PNG Mining-Opportunities & Challenges

Webinar

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IMPORTANCE OF MINING TO THE PNG ECONOMY

• The mining and petroleum sectors have been the mainstay of the PNG economy for many years
  - currently contributing more than 25% of the country’s GDP and 80% of its export revenue
  - the industry also employs more than 20,000 workers

• While major earthquakes in February adversely affected the operations of several PNG mines, production has since returned to pre-earthquake levels at all of the mines

• While economic conditions in PNG are currently subdued, many opportunities still exist for Australian METS companies
CURRENT CHALLENGES FOR THE PNG MINING SECTOR

• Changes to the MRA Act and potential changes to the PNG Mining Act
• Foreign exchange shortages
• Lack of infrastructure
• High cost and unreliability of power supplies
• Security
• The need to support local landowners, businesses and communities
PROGRESS TOWARDS ECONOMIC RECOVERY IN PNG

• The following factors should help PNG to resolve its foreign currency shortages and revive its economy in the next 12 months

  - Budget support loans from the ADB and World Bank

  - A successful Sovereign Bond issue worth at least US$500 million

  - An announcement that at least one (and hopefully more than one) new LNG or mining project is ready to proceed
PNG MINING – EXISTING AND POTENTIAL MINES

Compiled by Papua New Guinea Chamber of Mines and Petroleum, 2015
PNG MINING – EXISTING MINING OPERATIONS

• PNG currently has 8 mines that produce gold, copper, silver, nickel and cobalt

• The largest of the existing mines are:

  ➢ **Lihir** - gold/silver mine owned by Newcrest Mining (Australia)

  ➢ **Porgera** - gold/silver mine operated in a JV between Barrick Gold of Canada, Zijin Mining Group of China and Mineral Resource Enga

  ➢ **Ok Tedi** - copper/gold/silver mine owned by the PNG Government

  ➢ **Ramu NiCo** - nickel/cobalt JV between MCC Ramu Nico Ltd of China, Highlands Pacific (Australia), the PNG Government and local landowners
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PNG MINING – EXISTING MINING OPERATIONS

• The other mines are:

  ➢ **Simberi** - gold mine owned and operated by St Barbara (Australia)

  ➢ **Hidden Valley** - gold/silver mine owned and operated by Harmony Gold (South Africa)

  ➢ **Kainantu** - gold mine owned and operated by K92 Mining (Canada)

  ➢ **Edie Creek** - small gold/silver mine owned by Niuminco Group Limited (Australia)
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PNG MINING – POTENTIAL MINING OPERATIONS

• Potential new mining projects

  ➢ Wafi-Golpu – major gold/copper project to be developed in a JV between Harmony Gold (South Africa) & Newcrest Mining (Australia)

  ➢ Frieda River – one of the world’s largest undeveloped copper and gold deposits to be developed by PanAust (a Chinese owned Australian company) in a JV with Highlands Pacific (Australia)

  ➢ Solwara 1 – a world first deep sea mining project to be developed by Canadian company, Nautilus Minerals, to recover copper, gold, zinc and silver from deposits in the Bismarck Sea

  ➢ Crater Mountain – underground gold mine to be developed by ASX listed company, Crater Gold Mining
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PNG MINING – POTENTIAL MINING OPERATIONS

• Potential new mining projects

- **Woodlark** – gold project to be developed by Geopacific Resources (Australia) on Woodlark Island in Milne Bay Province

- **Orokolo Bay** – industrial and mineral sands project to be developed in the Gulf Province by Mayur Resources (Australia)

- **Misima** – gold project in Milne Bay Province to be developed by ASX listed company, Kingston Resources, in partnership with PPC (Japan)

- **Imwauna** – gold project on Normanby Island in Milne Bay Province currently being explored by ASX listed company, AMD Resources Ltd
PNG MINING

OPPORTUNITIES FOR AUSTRALIA IN THE PNG MINING SECTOR

• Australia is already a significant supplier of METS to most of the PNG mines

• Australia is strategically placed to service the market

• Several PNG mines are run in whole or part by Australian companies

• A significant number of Australians work in PNG mines and often look to Australia for products and services with which they are familiar or that meet required industry standards

