



**REPORT**

# International Cyanide Management Code Recertification Audit

## *Newmont Asia Pacific: Boddington Recertification Audit Summary Audit Report*

Submitted to:

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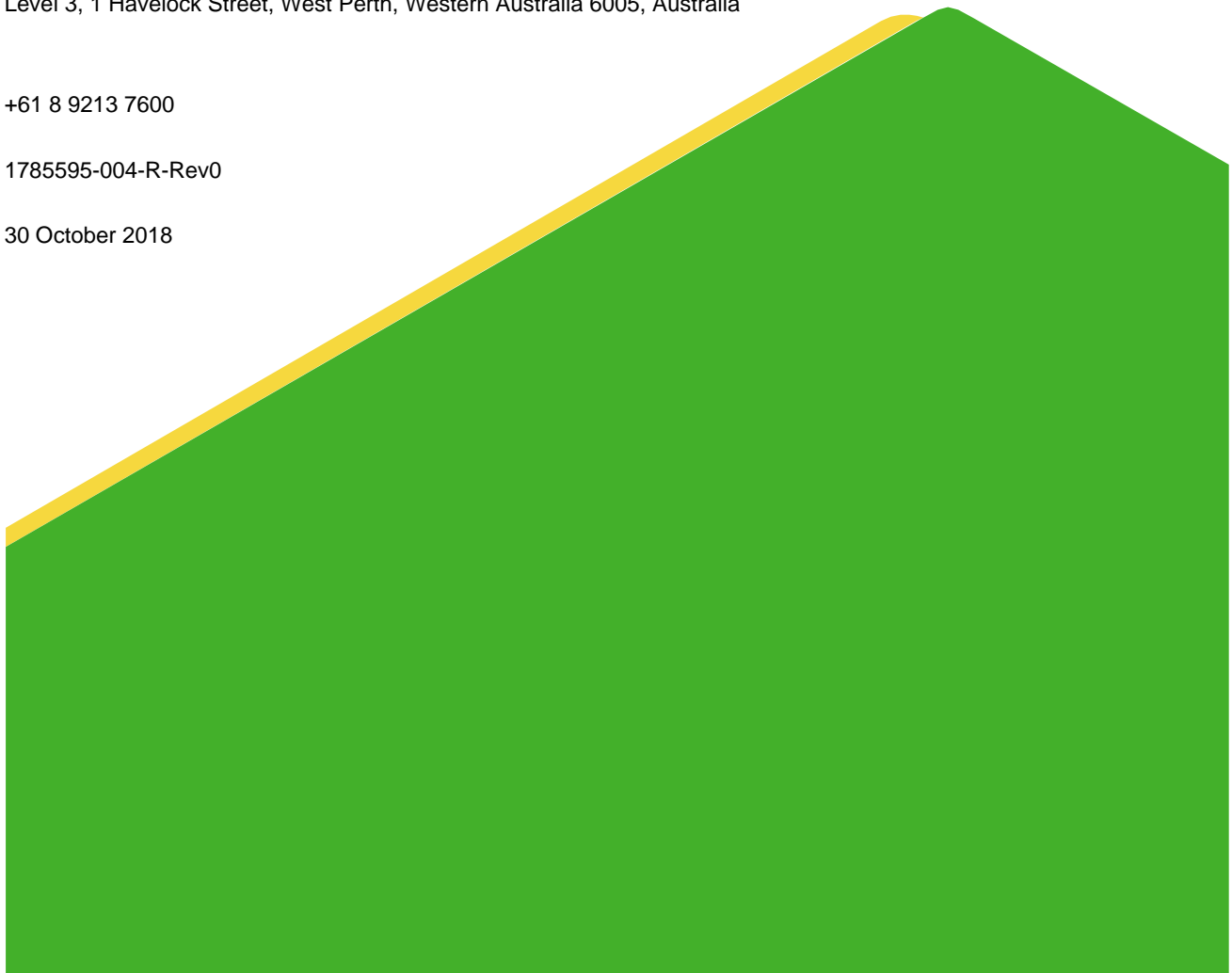
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1785595-004-R-Rev0

30 October 2018



## Distribution List

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# Summary Audit Report

## FOR OPERATIONAL GOLD MINES

<b>Name of Mine:</b>	Newmont Boddington Gold Mine
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## LOCATION DETAIL AND DESCRIPTION OF OPERATION

### Newmont Asia Pacific

Founded in 1921 and publicly traded since 1925, Newmont (NYSE: NEM) is headquartered in Denver, Colorado. Newmont operates core assets in North America, South America, Australia, New Zealand, Indonesia and Ghana, with new mine projects currently being developed.

Newmont Asia Pacific is Newmont Mining Corporation's Australian arm, which operates its mines in Australia, New Zealand and Indonesia.

### Newmont Boddington Gold Mine

NBG is a gold and copper mine, and processing facility located approximately 17 km north-west of the town of Boddington and 130 km south-east of Perth in Western Australia (WA). NBG was officially reopened on 3 February 2010. The Operation consists of an open pit, processing circuit, Residue Disposal Areas (RDAs) and water storage facilities.

## AUDITORS FINDINGS

The Newmont Boddington Gold Mine is:

in full compliance with

in substantial compliance with

not in compliance with

**The International  
Cyanide Management  
Code**




This operation has maintained full compliance with the International Cyanide Management Code throughout the previous three-year audit cycle. No significant cyanide incidents or cyanide exposures and releases were noted as occurring during the audit period.

**Audit Company:** Golder Associates Pty Ltd

**Audit Team Leader:** Jaclyn Ennis-John, Lead Auditor and Technical Specialist

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Name	Position	Signature	Date
Jaclyn Ennis-John	Lead Auditor and Technical Specialist		30 October 2018
Brenton Laslett	Auditor		30 October 2018
Sara Pritchard	Trainee Auditor		30 October 2018

## Dates of Audit

The Recertification Audit site visit was conducted between 16 and 18 April 2018.

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

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

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Important Information

## 1.0 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:**

NBG is in FULL COMPLIANCE with Standard of Practice 1.1, requiring the operation purchase its 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.

NBG purchases its cyanide from AGR (Australian Gold Reagents Pty Ltd) under a Sodium Cyanide Supply Agreement (Supply Agreement). The Supply Agreement requires AGR to conform to the requirements of the ICMC. AGR is an ICMC certified cyanide producer AGR was recertified with the ICMC on 3 August 2017.

## 2.0 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:

NBG 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.

The Supply Agreement between the operation and the cyanide transporter (AGR) designates some responsibility for the transportation-related responsibilities identified by the Code. The Supply Agreement extends to any subcontractors used by AGR.

