



June 2014

## ICMI RE-CERTIFICATION SUMMARY REPORT

# AngloGold Ashanti Mponeng Gold Plant

**Submitted to:**

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REPORT



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## 1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

**Name of Cyanide User Facility:** Mponeng Gold Plant  
**Name of Cyanide User Facility Owner:** AngloGold Ashanti (AGA)  
**Name of Cyanide User Facility Operator:** AngloGold Ashanti (AGA)  
**Name of Responsible Manager:** Mr L LaGrange Lombard  
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## 2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

AngloGold Ashanti Ltd. is a global gold mining company. It was formed in 2004 by the merger of AngloGold and the Ashanti Goldfields Corporation. AngloGold Ashanti (AGA) is now a global gold producer with 21 operations on four continents: Africa, North America, South America and Australia.

AngloGold Ashanti's Mponeng Gold Plant, the subject of this re-certification, is located in the Carletonville area, approximately 90 km South West of Johannesburg in the Gauteng Province, South Africa. It currently receives its feed sources from Mponeng Mine.

The plant comprises of the ore storage and transport section, the milling, thickener, leach and CIP section, the elution circuit, the smelt house and the backfill and residue section. Ore from the mine is milled in three ROM (Run of Mine) mills operating in closed circuit with hydro cyclones. The cyclone overflow product reports to the thickeners for dewatering prior to leaching. The coarse cyclone underflow material is directed back to the mills for re-grinding.

Lime is added to the thickener feed to achieve a pH of 10.2 reporting to the pre-leach tank. The leach section consists of 10 leach tanks in series. The first tank is used for pre-oxidation while cyanide is added to the second leach tank. Cyanide dosing control is affected by means of an on-line cyanide analyser and cyanide addition is controlled according to the dry tonnage feed to the leach and concentration set point in dosing tank.

The leach slurry reports to the CIP tanks where activated carbon is used to adsorb the dissolved gold. The gold loaded carbon is removed from the CIP tanks and reports to the elution circuit for de-sorption of the gold back into solution. The CIP residue slurry reports to the backfill feed tank feeding the backfill section. The excess residue slurry not used for backfill reports to the final residue tank together with the fines removed

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from the backfill product. The final residue slurry is pumped to the tailings storage facility for disposal. The WAD cyanide in the final residue is continually monitored by means of an on-line CN WAD analyser located in the plant. Ferrous sulphate is used to complex the residual free cyanide in the backfill material before it reports to the shaft backfill storage tanks.

Loaded carbon from the CIP section is washed before reporting to the acid wash columns where it is treated with hydrochloric acid. Following a sodium hydroxide neutralisation step, the gold is stripped from the carbon in the elution columns using a hot caustic cyanide solution. The gold solution from the elution circuit reports to the smelt house where the gold is recovered in the electrowinning cells and smelted into bullion bars.

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## SUMMARY AUDIT REPORT

### Auditors Findings

in full compliance with **The International Cyanide Management Code**  
**AngloGold Ashanti** is:  in substantial compliance with  
**Mponeng Gold Plant**  not in compliance with

**Audit Company:** Golder Associates  
**Audit Team Leader:** Ed Perry, Lead Auditor  
**Email:** [eperry@golder.com](mailto:eperry@golder.com)

Mponeng Gold Plant has not experienced any significant cyanide incidents or compliance problems during the previous three year audit cycle.

### Name of Other Auditors

Marie Schlechter, ICMI pre-certified Mine Technical Specialist

### Dates of Audit

The Re-certification Audit was undertaken between 4 October 2013 and 27 November 2013. The tailings facilities and other central services are shared between of the various gold plants within the West Wits Operations, located near Carletonville in the Gauteng province. The audit therefore started when these first of these shared services was visited and completed when the plant visit was completed.

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

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

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**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 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 manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment. AGA has a contract with Sasol Polymers (the only producer of liquid sodium cyanide in South Africa) for the supply of liquid sodium cyanide. The latest amendment of the contract states that the producer and transportation company must be ICMI certified. Sasol Polymers cyanide production facility in South Africa was recertified on 7 May 2013.

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## **PRINCIPLE 2 – TRANSPORTATION**

### **Protect Communities and the Environment during Cyanide Transport**

**Standard of**

**Practice 2.1:**

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

**in full compliance with**

**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; to establish clear lines of responsibility for safety, security release prevention, training and emergency response in written agreements with producers, distributors and transporters. An agreement exists between Sasol Polymers (cyanide producer), Tanker Services (cyanide transporter) and AGA dated 3 May 2012. The agreement states that Tanker Services must be ICMI certified. Tanker Services was certified on 13 December 2011. The Agreement includes the following: details of the tankers used; a requirement to comply with national legislation; duties and responsibilities of the transporter including; safety, maintenance, training, security, offloading and emergency response. The training matrix for Tanker Services was observed showing that the training for all drivers is up to date. No subcontractors are used and there are no stop overs for the tankers. A transport route risk assessment is undertaken by Sasol Polymers and this is reviewed every two year with the most recent version dated 24 January 2012.

**Standard of**

**Practice 2.2:**

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

**in full compliance with**

**The operation is**

in substantial compliance with

**Standard of Practice 2.2**

not in compliance with

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

The operation is in full compliance with Standard of Practice 2.2; to require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management. Group wide cyanide supply contract covering all AGA Gold Plants is in place with Sasol Polymers as the sole supplier of liquid sodium cyanide in South Africa. Sasol was responsible for the transport of cyanide to Mponeng Gold Plant until July 2011 when SiLog (Sasol's transport services) and its physical assets were sold to Tanker Services who started transporting liquid sodium cyanide from Sasol Polymers to the gold plants from July 2011. Amendment no 6 LSA12 (1) 1 Jul 2006 to contract JG043001 requires the producer, supplier of cyanide to be a signatory to the ICMI Code and the producer, supplier and transporter to be ICMI certified.

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Version 10 of Contract Ref No. 4600000048 dated 10 November 2013 also states that the producer and transportation company need to be certified with the ICMI.

Tanker Services became a certified ICMI transporter on 13 December 2011.

The break in ICMI certification of the liquid sodium cyanide transportation is deemed acceptable by the auditors as the interim cyanide risk was minimal because the new transporter took over all of the transporter resources of ICMI transport certified SiLog (dedicated bulk cyanide liquid tankers, trained and experienced owner-drivers and contract drivers, assessed route risk assessments, cyanide documentation and systems) and was, and still is, covered in terms of Sasol's Product Stewardship and Responsible Care policies by the Sasol cyanide emergency response system (24 hour emergency control room, network of cyanide trained, emergency response spill and medical response service providers), dedicated cyanide tanker storage area and cyanide tanker decontamination facilities. Delivery notes (chain of custody records) for the three year re-certification period were observed showing that the liquid cyanide was transported directly from the Sasol Polymer cyanide production facility to Mponeng Gold plant with no stop overs.

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**PRINCIPLE 3 – HANDLING AND STORAGE**

**Protect Workers and the Environment during 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; to 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 following documents were observed showing an evaluation of the facilities by the relevant experts: "Structural Condition Report of the Cyanide Plant at Mponeng Gold Plant" conducted 15 October 2013 by Tenova Bateman - Werner Reynecke Principle Engineer (Pr. Eng. 20020226); "Sasol Bulk Facility Technical Inspection Report" conducted 17 July 2012 by Philip Viviers (Sasol); and "Sasol Bulk Facility Technical Inspection Report" conducted 14 February 2013 by Kobus de Wet from Sasol.

The offloading area for the liquid sodium cyanide is on concrete, surfaced with bitumen, equipped with humps, kerbs, walls 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 into an appropriate stage of the process. There are no surface waters or drainage to surface waters in the cyanide storage area or the Gold Plant as a whole

The following procedures were observed showing how the cyanide storage tanks are prevented from over filling.

"Cyanide Off-loading Procedure" MGP-CN36 Rev 06 May 2013 off-loading may not take place when level of receiving tank is 50% or higher. At 80% the air valve will close automatically.

The liquid cyanide storage tanks are each equipped with a ventilation pipe. The liquid cyanide storage tanks are in a fenced and locked area. In addition all storage and mixing tanks are located within the Gold Plant with entry being strictly controlled and the plant is surrounded by 3 m fences and razor wire.

The liquid cyanide storage tanks are not close to any incompatible materials and are situated in a bunded area to prevent the release of any liquid cyanide into an area where it could mix with any incompatible materials

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**Standard of Practice 3.2:**

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

Liquid sodium cyanide is delivered in bulk tankers from Sasol Polymers to the Plant and offloaded into cyanide storage tanks. No solid cyanide is used on the plant therefore the only containers are the tankers themselves the outside of which are washed during the offloading process and on their return to Sasol's premises.

