

VERY ENCOURAGING TESTWORK RESULTS APHRODITE GOLD DEPOSIT

ASX: AQQ



APHRODITE
Gold Limited

22 February 2013

Company Announcements Office
Australian Securities Exchange Limited

IMPRESSIVE METALLURGICAL TESTWORK RESULTS FROM SULPHIDE ZONE APHRODITE GOLD DEPOSIT

The Directors of Aphrodite Gold Ltd are pleased to report further highly encouraging metallurgical testwork results on samples from its Aphrodite Gold Deposit located 65 km north of Kalgoorlie, Western Australia on which a Pre Feasibility Study (PFS) is currently being conducted.

HIGHLIGHTS

Testwork to date on sulphide material confirms a flowsheet incorporating flotation followed by Pressure Oxidation (POX) as a strong processing option achieving high gold recoveries.

- **Up to 96.8% gold recoveries achieved from initial Pressure Oxidation (POX) testwork on sulphide concentrate.**
- **Further flotation work returns high gold recoveries with excellent very low mass pull to concentrate.**
- **Optimisation testwork in progress to improve POX and flotation gold recoveries.**
- **Development of process flowsheets at an advanced stage**

TESTWORK

Introduction

A detailed metallurgical testwork program is currently being conducted on composite samples prepared from diamond core drilled in 2012. These samples lie within, or adjacent to, resource

ABN: 61 138 879 928

45 Ventnor Avenue West Perth WA 6005 • PO Box 829 West Perth WA 6872 • Phone (08) 9389 4421 • Fax (08) 9389 4400

Email info@aphroditegold.com.au www.aphroditegold.com.au

For personal use only

blocks identified from the Scoping Study as potentially mineable from an open pit (refer to ASX report 9 February 2012).

The design and management of the program is being conducted by consulting mineral processing engineers Mineral Engineering Technical Services Pty Ltd (METS), with test work undertaken at the laboratories of ALS-AMMTEC Pty Ltd.

The testwork program is investigating both the Alpha and Phi lode material and is an extension of the initial program conducted for the Company's Scoping Study completed in February 2012.

A significant amount of testwork (including POX) was also completed by Goldfields Exploration between 1988 and 2001 (then owners of the nearby Paddington Gold Mine) on drill samples from the high grade, lower half of the Aphrodite Deposit which is currently planned for underground development (viz. below 190m to at least 440m depth). Data from these earlier programs has been incorporated into the metallurgical database.

Background

The primary (sulphide) resources at Aphrodite are refractory in nature requiring a process stage to be introduced to facilitate liberation and extraction of the gold.

As part of Aphrodite's Scoping Study METS completed a formal assessment of possible processes for the treatment of high grade sulphide concentrate - produced by separating (after crushing and grinding) the gold bearing sulphide minerals from 'barren' minerals using flotation technology. These processing options were; off-site concentrate treatment, pressure oxidation, Albion, Intec, bacterial oxidation and roasting.

Both concentrate sale and off-site treatment require the production of a high grade flotation concentrate on-site before transportation to a secondary processing facility. However, these options do not produce gold doré on site - production of doré on site is considered more favourable as it attracts lower government royalty and provides Aphrodite with control over all stages of processing. All other options investigated oxidise the gold bearing sulphides so that gold can be recovered as the final product of the process.

To determine the most appropriate processing option for the Aphrodite Deposit METS developed a number of ranking criteria to be assessed for each option. Criteria investigated included gold recovery, financial risk, process risk, environmental risk as well as OHS issues and capital and operating costs. The outcome from the study was that pressure oxidation (POX) was the most preferred option going forward for processing of the gold bearing concentrate.

Pressure oxidation has been used extensively around the world for the past 30 years and continues to be the favoured option for a number of refractory gold plants currently in the design and construction stages including those for Barrick and Newcrest's deposits.

Pressure Oxidation (POX) Tests

Current pressure oxidation (POX) testing has investigated the effect of temperature, pressure and grind size on a bulk flotation concentrate prepared from Alpha Lode material. The

For personal use only

concentrate averaged 47.3 g/t gold and was prepared from a composite of core samples averaging 1.49g/t gold.

Sub-samples of the concentrate were subjected to POX for 1 hour resulting in rapid oxidation during this very short period.

Testing undertaken showed that there was a significant increase in sulphide oxidation at higher temperature (220°C) and pressure (2,500kPa) for the two grind sizes (75 and 20 micron) evaluated.

