



September 2014

INTERNATIONAL CYANIDE MANAGEMENT
CODE RECERTIFICATION AUDIT

**Gold Fields Australia Pty
Ltd Granny Smith Gold Mine
Recertification Audit
Summary Audit Report**

Submitted to:

International Cyanide Management Institute (ICMI)
1400 I Street, NW Suite
550 WASHINGTON DC 2005

Gold Fields Australia Pty Ltd
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WEST PERTH WA 6005

REPORT

Report Number. 147648007-003-R-Rev1

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SUMMARY AUDIT REPORT FOR OPERATIONAL GOLD MINES

Name of Mine: Granny Smith Gold Mine
Name of Mine Owner: Gold Fields Australia Pty Ltd
Name of Mine Operator: GSM Mining Company Pty Ltd
Name of Responsible Manager: Stuart Mathews, General Manager
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LOCATION DETAIL AND DESCRIPTION OF OPERATION:

Gold Fields is one of the world's largest unhedged producers of gold. In Australia, Gold Fields operates four gold mines in Western Australia – Agnew, Darlot, Granny Smith and St Ives.

Granny Smith Gold mine is located 720kms east-north-east of Perth in Western Australia and 23 km south west of Laverton, Western Australia near Mount Weld.


Granny Smith Gold Mine was commissioned in 1989 and at the time the mine was expected to have an eight year mine life but has remained in continual operation since commissioning and has produced over 6 million ounces of gold.

Granny Smith Gold Mine was one of the three Yilgarn South Assets acquired from Barrick Gold of Australia by Gold Fields in October 2013.

The processing plant consists of two-stage fresh ore crushing circuit with closed circuit screening and a single-stage oxide ore crushing circuit, a semi-autogenous grinding mill in closed circuit with a cone crusher, an agitation leaching and carbon-in-pulp circuit, tailings gravity re-treatment plant with fine grind, a gold recovery plant with carbon reactivation, and a tailings thickener.

Granny Smith is exclusively a Fly in Fly out site from Perth, Western Australia.

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Name of Facility



Signature of Lead Auditor

16 September 2014
Date



**SUMMARY AUDIT REPORT
AUDITORS FINDINGS**

Granny Smith Gold Mine is:

in full compliance with

in substantial compliance with

not in compliance with

**The International
Cyanide Management
Code**

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

Audit Company: Golder Associates Mauritius

Audit Team Leader: Ed Clerk, Exemplar Global (105995)

Email: eclerk@golder.com.au

Name and Signatures of Other Auditors:

Name	Position	Signature	Date
Ed Clerk	Lead Auditor and Technical Specialist		16 September 2014
Mike Woods	Auditor		16 September 2014

Dates of Audit:

The Recertification Audit was undertaken over three days between 11 and 13 March 2014.

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's *Gold Mining Operations Verification Protocol* 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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 1.1, requiring the operation 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.

Granny Smith purchases its sodium cyanide from Australian Gold Reagents Pty Ltd (AGR) under a Sodium Cyanide Solution Supply Agreement (Supply Agreement). Although the Supply Agreement has not been finalised, AGR was recertified under the Code on 24 November 2010. The text of the Supply Agreement does not require that the cyanide be produced at a facility that has been certified as being in compliance with the Code. Despite this, AGR is an ICMC certified cyanide producer. AGR was conditionally recertified with the ICMC subject to the implementation of a Corrective Action Plan on 13 March 2013. All items in the Corrective Action Plan were closed out on 19 June 2014 as reported on the ICMI website.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 2.1, requiring that the operation establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

Agreement between the operation and the cyanide producer (and transporter, including subcontractors) designating transportation-related responsibilities has been established through the recertification of AGR's West Australian Supply Chain on 13 June 2013 and its Production Facility on 19 June 2014.

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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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 2.2, requiring that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

Granny Smith purchases its sodium cyanide from AGR under a Purchase Agreement which requires AGR to be certified under the Code. AGR's West Australian Supply Chain cyanide, the cyanide transporter, was recertified with the Code on 13 June 2013.

The operation has chain of custody records identifying all elements of the supply chain (producer, transporter(s), interim storage facilities) that handle the cyanide brought to its site.

Within AGR's West Australian Supply Chain, cyanide is transported by rail from the CSBP's (AGR) loading station to the West Kalgoorlie Container Terminal by Aurizon. Toll Mining Services then transports the isotainers from the container terminal to Granny Smith..

PRINCIPLE 3 – HANDLING AND STORAGE

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

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality control (QA/QC) procedures, spill prevention and spill containment measures.

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Facilities for unloading and storing cyanide have been designed and constructed in accordance with the cyanide producers' guidelines. AGR has assessed the unloading facility as configured as being in compliance with Dangerous Goods regulations. Unloading and storage areas for liquid cyanide are located away from people and surface waters. The nearest surface water is Windich, a former open pit that now forms part of Granny Smith's raw water system. Windich is more than 200 m from the reagent cyanide area to the south-east. The nearest surface water body outside Granny Smith's control is Lake Carey located 13 km to the south-west. AGR has assessed that the distance between the reagent cyanide installation and Office buildings, warehouses, processing area, workshops and amenities areas is greater than 15 m as required by Dangerous Goods regulations.

The unloading facility at Granny Smith is located on an impermeable concrete slab to minimise seepage of spilt liquid cyanide to the subsurface. The slab is slightly graded to drain preferentially into a sump that can be pumped to the Cyanide Reagent Storage Bund.

The cyanide unloading area at Granny Smith is designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck. The facility consists of an isotainer unloading bay sufficient for one isotainer at a time to be accessed from an unloading tower immediately above it. Whilst the isotainer is aligned to the unloading tower immediately above it, the isotainer is inherently located on a graded slab of concrete that will catch any drips of reagent cyanide that may be released during the operation and prevent minor drips and spills from reaching the ground. Rollover bund walls at the entrance and exit to the pad, a kerb wall on the edge remote from the existing bund wall and bollards to help prevent passing traffic tracking dirt onto the pad were installed. A sump and pump are also present to remove liquid to the Cyanide Reagent Storage Bund.

Several methods exist to prevent overfilling of the cyanide storage tank at Granny Smith. Prior to unloading, the tank level is checked to ensure it has the required capacity to receive the cyanide delivery. Multiple level alarms have been established and the high level alarm triggered at 91% stops the unloading process by isolating the air flow. In the event that the observer is not capable of manual shutoff should a further visual and audible alarm is triggered and a solenoid-activated valve isolates and vents the air line.


Cyanide mixing and storage tanks are located on a bunded concrete surface which acts as a competent barrier to leakage.