The following procedures were also observed showing; the operation of valves and couplings, the actions in the event of a spill, the PPE requirements when undertaking activities associated with cyanide, and the use of a buddy system when undertaking these activities: "Cyanide Off-loading Procedure" MGP-CN36 Rev 06 May 2013; "Cyanide Delivery Line Leak" MGP-CN25 Rev 06 May 2013; "Procedure for Cyanide PPE to be worn" MGP-CN05 Rev 06 May 2013; "Buddy System Procedure" MGP-CN67 Rev 06 May 2013.

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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 preventative 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 preventative maintenance procedures.

Mponeng Gold Plant has 93 Special Cyanide Safety Procedures.

West Wits Tailings have 24 Emergency Procedures. In addition there is the "Mandatory Code of Practice Mine Residue Deposits", the "Tailings Management Framework", and the "West Wits Tailings Storage Facilities Day Wall Paddock System Operating Manual"

The Mponeng Gold Plant used to be run at a mean pH of 10.5. The pH has now been lowered to 10.2. The Change Management process undertaken for the lowering of pH from 10.5 to 10.2 conducted on 23 April 2013. The "pH Control at the Leach Section" MGP-CN73 Rev 06, May 2013 states the pH alarm will sound at a pH of 10.1. The addition of sodium cyanide is set at mean of 110 ppm (free cyanide). These points have been set as part of the optimisation program.

Observed on Remote Operations Centre (ROC) that the upper control limit of the WAD cyanide in the residue sent to the tailings facility is set at 50 ppm. The "Procedure to be followed when high cyanide levels are measured in the residue slime WAD levels High" MGP-CN12 Rev 06 May 2013 details the process to be followed when the WAD cyanide starts increasing above 30 ppm. The tailings facilities (TSF) management is notified if the concentration in the residue leaving the Plant goes above 50 ppm.

Chapter 31 – Backfill Product Management of the AGA Cyanide Code states the levels of cyanide permissible in the Backfill; Free Cyanide 26.5 ppm, Sodium Cyanide (total) 50 ppm, WAD Cyanide <50ppm. This is as per MINTEK Technical Info: PWL AGA BF 100112 dated 12 January 2010. "Backfill Quality" MGP-CN27 Rev 06 May 2013 states that the permissible cyanide concentration in backfill product is 25 ppm (Free Cyanide) and 50 ppm (Sodium Cyanide, total). If free cyanide is above 25 ppm the Production Metallurgist rejects the batch and it is pumped to residue.

Stability analysis is conducted every 2 years on the West Wits tailings facilities as detailed in the following documents. West Wits TSF monthly surveillance minutes (25 July 2013 and 28 Feb 2013) include freeboard for the various TSF. The legal requirement for freeboard is a minimum of 0.8 m with the AGA standard being a minimum of 1.3 m.

Inspections of the Gold Plant are undertaken in accordance with the following procedures, which also detail the frequency of inspections: "Checking Safety Showers and Eye Wash Basins" MGP-CN18 Rev 06 May

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2013 (daily); "Checking of Cyanide First Aid Kits" MGP-CN20 Rev 06 May 2013 (daily); "Daily Cyanide Facility Checklist" MGP-CN63 Rev 06 May 2013 (daily); "Inspection of Medical and Cyanide Antidote Kits" MGP-CN69 Rev 06 May 2013 (daily); "Thickness Testing of Cyanide Storage Tanks Procedure" MGP-CN85 Rev 06 May 2013 (annually); and "Servicing of Cyanide Tanks Level Transmitter Procedure" MGP-CN89 Rev 06 May 2013 (monthly).

Maintenance at the Gold Plant was managed using the Computerised Maintenance, Management Information System (CMMIS). The maintenance documentation includes the equipment number and description as well maintenance frequency, inspection frequency, the task descriptions, the tools required, PPE requirements and relevant Risk Assessments. AGA moved from CMMIS to SAP in February 2013. All the historic data from CMMIS was moved over to SAP.

Preventative maintenance includes thickness testing of storage and mixing tanks undertaken every two years. The tanks are above 75% of their initial thickness in accordance with "Cyanide Plant Audits - Structural and Civil Investigations and Recommendations".

Inspection of the Mponeng tailings facilities are undertaken on a daily basis as recorded in the Mponeng TSF Monthly Logbooks. In addition Monthly Surveillance Meetings / Inspections are undertaken and Quarterly TSF Inspection meetings done for both Savuka and Mponeng TSFs, which include; details of piezometric levels, freeboard, repairs to be made, observations made and the attendees. There is also an annual inspection of the TSF by the Corporate Geotechnical Engineer.

The Gold Plant has the following procedures to identify when changes in a site's processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures "Change Management" MGP-CN 01 Rev 06 May 2013.

The equivalent procedure for the West Wits tailings facilities is "Change Management" WWTM-CN 11 Rev 06 May 2013.

The Plant and TSF have the following procedures to be followed when there is an upset in the water balance or when there is a temporary closure. The "Procedure to be followed when high cyanide levels are measured in the residue slime WAD levels High" MGP-CN12 Rev 06 May 2013; "Procedure to Follow when HCN is detected" MGP-CN09 Rev 06 May 2013; "Cyanide Related Activities and Power Failures" MGP-CN16 Rev 06 May 2013; "Sampling of Anti-pollution Dam Overflow" MGP-CN59 Rev 06 May 2013 - WAD sampling to be done every 30 mins during pollution control dam overflow; "Procedure to follow during heavy rainfall / overtopping event" WWTM-CN09 Rev 06 May 2013 (TSF Procedure); and "Procedure to follow during a power failure" WWTM-CN12 Rev 06 May 2013 (TSF Procedure).

Emergency power is available in the event of a power failure to supply lights, security cameras and agitate the tanks and fire water reticulation, pollution control dam pumps (to pump water back to prevent overflow), residue pumps to TSF. The Plant has the flexibility to switch power of one of the substations to a particular area of the Plant if it is needed.

The emergency generator is tested on a weekly basis by the Electrical Department. They also do an inspection and record it on the inspection register (Diesel Emergency Generator IS/SHE/s/105) There is also a generator test which is done during shut downs. The generator is tested under light load during the plant shut down. This is the manufactures operating manual guideline. There is also a yearly SAP (Maintenance Flag for a full service.)

A temporary cessation of operations due to a power failure will be managed in accordance with procedure "Cyanide Related Activities and Power Failures" MGP-CN16 Rev 06 May 2013. This states that all cyanide related work to stop during power outages due the unavailability of safety alarms.

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If a temporary cessation of operations is due to an emergency event this will be managed in accordance with the Emergency Preparedness and Response Plan and Procedures.

The "Structural Condition Report of the Cyanide Plant at Mponeng Gold Plant" conducted 15 October 2013 by Tenova Bateman - Werner Reynecke Principle Engineer (Pr. Eng. 20020226) includes an inspection of all tanks and Plant infrastructure for structural integrity and signs of deterioration, corrosion or leakage. In addition the offloading area and cyanide storage tanks are inspected every two years by Sasol. Other inspections undertaken at the Gold Plant include inspections of secondary containments, pipelines, pumps, valves and the pollution control dam.

The following inspections were observed for the West Wits tailings facilities West Wits Tailings - Pipe Patrol Inspection Route and Meter Readings (done shiftly - morning, afternoon, night). All return water and storm water dam levels are visible on Wonderware (SCADA system).

The inspection documents record the name of inspector, date, observations and corrective actions recorded during inspections. Deficiencies and corrected actions are noted on inspection documentation, if action was required a job card is issued to undertake the necessary work.

All liquid sodium cyanide and mixtures containing sodium cyanide is contained in tanks and pipes. If the power fails all liquids and mixtures will remain in their appropriate storage tanks and pipelines. No cyanide will be released into the environment due to the power failure.

**Standard of Practice 4.2: Introduce management and operating systems to minimise 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 introduced management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

Various sampling and test work has been done to determine optimum cyanide addition, these include the following: Base Recovery Analysis; Diagnostic Leach Analysis; Size analysis; Bottle Roll Test; and conduct monthly speciation samples (sent to MINTEK) in backfill and residue to ensure that no cyanide is unnecessarily lost.

The optimisation programme is seeking to reduce the variability of the process. The ROC graphs provide Upper Control Limits (UCL) and Lower Control Limits (LCL) as well as the mean for various parameters. The ROC graphs show the limits based on 99.7% of readings being between the two limits. This enables the plant to see the effect of any changes and to see how the management of the process is improving e.g. Residue UCL 28.99 ppm and mean 17.56 ppm.

The following improvements were undertaken as part of the optimisation programme. A TAC1000 is used to control cyanide addition, services by Process Analytical (independent company) have been increased from every three months to every month. A VSD pump (Variable Speed Pump) was installed on Barren addition from elution to Tank 9 (Barren contains additional cyanide that is added to the process when barren is added) so that it is related to the residence time of material in the leach tanks. Installation of a dissolved oxygen meter in the first leach tank to further control optimization. Lowering of pH from 10.5 to 10.2. Installed

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magnetic drive for cyanide dosing pumps to prevent leakage and reduce the amount of maintenance required.

