



26 June 2019

Corporate Details

Ordinary Shares:
891,186,531

Market Capitalisation:
~\$85 million

ASX Code: MOY

Board of Directors

Greg Bittar
Non-Executive Chairman

Tim Kennedy
Non-Executive Director

Peter Lester
Non-Executive Director

Bruno Lorenzon
Non-Executive Director

Management

Peter Cash
Chief Executive Officer

Ray Parry
Chief Financial Officer and
Company Secretary

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First gold delivered from sulphide ore at Nullagine

Commissioning of Stage 1 sulphide plant produces first gold

Key Points:

- **Stage 1 sulphide plant expansion delivers first gold production from sulphide ore.**
- **Early analysis indicates all components of the expanded sulphide circuit are performing in line with or exceeding feasibility expectations.**
- **Commissioning of Ultra-fine Grind Mills undertaken over 19-24 June, with higher sulphide feed stockpiles now starting to be processed along with freshly generated product from the concentrator circuit.**
- **Concentrate grades over the past six weeks averaging ~3g/t Au – an upgrade of +13-times the average concentrator feed grade.**
- **Bartons Underground performing well following implementation of a new mining sequence, with ore production rates of over 1,000 tonnes per day being achieved on a regular basis and the grade profile within expectations.**
- **Completion of Stage 1 plant upgrade expected to underpin strong uplift in gold production and head grade in 2H CY2019, with the mine schedule shifting towards high-grade sulphide deposits that can now be economically processed through the expanded circuit.**

Millennium Minerals (ASX: MOY) is pleased to advise that gold production from sulphide ore has commenced at the Nullagine Gold Project in Western Australia following the successful commissioning of the Stage 1 sulphide plant expansion.

The delivery of first gold from sulphide ore represents a major milestone for the Company, marking the culmination of detailed development studies and optimisation programs completed over the past four years.

The ability to cost-effectively process sulphide ore also represents a key element of the Company's longer-term growth and development strategy, opening up a large portion of the Nullagine Reserve base as well as delivering a range of new, high-grade exploration targets.

The Ultra-fine Grind (UFG) Mills were commissioned over 19-24 June, with gold now being recovered from sulphide concentrate.



Concentrate stockpiles currently total approximately 1,200 tonnes, with the concentrator spirals delivering positive performance over the six weeks since commissioning, and expected throughput rates being maintained.

Concentrate grades remain in line with expectations for the ore types and grade being processed since commissioning. The upgrade ratio will vary depending on the grade and sulphide content of the material being fed to the concentrator plant.

The circuit has been commissioned using lower grade / lower sulphide ore, however it has demonstrated sufficient capacity to accommodate the increased sulphide content and higher concentrate volumes expected once processing of higher grade ore commences.

To date, while processing lower grade / lower sulphide content ore, the circuit has delivered concentrate generation rates averaging approximately 3% of the feed mass. Concentrates produced to date have an average grade of approximately 3g/t Au.

Stockpiled concentrates, together with freshly generated concentrates, will now be fed back into the UFG Mill circuit for final gold recovery.

With the expected concentrate generation rate going forward and the installed mill capacity, it is expected that the stockpiled concentrates will be processed over a 4-6 week period.

Optimisation of the sulphide circuit is continuing, with test work underway on fresh concentrates generated in the plant. For pyrite-rich concentrates, test work is focused on the potential to increase grind size from the designed 10 micron to closer to the 20-30 micron range. This reduction in grind requirements would reduce operating costs and enhance cash flow for Stage 1 of the sulphide plant operations, by allowing an increase in UFG mill throughput and a reduction in power costs, media consumption and wear, with minimal adverse impact on gold recoveries.

A further update on gold recoveries and production metrics will be provided in the Company's June 2019 Quarterly Activities Report, which is scheduled for release in late July.

Millennium Chief Executive Peter Cash said all early results from the sulphide circuit had been very positive, indicating the potential to generate strong, profitable gold production from sulphide ore.

"The ability to cost-effectively process the high-grade sulphide ore sources at Nullagine has been a core component of Millennium's growth plan over the past four years, and we are absolutely delighted to have successfully achieved this milestone," he said.

"The past 14 months have been a very capital-intensive period for the Company, where we have made significant investment in long-term growth initiatives including the sulphide plant expansion and the development of sulphide ore sources.

"This has had an impact on production and cash flow over the past six months, however we are now moving into a period where we expect to see both production and cash flow increase strongly, with an expected return to positive cash flow by the end of July.

"It is also important to note that the Stage 1 upgrade to the processing plant is expected to have a positive impact on gold recoveries across both oxide and sulphide ore sources. To date, the Stage 1 upgrade has enabled us to recover up to 30 per cent of the residual gold from our lower grade tailings, with the uplift likely to be much greater from the higher grade sulphide ores. We are also seeing a positive impact on recoveries from our traditional oxide ore feed.

"We also expect to close out a large percentage of our gold hedging contracts by the end of this month. This will reduce the Company's hedge book to just 39,000 ounces at an average price of A\$1,796 per ounce, meaning it can take further advantage of the current high spot bullion price.

Over the remainder of 2019, approximately 50% of Millennium's ore feed will come from sulphide sources.



The sulphide expansion project is broken into three distinct phases:

- **Stage 1a:** Concentrator and fine grinding circuit (now in operation)
- **Stage 1b:** Installation of the in-mill oxidation (INOX) process as the concentrate transitions from a pyrite-dominant to a blended pyrite / arsenopyrite ore
- **Stage 2:** Pressurised in-mill oxidation (PINOX) to facilitate processing of arsenopyrite-dominant ore

Completion of the Stage 1b and Stage 2 upgrades will be timed to maximise cash flow based on the mine schedule.

ENDS

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Figure 1: Concentrator and mill area during final stages of construction



Figure 2: Mill agitator assembly being loaded into the mill shell



Figure 3: Concentrator circuit showing desliming cyclone clusters with spiral concentrator in background



Figure 4: UFG Mill #1 with Spiral concentrator in background



Figure 5: Concentrator and mill area during final stages of construction



Figure 6: Spirals in operation



Figure 7: Spirals feed / Carbon safety screen

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