June 2014

ICMI RE-CERTIFICATION SUMMARY REPORT

AngloGold Ashanti Noligwa Gold Plant

Submitted to:
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REPORT

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Report Number. 12614591

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Golder Associates

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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

Name of Cyanide User Facility:	Noligwa 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.

The subject of this Re-certification Audit, the AngloGold Ashanti Noligwa Gold Plant, is operated as part of the Vaal River operations. It is situated in the Free State and North West Provinces of South Africa, approximately 24 km South East of Klerksdorp.

Noligwa plant was commissioned in 1971 and treats approximately 200 000 tons per month of reef material from the Great Noligwa, Noligwa and Moab Khotsong mines. Following milling in two run-of-mine mills, the slurry is thickened before being pumped to the uranium section for uranium extraction.

The uranium plant residue at pH 1.5 -2.5 is returned to the gold plant where it is neutralised with lime in the neutralisation section. The pH neutralisation occurs in stages to pH 7.5, pH 9.5 and final pH 10.5 respectively in air agitated pachucas. The neutralised slurry at pH 10.5 is pumped to the leach section for cyanide addition and gold extraction.

Liquid sodium cyanide is added to the leach feed slurry with cyanide dosing control being achieved by means of an on-line auto titrator integrated into a dosing control loop linked to the dry tonnage feed to the leach section. Gold leaching takes place in a series of mechanically agitated tanks and air agitated pachucas.

The dissolved gold in the leached slurry is recovered onto activated carbon in the CIP (carbon in pulp) section consisting of eight mechanically agitated adsorption tanks. The gold loaded carbon is screened out of the slurry before being washed and transferred to the elution circuit.

In the elution circuit the carbon is washed with a hot caustic solution to strip the gold back into solution following which the gold bearing solution passes through the electrowinning section where the gold is plated onto stainless steel cathodes and smelted to produce gold bullion for refining.

The slurry exiting the adsorption section is pumped to the floatation plant where the material is acidified and conditioned prior to floatation for pyrite recovery. Backfill material for use as underground support is produced from the neutralised floatation residue material. The initial acidification and subsequent floatation process effectively destroys the residual cyanide in the material used to produce the backfill. The neutralised floatation residue material (Monitored for WAD Cyanide, Free Cyanide with a WAD Cyanide analyser) not taken for backfill production is pumped to the final residue stream exiting the plant to the Mispah TSF.

Low grade waste rock is also treated in the Noligwa gold plant through the low grade Mispah milling and recovery circuit. Following run-of-mine milling, the slurry is subjected to a cyanide leach followed by gold adsorption in a carousel operated CIP plant. Cyanide dosing control to the Mispah leach circuit is achieved by means of an on-line cyanide titrator integrated into a control loop linked to the dry tonnage feed.

The loaded carbon from the CIP circuit is treated in the elution section for final recovery of gold in the electrowinning cells. The CIP residue material joins the final residue stream reporting to the Mispah TSF from where the recovered water is recycled back to the mills.

Noligwa Gold Plant
Name of Facility

Signature of Lead Auditor

6 June 2014
Date

SUMMARY AUDIT REPORT

Auditors Findings

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

Audit Company: Golder Associates Africa (PTY) Ltd

Audit Team Leader: Ed Perry, Lead Auditor

Email: eperry@golder.com

Noligwa 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 1 November 2013. The tailings facilities and other central services are shared between of the various gold plants within the Vaal River Operations, located near Orkney in the North West and Free State Provinces. The audit therefore started when the 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.**

The operation is

☒ **in** full **compliance with**

☐ 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. An amendment of the contract states that the producer 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 Noligwa 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. Tanker Services became a certified ICMI transporter on 13 December 2011.

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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 Noligwa 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.

Original drawings were verified during the 2007 Certification Audit. Verified original drawings:

No material changes to engineering design or practices have been undertaken at the Plant in the last three years.

The following documents were observed showing the facility has been designed and constructed in accordance with sound and acceptable engineering practices “Structural Condition Report on the Noligwa Plant” July 2011 - Bateman Africa - Cyanide Storage generally complete and fair condition; and Inspections by Sasol conducted on 8 June 2013 and 6 October 2011 (every 2 years) for Noligwa Gold Plant. Conducted on storage and off-loading facilities.

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

Plant procedures state that liquid sodium cyanide may only be offloaded if the level in the storage tanks is less than 65% otherwise approval from the Production Metallurgist must be obtained. Tank level indicators, display at the tank site and SCADA in the Control Room. High level alarms are set at 85% and interlocked with air valve to stop offloading at 85%.

Cyanide storage tanks located on concrete plinths and are equipped with ventilation pipes. The secondary containment areas for the liquid cyanide storage tanks and the leach tanks are constructed of cement and appropriately lined. There are covered secondary containment launders on cyanide feed pipes. Pipes installed inside the launders drain to the bund areas. The liquid cyanide offloading and storage area is placed away from incompatible materials explosives and apart from foods, animal feeds and tobacco.