The plant uses a TAC1000 on line analyser to measure cyanide addition in the head leach tank and a Cynoprobe to monitor terminal cyanide in the Leach Residue before it leaves the Plant to go to the TSF. This is fed into the ROC on-line system so that all managers can see the data.

The addition of sodium cyanide is set at mean of 110 ppm (free cyanide). This point has been set as part of the optimisation program. If the set point is exceeded or if it is too low then Metallurgical Engineer is informed via sms and email.

If the concentration of cyanide in the residue is too high (above 30 mg/l WAD cyanide) or too low a cascading e-mail and sms system is used to inform managers of the situation ultimately including the Regional Vice President.

**Standard of Practice 4.3: Implement a comprehensive water management programme 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; implement a comprehensive water management programme to protect against unintentional releases.

GoldSim Water Balance (a probabilistic water balance) was developed in 2010 and incorporates scenario planning to do water demand and water conservation strategy. Water balance input sheet are updated quarterly and fed into GoldSim. Other updates are done when major changes occur such as the recent influx of additional groundwater due to neighbouring shafts that stopped pumping.

Clean dirty separation studies (1:50 year storm event) data is fed into the GoldSim model in terms of dam sizes and overflows.

The 50 year storm event model run on GoldSim includes every plant and TSF, dam and catchment areas reviewed post 2009.

A meteorological assessment was conducted by an Aurecon, independent consultant and 1:50 year storm event was revised from 118mm to 130mm of precipitation in 24 hours. From there the plant specific conditions and requirements were assessed. Run-off factors from this study are incorporated into the water balance. THE model includes losses due to seepage, slurry and water to the TSF from the Plant and return water back to the Plant.

The model has the capability to run different scenarios such as electricity cuts (no facility to pump water back to the plants) and to determine if certain dams will overflow in certain rainfall events. Also where solutions will be discharged in a certain scenario such as a major stormwater event, inflow of additional water source.

Daily data collection and inspections are recorded on a spreadsheet for both Savuka and Mponeng TSF. Data collected over a quarter is used in the updating of the model.

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Necessary freeboard is specified in "Mandatory Code of Practice Mine Residue Deposits West Wits Tailings" COP/SHE/t/003 Rev 5 May 2013. The local legal requirement is a minimum of 0.8 m. the AGA standard is 1.3 m in order to reduce the risks of over topping. If necessary this is increased in accordance with the water balance calculations as detailed in the TSF monthly meeting minutes

Operating levels and freeboard for pollution control dams were determined by the hydrological assessment conducted by Aurecon in 2009. These levels are included in the Water Balance as fixed levels in order to determine other scenarios

Phreatic levels are measured and stability analyses conducted every two years, which in association with the water balance gives recommendations made on freeboard and pool management. The latest report Vaal River and West Wits Operations Tailings Storage Facility Freeboard Assessments Report No. 01, SLR, February 2013 was observed

No major events of snow and ice that will influence water balance in the West Wits area.

**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.

The residue piped to the tailings facility has a WAD cyanide concentration lower than 50 mg/l and hence the open waters on the tailings facilities also have concentrations less than 50 mg/l. When WAD cyanide in the residue exceeds 50 mg/l the plant informs the TSF so that appropriate measures can be undertaken.

The following procedures detail the actions to be taken in the event of WAD cyanide in the residue exceeding 50 ppm: "Procedure to be follow when high cyanide levels are measured in the residue slime WAD cyanide levels high" MGP-CN12 Rev 06 May 2013 details actions to be taken by the Plant; and "Procedure to be followed when elevated WAD Cyanide is Reported by the Gold Plants" WWTM-CN06 Rev 06 May 2013 details the actions to be taken by the TSF e.g. HCN monitoring to be undertaken, and animals and birds to be scared away from the TSF.

Degradation of cyanide between the Plant and the TSF has not been calculated, however it was a minimum of 11% for Savuka which has a shorter distance between the Plant and the TSF.

Daily TSF Inspection Checklist has specific space for recording wildlife injuries and deaths. No wildlife mortalities have been observed in the last three years.

The pollution control dam on the plant is the only open water. Monitoring the WAD cyanide levels started in September 2013. Sampling is conducted weekly Results of sampling for September indicated the highest levels to be 1.2 ppm WAD cyanide.

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The following procedures for the Gold Plant were also observed: "Daily Cyanide Facility Checklist" MGP-CN63 Rev 06 May 2013. The checklists record any wildlife mortalities if there are any, none were recorded.

There are no leach heap operations.

**Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.**

in full compliance with

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 a comprehensive water management programme to protect against unintentional releases.

There is no direct discharge from the Gold Plant to surface water.

The West Wits tailings facilities have 4 legal discharge points to surface water:

-  Discharge of the sewage treatment works to the north of the site - highest reading 0.02 ppm WAD cyanide in the last three years;
-  Discharge of the sewage treatment works to the south of the site - highest reading 0.02 ppm WAD cyanide in the last three years;
-  Discharge towards the Blyvoor Canal - 0.03 ppm (07 June 2012,) WAD cyanide in the last three years; and
-  Discharge at the Gooseneck from the Aquatic Dam towards the Elandsfonteinspruit (river) - 0.02 ppm WAD cyanide in the last three years.

There are no established mixing zones.

Groundwater results observed from 2011 to 2013 are not elevated. The highest level observed was 0.04 ppm free cyanide on 18 April 2013. This was an isolated event with the other readings being 0.02 ppm or less.

There is a possibility of seepage from the TSFs indirectly impacting surface waters, however no surface water sampling results or ground water monitoring results show elevated cyanide levels above 0.02 ppm except for the isolated events detailed above.

**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

Signature of Lead Auditor

**Mponeng Gold Plant**  
Name of Facility

5 June 2014  
Date







**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.

There is no numerical standard established by the applicable jurisdiction for WAD cyanide or any other species of cyanide in groundwater, therefore there are no compliance points below or down gradient of the gold plants or tailings facilities. There are also no identified beneficial uses of groundwater down-gradient of the TSFs. Groundwater monitoring is undertaken to establish whether the tailing facilities are having an impact on the surrounding groundwater. Groundwater monitoring is undertaken twice a year. Down-gradient monitoring records were observed: the highest level observed was 0.04 ppm free cyanide on 18 April 2013. The seepage from the TSFs have therefore not caused the cyanide concentration of the ground water to exceed the levels to protect its beneficial use. Therefore no remedial action has been required.

Solution trenches have been installed around the TSF from where the water flows to the return water dam. Phyto-remediation and evaporation paddocks have also been implemented to intercept any seepage.

Chapter 31 - Backfill Product Management of the AGA Cyanide Code states the levels of cyanide permissible in the Backfill; Free Cyanide 26.5 ppm, Sodium Cyanide (total) 50 ppm, WAD Cyanide <50ppm. This is as per MINTEK Technical Info: PWL AGA BF 100112 dated 12 January 2010 (MINTEK is South Africa's national mineral research organisation specialising in mineral processing, extractive metallurgy and related areas.)

"Backfill Quality" MGP-CN27 Rev 06 May 2013 procedure states that the allowable free cyanide in backfill to the shaft is 26.5 ppm and total cyanide is 50 ppm. No exceedences of these levels were observed.

**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.

The offloading 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 back into the process. The pump is manually started prior to offloading and is run during coupling and uncoupling. There are no public areas close by. There are no surface waters or drainage to surface waters in the cyanide storage area or the Gold Plant as a whole.

The leach tanks and carbon in leach (CIL) tanks are located within separate concrete bunded areas, which act as secondary containment. A spillage pump is located within these bunded areas. Any overflow from these bunded areas go to the large bunded area for the residue tanks (6,568 m<sup>3</sup>) via a concrete lined trench.

The liquid cyanide storage tanks, leach tanks and CIL tanks are adjacent to each other with the connecting pipework being located above concrete bunded areas.

Signature of Lead Auditor

**Mponeng Gold Plant**  
Name of Facility

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Date





## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

The following procedure prevents the discharge of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment area to the environment: "Emptying Cyanide Spillage Bund Areas" MGP-CN21 Rev 06 May 2013, which states that spilled cyanide will be pumped back to the Leach Cyanide Storage Tank and rain water will be pumped into the Barren Tank.

There are no cyanide process tanks without secondary containment

There are covered secondary containment launders on cyanide feed pipes. Pipes installed inside launder drain to the cyanide storage tank main bund area.

Other relevant procedures include "Cyanide Delivery Line Leak" MGP-CN 26 Rev 06 May 2013 actions to take in the event of spillage from delivery line at the Plant; "Procedure to follow before pipeline maintenance" WWTM-CN010 Rev 06 May 2013 (TSF procedure); and "Handling and Detoxification of Hazardous Chemical Spillage" WWTM-CN017 Rev 06 May 2013 (TSF procedure).

