**October 2009**

## INTERNATIONAL CYANIDE MANAGEMENT CODE
## GOLD MINING CERTIFICATION AUDIT

# Newmont Asia Pacific
# Waihi Gold Mine, New Zealand
# Certification Audit
# Summary Audit Report

**Submitted to:**

International Cyanide Management Institute (ICMI)
888 16th Street, NW - Suite 303
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AUSTRALIA

REPORT

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# Record of Issue

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# SUMMARY AUDIT REPORT
# FOR OPERATIONAL GOLD MINES


| | |
|---|---|
| **Name of Mine:** | Waihi Gold Mine |
| **Name of Mine Owner:** | Newmont Mining Corporation Limited |
| **Name of Mine Operator:** | Waihi Gold Company Ltd |
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## LOCATION DETAIL AND DESCRIPTION OF OPERATION:

Founded in 1921 and publicly traded since 1925, Newmont (NYSE: NEM) is headquartered in Denver, Colorado. The Company has approximately 34,000 employees and contractors, the majority of whom work at mine sites on five continents. Newmont operates core assets in North America, South America, Australia, Indonesia and Ghana, with new mine projects currently being developed.

The Waihi Gold Mine is managed by Waihi Gold Company Limited (Waihi). The Waihi operation is located in the town of Waihi, 110 km south-east of Auckland, North Island, New Zealand and has a population of approximately 4,700. Newmont acquired the Waihi operations in February 2002 as part of the Normandy Mining acquisition.

In 2007, operation manning levels were approximately 130 Newmont employees and 200 contract workers.

The wholly owned Newmont mine consists of the Martha open pit, Favona underground mine, a processing plant, water treatment plant and two tailing storage facilities.

The process plant and water treatment plant are located 100 m from the Ohinemuri River. The process plant comprises cyanide storage and mixing facilities, reagent tanks and lime silos, a sag and ball mill, and eleven leach tanks that process ore. Process water tanks hold tailings decant water and river water (used in the elution circuit).

Favona underground offices, supply stores, and various workshops are in close proximity to the process plant as well as the underground portal.

The water treatment plant treats water from the tailings storage facilities and process ponds for metals and cyanide reduction.

The tailings storage facilities (S1A and S2) are located east of the river and these facilities occupy approximately 180 ha. Storage 1A is the only active tailings storage facility.

The site is surrounded by farmland owned or leased by Waihi.

# SUMMARY AUDIT REPORT
# AUDITORS FINDINGS

The Waihi Gold Mine is:

☒ **in full compliance with**

☐ in substantial compliance with

☐ not in compliance with

**The International Cyanide Management Code**

| | |
|---|---|
| **Audit Company:** | Golder Associates |
| **Audit Team Leader:** | Edward Clerk, CEnvP (112), RABQSA (020778) |
| **Email:** | eclerk@golder.com.au |

## Name and Signatures of Other Auditors:

| Name | Position | Signature | Date |
|---|---|---|---|
| Edward Clerk | Lead Auditor and Technical Specialist |  | 16 September 2009 |
| Peter Willcocks | Independent Auditor |  | 27 March 2009 |
| Russell Beazley | Auditing Support |  | 27 March 2009 |

## Dates of Audit:

The Certification Audit was undertaken over four days (12 man-days) between 13 and 16 October 2008.

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.

| Waihi Gold Mine | | 29 October 2009 |
|---|---|---|
| Name of Facility | Signature of Lead Auditor | Date |

# Table of Contents

# 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:**

Waihi 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.

Waihi purchases its sodium cyanide from Orica under a Sodium Cyanide Contract (Contract) developed by the parent company Newmont Mining Corporation Asia Pacific.

In addition to the contract, Orica, the cyanide producer, was certified as fully compliant under the Code on 7 June 2007.

Inspection of cyanide shipping documents provided no evidence to suggest that Waihi has received bulk delivery of cyanide reagent from any other producer.

# 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:**

Waihi 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.

Waihi purchases its sodium cyanide from Orica under a Sodium Cyanide Contract, developed by the parent company Newmont Mining Corporation Asia Pacific.

The text of the Contract does not specifically document all of the transportation responsibilities listed in Standard of Practice 2.1.1. However, by specific reference to the Code and the ICMI those requirements are specified effectively.

Recent cyanide shipping documents provide no evidence to suggest that Waihi has received bulk delivery of cyanide reagent under any transportation arrangements other than those contracted by the producer.

The Contract requires Orica to obtain written consent from Newmont for any change in subcontracted arrangements.

**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:**

Waihi 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 operation purchases its sodium cyanide from a cyanide producer certified as compliant under the Code pursuant to a contract. The contract requires the producer to transport cyanide to the site and demonstrate responsible cyanide management for the transport activities along the entire supply chain in accordance with the ICMC.

The producer has conducted code-equivalent, non-certification audits of the cyanide transportation activities between its production facility (Queensland) and the Waihi operation (New Zealand). The transport of

cyanide from production facility to Waihi is coordinated from the production facility and uses a combination of road, rail and ships:

- Road:
  - Toll Gladstone (Queensland, Australia)
  - Provincial Freightlines/Linfox (New Zealand)
- Rail:
  - QR National, Queensland
- Marine:
  - Port of Brisbane
  - Hapag Lloyd
  - Port of Tauranga

The producer's due diligence investigations of rail transporters, rail yards, ports and shipping companies were reviewed by the transport auditor during the audit process to determine if it had reasonably evaluated these facilities and implemented, as practical, any necessary management measures.

The audit report concludes producer's cyanide transportation activities between its production facility (Queensland) and the Waihi operation (New Zealand) demonstrate the implementation of programmes, practices and procedures consistent with ICMI's Cyanide Transportation Audit Protocol and were in full compliance with the Code. The audits were conducted in the last three years. Chain of custody records held at Waihi demonstrate that transportation arrangements are consistent with the supply chain as-audited.

