



Gold Fields Limited

ICMI GOLD MINE RECERTIFICATION AUDIT

Summary Audit Report





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TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 41106652

DATE: MAY 2025

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Final Summary Audit Report	Final Summary Audit Report		
Date	January 2025	May 2025		
Prepared by	Marié Schlechter	Marié Schlechter		
Signature	-			
Checked by	Ashlea Strong	Ashlea Strong		
Signature	-			
Authorised by	Ashlea Strong	Ashlea Strong		
Signature	-			
Project number	41107254	41107254		
Report number	02	02		
File reference	Z:\ZA\Projects\41100xxx\41106652 - GFSA South Deep ICMI Audit\41 PA\01-Reports\01-Draft\Recert Audit			

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1 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Cyanide User Facility: South Deep Gold Mine

Name of Cyanide User Facility Owner: Gold Fields Limited

Name of Cyanide User Facility Operator: Gold Fields Limited

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2 LOCATION DETAIL AND DESCRIPTION OF OPERATION

2.1 LOCAL DETAIL AND DESCRIPTION OF OPERATION

Gold Fields' South Deep Gold Mine is situated in the Magisterial Districts of Westonaria and Vanderbijlpark (Gauteng Province), some 45km southwest of Johannesburg in the Republic of South Africa.

Geologically, the South Deep Gold Mine is located in the West Rand Goldfield of the Witwatersrand Basin. South Deep Gold Mine is a deep to intermediate level underground mine exploiting gold-bearing, shallow dipping tabular and/or stacked reef orebodies. South Deep Gold Mine is situated next to the Sibanye Stillwater Kloof Gold Mine and below the Ezulwini Mine, which is also operated and owned by Sibanye Stillwater.

2.2 MINING METHOD

South Deep Gold Mine is an underground mechanised mine, using an owner mining workforce. Reserves are accessed through de-stress and shadow development cuts to manage rock stress and seismic activity. A number of selective mining methods, including drifts and benches, are employed, but long-hole stoping with paste fill is the primary bulk mining method. Significant focus is on frontline coaching to improve compliance to plan and productivity. Mining method and extraction sequence optimisation is ongoing. It is estimated that the current Mineral Reserves will be depleted in (71 years).

The workings are accessed from the surface through two shaft systems, the Twin Shaft complex (main and ventilation shafts), of which the main shaft comprises a single-drop to 110A level, a depth of 2,998m, the vent shaft to 110 level at a depth of 2,947m and the South Shaft complex, which is a sub-vertical system (three operating shafts) to 95 level at a depth of 2,786m.

The mine is divided into three main areas:

1. Current Mine (CM), characterised by selective mining methods scattered over a large area originally exploited by means of conventional tabular mining. The CM is accessed from four active levels (90, 93, and 95) from both the South Shaft and Twin Shaft complexes.
2. The North of Wrench (NoW), directly south and down dip of CM, comprises six mining corridors separated by regional pillars that extend southwards to the Wrench fault. A bulk non-selective mining method is applied, resulting in a higher Resources to Reserves conversion ratio.
3. The South of Wrench (SoW) east and west areas, situated south and down dip of NoW, will be mined in the same manner as NoW.

2.3 PROCESSING

The South Deep Processing Plant consists of a conventional semi-autogenous grinding (SAG) / Ball Milling circuit, thickening, a Gravity Gold recovery circuit including an Intensive Cyanidation in Line Leach (Gekko) reactor, and a conventional Leach / Carbon in Pulp (CIP) circuit. In addition, tailings from the dormant Tailings Storage Facilities (1 and 2) are remined, pumped to and re-processed at the South Deep Plant through a tailings retreatment section that consists of a Remining Thickener followed by a dedicated CIL (Carbon in Leach) circuit. Bulk liquid sodium cyanide is delivered by means of road tankers and offloaded into bulk storage tanks from which cyanide is dosed into the Leach and CIL circuits. Carbon is eluted through an Anglo-American Research Laboratory (AARL)

elution circuit and regenerated for reuse by the CIP and CIL circuits. The final products from the Gravity CIP and CIL circuits are smelted into bullion. The Gold Plant is equipped with a hydrogen peroxide detox plant to reduce Weak Acid Dissociable (WAD) cyanide concentrations in the Processing Plant's tailings. Water from the Old Return Water Dam (RWD) and Doornpoort Tailings Storage Facility (TSF), is fed to the South Deep Plant and used as process water in all the plant's processing circuits, including milling. The Processing Plant is classified as a cyanide facility (above 0.5 mg/l WAD cyanide). Subsequent to the previous recertification audit and commissioning of the Intensive Cyanidation in Line Leach Reactor, the Old Return Water cyanide concentrations were found to be above 0.5 ppm CN WAD and therefore the Milling, all Thickening and Process Water circuits inside the Processing Plant are now regarded as newly classified cyanide facilities.

Approximately a third of the tailings from the South Deep Plant is pumped to the Backfill Plant where the coarse solid particle size fraction of the tailings is removed using a hydro cyclone cluster and blended with a cement binder to produce a Backfill product. The Backfill product is fed to fill mined out areas underground. The Backfill Plant is classified as a cyanide facility (above 0.5 mg/l WAD cyanide).

South Deep has one active TSF, the Doornpoort TSF, and four dormant TSFs, known as TSFs 1, 2, 3, and 4. The Global Industry Standard on Tailings Management (GISTM) is being implemented at all the South Deep TSFs and conformance is expected by August 2025 in line with the requirements for High GISTM Consequence classified TSFs.

TSFs 1 and 2 are undergoing remining using hydraulic mining methods (i.e., using a high-pressure water cannon). TSFs 1 and 2 were commissioned in 1968 and operated as upstream raised paddock dams as is typical in South African gold mines. These TSFs cover a combined footprint of 69 ha (hectares) and have a maximum height of 39m. Deposition on these TSFs ceased in 2011. TSFs 1 and 2 are newly classified as a cyanide facility (above 0.5 mg/l WAD cyanide) due to process water from the Old RWD being supplied to the remining operation.

TSFs 3 and 4 were commissioned in 1982 and are also upstream raised paddock dams. These TSFs cover a combined footprint of 100 ha and have a maximum height of 41m. Deposition on these TSFs ceased in 2011.

The Doornpoort TSF was commissioned in April 2011, and a number of upstream wall raises have been constructed. The Doornpoort TSF incorporates a gravity decant system with drainage structures placed beneath the tailings itself which drain seepage water to the Doornpoort RWD. The Doornpoort TSF, holds sufficient capacity for the LOM (Life of Mine) of South Deep as well as for the reclamation of TSFs 1 to 4.

There are two Reverse Osmosis Water Treatment Plants (WTPs) (known as the "RO 1 and RO 2 Plants"). RO 1 treats excess mine water from underground to produce potable water whereas RO 2 treats a process water feed stream from the Old RWD to produce a potable water product stream. The quality of the products from both RO plants is in line with the potable water standard, South African National Standards SANS 241:2015. The product water is pumped to the South Deep Rand Water Board (RWB) potable water reservoirs for consumption within the mine. The RO 2 Plant is a new facility commissioned in 2024 and classified as a cyanide facility (above 0.5 mg/l WAD cyanide).

Since the previous recertification audit, the following construction and modification to cyanide facilities have been undertaken:



South Shaft (Old) Return Water Dam Upgrade Project
Backfill Footprint Reduction Project
Doornpoort Tailings Storage Facility Phase 2
Second Reverse Osmosis Water Treatment Plant

3 SUMMARY AUDIT REPORT

3.1 AUDITOR FINDINGS

South Deep Gold Mine is:

☒ in full compliance with

☐ in substantial compliance with

☐ not in compliance with

**The International
Cyanide Management
Code**

3.1.1. Compliance Statement

This operation has not experienced any compliance issues during the previous three-year audit cycle.

No significant cyanide incidents or cyanide exposure and releases were noted as occurring during the audit period.

3.2 AUDITOR INFORMATION

Audit Company: WSP Group Africa (Pty) Ltd

Audit Team Leader: Marié Schlechter (Lead Auditor and Mine Technical Specialist)

Email: marie.schlechter@wsp.com

Name and signature of other auditors: N/A

3.3 DATE OF AUDIT

The re-certification audit was undertaken between 4 and 8 November 2024.

3.4 AUDITOR ATTESTATION

I attest that I meet the criteria for knowledge, experience and conflict of interest for International Cyanide Management Code (ICMC or Code) Verification Audit Team Leader and Mine Technical Specialist, established by the International Cyanide Management Institute (ICMI).

I attest that this Summary Audit Report accurately describes the findings of the Recertification Audit. I further attest that the Recertification Audit was conducted in a professional manner in accordance with the ICMC Mining Operations Verification Protocol (June 2021) and using standard and accepted practices for health, safety and environmental audits.

PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that Operate in a Safe and Environmentally Protective Manner

Standard of Practice 1.1: Purchase cyanide from certified 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

Standard of Practice 1.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 1.1; to purchase cyanide from certified manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

The cyanide purchased for use at South Deep Gold Mine is manufactured at a facility certified as being in compliance with the Code. Cyanide was purchased from the following producer during the current recertification period:

- Sasol South Africa (Pty) Ltd. The Sasolburg Operations is certified as being in full compliance with the Code on 07 March 2022.