AGR's West Australian Supply Chain was recertified under the Code on 26 September 2016 and AGR's Production Facility was recertified on 3 August 2017.

**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:

NBG 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.

The Supply Agreement between the operation and the cyanide transporter requires AGR to comply with the requirements of the Code.

AGR's West Australian Supply Chain was recertified under the Code on September 26, 2016. Shipping documents confirm the transport of cyanide from Kwinana to NBG by AGR.



### 3.0 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:

NBG is in FULL COMPLIANCE with Handling and Storage 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.

Facilities for unloading and storing cyanide have been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices for these facilities. No modification have been made to the facility since the previous certification. In addition, NBG's cyanide supplier (AGR) undertakes annual visual inspections of the cyanide unloading and storage facility in accordance with AS4452 – The Storage and Handling of Toxic Substances.

Unloading and storage areas for liquid cyanide are located away from people and surface waters.

Liquid cyanide is unloaded on a concrete surface that can minimise seepage to the subsurface.

The cyanide unloading area is designed and constructed to contain, recover or allow remediation of any leakage from the tanker truck.

The cyanide unloading facility consists of a concrete pad that grades toward the concreted secondary containment bund of the 17 000 kL cyanide storage tank. The cyanide storage tank secondary containment is also separate from other chemicals (i.e. lime and caustic) and has a sump pump that pumps to either the cyanide storage tank or Cyanide in Leach (CIL) train 1 feed distributor upon manual activation. If the immediate bund around the tank fills, then it over-tops into the Cyanide Storage Tank Overflow Pond, which is synthetically lined and has a Leak Capture and Recovery System (LCRS).

The operation employs four methods to prevent the overfilling of cyanide storage tanks. These include:

- Level indicators
- Unloading Permissive
- High Level Alarms
- Storage tank level.

The cyanide storage tank is located on a concrete or other surface that can prevent seepage to the subsurface. The site does not have a mixing tank.

The cyanide storage tank is situated on a ring beam foundation that is covered by a HDPE liner on geotextile. A layer of oil sand exists between the liner and tank base. Should under tank leakage occur it would report to tell-tale pipes.

The cyanide storage tank is situated within a bunded area and contains a HDPE surface layer, overlying a concrete slab, on top of a polyethylene membrane.

Cyanide is stored with adequate ventilation to prevent the build-up of HCN gas. The enclosed cyanide tank has a vent pipe that discharges at an elevation above and away from any platforms where workers may be present.

During unloading, a secondary ventilation pipe passes HCN through a seal pot to remove HCN prior to discharge.

Cyanide is stored in liquid form in purpose built enclosed tanks within a secure area where public access is prohibited via a gated fence around the cyanide storage area.

Cyanide is stored separately from incompatible materials with berms, bunds, walls or other appropriate barriers that will prevent mixing. The cyanide unloading and storage area is located between the lime and caustic unloading and storage areas. The cyanide unloading and storage area is physically separated from the lime and caustic areas through the use of rollover bunds and secondary containment walls. No incompatible materials are stored within the vicinity of the cyanide storage area or drain to the Cyanide Storage Tank Overflow Pond.

**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:**

NBG 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.

Liquid cyanide is delivered to site in trucked isotainers and transferred to a bulk storage tank within a bunded storage area. After the cyanide has been transferred to the storage tank, the isotainers are returned to AGR for reuse.

The unloading is carried out through cooperation between NBG and AGR and the unloading is actually one procedure with complementary roles. The NBG representative is not required to operate any valves apart from the shutoff valve which may be required to be operated in an emergency. Operation of all valves and coupling for unloading is the responsibility of the Transporter (AGR). As detailed in 2.1, AGR's Western Australian Supply chain is certified under the ICMC.

An NBG observer is present during the unloading process.

Solid cyanide is not used on site.

## 4.0 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:

NBG 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 management and operating plans or procedures have been developed and implemented for the areas of operation that involve cyanide solutions greater than 0.5 mg/L WAD cyanide. These include cyanide unloading and storage facilities, leach plants, tailings impoundments and cyanide destruct systems. The site does not have any cyanide mixing facilities, regeneration systems, disposal systems or heap leach operations.

There are standard operating procedures for the operators, as well as maintenance procedures, inspection procedures and checklists.

SAP software is used to routine preventive maintenance activities.

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

The operation has plans and procedures that identify the assumptions and parameters on which the facility design was based and applicable regulatory requirements as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements.

The Consolidated Environmental Design Criteria document was developed to specify environmental design criteria to be adopted for engineering design, feasibility costing, construction, operational modifications and closure and reclamation of the NBG Expansion Project. The design basis, assumptions, and commitments noted in this document appear to have been included within operational procedures and plans.

The Process Water Management Plan provides an overview of the water supply system and details the operational practices, process controls and required monitoring. Regulatory requirements are also discussed.

The Cyanide Management Plan outlines the means by which NBG manages cyanide to achieve compliance with legislation and permits as well as conformance to relevant standards and codes.

As the Operation has continued to operate there have been changes required to the operating assumptions and parameters. When these changes have been required they have been managed through the Change Management System and reported/updated in Babel Fish (software used as a database/communication management system). Changes are detailed in Work Instructions which are then communicated to each shift during Tool Box meetings.

The site has developed a formal Management of Change Procedure to identify and control hazards and risks associated with changes to facilities, equipment, materials, mining, milling or operating processes prior to any change being implemented. All changes must be assessed and recorded through the Change Management System.

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 and/or when a temporary closure or cessation of the operation may be necessary.

The Process Water Operating Plan identifies contingencies for a range of trigger events.

The RDA Operating Manual includes guidance on responding to emergency scenarios.

At a corporate level Newmont has developed a Rapid Response System (RRS) on EMQnet for high level communication for all Newmont operations. The RRS aims to mitigate and prevent the escalation of adverse consequences in the event that existing risk management controls fail. To complement the RRS, NBG has developed and implemented an integrated and tiered emergency management system specific to its operations.

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

Tanks and pipelines are formally inspected by ALS Industrial Pty Ltd on a scheduled basis.

Pumps are inspected by process maintenance technicians on a scheduled basis.

Stormwater ponds are checked on a daily basis as part of the pre-start checks. Daily checks are undertaken by Process Technicians, Maintenance Technicians and Engineering Services Reliability Technicians.

Monthly environmental inspections are undertaken of the plant. Monthly safety inspections are undertaken of the plant.

Such inspections are undertaken daily in the normal course of process operations and are an adjunct to operational activities. Identified issues are recorded for corrective action by reporting to the mill foreman who raises a maintenance work order. Process Technicians are trained in conditions to look for as part of their inspections.