# 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:**

Waihi 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, spill prevention and spill containment measures.

Waihi has facilities to receive cyanide in both sparge tank containers and intermediate bulk containers (IBCs). These facilities have been designed and constructed in accordance with cyanide producers' guidelines and accepted engineering practices for these facilities.

The unloading, mixing and storage areas are located within the processing plant within approximately 50 m of areas occupied by workers. A river is located approximately 100 m downgradient of the facility. Due to the proximity of employees and water bodies to the unloading and storage areas, a qualitative risk assessment was conducted by the Waihi Safety Manager in 2006. An outcome of which was the development of detailed set of standard operating procedures that describe the safe operating practices for the unloading and storage areas.

Cyanide from the sparge tank is unloaded on a concrete surface that can minimise seepage to the subsurface. The pad graded so that spilled material will flow towards a sump pump located in the mixing area. Liquid within the sump can be pumped into the mixing tank or leach tank No 1. The unloading area and mixing area for solid cyanide is also located on a concrete surface that can minimise seepage to the subsurface. The pad drains towards the mixing area sump.

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

Ultrasonic level detectors and high level switches have been installed on the dosing tank, sparging tank and bag mixing tank. Alarms are raised initially local to the tanks and at higher levels, alarms are triggered in the control room, gold room and water treatment plant.

The cyanide mixing and storage tanks are located on a concrete surface that can prevent seepage to the subsurface. They are constructed on concrete plinths on an impermeable concrete surface.

Secondary containments for cyanide storage and mixing tanks are constructed of materials that provide a competent barrier to leakage. The storage tanks are located within secondary containment constructed of concrete. The facilities are equipped with sump pumps to recover any spillages.

Liquid cyanide is stored in tanks that are vented to the atmosphere. Boxed cyanide is stored in locked and sealed containers. The site has a procedure to ventilate the container prior to any entry to remove cyanide.

All cyanide is stored off the ground in a covered area and access is restricted to appropriate personnel. No incompatible materials are stored within the cyanide storage area.

**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:**

Waihi 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.

Solid cyanide boxes are not reused. After use, the boxes and associated bags and liners are taken to the burn pad for incineration or stored securely on a temporary basis until a burn can be commenced. Therefore, rinsing of the boxes and associated liners is not required.

Solid cyanide is also delivered to site in sparge tank containers from which the cyanide is dissolved by sparging (circulating pH modified solution through the sparge tank containers until the solid cyanide has been completely dissolved). Part of the sparging process as detailed in the procedure is to hose the sparge tank containers and fittings after the transfer of cyanide from the sparge tank containers has been completed and hoses detached.

Procedures have been developed that provide comprehensive detail on all valve and coupling requirements for unloading of cyanide.

Handling of boxes by forklift is restricted to one box per movement. All forklift drivers are trained and qualified. Stacking height is restricted to three boxes.

Any spills during mixing are cleaned up by the operators once the mixing has been completed.

The solid cyanide mixing procedure requires the presence of two persons. A cyanide monitor must be worn prior to opening the cyanide storage shed and must be worn at all times throughout the operation. The procedure also details the required personal protective equipment.

# 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:**

Waihi 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 for cyanide facilities handling over 0.5 mg/L WAD cyanide. This includes unloading and storage facilities, leach circuits and tailings impoundments.

The operation's TSF Operating Manual identifies key assumptions and parameters on which the facility design was based to prevent or control cyanide releases and exposures consistent with applicable requirements. Regulatory requirements regarding the environment (i.e. consents and conditions) are detailed within a summary report provided to Waihi by their legal representatives.

The operation has plans and procedures that describe the standard practices necessary for the safe and environmentally sound operation of the facility, including specific measures needed for compliance with the Code, such as inspections (e.g. unloading and mixing areas, the TSF and associated ponds) and preventative maintenance activities.

The operation has a Change Management procedure, which is used when there is potential to cause a significant level of impact on the operation, safety management, the environment or the community. The procedure applies to all facilities managed by Waihi to ensure that environmental, social, safety and health considerations are incorporated into new or modified projects and new initiatives on-site.

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. Contingency plans have also been developed.

The operation inspects cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters. Inspections of the TSF and associated facilities (e.g. pumps and pipes) are conducted every two to three hours by plant personnel. Weekly preventative maintenance inspections are also carried out by maintenance personnel on all critical cyanide facilities within the plant. Longer term preventative maintenance inspections (e.g. for tanks) are also scheduled as appropriate to the age and condition of the facility.

Inspections are documented, including the date of the inspection, the name of the inspector, and any observed deficiencies. The nature and date of corrective actions are documented within the ELIPSE Computerised Maintenance Management System.

A risk analysis on power outage was conducted to determine significance of personnel exposure to cyanide due to power outage and the release of cyanide beyond the lease boundary.

The risk analysis identified that the likelihood of personnel exposure and/or release of cyanide beyond the lease boundary during a power outage is rare. The primary power supply is electricity from the New Zealand grid. Power outages of greater than 2 hours are infrequent. Back-up power is immediately available from supplementary diesel powered gensets.

Back up generators can also be brought to the site from a local supplier in the event of a power failure to provide emergency power to the water treatment plant and associated discharge pumps. Waihi is located close to services so the likelihood of losing diesel fuel for primary power is very low.

A procedure has been developed that describes the protocols to be followed in the event of power failure.

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

☒ **in full compliance with**

The operation is ☐ in substantial compliance with **Standard of Practice 4.2**

☐ not in compliance with

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

Waihi is in FULL COMPLIANCE with Standard of Practice 4.2, requiring that the operation introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

The operation does conduct a program 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.