• PNG is taking a more nationalistic approach to the development of new mines and, to some extent, existing mines to try to ensure that local landowner companies and other businesses in PNG benefit from their development
OPPORTUNITIES FOR AUSTRALIA IN THE PNG MINING SECTOR

• Because most of the PNG mining projects (both existing and proposed) are located in very remote parts of the country where infrastructure is limited, security can be a problem and logistics is always an issue, costs tend to be high so

  - the mines are keen to find ways to increase their production, improve their grades, raise productivity levels, lift safety standards, protect the environment and, most importantly, reduce their costs

  - most mines are open to innovative, technical solutions

  - opportunities also exist for training service providers in some mines because skilled labour is not always readily available
RECOMMENDATIONS

• Attend the PNG Mining & Petroleum Investment Conference and Trade Exhibition in Sydney from 3 to 5 December 2018
  - for more details on the event, go to www.pnginvestment.com.au
  - Austrade Port Moresby will attend this conference and can provide business matching services for Australian companies that need any help to set up meetings with key industry contacts at the event

• Visit PNG to demonstrate your commitment and build relationships (PNG is not an easy market to develop long distance)
  - one early option is to register to attend the APEC CEO Summit in Port Moresby from 15 to 17 November
  - for more information on the Summit or to register your interest, go to https://abacpng.com/apec-ceo-summit-2018
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Wafi-Golpu Project

Project Overview

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Disclaimer

Harmony Gold Mining Company Limited

Forward Looking Statements

These materials contain forward-looking statements within the meaning of the safe harbor provided by Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended, with respect to our financial condition, results of operations, business strategies, operating efficiencies, competitive positions, growth opportunities for existing services, plans and objectives of management, markets for stock and other matters. These include all statements other than statements of historical fact, including, without limitation, any statements preceded by, followed by, or that include the words “targets”, “believes”, “expects”, “aims”, “intends”, “will”, “may”, “anticipates”, “would”, “should”, “could”, “estimates”, “forecast”, “predict”, “continue” or similar expressions or the negative thereof. These forward-looking statements, including, among others, those relating to our future business prospects, revenues and income, wherever they may occur in this report and the exhibits to this report, are essentially estimates reflecting the best judgment of our senior management and involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. As a consequence, these forward-looking statements should be considered in light of various important factors, including those set forth in this report. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, without limitation: overall economic and business conditions in South Africa, Papua New Guinea, Australia and elsewhere, estimates of future earnings, and the sensitivity of earnings to the gold and other metals prices, estimates of future gold and other metals production and sales, estimates of future cash costs, estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices, statements regarding future debt repayments, estimates of future capital expenditures, the success of our business strategy, development activities and other initiatives, estimates of reserves statements regarding future exploration results and the replacement of reserves, the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, fluctuations in the market price of gold, the occurrence of hazards associated with underground and surface gold mining, the occurrence of labour disruptions, power cost increases as well as power stoppages, fluctuations and usage constraints, supply chain shortages and increases in the prices of production imports, availability, terms and deployment of capital, changes in government regulation, particularly mining rights and environmental regulation, fluctuations in exchange rates, the adequacy of the Group’s insurance coverage and socio-economic or political instability in South Africa and Papua New Guinea and other countries in which we operate. For a more detailed discussion of such risks and other factors (such as availability of credit or other sources of financing), see the Company’s latest Integrated Annual Report and Form 20-F which is on file with the Securities and Exchange Commission, as well as the Company’s other Securities and Exchange Commission filings. The Company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events, except as required by law.
Forward Looking Statements
This presentation includes forward looking statements. Forward looking statements can generally be identified by the use of words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “continue”, “outlook” and “guidance”, or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs. Newcrest Mining Limited (the Company) continues to distinguish between outlook and guidance. Guidance statements relate to the current financial year. Outlook statements relate to years subsequent to the current financial year.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, performance and achievements to differ materially from statements in this presentation. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the Company’s good faith assumptions as to the financial, market, regulatory and other relevant environments that will exist and affect the Company’s business and operations in the future. The Company does not give any assurance that the assumptions will prove to be correct. There may be other factors that could cause actual results or events not to be as anticipated, and many events are beyond the reasonable control of the Company. Readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in this document speak only at the date of issue. Except as required by applicable laws or regulations, the Company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in assumptions on which any such statement is based.
Non-IFRS Financial Information
Newcrest results are reported under International Financial Reporting Standards (IFRS) including EBIT and EBITDA. This presentation also includes non-IFRS information including Underlying profit (profit after tax before significant items attributable to owners of the parent company), All-In Sustaining Cost (determined in accordance with the World Gold Council Guidance Note on Non-GAAP Metrics released June 2013), AISC Margin (realised gold price less AISC per ounce sold (where expressed as USD), or realised gold price less AISC per ounce sold divided by realised gold price (where expressed as a %), Interest Coverage Ratio (EBITDA/Interest payable for the relevant period), Free cash flow (cash flow from operating activities less cash flow related to investing activities), EBITDA margin (EBITDA expressed as a percentage of revenue) and EBIT margin (EBIT expressed as a percentage of revenue). These measures are used internally by Management to assess the performance of the business and make decisions on the allocation of resources and are included in this presentation to provide greater understanding of the underlying performance of Newcrest’s operations. The non-IFRS information has not been subject to audit or review by Newcrest’s external auditor and should be used in addition to IFRS information.
Project Location
Mine to Port footprint