PRINCIPLE 2 – TRANSPORTATION

Protect Communities and the Environment during Cyanide Transport

Standard of Practice 2.1: Require that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training and emergency response.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 2.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 2.1; requiring that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training and emergency response.

The operation has chain of custody records identifying all the elements of the supply chain (producer, transporter) that handle the cyanide brought to South Deep Gold Mine.

Chain of custody records observed state that liquid cyanide was transported from the Sasolburg production facility to South Deep Gold Mine by Tanker Services Food and Chemicals / Imperial Logistics.

The identified transporter is individually certified in compliance under the Code:

- Tanker Services Food and Chemicals / Imperial Logistics is a certified transporter under the Code and was recertified on 22 May 2024.

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

The operation is

☐ in substantial compliance with

Standard of Practice 3.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with 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.

The facilities for unloading and storing of cyanide have been professionally designed and constructed in accordance with applicable jurisdictional rules and sound and accepted engineering practices, as detailed in the initial Code certification audit.

The cyanide reagent facilities consist of a liquid cyanide offloading area, cyanide storage tanks and cyanide transfer tank (slave tank), all located in access-controlled areas of the process plant.

No changes were made to the unloading and storage facilities since the previous recertification audit.

Regular technical and structural inspections are conducted at the cyanide off-loading and storage areas. Recent inspections identified the need for repairs to the cyanide decontamination bay and steel structure at the cyanide storage area. These repairs have been completed.

Further maintenance has been undertaken at the cyanide storage bund. Currently, TK-06 Cyanide Storage Tank is offline for repairs while TK-07 Cyanide Storage Tank is in use.

At the time of the finalization of the audit reports, it was confirmed that the work to repair the cyanide storage tank, TK-06, has been completed.

The cyanide offloading area is located in an access-controlled area away from people and surface water.

The cyanide storage tanks are located inside a locked fenced-off area inside the high security and access-controlled area of the process plant. Only authorised operational personnel hold the keys for the cyanide off-loading and storage areas to prevent unauthorised entry into the area. A proximity switch (once gate is opened, it detects movement) is installed on the gate. A pop-up will appear on the Supervisory Control and Data Acquisition (SCADA) system in the control room when the gate is opened. Process cameras (3) are installed in the area and can be viewed in the control room.

The cyanide unloading area is concrete with a bund and humps to contain any spillage during off-loading. Spillage will flow towards the offloading area bund from where it can be pumped to the cyanide / caustic sump in the cyanide storage area.

The auditor confirmed that the bund can contain the full load of the cyanide tanker in the event of a total tanker failure.

There is a system in place to prevent overfilling of the cyanide store tanks. Automatic level indicators are installed on the cyanide storage tanks and can be viewed at the cyanide offloading area and at the storage tanks as well as on the SCADA system.

The levels of the two cyanide storage tanks and alarm levels are visible to the control room operator on the SCADA system as well as the operators working in the cyanide offloading area and at the cyanide mixing area.

The tank overfilling prevention system is tested weekly in the control room and checking the interlocks, levels at the cyanide storage tanks and functioning of the offloading area air valve is done to ensure that it is working optimally.

A weekly job card is raised on the SAP planned maintenance system to inspect and test the cyanide storage tank level indicators.

Note: South Deep Gold Mine has two cyanide storage tanks which are interlinked. However, due to the repair works undertaken on TK-06 Cyanide Storage Tank at the time of the audit, only TK-07 Cyanide Storage Tank was in use. Since only one tank was in use, the above-mentioned operating procedure was adapted. The level of the cyanide storage tank must be below 45% before offloading commenced. The procedure at the time was confirmed to the auditor by the Control Room Operator.

Site inspections and verification of drawings confirmed that the cyanide storage tanks, TK06 and TK07, are located on 50 mm bitumen layer on top of a 300mm concrete layer, providing a competent barrier to leakage and prevent seepage to the subsurface.

The secondary containments for the cyanide storage tanks are constructed of 350 mm reinforced concrete with a liner, observed to be in a good condition, providing a competent barrier to leakage and prevent seepage to the subsurface.

The cyanide storage tanks are located in the open and each tank is fitted with a ventilation pipe and scrubber system.

The liquid cyanide is stored separate from incompatible materials.

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

The operation is

☐ in substantial compliance with

Standard of Practice 3.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with 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.

Liquid cyanide is received by road tanker. Once empty, the tanker returns to the cyanide manufacturer for a subsequent delivery. The tanker is hosed with potable water before flange covers are replaced.

The *Procedure for Offloading Bulk Sodium Cyanide* describes the steps to follow during liquid cyanide offloading, including the operation and maintenance of all hoses, valves and couplings.

The *Emergency Procedure for Cyanide Release during Receiving (offloading)* describes the steps to follow in the event of a cyanide spillage during an offloading event.

The *Cleaning of Sodium Cyanide Spillages in No-Mans Land Offloading Area* procedure describes the steps to following in the event of a major cyanide spillage during offloading, where the cyanide has spilled outside the bunded offloading area and potentially onto the soil.

Procedure for Offloading Bulk Sodium Cyanide lists the required personal protective equipment (PPE) for the chemical handler to wear during an offloading event. This includes chemical resistant suit, gumboots, latex gloves, polyvinyl chloride (PVC) gloves, face shield, hydrogen cyanide (HCN) gas monitor, full face canister mask.

The *Procedure for Act as a Buddy* describes the requirements and steps to follow for a second individual to observe from a safe distance. This person will not be part of the work and will only observe from a distance in order to alarm in case of an emergency.

Liquid sodium cyanide is supplied to the mine by Sasol. The Safety Data Sheet (SDS) for sodium cyanide stipulates in *Section 9 Physical and chemical properties – colour: Light to dark red.*

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 including contingency planning and inspection and preventive maintenance procedures.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 4.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.1; to implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

South Deep Gold Mine has developed written procedures for the operation of cyanide facilities including unloading, and storage facilities, CIL and CIP plant operations, milling and thickening sections, backfill section, Doornpoort TSF and associated pond management, TSF 1 and TSF 2 remining area, and Backfill Reverse Osmosis Plant 2.

The operation has plans and procedures that identify the assumptions and parameters on which the facility design is based and any applicable regulatory requirements (e.g., freeboard required for safe pond and impoundment operation, the cyanide concentrations in tailings on which the facility's wildlife protection measures were based) as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements. Critical parameters includes:

- The concentration of WAD cyanide in tailings at the TSF tipping point.
- The concentration of WAD cyanide in opened bodied water.
- The concentration of WAD cyanide in the backfill.
- The concentration of WAD cyanide in the product water from the RO 2 Water Treatment Plant.
- The pH in the leach feed.
- Freeboard at the respective TSFs, RWDs and process water dams.

The operation has plans and procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility including the specific measures needed for compliance with the Code, such as water management, inspection and preventative maintenance activities.

The *TSF Operating Manual* and *Mandatory Code of Practice* describes the requirements for the safe operation of the TSFs, RWDs and process water ponds.

The following operational inspections are conducted:

- Processing plant: Daily Shift Management and Handover book – Shiftly inspection of operational areas including the cyanide storage area, inline leach reactor area.
- Processing plant: Daily Gekko Inspection.
- Daily Smelt house Inspection.

- Offloading area: Daily Routine safety inspection.
- Offloading area: Offload Bulk Sodium Cyanide
- Backfill plant: Shiftly inspections
- TSF: Daily inspection for both Doornpoort TSF and TSFs 1 – 4 (TSF Foreman)
- TSF: Monthly inspection (Mine, Stefanutti Stocks)
- TSF: Quarterly inspection (Mine, Stefanutti Stocks, SLR Consulting)
- TSF: 6-monthly Engineer of Record (EoR) inspection (Mine, Stefanutti Stocks, SLR Consulting) – report focus on the operational issues associated with the Doornpoort Phase 1 as well as the Phase1-Phase 2 commissioning interface.
- Annual TSF Inspection, SLR Consulting
- Stefanutti Stocks Daily Diary Doornpoort TSF
- Stefanutti Stocks Month-end Review Contractor Life Management (CLM) Meeting
- Stefanutti Stocks weekly re-mining pump station inspection.
- RO2 WTP daily morning inspection by operator (Watercare Mining)
- Safety Officer Inspection – Legal inspections, cyanide area inspected 30-days, 40 days or 90-day depending on the risk of the area. The following areas are also inspected:
 - Mill Area
 - Gekko Plant
 - CIP / CIL Tailings
 - Smelt house
 - Caustic cyanide area
 - Mill and control room area
 - Elution CIP Tailings

South Deep Processing Plant uses the computer-based SAP planned maintenance system to plan and schedule inspection and planned maintenance activities at varying frequencies.

The RO2 WTP has implemented a planned maintenance system – UpKeep System - to ensure inspection and maintenance of the pumps, structures, bunds, pipelines, tanks at predetermined frequencies.

South Deep Gold Mine has implemented a Management of Change (MOC) procedure. The objective of the procedure is to assess changes to the facility or its operating practices that may increase the potential for workers to be exposed to chemicals and/or other hazards or increase to potential for chemical releases before such changes are implemented so that they can be evaluated and addressed as necessary. It is required that the Implementation and Control Document must be signed off by the following persons, as required:

- Originator
- Environmental Officer
- Full Time Health and Safety Representative
- Process Area Superintendent
- Senior Plant Metallurgist
- Engineering Unit Manager
- Head of Metallurgy
- Stakeholders.