The determination and control of free cyanide in process solutions is an automated process performed by the Cyanoprobe cyanide analyser and Leachstar control platform. The Cyanoprobe measures free cyanide approximately every 8 minutes, the results are integrated into the Leachstar control software, including the leach feed flow rate, and density. Multiple redundancy of cyanide measurement is used in the leaching process. Online monitoring and control of free cyanide in the leaching circuit is checked by manual lead nitrate titration every two hours as part of normal shift duties. This ensures the calibration of the Cyanoprobe is accurate and has not drifted.

Various features for control of cyanide addition are used. An on-stream cyanide analyser (CYANOPROBE using LEACH STAR software) is installed and controls the rate of addition of cyanide by analysing the feed to the CIL Tank and the contents of the CIL Tank. The process operators conduct manual cyanide titrations every two hours and compare results with the on-stream analyser. Manual titrations are conducted on the Ball Mill, Leach Feed, Tank 1A, Tank 5 and Tank 11.

Daily parameters are determined at 7.00 am by the Mill Metallurgical Team. Operators are advised via a parameters board in the control room.

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

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.3**

☐ not in compliance with

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

Waihi 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.

Waihi has developed a comprehensive, probabilistic water balance, which addresses all the relevant elements detailed within the ICMI Auditor Guidance documentation.

The model uses predicted tailings deposition rates. Inputs include solids content and pumping rates.

Rainfall probability is based on one hundred years of data collected from Waikatoi Regional Council and site meteorological data, both run to New Zealand Standards. From this data, the rainfall events in any given month are calculated based on probability (i.e. the probability of "X" mm of rainfall occurring in each month of "X" year of the historic rainfall dataset). A meteorological software package interrogates this monthly rainfall data and assigns it into a series of storm event for that month (rather than applying an arbitrary daily average based on the amount of rainfall for that month).

Evaporation data is obtained from the same databases as the precipitation data.

Where appropriate, Waihi has used survey data to determine catchment runoff coefficients into their on-site waterbodies. These coefficients are included in the water balance model.

Impacts of freezing and thawing are not relevant at Waihi as it is located along the coast on the north island of New Zealand.

Decant pumping rates from the TSF and collection ponds have been accounted for in the model.

Actual seepage data, whilst minimal, has been collected based on the amount of seepage reporting to TSF1A toe drain via the underdrainage system. The effects of this (on supernatant levels and the water treatment system) have been accounted for in the water balance model.

The discharge capacity has been fixed in the model, based on the consent limits set by the regulators and the capability of the water treatment system. A water treatment plant is required as the operation has a positive water balance. Potentially excess water can build up in tailings ponds and/or result in stormwater retention ponds overflowing if not managed (primarily by treatment).

The finite discharge limit of the water treatment facility is programmed into the water balance model.

Drain down pumping capacities and power outages are not specifically included in the model. The operation as static spreadsheets that can be used to predict the rise or fall of water levels during the day should a pump fail. In addition, the likelihood and impact of a pump failure is small because of the daily operational inspection of the pumps and the availability of spare pumps. Main power failure will not affect the decant pumps as they are diesel operated and diesel supply is reliable. Back up generators are available to provide emergency power to the water treatment plant and associated discharge pumps.

The discharge capacity of the water treatment plant has been fixed in the model, based on the consent limits set by the regulators and the capability of the treatment system.

The water balance model also takes into account ore tonnages in the mill and from that, inferred chemistry of the tailings output. This has an impact on the treatment of decant water at the water treatment plant in terms of time taken and treatment capability.

Existing operating procedures incorporate inspection and monitoring activities to manage the risk of overtopping the TSF and other impoundments.

The TSF is designed and operated to maintain a freeboard of 1 m plus contain, without overtopping, the probable maximum precipitation (PMP). The PMP equates to 1.2 m, which is nearly twice the estimated 612 mm precipitation received in 1,000 year, 72-hour event.

Information from the weather forecasting services is obtained daily by facsimile as well as through the MetService web site(s). The water treatment plant operators then prioritise the treatment of ponds.

**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:**

Waihi 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.

Waihi has five waterbodies with the potential to contain cyanide. Of these, TSF1A is the only open water body that has a cyanide concentration in excess of 50 mg/L WAD cyanide.

TSF1A is a paddock style TSF located to the north-east of the processing plant. Waihi is actively discharging into this TSF using a peripheral discharge system. This facility and the neighbouring TSF2 are bounded by electric fences along their northern, eastern and southern boundaries to prevent livestock access. The north-western boundary abuts riparian vegetation, with farm fencing further afield to restrict livestock access to the bushland and by association, the TSFs. WAD cyanide levels within the supernatant of TSF1A have not exceeded 8 mg/L between 1 February and 30 September 2008. However, spigot WAD cyanide levels are frequently above the 50 mg/L limit stipulated in the Code. The maximum WAD cyanide level recorded since 11 April 2008 was 143 mg/L.

A research programme was commissioned by Waihi, in which Donato Environmental Services (DES) investigated wildlife interaction with the tailings system and any subsequent risks of cyanide toxicosis (*Wildlife Cyanide Risks and Compliance with the International Cyanide Management Code: Newmont Waihi Gold Mine, September 2008 or* Main report). From data obtained during the programme, the author found that there was a casual relationship (using Hill's Criteria) between the lack of bird deaths and two identified protective mechanisms.

A peer review of the Main report raised a number of issues which were clarified within an addendum report entitled *Wildlife Cyanide Risks and Compliance with the International Cyanide Management Code, Addendum: Newmont Waihi Gold mine* (Addendum).

The Addendum prepared by DES was designed to address these issues and it was subsequently Peer reviewed by Dr Owen Nichols, Lead Reviewer (Environmental Management and Research Consultant).

