Newmont

ICMM Mine Tailings Summit Reduce

SEPTEMBER 2024 LUKE VOLLERT – PRINCIPAL PROCESS ENGINEER

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Estimates or expectations of future events or results are based upon certain assumptions, which may prove to be incorrect. Such assumptions, include, but are not limited to: (i) there being no significant change to current geotechnical, metallurgical, hydrological and other physical conditions; (ii) permitting, development, operations and expansion of Newmont's operations and projects being consistent with current expectations and mine plans, including, without limitation, receipt of export approvals; (iii) political developments in any jurisdiction in which Newmont operates being consistent with its current expectations; (iv) certain exchange rate assumptions for the Australian dollar to the U.S. dollar and Canadian dollar to the U.S. dollar, as well as other exchange rates being approximately consistent with current levels; (v) certain price assumptions for gold, copper, silver, zinc, lead and oil; (vi) prices for key supplies; (vii) the accuracy of current mineral reserve, mineral resource and mineralized material estimates; and (viii) other planning assumptions. Uncertainties include those relating to general macroeconomic uncertainty and changing market conditions, changing restrictions on the mining industry in the jurisdictions in which we operate, impacts to supply chain, including price, availability of goods, ability to receive supplies and fuel, and impacts of changes in interest rates. Such uncertainties could result in operating sites being placed into care and maintenance and impact estimates, costs and timing of projects. Uncertainties in geopolitical conditions could impact certain planning assumptions, including, but not limited to commodity and currency prices, costs and supply chain availabilities. Investors are reminded that the dividend framework is non-binding. Future dividends, beyond the dividend payable on June 27, 2024 to holders of record at the close of business on June 4, 2024 have not yet been approved or declared by the Board of Directors, and an annualized dividend payout or dividend yield has not been declared by the Board. Management's expectations with respect to future dividends are "forwardlooking statements". The declaration and payment of future dividends remain at the discretion of the Board of Directors and will be determined based on Newmont's financial results, balance sheet strength, cash and liquidity requirements, future prospects, gold and commodity prices, and other factors deemed relevant by the Board. For a more detailed discussion of such risks, see the Company's Annual Report on Form 10-K for the year ended December 31, 2023 filed with the U.S. Securities and Exchange Commission ("SEC") on February 29, 2024, as well as Newmont's other SEC filings, available on the SEC website or www.newmont.com. 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About Newmont

Where We Operate





*Newmont's minority ownership interest is 38.5% of Nevada Gold Mines and 40% of Pueblo Viejo. **See endnotes re Tier 1 assets.

Located in the World's Most Favorable Mining Jurisdictions

The Gold Sector's Recognized Sustainability Leader





Top Gold Miner in the Dow Jones Sustainability Index for 9 Consecutive Years

Ratings and rankings can fluctuate throughout the year, either based on Newmont performance, or relative to sector rankings and/or ratings agency scoring changes and periodic updates. Ratings and recognition items shown here are effective as of July 26, 2024. *The Sustainalytics rating shown on the ESG screen of the Bloomberg terminal has changed from a percentile rank to a risk score. Newmont's 21 score translates to Medium Risk.





Global Trend Increasing Demand + Lower Ore Grades



BIGGER mills ... **MORE** power ... **BIGGER** and more expensive Tailings Storage Facilities **MORE** land... **BIGGER** potential impacts on biodiversity... **MORE** water demand



The volume of waste material produced per unit of commodity is increasing due to declining ore grade. Tailings are only going to grow as populations grow and grades decline.

Source: Global Tailings Review, ICMM, UNEP, PRI **Note:** Tailing facility estimates come from using the reported number of facilities projected to global commodity production using USGS mineral commodity production estimates.





~We cannot solve our problems with the same thinking we used when we created them~ *Albert Einstein (Paraphrased)*

ICMM Tailings Reduction Roadmap (2022)



Long term goal: "Developing improved and cost-effective alternatives to conventionally managed tailings storage facilities that will reduce the risk of catastrophic failure"

Identified focus areas:

- Precision geology: geological techniques, processes or models that have the ability to better characterise the ore body for downstream processing, maximising ore and minimising waste rock being mined which will have an impact on tailings generated.
- Precision mining: mining approaches or technologies that minimise or eliminate waste rock being mined which will have an impact on tailings generated.
- Precision segregation: segregation and liberation technologies that can optimise mineral recovery or produce more benign tailings.