South Deep Gold Mine has developed procedures for contingencies and non-standard operating conditions, including upset in water balance, corrective action, and either planned or emergency shutdowns, both long and short-term:

- *Doornpoort Tailings Dam Operating Manual, Section 6.2.1 Pool Management*, during heavy and extended rainfall events, night operating and emergency decanting may be required.
- The *Spill Prevention Control Procedure* describes the options for pumping water from one process water dam to another with capacity in the event of emergency or abnormal conditions. A flow sheet is provided indicating *the pumping capacity and availability*.
- *Procedure for Spill Prevention Control* will be implemented in the event that inspections have identified spillage, to effectively manage water and slurry spillage occurring in the processing plant.
- The SAP Planned Maintenance System records the corrective actions and corrective maintenance required.
- The Stefanutti Stocks *Spill Prevention* procedure and *Stopping of Pump Station* procedure describes the steps to take in the event that the potential for a spill from the re-mining operations has been identified.
- South Deep Gold Mine has the following procedures for stopping the processing plant, the backfill plant and TSF operations for extended periods, under normal and abnormal conditions. The procedures describe the inspection, maintenance, monitoring and, if required, draining and flushing actions to take for periods 0 – 7 days and then for periods longer than 7 days and including cessation, as applicable:
 - The *Procedure for Demolition of Cyanide Facilities* provides the required actions in the event that a long-term shutdown or cessation of operations require the emptying of the cyanide storage and process tanks, pipelines and ponds and decontamination of the equipment.
 - The *Stopping of the Backfill Plant Operations for Extended Periods* procedure provides the safe actions to stop the entire Backfill Plant operations in normal (planned e.g. shut down for maintenance) and abnormal (unplanned stoppage e.g. strikes, cessation) conditions.
 - The *Stopping the Gold Plant Operations for Extended Periods* procedure provides actions to stop the processing plant in a safe manner to avoid any floodings, overtopping / spillage of any chemicals, including cyanide. The procedure is applicable to stopping the processing plant under both normal and abnormal conditions.
- The Stefanutti Stocks *Emergency Procedure Strike Contingency* procedures states that, in the event of a labour strike, management will assess whether operation of the TSF can continue and measures that will be implemented to ensure continued safe management of the TSF.
- The Stefanutti Stocks *Stopping of a Pump Station for a Period of 12 hours and above* procedure details the steps to take when the remaining pump station must be stopped for an extended period.

The operation inspects the following at unloading, storage, mixing and process areas, as applicable to the site:

- Tanks holding cyanide solution for structural integrity and signs of corrosion.
- Secondary containments provided for tanks and pipelines for physical integrity, the presence of fluids and available capacity, locked, to prevent accidental releases to the environment.
- Leak detection and collection systems at ponds, as required in the design documents.
- Pipelines, pumps and valves for deterioration and leakage.

- Ponds and impoundments for the parameters identified in their design documents as critical to their containment of cyanide and solutions and maintenance of the water balance, such as available freeboard. The operation inspects cyanide facilities on an established frequency sufficient to ensure and document that they are functioning within design parameters. Operational and preventative and planned maintenance inspections are conducted at frequencies varying between daily, weekly, monthly, quarterly, six monthly and annually, dependent on the equipment, task and area, dependent on risk.

Inspections are documented, listing specific items to be observed, includes the date, name of the inspector and any deficiencies observed.

The nature and date of corrective actions are documented in the planned maintenance system. Inspection records are retained.

Preventative maintenance programmes are implemented, and activities documented to ensure that equipment and devices function as necessary for safe cyanide management.

South Deep Gold Mine uses the SAP preventative maintenance planning system to manage tasks including those identified during inspection and ad hoc observations. The system is used to plan and schedule inspections and maintenance activities at varying frequencies.

Unplanned job cards are raised when inspections or walk arounds identify deficiencies that require action. The job card is printed, completed during the work and returned to the Planned Maintenance Office. Weekly status report generated indicating completed and outstanding items.

An emergency generator is available at the processing plant and another at the backfill plant that will power the lights, thickeners and security system. The generators are inspected weekly by the electrician as part of the planned maintenance system.

Cyanide is only pumped for one hour per day between the storage tanks and Slave tank. During a power interruption, the cyanide in the pipeline will flow back to the tank. Process solutions will remain in the tanks during a power failure and will not overflow.

South Deep Mine receives its primary power supply from Eskom via the Bernina substation. In the event of a power failure at the returns water dams, a secondary supply can be obtained through the Taunus substation, or the Westgate substation.

In addition, Stefanutti Stock (the TSF Business Partner) can supply a diesel pump at short notice in the event of a power failure to any of the water pumps (return water dams, process water dams or pollution control dams).

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

The operation is

☐ in substantial compliance with

Standard of Practice 4.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.2; To introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

The operation conducts a program to determine appropriate cyanide addition rates in the Leach and CIP and evaluate and adjust addition rates as necessary when ore type or processing practices change cyanide requirements.

South Deep Gold Plant treats two streams namely the reef stream and the TSF remining stream. Cyanide addition for the two streams is done as follows:

- Reef stream (CIP) – two stage cyanide addition on Leach tank TK01 or Leach tank TK02 (dependent on maintenance activities) and Leach tank TK04.
- TSF Remining (CIL) – one stage addition on CIL tank TK10.

The cyanide control programme implemented at South Deep Gold Mine consists of having cyanide setpoints, monitoring cyanide content and undertaking cyanide addition control via the automatic TAC1000 cyanide analyser.

Manual dosing of cyanide applies when auto dosing is not reaching set points. Internal approval is needed for manual dosing to proceed.

Manual titrations are done every 2 hours to compare the results from the TAC1000 cyanide analyser with the manual titration results. Adjustments in cyanide dosing will be done if discrepancies are noted.

Bottle roll tests are conducted at the planned setpoint, below the current setpoint and higher than the current setpoint. Tests are conducted monthly for both the reef and TSF remining streams to determine the optimal set point and ensure that WAD cyanide in the tailings stream remains low.

Bottle roll tests are conducted on any ad hoc material to be treated to determine optimal cyanide addition.

Changes to the cyanide setpoints are recorded in the Cyanide Setpoint Logbook, including the reason for the change in setpoint, the new setpoint(s) and sign-off by the Plant Superintendent and Metallurgist.

Currently, cyanide destruction is done by adding hydrogen peroxide into the CIP tails.

In addition, South Deep Gold Mine optimised the use of two stage cyanide dosing on the leach stream to reduce the WAD cyanide in the tails by reducing the respective setpoints.

Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 4.3

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.3; To implement a comprehensive water management program to protect against unintentional releases.

South Deep Gold Mine has implemented a comprehensive and probabilistic (stochastic) water balance model using the GoldSim software platform.

The mine maintains an input spreadsheet that supports the model with data collected at the mine. Data is collected monthly and fed into the model. It was demonstrated to the auditor that the mine runs monthly simulations as per current situations such as tonnage received from underground, status of re-mining activities, whether the Reverse Osmosis plant is operational, availability of return water, and rainfall etc. The simulations are run monthly for planning and to determine if any actions need to be taken to prevent overtopping or if there is a shortage of process water.

The model is calibrated annually by an external consultant or if a major change to the operations occurs.

The water balance considers the following in a reasonable manner and as appropriate for the facility and the environment:

- Daily deposition rates for the Doornpoort TSF are consolidated into a monthly report and provided for the update of the water balance.
- The model is based on a 1:50 year rainfall event that equates to 115 mm in 24hrs.
- Rainfall data is collected from two meteorological stations at the mine. More than 40 years of onsite data have been included in the model.
- Evaporation data were calculated based on the on-site meteorological data.
- The model was further updated with the climate data from the SRK Climate Change Assessment, 2023.
- The various catchment areas within the water balance area have been defined. The model accounts for precipitation entering from upgradient watersheds.
- There is no permitted or permanent discharge from cyanide facilities. The model accounts for losses due to seepage, decant in the event of excessive rainfall in excess of a 1:50 year rainfall event as well as water used for dust suppression on TSF.
- Simulations are run for a 72-hr power outage event to inform decision-making during high rain-fall scenarios.
- The model considers the water entrained in the TSF.

The ponds and impoundments are designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from the water balance calculations including the following:

- The Doornpoort TSF Operating Manual requires that the freeboard on the TSF should be in accordance with the following local legislation and global industry standards:
 - GN 704 (Government Notice 704, Government Gazette 20118 of 4 June 1999) in terms of the National Water Act (Act No. 36 of 1998).
 - Australian National Committee on Large Dams (ANCOLD) Guidelines Australian National Committee on Large Dams (Doornpoort TSF classified as a facility with a hazard rating of “High C”).
 - Probable Maximum Precipitation in terms of the Global Industry Standard for Tailings Management (GISTM).