Cyanide is stored:

- With adequate ventilation to prevent the build-up of HCN gas. AGR has assessed the unloading facility as configured in compliance with Dangerous Goods regulations to ensure that it is protective of personnel working on the drivers' platform during unloading
- Only as a liquid so there is no need for measures to minimise the potential for contact of solid cyanide with water
- In a secure area where public access is prohibited via a gated fence around the cyanide storage area

Separately from incompatible materials. There is a facility for unloading and storage of hydrochloric acid adjacent to the cyanide reagent unloading and storage facility. This facility is separated from the cyanide reagent area by a bund wall.

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Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 3.2

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

Only reagent cyanide is used at Granny Smith, which is unloaded from truck-mounted isotainers into a Cyanide Storage Tank. The isotainers remain on the truck throughout delivery and remain under the control of the supplier at all times.

Standard operating procedures have been developed and are implemented to manage cyanide unloading and storage activities effectively and safely. Clear attention has been paid to the role of the Granny Smith representative whose role in unloading is complementary to the AGR truck driver. The Granny Smith representative observes the delivery Driver from a safe location throughout the unloading operation and ensures that appropriate personal protective equipment is used by the driver.

PRINCIPLE 4 – OPERATIONS

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

Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.1

not in compliance with


Summarise the basis for this Finding/Deficiencies Identified:

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

Written procedures, plans and manuals have been developed and implemented for the following areas and activities of operation that involve cyanide solutions greater than 0.5 mg/L WAD cyanide. Key procedures include:

- Working in Cyanide Areas
- Confined Space
- Liquid Cyanide Unloading

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- *HCN Area Monitoring*
- *Cyanide Titrations and pH Measurement*
- *Tank Operator Sampling*
- *Cleaning Tools and PPE after Cyanide Work*
- *Decontamination of Plant/Equipment to be Removed or Maintained*
- *Cleaning of Trash and Carbon Screens*
- *Acid Wash*
- *Cyanide Management Plan*
- *Crushing Circuit Process Technician Training Manual*
- *Leach-CIP Training Manual*
- *Thickener and Water Systems Process Technician Training Manual*
- *Tails Retreatment Circuit Process Technician Training Manual*
- *Tailings Storage Facility Operating Manual.*

The TSF Operations Manual describes the Hypersaline injection system and controls. Mill Flow process flow diagrams do not show any other cyanide treatment systems on site

Granny Smith uses a software system called InTuition to control documentation of competencies, job roles, training courses, procedures, compliance and regulations relating to mineral processing.


Oracle software is used to administer schedules, requirements and records of routine preventive maintenance activities.

Some processing operations such as pumping systems to pump water collected in secondary containments back into the process are automated. These are controlled via a CITECT distributed control system (DCS).

Important design assumptions and regulatory parameters are documented and explained in manuals, plans and key procedures. These specifically include:

- *Working in Cyanide Areas*
- *HCN Area Monitoring*
- *Cyanide Management Plan*
- *Crushing Circuit Process Technician Training Manual*
- *Leach-CIP Training Manual*
- *Thickener and Water Systems Process Technician Training Manual*
- *Tails Retreatment Circuit Process Technician Training Manual*

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- *Tailings Storage Facility Operating Manual*
- *Cyanide Management Plan.*

Further arrangements are in place to reinforce awareness of key requirements. In particular, a white board is maintained in the Mill Control Room and CIP Hut by the mill foremen and the metallurgists summarising set points for operating requirements.

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

The manuals used for training include directions on specific requirements for implementing practices required including operational inspections in the reagent storage, leaching and tailings areas with focus on leaks from pumps and piping and readiness of secondary containments to handle such leaks.

There are also specific standard operating procedures that support the safe and environmentally sound operation of the facility.

Oracle software is used to administer routine (daily, weekly and monthly) inspections of operational areas and routine preventive maintenance activities. A review of documented inspections and preventative maintenance schedules of cyanide critical equipment and discussions with Maintenance confirmed these are occurring for cyanide facilities.

The operation has procedures 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. During the audit period the operation moved from a paper based decentralised management of change system to a centralised electronic database.

The centralised database was discontinued at the time of changing ownership and the operation has reverted to a paper based system. The operation has completed one management of change assessment under the new ownership for the deletion of a lower strainer in an elution column. Completed management of change assessments reviewed had been assessed by safety and health personnel.

The operation has developed formal cyanide management documents that address contingency procedures for situations when inspections and monitoring identify a deviation from design or standard operating procedures. The Leach-CIP Training Manual includes scenarios in a Troubleshooting Guide Table along with possible explanations and potential corrective actions to guide the response by Process Technicians.

There is a dedicated procedure to guide the response for critical slurry pump failures and to clean up following minor cyanide spills.


The Tailings Operations Manual includes guidance on responding to specific scenarios.

The operation has also developed and implemented a Cyanide Emergency Response Plan to address potential accidental releases of cyanide. The Cyanide Emergency Response Plan considers a number of cyanide failure scenarios appropriate for its site-specific environmental and operating circumstances.

The Granny Smith Gold Mine Standardised Cyanide Process Plant and Associated Infrastructure Decontamination and Decommissioning Plan is implemented in the event that temporary closure or cessation of the operation may be necessary.

The operation does inspect cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters.

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Inspections of cyanide facility areas are conducted daily, weekly and monthly by Process staff. The inspections are recorded and signed off by Supervisors. Work orders are raised for issues identified during the inspections. Process Technicians also are trained in conditions to look for as part of their inspections and daily activities, as detailed in training manuals such as the Leach-CIP Training Manual.

The monthly inspections are Plant General Inspections (PGIs) carried out for 18 defined areas. Responsibility for inspections is rostered amongst 18 mill inspection groups within the organisation. The TSF is one of the areas and it has a special requirement that a more detailed inspection is carried out every six months, so a simpler monthly inspection is carried out in five months out of six.

Inspections conducted by maintenance personnel provide emphasis on the physical integrity of equipment. Such inspections are undertaken according to the frequencies scheduled in Oracle, which are specific to the risks associated with individual equipment types. For example, pumps are inspected weekly, slurry pipelines are inspected every two months.

Oracle software is used to administer schedules, requirements and records of routine preventive maintenance activities. A review of preventative maintenance schedules of cyanide critical equipment and discussions with the Maintenance staff confirmed that preventative maintenance inspection reports had been developed and scheduled for all cyanide critical equipment.