- In-situ and ex-situ recovery: leaching techniques that can optimise mineral recovery and minimise and/or eliminate the volume of waste rock produced which will have an impact on tailings generated.
- Tailings enhancement and valorisation: different ways to create value from tailings, or ways to minimise the requirement for tailings storage.



'Reduce' Flowsheet Vision

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Efficient Water Recovery/Treatment

Precision Mining – On Shovel Sensing



- Reject uneconomic material from ores as economically efficiently as possible.
- Leverage In-situ orebody heterogeneity.
- Sensor or separation method must be capable of detecting grade variability.
- Redirection is achieved by taking advantage of the finer resolution offered by the system.
- Each grade control assay represents 4-5 truckloads of material.
- 16 25 times increase in measurement resolution.







Precision Mining – Belt Scanning

- Leveraging bulk sorting also possible via an updated grade control process for block cave mining method.
- On-belt heterogeneity from bulk mining needs to be amplified for sorting by manipulating the mining process.
- High-grade ore as mill feed low-grade ore for stockpiling/ alternative treatment.
- Verification of the grade on belt using: Prompt Gamma Neutron Activation Analysis (PGNAA), X-ray fluorescence (XRF), Magnetic Resonance (MR) etc.





Precision Segregation - Ultra Efficient Comminution

Targets for Ultra Efficient Comminution:

- Reduced specific energy (kwh/t) relative to conventional SABC circuit.
- Dry processing.
- Enhanced circuit flexibility with rapid rate of start-up or shutdown.
- Steep product size distribution → increased deportment of mill product into coarse flotation range.
- Grind only enough to liberate minerals for downstream processing - elimination of overgrinding.





Precision Segregation - Hybrid Classification

- Fine/slimes tailings retain more water and are difficult to dewater below saturation.
- Saturated fines are geotechnically unstable.
- Poor classification contributes to overgrinding and slimes generation.
- Hydrocyclones are space-efficient but inherently poor classifiers.
- Screens are very efficient at classifying based on size but require a significant footprint.
- Hybrid classification is aimed at correcting the density bias introduced by hydrocyclones.
- Can significantly improve classification efficiency & reduces misclassification of fines.



Typical Hydrocyclone efficiency curve compared to an ideal separator (after Lisso, 2020)



Precision Segregation - Coarse Flotation

- Successfully proven at scale since the industry first installation at Cadia in 2018.
- Ability to effectively recover mineral composite particles in size fractions up to ~650 µm with as little as 5% surface liberation.
- Fundamentally shifts the economic optimum grind size.
- Produces a fines deficient sand tailings product.







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Tailings Enhancement – Sand Opportunities

- Precision segregation = increased deportment of tailings mass to sand fraction.
- Tailings entrainment & evaporation are largest water consumers.
- Higher water recovery possible from sand split system relative to thickened tailings.
- Separation of sand generates additional opportunities:
 - Sand stacking in dedicated facility
 - Sand for embankment construction

Compaction Zonf

Deposition cycle direction

Discharge

Sand as a by-product stream





Figure 12. Make-up tailings management technologies comparison of performance.

Efficient Use of Water in Tailings Management: New Technologies and Environmental Strategies for the Future of Mining

Carlos Cacciuttolo 1,6 and Fernando Valenzuela



Theoretical Exercise - Greenfield Project

The Challenges:

- Low-grade resource
- High energy consumption on a produced metal basis
- Lack of established infrastructure
- Water-stressed site with high cost of makeup water
- Limited space and unfavourable topography for tailings storage
- Downstream populations
- Nature positive commitments





Theoretical Exercise - Greenfield Project



- Grind recovery curve is flattened significantly with efficient comminution + coarse particle separation.
- Optimum grind based on recovery vs. power + water + tailings infrastructure trade-off.
- Key divers will differ depending on project location.



If new economic optimum was 250 micron:



Diverted to Waste Sand Tailings Fine Tailings

- 12% diversion from mine to waste (conservative assumption)
- >50% reduction tailings requiring dam storage
- >30% reduction in water demand

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