Using the normal TSF operating pool as a reference, this equates to freeboard requirements for:

GN 704 Regulations:

- An allowance for 1:50-year storm (140mm rainfall depth) plus
- A minimum of 0.8m between the 1:50-year storm level and the lowest point on the TSF wall crest

Therefore, a minimum freeboard requirement of 0.8m

ANCOLD Freeboard Guidelines:1:

- 100-year Annual Exceedance Probability (AEP), 72hour flood (151mm rainfall depth); plus
- Extreme Storm allowance (195mm rainfall depth); plus
- 0.5m freeboard.
- Therefore, a minimum freeboard requirement of 0.5m

Probable Maximum Precipitation (GISTM)

- Probable maximum precipitation rainfall depth (510mm)
- The minimum freeboard required will be equivalent to the elevation level which corresponds to the probable maximum precipitation and will vary according to the changes in geometry of the TSF basin.

The same applies for TSF 1 and TSF 2.

- The *Mandatory Code of Practice on Cyanide Management* states that the Doornpoort RWD will be operated at minimum levels to ensure that no overtopping to the Leeuwspruit can occur and therefore a freeboard is maintained to accommodate a 1:50 year rainfall event that equates to 140mm in 24hrs.

Note: the design is based on 140mm in 24hrs, while the current Water Balance Model considers 115mm in 24hrs based on continued collection of rainfall data.

- Process water dams are operated as low as possible.

The *Spill Prevention Control Procedure* describes the options available to move and store water between dams to prevent spillage of process water to the environment.

The TSFs, RWDs and process water ponds are inspected daily to ensure compliance to the required freeboard and operating philosophies.

The TSFs, RWDs and process water ponds and facilities are inspected daily by the TSF operators and operational personnel. Includes inspection of the RWD levels and TSF pool.



The levels of the Gold Plant pollution control dam (PCD) and the Doornpoort RWD are visible on the Gold Plant SCADA in the control room.

The operation measures precipitation daily at two meteorological stations. Monthly rainfall results are incorporated into the Water Balance model. Simulations are run and changes are made in operating practices, if needed.

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

The operation is

☐ in substantial compliance with

Standard of Practice 4.4

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.4; to implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

WAD cyanide is measured daily in the following facilities:

- Processing Plant PCD
- Old TSF RWD
- Dam 1
- Dam 5
- Twin Shaft PCD
- Doornpoort RWDs
- Final Tailings Tank to Doornpoort TSF.

The open water bodies including the TSFs are in operational and fenced areas that prevents access by livestock. No wildlife deaths due to cyanide poisoning have been recorded. Therefore, no measures have been implemented to restrict access by wildlife and livestock.

The daily WAD cyanide monitoring results observed for 2022, 2023 and 2024 for the open water bodies indicated minimal exceedances above 50 mg/l WAD. The daily WAD cyanide monitoring results at the Final Tailings Tank to Doornpoort TSF (compliance point) demonstrated a decline in exceedance year-on-year from 39 exceedance in 2022 to 21 in 2023 and currently 12 exceedances for 2024. Incident investigations are conducted after each exceedance. The report includes a description, cause of the exceedance, the results of the day of exceedance, and the daily average results.

Maintaining a WAD cyanide concentration of 50 mg/l or less in open water is effective in preventing significant wildlife mortality. No wildlife mortalities were observed in the period since the previous recertification audit.

South Deep Gold Mine does not have a heap leach facility.

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**

The operation is

☐ in substantial compliance with

Standard of Practice 4.5

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.5; to implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

The operation does not have a direct or indirect discharge to surface water during normal operating conditions.

Monitoring for free cyanide downstream of the operations is conducted monthly at the following monitoring points:

- S10 (downstream in Kariegaspruit) – all <0.005mg/l
- S11A (upstream in Leeuspruit) – dry for entire audit period
- S11B (upstream in Leeuspruit) – dry for entire audit period
- S6 (downstream in Leeuspruit) – one reading of 0.015 free cyanide in July 2024. All the rest were below detection limit.
- S20 (downstream of Doornpoort TSF and RWD) – only one reading of 0.01 mg/l for November 2023. All the rest were below detection limit.

Monitoring results indicate cyanide concentrations in surface water have not risen above levels protective of a designated beneficial use for aquatic life.

Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 4.6

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.6; to implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

The operation implements specific water management or other measures to manage seepage to protect beneficial uses of groundwater beneath and/or immediately down-gradient of the operation.

The cyanide facilities at the chemical offloading area, Gold Plant and Backfill Plant are in concrete areas with bunds fitted with sumps and pumps. Annual bund seepage tests are conducted at all cyanide facility bund.

The design of the TSFs, associated ponds and pipelines include the following to minimise and manage seepage:

- South Deep Gold Mine is currently busy with a project to upgrade, expand and high-density polyethylene (HDPE) line the Cascade Dams and the Old RWDs with a concrete ballast layer placed on top to support the liner.
- The Doornpoort TSF is fitted with an underdrain system and a penstock drain.
- The Doornpoort RWD was constructed with a HDPE liner and leakage detection system. An additional pump has been installed at the S21 monitoring point downstream of the Doornpoort RWD to pump seepage water back to the RWD. Eighteen scavenger boreholes have been installed downstream of the TSF and RWD to manage groundwater levels and the pollution plume. The scavenger boreholes were commissioned in January 2018. The water from the 18 scavenger boreholes and four surface boreholes (surface runoff from the Doornpoort TSF solution trench) is pumped back to the Doornpoort RWD.
- Toe drains and cut-off drains have been installed at the Doornpoort TSF to ensure removal of process water to the RWD. The solution trenches at the Doornpoort TSF have been cement lined to prevent seepage from the trenches.
- The Old South Deep TSF is dormant, but the RWD is still used to store process water. A seepage cut-off trench has been installed south of the Old South RWD. Four operational scavenger boreholes were installed. The water captured by the cut-off trench is pumped back to the Old RWD.
- Toe drains and cut-off drains on Compartment 3 and 4 of the Old TSF assist with removal of process water to the Old RWD.

Groundwater monitoring is conducted quarterly at various locations at the South Deep Gold Mine. The South African groundwater limit for total cyanide in groundwater is 0.5 mg/l.

Groundwater is abstracted in the wider area for drinking water (water is filtered and tested quarterly for total, WAD and free cyanide). Seepage from the operation has not caused cyanide concentrations of groundwater to rise above levels protective of beneficial use. All groundwater monitoring results were below 0.5mg/l total cyanide, the South African limit for groundwater.

South Deep Gold Mine uses tailings as backfill.

An assessment was conducted by Maelgwyn South Africa to track the concentrations of cyanide in the backfill material used the mine.

During April / May 2024, samples were collected by Maelgwyn representatives from the Backfill surface plant as well as from the South Deep underground backfill, both actively filling and older backfilled sites.

Report concluded that the sample containing the highest cyanide out of all the samples collected during this campaign, was the backfill surface plant feed sample prior to cycloning and binder addition.

This sample contained < 50 ppm WAD cyanide which was within the limit of plant discharge values. The target for WAD cyanide levels in the tailings portion of the backfill sent underground is 50 ppm.

From this sample containing the 35 ppm WAD cyanide, the cyanide speciation results showed that the highest potential level of HCN gas calculated and measured (at equilibrium) could possibly be 4.1 ppm HCN gas. The binder addition raised the pH to values > pH 13, which apart from the dilution of the metals and cyanide during binder addition, also caused the metals to precipitate from the solutions.

The underground sample compositions were deemed fairly harmless with low levels of cyanide considering the risk aspects of body contact, inhalation of generated gas or even accidental ingestion.

The free cyanide levels presented in the report were analysed with the more sensitive Segmented Flow Injection Analysis that is accurate for samples with low or trace amounts of cyanide, compared to typical silver nitrate titrations, which are not necessarily set up for low-level environmental samples but rather for operational cyanide analysis. The samples from the Backfill Surface plant showed that the samples contained low levels of cyanide and metals that possibly diluted and precipitated out during binder addition.

The fissure water sampled did not appear to be contaminated by cyanide, with cyanide levels in the fissure water solution sample measured at detection limits.

Every batch of backfill is tested for WAD cyanide in the tank before it is sent down the mine. If WAD cyanide is not under 50 ppm, the batch is rejected and dumped into the thickener and ultimately to tailings.

Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 4.7

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.7; to provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention or containment measures are provided for the cyanide unloading area, cyanide storage tanks, CIL and CIP tanks, intensive leach reactor, mill area and backfill section.

The off-loading area for the liquid sodium cyanide is closed off with restricted access, installed on a concrete surface equipped with humps and drains to contain any spills. The drainage for this area is to a spillage sump equipped with a pump, which delivers any liquid into the main bund area for the sodium cyanide storage tanks from where it can then be pumped to any other part of the leach tanks.

The feeder cyanide tank (Slave Tank) for dosing of the leach tanks is located above the leach tanks into which any spillage will fall.

The leach tanks and CIP tanks are located in a concrete bunded area. Greater than 110% of a tanks volume is provided by the bund in conjunction with the processing plant PCD. The plant's PCD is concrete lined and connected to the Twin Shaft Pollution Control Dam in the event of an overflow.

The mills, intensive leach reactor, RO2 Plant and backfill process tanks are in concrete bunded areas to contain spillage.

Secondary containment for cyanide offloading, storage and process tanks are sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event.

There are measures in place to prevent discharge to the environment from any cyanide solution or cyanide containing water that is collected in the secondary containment areas. All bunds have sumps fitted with pumps and associated pipelines to return the content to the process. Some sump pumps are automated and others must be started manually to control where the effluent is pumped to. No sump pump piping system is directed to the environment.