The last incident of pipeline failure (and the only incident within the last three years) that occurred at West Wits tailings facilities was on 28 August 2011. A significant quantity of tailings was spilled into a nearby containment facility as well as into the veldt and the Aquatic dam. The incident did not give rise to any wildlife or human casualties or fatalities and therefore is not classed as significant.

All of the recommendations from the investigation have been implemented these include; pipeline patrols being put in place and the replacement of unlined pipes for the movement of slurry with pipes that are lined with HDPE.

All pipelines from the Gold Plant to the TSF are on SAP and are either inspected annually for unlined pipes of every two years if lined with HDPE. All residue pipelines are being replaced so that they are all HDPE lined. Unlined steel pipes and HDPE lined pipes are compatible with cyanide and high pH conditions. All tanks are constructed of mild steel, which is compatible with cyanide and high pH conditions.

**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 procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Original drawings and the quality assurance process for these designs were verified during the 2007 Certification Audit. No material changes to engineering design or practices have been undertaken at the Plant in the last three years.

An appropriately qualified person has inspected those elements of the facility involving cyanide and issued a report concluding that its continued operation are within established parameters which will protect against cyanide exposures and releases.

Signature of Lead Auditor

**Mponeng Gold Plant**  
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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

These reports include the following: "Structural Condition Report of the Cyanide Plant at Mponeng Gold Plant" conducted 15 October 2013 by Tenova Bateman - Werner Reynecke Principle Engineer (Pr. Eng. 20020226); "Sasol Bulk Facility Technical Inspection Report" conducted 17 July 2012 by Philip Viviers (Sasol); "Sasol Bulk Facility Technical Inspection Report" conducted 14 February 2013 by Kobus de Wet (Sasol)

Stability analyses of the TSFs are conducted by SLR Global Environmental Solutions every 2 years. The reports include the following: "Mponeng and Savuka Tailings Storage Facilities - Stability Review- Initial Site Inspection and Gap Analysis - SLR Ref No. 710.01003.00002 Report No. 02 - Final March 2012; and "Mponeng and Savuka Tailings Storage Facilities - Field Investigations and Side Slope Stability Assessments" SLR Project No: 710.01003.00006 Report No. 1 Final October 2013.

In addition there is an annual TSF inspection by the AGA Corporate Geotechnical Engineer producing the following reports; "West Wits Operations Tailings Facilities Audit Report" dated; August 2013, September 2012, and October 2011.

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

Written procedures for monitoring include the following: "Sampling Procedure for Specialised Speciation- and Environmental Samples" MGP-CN30 May 2013 - (Plant Procedure); "Sampling of Anti-pollution dam overflows" MGP-CN 59 Rev 06 May 2013 (Plant Procedure); "Sampling procedure for Specialised Speciation and Environmental Samples" WWTM-CN08 Rev 06 May (TSF Procedure); and "Sampling of any Water Dam Overflow" WWTM-CN018 Rev 06 May 2013 (TSF Procedure).

MINTEK cyanide specialist chemist originally developed the Sampling Procedure for Specialised Speciation and Environmental Samples (VRTM-CN08) dated May 2013 for sampling of contaminated soils and solutions. This has subsequently been reviewed by the West Wits TSF Production Metallurgist, Production Engineer and Full time Safety Representative and has been used as the basis for the Plant's and TSF's sampling procedures, which include the following: "Sampling procedure for specialised speciation and environmental samples" WW/CNOPS 5.8 Rev 08 May 2013; "Water Management Procedure 2 - Groundwater Sampling" (SAR/EMW/002) dated 28 Jan 2011; and "Water Incident Sampling Procedure" (SAR/EMW/005) dated 25 May 2011.

These procedures include how and where samples should be taken, sample preservation techniques, chain of custody procedures and cyanide species to be analysed.

Log sheets for the Plant and TSF were observed showing that sampling conditions were noted.

Signature of Lead Auditor

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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

The operation monitors for cyanide in discharges to surface water and in groundwater up gradient and down gradient of the TSFs and Plants. No evidence of surface water or groundwater being affected by the Plant or TSF was observed. There are no discharges of process water to surface water.

The pollution control dam on the Plant is the only open water from which samples are taken twice a week. Groundwater monitoring is undertaken twice a year. In the professional judgement of the auditors the frequency with which the surface water and groundwater monitoring is conducted is adequate to characterise the medium being monitored and identify any changes in a timely manner.

The Plant monitors each batch of backfill sent to the shaft for total cyanide and free cyanide together with monthly speciation samples analysed by Mintek. The pollution control dam at the Plant is monitored twice a week. In addition the Plant has daily inspections and weekly inspections of various equipment e.g. safety showers and monthly maintenance inspections.

A stability review of the TSFs is undertaken every two years. Mponeng TSF monthly logbooks detail the daily inspections of the TSF.

There are also the following inspections: monthly surveillance meetings / inspections done for both Savuka and Mponeng TSF; quarterly TSF inspections; and annual TSF inspection by Corporate Geotechnical Engineer.

Daily Cyanide Facility Checklist" MGP-CN63 Rev 06 May 2013 includes the requirement to monitor for any wildlife deaths. No wildlife mortalities were recorded.

**Mponeng Gold Plant**  
Name of Facility

Signature of Lead Auditor

5 June 2014  
Date



**PRINCIPLE 5 – DECOMMISSIONING**

**Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment**

**Standard of Practice 5.1:**

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

**in full compliance with**

**The operation is**

in substantial compliance with

**Emergency Response 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 and livestock.

The following procedures have been developed for the decommissioning of the facility.

"Cyanide Plant Decommissioning Procedure" MGP-CN62 Rev 06, May 2013. Contains actions to be undertaken 12, 6 and 3 months prior to decommissioning of cyanide related infrastructure and equipment.

"Detoxification of Cyanide Contaminated &/ or Redundant Equipment and Disposal of Cyanide Contaminated Waste", MGP-CN14 Rev06, May 2013. This includes the decontamination of individual pieces of equipment and cleaning out obsolete or redundant cyanide bulk storage tanks.

Decommissioning procedures are reviewed every 3 years.

**Standard of Practice 5.2:**

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

The premature closure liabilities for Mponeng Gold Plant for 2012 have been calculated including contractor costs. Costs include the demolition of cyanide storage tanks, leach tanks and off-loading facilities (in addition to all other aspects of the Gold Plant) as well as the decontamination and removal of cyanide. . The costs have been obtained from third party contractors and then escalated on an annual basis.

AGA has established a Trust Fund and Bank guarantees to provide for the closure liability costs. Ernst and Young Accountants audit's the financial calculations as well as the income of the trust fund on an annual basis.

Signature of Lead Auditor

**Mponeng Gold Plant**  
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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

Observed AGA Environmental Rehabilitation Trust Annual Report 2012 signed by Director of Ernst and Young on 26 June 2013. The overall opinion stated in report was that the information on the calculations and trust fund presented was fair for 31 Dec 2012 and in accordance with International Financial Reporting Standards.

Signature of Lead Auditor

**Mponeng Gold Plant**  
Name of Facility

5 June 2014  
Date



**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 measure 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 measure as necessary to eliminate, reduce and control them.

The following procedures have been developed describing how cyanide related tasks at the Plant should be conducted: "Cyanide Off-loading Procedure" MGP-CN36 Rev 06 May 2013; "Buddy System Procedure" MGP-CN67 Rev 06May 2013; "Issuing of Clearance Certificates for cyanide areas and equipment" MGP-CN019 Rev 06 May 2013; "Ventilation of Confined Space" MGP-CN47 Rev 06 May 2013; and "Detoxification of Cyanide Contaminated and / or Redundant Equipment and Disposal of Cyanide Contaminated Waste" MGP-CN14 Rev 06 May 2013.

The following procedures have been developed describing how cyanide related tasks at the TSF should be conducted: "Safe working practices related to Cyanide" WWTM-CN01 Rev 06 May 2013; "Procedure to follow before pipeline maintenance" WWTM-CN010 Rev 06 May 2013; and "Ventilation of Confined Spaces" WWTM-CN020 Rev06 May 2013.

The procedures above in addition to those below address the use of PPE and pre-work instructions: "Procedure for Cyanide PPE to be Worn" MGP-CN05 Rev 06 May 2013; "Ventilation of Confined Space" MGP-CN47 Rev 06 May 2013. "Procedure for Safe Operating of Machines" Procedure 3 of the West Wits Tailings Storage Facilities Day Wall Paddock System Operating Manual Doc No: WWC001/OM/12 Aug 2012; "Site Safety and Asset Protection" Procedure 4 of the West Wits Tailings Storage Facilities Day Wall Paddock System Operating Manual Doc No: WWC001/OM/12 Aug 2012; and "Penstock Operating Procedure" Procedure 6 of the West Wits Tailings Storage Facilities Day Wall Paddock System Operating Manual Doc No: WWC001/OM/12 Aug 2012.