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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.**

The operation is

☒ **in full compliance with**

☐ 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 therefor 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.

Procedures were observed on the "Offloading of Cyanide", "Procedure for addressing Cyanide Solution Spillages", and "Buddy System Procedure". The Offloading of Cyanide procedure states that; both the tanker driver and off-loader is present during the off-loading, both driver and off-loader must wear PPE (as defined in the Cyanide PPE Requirements procedure), Personal Monitoring Equipment, and the role of the buddy.

The Operational procedures provide for the safe operation of all valves and couplings during off-loading.

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.

Noligwa Gold Plant has the following procedures: 14 Cyanide Process Procedures, 16 Cyanide Emergency Procedures, 4 Cyanide Alarm Procedures, 9 Cyanide Engineering Procedures, 8 Cyanide PPE Procedures, 24 General Procedures, and 19 General Cyanide Procedures. In addition to a "Code of Practice for the TSF and Cyanide Guidelines for the South African Region of AGA".

The WAD cyanide concentrations in the tailings sent to the tailings facilities (TSFs) is measured on a continual basis and graphed on-line. The on-line graphs for Noligwa Gold Plant were observed with the Residue WAD Cyanide upper control limit set at 25.0 mg/l WAD. The procedure "Environmental Sampling High WAD Cyanide in Residue Slime" CN-PRO-04, Rev 09, June 2013 states that the maximum WAD cyanide allowed to exit the plant is 50 ppm.

The tailings facility management is informed if the concentration of WAD cyanide in the tailings leaving the plant exceeds 40 mg/l. An alarm is given if the WAD cyanide if the tailings exceeds 50 mg/l. On line monitoring shows the plant management the operating parameters for WAD cyanide in the tailings.

Freeboard and design storm event (1.3 m and 1:50 year storm event respectively) is defined in the Code of Practice for the TSFs.

The SAP system for the Plant was demonstrated by Plant Maintenance Department. The SAP system covers all the planned maintenance work since April 2013. Prior to this a Computerised Maintenance, Management and Information System (CMMIS) was used. All plant equipment have been moved from one system to the other. Information under CMMIS has been retained as excel spreadsheets.

A range of inspections are also undertaken including the following: "Daily Cyanide Storage Facility Checklist" (checks for signs of corrosion and leakage at the storage tank, bund integrity, the presence of fluids and available capacity, drains closed and locked, and leakage from pipes); "Daily Tailings Inspections" by Frazer Alexander Tailings (FAT) and Cyclone Projects (both are subcontractors who operate the TSFs) of the TSFs; two yearly Stability Analysis of TSFs; Annual Internal Audit on all TSF. These inspections include unloading, storage, mixing and process areas. These inspections are documented including the date of the inspection, name of the inspector, any observed deficiencies and the date of corrective actions.

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Inspection frequencies for individual pieces of equipment as defined through risk assessments using the Failure Mode Effective Critical Analysis (FMECA) methodology. Inspections include the following: cyanide storage tanks inspected and thickness tested annually; safety showers maintenance inspections 6 monthly; cyanide delivery pumps maintenance inspections 6 monthly, cyanide spillage pumps maintenance inspections monthly; earth leakage testing undertaken annually; pressure relief valves maintenance inspections undertaken 6 monthly and changed annually; proximity switches maintenance inspections annually; level transmitter maintenance inspection annually; cyanoprobe inspected weekly and 3 monthly.

The procedure for “Monitoring and Controlling Reservoir Levels”” CN-PRO-13, Rev 5, June 2013 prevents the overtopping of the 4 settling dams associated with the Plant.

The Plant has the following change management procedure “Change Management” CN-ENG-03, Revision 10, June 2013 to follow in event of change on the plant.

A pipeline maintenance strategy was observed which has been formulated for implementation from October 2012 in order to reduce pipeline failures. Quest have been contracted to undertake pipeline thickness measurements and recommend pipeline replacements where necessary. The Metallurgy Pipelines and Valves Standard for Tailings was observed showing that bare steel pipes will be thickness tested every 12 months whereas HDPE lined pipes will be tested every 36 months.

Emergency generators are in place for the thickeners, CIP tank agitators, backfill product tanks, kilns and diesel motor for fire hydrants. UPS power for alarms. Cyanide pumps will automatically stop in event of a power failure. Cyclone Engineering Projects is contracted for emergency pumping using mobile generators. The emergency generators are tested and inspected on a weekly basis by the Electrical Department, which is recorded on the inspection register (Diesel Emergency Generator IS/SHE/s/105) There is also a generator test during shut downs and a yearly SAP (Maintenance Flag for a full service.)

In event that Noligwa Gold Plant has a power failure but feed is still coming from the South Uranium Plant, a phone call will be made to the South Uranium Plant to stop pumping. An 8 hour surge capacity exists at the Noligwa Gold Plant to enable them to continue to receive feed from the South Uranium Plant until the pumping ceases.