All cyanide process tanks are equipped with secondary containment.

Spill prevention or containment measures have been provided for all cyanide process solution pipelines.

Pipelines for reagent cyanide transfer from the off-loading area to storage tanks runs over a concrete slab and the pipes are drained directly following off-loading. The cyanide pipelines are checked daily for leaks during each shift. Reagent cyanide pipelines within the processing plant runs over concrete bunded areas.

All cyanide process solution pipelines in the processing plant runs over concrete areas that drain into concrete trenches that runs to the plant PCD.

Pipelines at the Backfill plant that does not run over concrete areas are either rubber, HDPE or Copon (epoxy) lined and thickness testing is conducted annually.

The pipelines from the processing plant to the Doornpoort TSF are within an earth bund (along the entire length). Spillage catchment areas have been constructed that will contain spillage during an incident and maintenance to facilitate clean-up. Pipeline inspection is undertaken on a daily basis and thickness testing of pipework on an annual basis.

The remaining pipeline to the processing plant is a HDPE pipeline. The pipeline is buried at shallow depth (distance between topsoil surface and top surface of the pipe is approximately 0.5m). Since the remaining pipeline is buried at shallow depth, any leaks that develop will push upwards with a spout which means that any leaks can be visually detected. The remaining pipeline route is visually inspected daily by the South Deep TSF Foreman.

The pipeline from the pump station (Jo-Jo) to the high-pressure water monitoring gun is Victaulic (steel with clamps).

The pipeline from the Old RWD to the RO2 WTP is a mild steel pipeline which is visually inspected daily. Brine pipeline from plant to Old RWD (Dam 5) is a HDPE pipeline.

Two tailings and one return water pipeline cross the Kariegaspruit stream flowing to the Leeuwspruit. The pipelines cross on support plinths and rock gabions either side of the stream to prevent erosion during periods of high flow. The tailings pipelines are steel pipelines that are HDPE lined. The pipelines are fitted with high pressure flanges and bolts. The pipeline section over the spruit is an extra length in order to not have a flange over the water. The return water pipeline is a steel pipeline with Copon lining.

The cyanide tanks and pipelines are constructed of material compatible with cyanide and high pH solutions.

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

Standard of Practice 4.8

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in Full Compliance with Standard of Practice 4.8; to implement quality control/quality assurance (QCQA) procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Quality control and quality assurance (QCQA) programs have been implemented during the construction of all new cyanide facilities and modifications to existing facilities, including cyanide unloading, storage and other cyanide facilities. The QCQA for the operation's cyanide facilities were addressed in the original ICMC certification audit and the subsequent recertification audits, including the current audit.

Since the previous recertification audit, the following construction and modification to cyanide facilities have been undertaken:

- Gold Fields Old RWD Upgrade Project
- Backfill cyclone cluster structure
- Doornpoort TSF Phase 2
- RO2 Water Treatment Plant

Quality assurance and quality control programs were implemented for the above-mentioned projects.

QCQA documentation observed during the current audit addressed the suitability of materials and adequacy of soil compaction for earth works, the installation of liners and the construction of the tanks and structures.

QCQA records for cyanide facilities have been retained and this was addressed in the original ICMC certification and subsequent recertification audits, including the current audit.

The review of cyanide facility construction by appropriate qualified personnel was addressed in the original ICMC certification audit and subsequent recertification audits.

QAQC records were not available for the following for the Gekko and the TSF 1 and TSF 2 remining pumpstation, therefore the facilities were inspected by appropriately qualified persons and reports were issued concluding that their continued operation within established parameters will protect against cyanide exposures and releases.

Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, and surface and groundwater quality.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 4.9

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 4.9; to implement monitoring programs to evaluate the effects of cyanide use on wildlife, and surface and groundwater quality.

The operation has developed written standard procedures for monitoring activities.

- Surface water monitoring conducted weekly and monthly by DD Science in accordance with the requirements of the *Procedure for Taking Cyanide Samples* and the *Procedure for the preparation and preservation of samples (surface water)*.
- Groundwater sampling is conducted by Rison Consulting in accordance with the requirements of the *Groundwater Sampling Manual* compiled by the Water Research Commission.
- Wildlife monitoring is done visually during daily TSF, RWD and process water pond inspections as well as by the Environmental Department during groundwater and surface water monitoring events and ad hoc inspections.
- The *South Deep Standard Procedure for Water Monitoring Programme* provides overall guidance to ensure quality control and assurance.

The sampling and analytical protocols have been developed by appropriately qualified personnel.

The procedures specify where the samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, cyanide species to be analysed for and quality assurance and quality control.

Sampling conditions and procedures are documented in writing.

Monitoring is conducted at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner. Groundwater monitoring is conducted quarterly. Surface water monitoring is conducted weekly and monthly. Wildlife monitoring is conducted daily by TSF personnel and during the above-mentioned surface and groundwater monitoring events.

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 cyanide facilities to protect human health, wildlife, livestock, and the environment.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 5.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 5.1; to plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife, livestock, and the environment.

South Deep Gold Mine has developed written procedures to decommission cyanide facilities at the cessation of operations.

The *Procedure for Demolition of Cyanide Facilities* describes the steps to following for the demolition of cyanide facilities at the cessation of operations. The procedure is applicable to all cyanide facilities at South Deep Mine. It states the requirements to decontaminate cyanide related pipelines, tanks and other related equipment at the cyanide facilities, demolition and disposal of demolition material.

The *Final Rehabilitation, Decommissioning and Mine Closure Plan* specifies specific closure measures related to cyanide decontamination at closure.

A detailed schedule has been developed for the closure of the South Deep metallurgical and backfill sections.

The decommissioning procedures are reviewed every 3 years or if a change has occurred.

Standard of Practice 5.2: Establish a financial assurance mechanism capable of fully funding cyanide-related decommissioning activities.

☒ **in full compliance with**

The operation is

☐ in substantial compliance with

Standard of Practice 5.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 5.2; to establish a financial assurance mechanism capable of fully funding cyanide-related decommissioning activities.

The operation has developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in the *Procedure for Demolition of Cyanide Facilities and Final Rehabilitation, Decommissioning and Mine Closure Plan*.

South Deep Gold Mine has compiled the Closure Cost Estimate Report. The closure cost estimate for the South Deep Gold Mine is reviewed and updated annually by an external consultant.

The closure cost report includes all infrastructure, including cyanide related infrastructure.

The operation has established a financial mechanism approved by the applicable jurisdiction to cover the estimated costs for cyanide-related decommissioning activities as identified in its decommissioning and closure strategy.

South Deep contributes to the Place Dome Western Areas Joint Venture Trust. The shortfall between the money in this trust and that required for cyanide related decommissioning activities is funded by bank guarantees.

It was observed that South Deep Gold Mine has sufficiently covered the estimated decommissioning and closure costs.

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

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 6.1; to identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

South Deep Gold Mine has developed procedures describing how cyanide related tasks such as unloading, plant operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimise worker exposure.

The operational procedures include the PPE required, address pre-work inspections as well as the procedural steps to follow.

Various forums and processes are used to communicate with employees and contractors on safety procedures and to provide them with an opportunity to provide their input in developing and evaluating health and safety procedures. These include:

- Gold Plant Monthly Safety Representatives meeting.
- TSF (Stefanutti Stocks) daily morning meetings / special meetings to discuss operational procedures.
- Backfill Area overtime shifts / production meetings.

RO2 WTP holds procedure discussions with employees during operational meetings

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

The operation is

☐ in substantial compliance with

Standard of Practice 6.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 6.2; to operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

The *Managerial Directive Optimization Plan Sodium Cyanide* states that the Leach feed pH must be maintained at 10.5 and higher.

The operation has identified areas and activities where workers may be exposed to cyanide in excess of 10 ppm on an instantaneous basis and 4.7 ppm continuously over an 8-hour period and require use of PPE in these areas or when performing these activities.

Following areas have been identified as cyanide hotspots:

- Top of leach (CIL)
- Top of leach
- Tailings screen
- CIP feed launder
- Cyanide storage area
- Bottom of elution area
- Smelt house
- Gekko
- Mill spillage sump.
- Cyanide offloading bay
- Backfill storage tank
- Backfill TK1, TK 8 and TK9 tanks, tundish area
- Doornpoort penstock.

Surveys are conducted every 3 years or if there is a major change at the operational areas.

PPE required in these areas are indicated on safety signs and stipulated in operational procedures relating to specific cyanide related activities.

Where the potential exists for significant cyanide exposure, the operation uses ambient and personal devices to confirm that controls are adequate to limit worker exposure to hydrogen cyanide gas to 10 ppm on an instantaneous basis and 4.7 ppm continuously over an 8-hour period.

Fixed monitors have been installed in the following areas, with the first alarm set a 4.7 ppm and the second alarm at 10 ppm:

- Gold plant transfer pumps in cyanide storage area
- CIP launder (x3)
- Leach tank (x5)

- Smelt house (x4)
- Sag mill sump
- Elution column
- Tailings launder
- Cyanide offloading area
- Backfill tanks (x3)
- Doornpoort TSF neutralisation pump station
- Gekko

Personal HCN monitors are available for use at the Backfill section, chemical offloading area, Doornpoort TSF and Gold Plant.