The report focuses on the following characteristics of the potentially toxic flowing tailings streams:

- The high suspended solids content, which affects visibility and palatability;
- The turbulence of the flowing stream, which prevents macro invertebrates settling on it; and
- The lack of any aquatic macro invertebrates in the tailings stream.

By analysing these in relation to bird behaviour and morphology, the Addendum report attempted to establish whether protective mechanisms exist, and if so, describe them in detail with reference to established scientific knowledge and observed monitoring data.

The Addendum report proposed the following protective mechanisms:

- The high content of suspended solids eliminates feeding attempts by sight hunting species;
- No terrestrial invertebrates are entrained on the surface due to the turbulence;
- There is a lack of aquatic and terrestrial macro invertebrates in the flowing tailings streams.

The Peer Review noted that the Addendum correctly concluded that the suspended solids eliminate the tailings liquor as a drinking resource and together these explain the extremely low bird utilisation of the habitat. The proportionally lower visitation rate of this habitat (by an order of magnitude) indicates that water birds are preferentially avoiding it, and the protective mechanisms described above for particular bird groups explain why. This establishes a causal relationship between site characteristics and observed wildlife utilisation. Other characteristics of the tailings stream habitat, such as a lack of suitable perching structures, would further decrease the area's suitability for particular bird species.

The Peer Review also noted that the Addendum correctly concluded that the only cases of wildlife interaction with the flowing tailings streams consists of very few attempts at filter feeding, with no observed ill-effects due to the protective mechanisms described. The mode of filter feeding utilised, together with the species' morphological adaptations and the lack of food resources render the flowing tailings streams within TSF1A effectively non-toxic.

The protective mechanisms are summarised into four hypotheses, and the report concludes that, on the basis of scientific knowledge and monitoring data, all are supported as protective mechanisms. The Peer Review noted that this conclusion appears to be correct.

The Peer Review concluded that the Addendum's conclusions and recommendations are correct, and that it has demonstrated a causal relationship between critical parameters (e.g. solids content/turbidity/flow and waterbird utilisation – or, more specifically, the lack thereof). The Peer Review further noted that it clearly demonstrates a rationale why no mortalities have occurred.

Waihi selected a panel of three independent Peer Reviewers to assess the Main report:

- Dr Owen Nichols, Lead Reviewer (Environmental Management and Research Consultant).
- Associate Professor Barry Noller – Environmental Chemist and Toxicologist (Centre for Mined Land Rehabilitation, University of Queensland Australia, Australia).
- Dr Alan Julian – Veterinary Pathologist (Gribbles Veterinary, Hamilton, New Zealand).

The Addendum report was only reviewed by Dr Owen Nichols as the Addendum focused on areas specific to Dr Owen Nichols area of expertise.

The Addendum report stated that the operating (critical) parameters experienced during this study are provided as the compliant parameters in lieu of the cyanide concentration limits prescribed in the Code.

The Addendum report provided three recommendations:

- Recommendation 1: Maintain flowing stream so they are turbulent, have high suspended solids through their entire length and dead terrestrial macro invertebrates entrained within the stream are not available to wildlife.
- Recommendation 2: Maintain cyanide concentrations as stipulated in the Main Report:

| ***Parameter*** | ***Target Maximum WAD Cyanide (mg/L) 95 percentile*** | ***Target WAD Cyanide 80 percentile (mg/L) (operate under on 80% of days)*** | ***Target maximum copper (mg/L)*** |
|---|---|---|---|
| *Spigot (analysed)* | *127* | *98* | *14* |
| *Supernatant (analysed)* | *<10* | *<5* | *<10* |

- Recommendation 3: Record the flowing tailings streams characteristics (length, presence/absence of pooling) on daily field observation sheets.

The Main report (Wildlife Cyanide Risks and Compliance with the International Cyanide Management Code: Newmont Waihi Gold Mine, September 2008) also provided four additional recommendations which are summarised below:

- Recommendation 2: Continuation of a systematic monitoring regime:
  - Frequent cyanide and chemistry monitoring at the TSF.
  - Duplicate tailings samples to be taken from the spigot discharge point.
  - Daily wildlife monitoring by trained in-house staff.
  - Management of monitoring data.
  - Environmental and technical staff wildlife monitoring training.
  - Incorporate intensive monitoring by external experts in the event of cyanide-related wildlife mortality.
- Recommendation 3: Minimise infrastructure around cyanide bearing habitats.
- Recommendation 4: Vegetation removal and suppression of re-growth in and around cyanide bearing water bodies.
- Recommendation 5: Consideration of findings generated by Mutis Liber Review of cyanide sampling and analysis.

Waihi has complied with the recommendations from the Main and Addendum reports.

The Waihi Environment Department conducts wildlife observations daily at TSF1A and weekly observations at TSF2. Monitoring data has not recorded any cyanide related mortalities.

The operation does not use a heap leach process.

**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:**

Waihi 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.

A discharge permit (971318) has been granted to Waihi by Waikato Region Council to discharge treated water from the Water Treatment Plant into the Ohinemuri River via two discharge points. The level of WAD cyanide allowable in the discharged water is dependent on three operating regimes, which are selected on the basis of ore type being used, discharge rate and river flow.

WAD cyanide levels of the discharge have not exceeded 0.5 mg/L. Free cyanide levels monitored downstream of the specified mixing zones (Discharge permit 971318) of both Ohinemuri River discharge points have not exceeded 0.022 mg/L.

Groundwater monitoring conducted indicates that the operation does not have any indirect discharges into surface water.

**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

☐ not subject to

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

Waihi is in FULL COMPLIANCE with Standard of Practice 4.6 requiring the implementation of measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

The operation has groundwater monitoring bores downgradient all of its operational and non-operational TSFs, as well as the plant site. In addition to monitoring bores, the main TSFs have an underdrainage system to collect any potential seepage.