The following procedures are used by the Plant to review proposed changes for their impact on worker health and safety: "Change Management Procedure" MGP/CN-001 Rev 06 May 2013 (Plant procedure) - Process to be followed during management of change and the requirement for FMECA / Procedural Hazop to be conducted to assess change; and "Change Management" WWTM-CN 11 Rev 06 May 2013 (TSF procedure).

The minutes of the Plant SHE Monthly Meeting include discussing and obtaining feedback on new procedures. In addition One Team Meetings (H&S meetings prior to shifts) also discuss new procedures. Mponeng Gold Plant SHE Committee Meeting Minutes were observed to discuss the requirements of procedures.

Monthly West Wits Tailings SHE meetings include a discussion on procedures. The application of procedures is also discussed during the production of HAZOPs to ensure their effectiveness.

Signature of Lead Auditor

**Mponeng Gold Plant**  
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# ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

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

Chapter 24 Use of Cyanide of AGA Cyanide Code states that the pH of slurry in the two leach tanks immediately downstream of the point of addition must be maintained above 10.5 or at a pH as determined by a risk assessment. Mponeng have undertaken the appropriate Risk Assessment and reduced the pH for the optimal operation of the Plant to 10.2.

Each plant uses the following monitoring equipment: Polytron (fixed) to measure HCN at the dosing point; XAM 500 - personal monitoring - 4 multigas including HCN; XAM7000 - personal monitoring - 5 multigas including HCN; PAC7000 - personal monitoring – HCN, all limits set to first alarm 7.5 ppm and second alarm to 10 ppm.

Quarterly surveys are conducted by Occupational Hygienist at the Gold Plants to determine areas of potential cyanide exposure. 'The Code of Practice for Occupational Hygiene, dated 10 October 2013 includes baseline monitoring of known pollutants within the Plants and the TSFs. A risk assessment for each pollutant for each area of the plant was then undertaken using this monitoring data. No areas were identified where levels of 4.7 ppm continuously over an 8 hour period were identified.

All readings were 0.0 for the survey's results that were observed by the auditors. When entering a confined space that has been determined to be a hot spot workers are required to carry a PAC 7000 when entering a Hot Spot area and for a survey to be undertaken by the Occupational Hygienist prior to this to ensure it is safe to enter.

"The Code of Practice for Occupational Hygiene", dated 10 October 2013 includes baseline monitoring of known pollutants within the Plants and the TSFs. A risk assessment for each pollutant for each area of the plant was then undertaken using this monitoring data. In addition to this a HAZOP for each plant has been undertaken to identify gaseous hotspots at the plant.

Monitoring equipment is calibrated by Drager on a quarterly basis although it is only required by the manufacturer to be calibrated on a six monthly basis. If an instrument is not calibrated when technician is on plant it is flagged. Before the Drager technician leaves the mine after the week of calibration they are collected and calibrated or withdrawn until calibrated. Calibration certificates were sampled during the last three years.

Signs were observed in areas where cyanide is used e.g. offloading point for liquid sodium cyanide storage tanks and dosing points for leach tanks. The signs are placed to warn that cyanide is present, that smoking is prohibited, no open flames or eating and drinking are allowed. They also instruct on what PPE must be worn.

Signature of Lead Auditor

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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

Observed during the site visit that showers (with eye wash), dry powder fire extinguishers are located at strategic locations throughout the plant where cyanide is used. The safety showers are inspected daily and fire extinguisher are checked monthly and serviced annually.

Pipes are identified including flow direction at the Gold Plant during site visit. All reagent strength cyanide pipes are colour coded purple and indicates that it contains cyanide as well as flow direction.

Cyanide storage tanks are colour coded purple with red band as per colour coding index. Pipes carrying tailings are labelled as toxic /poisonous water with a skull and cross bones and not potable water pictogram at culverted areas.

The official language of AngloGold Ashanti is English with all documentation being in English including the induction, which has to be passed before they are allowed to work.

All procedures are in English and training on procedures as well as task assessments are undertaken in English. The MSDS for Cyanide and Ferrous Sulphate is displayed at the storage areas. Cyanide MSDS is displayed in the First Aid room and on gate of Cyanide storage area.

Any incident is announced to all South Africa Metallurgy Business Unit. Any incident is investigated by a team including the Cyanide Champion. The timeline (including photographs) is reconstructed. Access the cause of the accident and then compile remedial actions. Actions are loaded into an Action Manager (RMS). No cyanide exposure incidents have been recorded in the last 3 years.

**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.

Mponeng Gold Plant has first aid rooms at the following locations: Cyanide Emergency First Aid Room (Cyanide Off-loading), Leach First Aid Room, Emergency Trailer and First Aid Room. These rooms contain water, oxygen, antidote kits, telephones, and alarm systems are present where employees could potentially be exposed. A fully equipped emergency trailer (except for antidote) is parked at the Cyanide Emergency Room. ER24 (provide ambulance and paramedic services) are called when there is an incident to provide paramedic response and transportation to West Wits AGA Hospital.

No cyanide emergency equipment exists on the tailings facilities. The staff use radios and cell phones to communicate and to receive evacuation instructions from the Plant. ER24 provides a 24 hour paramedic and ambulance service under contract to AGA, who is called when there is an incident at the Plant or TSF to provide paramedic response and transportation to West Wits AGA Hospital. ER24 have oxygen, resuscitator and qualified personnel available to assist with a cyanide exposure incident. Each operational ambulance and the response vehicle have a Cyanide First Aid Kit. West Wits Hospital has oxygen, antidote kits, resuscitator available to except patient exposed to cyanide.

Signature of Lead Auditor

**Mponeng Gold Plant**  
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The Plant has the following first aid equipment inspections: "First Aid Box Inspection Register" - IS/SHE/s/052 Rev1 - daily Inspection; "Inspection Register Medical Oxygen Cylinder" - IS/SHE/s/055 Rev 2 - daily inspection; "Self Contained Breathing Apparatus Register" - IS/SHE/s/073 Rev 1 - daily Inspection; "Cyanide Antidote Kit Register" - IS/SHE/s/075 Rev 1 - daily Inspection; and "Emergency Trailer Monthly Inspection".

ER 24 inspects and ensures all equipment in Cyanide First Aid Kits is correct and then uses a cable tie to close it to prevent any tampering. Once used it will be replaced and checked by Mponeng Gold Plant Cyanide Champion and resealed. The Tripac-Cyano and Dicobalt Cyanide Antidotes at West Wits Hospital are kept in the fridge and are within expiry date. AGA Metallurgy keeps a Tripac-Cyano and Hypo Solution Expiry List dated Sept 2013 for all of the Gold Plants and Hospitals.

Mponeng Gold Plant has 93 Special Cyanide Safety Procedures including "Plant Emergency Response Team Call-Out Procedure" MGP-CN 61, Rev 06 May 2013.

The Emergency Preparedness and Response plan for the Plant contains the following: Statement of Strategic Intent; Management Roles and Responsibilities; Plan Maintenance and Change Management; Escalation Points and Incident Levels; Plant Training and Testing; Schedule for Full Hospital Response Chain (cyanide emergency drill schedule for Vaal River Operations); Emergency Scenario Response Plan; Plant Process Description; Crisis Management Plan; Command Centres.

Procedures for the TSF include the following: "Notification of Cyanide Exposures to Tailings Employees" WWTM-CN02 Rev 06, Dated May 2013, "Emergency Procedure for Cyanide First Aid Treatment" WWTM-CN05, Rev 06, May 2013, and "Procedure to Follow when Cyanide is Detected by Occupational Hygienist during Routine Sampling or Surveys" WWTM-CN04, Rev06 dated May 2013.

Both ER24 and West Wits Hospital use Chapter 42 – First Aid and Medical Treatment for Cyanide Exposures -of the South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, July 2013, Rev 06

There are two procedures for dealing with the transportation of patient to hospital "Emergency Procedure for Access on an Ambulance in the event of a cyanide exposure" MGP-CN03 Rev 06 May 2013 (for the Plant) and "Procedure for notification of Cyanide Exposures to Tailings Employees", WWTM-CN02, Rev 06, dated May 2013 for the Plant and TSF respectively.

ER24 and West Wits Hospital take part in cyanide exposure drills.

Full chain drill (i.e. from man down all the way through to treatment at the hospital) is conducted every six months rotated between the plants in the West Wits Area (Savuka Gold Plant and Mponeng Gold Plant). In addition the Plant undertakes monthly drills which include different scenarios including cyanide splash, inhalation and cyanide spills. Lessons learned from these drills are reviewed and communicated as appropriate.