As per the *HCN Gas Detection* procedure, the area where HCN gas above 4.7 ppm is detected must be evacuated until the gas level has lowered to below 4.7 ppm.

The fixed and personal monitors are maintained, tested and calibrated 6 monthly by an external party. Monthly bump tests and inspections are done internally on the fixed units as per the planned maintenance system. The calibration records are retained for at least 3 years.

Warning signs, in areas where cyanide is used, advising that cyanide is present, the required PPE for the area, that smoking, open flames and eating and drinking are not allowed, have been placed. The signs advise of the presence of cyanide and warn against eating, drinking, smoking, and the use of open flames, as applicable. The signs further instruct that the appropriate PPE should be worn, where applicable.

High-strength cyanide liquid cyanide is dyed for clear identification.

Showers, low-pressure eyewash stations and dry powder / non-acidic sodium bi-carbonate fire extinguishers are located at strategic locations throughout the plant where cyanide is present.

The safety showers and eyewash stations are inspected weekly as part of the planned maintenance programme and in accordance with the requirements of the *Procedure for Safety Shower Inspection*. Safety showers are inspected daily during the offloading area inspection, prior to an offloading event, in addition to the weekly planned maintenance programme inspections.

Safety showers are inspected daily (morning and night shift) at the backfill plant area and tailings bund area in addition the weekly planned maintenance programme inspections.

Safety showers are inspected daily at the RO2 WTP.

Fire extinguishers are inspected monthly and indicated on the label on the unit. The inspections are conducted by an external service provider who also provides a monthly report with all units inspected and the status thereof. Annual pressure tests are performed on the units.

Unloading, storage, process tanks and piping containing cyanide solution are colour coded in accordance with the metallurgical division's colour coding system, with some structures having additional labelling. All tanks and pipelines are colour coded in accordance with the *Procedure for Colour Coding* and will display the colour corresponding to the content being conveyed.

The content and the flow direction of the reagent strength cyanide pipelines and process pipelines are indicated.



The high strength cyanide and caustic pipelines are covered with lagging and are therefore marked with stickers in the corresponding colour.

The sodium cyanide SDS and first aid procedure are available at the areas where cyanide is managed in the process plant and at the solid cyanide storage areas.

Safety signs are available in English. The official language of South Deep Gold Mine is English with all documentation being in English.

Procedures are in place and being implemented to investigate and evaluate cyanide exposure incidents to determine if the operation's programs and procedures to protect worker health and safety, and to respond to cyanide exposure, are adequate or need revising.

South Deep Gold Mine has implemented the *Standard for Accident (or) Incident Reporting (General)* to ensure that incidents are reported, investigated and corrective / preventative are implemented to prevent future occurrence.

It is required that all incidents are managed via the Incident Cause Analysis Method (ICAM) process.

A process is in place to revise programs and procedures should an incident investigation and evaluation identify the need in order to protect worker health and safety and to adequately respond to cyanide exposures.

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

☐ in substantial compliance with

Standard of Practice 6.3

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 6.3; to develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

The operation has oxygen and resuscitators, antidote kits, radios and telephones readily available for use at the cyanide unloading and cyanide storage area and elsewhere in the processing plant, backfill section (including for the RO 2 WTP), Doornpoort TSF and TSF 1 and 2 remining area.

The antidote kits, Cyanokit, are stored at the ER24 Emergency Response station and will only be administered by a medical officer only.

The operation inspects its first aid equipment regularly to ensure that it is available when needed, and materials such as cyanide antidotes are stored as directed by the manufacturer and replaced on a schedule to ensure that it will be effective when needed.

The first aid equipment at the processing plant first aid room, leach, smelt house, and training and maintenance emergency equipment is inspected monthly.

The backfill plant first aid rooms and the Doornpoort TSF first aid room are inspected monthly.

The chemical offloading first aid equipment is inspected as part of the *Chemical Offloading Bay Daily Routine Safety Checklist* as well as the pre-offloading inspection.

South Deep Gold Mine has developed the *Cyanide First Aid Protocol* to respond to cyanide exposures. The procedure is applicable to cyanide exposures that could occur at the chemical offloading area, processing plant, backfill plant, Doornpoort TSF, TSF 1 and 2 remining area, and RO2 WTP.

In addition, ER24 (paramedic response) has developed the *Cyanide Exposure Response* procedure to respond to cyanide exposures.

The emergency procedures detail the necessary response actions to cyanide:

- Inhalation of HCN gas through the nose and mouth
- Ingestion / swallowing through mouth
- Absorption through the skin, eyes, ears and mucous membranes.

South Deep Gold Mine has its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide.

There are trained first responders at the processing plant, backfill plant, TSF 1 and 2 remining area, RO2 WTP and Doornpoort TSF.

ER24 (ambulance and paramedics) is part of the emergency response for South Deep Gold Mine. The processing plant control room will notify the ER 24 control room (on the mine) to dispatch an ambulance in an emergency. The ER24 ambulance is located at the mine. ER24 is a 24-hr



emergency response service and have oxygen, resuscitator, radio, antidote kits and qualified medical personnel available to assist with any cyanide exposure incident.

The operation has developed procedures to transport workers exposed to cyanide to locally available qualified off-site medical facilities. The ER24 *Transportation of ingested/inhaled/absorption of cyanide patient* states that the patient will be taken to the receiving hospital.

South Deep Gold Mine has made formalised agreements with Lenmed Private Hospital to treat patients for cyanide exposure. South Deep Gold Mine is confident that the hospital has adequate, qualified staff, equipment and expertise to respond to cyanide exposures. The hospital participates in at least one full chain emergency mock drill every three years, combined with South Deep ER24 paramedics. South Deep Gold Mine provides the hospital with cyanide emergency PPE.

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

The operation is

☐ in substantial compliance with

Standard of Practice 7.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 7.1; to prepare detailed emergency response plans for potential cyanide releases.

South Deep Gold Mine has developed the following emergency response plans to address accidental release of cyanide and cyanide exposure:

- *Procedure for Cyanide Emergency Preparedness and Response*
- *Emergency Procedure for Cyanide Transport Tanker on-site road incident.*
- *Emergency Preparedness and Response Plan for South Deep TSF's*
- *Elevated WAD Cyanide Levels in the Plant Residue.*

South Deep Gold Mine has implemented the *Procedure for Cyanide Emergency Preparedness and Response* (Cyanide EPR) and associated procedures that list the various credible events scenarios for the site inclusive of cyanide incidents. The Cyanide EPR and associated procedures account for the following events:

- a) Catastrophic release of hydrogen cyanide from storage, process or regeneration facilities.
- b) Transportation accidents occurring on site or in close proximity to the operation.
- c) Cyanide releases during unloading and mixing.
- d) Cyanide releases during fires and explosions.
- e) Pipe, valve and tank ruptures.
- f) Overtopping of ponds and impoundments.
- g) Power outages and pump failures.
- h) Uncontrolled seepage.
- i) Failure of cyanide treatment, destruction or recovery systems.
- j) Failure of tailings impoundments and other cyanide facilities.

For each scenario, the plan states the purpose, emergency controller, hazards, response actions, specific cyanide related procedures / references.

Transport related emergencies outside the mine are the responsibility of the cyanide transporter, Tanker Services, and will be handled in accordance with their transportation emergency response plan.

A route risk assessment was conducted by Tanker Services from the Sasol Chemicals Midlands facility in Sasolburg to the South Deep Mine near Westonaria for the transportation of sodium cyanide.

The risk assessment considered the:

- Recommended Transportation route as well as an alternative route.
- Route profile
- Condition of the road along the route, risks / red flags, possible preventative action, positive aspects (availability of emergency response from local authorities, etc).

South Deep Gold Mine has developed the *Emergency Procedure for Cyanide Transport Tanker On-site Road Incident* that describes the response actions for transportation incidents on the mine site.

The emergency plans and procedures describe the following:

- a) Specific response actions (as appropriate for the anticipated emergency situations) such as clearing site personnel and potentially affected communities from the area of exposure.

Operational procedures provide guidance to ensure the safety and health of employees while experiencing abnormal circumstances and to ensure the safest and quickest way to evacuate the processing plant, smelt house and backfill section in case of an emergency.

The *Procedure for Affected Communities & Site Personnel Evacuation* details the requirements for the activation, notification and actions to be taken to facilitate the evacuation of affected communities and site personnel as well as to highlight preplanned escape routes in the event of a catastrophic TSF failure.

The *Emergency Preparedness and Response Plan for South Deep TSF's* provides details on the notification of employees and affected communities and government departments in the event of a catastrophic TSF failure, including steps to follow to safely evacuate the affected parties.

- b) Use of cyanide antidotes and first aid measures for cyanide exposure.

It is stated in the *Cyanide First Aid Protocol* that only medically trained personnel (professional nurse or advanced life support (ALS) paramedic) may administer the Cyanokit antidote and not plant personnel. Plant personnel may only administer 100% oxygen and CPR. Antidote kit is to be sent with the patient to hospital. The procedure further describes the steps to follow in the event of a cyanide exposure.

The *Cyanide Antidote Kits (Hydroxocobalamin Cyanokit)* procedure provides information on procurement, storage and inspection of the Cyanokit antidotes.

- c) Control of releases at their source.
- d) Containment, assessment, mitigation and future prevention of releases.

Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 7.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 7.2; to involve site personnel and stakeholders in the planning process.