Temporary cessation of operations due to a power failure is detailed in the following Procedure "Cyanide Related Activities and power failures" CN-ENG-02 Rev 09 – in the event of a power failure the man down alarm will not function. All work to be suspended in the Cyanide area until the power is restored. If there is a temporary cessation of operations for any other planned reason a mini risk assessment will be undertaken. If there is a cessation of operations due to an emergency situation this will be managed in accordance with Noligwa Gold Plant Emergency Preparedness and Response Plan - Noligwa/EPP Rev 06 July 2013, which was observed.

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:

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The operation is in full compliance with Standard of Practice 4.2; to introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

AGA conducted a Workshop in Nov 2010 and Dec 2012 with Afritech on Cyanide Optimisation. A Cyanide Optimisation Programme for Surface Sources Noligwa Gold Plant was compiled. The current control philosophy for Noligwa Gold Plant is a holistic control philosophy rather than a cyanide only control. It includes the control of process parameters (thickener density, pH, slurry flow, and cyanide addition control with TAC1000).

Diagnostic leach and base recovery tests are undertaken by SGS as part of the optimisation programme. This was conducted quarterly and more recently monthly. The aim of the test work and reports are to establish gold-mineral association within individual ore sources. In addition WAD cyande, free cyanide and speciation test are undertaken to establish the optimum level of cyanide to use for a particular ore.

In addition oxygen is injected into the neutralising and pre-leach tanks to ensure optimal oxidization of cyanide and increase in leaching efficiency and decrease cyanide consumption by maintaining cyanide in solution through the oxidation of chemical species that could react with the cyanide.

The newly implemented Remote Operations Control (ROC) system (and advanced data collection system and monitoring station) monitors the instrumentation outputs, which is stored in a data collector. This includes a TAC1000 on line analyser to measure cyanide in the head leach tank and a TAC2000 to monitor terminal cyanide in the Leach Residue. Control charts are compiled for performance parameters. Upper limits and lower limits for performance are set. Notification emails and sms are sent in an escalation sequence when the upper or lower limit is breached ultimately culminating in a notification to the Regional Vice President if there is no improvement after 48 hours.

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.

A probabilistic water balance for the TSFs and Plants in the Vaal River Region is run on GoldSim using a 1:50 year 24 hour storm event for the design scenario.

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.

Input into the GoldSim is updated at least once a quarter. The following are included; slurry tonnage deposition onto each dam is included in the sheet; daily recorded rain measurement taken at each TSF, precipitation levels for a 1 in 50 year storm event; and monthly S Pan evaporation values, gold plant specific hydrological assessment. The rainfall measurements are incorporated into the water balance and TSF operations.

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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 storm water event, inflow of additional water source.

Cyclone Engineering Projects is contracted for emergency pumping using mobile generators in the event of a power failure. Letter VRO131/13 August 19, 2013 agreeing to provide pumps to AGA as required was observed. This is used on a periodic basis by AGA.

TSF Freeboard is surveyed monthly as per the "Mandatory Code of Practice Mine Residue Deposits Vaal River Tailings" Ref No. COP/SHE/t/002, May 2013 Rev. 2.

Phreatic level measured and stability analyses conducted every two years, with recommendations made on freeboard and pool management.

It is noted that all ponds and impoundments at the time of the audit were operated with adequate freeboard as detailed in the documents observed.

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 TSFs receive slurry containing less than 50 mg/l WAD cyanide except during abnormal situations. The open water in the return water dams have a WAD cyanide concentration of less than 50 mg/l and therefore do not require any special measures to restrict access by wildlife. If tailings are measured at the plant to have a WAD cyanide concentration of higher than 50 mg/l the TSF is informed and emergency procedures implemented to scare away any animals or birds. WAD cyanide levels in open water are then measured. No WAD levels have been recorded in open water above 50 mg/l.

The occasional wildlife mortalities were recorded but none have been linked to cyanide. Any wildlife mortalities found close to TSF ponds or Return Water Dams are sent away to the Veterinarian Institute for toxic analysis. One bird (flamingo) was found dead on 16 September 2013, the report is still awaited from the Veterinarian Institute but has verbally been confirmed that it is not due to cyanide. One dead cow death found on 6 September 2013 at Mispah TSF - Incident No: MET/06092013/H&S/M/069-13 VR Tailings, Mispah 2 TSF. The Report is still awaited from the Veterinarian Institute. It has verbally been communicated that this death was not due to cyanide but "sour stomach" from eating maize.

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.

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	☒ **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 are no direct discharges to surface water from these cyanide facilities. Two legal discharge points exists that are allowed to discharge seepage water to the Vaal River. Legal discharge points are Eye dam sump and Boat Club sump. The water at these points although legally able to be discharged to the Vaal River are not discharged but recycled back to the operations for use as process water due to the lack of available process water. There is no established mixing zone. The only discharge in the last three years was from the Boat Club sump (March 2011) due to flooding of the Vaal River. At the time of the flood the monthly analysis shows the WAD levels to be <0.02 mg/l.