**Mponeng Gold Plant**  
Name of Facility

Signature of Lead Auditor

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Date



**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.

The operation has developed an "Emergency Preparedness and Response Plan" MGP-EPRP-CN Rev 06 May 2013 (EPP), which includes "Issue Base Risk Assessment - Procedural Hazop, Emergency Scenarios Assessment for Mponeng Gold Plant" MPN-EMR-Scenarios September 2013.

Mponeng Gold Plant has 93 Special Cyanide Safety Procedures in addition to the Hazop and other procedures.

The EPP and procedures stipulate specific actions to be undertaken including as clearing site personnel and any affected communities from the area of exposure, use of cyanide antidotes and first aid measures for cyanide exposure, control of releases at their source, and containment, assessment, mitigation and future prevention of releases. These procedures detail actions to be undertaken in the event of catastrophic releases of hydrogen cyanide from storage or process facilities; releases during unloading and mixing; releases during fires and explosions; pipe, valve and tank ruptures; overtopping of ponds and impoundments; power outages and pump failures; failure of cyanide treatment systems; and failure of cyanide facilities.

Transport accidents are considered in Sasol Polymer procedure for "The procedure for the handling of dangerous goods transportation incidents involving Sasol and Sasol service provider vehicles" - SSP-S-009 Rev 2 Date 14 December 2012. In addition the following risk assessment has been undertaken for the transportation of liquid cyanide from Sasol to the Gold Plant; Sasol Transport Route Risk Assessment (Road) - Assessment Number SA 0038 - Sasol Polymers Sasolburg to AngloGold Ashanti West Wits Mponeng Gold Plant at Fochville. Conducted 24 January 2012. (re-assessment is undertaken every two years). Conducted by D. Stopforth (Risk Coordinator for Sasol) and AGA Reagent and Risk Manager.

The following procedures were observed, which describe specific response actions: "Evacuation Procedure" MGP/EPP-12 Rev 06 May 2013; "Issue Base Risk Assessment - Procedural Hazop, Emergency Scenarios Assessment for Mponeng Gold Plant" MPN-EMR-Scenarios September 2013; "Response to Abnormal and Emergency Conditions Procedure" MGP-CN75 Rev 06 May 2013 - process to follow in event of abnormal and emergency conditions such as employee exposures and cyanide spillage; "Procedure to follow when HCN is detected" MGP-CN09 Rev 06 May 2013 - process to follow in the event of HCN detection by either fixed personal monitoring equipment or portable personal monitoring equipment; and "Emergency Procedure for Cyanide First Aid Treatment" MGP-CN10 May 2013 - First-Aid & Medical Treatment for Cyanide Exposures.

Signature of Lead Auditor

**Mponeng Gold Plant**  
Name of Facility

5 June 2014  
Date





# ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

The Mandatory Code of Practice Mine Residue Deposits West Wits Tailings" COP/SHE/t/003 Rev 5 May 2013 - Section 5.9.1 lists actions to be taken in emergency situations and people responsible for those actions and the "Pipeline Failure Procedure" P/SHE/e/015 Rev 0 November 2012 controls the actions to be undertaken in the event of a release of residue.

Emergency Plans are reviewed every 3 years.

**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.

The operation involves its workforce in risk assessments through the following: "Issue Base Risk Assessment - Procedural Hazop, Emergency Scenarios Assessment for Mponeng Gold Plant" MPN-EMR-Scenarios September 2013. The documentation included a list of people from various sections in the plant (attendance register) that attended the Risk Assessment. (Plant Management, Cyanide Champion, Safety Officer, Health and Safety Steward); Monthly West Wits Tailings SHE meetings are attended by the Plant Management, Section Safety Stewards and Full Time Safety Stewards, who represent the workers.

"Work force Consultation and Disclosure" MGP-CN70 Rev 06 May 2013 – states that communications with the workforce will be through the following mechanisms: Mancom Meetings, Health and Safety meetings, Safety Rep Meeting, Green area meetings, instruction book system, notice board display and OESH books.

In addition there is a "Procedural Hazop Study for Emergency Scenarios Assessment for West Wits Tailings" dated 26 August 2013, which included attendance register of team.

Observed brochure/poster placed by TSF personnel at the entrance to the TSF offices. Brochure stipulates the process and where cyanide is used, how communities can be exposed, as well as emergency telephone numbers. A similar brochure/poster regarding the operation of the Plant is posted inside the Reception area to the Plant.

The Plant communicates with relevant stakeholders to keep the EPP up to date.

The Fire Captain liaises with Municipal Fire Department on a regular basis e.g. Annual General Meeting 24 April 2013 where issues regarding the emergency response planning can be brought up. The West Wits Fire Department are also a member of the Fire Protection Association where relevant topics are discussed. Letters were observed expressing appreciation of the work the Fire Team undertake in support of the local community fire services e.g. letter dated 31 July 2012 from Regional Commander West Rand Municipality. The Fire Captain also discusses emergency planning with neighbouring land owners to ensure there is a co-ordinated response. Fire teams are not trained to handle cyanide, which will be dealt with by Cyanide Appointees if on the Plant or the team from Sasol if the emergency involves a tanker in transit. The Fire Teams will assist in the coordination of actions and prevent access to any emergency area.

ER24 (contracted by AGA) and West Wits Hospital (owned and operated by AGA) are involved in the emergency planning process and with the emergency drills.

Signature of Lead Auditor

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# ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

**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

Emergency Preparedness and Response Plan" MGP-EPRP-CN Rev 06 May 2013 (EPP) States that B Lesame (Cyanide Champion) has been appointed as Emergency Preparedness Plan Coordinator. The EPP also includes the following: Section 14 "Management Roles and Responsibilities"; Section 5.2.6 "Emergency Response and Control Chart"; Section 5.2.7 - 5.2.9 illustrates the Emergency Response Control Chart for Level 1 - 3 inclusive responsibilities and communication flow; Section 7 "Plan Training and Testing"; Mponeng Gold Plant Emergency Numbers (dated November 2013) and the SA Region Metallurgical Plants - Cyanide / Chemical Emergency Contact Numbers (dated 10 October 2013); the list of the Emergency Equipment, Resources and Emergency PPE as well as the location of the equipment, resources and PPE.

Emergency Team Members are all Cyanide Appointees and the training matrix was observed that indicates that they receive Cyanide First Aid Training, etc.

The following procedures were observed regarding the inspect of emergency equipment to ensure its availability: "Checking Safety Showers and Eye Wash Basins" MGP-CN18 Rev 06 May 2013; "Checking of Cyanide First Aid Kits" MGP-CN20 Rev 06 May 2013; "Daily Cyanide Facility Checklist" MGP-CN63 Rev 06 May 2013; "Inspection of Medical and Cyanide Antidote Kits" MGP-CN69 Rev 06 May 2013;

Chapter 42 of AGA Cyanide Management Code is signed by Dr James Steele (AGA Head of Health) - confirming the commitment by the Hospitals to assist with Cyanide related emergencies.

The following Emergency Response Plans and documentation was observed for the tailings facilities: "Preparedness for handling an emergency associated with tailings storage facility failures at West Wits" WWTLMP07 Rev 10 June 2012. Attachment 2 stipulates the actions required with the responsible person; and "Emergency Preparedness and Response Procedure" MS SHE OP 151 Rev 01 22 January 2013. Section 7 stipulates the Responsibilities and Accountabilities with regards to the plan for the TSF.

There is no emergency equipment on the TSFs. In the event of an emergency ER24 will be called in addition to the emergency team from the closest Plant

Observed Emergency telephone numbers placed at Telkom phones and at the entrances to the TSFs. Team leader of operator on dams have cell phones to notify management of any emergencies. Pipe patrol also equipped with cell phones.

"Emergency Preparedness and Response Plan" WWTM-EPP Rev 06 May 2013 - specifies the responsibilities of the EPP Sponsor, EPP Coordinator, EPP Committee and Emergency Response Team Leader for the TSF. 24 hour emergency telephone numbers are placed at every external telephone on the plant.

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Each procedure stipulates the PPE Requirements for dealing with the specific issue. In addition the emergency response equipment available at the plant is listed in the relevant procedures. There is no emergency equipment on the TSFs. In the event of an emergency ER24 will be called in addition to the emergency team from the closest Plant.

Observed Emergency telephone numbers placed at Telkom phones and at the entrances to the TSFs. Team leader of operator on dams have cell phones to notify management of any emergencies. Pipe patrol also equipped with cell phones.

ER24 (contracted by AGA) and West Wits Hospital (owned and operated by AGA) are involved in the emergency planning process and with the emergency drills as confirmed through interviews with ER24 and hospital staff. South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines, July 2013, Rev 06. Chapter 42 First-Aid & Medical Treatment of Cyanide Exposure states the West Vaal Hospital and ER24 requirements - Dr James Steel (West Vaal Hospital Manger) signed on 18 July 2013 to confirm commitment.