Regulatory consent conditions require WAD cyanide levels within groundwater to be below 0.093 mg/L at compliance wells (this figure is based on United States EPA water quality criteria). Since January 2004, the maximum detected level of WAD cyanide within the groundwater monitoring bores has been 0.029 mg/L.

The operation does not use mill tailings as backfill in its underground works.

Seepage from the operation has not caused cyanide concentrations of groundwater to rise above levels protective of beneficial use.

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

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 4.7**

☐ not in compliance with

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

Waihi is in FULL COMPLIANCE with Standard of Practice 4.7 requiring that the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

Spill prevention and containment measures are provided for the cyanide unloading, storage, mixing and process solution tanks. CIL and process water tanks were observed to be constructed on ring beams and subsequent to the audit, Waihi approved the installed leak detection devices beneath these tanks. The leak detection systems and initial inspections have been completed and verified to be effectively working.

Bund volume calculations for the spent and loaded electrolyte, bulk tank and dosing and mixing tanks bunds satisfy the requirements for 110% of the volume of the largest tank. The bund volume of the CIL tank area is less than the 110%. However, any spillage is directed to the Water Treatment Plant via the Mill Containment Pond and appropriate cleanup procedures are in place to rectify any spill.

Procedures are in place and being implemented to prevent discharge to the environment of cyanide solution or cyanide-contaminated waters that are collected in the secondary containment areas. All secondary containment areas have sump pumps or level activated pumps that are used to prevent overflow in those areas.

All tanks and pipelines are contained within compliant secondary containment. Despite this, there are procedures in place for the remediation of contaminated soil in the event of an uncontained release of cyanide.

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

Tailings slurry lines, decant return water lines and pond return water return to the plant via a river crossing. The pipes are contained within a fully enclosed and sealed, secondary containment pipe or a fully enclosed and sealed, launder. The containment measures are tested for leaks every 24 weeks as part of a preventative maintenance schedule.

Waihi has identified areas where cyanide pipelines present a risk to surface water and has implemented special protection needs.

Cyanide tanks and pipelines are constructed of materials compatible with cyanide and high pH conditions. In October 2008, Waihi commissioned an engineering consultant to assess seven cyanide bulk and process storage tanks (including the storage and mixing tanks), heat exchanger and associated pipework against accepted engineering design and maintenance standards. The assessment concluded the consulting engineer was …*aware of no reason that the facilities cannot continue operation within current established parameters (i.e. sound engineering practices, standards and specifications). The current condition of the bulk cyanide storage tanks, associated piping and equipment should be adequate to avoid cyanide exposures and releases due to equipment failures during the next five-year operating period.*

Waihi has also commissioned Beca AMEC to carry out a further structural audit of the low to medium strength cyanide facilities.

Waihi Gold Mine
Name of Facility

Signature of Lead Auditor

29 October 2009
Date

The report identified plant items that required some level of remedial work which have been subsequently completed by Waihi.

The report concluded:

*Based on the visual external inspection of the low cyanide concentration process and effluent water treatment areas, we are aware of no reason that these plant areas cannot continue operation, provided that the recommendations in this report are carried out in a timely manner and that sound operational practices, engineering practices, standards and specifications are followed.*

**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:**

Waihi is in FULL COMPLIANCE with Standard of Practice 4.8 requiring that operations implement QA/QC procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Site could not provide confirmation that quality assurance and quality control programs were been implemented during construction of the sodium cyanide solution unloading, mixing and storage facilities and other cyanide facilities.

Historical QA/QC records of the original Process Plant design and construction were not available during this audit.

In October 2008, Waihi commissioned an engineering consultant to assess seven cyanide bulk and process storage tanks (including the storage and mixing tanks), heat exchanger and associated pipework against accepted engineering design and maintenance standards. The assessment concluded that there is *no reason that the facilities cannot continue operation within current established parameters (i.e. sound engineering practices, standards and specifications). The current condition of the bulk cyanide storage tanks, associated piping and equipment should be adequate to avoid cyanide exposures and releases due to equipment failures during the next five-year operating period.*

Waihi has also commissioned Beca AMEC to carry out a further structural audit of the low to medium strength cyanide facilities.

The report identified plant items that required some level of remedial work which have been subsequently completed by Waihi.

The report concluded:

*Based on the visual external inspection of the low cyanide concentration process and effluent water treatment areas, we are aware of no reason that these plant areas cannot continue operation, provided that the recommendations in this report are carried out in a timely manner and that sound operational practices, engineering practices, standards and specifications are followed.*

Waihi Gold Mine
Name of Facility

Signature of Lead Auditor

29 October 2009
Date

**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:**

Waihi 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.

Waihi has procedures and management plans that outline, if appropriate for the task, how and where samples should be taken, sample preservation techniques, chain of custody procedures and shipping instructions.

The operation uses a field sample logbook to note sampling conditions that may affect the analysis of water samples. The wildlife observation forms have a comment space to record monitoring conditions. A check of these forms showed that observers were recording the weather conditions (e.g. cloud cover, wind and temperature). Observers are also prompted for the sunrise time and the time that any observation was made.

The operation monitors WAD cyanide in groundwater up and downgradient of the site through a series of groundwater monitoring bores around the TSFs and plant site. The operation monitors discharges into surface water at seven sampling points within relevant rivers and streams.

Waihi Environmental personnel inspect for wildlife mortality on the active TSF (TSF1A) daily and weekly on the inactive TSF (TSF2). A review of the logsheets and field observations confirmed that this occurs.

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

# PRINCIPLE 5 – DECOMMISSIONING

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

**Standard of Practice 5.1:** **Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 5.1**

☐ not in compliance with

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

Waihi 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 developed decommissioning plan detailing Waihi's decommissioning procedures and costs.