Preventative maintenance inspections are conducted on tanks and containments including foundations and sumps. At the start of each shift, the pre-start checklist is undertaken by area technicians, which includes secondary containment. The annual inspections conducted on tanks and containments include an inspection of the tank leak detection. The site does not have any leach pads.

The Process Department Engineer advised that preventative maintenance inspections are conducted on all cyanide pumps and valves every six months.

A procedure (Pipeline Management System for Pipelines Carrying Cyanide Solution) has been developed to establish a Pipeline Management System for NBG.

NBG undertake inspections of the RDA's. F1 RDA is inspected once every six hours. There are also monthly routine inspections and periodic operational audits, R4 RDA is inspected daily.

The RDA Operating Manual states that the frequencies and checks comply with the requirements of the DMP for a Category 1 facility.

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 are maintained. Preventative Maintenance records also note date of the inspection, the name of the inspector, and any observed deficiencies. Records are kept of the third party tank integrity inspections and associated corrective actions.

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

The operation has compiled a list of cyanide critical equipment and has developed a pipeline inspection program outside of the tailings and return water lines.

Pumps are inspected under planned maintenance tasks by site personnel.

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 of power is interrupted.

The design of the plant in relation to the cyanide code incorporates full secondary containment of all potential releases from processes or pipelines containing cyanide.

The residue delivery and decant pumps are connected to the process plant power distribution system. In the event of a total loss of power all pump systems and automatic valves not connected to standby generators will cease operations.

**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:**

NBG 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.

This initial program was developed and outlined as part of the Mine Expansion Project Prefeasibility Study. Cyanide addition rates are based on metallurgical test work.

The operation has evaluated various control strategies for cyanide additions.

In 2015, flocculant trials were undertaken to reduce solution content and therefore reduce cyanide addition.

Additionally, shift, daily and weekly test work is undertaken to monitor reagent use.

The operation has implemented a strategy to control its cyanide addition.

Cyanide addition is monitored through a series of on-line cyanide analysers which feed free cyanide and WAD cyanide results to the DCS which in turn adjusts cyanide addition rates to maintain the established cyanide set points.

The cyanide analysers at the front end of the CIL train monitor free cyanide while the analysers at the end of the circuit and at the booster station monitor WAD and free cyanide in residue being pumped to the RDA after cyanide destruct and decant return water being pumped to the process water pond after cyanide destruct.

Cyanide addition set points and the CIL performance are validated through weekly bottle roll tests. Changes to the dosing rates (set points) are made in Babel Fish and communicated via Work Instructions.

**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:**

NBG 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 uses a GoldSim Probabilistic Water Balance Model (PWBM), to assist in the management of its water resources. The PWBM is updated weekly and run at the end of each month, taking into account the following information:

- Daily Data (including rainfall, evaporation and Hotham River Flow)
- Weekly Data (surveyed surface levels of site water storage bodies)
- Monthly Data (including flows between site water storage bodies and tailings deposition)
- Constants (including characteristics of tailings; planned water use data associated with throughputs; and runoff parameters (this is a constant) based on the larger catchment (34 Mile Brook) and for each operational area).

The PWBM also considers the following:

- Tails deposition
- Extreme weather events and storm intervals through the use of freeboard requirements set by regulators.
- Weather conditions, including precipitation and evaporation are based on actual site conditions. Weather data is recorded automatically by the sites weather monitoring station, Comms Hill, and this data is updated to the PWBM weekly. Recently the rainfall generator and catchment components were updated for the S05 Next layback Project.

- Runoff from the up-gradient watershed, including adjustments as necessary to account for differences in elevation and for infiltration of the runoff into the ground. Runoff is calculated for the different water areas of the site using runoff factors; and rainfall runoff from unaffected catchments is simulated.
- Solution losses in addition to evaporation, such as the capacity of decant, drainage and recycling systems, allowable seepage to the subsurface are included as applicable. Minor seepage loss has been included, except for facilities that have an under drainage system and a leak collection recovery system (LCRS) installed. Allowable surface water discharges are not included as there is no discharge to the surface water.
- The effects of potential power outages or pump and other equipment failures on the drain down from a leach pad or the emergency removal of water from a facility are not considered in the model. NBG has appropriate back-up power or sufficient drain down storage.

The following is not considered by the PWBM:

- Freezing and thawing conditions on the accumulation of precipitation within the facility and the up-gradient watershed, as these have not been experienced at the site since records have been kept.
- Discharges to surface water, as none occur at NBG.

NBG'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 Water Management Plan states the Operating Rules for Facilities and details trigger levels and contingencies based on the planning and assumptions made as part of the development of the PWBM.

NBG undertake inspections of the pump stations, water bodies, including RDAs, and pipelines at least once per shift. Inspections are undertaken by Processing Technicians. 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 operation does measure on-site precipitation and evaporation on an hourly and daily basis from the sites weather station. Rainfall, temperature and pan evaporation measurements are recorded and input into the PWBM weekly, any revisions are made monthly as required.

Audits, as required by relevant regulatory authorities, are conducted on the RDA facilities by a qualified engineer on an annual basis.

**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:**

NBG 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 operation does not need to restrict access to open waters as there are no open water facilities where WAD cyanide exceeds 50 mg/L. This can be demonstrated by the operation through its monitoring data.

The following facilities have the potential to contain cyanide greater than 50 mg/L WAD cyanide:

- F1/F3 RDA Decant
- Process Water Pond
- CIL Containment Pond.

All of the facilities are included in the monthly environmental monitoring suite as well as daily monitoring conducted by the Processing Department. All results observed recorded WAD cyanide levels below 50 mg/L. Stormwater Pond 2 water inputs (Process Water Tank, the Process Water Pond and raw water) all have WAD cyanide levels below 50 mg/L.

Water samples are analysed at the NATA accredited laboratories and all water bodies are sampled monthly. In addition to the monthly monitoring by the Environmental Department, F1/F3 decant (prior to disposal), the Process Water Pond and Tank; and the CIL Containment is monitored daily by the Processing Department.

Wildlife monitoring has indicated that maintaining a WAD cyanide concentration of 50 mg/L or less in open water appears effective in preventing significant wildlife mortality.

Even though WAD cyanide is less than 50 mg/L, additional wildlife deterrent measures are used. Wildlife is deterred from using F1 as a drinking source through a series of 26 artificial drinking points, which have been installed around the perimeter. In addition, R4 RDA is used as a decoy habitat for wildlife. During the audit period there have been no cyanide related wildlife mortalities at the site.

The facility does not have heap leach facilities.

**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:**

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

The operation does not have direct or indirect discharges to surface water.

The majority of the operation is located in the catchment of 34 Mile Brook. The closest natural surface water body is 34 Mile Brook, which is a tributary of the Hotham River. There is no direct discharge to these systems. However, the site does monitor surface water around and off the site.