The Reagent and Risk Manager has regular discussion with Chief Fire Officer, Business Services, as confirmed through interview. The Fire Captain liaises with Municipal Fire Department on a regular basis e.g. Annual General Meeting 24 April 2013 where issues regarding the emergency response planning can be brought up. Fire teams are not trained to handle cyanide, which will be dealt with by Cyanide Appointees if on the Plant or the team from Sasol if the emergency involves a tanker in transit. The Fire Teams will assist in the coordination of actions and prevent access to any emergency area.

**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 Mponeng EPP includes the following: Section 5.2.6 "Emergency Response and Control Chart" illustrates the incident command and control arrangements with regards to the different responsibilities; and Section 5.2.7 - 5.2.9 illustrates the Emergency Response Control Chart for Level 1 - 3 inclusive responsibilities and communication flow. Each diagram indicates the responsibility of the communication to outside stakeholders such as outside responders and medical facilities. This also contains the Mponeng Gold Plant Emergency Numbers (dated November 2013) and the SA Region Metallurgical Plants - Cyanide / Chemical Emergency Contact Numbers (dated 10 October 2013).

The "SHE Communication, Consultation and Participation" SP/SHE/s/008 Rev 07 October 2012 procedure includes the external communication process to Government Departments, I&APs and organised forums. The procedure states that under no circumstances may any employee, SHE representative or manager communicate with the media directly. Issues that could result in public exposure regarding either the Plant or the TSF are referred to General Manager SA Region Metallurgy and Environmental Manager Environmental Management Department for them to co-ordinate communications with the Press and any affect individuals or communities.

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The "Emergency Preparedness and Response Plan" WWTM-EPP Rev 06 May 2013 for the tailings facilities was observed, which includes escalation points and incident levels as depicted in Figure 1 - General Emergency Escalation Points determination and Figure 6 Emergency Communication Structure. Observed West Wits Tailings Emergency Telephone numbers dated November 2013.

"Public Consultation and Disclosure / Emergency Communications" WWTM-CN07 Rev 06 May 2013 (TSF Procedure) states the Tailings Process Manager is to follow established communication structure as per SHE Communication, Consultation and Participation (SP/SHE/s/008) dated October 2012.

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

in full compliance with

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

The Plant and TSF have specific procedures for the recovery or neutralisation of solutions or solids, the decontamination of soils or other contaminated media, and the management and/or disposal of spill clean-up debris. This includes; "Sampling Procedure for Specialised Speciation and Environmental Samples" MGP-CN 30 Rev 06 May 2013; "Handling and Detoxification of Cyanide Spillage" MGP-CN 50 Rev 06 May 2013; "Using Ferrous Sulphate" MGP-CN74 Rev 06 May 2013; "Handling and Detoxification of Hazardous Chemical Spillage" WWTM-CN017 Rev 06 May 2013; "Pipeline Failure Procedure" P/SHE/e/015 rev 0 November 2012; "Handling and Detoxification of Hazardous Chemical Spillage" WWTM-CN017 Rev 06 May 2013; and "Pipeline Failure Procedure" P/SHE/e/015 rev 0 November 2012.

All drinking water is provided from municipal water that would not be affected by any incident to surface or groundwater and therefore the provision of an alternative supply is not required.

The following procedures "Using Ferrous Sulphate" MGP-CN74 Rev 06 May 2013; and "Handling and Detoxification of Hazardous Chemical Spillage" prohibit the use of ferrous sulphate, sodium hypochlorite and hydrogen peroxide to neutralise cyanide spillage into clean water rivers and dams.

The Plant and TSF have specific procedures that include the requirement for environmental monitoring to identify the extent and effects of any cyanide release and include the sampling methodology. These include "Sampling Procedure for Specialised Speciation and Environmental Samples" MGP-CN 30 Rev 06 May 2013; "Sampling of Anti-Pollution dam Overflows" MGP-CN 59 Rev 06 May 2013; "Sampling Procedure for Specialised speciation and Environmental Samples" WWTM-CN08 Rev 06 May 2013; and "Handling and Detoxification of Hazardous Chemical Spillage" WWTM-CN017 Rev 06 May 2013 (TSF Procedure).

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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

**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.

The "Emergency Preparedness and Response Plan" MGP-EPRP-CN Rev 06 May 2013 (EPP) states that it will be updated every 3 years or whenever there is major change to the document or when the following changes occur, regulatory changes, new risks identified, resources or organizational structure changes, after drills exercises, after the EPP is used for an actual event or for major changes.

The "Issuing and Use of Cyanide Procedures" MGP-CN44 Rev 06 May 2013 procedure states that all cyanide procedures shall be revised on an three years basis.

The Tailings EPP is revised every 3 years or when a major change occurs or when regulatory changes occur, new risks are identified, resources or organizational structures change, after drills if required, when the EPP is used for an actual event, and technology changes. .

Full chain drill (i.e. from man down all the way through to treatment at the hospital) is conducted every six months rotated between the plants in the West Wits Area (Savuka Gold Plant and Mponeng Gold Plant). In addition the Plant undertakes its own cyanide drills every month.

Cyanide Mock Drills on the TSF are undertaken monthly. It has been determined that exposure to cyanide will not occur on the TSF due to the Plant altering the TSF when there is high WAD CN in the Tailings.

There have been no cyanide exposures in the last 3 years.

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## 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.

All AngloGold Ashanti staff entering the Plant receives a 2 day Induction. A refresher is undertaken no longer than 18 months after the previous course. This includes cyanide hazard recognition and basic cyanide first aid, which is refreshed every 12 months. The presentation used to undertake the Induction was observed. Written tests are conducted for the induction and refreshers with a pass mark of 80%.

Contractors that will spend more than 3 days on the plant or if the contractor will be on the plant for less but will perform high risk work, will receive the same Induction Training as the employees. Contractors that will work less than 3 days on the plant (under direct supervision of a plant employee) will receive plant specific induction.

A training matrix is in place for all employees per plant/area showing the individuals and the various training modules including job specific training. The training matrix highlights the training employees have received (green) where the training is due to expire within 3 months (yellow) and where the training is out of date (red).

The training for the plants within the Vaal River and West Wits areas are managed from a central training department. A plant training officer is present at each plant to undertake the plant specific training. Central training is responsible for induction training, maintaining the training matrix and as a moderator for plant specific training. Specialised training is done by outside training institutes.

All Cyanide Appointees and Off-loaders have a competency card showing that they are competent to work in cyanide areas (Cyanide Appointees and Off-loaders are certified to work in areas with risk of possible cyanide exposure) and the expiring date of their training. Training to be a Cyanide Appointee includes; Self Contained Breathing Apparatus (SCBA), St John's First Aid, PAC 7000, Cyanide Plant First Aid, Cyanide Offloading, Preparation for Maintenance, Induction Refresher and Emergency Response. Off-loaders in addition have training in cyanide offloading.

Refresher training of the Induction is undertaken every 18 monthly. Refresher training for Cyanide First Aid is undertaken every 12 months. Long term contractors induction is refreshed annually. Other training refreshed 3 yearly or as detailed in specific individual training records.

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## ICMI CYANIDE RE-CERTIFICATION AUDIT - SUMMARY REPORT

**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.

Workers are trained to perform their normal production tasks, including unloading, mixing, production and maintenance with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases. The training matrix defines what training each worker receives based on their position and the tasks required of that position. The training matrix indicates when the validity of an assessment will expire by turning the green block yellow 90 days prior to expiry.

All employees and permanent contractors are trained during the induction training prior to commencement of work related to cyanide. All employees receive Basic Cyanide First Aid Training during induction. Cyanide Off-loaders and Appointees are trained before working in areas where there is a potential for cyanide release. A Planned Task Observation (PTO) is undertaken the first time they are required to work in an area where there is a risk of cyanide release. All contractors who are due to work more than 3 days at the plant or who will be working in areas that have the risk of cyanide release undergo the 2 day induction including Basic Cyanide First Aid Training. Workers who will be working on site for less than 3 days are accompanied by an appropriately trained permanent employee. Once trained Cyanide Appointees and Off-loaders receive identification card with expiry date of training so that it can be confirmed that training is up to date before any permit to carry out work in an area where cyanide may be released is issued.

The training material for Cyanide Off-loading includes a wide range of modules including: Self Contained Breathing Apparatus (SCBA), St John's First Aid, PAC 7000, Cyanide Plant First Aid, Cyanide Offloading, Preparation for Maintenance, Induction Refresher and Emergency Response, and Cyanide off-loading. It covers normal off-loading as well as abnormal / emergency conditions that could occur during off-loading. The training matrix records which off-loaders received the off-loading training. After completion of the training, the off-loader is assessed at the plant by an assessor.