This plan includes an implementation schedule taking into account pre-closure, detoxification and deconstruction.

The operation has undertaken to annually review the procedures within the plan (including cost estimates) and revise as necessary.

**Standard of Practice 5.2:** **Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 5.2**

☐ not in compliance with

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

Waihi 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 costs of decommissioning Waihi's operations were calculated by Chemical Cleaning Services, Orica Chemnet using third party equipment and labour rates. The cost estimate is sufficient to cover the items detailed within the decommissioning Plan.

The operation has undertaken to annually review the procedures within the plan (including cost estimates) and revise as necessary.

The Waikato Regional Council requires that prior to exercising their consent to undertake mining operations, Waihi must obtain a bond which is to be made available to the Council to rectify any environmental impacts. Waihi's current bond exceeds their decommissioning cost estimate.

# 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:**

Waihi 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 developed numerous procedures describing how cyanide-related tasks such as unloading, mixing, plant operations, entry into confined spaces, and equipment decontamination prior to maintenance should be conducted to minimise worker exposure.

All procedures have been developed using a common structure and contain information on the task purpose, scope and step by step instructions, the first instruction notes the minimum personal protective equipment (PPE) required. In addition, all employees and contractors working on the site are required to undertake a SafeCheck prior to undertaking any task. SafeCheck is a Point of Work Risk Assessment process that provides personnel performing tasks and activities with a tool for identifying and controlling hazards prior to commencing work. SafeCheck can act as a trigger for a Job Hazard Analysis (JHA), which is a more rigorous form of hazard identification and risk assessment.

The operation has a change management procedure to allow process and operational changes and modifications to be reviewed for their potential impacts on worker health and safety, and incorporate the necessary worker protection.

The operation does formally solicit and actively consider worker input in developing and evaluating health and safety procedures. Each procedure has a specified review period based on risk. All procedures are available to employees via Goldnet and any employee can propose changes to a procedure even if it is not due to be reviewed. Procedures that are new or require revision are also discussed at PASS (Positive Attitude Safety System) meetings held daily for both day and night shift.

**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:**

Waihi is in FULL COMPLIANCE with Standard of Practice 6.2 requiring an operation operates and monitors cyanide facilities to protect worker health and safety and periodically evaluates the effectiveness of health and safety measures.

The operation has determined that a pH of around 10.3 is appropriate for limiting the evolution of HCN gas during mixing and production activities.

Cyanoprobes monitors cyanide and pH continuously using an automated system (Leachstar). Cyanide is monitored in Leach Tank 1A and the leach feed into tank 1A while the pH is monitored in tank 1A and tank 7. The Leachstar system is used to control the cyanide addition and variable speed lime feeder to maintain the cyanide and pH set points.

Where the potential exists for significant cyanide exposure, the operation uses monitoring devices to confirm that controls are adequate to limit worker exposure to HCN gas. There are nine fixed monitors located throughout the plant, all of which report to the SCADA readout. In addition, plant personnel take readings every two hours using personal monitors at eight locations around the plant. During unloading and mixing of cyanide, the addition of cyanide solution to the leach tanks and working in ball mill, all personnel must wear a personal monitor.

The operation has identified areas and activities where workers may be exposed to cyanide in excess of 10 ppm and require use of PPE in these areas or when performing these activities. These activities and areas have been identified through operator experience, monitoring and the JHA/risk assessment process. The activities include bulk cyanide unloading, cyanide mixing, cyanide emergencies, cyanide decontamination, maintenance and confined space entry within cyanide areas. Areas requiring PPE are signposted and pointed out during the induction process.

HCN monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and records retained for at least one year.

Access to the treatment plant area is restricted and eating and drinking is restricted to the crib room located adjacent to the control room and smoking is only allowed immediately outside the crib room after washing hands. This was confirmed by interviewing process operators.

Signage at the cyanide shed area stipulates that there is “No Smoking, No Eating and No Drinking, In this Area”. Signage is posted and the area cordoned off when bulk cyanide deliveries are in progress to keep non-essential persons away. Signage at other high-risk cyanide areas also informs workers entering these areas what PPE is necessary prior to entry.

Showers, low-pressure eyewash stations and dry-powder fire extinguishers were located at strategic locations throughout the operation in the cyanide areas, and are maintained, inspected and tested on a regular basis.

Tanks and piping containing cyanide at concentrations that pose a threat to worker health and safety (i.e. >15 mg/L WAD) were adequately labelled.

MSDS and first aid instructions (both in English) are posted at the cyanide reagent area, the control room and mines rescue building. Waihi has installed Chem Alert II, a MSDS database and is accessible by all employees through Goldnet.

Waihi has developed and implemented an Incident Reporting and Investigation Procedure capable of investigating and evaluating cyanide exposure incidents to determine if the programmes and procedures are adequate to protect worker health and safety or need revising.

**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:**

Waihi 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 the necessary equipment to respond in the event of a worker's exposure to cyanide.

An external contractor is engaged to inspect and replace first aid supplies on-site every two months. An inspection of the cyanide antidotes confirmed they are stored as directed by their manufacturer and replaced on a schedule to ensure that they will be effective when needed.

The operation has developed specific written emergency response plans and procedures to respond to cyanide exposures. The operation maintains an administration protocol and flow chart describing the treatment and evacuation procedures. The flowchart differentiates between a conscious casualty and an unconscious casualty, and the level of treatment required for each situation including the need to give oxygen and seek urgent medical attention from the local hospital.

The operation does have its own on-site capability to provide first aid or medical assistance to workers exposed to cyanide. The Mine Rescue (Emergency Response) Team and Process Operators are all first aid trained. Three trained ambulances officers (volunteer) are also present on-site. Oxygen therapy training is also conducted for all employees who access cyanide areas.