Seepage from tailings facilities are intercepted by a system of trenches and boreholes this water is pumped to storage facilities before being used in the gold plants for the Vaal River area as process water. Monitoring is conducted upstream and downstream of the gold plants and associated infrastructure on the Vaal River and the Schoon Spruit (Schoon River). The majority of the monitoring on both rivers show WAD cyanide levels to be between 0.02 mg/l and <0.02 mg/l. The downstream values for the Vaal River only exceeded this on one occasion when WAD cyanide was 0.03 mg/l upstream of the facilities and 0.06 mg/l downstream of the facilities. The downstream values for the Schoon Spruit exceeded 0.02 mg/l on two occasions. On both occasions the upstream concentration was <0.02 mg/l with the downstream concentration being recorded as 0.74 mg/l on both occasions. With both incidents having an identical reading and no subsequent increases in concentration it is believed that these levels may be due to an analytical or recording error. Elevated concentrations have not been recorded since June 2011.

The instances when downstream concentrations of WAD cyanide have been recorded as being above 0.022 mg/l appear to have been isolated instances with no causal link established. Therefore no remedial action has been required to prevent further degradation.

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

	☒ **in full compliance with**	
The operation is	☐ in substantial compliance with	**Standard of Practice 4.6**
	☐ not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

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

Mining processing plants process water is the only beneficial use of groundwater, all other water for domestic and livestock use in the immediate area is supplied from the local potable water supplier, Midvaal Water Company. Groundwater monitoring results associated with the TSFs since 1 Jan 2011, that were

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observed, did not exceed 0.03 mg/l for Mispah TSF and 0.02 mg/l for West TSF. Therefore no remedial action is deemed to be necessary.

Seepage from the TSFs is managed through a number of measures including the following: lining of trenches for the transportation of process water; boreholes adjacent to Vaal River to intercept seepage from TSFs; sub surface perforated pipeline that discharges into Boat Club sump before being pumped to the plants; and various areas of woodland adjacent to TSFs planted to undertake phytoremediation of shallow groundwater.

"Backfill Quality Assurance" CN-GEN-17, Rev 09, June 2013 procedure stipulates the procedure to be followed to ensure that the backfill quality meets the required specification regarding its cyanide content. The procedure states that the permissible cyanide concentration in backfill product is 25 ppm (Free Cyanide) and 50 ppm (Sodium Cyanide, total). This is as per MINTEK Technical Info: PWL AGA BF 100112 dated 12 January 2010 If free cyanide is above 25 ppm the Production Metallurgist rejects the batch and it is pumped to residue.

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, and equipped with humps and drains to contain any spills. The drainage for this area is to a spillage sump equipped with a pump, which delivers any liquid into the main bund area for the sodium cyanide storage tanks from where it can then be pumped to any other part of the Plant. 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.

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

All liquid cyanide storage tanks or cyanide process tanks are located within concrete lined bunds which provide storage greater than 110% of the largest tank or linked tanks together. Any cyanide solutions within any bunded area or the pollution control dams are returned to one of the storage tanks.

For pipes transferring tailings from the plant to the TSFs and the transfer of process water from the TSFs a pipeline maintenance strategy was observed which has been formulated for implementation from October 2012 in order to reduce pipeline failures with thickness measurements undertaken and where necessary pipes replaced. All slurry lines when replaced are replaced with HDPE lined pipes. Any spills from slurry pipe are cleaned up as soon as possible in accordance with "Pipeline Failure Procedure" (P/SHE/e/015) dated February 2012.

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Tailings pipelines do not present a risk to surface water.

Pipelines are steel with possible linings of HDPE. These materials are 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.

Verified original drawings: P&ID 1105019-VR-08G-55-F002.1 rev 2 10 May 2010 signed by relevant staff as per Sheet 1 as Per Chapter 42 of PCR standards - pipe and valve specifications are cyanide specific during re-certification audit in July 2010.

No material changes to engineering design or practices have been undertaken at the Plant in the last three years

A number of inspections have been undertaken of the plant and the TSFs by an appropriately qualified person with subsequent reports concluding that their continued operation is within established parameters and therefore protect against cyanide exposures and releases. These include:

- Structural Condition Report on the Noligwa Plant July 2011 - Bateman Africa;
- Structural Conditions Report of the Cyanide Plant at Noligwa Gold Plant - September 2013 Tenova Bateman; and
- Annual TSF Audit Report for August 2013, SLR Global Environmental Solutions Vaal River and West Wits Operations Tailings Storage Facility Freeboard Assessments, Vaal River Operations Mispah Tailings Storage Facility - Review of Piezometers and Stability of Mispah TSF's.

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

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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 have been developed for monitoring including the following: "Water Management Procedure 2 - Groundwater Sampling" (SAR/EM/W/002); "Water Incident Sampling Procedure" (SAR/EM/W/005).

"Sampling Procedure for Specialised Speciation and Environmental Samples" CN-PRO-10 Rev 10, June 2013 for samples taken by the Gold Plant, and "Sampling Procedure for Specialised Speciation and Environmental Samples" (VRTM-CN08) dated May 2013 for samples taken by Vaal River TSFs.