Granny Smith inspects the following at unloading, storage, mixing and process areas:

- Tanks holding cyanide solutions for structural integrity and signs of corrosion and leakage through a combination of daily and monthly inspections and a preventative maintenance schedule that conforms with a risk based inspection programme.
- Secondary containments for their integrity, the presence of fluids and their available capacity, and to ensure that any drains are closed and, if necessary, locked, to prevent accidental releases to the environment
- Leak detection beneath the Process Water Storage Pond on a monthly basis
- Pipelines, pumps and valves for deterioration and leakage
- Ponds and impoundments for the parameters identified in their design documents as critical to their containment of cyanide and solutions and maintenance of the water balance, through per shift, monthly and six monthly inspection regimes


Inspections are documented, including the date of the inspection, the name of the inspector and observed deficiencies. The nature and date of corrective actions are documented.

Records kept of PGIs demonstrated that those inspections are documented including the date of inspection, the name of the inspector and the observed issues. Records were also available for other months.

Preventative maintenance records also note date of the inspection, the name of the inspector, and any observed deficiencies. The use of work orders for observed deficiencies allows the nature and date of corrective actions documented to be documented.

Preventive maintenance programmes are implemented and activities documented to ensure that equipment and devices function as necessary for safe cyanide management. Oracle software is used to administer schedules, requirements and records of routine preventive maintenance activities.

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The operation does not require emergency power resources to operate pumps and other equipment to prevent unintentional releases and exposures in the event its primary source power is interrupted. Two air receivers ensure sufficient back up supply of motive air to operate the isolation valves in the feed lines to the Leach Tanks train and the CIP Tank train to prevent an overflow of the tank cascade under gravity during power failure conditions.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.2, requiring that the operation limit the use of cyanide to that optimal for economic recovery of gold so that the waste tailings material has as low a cyanide concentration as practical.

The operation conducts a programme to determine appropriate cyanide addition rates in the mill and evaluate and adjust addition rates as necessary when ore types or processing practices change cyanide requirements.

Cyanide addition is typically in the range 0.40 to 0.67 kg/tonne of ore.

Daily bottle roll tests/leach tests are conducted to verify recoveries and provide support for the rate of cyanide addition nominated.

Test work was conducted on future ore sources from the Wallaby Decline based on samples collected from underground. Since 2011, the metallurgical test work has been replaced with bottle roll test work due to a greater understanding of ore characteristics.

The operation has evaluated various control strategies for cyanide additions.

Over time, the operation has sought to reduce the rate of cyanide addition to the Leach Feed. Cyanide concentrations in LT1 during the Certification period had been reduced from 400 mg/L to 200 mg/L. During the Recertification period it has been further reduced to 180 mg/L. Circuit recovery has been maintained.

Cyanide is added to Leach Tank LT1 under automatically controlled closed loop. The control loop uses a Cyantific Instruments Cyantist OCM5000 on-line analyser to control the concentration in LT1 at 180 mg/L


The Cyantist analyser is also configured to monitor the cyanide concentration downstream in LT6 for one in four of the ten minute analysis cycles with which the instrument operates.

Process Technicians conduct manual titrations of cyanide in LT1, LT6 and CIP Tank 6 on a four-hourly basis as a calibration check on the Cyantist instrument and to provide additional lagging performance data.

This strategy has been in place since around 2000 when the plant was upgraded to accept Wallaby ore.

Bottle roll tests are conducted on the CIP tails to assess leaching efficiency. The WAD cyanide levels being discharged to the TSF are taken into consideration when a decision is made to increase cyanide addition.

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management programme to protect against unintentional releases.

The operation has developed a comprehensive and probabilistic water balance for the site.

The water balance model has been run on a quarterly basis since the first quarter of 2013, through to the time of the recertification audit. This equates to approximately a third of the recertification period. The Metallurgy Superintendent indicated that the water balance was not being used during the first two years of the recertification period because, following a 1 in 500 year storm event experienced in February 2011 (which was contained by Granny Smith), the operation identified that the data from some water input areas were not accurate enough for use within the water balance. Consequently, the operation was seeing water levels within the decant pond, storage pits and process water pond that weren't reflective of what was being predicted by the model. To rectify this, Granny Smith began a programme of installing and replacing flow meters to provide more accurate data. Due to programme delays and budget constraints associated with the former owner's decision to divest Granny Smith, the installation/replacement of flow meters took longer than originally intended.

However, despite a probabilistic water balance not being used for approximately the first two years of recertification period, Granny Smith had systems and infrastructure in place that negated the need for a model and protected against overtopping of the TSFs. Department of Mines and Petroleum (DMP) and licence conditions require that a 500 mm total freeboard (minimum) from the pond level, when containing runoff from the 100 Year 72 hour rainfall event, to the embankment crest is maintained. Throughout the recertification period, this freeboard requirement was met.


Regulatory authorities have granted Granny Smith Mine permission to discharge excess supernatant pond water into the Goanna Pit void during emergency situations. This may occur during extreme rainfall events. A pipeline to Goanna Pit is installed to facilitate this process and the *TSF Operating Manual* outlines the pumping procedures. Goanna pit is estimated to have over 30 m of freeboard or approximately 3.47 GL of capacity, which is far in excess of 1 in 100 year 72 hour freeboard capacities of the three cells within the TSF.

The Auditor accepts that there is sufficient capacity and capability to manage the net effect of a 1 in 100 year 72 hour storm. The TSF, Goanna Pit and pumping facilities are such that a significant buffer has been maintained to contain the precipitation associated with a worst case scenario rainfall event. Additionally, with the improvement in data collection associated with the new flow meters, the Auditor notes that despite the water capacity onsite, Granny Smith has been utilising the water balance for approximately one year.

The Auditor notes that the intent of this Standard of Practice is:

...to protect against unintentional releases.

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The facilities and operating methods at Granny Smith are such that this intent is met without the need for the continual use of a water balance. However, due to water management requirements from an operational viewpoint, Granny Smith will be utilising the water balance going forward.

The water balance considers the tailings schedule, which refers to where within in the TSF (i.e. which cell) the tailings will be deposited. It also takes into account the ore feed rate.

The model can take into account low, median and high long-term rainfall scenarios (based on the Laverton 1889 to 2006 rainfall data record-set from the Bureau of Meteorology) and short term design storm events of 72 hr 1 in 100, 500, 1 000 and 10 000 years. Granny Smith run their model quarterly using the high long term rainfall scenario and the 1 in 100 year 72 hour design storm event. The operation's TSF is designed to cope with a 1 in 100 year 72 hour storm event. The model uses Bureau of Meteorology data from the Laverton weather station, which is 23 km from the operation. Climatic pan evaporation data is modified based on water density (i.e. salt and maximum water density).