In the event that seepage from F1/3 RDA occurs, seepage is captured via the Underdrainage Collection System and the LCRS. Any seepage collected is pumped back into the F1/3 RDA decant. A similar system is in place under the Process Water Pond.



In addition to the seepage collection/protection measures, surface water monitoring for cyanide is conducted at D1 WSR, as any other seepage would be expected to report to D1 WSR. D1 WSR seepage reports to 34MBDP, where monitoring for cyanide is also undertaken.

**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:**

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

The operation does implement specific management measures to protect the beneficial use beneath or immediately down gradient of the operation.

The Water Management Plan details the seepage protection structures in use at NBG:

- Underdrainage Collection System. This is installed at F1/F3 RDA Decant and the PWP.
- Leak Collection and Recovery System. This is installed at F1/F3 RDA and the PWP.
- R4 Seepage Ponds.
- F1, F3 and R4 Toe Drains.

WAD cyanide concentrations in groundwater are below levels that are protective of identified beneficial uses of groundwater. Data reviewed from Monitor Pro database confirmed that all 15 bores have not detected WAD cyanide. The detection limit is below <0.5 mg/L WAD CN Level.

The operation does not use mill tailings as underground backfill.

**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:**

NBG 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 have been provided for all cyanide unloading, storage, mixing and process solution tanks.

All tanks are constructed on ring beams equipped with leak detection systems. The leak detection system comprises up to six (typically four) pipes per tank extending horizontally into sand beneath the tank. A HDPE liner is located under the sand and acts as secondary containment. An annual inspection is undertaken by observing whether there is any discharge. Discharges are tested for cyanide content.

The elution tanks are located on concrete plinths in a concrete bunded area. The gravity concentrator leach reactor is located in a concrete bund within a bund.

The CIL containment pond has a plastic liner over a clay liner, with a leak detection system. The CIL stormwater pond has a plastic liner.

The Flotation Tails Thickener serviced by the cyanide line is located above a concrete slab. There is a ring bund around the thickener.

The area between the CIL tanks has been paved with asphalt, draining to concrete spoon drains, which drain to the CIL pond.

Secondary containments 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.

The containments at NBG are either a single area or multiple connected containments. The operation has prepared calculations for the cyanide containment areas. The calculations consider the requirements of this question and show that secondary containment volumes are appropriate. In some circumstances the volume of process plant stormwater ponds are used to ensure appropriate volumes are available. The stormwater ponds are connected to the secondary containments via sealed drains.

Procedures are in place for all cyanide containment facilities to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment area.

All treatment plant containment bunds are fitted with automated sump pumps for spill recovery (i.e. leach tank, CIL containment pond, and RDA bund sumps etc.). The sump pumps are connected to the process to enable spillages to be pumped into the process, either back into the tanks in the process plant areas and to the RDA at the Booster Plant. All treatment plant containment bunds are fitted with sump pumps for spill recovery. The sump pumps are connected to the process to enable spillages to be pumped into the process. Sump pumps at the Booster Plant are pumped back to the RDA. All of the cyanide process tanks have secondary containment.

Catch pits for the tails line (i.e. from the leach tanks to the RDA Booster tanks) were viewed as tertiary containment as the tails pipe is a poly pipe with a steel pipe around it. The catch pits along the tails line from the process plant to the RDA utilise manually operated pumps. Procedures are in place that identify how to drain slurry or contaminated water into the catch pits from the RDA and how to pump from the catch pits (i.e. tertiary containment). In the event that a spill reaches soil, the site has procedures for testing and remediation of contaminated soil.

Spill prevention or containment measures are provided for all cyanide process solution pipelines to collect leaks and prevent releases to the environment.

On the tailings line there are three monitoring strategies: differential flow measurement based on instruments at the remote ends of the line, pressure monitoring based on the expected drop in line pressure if a significant leak occurs when the pump is operating, and catchpits strategically located along the line.

Areas where cyanide pipelines present a risk to surface water have been evaluated for special protection needs.

Cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions. Material compatibility was assessed during the previous audit and there have been no changes to the tanks (reagent, elution or process tanks) since then.

Additional pipework has been constructed as part of the RDA, the Senior Metallurgist confirmed that all pipework is constructed HDPE which is cyanide compatible material.

**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:**

NBG 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.

Quality control and quality assurance programs have been implemented during construction of new cyanide facilities and modifications to existing facilities, including during construction activities cited in NBG's previous ICMC certification audit reports and RDA modifications that occurred during the recertification period.

Quality control and quality assurance programs have addressed the suitability of materials and adequacy of soil compaction for earthworks. The Gold Recovery – RDA and Water Services Coordinator confirmed that there had been no changes during the recertification audit period, except for the stage 9 and 10 works on the RDA. Separate Civil Construction Reports have been prepared for each earthworks programme on the RDA. The reports confirm that quality control and quality assurance programs have been implemented during construction of the stages.

Quality control and quality assurance records have been retained for cyanide facilities, including corresponding records cited in NBG's previous ICMC certification audit report and records pertaining to the construction/modification of cyanide facilities during the recertification period.

Quality control and quality assurance records confirm that the facility has been built as proposed and approved.

Relevant records cover construction activities cited in NBG's previous ICMC certification audit report as well as works that occurred during the recertification periods contain Tailings Storage Facility Construction Certificates of Compliance that are signed by the engineering consultant (Chartered Professional Engineer).

**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:**

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

The operation has developed written standard procedures for monitoring activities. NBG has developed a monitoring management strategy. It includes surface hydrology and water quality; and groundwater level and quality monitoring. The site also has a Water Sampling and Monitoring Procedure and an RDA Wildlife Monitoring Procedure.

Environmental procedures have been prepared, reviewed and approved by relevant environmental personnel. Environmental personnel are appropriately trained in their field of expertise and have relevant university degrees.

Where appropriate, the operation's procedures specify how and where samples should be taken, sample preservation techniques, chain of custody procedures and shipping instructions.

Cyanide species to be analysed are detailed on the Surface Water and Groundwater Monitoring sheets. The sheets define a suite of samples that need to be collected and this suite is also defined on the chain of custody paperwork.

Sampling conditions and procedures are documented in writing.

The field monitoring sheets have a comments section where conditions affecting sampling can be recorded.

The RDA Wildlife Observation Sheet has a section for documenting weather conditions including temperature, wind strength, cloud cover and rainfall. Examples of the wildlife observation sheets were viewed, and they showed that conditions were being recorded.

The operation does not monitor for cyanide in discharges of process water to surface water as the operation does not have a direct discharge to surface water, but it does monitor for cyanide in surface water down gradient of the site. A number of groundwater bores down gradient of the RDAs and down gradient of the whole operation are also monitored.