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

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. MINTEK is South Africa's national mineral research organisation specialising in mineral processing, extractive metallurgy and related areas.

Sample log sheets were observed showing that sampling conditions including weather, temperature, precipitation, animal activity and anthropogenic influences are recorded.

The operation monitors for cyanide in discharges to surface water from the Eye Dam sump and the Boat Club sump on a monthly basis. Cyanide monitoring is undertaken in the Vaal River and the Schoon Spruit upstream and downstream of the AGA Gold Plants and associated infrastructure in the Vaal River Region on a monthly basis. Groundwater is monitored up-gradient and down-gradient of the gold plants and the TSF on a 6 monthly basis. Monitoring of WAD cyanide in tailings leaving the Gold Plant is monitored on a continual basis.

The Gold Plant inspects for wildlife mortalities on a daily basis, none have been recorded in the last 3 years. Wildlife mortalities are inspected for on the TSFs where the results are recorded in the daily logs. Wildlife mortalities are also inspected by the pipeline patrols on the patrol check sheets. Two wildlife mortalities have been found in the last 3 years, neither of which has been associated with the ingestion of cyanide.

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.

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" CN-GEN-15, Rev 09, June 2013, which describes the process to be followed prior to and during decommissioning (decontamination of cyanide equipment prior to demolition) this includes actions to be undertake 12, 6 and 3 months prior to decommissioning.

"Cyanide Plant Decommissioning Procedure" CN-ENG-07, Rev09, June 2013, describes the decontamination and disposal of cyanide equipment and will be updated/revised in June 2016 or earlier.

Chapter 38: Basic Demolition Practices of the "South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines", July 2013, Rev 06 describes the process to following during decommissioning.

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

The premature closure liabilities for Noligwa Gold Plant for 2012 have been calculated. 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.

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

Observed AGA Environmental Rehabilitation Trust Annual Report 2012, signed by Director of Ernst and Young 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.

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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 operation has a large number of procedures describing how cyanide-related tasks such as unloading, mixing plant, operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimise worker exposure. These procedures include personal protective equipment and address pre-work inspections including the following: Issuing of "Clearance Certificates for Cyanide Areas and Equipment" CN-GEN-04, Rev 09, June 2013, which describes the process for issuing clearance certificates for cyanide areas and equipment; "Cyanide PPE to be Worn / PPE Levels" CN-PPE-01, Rev 09, June 2013; and "Cyanide PPE Requirements" VRKGP/CN/09S Rev 8 August 2013.

The Gold Plant has the following procedure, "Change Management" CN-ENG-03, Rev 10, June 2013 in order to review proposed process and operational changes and modifications for their potential impacts on worker health and safety, and incorporate the necessary worker protection measures.

Plant conducts Monthly Health and Safety Meetings, which are attended by the Plant Management, Section Safety Stewards and Full Time Safety Stewards who represent the workers. These meetings include discussions on any changes to health and safety procedures. In addition new Procedures are emailed to Shift Foremen for discussion in Operational Team Meetings (per shift).

Risk assessments are conducted and reviewed prior to the compilation or revision of procedures and then training is undertaken on the new procedures. Feedback is solicited at all stages of the risk assessment and training.

Standard of Practice 6.2: **Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.**

☒ **in full compliance with**

The operation is

☐ in substantial compliance with **Standard of Practice 6.2**

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

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The pH of the slurry is controlled automatically and monitored by the ROC. The pH level is interlocked with the cyanide pumps, when the pH dips to 10 the cyanide pumps will stop and will only restart at 10.5.

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.

The Noligwa Gold Plant gas survey inclusive of hot spots for 18 June 2013 was observed where all measurements of HCN were 0.0 ppm.

PAC 7000 ambient personal monitoring devices are used on the TSF if the TSF is notified by the Plant that the concentration of WAD cyanide in the tailings exceeds 50 mg/l. Monitoring did not show elevated levels of HCN on the TSFs during these periods of high WAD cyanide in tailings from the Gold Plant. Workers are protected from dust by the use of appropriate PPE (dust masks) as detailed in the risk assessment undertaken as part of the Job Template Analysis.

“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. Hot spot monitoring showed concentrations at Noligwa Plant Leach Cyanide dated 10 September 2013 - maximum result 1.6 HCN ppm.

All monitoring devices observed during site visit were observed to be calibrated. 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. Calibration certificates were observed.

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 and what PPE must be worn. Signs are placed at TSF sides and at the penstock prohibiting the drinking of the water, instruct on what PPE must be worn, prohibits unauthorised entry.

All safety showers have an integrated eye wash. Safety showers were located at appropriate locations including adjacent to the offloading area and at the top of the leach tanks.

Safety showers are tested per shift as observed in “Daily Cyanide Checklist”. The fire extinguishers on the Plant were all observed to be dry powder. Fire extinguishers are checked monthly and serviced annually.

Pipes at the Gold Plant are identified through colour coding and labelled with direction of flow. Pipes carrying tailings are labelled as toxic /poisonous water with a skull and cross bones and not potable water pictogram at culverted areas.