Based on site topography and paddock style design of the TSF, there is no risk of surface run-on from an upgradient watershed to the TSF. There is a potential risk for run-on from the TSF walls to collect in Windich Pit and the Process Water Pond. As such, the model includes a runoff factor (storage coefficient) and catchment area to assess the potential for runoff following a storm event into these facilities.

Freezing and thawing are not considered as they have not been recorded in nearby Laverton since records were first collected in 1899.

Seepage loss from the TSF to the seepage drains are accounted for in the water balance model, based on site measurements. Due to the low flow rates seepage does not have a significant impact on the model. There are no discharges to surface water at Granny Smith.

The model allows the user to set scheduled and emergency pump outages.


The model also takes into account the hypersaline water input used to reduce the WAD cyanide concentration in the tailings.

Granny Smith's operating procedures incorporate inspection and monitoring activities to implement the water balance and prevent overtopping of ponds and impoundments and unplanned discharge of cyanide solutions to the environment. The TSF is inspected at least once per shift by the shift supervisor and annually by a third party tailings engineer. These inspections include freeboard, supernatant pond size, embankment and pipe and valve checks.

Ponds and impoundments are designed and operated with adequate freeboard above the maximum design storage capacity determined to be necessary from water balance calculations. The TSF *Operations Manual* states that the TSF is considered to be at maximum sediment storage capacity when the available freeboard is reduced to 300 mm, whilst the water pond storage capacity is at maximum when the freeboard is reduced to 500 mm. The water balance was designed with these freeboards in mind. Quarterly surveys and annual TSF inspections, each undertaken by external providers, have indicated that the freeboard limits stipulated above have largely been maintain for during the recertification period.

Due to large amounts of historical data from the Laverton weather station, onsite precipitation data is not used in the water balance. The Bureau of Meteorology data for Laverton, which has been operational since 1889 and is located 23 km from Granny Smith. Laverton has comparable topographic conditions to Granny Smith, such that precipitation data is representative of conditions at the site.

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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:

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

The tailings discharges (at the spigot) into the TSF cells are at times above 50 mg/l and less frequently in the supernatant. There are currently no measures at the TSF to restrict wildlife access. However, a protective mechanism via the injection of hypersaline water into the tailings stream has been established at Granny Smith and was in affect during the recertification period. Since certification, Granny Smith has implemented changes to mill processes and tailings discharges procedures that has resulted in the majority of discharges at the spigot being below 50 mg/L WAD cyanide. As such, hypersaline injection has only been used during the recertification period on an as-needed basis (approximately 3% of the time).

To maintain the protective mechanism (when in use) a number of recommendations and conditions must be met. One recommendation pertaining to the salinity in the supernatant was altered following the peer review and ICMI completeness review process. The Auditor is satisfied that Granny Smith met the required recommendations and conditions during the recertification period.

Across the recertification period, there were 16 instances of an exceedance occurring (once during the employment of the protective mechanism and 15 times when it was not in use). Despite there being 16 instances during the recertification period that lead to WAD cyanide exceedances, the Auditor concludes that the operation is still in Full Compliance for the following reasons:


- The vast majority of the instances, upon retesting of the samples, were shown to not be exceedances.
- Of those instances that were not due to laboratory issues, the failure mechanisms were not of a programmatic or systematic nature. As such, the causes of the exceedances have not been repeated during the recertification period. Additionally, sufficient time as passed to indicate that any correct actions implemented have been successful.
- The cause last exceedance (December 2013) was outside the control of the operation (i.e. lightning strike).

Apart from the TSF, no other open water bodies at Granny Smith have WAD cyanide concentrations in excess of 50 mg/L.

The protective mechanism has been effective in preventing wildlife mortality attributable to cyanide exposure at open water bodies. Similarly, no wildlife mortalities occurred when tailings discharges were been below 50 mg/L WAD cyanide (and thus the protective mechanism is not in use).

The operation does not use a heap leach process.

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Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct or 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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.5, requiring the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.

The operation does not have a direct discharge to surface water. The nearest surface water bodies are the Windich Creek (ephemeral) and the disused Windich Pit. The Windich Pit receives water via aquifer recharge and through a diversion channel from the creek. No process water is discharged into either water body.

Groundwater and surface water monitoring does not indicate that the operation is indirectly discharging to these surface water bodies.

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:

Standard of Practice 4.6 requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater is NOT APPLICABLE to Granny Smith.


The TSF was constructed with no underdrainage or internal toe drains. A perimeter drain has been constructed around most of the TSF to collect seepage water issuing from the foundation sediments on which the TSF are constructed. The drain commences near the run-of-mine access ramp and continues right around the south-eastern side of Cells 2 and 1, until it reaches a the Runoff Collection Sump located at the intersection of Cells 1 and 3. Cell 3 has had seepage mitigation features included in its design in an attempt to attain effective seepage control.

A downstream seepage interception system has been constructed around the toe of the TSF to intercept near surface seepage from the facility, which is then directed to reclaim sumps. A further seepage interception trench was commissioned in 2012 along the southern wall of Cell 3. The seepage interception trench runs approximately from the Windich Creek under-drainage tower to just before the western extremity of the Cell 3 south wall. The trench drains from east to west. Monitoring of the intercepted water indicates WAD cyanide levels below 0.6 mg/L.

Fifty-seven monitoring bores are installed around the TSF, which are sampled quarterly for WAD cyanide. Results from June 2011 to September 2013 have not exceeded 0.3 mg/L.

The Process Water Storage Pond is double lined with high density polyethylene liners, with a leak detection system between the two liners. This system is monitored regularly for leaks.

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Four monitoring bores have been installed round the Mill (up and down gradient) to identify any seepage from cyanide bearing tanks and facilities (e.g. Process Water Storage Pond) within the Mill. Monitoring results between September 2011 and September 2013 have not exceeded 0.6 mg/L WAD cyanide.

The operation does not use mill tailings as underground backfill.

There are currently no identified beneficial uses of groundwater beneath or immediately down gradient of the operation and there are no licensed regulatory numerical standards for WAD cyanide concentrations in the groundwater beneath or immediately down gradient of the operation. As such, the entire Standard of Practice is not applicable to the operation.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.7 requiring that the operation Provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention or containment measures are provided for all cyanide unloading, storage, mixing and process solution tanks. All except thirteen Leach and CIP tanks have concrete containment. With regards to the other thirteen tanks, the operation identified that they had been installed so that 0.5 to 1.0 m of side wall are below the ground surface. These underground sections of the tanks are not separated from the geological environment by concrete or other impermeable material. Therefore, Granny Smith has implemented a risk based inspection (RBI) programme and external groundwater monitoring system to prevent and detect external contamination.