Input from the workforce and emergency response teams, ER24 and Lenmed Hospital, is obtained during the debriefing sessions following mock drills. Opportunity is provided to discuss shortcomings and for them to make recommendations on required changes.

During annual stakeholder engagement sessions with the communities, as well as emergency response siren testing, the communities are provided with opportunity to provide feedback on emergency response planning. The session was also attended by disaster management teams from the West Rand District Council and Emfuleni Local Municipality.

In the event of catastrophic TSF failure, the Metallurgical Senior Administrator or appointed EMQNet Log Keeper will activate the EMQNet Crisis Management System and immediately send out cell phone messages to preloaded community members in the TSF zone of inundation and notify the West Rand District Municipality Disaster Management to immediately evacuate any identified vulnerable or special needs community members to the emergency muster point, the Lido Country Lodge. Messages will also be posted on community WhatsApp groups. The stakeholder database is kept up to date during the annual stakeholder engagement sessions.

Emergency preparedness and response meetings were held with the West Rand District Municipality and Emfuleni Local Municipality Disaster Management teams and Lido Country Lodge, that will be used for an emergency muster point.

Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 7.3

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 7.3; to designate appropriate personnel and commit necessary equipment and resources for emergency response.

The cyanide-related elements of the *Cyanide Emergency Preparedness and Response Plan* (Cyanide EPR) and associated procedures details the following:

- *Cyanide EPR – Section 3 Cyanide Emergency Response Team (ERT)* states that the cyanide emergency response team is a multi-disciplinary response team that will be led by the Head of Metallurgy as the cyanide emergency response coordinator and supported by cyanide incident emergency team members including the Plant Shift Supervisor, Plant Engineering Manager, Safety Officer, Area Superintendent, South Deep Proto Team, ER24 Medical Response Team, Protection Services, external response agencies from Disaster Management teams from the West Rand District Municipality.
- *Cyanide EPR – Section 3.3 Cyanide Incident Emergency Team Members* lists the emergency team member designations, including operational personnel, ER24 medical response team, external response agencies from local and district municipality disaster management teams.
- *Cyanide EPR – Section 4.1.4 Role of Heads of Department* states that the Heads of Department are accountable for employee and contractor emergency response awareness and adherence to this procedure, including induction training.
- The *Metallurgical Training Matrix* includes cyanide awareness and cyanide first aid training for nominated emergency responders and cyanide awareness for all employees and contractors, emergency mock drill participation.
- The *Call out Procedure for Emergency Response* procedure details the procedure to bring medical and emergency assistance as quickly as possible to an emergency. The procedure includes emergency contact details.
- *Cyanide EPR – Section 4.1 Roles and Responsibility* details the responsibilities of the key cyanide emergency teams.
- The *Procedure for Emergency Response Equipment* provides the detail of the emergency response equipment used at the operations as well as the contact details of suppliers for approved cyanide emergency response equipment. The procedure states the areas where emergency response equipment is available.

The procedure states the frequency and responsibility for inspection of the emergency response equipment.

A detailed inventory of the emergency response equipment at all operational areas is held and checked and updated monthly.

- The *Procedure for Emergency Response Equipment* details the requirements (area where equipment is stored, responsible person, frequency) for inspection of emergency response equipment.
- The roles of ER24, Lenmed Hospital and Lido Lodge (muster point) are described in the Cyanide EPR.

Communities have no role in the execution of the emergency response plan other than evacuation to the muster point.

South Deep Gold Mine has confirmed with ER24 and Lenmed Private Hospital their roles and responsibilities as identified in the Emergency Response Plan. Both ER24 and Lenmed Private Hospital are included in full chain mock drills every three years.

A Memorandum of Understanding has been signed between South Deep JV and Lido Country Lodge cc to provide the necessary facilities to serve as a muster point in the unlikely event of an environmental disaster, including but not limited to a tailings facility failure.

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

Standard of Practice 7.4

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.4; to develop procedures for internal and external emergency notification and reporting.

The procedure to notify management, regulatory agencies, external response providers and medical facilities are described in the *Cyanide Emergency Preparedness and Response* plan.

All contact details for management, regulatory agencies, external response providers, medical facilities, and neighbouring farm owners are available on the online EMQnet Crisis Management System. In the event of a significant cyanide medical and/or spill emergency, the cyanide emergency will be managed using the EMQNet Crisis Communication Software tool. The Metallurgical Senior Administrator or appointed EMQNet Log Keeper will activate the EMQNet Crisis Management System and mobilise all the emergency response teams.

Cyanide EPR - Section 7.1 Communication with Communities and Authorities describes the use of the EMQNet Crisis Management System to notify the communities in the event of a cyanide related incident and any required response measures.

Cyanide EPR - Section 7.3 Media Communication states that the South Deep People and Organisational Vice President or alternate must be consulted when arranging or controlling the media, in accordance with the requirements detailed in the *South Deep Crisis Management Plan*. It is stated in the *Crisis Management Plan* that the Regional Incident Management Team Chairperson will authorise external media and stakeholder briefings for crisis events.

South Deep Gold Mine has implemented the Procedure for Notification of Significant Cyanide Incidents to the ICMI. The procedure describes the reporting requirements in the event that a significant cyanide incident occurs in any of the cyanide facilities.

No significant cyanide incidents have occurred in the period since the last recertification audit.

Standard of Practice 7.5: Incorporate remediation measures and monitoring elements into response plans and account for the additional hazards of using cyanide treatment chemicals.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 7.5

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 7.5; to incorporate remediation measures and monitoring elements into response plans and account for the additional hazards of using cyanide treatment chemicals.

Spilled liquid cyanide will be pumped if in a bund or hosed to a sump and from there pumped to the process (leach section). Spillage in the no man's land area will be contained and contaminated soil will be loaded and discarded at the processing plant mill stockpile.

The preferred method of control for spilled cyanide is to pump solutions back into a containment area such as a lined process water pond, detox/containment dam, tailings dam or solution corridor. In cases where pump transfer is not possible, then initial containment should be affected using earthen dams, sumps or temporary drains to confine the spillage and prevent spread of cyanide into surrounding water bodies.

The South Deep Environmental Department will monitor the extent of the incident by taking soil, water and other related element samples (area to be made safe). Contaminated soil from affected areas will be sampled by an approved third-party sampler using the soil sampling methodology described in the plan and analysed for applicable cyanide range and other related elements as per applicable legislation. Samples will be analysed at the South African National Accreditation System (SANAS) accredited laboratory in line with chemical and cyanide analysis requirements. Soil sampling and remediation will continue until the *Protection of Ecosystem Health* limit of 20 mg/kg cyanide is reached as stated in Government Notice 467 of 2013 – *National Norms and Standards for the Remediation of Contaminated Land and Soil Quality in the Republic of South Africa*.

In the event that water sources have been polluted, arrangements will be provided by the South Deep Gold Mine to supply alternative clean water for consumption by the affected community until such time as the affected water is declared safe. Bulk potable water will be supplied from the South Deep Gold Mine Rand Water reservoir which will be transported to the affected community using a water tanker. If required, bottled water, in smaller quantities, will also be provided.

Emergency procedures state to not use detoxification chemicals like hypochlorite, hydrogen peroxide, and ferrous sulphate to treat cyanide spillage into stream and natural ponds.

During an emergency or abnormal event, including cyanide incidents, more frequent sampling will be undertaken, depending on the extent of contamination. The location of an incident (e.g. contamination of a public stream) will receive higher frequency of sampling due to potential impact to downstream water users (farming, domestic use).

Sampling will be in accordance with the sampling methodologies and parameters detailed in the relevant emergency procedures.



Sampling location(s) and number of sampling points will be determined by the Environmental Department based on the location and extent of the incident.

Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 7.6

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 7.6; to periodically evaluate response procedures and capabilities and revise them as needed.

South Deep Gold Mine reviews and evaluates the cyanide related elements of the *Emergency Response Plan* for adequacy on a regular basis. The *Cyanide EPR* is reviewed every three years, or following changes necessitated by an emergency mock drill exercise or when cyanide related emergency / accident occurred that requires the revision of the procedure. Environmental water monitoring procedures, used in the event of a cyanide incident requiring additional environmental monitoring, are revised every 2 years or if there has been a change to the monitoring points or procedures.

The South Deep Metallurgical Department has developed a procedure and schedule to ensure that emergency mock drills are conducted in a safe and effective manner. The procedure describes the steps to follow and documentation to be retained following the drill. It is stated that cyanide related emergency mock drills must be conducted on a rotational basis in each area to test emergency response capability (including ER24) and emergency equipment availability. A drill including the hospital is scheduled at least once in 3 years.

Mock drills are conducted at least annually, address release and exposure scenarios, involve on-site and external personnel (ER24 and Lenmed Private Hospital).

There are provisions in place to evaluate and revise the Emergency Response Plan following mock drills or after a cyanide-related emergency requiring its implementation. Mock drills are evaluated and deviations / actions for improvement are recorded. Actions are detailed in the action plan for follow up and close out.

No cyanide related incidents occurred during the current recertification period and therefore no review and revision of the emergency response procedures were required as a result thereof.

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

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 8.1; to train workers to understand the hazards associated with cyanide use.