The Sodium Cyanide Solution MSDS in English (official language of AGA) is on the outside of the cyanide offloading area and in the First Aid Cabin next to the offloading area. It includes the first aid procedures, safe handling and storage, personal protection, etc.

No cyanide exposure incidents have been recorded in the last 3 years. 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. Assesses the cause of the accident and

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then compile remedial actions. Actions are loaded into the Risk Management System (RMS) to track the actions taken.

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.

It was observed that First Aid rooms at Cyanide Storage Area, at top of Leach tanks, bottom of the leach tanks and at the offloading area contain water, oxygen, and antidote kits, available for use. All foremen etc. have radios for communication. The fully equipped (except for antidote kit, which is kept in a fridge in the first aid rooms) emergency trailer is parked at the gate.

In the event of an emergency at the TSF the Shift Forman will be immediately informed who will then call ER24 (ambulance and paramedic service) and at the same time informs the Tailings Production Metallurgist who then informs the nearest Plant Production Metallurgist who will send their Emergency Response Team. The Shift Foreman/ Tailings Production Metallurgist will also inform the Occupational Health Doctor and Occupational Health Sister. This is detailed in “Procedure for Notification of Cyanide Exposures to Vaal River Tailings Employees” (VRTM-CN02) dated May 2013.

The Daily Cyanide Checklist includes the inspection of first aid kits including cyanide antidote. Observed “SA Metallurgy Tripac-Cyano and Hypo Solution Expiry List”, Sept 2013, kept by the Reagent and Risk Manager was observed. All antidote kits were observed to be kept in fridges and within the expiry dates.

Observed “Noligwa Gold Plant Emergency Preparedness and Response Plan” (EPP) Rev 06 July 2013. Emergency Preparedness and Response plan 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. Noligwa Gold Plant has 16 Cyanide Emergency Procedures.

“Procedure for Notification of Cyanide Exposures to Vaal River Tailings Employees” (VRTM-CN02) dated May 2013 details the emergency response in the event of a cyanide exposure at any of the Vaal River Tailings facilities. Contractors on site e.g. FAT also comply with this procedure. Both ER24 and West Vaal Hospital use Chapter 42 of the “South Africa Region Metallurgy (SARM) Cyanide Code Implementation Guidelines”, July 2013, Rev 06.

Cyanide Appointees having undertaken the relevant first aid training make up the First Aid team trained to conduct cyanide related first aid. ER24 contracted by AGA is part of the emergency response for AngloGold Ashanti. The ER24 headquarters for the Vaal River area is located at Noligwa Gold Plant. ER 24 - 24 hr Emergency Response have oxygen, resuscitator, radio and qualified personnel available to assist with any cyanide exposure incident.

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ER24 are contracted to provide emergency assistance and transport patients to West Vaal Hospital, which is owned and operated by AGA.

“Access of ER24 Ambulance During Cyanide Exposure” CN-EMER-04, Rev 08, June 2013 includes the requirement for security to allow the ER24 ambulance unrestricted access into the South Uranium plant and the Noligwa Gold Plant gate, all other traffic at the gates will be diverted away.

“Procedure for Notification of Cyanide Exposures to Vaal River Tailings Employees” (VRTM-CN02) dated May 2013 details the actions to be taken at the TSFs.

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. Noligwa Gold Plant conducted its last full chain drill on 10 October 2011. This was well documented including photographs. Drills on the Plant are undertaken monthly for cyanide exposure or release. Cyanide drills are undertaken on VSF at 6 monthly intervals. Drill reports detail lessons learned and where necessary lessons are incorporated into response planning.

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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 following was observed: “Noligwa Gold Plant Emergency Preparedness and Response Plan” Rev 06 July 2013, which includes: Emergency Preparedness and Response plan 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; and Command Centres.

Noligwa Gold Plant has 16 Cyanide Emergency Procedures in addition to the following: Issue Based Risk Assessment - Emergency Scenarios for Noligwa Gold Plant conducted 05/09/2013.

The 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 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.

“Cyanide Tankers Escort Sec-068” (APCP-CYN01) Rev 02 dated 09 October 2010 revised Aug 2013 - stipulates the process to be followed by security to visually inspect and transport the tanker from Central Salvage to the Gold Plant over the No. 8# Vaal River Bridge. It stipulates the steps to take in the event of leakage or road accident.

Overtopping of ponds and impoundments and failure of tailings impoundments, are considered in the following plans: “Vaal River Tailings Emergency Preparedness Plan - No.2 Tailings Plant Manager EPP”.

“Procedural Hazop Study for VR Tailings” VRT EP 071206 Rev 6 Aug 2013 assessed and listed the potential cyanide emergencies relevant to Vaal River TSF.

It is stipulated that Emergency Plans are reviewed every 3 years.

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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.

Plant conducts Monthly Health and Safety Meetings, which are attended by the Plant Management, Section Safety Stewards and Full Time Safety Stewards who represent the workers. These meetings include discussions on any changes to cyanide emergency response planning.