The competency assessment document used to assess compliance with the training for Intermediate Cyanide First Aid Treatment (MET-G 136) as part of the Cyanide Appointees and Off-loaders training was observed. It covers PPE requirements, identification of hazards and risks, symptoms of poisoning and first aid treatment. The details of the elements required per job as detailed in the training matrix include PTO.

Refresher Basic Cyanide First Aid is conducted every 12 months. Intermediate Cyanide First Aid is assessed every 12 months as part of the training for Cyanide Appointee and Off-loaders. Advanced Cyanide First Aid (including SCBA) is refreshed every 3 years. Fire Incident Command is refreshed every 3 years. Cyanide Appointee and Off-loading training is refreshed every year.

Refresher Basic Cyanide First Aid is conducted every 12 months. Intermediate Cyanide First Aid is assessed every 12 months as part of the training for Cyanide Appointee and Off-loaders. Advanced Cyanide First Aid

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(including SCBA) is refreshed every 3 years. Fire Incident Command is refreshed every 3 years. Cyanide Appointee and Off-loading training is refreshed every year.

All trainers are qualified e.g. Vaal River TSF trainer - Mr Matube - Workplace Assessor - (ETDP SETA Accredited Service Provider), also completed various other courses on training management; Mponeng Gold Plant - Mr Ntehelang - Registerd and Workplace Assessor - (ETDP SETA Accredited Service Provider, MQA registered). Completed "Facilitation for Trainers" Course.

Records of training undertaken for all employees and all contractors are kept for at least the life of the plant on the electronic EduCos system detailing; the employees name, the date of the training, and the topics covered. Hard copies of training for all employees and contractors are kept for at least the life of the plant. The hard copies in addition to the information kept on EduCos also show the trainer and how the employee demonstrated an understanding of the training material.

### **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; train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

All employees and contractors receive Basic Cyanide First Aid training during the induction training. Induction training presentation was observed.

The Emergency Response Team consists of Cyanide Appointees. Cyanide Appointees have all obtained a certificate in Self Contained Breathing Apparatus and Confined Space Rescue (SCBA) training.

The Medical Response Team (ER 24, Casualty Department Nurses) receive Intermediate Cyanide First Aid training. Casualty department nurses also receive Cyanide Poisoning Training at the hospital.

Refresher Basic Cyanide First Aid is conducted every 12 months. Intermediate Cyanide First Aid is assessed every 12 months as part of the training for Cyanide Appointee and Off-loaders. Advanced Cyanide First Aid (including SCBA) is refreshed every 3 years. Fire Incident Command is refreshed every 3 years. Cyanide Appointee and Off-loading training is refreshed every year.

The Emergency Drills are conducted at plant level. The plant training officer is present at all drills and evaluates training effectiveness. The review of the drill to assess that all personnel have the necessary skills and knowledge to ensure an effective response. Training procedures will be revised if deficiencies are identified. Plant training officer reports to AGA central training where any changes to training procedures are made and implemented.

Records of training undertaken for all employees and all contractors are kept for at least the life of the plant on the electronic EduCos system detailing; the employees name, the date of the training, and the topics covered. Hard copies of training for all employees and contractors are kept for at least the life of the plant. The hard copies in addition to the information kept on EduCos also show the trainer and how the employee demonstrated an understanding of the training material.

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**PRINCIPLE 9 – DIALOGUE**

**Engage in Public Consultation and Disclosure**

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

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 provide stakeholders with the opportunity to communicate issues of concern.

A person wanting to complain on an issue related to Mponeng Gold Plant can come to the Plant security at the Plant entrance. Security will escalate the complaint to Plant Management. If complaint is made to Security then they will call Plant Management. Security will record complaint in OB book (Occurrence Book) with all details of complainant and complaint. Production Metallurgist will action the complaint and give feedback to complainant depending on the severity of the complaint.

A school awareness campaign was run in November 2011 regarding the TSF facilities and the dangers they pose. The following schools were visited on 10 November 2011. Wedela Technical High School (flyer and presentation by TSF personnel), Xhobani Primary School, Wedela Primary School. Flyers were distributed during October 2013 by TSF personnel and contractors in the Wedela community highlighting the dangers of the TSFs. This included a telephone number to obtain additional information.

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

in full compliance with

**The operation is**

in substantial compliance with

**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 initiate dialogue describing cyanide management procedures and responsively address identified concerns.

Information has been provide to stakeholders describing cyanide management procedures and providing stakeholders to express concerns include the following:

AGA Sustainability Report for 2010 (published March 2011) informs stakeholders that AGA is a signatory to the ICMI. AGA Sustainability Report for 2011 (published in 2012) includes a graph indicating the number of sites with full compliance in terms of ICMI certification. AGA Sustainability Report for 2012 (published in 2013) states AGA is a signatory to the ICMI and indicates the amount of cyanide used.

AuRa Newsletter - May 2012 explains the International Cyanide Code and that AGA is a signatory to the Code across its operations. The newsletter is distributed company wide electronically and is available to stakeholders who request it. AGA Result for the first quarter ending 31 March 2012 presentation to host

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communities in Matlosana and Merafong by Executive Vice President - SA Region 25 May 2012. Stated in presentation that ICMI Certification retained.

Observed presentation given as part of awareness campaign at schools in the West Wits area in November 2011 - Primary and secondary schools in the area. Presentation on tailings: safety aspects such as drowning, dust and dust suppression, waste rock dumps, lighting, pipe failures and what to do, high pressure pumping, sinkholes, electricity, safety signs (no entry at TSFs, no drinking of water).

Flyers distributed to communities in neighbouring areas regarding dangers of TSF.

Observed brochure / poster placed by TSF personnel at the entrance to the TSF offices. Brochure stipulates the process and where cyanide is used, how communities can be exposed, as well as emergency telephone numbers. A similar brochure/poster regarding the operation of the Plant is posted inside the plant at the entrance, in the control room and at the Cyanide Emergency First Aid Station. Contents of the brochure were discussed with the plant employees by the Training Officer.

**Standard of Practice 9.3: 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 9.3**

not in compliance with

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

The operation is in full compliance with Standard of Practice 9.3; make appropriate operational and environmental information regarding cyanide available to stakeholders.

Observed Cyanide Management Brochure for Processing Plants explaining what cyanide and ICMI are, the possible effects on the environment, and reasons for its use. This brochure is available for distribution by the Plant either electronically or in paper. This is posted at the pollution control dams; the parking area; on the outside fence; at the outside fence at the Waste Rock dump loading area; and the Reception for the Plant. The contents of the brochure were discussed with the plant employees by the Training Officer.

A similar brochure / poster regarding the operations of the TSF is placed by TSF personnel at the entrance to the TSF offices. The brochure stipulates the process and where cyanide is used, how communities can be exposed, as well as emergency telephone numbers.

In addition the 2012 Country Fact Sheet – South Africa details the quantity of cyanide used and this is on the AGA website.

The majority of the community in the vicinity of the AGA Gold Plants in the West Wits Region are literate and therefore it is not necessary to disseminate information in a verbal form.

There have been; no cyanide exposure, hospitalisation or fatalities occurred or were reported in the last three years at either the TSFs or the Gold Plant.

There have been two environmental incidents in the last three years

The first was a pipeline failure that occurred at West Wits TSF on 28 August 2011.

MET/28082011/ENV/H/121-1. This resulted in tailings entering into a nearby containment facility as well as into the veldt and a limited quantity entering the nearby Aquatic Dam. Internal Incident Announcement

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MET28082011/ENV/H/121-1 stating that the Department of Water Affairs was notified telephonically and formal letter of notification was submitted on 30 August 2011. The investigation lead to the implementation of pipeline patrols and the gradual installation of HDPE lined pipes for the transportation residue to the TSFs.

If any incident were to lead to hospitalisation or fatality (none have occurred) the Department of Water Affairs (the Regulator) would be informed placing it in the public domain.

One environmental incident has occurred in the last 3 years. Investigation: MET/07062011/ENV/H/076-11 - Mponeng Gold Plant Pollution Control Dam overflow due to heavy rain. The overflow water did not leave the mine site and no evidence present that the overflow had elevated cyanide levels. This was not reported to the Regulator or information made publically available as there was no significant effect on the environment.

Information regarding significant environmental incidents if there had been any would be in the public domain and can be obtained from the regulator. In addition the number of reportable environmental incidents in South Africa (10) is reported in the 2012 Country Fact Sheet – South Africa, which is on the AGA website.

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## Report Signature Page

**GOLDER ASSOCIATES AFRICA (PTY) LTD.**

Handwritten signature of Ed Perry in black ink.

Ed Perry  
Lead Auditor

Handwritten signature of Marie Schlechter in black ink.

Marie Schlechter  
Reviewer

Date: 5 June 2014

MS/EP/ms

Reg. No. 2002/007104/07

Directors: SAP Brown, L Greyling, RGM Heath

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At Golder Associates we strive to be the most respected global group of companies specialising in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organisational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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