- Secondary containment for cyanide unloading, storage, mixing and process tanks are sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event.
- Procedures are in place and being implemented to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment area. These procedures state that cyanide spills must be returned to either the TSF or the process circuit and describe the locations of pumps and the receiver areas pumped material.

Granny Smith has developed the *Minor Cyanide Spill Clean Up* procedure to respond to cyanide spills within containment and outside of containment.

Spill prevention or containment measures are provided for all cyanide process solution pipelines to collect leaks and prevent releases to the environment. This consists of concrete containment and pipe racking within the process facility and differential flow measurement and pressure monitoring of the tailings lines.

All surface water is a sufficient distance from cyanide pipelines to not warrant special protection needs.

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The materials of construction used at Granny Smith to contain the process streams containing cyanide at high pH conditions are:

- Stainless steel for reagent cyanide
- Mild steel for process tanks, some lined with a proprietary product called Polyeuro 1050H
- Rubber-lined mild steel and high density polyethylene (HDPE) for slurry systems
- Stainless steel for the elution area.

Appropriately qualified professionals have deemed these materials suitable for handling 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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.8 requiring that operations implement Quality control and quality assurance (QA/QC) procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

QA/QC programmes have been implemented during construction of new cyanide facilities since the last Recertification Audit. Since the Recertification Audit the following Projects have been undertaken at Granny Smith:


- Steel refurbishment at the tails retreat area
- Concrete refurbishment
- Caustic tank relocation to the cyanide reagent area.

Evidence was available for QA/QC programmes implemented in the form of Manufacture's Data Reports, Project Completion Reports and Project Files containing QA/QC documentation.

The QA/QC programmes for the concrete refurbishment and caustic tank relocation to the cyanide reagent area have addressed the suitability of materials and adequacy of foundation materials.

The QA/QC documents were reviewed by appropriately qualified personnel. All capital projects at the site are managed by the site's Projects Manager, an appropriately qualified engineer.

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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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 4.9 requiring that operations implement monitoring programmes to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

The operation has written standard procedures for monitoring activities for wildlife, carcass detection and surface and groundwater quality (internal and external analysis), which were prepared by appropriately qualified persons. The procedures and other complementary documentation contain information on how and where samples should be taken, sample preservation techniques, chain of custody procedures, shipping instructions, and cyanide species to be analysed.

Space is provided on the field datasheets for wildlife monitoring and surface and groundwater monitoring to record sampling conditions (e.g. weather, livestock/wildlife activity, anthropogenic influences, etc.). A review of the field sheets confirmed that such observations were being made.

Granny Smith does not have a direct discharge to surface water. The operation monitors for potential indirect discharges of cyanide to Windich Pit from TSF seepage through quarterly pit water sampling. In addition, groundwater is monitored for cyanide via 61 monitoring bores located around the site. Several of these are down gradient of the operation.

The operation inspects for and records wildlife mortalities related to contact with and ingestion of cyanide on a daily basis. A review of the wildlife observation data sheets for the period 1 December 2011 to 10 March 2014 showed that daily monitoring was being conducted.

Monitoring is conducted at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner. These frequencies include daily wildlife observations; daily, weekly and quarterly surface water monitoring; and quarterly groundwater monitoring.

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


Standard of Practice 5.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 5.1 requiring that operations plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

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The operation has developed a *Decontamination and Decommissioning Plan* detailing Granny Smith's decommissioning procedures.

The plan includes an implementation schedule divided into monthly units and the planned tasks are scheduled up to 24 months prior to closure and continue for up to 24 months after closure.

The operation has established a system to review its decommissioning procedures for cyanide facilities during the life of the operation and revise them as needed, which involves biennial reviews of the document.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 5.2 requiring that the operation establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.


The operation has developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in its decontamination and decommissioning plan. A tool known as the Barrick Standardized Reclamation Cost Estimator (BRCE) has been used to develop mine closure and decontamination and decommissioning costings for Granny Smith. The tool uses contractor rates provided by a third party.

The operation does review and update the cost estimate at least every five years and when revisions to the plan are made that effect cyanide-related decommissioning activities. During the recertification period, the cyanide related decommissioning costs were included within the mine closure costs. The closure costs for each Barrick operation within Australia were calculated annually using the BRCE. Changes to the DDP that affect the cyanide related decommissioning costs were taken into account during the annual mine closure cost review.

The Environment and Community Superintendent indicated that a similar process will occur under Gold Fields ownership, using a revised version of the BRCE.

The DMP has established bond system under Section 84 of the Mining Act. The bond documented on the Granny Smith mining lease containing all cyanide facilities, is sufficient to cover the operation's estimate for cyanide-related decommissioning activities.

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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 measures as necessary to eliminate, reduce and control them.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 6.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

The operation has a series of plans, procedures, forms and sampling documents for both the processing and for maintenance tasks in the Mill Area relating to cyanide tasks.

- The cyanide unloading procedure covers the unloading of bulk liquid cyanide from AGR’s isotainer to the operations cyanide storage tank. It takes into account AGR’s processes as well as the operations processes. Only those personnel fully trained and deemed competent are permitted to undertake this procedure without supervision
- Plant Operations – There are a series of other procedures and five training manuals (related to grinding, refinery, leach/CIP circuit, thickener and process water and tailings treatment) which include standard operating procedures (SOP) that address cyanide related tasks
- The operation has a confined space entry procedure and permit system. Workers are not permitted to enter a confined space unless that have completed industry recognised confines space training and there is a permit for the work to be completed. Confined spaces are individually identified on site.
- Decontamination is addressed in the Minor Cyanide Spill Cleanup procedure and there is a procedure for the Decontamination of Plant/Equipment *to be Removed or Maintained*.


All employees and contractors working on the site are required to undertake a Job Safety Analysis (JSA) or a *Field Level Risk Assessments* (FLRAs) prior to undertaking any task, the assessment completed will depend on the size of the task.

The Visitors, Short Term and Employee Inductions detail the site requirements, including personal protective equipment (PPE) requirements for the site.

A site specific Mill induction is provided for access to the Mill and includes a discussion on specific PPE required on site. Part of the Mill induction is the requirement to complete the *Cyanide Awareness Presentation*. This presentation includes details on PPE for cyanide specific tasks. Process Operators were observed to be wearing the appropriate PPE for the relevant tasks.

The operation has procedures 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. Complete management requests had been reviewed by safety and health personnel.