The Chief Fire Officer, Business Services (the only permanent member of the AGA fire crew) liaises with local authority emergency response teams who provide feedback on cyanide emergency response planning on behalf of potentially affected communities. The Chief Fire Officer has been asked to be the Chair of the regional municipal Disaster Management Committee. Monthly meetings between the Chief Fire Officer and the Assistant Director or Fire and Safety are due to resume after a 2 year gap as there has been a new appointee to this position.

Sasol Polymers undertake a cyanide road show along the cyanide tanker transportation routes in association with the Gold Plants. The latest road show was 15 July 2012 in Midvaal. The Reagent and Risk Manager attended on behalf of AGA. These road shows allow communities to provide feedback on the emergency planning process.

Cyanide Management Brochure for Processing Plants explaining; what Cyanide is, its effects on people and the environment, reasons for use and ICMI certification has been produced. This brochure can be distributed electronically or in paper format on request. Boards showing this information have been put up inside the Gold Plant and at the TSFs. The public being able to see the latter.

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

The Emergency Preparedness Plans are reviewed every three years and as part of this review internal stakeholder are communicated with. “Noligwa Gold Plant Emergency Preparedness and Response Plan” was last reviewed in August 2013. “Vaal River TSF Emergency Response Plan” was last reviewed in July 2013. Where necessary, consultation is undertaken with stakeholders more often than this to keep the Plan up to date.

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

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

The "Noligwa Gold Plant Emergency Preparedness and Response Plan" Rev 06 July 2013 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. Figure 2 of the plan indicates the On Scene Control Team (inclusive of alternates). Figure 3 - 5 illustrates the Level 1 to level 3 incident response control chart and teams.

In addition the Emergency Preparedness and Response Plan and associated procedures contain lists of emergency response equipment. This equipment is checked in accordance with the Daily Cyanide Facility Checklist CN-GEN-13, Rev 09, June 2013, Use of the Cyanide Emergency Trailer CN-EMER-15, Rev08, June 2013 and the two weekly SHE Officer Inspections.

"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 18/7/2013 to confirm commitment. Chapter 12 stipulates Training Requirements for Cyanide Appointees.

24 hour emergency telephone numbers are placed at every external telephone on the plant. The telephone lists were dated 30 October 2013.

Representatives of ER24 (paramedics and ambulance response) and West Vaal Hospital (AGA hospital) confirmed that they are aware of their involvement and that they are included in the drills.

The "Mass Incident Plan (External Disaster Plan)" ref AGAH/VR/EP/SOP/010, dated July 2012 compiled by Dr. J Pretorius (CMO Anaesthesia) details how West Vaal Hospital will respond to a cyanide incident.

The AGA, Chief Fire Officer, Business Services is informed of Man Down drills, however the fire crew is not directly involved as they do not have cyanide training. The Emergency Response Team for the Plant responds to cyanide emergencies.

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.

"Noligwa Gold Plant Emergency Preparedness and Response Plan" Rev 06 July 2013 figure 2 indicates the On Scene Control Team (inclusive of alternates). Figures 3 - 5 illustrate the Level 1 to level 3 incident response control chart and teams. The EPP includes emergency telephone list dated 30 October 2013.

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A control sheet is kept by the Cyanide Champion to ensure that the telephone lists are changed at all points in the plant. Every time the emergency telephone list is changed, the colour of the sheet is changed for easy recognition of outdated lists. The telephone lists were updated during the audit (due to change in senior management).

The only community in the vicinity of Noligwa Gold Plant is the high density accommodation for AGA workers. The EPP stipulates the escalation of incidents that will affect outside communities.

"Procedure Evacuation Procedure" GEN-011, Rev 05, June 2013 includes community evacuation. A Disaster Management Committee will be established to control activities of mass evacuation.

"Procedure Public Consultation and Disclosure / Emergency Communications" VRTM-CN07 dated May 2013 details how communications about an emergency are undertaken. This procedure states that "No employee, contractor or manager is permitted to communicate directly or indirectly with the press or general public". The process for external communication is detailed in "SHE Communication, Consultation and Participation" (SP/SHE/s/008) dated October 2012. Issues that could result in public exposure are referred to General Manager SA Region Metallurgy and Environmental Manager Environmental Management Department.

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

Specific remediation measures are included in the following procedures:

- Using Ferrous-Sulphates CN-PRO-12, Rev 5, June 2013 - use of ferrous-sulphate to neutralize cyanide spillage;
- Procedure for addressing Cyanide Spillage on the Plant CN-EMER-13, Rev 09, June 2013;
- Detoxification of Cyanide Equipment and Disposal of Cyanide Contaminated Waste, Rev 09, June 2013; and
- Mill control during addition of cyanide waste material CN-PRO-03, Rev 09, June 2013.

Large quantities of pure cyanide spilled will be cleaned up by the Sasol Hazchem Team. Drinking water is supplied from Midvaal Water Company therefore alternative supplies are not required.