- Highlands Highway
- NADZAB Airport
- 35km New Northern Access Road to site
- 100km Pipeline Corridor to and from site
- On-site power generation
- 65km SW of Lae
- SML – Mine site
- Lae City & Concentrate Export Facility
- DSTP Outfall Wagang
- Huon Gulf tailings deposition
Significant Exploration and Studies Activities

- Long history of exploration, commencing 1977
- Multiple studies
- Significant work undertaken on the Project since the formation of WGJV in 2008 including:
  - 2016 Golpu Feasibility Study
  - 2018 Feasibility Study Update
- Significant Expenditure:
  - Over US$700 million spent as at 30 June 2017
Multi-generational
Potential for significant contribution to PNG economy

- Large deposit with significant scale
- Projected long-life mine
- Projected low operating cost
- Access to infrastructure

- Largest underground mine in PNG if developed
- At least 28 years, Golpu ore body open at depth
- Can sustain commodity cycles
- Leverage of Lae
“Cave mining” refers to mining operations in which the ore body **caves naturally after undercutting** the base. The caved material is recovered using draw points:

- Bottom-up mining method
- Higher establishment cost, but lower operating cost
Mine Area – Watut Declines Portal

3D model showing Watut portal terrace infrastructure and process plant terrace
Underground Mining Layout
Process Plant Area

3D model showing proposed process plant infrastructure at Mine Area
Infrastructure Corridor
Links mine to port

Corridor includes:
• Road up to Zifasing with bridges over the Bavaga, Watut and Markham rivers.
• Concentrate, tailings and fuel pipelines to Lae
Port Facility – Concentrate Export
Leverage off existing Lae port infrastructure

- Two to three cargoes expected to be dispatched per month (32,000wmt per cargo)
- Memorandum of Agreement in place with PNG Ports to negotiate terms of tenure
- Footprint defined and site identified
- Interim right of access secured
- Wharf access to be negotiated
Tailings Management - DSTP

Diagram of DSTP system
Procurement Vision

• Ensure WGJV’s (and those of the WGJV Participants) commercial, legal, and reputational risks are mitigated and controlled
• Apply global best value sourcing principles
• Where possible maximize competitive and compliant local participation through procurement and employment
• Project expenditure optimized on goods and services with local companies (where proven to be competitive on safety, cost, quality, availability, low/reasonable risk)
  – Optimise the WGJV's efficiency and economy through engagement with local suppliers
• Manage expectations of early and proactively economic benefits, opportunities and participation
• Foster confidence that the WGJV system provides fair and transparent outcomes for all
• Where deemed competitive, support the growth and development of a reliable, diversified and sustainable local and onshore supplier base
• Target win-win outcomes through relationship/risk share contracting
Procurement Core Principles