The operation inspects for and records wildlife mortalities related to contact with and ingestion of cyanide on a daily basis; a daily inspection is conducted first thing in the morning around the RDAs. Also, in order to determine if cyanide was the cause of any wildlife mortalities the RDA Wildlife Mortality Response Procedure details the actions to be implemented when a wildlife mortality or injured wildlife is detected at an RDA. No cyanide related fauna mortalities occurred during the audit period.

Monitoring is conducted at frequencies adequate to characterise the medium being monitored and to identify changes in a timely manner.

## 5.0 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:**

NBG 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.

The operation has a Cyanide Facilities Decommissioning Plan which includes a high-level implementation schedule. The schedule is divided into yearly and monthly units and the planned tasks are scheduled up to 24 months prior to closure and continue for up to 12 months after closure (with some tasks recognised as likely to be greater than 12 months or ongoing).

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. The next review due of the plan is June 2019.

**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:**

NBG 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.

All Newmont sites are required to review rehabilitation cost estimates annually to fulfil Newmont Mining Corporation's obligations under Financial Accounting Standards Board Statement (FASB) 143 Accounting for Asset Retirement Obligations. A third party closure cost estimate focusing on life of mine closure is also undertaken every five years; the most recent third party closure costing for the site was undertaken in 2015. Both these closure cost estimates include costs associated with closure of cyanide related facilities.

The operation has established a financial mechanism approved by the applicable jurisdiction to partly cover the estimated costs for cyanide-related decommissioning activities as identified in its decommissioning and closure strategy. NBG contribute an annual 1% levy on its total mine rehabilitation liability in accordance with the Mining Rehabilitation Fund Act 2012. During the 2017 MRF submission, the levy for NBG was calculated at \$1.37M.

The MRF replaced the Unconditional Performance Bond (UPB) system under Section 84 of the Mining Act. The ICMI have previously confirmed that the MRF is considered to comply with the financial assurance provisions of the Cyanide Code.

## 6.0 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:

NBG 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.

NBG has developed procedures describing how cyanide-related tasks should be conducted, including:

- Reagent delivery checks
- Observing cyanide unloading
- Operating of the reagent and leach areas
- Confined space entry
- Operation of the Caro's acid plant
- Clean-up of spills
- Decontamination of equipment.

The procedures require, where necessary, the use of personal protective equipment (PPE) and addresses pre-work inspections. All NBG SOPs list the PPE requirements for the identified task. In addition, signage is present throughout the Plant and the RDA.

As noted in 4.1 the operation has two main procedures to identify when changes in a site's processes or operating practices may increase the potential for the release of cyanide and to incorporate the necessary release prevention measures.

The Process Plant utilises a software package (Babel Fish) for software and instrumentation changes within the Process Plant. Once a change has been entered into Babel Fish, it is distributed to a list of stakeholders for comment.

The site has also developed a formal Management of Change procedure to identify and control hazards and risks associated with changes to facilities, equipment, materials, mining, milling or operating processes prior to any change being implemented. The procedure does not apply to changes covered by an existing defined risk management or controlled process such as the instrumentation and software changes through Babel Fish. The procedure requires all changes to be risk assessed to determine the initial change risk or opportunity. The Change Initiator must obtain his/her Supervisor's sign off prior to the change management process going any further. If the Supervisor agrees with the change, then a list of stakeholders is developed, who will participate in a formal risk assessment process. It is up to the Change Initiator and their Supervisor to determine whether environmental and safety personnel are stakeholders. The initial risk assessment process guides the selection of appropriate stakeholders.

The operation does solicit and actively consider worker input in developing and evaluating health and safety procedures.

Workers within each department assist in the development of procedures associated with their work area. These procedures are located on the intranet, which can be accessed by all employees, and are available for comment, even when not due for review. Suggestions or concerns regarding the procedures can be raised in shift prestart meetings. Similarly, any changes to procedures are communicated during the prestart meetings. Where appointed, Safety Representatives are involved in procedure reviews. In addition, both Departmental and Site safety meetings are held on a monthly basis.

**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:**

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

The operation has determined the appropriate pH for limiting the evolution of HCN gas during mixing and production activities. NBG currently aims for a pH of between 10.0 and 10.5. Online samplers and automatic dosing pumps monitor the pH and adjust lime levels as necessary. The plant metallurgists determine the set points for the processing facility that is controlled through a DCS.

The start-up of the cleaner leach circuit CIL 660 procedure requires that operator check that the pH is above 10 in the first leach tank. If it is below, they are required to contact the Control Room Operator and request more lime is added to the leach feed.

The operation uses monitoring to confirm that controls are adequate to limit worker exposure to hydrogen cyanide gas to 10 parts per million on an instantaneous basis and 4.7 parts per million continuously over an 8-hour period.



NBG has fixed, alarmed monitors in the:

- Reagents area (i.e. unloading and storage)
- All CIL areas.

The process technicians log HCN readings using their personal monitors at least once per 12 hour shift as back up for the fixed monitors.

The HCN alarms are programmed with a low level alarm at 4.7 ppm and high level alarm at 10 ppm. When the low level alarm activates personnel leave the immediate area and follow the process detailed in the HCN Static Monitor and Alarm Operator Actions procedure:

- Area must be evacuated immediately
- Restrict access to the area with barricading or spotter as directed by Supervisor
- Notify main control room and shift supervisor and ESO
- Request main control room to review area DCS for irregularities in pH and cyanide delivery flow rate
- Do not return to the affected area unless static monitor is no longer in alarm condition.

The same process is followed for the activation of the higher level alarm. Access to areas where HCN levels are above 10 ppm can only be undertaken by personnel wearing respiratory protective equipment.

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

Each task SOP states the PPE that workers must wear prior to undertaking the task. These PPE requirements are reinforced through training and signage in high risk areas. Personal HCN monitors must be worn in the following areas:

- Intensive Leach reactor
- CIL trains 1 and 2
- Cleaner Scav. Tail Leach circuit
- Elution
- Gold Room
- Residue disposal
- Cyanide delivery and storage area
- Any other area where cyanide is being dosed and there is a potential for HCN to be released
- When instructed by process supervisors due to process flow changes.

Fixed HCN monitors undergo six-weekly “bump tests” and 12-weekly calibration tests by Maintenance Personnel in accordance with manufacturers recommendations. Personal HCN monitors are calibrated using on-site docking stations. The operation has BW Microdock II station linked to a database that records the results of the bump test and calibration. The operation has set the inbuilt calibration countdown to the manufacturer recommendation of 90 days.