The prohibition of the use of ferrous sulphate, hydrogen peroxide or sodium hypochlorite when cyanide has spilled in to surface water is contained in the following procedures: "Procedure Using Ferrous-Sulphates Cyanide" PRO-12 Rev 5 June 2013 - use of ferrous-sulphate to neutralize cyanide spillage; "Handling and Detoxification of Hazardous Chemical Spillage" Ref No. VRTM-CN017 Rev 06 May 2013; and "South Africa

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Region Metallurgy (SARM) Cyanide Code Implementation Guidelines", July 2013, Rev 06. Section 6 Chapter 41 point 4.16.

Sampling in the event of a release are detailed in the following procedures: "Environmental Sampling CN-PRO-02 Rev 08 June 2013" – sampling by the Gold Plant during cyanide spills; "Sampling Procedure for Specialised Speciation and Environmental Samples" CN-PRO-10 Rev 10 June 2013 - describes the sampling methods for slurry samples and solution samples to be undertaken by the "Gold Plant; and Titration for Free Cyanide" CN-PRO-06 Rev 09 June 2013.

"Pipeline Failure Procedure" PSHEe015 Rev 0. February 2012, states that samples need to be taken at the point of impact, at the point where spill meets sensitive ecosystems and downstream of impact as well as dams that may have been affected (where spill is not contained).

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 Noligwa Gold Plant Emergency Preparedness and Response Plan" Rev 06 July 2013 as well as the associated Emergency Procedures are revised every 3 years or whenever there is a major change to the document as per: "Review of Cyanide Procedures" CN-GEN-10, Rev 09, June 2013. A major change in the document includes but is not limited to the following: any emergency situation, significant changes to risk assessments including the cyanide route risk assessment, management changes or reallocation of responsibilities.

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. Noligwa Gold Plant conducted its last full chain drill on 10 October 2011. The scenario was a cyanide splash and gas inhalation. Included step by step photos of drill, lessons learned from various participants, actions loaded onto the Risk Management System. In addition drills are undertaken at the Plant on a monthly basis.

The EPP states that on the completion of mock drills, any required changes to procedures will be communicated for implementation and change of procedures. This has not been required in the last 3 years.

No requirement to update the Emergency Response Plan has been identified after any cyanide related emergency as the Vaal River TSF and Gold Plant have not had a cyanide related emergency 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.

The operation is

- ☒ **in full compliance with**
- ☐ 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 receive 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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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.**

The operation is

☒ **in full compliance with**

☐ 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.

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; Noligwa Gold

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Plant trainer - Mr Mathuloe - Workplace Assessor - (ETDP SETA Accredited Service Provider); and Trainer Development Diploma for T.C. van Gent dated 18 November 2002.

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; to 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. Record of Full Chain Drill, February 2013, show that J Motsemme – Senior Training and Development Officer Metallurgy was present. J Motsemme stated that it had not been found necessary to change procedures in light of the drills (there are also monthly Plant cyanide drills) but training for individuals has been refreshed, on the job, in response to drills.

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 Noligwa Gold Plant can come to the plant security at the plant entrance. Security will escalate the complaint to Plant Management record the complaint in OB book (Occurrence Book) with all details of complainant and complaint

In addition a school awareness campaign was run in October 2011 regarding the TSF facilities and the dangers they pose.

A visit was undertaken to site on the 19 July 2012 by grade 8 learners from Vaal Technical High School, Matlosana; Mayoral representative; and National Union of Mineworkers representatives.

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

AGA provides information to its stakeholders regarding cyanide management through the following:

- Annual Sustainability Reports that are available on the AGA website;
- AuRa Newsletter that is distributed electronically and sent to stakeholders on request;
- Visit to site on 19 July 201 by grade 8 learners from Vaal Technical High School, Matlosana; Mayoral representatives; and National Union of Mineworkers representatives;
- Awareness campaign at primary and secondary schools in the Vaal River area 17 - 20 October 2011; and,

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

Standard of Practice 9.3: **Make appropriate operational and environmental information regarding cyanide available to stakeholders.**

The operation is

- ☒ **in full compliance with**
- ☐ 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; to 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 displayed as a poster inside the plant. Observed Cyanide Management Brochure displayed as a poster on boards adjacent to TSFs where public have access. 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 Vaal River Region are literate.

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. The environmental incidents include Pipe and pump failures between Noligwa Gold Plant and the TSF. The pipe failures involved pipes carrying return water, where the concentration of cyanide is below 0.5 mg/l WAD cyanide and therefore not defined as a process solution and this did not enter surface water. These incidents are reported to the Regulator (Department Water Affairs and Forestry Free State) putting it in the public domain. In addition any incident that would lead to hospitalisation or a fatality would also need to be reported to the Regulator and would therefore be in the public domain.

Report Signature Page

GOLDER ASSOCIATES AFRICA (PTY) LTD.

Ed Perry
Lead Auditor

Marie Schlechter
Reviewer

Date: 6 June 2014

MS/EP/ag

Reg. No. 2002/007104/07
Directors: SAP Brown, L Greyling, RGM Heath

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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