The operation trains all plant, TSF employees and contractors who may encounter cyanide, in cyanide hazard recognition:

- All new employees, contractors and visitors must attend the Cyanide Awareness presentation prior to entering the work areas.
- Cyanide Product Awareness training is presented to all metallurgical employees (processing plant, backfill plant, RO2 WTP, TSF remining and Doornpoort TSF contractors) annually.
- All processing plant, backfill plant, RO2 WTP, TSF remining and Doornpoort TSF employees and contractors receive additional cyanide training as part of South Deep Mine's e-learning induction system. The training mainly covers potential cyanide exposures and symptoms.

The Cyanide Awareness training and the Cyanide Module as part of the mine wide e-learning is conducted every 24 months and Cyanide Product training is refreshed annually.

Training records are maintained for the period of employment and thereafter for the life of the operations.

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

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 8.2; to train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

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

New and existing employees receive specific on-the-job training and are assessed by means of Planned Task Observation (PTOs). A PTO will be conducted at least once a year for a specific task on a specific employee, except for high-risk tasks that are assessed every 90 days. If during the assessment, the employee is found not competent, the employee will receive training again and will be re-assessed. For the TSF and RO2 WTP operations, PTOs are conducted weekly dependent on the task performed.

Training matrices have been compiled detailing the required operational training (standard operating procedures) per person / occupation working in a specific area. The matrix states the procedure numbers, dates of completed training, dates of planned future training.

The training elements necessary for each job involving cyanide management are identified in the training materials. Training is conducted on the steps stipulated in the operational procedures. The elements of the procedure are transferred to a training and PTO format used for both training and assessment of competence.

The training is conducted by appropriately qualified trainers providing training related to cyanide management activities. Task training related to cyanide management activities is provided by the respective supervisors responsible for the operational areas, including the processing plant, backfill plant and RO2 WTP.

Employees receive specific on-the-job training prior to working with cyanide. Employees work under supervision until found competent after which the employee can work unsupervised. A routing form system is used to ensure that new employees undertake the induction and mandatory training prior to reporting to the respective operational areas. Thereafter on-the-job training is done under the supervision and guidance of the sectional supervisor.

Operational training, based on the requirements of an operational procedure, will be refreshed if need for refresher training was identified during a PTO or if changes are made to a specific operational procedure or if changes occur in an operational area.



Records are retained for duration of employment. Records contain the names of the employee, trainer, date, topics covered, and whether the employee demonstrated an understanding / knowledge.

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

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 8.3; to train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

All cyanide unloading, production and maintenance personnel are trained in the procedures to be followed if cyanide is released, including decontamination and first aid procedures.

Cyanide first aid, cyanide PPE and emergency equipment, and cyanide spill management training is provided to first responders at the processing plant, backfill plant and Doornpoort TSF, TSF remaining area and RO2 WTP. Training is provided annually by an external service provider. The training consists of theory, practical demonstration and an assessment. The chemical handlers (also responsible for cyanide offloading) and ER24 personnel also attend these training courses.

High-level cyanide first aid training is presented to all employees as part of the Cyanide Awareness training.

The first responders, ER24 and Lenmed Private Hospital personnel participate in mock drills.

The Cyanide Awareness presentation (adapted) and feedback from full chain mock drills are presented to the relevant Lenmed Hospital personnel. Demonstrations on donning of cyanide PPE are done by the ER24 paramedic to the relevant hospital personnel. This training is provided every three years.

The local fire brigade and police service does not have a roll in responding to cyanide release events.

Training records are retained for the duration of the employment after which it will be archived. It was observed that the records include the names of the employee and the trainer, the date of training and topics covered, and if the employee demonstrated an understanding of the training.

PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

Standard of Practice 9.1: Promote dialogue with stakeholders regarding cyanide management and responsibly address identified concerns.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 9.1

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 9.1; to promote dialogue with stakeholders regarding cyanide management and responsibly address identified concerns.

South Deep Gold Mine provides stakeholders with information on its cyanide management practices and engages with them regarding their concerns.

South Deep Gold Mine is actively involved with nine communities situated near the operations. The communities are Westonaria, Westonaria Borwa, Bekkersdal, Simunye, Hillshaven, Thusanang, Poortjie, Zuurbekom, Neighbouring farms (Priority A) as well as others located at a further distance namely, Randfontein communities (Priority B).

A Stakeholder Engagement Plan has been developed that identifies stakeholders at various levels including communities, farmers, government departments, etc. The plan describes the various engagement levels (level within the South Deep operation responsible for engagement), the stakeholders that will be engaged on that level and engagement forums at each level. Of importance to this principal is that, at Level 3, the South Deep Gold Mine supervisors and officers will engage with municipal councillors, non-governmental organisations (NGOs), nonprofit organisations (NPOs), forums, community police forums (CPFs) at Ward Committee Forums, the Thusanang community and multi-stakeholder forums.

In addition, community open days are held at least annually with the Category A communities except for the larger Bekkersdal community that are engaged more frequently.

The plan further details the purpose of the specific engagement session, the stakeholder group / activity, internal level responsible for engagement, time frame (schedule per months of engagement), internal South Deep Gold Mine attendance required, anticipated external attendance.

South Deep Gold Mine provide stakeholders with information and provide opportunity for stakeholders to engage on their concerns at the following meetings / forums:

- Local NGOs, community forums and associations (includes school engagements, home-owner associates, community open days held monthly)
- Local farmer meetings
- Environmental awareness campaigns and programmes (mine tours for local farmers, tertiary education groups to take them around the mine facilities and to explain different mining activities are conducted quarterly).

Attendance registers and questions are documented for the above-mentioned engagement sessions.



The stakeholder engagement plan is revisited frequently as communities change and the need for additional engagement is identified.

A Grievance Procedure has been implemented by South Deep Gold Mine. Included in the documentation provided to attendees at engagement sessions is a one-page document *"How to lodge a grievance with South Deep Gold Mine"*. The contact details of the Community Relations Department are also provided.

The objective of the procedure is to provide guidance to South Deep Gold Mine operation for effective management of community grievances and complaints. The procedure provides a process flow for the receiving and management of grievances until it has been resolved and feedback provided to the person.

An electronic grievance register is kept by South Deep Mine. The register includes the date of grievance, name of aggrieved, description of grievance, grievance type, initial level of grievance, current level, closed out / ongoing. No grievances related to cyanide management were lodged from 2022 to 2024.

Standard of Practice 9.2: Make appropriate operational and environmental information regarding cyanide available to stakeholders.

☒ in full compliance with

The operation is

☐ in substantial compliance with

Standard of Practice 9.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in FULL COMPLIANCE with Standard of Practice 9.2; to make appropriate operational and environmental information regarding cyanide available to stakeholders.

The operation is in full compliance with Standard of Practice 9.2; to make appropriate operational and environmental information regarding cyanide available to stakeholders.

South Deep Gold Mine has developed a written and pictorial description (comic format) of the cyanide offloading, use and management activities at the mine as well as a little story on potential hazards at the TSF (why the community should not go near the TSFs).

A fact sheet on TSF management has been compiled and is provided to stakeholders during engagement sessions. The purpose of the fact sheet is to inform the community that TSFs are hazardous, and the material is poisonous and are not safe for the community to swim in or collect material from.

The documentation is available in English, isiXhosa, Sesotho, Afrikaans, isiZulu and is provided to stakeholders during community engagement activities. Presentations are given during the engagement sessions and translators are available to assist if attendees are not fluent in English.

Gold Fields makes information publicly available on the following confirmed cyanide release or exposure incidents if they occur: cyanide exposure resulting in hospitalisation or fatality, cyanide release off the mine site requiring response or remediation, cyanide releases on or off the mine site resulting in significant adverse effects to health or the environment, cyanide releases on or off the mine site requiring reporting under applicable regulations, and releases that cause applicable limits for cyanide to be exceeded.

It was confirmed to the auditor during interviews with various operational personnel that South Deep Gold Mine has not experienced any cyanide release or exposure incidents in the period since the last recertification audit.

In the event of a confirmed cyanide release or exposure incident, information of such an incident will be made publicly available as follows:

- Published in the Gold Fields Annual Integrated Report, available on the company's website.
- Water related environmental incidents, level 3 and above, are reported to the Department of Water and Sanitation (DWS). These incidents are discussed at the Rietspruit Water Forum (a public forum).
- Safety and health related incidents, including lost-time injuries, serious incidents and fatalities that includes cyanide related incidents, must be reported to the South African Mines Reportable Accidents Statistical Systems (SAMRASS) that is administered by the Department of Mineral Resources and Energy (DMRE).



The above-mentioned government departments do not make these incidents publicly available however, safety, health and environmental (SHE) incidents are reported in the Gold Fields Report to Stakeholders and in the Gold Fields Integrated Annual Report.

Cyanide exposure incidents resulting in hospitalisation or fatality will be reported by Gold Fields in the Integrated Annual Report under the section *Building a safe and respectful workplace*. The section provides information on serious injuries and fatalities, including the nature of the incident and the site location.

Gold Fields has maintained zero Level 3 – 5 environmental incidents since 2018. Cyanide release, as defined by items b) to e) of this question, will classify as a Level 3 – 5 incident in terms of the *South Deep Standard Procedure for Environmental Incident Identification, Classification, Reporting and Management* and will therefore be reported in the Gold Fields Integrated Annual Report under the section *Environmental Stewardship*, should such an incident occur.



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