Warning signs have been placed where cyanide is used, advising workers that cyanide is present, and that smoking, open flames and eating and drinking are not allowed, and that, if necessary, suitable PPE must be worn. In addition, training material highlights where smoking, eating and drinking is allowed. Unescorted access to the Plant Areas is not permitted without the appropriate level of training.

Showers, low-pressure eyewash stations and dry powder or non-acidic sodium bicarbonate fire extinguishers located at strategic locations throughout the operation. Inspections of showers and eyewash stations are carried out daily by Process Technicians and monthly by the Maintenance Department. Records provided indicate that the required inspections are taking place.

Fire extinguishers are serviced under contract by Chubb. All inspection tags on the fire extinguishers viewed by the auditor were current.

The operation has identified unloading, storage, mixing and process tanks and piping containing cyanide to alert workers of their contents. Through inductions and training in SOPs, all personnel working in the process area are aware that cyanide is in use and in low concentrations in the process water. Due to this training, it is NBG’s policy to only label high and medium strength areas. All concentrated cyanide lines are painted lilac, labelled “Cyanide” and have an arrow indicating the direction of flow. Medium strength lines >15 mg/l WAD cyanide are labelled “Low Cyanide Slurry” or “Low Cyanide Solution”, with the direction of flow indicated.

MSDS’, first aid procedures and informational materials on cyanide safety were available in the language of the workforce (English) in areas where cyanide is managed, including the cyanide unloading area and at the entry points to the CIL trains.

Procedures are in place and being implemented to investigate and evaluate cyanide exposure incidents to determine if the operations programmes and procedures to protect worker health and safety, and to respond to cyanide exposures, are adequate or need revising. The operation’s Accident and Incident Reporting Procedure defines the processes and responsibilities for internal and external reporting and investigations into accidents and incidents. The procedure requires that all cyanide incidents be reported to Newmont Corporate using a specific cyanide incident form. At site, all incidents and their associated investigations are tracked in NBG’s event management software database (Cintellate).

There have been no cyanide exposure incidents at NBG during the recertification period.

**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:**

NBG 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.

The operation has an on-site clinic with a defibrillator, oxygen, cyanide antidote kit, water and two ambulances. Communication equipment available on site include fixed and mobile phones, VHF and CB radios and an alarm system.

The clinic is manned by at least one occupational health nurse during day time operations and then an ESO at night. ESOs and selected ERT members are trained as industrial emergency responders to Certificate IV level for first aid response. Site occupational health nurses are trained to administer the antidote. The doctor that the site antidote kit is licenced under works at the Boddington District Hospital and must be contacted prior to administration of the antidote on site by the occupational health nurses.

The operation conducts inspections of its first aid equipment regularly to ensure that it is available when needed and materials such as cyanide antidotes are stored and/or tested as directed by their manufacturer and replaced on a schedule to ensure that they will be effective when needed. Weekly inspections are carried out by ERT members on response equipment and vehicles and Occupational Health Nurses on the clinic and associated equipment.

The cyanide antidote kits stored in the clinic is checked three-monthly and new antidotes are ordered one month prior to expiry. The antidote kits given to the Boddington District Hospital has the same expiry date as the kits held at NBG. Therefore, all antidotes are replaced at the same time.

The operation has developed and implemented specific written emergency response plans or procedures to respond to cyanide exposures. Such procedures include:

- Hazardous materials emergency response
- Cyanide poisoning treatment.

The operation has developed procedures to transport workers exposed to cyanide to locally available qualified off-site medical facilities. Following treatment in the on-site clinic, workers exposed to cyanide can be transported to Boddington District Hospital, if required, using one of two ambulances located on site.

NBG and the hospital have agreements to treat cyanide exposure cases from NBG. In addition, NBG has provided antidote kits to the hospital.

Mock cyanide drills have been conducted regularly throughout the audit period and the drills include response to cyanide exposure. For each drill there is a report detailing the scenario, outcomes and actions. NBG use a template Post Incident Analysis form to capture the information and actions are entered into Cintellate for tracking.

## 7.0 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:

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

The operation has developed and implemented an EMP to address potential accidental releases of cyanide. At the corporate level, Newmont maintains a Rapid Response System (RRS) to mitigate and prevent the escalation of adverse consequences in the event that existing risk management controls fail. When an incident or issue occurs that can have the potential to seriously threaten Newmont's operations, reputation and the safety and well-being of its employees, a decision is made as to whether to implement the RRS. At the site level, NBG has an EMP that deals with the overall coordination of preparation and response to various incidents at NBG. Its purpose is to define NBG's organisational procedures, responsibilities and reporting requirements to ensure the effective and timely management of all emergencies and unforeseen incidents that may occur at NBG. Beneath the EMP sit several incident and task specific emergency procedures.

NBG has plans and procedures in place to respond to:

- Catastrophic releases of hydrogen cyanide from storage or process facilities
- Transportation accidents
- Releases during unloading
- Releases during fires and explosions
- Pipe, valve and tank ruptures
- Overtopping of ponds and impoundments
- Power outages and pump failures
- Uncontrolled seepage
- Failure of cyanide treatment, destruction or recovery systems
- Failure of tailings impoundments.

The cyanide supplier, AGR, is contractually responsible for emergency response until the cyanide has been transferred into the storage tanks at NBG. As such, AGR has a Transport Management Plan (TMP) that details response actions in the event of an emergency. This TMP considers the transport route, properties of the cyanide product, method of transport and the design of the transport vehicle.

The NBG emergency response documentation describe specific response actions, such as:

- Evacuation (including process area)
- Cyanide spill response
- Cyanide medical treatment.

**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:**

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

The operation has involved its workforce and stakeholders in the cyanide emergency response planning process. NBG emergency preparedness is based on the outcomes of a site wide risk assessment conducted by Emergency Response Personnel and knowledgeable people in relevant departments. Following risk identification, the Emergency Response Group in conjunction with the relevant discipline experts have developed the EMP and SOPs that define the basic procedures that must be followed for the combating of each type of emergency scenario. Specific response plans have then been derived from the risk register on a facility or equipment basis.

The workforce is also involved in the EMP planning process via their participation in cyanide emergency drills and the post incident analysis process.

NBG has provided copies of the EMP to a number of concerned external entities, including the local shire, hospital and emergency services organisations.

The operation has made potentially affected communities aware of the nature of their risks associated with accidental cyanide releases. NBG is a member of the LEMC and has provided information to the committee members on the transport of cyanide to site and the EMP. In addition, NBG has conducted an exercise with members of the committee in relation to vehicular accidents during cyanide transport.

The operation has engaged in consultation or communication with stakeholders to keep the EMP current.

The EMP is updated annually or when warranted from lessons learnt (e.g. following exercises or activations of the EMP). Any changes to the EMP are communicated to the workforce via Safety Committee meetings and pre-shift meetings, as appropriate. The workforce is able to suggest changes to the EMP following activation or exercise through debriefing sessions held as part of the post-incident analysis process.