The operation has developed procedures to transport workers exposed to cyanide to locally available, qualified, off-site, medical facilities. The Emergency First Aid & Medical Treatment for Cyanide Poisoning procedure requires all casualties suffering the effects of cyanide poisoning to be urgently transported to the local hospital via ambulance or rescue helicopter. They will be transported to the Waihi Medical Centre (4 km), the Tauranga Hospital (60 km) or Whakatane Hospital (85 km) where the operation has agreed mutual aid arrangements for treating any cyanide cases.

The operation has liaised with the medical staff at Waihi Beach Medical Centre, Katikati Medical Centre, Waihi Medical Centre, Tauranga Hospital and Whakatane Hospital to inform them that Waihi uses cyanide and provide them with copies of the Emergency First Aid and Medical Treatment for Cyanide Poisoning Procedure.

Mock emergency drills are conducted periodically to test response procedures for various emergency scenarios, and lessons learned from the drills are incorporated into response planning via debriefs.

# 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.**

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 7.1**

☐ not in compliance with

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

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

At a corporate level, Newmont engaged EMQ, an emergency response consulting company to develop and implemented a Rapid Response System (RRS) 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. 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 by the Site Emergency Controller whether to implement the RRS.

To complement the RRS, Waihi has developed and implemented a site specific Emergency Management Plan (EMP). The EMP covers all operations including mining and processing at the operation and describes emergency response operations at the site level that are not already covered by the Newmont RRS. The EMP notes that any incident or issue that can have the potential to seriously threaten Newmont‘s operations, reputation and the safety and well-being of its employees, will initiate a Rapid Response System.

The operation has developed specific written emergency response procedures to respond to anticipated emergency events, including those listed in 7.1.2 (except the failure of cyanide treatment, destruction or recovery systems, which is not applicable).

Contractually, Orica are responsible for the transportation of cyanide to Waihi through Provincial Freightlines/ Linfox, and Newmont do not own the cyanide until it is transferred from the storage tank into the process. Despite this, the operation has planned transport related emergencies within the immediate vicinity of the site. The transporter has developed a manual containing cyanide emergency response procedures. These procedures were developed in assistance with Orica and took into account a route risk assessment which accounted for solid cyanide transportation in sparge tank containers and the condition of the road.

Specific response actions are described within all emergency response procedures and work instructions.

**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:**

Waihi 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. Waihi formally solicits, and actively considers, worker input in developing and evaluating health and safety procedures through its department safety meetings, including the EMP and Cyanide Management Plan. All procedures are available to employees via Goldnet and any employee can propose changes to a procedure even if it is not due to be reviewed. The Waihi Police, St Johns Ambulance, Waihi Fire station and Environment Waikato have all been issued a copy of the EMP and had the opportunity to provide comments.

The operation has made potentially affected communities aware of nature of their risks associated with accidental cyanide releases, and consulted with them directly regarding appropriate communications and response. The External Affairs Department has several mechanisms in place to allow interaction with the local community with respect to cyanide issues. Such mechanisms include websites, an information centre, brochures, DVDs, fortnightly articles in the community newspaper and guided mine tours.

The EMP distribution list notes that copies have been provided to Waihi Police Station, St Johns Ambulance (one copy for each Primary Care Officer), Waihi Fire station. The Safety Manager advised that the copies are delivered personally and the EMP is discussed with the responders at the time. The operation has liaised with the medical staff at Waihi Beach Medical Centre, Katikati Medical Centre, Waihi Medical Centre, Tauranga Hospital and Whakatane Hospitals to inform them that they use cyanide and provide them with a copy of the Emergency First Aid and Medical Treatment for Cyanide Poisoning procedure.

The Safety Manager advised that the operation does engage in consultation and communication with stakeholders to keep the EMP current. He noted this is done through the mechanisms noted in 7.2.1-3 and mock emergency drills. Debriefs are conducted after every exercise and the lessons learnt are used to amend the emergency response procedures.

The Emergency Response Coordinator noted the Fire brigade conduct familiarisation tours of the operation approximately every 18 months. The close working relationship between the operation and external emergency responders provides several opportunities for consultation or communication with stakeholders to keep the Emergency Response Plan current.

**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:**

Waihi 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.

The elements of the EMP and various procedures do:

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

The operation has made off-site Emergency Responders familiar with the elements of the EMP related to cyanide. The EMP anticipates that only local medical providers, the Waihi Fire Station, Waikato Environment and Waihi Police Station will assist in the event of a cyanide emergency.

The Emergency Response Coordinator advised that the Waihi Fire Station have not expressed an interest in a mock drill, however, a close working relationship is maintained with the volunteer Waihi Fire Station members and the fire fighters often attend site to conduct familiarisation tours, particularly when a new member joins the brigade.

Environment Waikato was involved in a mock emergency drill in June 2007.

**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:**

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

The EMP and RRS include procedures and contact information for notifying management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency where appropriate.

The EMP and RRS includes procedures for notifying potentially affected communities either directly or through 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:**

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

The EMP, Cyanide Management Plan and associated procedures and work instructions 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; and
- Provision of an alternate drinking water supply.

The Cyanide Detoxification Procedure prohibits the use of ferrous sulphate to treat cyanide that has been released into surface water.

The Spills and Discharges Environmental Investigation and Reporting procedure details environmental monitoring to identify the extent and effects of a cyanide release including sampling methodologies, parameters and, where practical, possible sampling locations sample locations.

Monitoring of soils is also undertaken in accordance with the Cyanide Detoxification Using Ferrous Sulphate procedure.

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

The operation is

☒ **in full compliance with**

☐ in substantial compliance with **Standard of Practice 7.6**

☐ not in compliance with

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

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

The operation has the systems in place to review and evaluate the cyanide related elements of its EMP, Cyanide Management Plan, RRS and associated procedures for adequacy on a regular basis.