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The operation does solicit and actively consider worker input in developing and evaluating health and safety procedures through several means:

- PSI (Pre Shift Information)
- Health and Safety Meetings

Review process integrated into procedure updates.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 6.2 requiring Granny Smith to operate and monitor cyanide facilities to protect worker health and safety and periodically evaluates the effectiveness of health and safety measures.

The site currently aims to maintain pH in the range of 9.7-10.0; this value is reviewed weekly by the Metallurgist who then updates the levels on the Reagent Whiteboard in the CIP Hut. Mill Operators manually test and adjust the process input to maintain the pH within the set range.

The Process Operators are required to complete twice daily HCN monitoring to monitor the levels of HCN around the Mill Area. The monitoring procedure directs the operator to take actions at 4.7 ppm and 10.0 ppm.

The Working in Cyanide Areas procedure identifies areas and activities where workers may be exposed to cyanide between 4.7 and 10 ppm and in excess of 10 ppm both on an instantaneous basis and continuously. This procedure includes the PPE requirements for each level. However for the cyanide storage and mixing areas the PPE requirements change and recruitments are listed for between 0–10 ppm and greater than 10 ppm.

The requirement for calibration/monitoring is tracked by the Processing trainer and calibration is completed six monthly as required by the manufacturer. The operation has an onsite calibration station that records the units and calibration results in a database.

Warning signs have been placed at specific areas around the Mill advising workers that cyanide is present, and those smoking, open flames and eating and drinking are not allowed.

Signage is posted when cyanide deliveries are in progress to keep non-essential persons away.

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

The operation conducts regular inspections and the facility is split up into 18 areas and inspections are to be completed monthly for each area. These inspections cover all safety equipment. A review of these records showed that each inspection was undertaken as programmed.

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Eyewash stations and emergency showers checked during the site tour were all in working order.

Fire extinguishers are also covered through six monthly checks by the supplier. All extinguishers are dry powder and were inspected in on a regular basis and confirmed via the site inspection.

The unloading, storage, mixing and process tanks are identified at Granny Smith with appropriate signage. In addition, the direction of cyanide flow in pipes is identified via labels with arrows indicating the flow direction.

MSDS' and first aid instructions were posted at the cyanide unloading area and in the CIP Control Hut. Workers also have access to MSDS and first aid instructions in the Mill Crib Room through computer access to the intranet. MSDS' are also available in the Health and Hygiene Centre, the Emergency Response area and the storage warehouse.

There is a system used for reporting and investigating incidents and an Incident Investigation Procedure. Once an incident has been observed, the incident report form is completed by the individual and their supervisor. This is then sent to the Occupational Health and Safety Department for review.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 6.3 requiring an operation develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

All mill operators carry a two way radio. There is a public announcement (PA) system covering the Mill Area and surrounding buildings allowing personnel to sound the alarm and communicate back to the control room in the event of an emergency. If the Mill operators cannot get to a PA phone, there are emergency buttons located at emergency eye wash stations.


There is an adequate water supply, if required, for cyanide decontamination (showers and eyewash stations).

There is an adequate supply of oxygen (Oxy Soks), located in the Mill Control Room, Mill Office and emergency Response Team (ERT) Health and Hygiene Centre, with extra oxygen also kept at the Health and Hygiene centre.

The ERT Health and Hygiene Centre is staffed during day shift by an OH trained paramedic who is also on call for nightshift. The operation conducts weekly inspections of ERT and Centre equipment. The Master Weekly Checklist ensures all the individual checks are completed (i.e. Antidote, ECG, Oxy-sok, Defib). The inspection sheets were reviewed and found to be completed and correlated with the condition of the facility and equipment. The Cyanokit was inspected and was in date and was kept in a cold fridge with a temperature gauge.

The site has a three tiered emergency documentation system. The three documents include the *Barrick Regional Crisis Management Plan (CMP)*, *Barrick Granny Smith Emergency Response Plan (ERP)* and the *Cyanide Emergency Response Plan (CERP)*.

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The CERP contains Pre-Incident Plans (PIP's). The PIP's cover the range of potential cyanide incidents that could occur at Granny Smith.

The Medical Facility has two Paramedics (back to back) on-site or on call 24 hours per day. They are trained and can administer amyl nitrite in the event of cyanide exposure if necessary. The sodium thiosulphate (25%) and hydroxocobalamin is administered under the direction of a doctor through a signed protocol with OccuMed.

The CERP contains a *Pre-Incident Plan* (PIP) for a cyanide injuries and this PIP instructs the ERT to arrange urgent transfer to the nearest hospital or if time critical, request RFDS (Royal Flying Doctor Service) pickup. The site maintains two ambulances which are available for transporting patients where required.

The CERP details that Laverton Hospital is the closest hospital for medical support for cyanide related injuries as well as telephone medical support. This is then followed by Kalgoorlie Hospital. The RFDS will be utilised to supply medical Doctor to site for cyanide related injuries as well as telephone and radio medical support. There are signed formalised agreements with these facilities agreeing to the CERP and providing medical assistance.

Various cyanide training has been completed for the ERT, mill and maintenance and management staff throughout the audit period. There were actions that came as result from the Emergency Response Exercise and Emergency Evacuation of the Mill and the evacuation process has been revised as a result.

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:


Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.1 requiring an operation prepare detailed emergency response plans for potential cyanide releases

The site has a tiered emergency documentation system. The three documents include a crisis management plan (CMP), Granny Smith Emergency Response Plan (ERP) and the Cyanide Emergency Response Plan (CERP). The CERP details the site cyanide hazards, required response equipment, responsibilities, training and procedures for foreseeable cyanide emergencies at Granny Smith.

The CERP details that the areas of concern at Granny Smith that present the highest risk of spill or contamination. These then form Pre-Incident Plans (PIPs) which cover the potential cyanide failure scenarios and are related to actual activities that are conducted at the site.

Planning for the response to transport related emergencies has been limited to on-site emergencies and transport incidents in close proximity to the mine site. A PIP covers transport truck accident anywhere on site and transport truck accident off site, but in close proximity to Granny Smith.

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The PIPs, dependant on the scenario, require the evacuation of Mill Personnel to muster points and the establishment of exclusions zones. Appendix 7 of the CERP detail the process by which site personnel are evacuated to appropriate site Muster Points at Granny Smith.

Section 4.0 of the CERP details First Aid and use of antidotes. Information relating to first aid is also included in Appendix 9 Advice to Medical Professional for Cyanide Antidote Kit.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.2, requiring an operation involve site personnel and stakeholders in the planning process.