The oxidised concentrates were then subjected to cyanidation leaching to recover the gold with most tests producing over 90% gold extraction with the two (75 and 20 micron) concentrates treated at the higher pressure and temperature returning **gold recoveries of 93.97% and 96.82%** respectively.

Results to date confirm the fast oxidation and strong gold recoveries which could be achieved using POX technology.

Additional testing is being implemented on the Alpha lode flotation concentrate to optimise these findings, with both an extended residence time (2 hours compared to the 1 hour currently tested) and other grind size being investigated.

Flotation Variability Tests

Testing of the Phi lode material is also undergoing investigation, with the main focus being on the sulphide material.

An initial flotation variability testwork program on Phi lode sulphide material has been completed. This testwork analysed sub-samples of the material at two different grind sizes (75 and 45 micron) at various reagent dosage schemes.

The results were very encouraging and showed:

- Lower mass pulls than seen in the Alpha lode study for both grind sizes tested, with the mass pull to rougher concentrate ranging from 3.17 to 8.83 %.
- Strong gold recovery at both grind sizes on all samples tested – ranging between **94.59 to 98.34%**, with the **average across all samples being 96.8%**
- All samples showed excellent sulphur recoveries in excess of 97% with most samples recovering over 99%.
- In most instances the lower reagent dosage resulted in a higher gold grade in the concentrate, with a lower mass recovery to the concentrate.
- The finer grind gave an increase in gold recovery in all samples. This increase ranged between an extra 1-3% recovery of gold to the flotation concentrate.
- The variance between the low and higher grade samples was negligible, indicating impressive flotation performance could be achieved at varying gold grades.

Because of the excellent mass pull no cleaner flotation testing has been undertaken at this stage.

Further optimising of reagents will be carried in order to gain further improvement in gold recoveries and mass pull.

Previous studies on Alpha lode material by Aphrodite Gold resulted in a 12.4% mass pull in the rougher concentrate. Cleaner flotation testwork reduced the mass of the concentrate to 5.85% and achieved an overall recovery of gold of 93.5%. **Bulk flotation tests produced an excellent mass pull of 2.9%.**

The flotation testwork completed on both Alpha and Phi lodes showed very encouraging result with high recoveries of gold per mass recovered with fast flotation kinetics indicating that a smaller flotation plant would be applicable for processing sulphide material.

A composite is being defined for the Phi lode material so a bulk flotation test can be conducted to produce a Phi lode concentrate required for the next stage of testing which will include:

- Confirmation of POX testing against optimal Alpha lode conditions
- Refinement of POX conditions
- Levin testing
- Generation of leach residue tailings for tailings analysis
- Leach residue wash water cyanide detox testing

The ongoing testwork program will also investigate the transitional material which makes up a small but significant portion of the Aphrodite resource.

COMMINUTION TESTING

Both the primary and transitional intervals identified in the Phi lode core have been subjected to comminution testing for design of the crushing and grinding circuits. This testing focused on a range of parameters including:

- UCS (unconfined compressive strength)
- CWi (Crushing work index)
- SMC (SAG mill comminution testing)
- Ai (Abrasion index)
- BWi (Bond ball mill work index)

These comminution parameters were used to compare to existing testwork data from the Scoping Study, as well as in the simulation of the crushing and grinding circuits undertaken as part of the PFS flowsheet design.

Overall the parameters of the Phi lode material aligned with those of the Alpha lode material from earlier testwork (refer to ASX announcements 29 March 2011) and indicating a low level of variability thus placing more confidence in selection of the front end - the crushing and grinding areas - of the process plant.

ENGINEERING

In addition to the testwork being conducted for the PFS study, the engineering side of the project is also advancing.

Due to the sequential nature of the study, several deliverables have been developed as an outline to be completed once all testwork data is available. These deliverables include capital and operating costs, mechanical equipment list and process description.

Process flowsheets have been developed and are currently being reviewed. The front end of the plant is being simulated using the updated testwork data with the objective of reducing capital costs and producing a more efficient circuit.

Yours Sincerely,



Leon Reigys
Managing and Technical Director

Competent Persons Statement

Information in this report that relates to exploration results, exploration targets and mineral resources reflects information compiled by Leon Reigys FellowAusIMM and Managing and Technical Director of Aphrodite Gold Ltd who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is reporting on as a competent person as defined in the 2004 Edition of "The Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves." Mr. Reigys consents to the inclusion in this report of the matters based on the information compiled by him, in the form and context in which it appears.

For personal use only