• Local businesses participation in development and operation of major projects is a **globally recognised enabling success factor**

• Project/Business returns improve with access to a pool of **capable, responsive and cost competitive local suppliers** who can deliver a range of quality goods and services

• Strong imperative to optimise expenditure on goods and services with local companies wherever they are **proven to be competitive on cost, quality, experience and availability** with foreign-sourced goods and services:
  – so long as their **performance meets WGJV’s threshold expectations**

• Give preference (subject to capability, capacity, quality, experience and competitiveness) to local suppliers, based on their proximity to the Project and their level of Papua New Guinean ownership
  – **Weight evaluation criteria to favour such suppliers**
Procurement - WGJV commitments

• Secure goods and services:
  – at the required quality, standard and price
  – from proven and approved suppliers
  – through the use of open, transparent and fair competitive tendering
  – with the highest level of ethical behaviour

• Establishes business dealings and agreements that are satisfactory to both the WGJV and the supplier
  – avoid situations that may produce a conflict of interest

• Only procure goods and services from suppliers who operate with in accordance with the WGJV’s health, safety quality, commercial compliance (including ABC) and environmental standards

• Treats suppliers and their representatives fairly, courteously and without bias or prejudice

• Maintains confidentiality over all information proprietary to the parties

• Afford improvement feedback where required to local contractors/suppliers
Local Participation Targets

- WGJV has specific local participation targets:
  - 20% of total expenditure with PNG companies during construction
  - Deliver 500 man-days of business training, 100 man-days of business mentoring and establishment of a Supplier Database
  - Supports establishment of three Lancos and a Repco for the MIA communities prior to the start of full construction, with constitutions to include:
    - acceptable provisions for transparency & good governance (regular audits)
    - shareholding by all adult community members
    - return of a share of profits to shareholders
    - regular reporting to shareholders
    - periodic elections of office-holders
  - WGJV and contractors advertise 95% of new roles in PNG
  - Deliver basic skills training to a minimum of 400 Tier 1 & 2 personnel over a 3 year period
  - Fill all designated ‘unskilled’ roles during construction with Tier 1 & 2s
  - Landowner companies as nominated subcontractors where applicable
Summary of Key Metrics

- Initial capital expenditure to commercial production of approximately 9.1bn Kina (US$2.8bn)
- Life of Mine capital expenditure of approximately 17.4bn Kina (US$5.4bn)
- First ore milled estimated to be ~4.75 years from grant of Special Mining Lease (SML)
- Life of Mine (LoM) of ~28 years from first production
- Average annual copper production of 161,000 tonnes, total Life of Mine 4,520,000 tonnes
- Average annual gold production of 266,000 ounces, total Life of Mine 7,058,000 ounces
- Maximum cumulative negative free cashflow of US$2,823 bn
- Project payback period estimated at 9.5 years
- NPV of approximately $2.6bn and IRR in real terms of approximately 18.2%

1. Please see the 19 March 2018 Releases by Newcrest and Harmony which set out the basis for these findings.
2. From first production of the processing plant (excluding construction and closure phases)
3. Maximum cumulative negative free cashflow comprises undiscounted free cashflow from commencement of construction until first year of positive free cashflow
4. Project IRR is after all taxes but before any withholding taxes on dividends or interest. The estimated IRR is based on an assumed copper price of US$3.00/lb and gold price of US$1,200/oz
Advancing Project to Production

Long lead time from approval to production

1. Progression through stages of the Project, and the timing of those stages, is subject to market and operating conditions and receipt of all necessary approvals, including Board approvals.
PROCUREMENT - KEY REFERENCE MATERIAL

- Refer WGJV website https://www.wafigolpujv.com

- WGJV Procurement Policy
  › purchasing@wafigolpujv.com

- Anti-Bribery and Corruption

- WGJV Code of Conduct (Whistle-blower) Service

- More to come pending Project approvals
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