The most recent version of the CERP was approved by the Occupational Health and Safety (OH & S) Superintendent in August 2013 and section 7.4 of the CERP states that this plan was developed through evidence and collaboration from its workforce and stakeholders. The document states that the authors included input from employees and Joint Health and Safety Committee Meeting representatives mainly through the review process. Stakeholders were involved through letters and community meetings.

The operation presented information to the Laverton Shire and the LEMC (Local Emergency Management Committee)during the initial development of the plan. This included describing cyanide in general and specific information on *“What does this mean to the Laverton Community?”* It also covered the community’s response in an emergency and how they would be contacted.

The operation regularly attends the LEMC meeting and periodically distributes updated versions of their emergency response plans. The operation has Memorandums of Understanding (MOU) with other stakeholders including medical facilities.

The operation has engaged in consultation or communication with stakeholders to keep the *Emergency Response Plan* current. The workforce is provided an opportunity to comment through the Joint Health and Safety Committee Meeting which is held monthly and consists of representative from for various departments. Other stakeholders are engaged through the document control and review process. When a change to the CERP is made copies of the document or relevant pages are sent to the stakeholders and they are required to acknowledge receipt by sending the old copy back.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.3 requiring an operation designate appropriate personnel and commit necessary equipment and resources for emergency response.

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The elements of the CERP and procedures do:

- a) designate primary and alternate emergency response coordinators whom have explicit authority to commit the resources necessary to implement the Plan
- b) identify Emergency Response Teams
- c) require appropriate training for emergency responders
- d) include call-out procedures and 24-hour contact information for the coordinators and response team members
- e) specify the duties and responsibilities of the coordinators and team members
- f) list emergency response equipment, including personal protection gear, available along transportation routes and/or on-site
- g) include procedures to inspect emergency response equipment to ensure its availability
- h) describe the role of outside responders, medical facilities and communities in the emergency response procedures.

The operation has made outside entities included in the emergency response plan aware of their involvement and has included them as necessary in mock drills or implementation exercises.

The operation has had discussions with Laverton Hospital regarding patient acceptance and potential to treat patients that have been exposed to cyanide.

The hospitals listed as providing support in the CERP have been contacted regarding their support and acceptance of the CERP.

Identified stakeholders were sent a *Memorandum of Understanding* (MOU) and a controlled copy of the latest CERP. The MOU, when signed by the stakeholders acknowledge receipt and agreement to their defined role and responsibilities in CERP.

As noted in 7.2.1, the operation is also an active member of the local emergency management committee comprising key agencies and companies in the region including police, fire and local authorities.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.4 requiring the development of procedures for internal and external emergency notification and reporting.

Appendices 2 to 6 of the CERP include the procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency.

Additionally there is contact information included in the Role Folders in the Incident Response Cupboard.

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The CERP details that the only scenario which could involve the community is PIP_16 – Transportation Accident. This procedure states that “LEMC may also be notified if the cyanide incident is in close proximity to Laverton. LEMC will then follow their procedure for community awareness. ”

The CERP does include procedures for communication with the media.

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.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.5, requiring an operation develop procedures for internal and external emergency notification and reporting.

The CERP and associated procedures do describe specific remediation measures as appropriate for the likely cyanide release scenarios, such as:

- Recovery or neutralisation of solutions or solids
- Decontamination of soils or other contaminated media
- Management and/or disposal of spill clean-up debris
- Provision of an alternate drinking water supply.

Section 5.3.4 of the CERP prohibits the use of chemicals, such as sodium hypochlorite, ferrous sulphate and hydrogen peroxide to treat cyanide that has been released into surface water.

Section 6.0 of the CERP address the potential need for environmental monitoring to identify the extent and effects of a cyanide release, and include sampling methods, parameters and, where practical, possible sampling locations and states that the monitoring is to be undertaken in conjunction with the site Environmental Department.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 7.6 requiring an operation periodically evaluate response procedures and capabilities and revise them as needed.

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The operation does review and evaluate the cyanide related elements of its Emergency Response Plan on a regular basis. The cover page of the CERP details the process for the frequency of review and a record of review. A summary of the revision process is also included in Section 7.8 of the CERP. The CERP was reviewed in October 2011, January 2012 and July 2013.

Mock emergency drills are conducted periodically to test response procedures for various cyanide exposure scenarios.

The OH & S Superintendent, OH & S Advisor and Process Training Advisor stated that the following relevant drills and scenarios have been completed:

- Mock Exercise Cyanide Tanker Rupture, 2 & 29 September 2012
- Mock Exercise Aerodrome Call Out, 20 February 2013
- Mock Exercise Mill Evacuation, 1 February 2012.

In addition to the larger mock exercises the operations ERT complete regular training sessions including practical exercises in first aid and response to hazardous materials including the use of the necessary equipment.

The operation has updated its mill evacuation procedure as a result of the mock drill to improve the efficiency of the evacuation and identification if personnel are missing.

Provisions are in place to evaluate and revise the emergency response plan after any cyanide related emergency.

Section 7.7 of the CERP details the Cyanide Emergency Response Plan Exercises and 7.8 details the revision process.

No cyanide emergencies involving the use of the CERP have been recorded to date.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 8.1 requiring an operation train workers to understand the hazards associated with cyanide use.

The operation does train all personnel who may encounter cyanide in cyanide hazard recognition. Granny Smith has a structured induction process that includes area inductions and a cyanide awareness training program.

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**GRANNY SMITH GOLD MINE – ICMC RECERTIFICATION
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The Cyanide Awareness Course is a requirement for all personnel which have the potential to be exposed to cyanide in their role. This includes employees and contractors. The cyanide awareness course covers hazard recognition, cyanide use, response and personal protective equipment. The course includes a knowledge assessment that is completed by each participant and recorded on their training file.

Mill Personnel and other personnel that may be exposed to cyanide are also trained in cyanide hazards through their job based operational training, including training manuals and standard operation procedures.

The Cyanide Hazard Awareness Induction is conducted for contractors and employees who may encounter cyanide. This training is only valid for two years and is a requirement for contractors and employees to complete the course within two years. Competency training including tasks involving cyanide is also carried out.

A review of training records and the Inx Intuition Training Database shows that cyanide awareness training is conducted periodically.

The operation utilises the training database InTuition to record training requirements and training records.

Hardcopies of procedure assessments assessment (understanding and competence) and other training documents are also kept on an employee’s personal training file in the Process Training Advisor Office in a locked filing cabinet.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 8.2 requiring that an operation trains appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.


The training received by new starters covers site inductions, cyanide awareness, operational training manuals and task specific procedures. The operational training manuals and procedures cover training related to normal production tasks.