Outside stakeholders can be engaged through the document control and review process. Details on updates can be provided during LEMC meetings.

**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:**

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

NBG's EMP and associated documentation does:

- Designate primary and alternate emergency response coordinators who have explicit authority to commit the resources necessary to implement the plan. The General Manager is in charge of any emergency situation that may occur on site. The General Manager has delegated responsibility to the Emergency Response Coordinator, who acts as the Incident Controller in the event of a major incident or an incident requiring external resources. The Incident Controller is responsible for all aspects of the management of the incident. The duty Emergency Services Officer is designated as the initial on-scene Incident Controller.
- Identify emergency response teams. The Emergency Response Group is led by an Emergency Services Coordinator supported by four (4) Emergency Services Officers and approximately fifty-five (55) ERT members. In the event of an incident, these members are paged.
- Detail required training for emergency responders includes open circuit breathing apparatus, confined space rescue, cyanide incident response, emergency driving, hazardous materials (HAZMAT), road crash rescue, advanced structural firefighting, vertical rescue, wildfire and first aid – Certificate II in Public Health.
- Include call-out procedures and 24-hour contact information for the coordinators and response team members. ERT members on site are tracked through a swipe card pager system which identifies ERT members as they enter through the front gate. In addition, the EMP has a contact list with contact information for Department Managers, health and safety personnel and the duty Emergency Services Officer.
- Specify the duties and responsibilities of the General Manager, Area/Departmental Manager, Site ESR Manager/Environment Manager/Social Responsibility Manager, Emergency Services Coordinator (ESC), Line supervisors, Emergency Services Officers (ESO), ERT members, Security Officer, Site Nurse and Site Personnel.
- List emergency response equipment, including personal protection gear, vehicles, spill response equipment and medical supplies available on site.
- Include procedures to inspect emergency response equipment each day of the week, split between day and night shifts to ensure its availability.

The operation has made outside entities aware that they do not have designated roles within the EMP.

**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:**

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

NBG emergency documentation includes procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency. This includes call-out procedures for emergencies and contact information for Department Managers, health, safety and medical personnel and the duty ESO.

The emergency response documentation includes procedures and contact information for notifying potentially affected communities of the cyanide related incident and any necessary response measures, and for communication with the media. Response team members are given a service pack that details their roles and responsibilities. Within this pack is reference information for dealing with the media and the correct pathways to generate a response.

The site is located approximately 13 km from the town of Boddington. As such, NBG has deemed there is no threat to the community from a cyanide incident at the mine.

**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:**

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

The NBG emergency documentation describes specific remediation measures as appropriate for the likely cyanide release scenarios, such as:

- Recovery or neutralisation – The NBG spill response procedure outlines the containment of spills and recovery with soda ash or neutralisation. The procedure notes that neutralisation with Ferrous Sulfate, Sodium Hypochlorite or Hydrogen Peroxide is a last resort and the Environment Department should be consulted before their use. The procedure outlines where neutralising agents are stored and the required concentration.



- Decontamination of soil and other media – The spill response procedure requires that all impacted soil is removed and replaced with clean fill as necessary. A sampling and testing procedure is in place to determine whether all affected soil has been removed.
- Management and/or disposal of spill clean-up debris – The spill response procedure requires that all affected soil be returned to the CIL circuit or to the RDA. It also requires that the decontamination of tools and equipment with water is to be undertaken in areas connected to a CIL Circuit sump.
- Provision of an alternate drinking water supply – NBG operates a reverse osmosis unit and storage pond for site potable water. In the event of a catastrophic failure (e.g. tank rupture and RDA overtopping), cyanide solution may report to the potable water storage pond. In such an instance, NBG has bottled water available on site as an alternate means of drinking water supply. In addition, the village is connected to Boddington’s scheme water.

The RDA is adjacent to the catchment boundary for the South Dardanup Dam that supplies drinking water to the metropolitan region of Perth. However, the RDA sits below the crest of the catchment divide and any major loss of containment would flow away from the catchment and further into NBG’s lease. In addition, the dam for the catchment is some 15 to 20 km from the RDA. As such, NBG has deemed that there is no risk to this drinking water supply

Ferrous sulfate, soda ash and lime are available at NBG to be used to neutralise cyanide spills. The operation’s emergency documentation prohibits the use of ferrous sulfate where there is a risk of it entering a waterway.

**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:**

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

NBG reviews and evaluates the cyanide related elements of its EMP on a regular basis. It is the responsibility of the Emergency Services Coordinator (ESC) to coordinate the development, implementation and review of the

Emergency Response Plan and supporting procedures. The previous EMP was dated 22 September 2016 and was revised on 13 September 2017.

Mock cyanide emergency drills are conducted periodically as part of the emergency response plan evaluation process. The operation has conducted regular mock drills for cyanide response throughout the certification period. The exercises are evaluated and the reviews documented.

Provisions are in place to evaluate and revise the EMP after any cyanide related emergency. The EMP states that changes may be made arising from incident investigations and resultant outcomes. No cyanide incidents requiring the activation of the EMP have occurred to date. However, updates to the EMP have resulted from exercises and audits of the plan and associated systems.



## 8.0 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:

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

NBG trains all personnel who may encounter cyanide in cyanide hazard recognition. Hazard recognition training is given to all employees during the Site Induction. Cyanide specific hazard training is only given to those that will encounter cyanide as part of their work, which includes all Process Plant workers, ERT members, medical staff and selected environmental, health and safety and maintenance staff. This training is given as part of the Cyanide Awareness Induction. Workers that have not undergone the Cyanide Awareness Induction cannot work unescorted in areas where cyanide is present.

Cyanide hazard recognition and refresher training has been completed for all required personnel. The Cyanide Hazard Awareness Induction is required for all personnel that may encounter cyanide during the course of the work. This training is only valid for two years and to remain valid refresher training is required. A review of the sites training matrices and employee training records indicated that refresher training is being undertaken every two years.

The operation does retain cyanide training records. Hardcopies are scanned and saved in the training file for each member. Attendance at cyanide awareness training is recorded in the applicable training matrices and is recorded in SAP or Intuition/INX. Training files were viewed by the auditor and confirmed that training records were suitably retained.

**Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 8.2**

not in compliance with

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

NBG 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.

NBG trains workers to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases. The training received by new starters covers site inductions, Cyanide Awareness, operational training manuals and task specific SOPs. The operational training manuals and SOPs cover training related to normal production tasks. Each new starter receives on the job task training from experienced operators in the field. Workers cannot undertake tasks unsupervised until the SOP for the specific task has been signed off by the operator.

