and contractor. A review of training records for workers at both KCGM facilities confirmed that records are retained.

Standard of Practice 8.2

Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

☑ in full compliance with

The operation is □ in substantial compliance with Standard of Practice 8.2

□ not in compliance with
Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 8.2. Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

KCGM trains workers to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases.

KCGM employees are trained prior to working with cyanide. Cyanide awareness training is included in the induction process for persons working in the processing areas, relevant contractors and maintenance personnel must also complete the induction and cyanide awareness training before working in the area. Personnel who may encounter cyanide complete the cyanide awareness and refresher training every two years.

The KCGM operation also has a formalised competency based training framework for processing personnel that includes training on tasks involving cyanide. The operation’s in-house trainers are experienced in the operation of the facility and hold Training and Assessing Qualifications.

The training elements necessary for each KCGM job involving cyanide management are identified in training materials. Formal competency training which includes cyanide tasks is run by the Process Trainer Coordinator and Process Trainers at Fimiston and Gidji out in the plant. All personnel are trained and assessed in procedures relating to cyanide tasks prior to allowing them to work independently.

The KCGM operation evaluates the effectiveness of cyanide training by testing, observation or other means. KCGM individuals complete a written assessment at the conclusion of the cyanide awareness training.

KCGM records are retained throughout an individual's employment documenting the training they receive. The records include the names of the employee and the trainer, the date of training, the topics covered, and if the employee demonstrated an understanding of the training materials.

**Standard of Practice 8.3**

Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

- ☑ in full compliance with

The operation is □ in substantial compliance with Standard of Practice 8.3

□ not in compliance with
Summarize the basis for this Finding/Deficiencies Identified:

Based on the finding of the audit KCGM are in FULL COMPLIANCE Standard of Practice 8.3. Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

All KCGM cyanide unloading, mixing, production and maintenance personnel are trained in the procedures to be followed if cyanide is released. Response to incidents and emergency situations is covered in the induction process that all employees must complete. Cyanide specific aspects are covered in the cyanide awareness training material and via task specific procedures.

KCGM site cyanide response personnel, including unloading, mixing, production and maintenance workers, are trained in decontamination and first aid procedures. They take part in routine drills to test and improve their response skills.

KCGM Emergency Response Coordinators and members of the ERT are trained in the procedures included in the Emergency Response Plan regarding cyanide, including the use of necessary response equipment.

The KCGM operation periodically communicates with off-site Emergency Responders, such as community members, local responders and medical providers, to ensure familiarity with those elements of the Emergency Response Plan related to cyanide.

Simulated cyanide emergency drills are periodically conducted for KCGM training purposes. The operation has conducted full scale emergency drills during the audit period that have addressed both worker exposure and potential environmental release. The debrief reports and records for the emergency drills contain recommendations in relation to improving training and instruction, and demonstrate that training needs are considered in the evaluation of the exercise.

KCGM attendance records for cyanide awareness training are maintained in hard copy by the processing training coordinator. The Emergency Response Coordinator maintains training records for the emergency response team members. A review of training records confirmed they detail the course delivered, the presenter, the date and the names of those attending.
PRINCIPLE 9 – DIALOGUE

Engage in public consultation and disclosure.

Standard of Practice 9.1
Provide stakeholders the opportunity to communicate issues of concern.

☑ in full compliance with

The operation is ☐ in substantial compliance with ☐ not in compliance with Standard of Practice 9.1

Summarize the basis for this Finding/Deficiencies Identified:
KCGM are fully compliant with Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern. The KCGM Sustainability and External Relations (SER) Department provides a number of services and contact points, which can be used by stakeholders to communicate issues of concern and inquiries in relation to the use and management of cyanide. The KCGM Public Interaction Line (PIL) includes a 24-hour 7-day a week manned telephone line, which ensures a timely response to enquiries. Interactions are captured within a stakeholder database. The KCGM Community Reference Group (CRG) meets once a month with KCGM representatives to discuss operational issues and to provide feedback from the public.

Standard of Practice 9.2
Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

☑ in full compliance with

The operation is ☐ in substantial compliance with ☐ not in compliance with Standard of Practice 9.2

Summarize the basis for this Finding/Deficiencies Identified:
KCGM are fully compliant with Standard of Practice 9.2. Initiate dialogue describing cyanide management procedures and responsively address identified concerns. KCGM publishes a range of materials about its operations, including Information Sheets, newsletters, reports and various informative signage accessible to the public. This information includes descriptions of cyanide management at KCGM operations. The operations seeks dialogue on cyanide related issues by inviting comments and enquiries in person through its Public Information Line or via the KCGM website. Records of all external engagements and dialogue are maintained.
Standard of Practice 9.3

Make appropriate operational and environmental information regarding cyanide available to stakeholders.

☑ in full compliance with

☐ in substantial compliance with Standard of Practice 9.3

☐ not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

KCGM are fully compliant with Standard of Practice 9.3. Make appropriate operational and environmental information regarding cyanide available to stakeholders. KCGM has a range of mechanisms in place to make information publicly available on cyanide release or exposure incidents, where applicable. KCGM reports all cyanide incidents that result in harm to workers or the environment to regulatory and other key stakeholders according to its procedures. The operations provide information publicly regarding its operations through the Newmont, Beyond the Mine Report, which would include details of significant cyanide related incidents or non-compliances, including cyanide incidents that result in hospitalization or fatality, should this occur.