A Training Matrix specific for Processing and Maintenance has been completed by the Process Training Advisor, who coordinates appropriate cyanide training and tracks completion for the whole site. The matrix identifies the cyanide related roles and responsibilities and related these each to cyanide awareness, training manual or a procedure.

The manuals and procedures identify specific areas where cyanide specific training is required.

The training and assessment system is mentoring based whereby a senior operator demonstrates and trains personnel in all relevant tasks. This is followed by a competency based practical assessment process which is completed by the Processing Safety & Training Coordinator (for cyanide areas).

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**GRANNY SMITH GOLD MINE – ICMC RECERTIFICATION
AUDIT SUMMARY AUDIT REPORT**

The Processing Safety & Training Coordinator has suitable mineral processing experience, and formal training qualifications including Certificate IV in Workplace Training and Assessment under the Australian National Training and Assessment Scheme.

Senior staffs conduct mentoring by shadowing and then supervision and on the job direction. The senior staff at the site are sufficiently experienced and have completed all the required training for their role.

The Cyanide Awareness course provides the knowledge for all personnel who will work in cyanide areas or on cyanide related tasks. This must be completed before gaining access unsupervised to areas where there are cyanide risks.

Granny Smith records completion of employee training in their training database InTuition. Additionally paper copies of training assessment sheets are kept in each employee’s personal file in the Process Training Advisors Office.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 8.3 requiring an operation train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

The required response for a cyanide release, decontamination and first aid procedures are detailed in the Cyanide Hazard Awareness training which is required to be completed every two years.

Additionally Appendix 7 of the CERP and the *Mill Emergency Evacuation Plan* detail the evacuation process in case of an emergency. Interviews with operators confirmed they knew what to do in the event of a cyanide release


Section 3.1.6 of the CERP detailed required ERT qualifications. A matrix is provided detailing training requirements for each of the key roles in emergency response. There is an overall training schedule and a monthly training schedule prepared for the ERT members. The monthly training schedule covers training and refresher training on various topics, where one topic is normally covered for approximately a month. There is an electronic database, InTuition, containing the records of completed training for each employee.

Hard copies of ERT training records and assessment sheets are also kept in each employees file in by the Emergency Response Coordinators office.

The operation has made off-site Emergency Responders, such as community members, local responders and medical providers, familiar with those elements of the *Emergency Response Plan* related to cyanide.

Identified stakeholders were sent a MOU and a controlled copy of the latest CERP by registered mail. The MOU, when signed by the stakeholders acknowledge receipt and agreement to their defined role and responsibilities in CERP.

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PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

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

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 9.1

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 9.1 requiring an operation provide stakeholders the opportunity to communicate issues of concern.

The Environment and Community Superintendent is responsible for managing the interactions between the local community and Granny Smith. All such interactions are recorded in the *Community Stakeholder Monthly Interactions* database. Routine interactions include attendance at the Shire Mining Liaison Meetings, Leonora-Laverton Cultural Awareness Group (LLCAG) meetings and participation in the LEMC. Cyanide usage by Granny Smith has been discussed in the forums.

Granny Smith has provided the flyers describing its cyanide use and handling activities to the President of the Laverton Shire Council for posting at prominent locations in the town (e.g. library and council chambers). This flyer has site contact information.

Additionally, the President of the Shire Council is also an employee of Granny Smith. Therefore, the President has a working knowledge of the Granny Smith’s activities and as ready access to personnel at the site for more detailed enquiries.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 9.2 requiring an operation initiate dialogue describing cyanide management procedures and responsively address identified concerns.

At an operational level, Granny Smith utilises site inductions and cyanide awareness training to create opportunities for the operation to communicate with the workforce and provide them with information regarding cyanide management practices and procedures.

With respect to the local community, the operation has a database with the contact information for relevant external stakeholders. Granny Smith representatives attend the local shire, Leonora Laverton Cultural Awareness Group and Local Emergency Management Committee meetings, where cyanide management at Granny Smith has been discussed.

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Whilst the operation is situated on the Mt Weld pastoral lease, Gold Fields is the current lease holder and the station manager is employed by Gold Fields. As such, those working the pastoral lease are aware of cyanide management practices at Granny Smith.

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:

Granny Smith is in FULL COMPLIANCE with Standard of Practice 9.3 requiring an operation make appropriate operational and environmental information regarding cyanide available to stakeholders.

Granny Smith has a written description of how their activities are conducted and how cyanide is managed at the site. This description is in the form of a flyer, which is posted on the notice board in the site administration building. Additionally, copies of this flyer have been provided to the President of the Laverton Shire Council for posting at prominent locations in the town (e.g. library and council chambers). The President of the Shire Council is also employed by Granny Smith to manage the pastoral activities within the site’s tenements

Based on the close proximity of the mine to the town of Laverton, and discussions with the Environment and Community Superintendent, it was considered that the illiterate proportion of the local population did not constitute a significant percentage. Consequently, verbal dissemination of material was not considered warranted.

The operation has some mechanisms to make information publicly available on the cyanide release or exposure incidents, where applicable.

Granny Smith is required to submit an Annual Environmental Report (AER) to the Department of Environment Regulation (DER) and DMP on an annual basis. The AER details all environmental incidents that occurred on-site during the reporting period. Cyanide releases, including tailings spills are reported in the AER and this was confirmed in a review of the document. Permission from Granny Smith was not required to access the AER. The public can access the AER through the Freedom of Information (FOI) Act.


Releases (environmental and exposures) that cause applicable limits for cyanide to be exceeded are advised to regulatory authorities as required by the safety and environment incident reporting and investigation procedure. The environmental releases are also reported within the AER.

All mining operations within Western Australia are required to report serious occurrences and mining injuries (including cyanide exposures) to DMP on designated forms. The Mining Injury Report Form requires information to be recorded concerning the nature of the injury, part of the body injured and incident details. Such information can be obtained by the public through FOI Act via the *FOI Application for access to documents DMP Resources Safety* form.

LIMITATIONS

Your attention is drawn to the document “Limitations”, which is included as Appendix A to this report. This document is intended to assist you in ensuring that your expectations of this report are realistic, and that you understand the inherent limitations of a report of this nature. If you are uncertain as to whether this report is appropriate for any particular purpose please discuss this issue with us.

Granny Smith Gold Mine
Name of Facility



Signature of Lead Auditor

16 September 2014
Date



Report Signature Page

GOLDER ASSOCIATES PTY LTD

A handwritten signature in black ink, appearing to read 'Ed Clerk'.

Ed Clerk
ICMI Lead Auditor and Technical Specialist

RJB/EWC/asu

A.B.N. 64 006 107 857

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APPENDIX A

Limitations



LIMITATIONS

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