An annual activity planner developed and maintained by the Emergency Response Coordinator details the weekly and monthly training plan. The MRT meets every month to discuss amongst other items, emergency response procedures. Every training day, practical training activities are conducted such as rope exercises, hazardous materials training, etc. A mock drill cyanide scenario involving a man down and fire in the cyanide storage area was conducted in September 2008.

Cyanide specific emergency response work instructions contain a statement that they are to be reviewed following cyanide related emergencies and drills.

# 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:**

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

Prior to commencing work at the processing plant, new starters undertake three days of training which incorporates a General Induction and an area specific Mill/Water Treatment Plant Induction. The General Induction covers issues relevant to cyanide safety including chemical safety and hazard and risk assessment. The area specific induction includes more specific aspects of safety and health related to the operation. As part of the area specific induction, new employees undertake a familiarisation tour after which an assessment is conducted.

Competency based cyanide hazard recognition refresher training is conducted annually. The training incorporates Orica's Cyanide Awareness Training package and key cyanide procedures covering a variety of topics:

Training and induction records are kept on an electronic database. Paper records are also maintained for a period of seven years.

**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

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

The Processing Department have dedicated training and assessment resources to train 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.

Waihi Training Department run formal competency training, which includes cyanide tasks. Personnel are trained and assessed in procedures relating to cyanide tasks prior to allowing them to work independently. The competency training is accredited training based on the Australian Metalliferous Qualifications

Framework. Maintenance workers are also trained in cyanide related tasks based on maintenance procedures.

All trainers and assessors are appropriately qualified.

Employees are trained prior to working with cyanide.

Cyanide awareness refresher training is conducted every year by the department training coordinator.

The operation evaluates the effectiveness of cyanide training by testing and observation.

The competency training records are maintained electronically. There are also hard copies of training records and assessment sheets, which are for a period of seven years.

| | | |
|---|---|---|
| **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:**

Waihi 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.

All cyanide unloading, mixing and production personnel are trained in the procedures to be followed if cyanide is released.

Site cyanide response personnel, including unloading, mixing, production and maintenance workers, are trained in decontamination and First Aid procedures and they have taken part in the recent cyanide emergency drill to test and improve their response skills.

Site Mines Rescue Team (MRT) personnel, including unloading, mixing, production and maintenance workers, are trained in decontamination and First Aid procedures and they have taken part in the cyanide emergency drill to test and improve their response skills.

All personnel accessing cyanide areas receive the Orica cyanide awareness presentation and the area specific induction, in which decontamination and the First Aid response is presented.

Personnel are also trained and assessed in the requirements of task specific procedures which include decontamination and first aid procedures.

Emergency Response Coordinators and members of the Emergency Response Team are trained in the procedures included in the Emergency Response Plan regarding cyanide, including the use of necessary response equipment.

The operation has made off-site Emergency Responders familiar with the elements of the Emergency Response Plan related to cyanide. The EMP anticipates that only local medical providers, the Waihi Fire Station and Waihi Police Station will assist in the event of a cyanide emergency. Waihi has also liaised with local medical providers.

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.

Refresher training for response to cyanide exposures and releases regularly conducted.

Simulated cyanide emergency drills covering both worker exposure and cyanide releases are conducted for training purposes. An annual activity planner developed and maintained by the Emergency Response Coordinator details the monthly training plan. The MRT meets every month to discuss amongst other items, emergency response procedures and conduct practical training activities such as rope exercises, hazardous materials training, etc. Every year a full scale cyanide mock drill is conducted.

Simulated cyanide emergency drills are conducted for training purposes for all relevant personnel to determine if they have the knowledge and skills required for effective response. The procedures are revised as necessary.

# 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:**

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

The operation does provide the opportunity for stakeholders to communicate issues of concern regarding the management of cyanide. This is done at an operational and corporate level.

At a corporate level, Newmont have established an email address (esrgroup@newmont.com) on their website for questions concerning cyanide.

At an operational level, the External Affairs Department has responsibility for issues relating to the local and wider community. Mechanisms in place to inform the community and provide them opportunities to raise concerns include:

- Martha Mine website;
- Waihi's Gold Story display at the town visitor centre;
- Brochure and DVD;
- Fortnightly publication in the community newspaper; and
- Mine tours.

Internally, the operation provides employees and contractors the forum to raise concerns regarding the use of cyanide through inductions, safety toolbox meetings and cyanide topics reported in the monthly staff newsletter and presentation given by the General Manager.

**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:**

Waihi 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, Waihi utilise the mechanisms in 9.1.1 to communicate information to both internal and external stakeholders.

Newmont has a website (www.beyondthemine.com) that outlines the cyanide management procedures at its sites, including Waihi. There is a contact email on this website, which allows stakeholders to make further enquires and interact regarding cyanide use by Newmont.

**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:**

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

Waihi and Newmont have both developed a website that contains pages regarding cyanide management practices and procedures. The website is advertised on all of Waihi's promotional tools.

Based on the location of the mine site within the Waihi township, and discussions with Waihi employees, it is considered that the illiterate proportion of the local population does not constitute a significant percentage.

The Waihi incident investigation system documents incident details on the SiteSafe database these are investigated and corrective actions implemented. The corrective actions would include making the information publicly available.

The Rapid Response (crisis management) System requires that significant incidents are reported to the authorities and public.

Any safety and environmental related incident information is reported in the Annual Beyond the Mine Sustainability Report, which is publicly available.

In addition to operational reporting mechanisms, Newmont posts statistics for all their operations regarding the five questions within this Standard of Practice on their Beyond the Mine website. These statistics can be found at: http://www.beyondthemine.com/2007/?l=2&pid=5&parent=167&id=409.

# Report Signature Page

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# APPENDIX A

## Limitations

## LIMITATIONS

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