The training elements necessary for each job involving cyanide management are identified in training materials. Course overviews are available for inductions, which outline the important training elements that must be conveyed to inductees. The operational training manuals and SOPs identify specific areas where cyanide specific training is required.

Appropriately qualified personnel provide task training related to cyanide management activities. The training and assessment system is mentoring based whereby a senior operator demonstrates and trains personnel in all relevant tasks. Senior staff are sufficiently experienced and have completed all the required training for their role. This is followed by a competency based practical assessment process, which is completed by a Process Training Coordinator (for cyanide areas). All Process Training Coordinators have attained Cert IV in Workplace Training and Assessment and have several years' experience working in a processing environment.

Employees are trained prior to working with cyanide. Personnel cannot work unsupervised on site until they have undergone the required inductions (e.g. area specific and Cyanide Awareness) and been deemed competent in the tasks they are to undertake. Refresher training on cyanide management has been provided to employees that work with cyanide every two years.

The operation evaluates the effectiveness of cyanide training by testing, observation or other means. Individuals are assessed at the conclusion of the Cyanide Awareness training by a trainer and the key learning outcomes of the awareness session reinforced by the trainer. Process circuit training for process operators includes competency-based assessments.

Records are retained throughout an individual's employment documenting the training they receive. The records do include the names of the employee and the trainer, the date of training, the topics covered, and if the employee demonstrated an understanding of the training materials. Hardcopies are generally scanned and saved in the training file for each member.

**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:**

NBG 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.

Cyanide unloading, mixing, production and maintenance personnel trained in the procedures to be followed if cyanide is released. Non-ERT members are required to raise the alarm and evacuate. All emergencies are to be handled by the ERT.

Site cyanide response personnel are trained in decontamination and first aid procedures. Personnel have taken part in drills to test and improve their response skills. The EMP requires that ERT members are trained in:

- Breathing apparatus
- Confined space rescue
- Cyanide incident response
- Emergency driving
- HAZMAT
- Road crash rescue
- Advanced structural fire fighting
- Vertical rescue
- First Aid.

Emergency Response Coordinators and members of the Emergency Response Team are trained in the procedures included in the EMP regarding cyanide, including the use of necessary response equipment. On-site training is held each Tuesday, focussing on core ERT competencies. ERT members also participate in drills.

The operation has made off-site Emergency Responders, such as community members, local responders and medical providers, familiar with those elements of the EMP related to cyanide. NBG participates in LEMC meetings every two months. The LEMC includes local authorities and emergency services. In addition, copies of the EMP have been sent to each of these entities.

Refresher training for response to cyanide exposures and releases is conducted regularly. This includes weekly core ERT training, regular cyanide emergency drills and two yearly Cyanide Awareness training.

Cyanide emergency drills are evaluated from a training perspective to assess if personnel have the knowledge and skills required for effective response. This occurs through a Post Incident Analysis undertaken after each drill.

Records are retained throughout an individual's employment documenting the training they receive. The records include the names of the employee and the trainer, the date of training, the topics covered, and if the employee demonstrated an understanding of the training materials. Electronic copies of training conducted by ERT members are kept in a database by the Learning and Development Department.

## 9.0 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:

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

NBG is located approximately 16 km north-west of Boddington, which is the closest community. NBG has a Social Responsibility Advisor, with responsibility for the development and maintenance of a communications strategy, which incorporates stakeholder engagement with respect to cyanide.

Mechanisms in place to inform the community and provide them opportunities to raise concerns include:

- The NBG Community Information Centre located in Boddington town
- Community Reference Group Meetings and other local community meetings and memberships
- Pamphlets and newsletters distributed to employees, contractors and stakeholders including the local community. These include:
  - The Golden Scoop
  - General Boddington Gold information pamphlets
  - Beyond the Mine (hard copy and website)
  - The Boddington Newspaper.

Internally, the operation provides employees and contractors the forum to raise concerns regarding the use of cyanide through inductions, cyanide awareness training and safety toolbox meetings.

**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:

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

NBG has created opportunities for the operation to interact with stakeholders and provide them with information regarding cyanide management practices and procedures.

At an operational level, NBG has developed the following opportunities to communicate to internal stakeholders:

- Site Safety Meetings
- Toolbox meetings
- Newsletters
- Cyanide awareness training – Given to all personnel working within the process plant area.

External stakeholders are engaged via:

- The NBG Community Information Centre located in Boddington town.
- Community Reference Group Meetings and other local community meetings and memberships
- Pamphlets and newsletters distributed to employees, contractors and stakeholders including the local community.

At corporate level, Newmont Asia Pacific has developed the Beyond the Mine, available via website ([www.beyondthemine.com](http://www.beyondthemine.com)) and as a hard copy report. The website has a link to a Contact Us page, where questions can be emailed to Newmont staff, and the report contains information on cyanide and its management, as well as the Cyanide Code.

NBG produce an AER, which details all environmental incidents that occurred on site during the reporting period. Permission from NBG is not required to access the AER, and the public can access the AER through the Freedom of Information Act and it is also available at the community information centre.

In a set of mine information pamphlets, NBG has produced a site specific information sheet title “Cyanide Management”. This is available at the Community Information Centre and at town events and includes information the use of cyanide at the site and information based on the nine ICMI principles.

**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:**

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

NBG has written descriptions of how their activities are conducted and how cyanide is managed, these include:

- Pamphlets and newsletters
- Annual Environmental Report

- Beyond the Mine document and website.

Based on the close proximity of the mine to Boddington, and discussions with the NBG Social Responsibility Advisor, 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. However, NBG do endeavour to present material that is suitable to the audience and prepares community presentations accordingly.

The operation has mechanisms to make information publicly available on the cyanide release or exposure incidents, where applicable. Any safety and environmental related incident information is reported in the Annual "Beyond the Mine" report, which is publicly available; and on the "Management of Cyanide at Newmont" page of the website. The statistics are provided for each operation, including Boddington, and cover:

- Incidents of cyanide exposure resulting in hospitalisation
- Incidents where releases off the mine site required response or remediation
- Incidents where releases on or off the mine site resulted in significant adverse effects to health
- Incidents where releases on or off the mine site resulted in significant adverse effects to the environment
- Incidents where a release on or off the mine site required reporting under applicable regulations.
- Incidents where releases caused applicable limits for cyanide to be exceeded.

## 10.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled – "Important Information Relating to this Report", which is included in Appendix A of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

## Signature Page

### **Golder Associates Pty Ltd**



Jaclyn Ennis-John  
*ICMI Lead Auditor/Technical Specialist*

JEJ/EWC/hn

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**APPENDIX A**

**Important Information**



The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

**Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification**



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