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The Manager Companies ASX Limited 20 Bridge Street Sydney NSW 2000

(5 pages by email)

## COUNTER-CURRENT ATMOSPHERIC LEACHING TESTWORK RETURNS EXCELLENT NICKEL, COBALT AND ALUMINIUM RECOVERIES CONSISTENT WITH PREVIOUS RESULTS

# HIGHLIGHTS

- Overall nickel and cobalt recoveries of **85% and 94%** respectively.
- Aluminium recovery of **61%** again well in excess of targeted recovery.
- Comparatively low overall acid consumption of **762 kg/tonne of ore**.
- 260 litres of Pregnant Leach Solution (PLS) currently undergoing partial neutralisation and iron removal before commencement of 7 day mini rig solvent extraction (SX) program to produce approximately 1kg of High Purity Alumina (HPA) targeting 99.99% (4N) purity.

The Directors of Collerina Cobalt Limited ('Collerina' or 'the Company') are pleased to announce the final results from testwork carried out on approximately 150kg of representative ore sample from the Homeville deposit within the Collerina tenement (EL6336) covering 150km<sup>2</sup> located 40 kilometres south of Nyngan in central NSW.

# **CCAL Sample**

The Homeville deposit ore sample tested closely resembles the properties of samples used for previous counter-current atmospheric leaching (CCAL) and SX extraction testwork. The sample also aligns with the newly completed preliminary life of mine plan as part of the PFS development and hence representative of likely ore feed to a commercial plant.

The composite ore sample was homogenised and split into representative aliquots ahead of the leaching testwork program. The composite ore sample assays returned:

	Al %	Co %	Cr %	Fe %	Mg %	Ni %	Si %
Feed Composite	4.13	0.054	0.63	20.2	6.76	0.59	17.7

#### Summary of Atmospheric Leach Testwork

#### **CCAL Process**

The leaching testwork involved a two-stage leaching process, initially using synthetic liquors to simulate the first and second stages of a CCAL process.

In the first stage, fresh ore was leached in a lower free acid solution, leaching the readily leachable material and producing a pregnant leach solution with relatively low residual acidity. The leach residue solids from the first stage were then washed and forwarded to the second stage of leaching where concentrated sulphuric acid was used with the more tenacious material being leached by the higher concentration of acid. The leach solution from the second stage, with a much higher residual acid concentration, was then recycled to the first stage leach as the acid source.

#### Leaching Procedure

A heated, insulated 100 litre agitated tank was employed for the leach tests. Individual test volumes were 70-75 litres for Stage 1 leaches and 35-45 litres for Stage 2 leaches. Thirteen CCAL tests (seven Stage 1 and six Stage 2) were completed. A synthetic leach solution was used for the first Stage 1 leach test, simulating acidic solution recycled from Stage 2 to Stage 1, based on a prediction from the METSIM® model. For the subsequent Stage 1 tests, actual filtrate from the previous Stage 2 test was used as recycled liquor. The pregnant leach solution (PLS) from the Stage 1 tests are now being used for partial neutralisation and iron removal, aluminium recovery and HPA production testwork.

In preparing the ore feed for each Stage 1 test, magnesium, aluminium, manganese, sodium, nickel, cobalt sulphates were added to the pulping water, based on a prediction from the METSIM® model, to simulate the composition of the iron-aluminium depleted liquor that would be recycled in a commercial plant for this purpose.

## Leaching Results

The Stage 1 leach achieved average nickel, cobalt and aluminium extractions of 28%, 54% and 14% respectively. Residual acidity in the Stage 1 discharge solution was reduced to 17 g/L. It is likely this could be lowered further with additional testing, resulting in lower overall acid consumption. The Stage 2 leach, using fresh concentrated sulphuric acid, extracted on average a further 80% of the nickel, 87% of the cobalt and 55% of the aluminium remaining in the first stage leach residue.

Overall nickel, cobalt and aluminium recoveries were **85%**, **94%** and **61%** respectively. Extractions of iron and magnesium, which are contaminant species, are lower than nickel and cobalt extractions.

After accounting for the acid recycled from Stage 2 to Stage 1, the overall acid consumption averaged **762 kg/t ore** which is low when compared to co-current agitated atmospheric leaching (typically 900-1,000 kg/t ore).

The leach test results are summarised in the following table:

CCAL Results											
Leach	Stage Acid Addition (kg/t)	Residual Free Acid g/L	Extractions (%)								
Stage			Ni	Со	Al	Fe	Mg				
Stage 1	178	17.4	28	54	14	0	32				
Stage 2	653	58.6	80	87	55	74	57				
Overall	762	17.4 (PLS)	85	94	61	73	71				

The leach test results are summarised in the following table.

Commenting on the bench scale CCAL batch testwork, Managing Director Justin Werner said;

"We are extremely pleased with the excellent recoveries returned from this bench scale batch CCAL testwork program which is our third and largest CCAL testwork program. Consistent results have been returned across all three programs, demonstrating the scalability of the CCAL process and providing good base data for our PFS."

"Whilst nickel and aluminium recoveries have decreased slightly from previous testwork and acid consumption increased slightly this is to be fully expected due to differences in the feed sample composition and the testwork method employed (batch versus continuous). Management are very confident of further improvements and refinements in our next program for a more definitive study which will include a continuous rather than batch CCAL testwork program in order to better simulate actual plant operation." "The 260 litres of PLS which was produced is currently being partially neutralised before being sent to our lab in Brisbane to commence a 7 day continuous mini rig SX program with the aim of producing approximately 1kg of 4N HPA to allow us to commence offtake and funding discussions with potential partners."

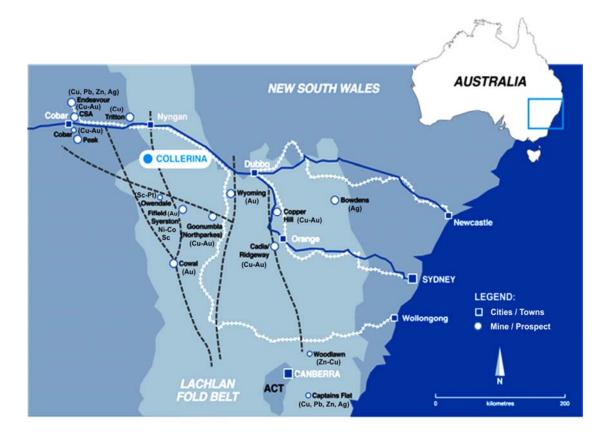
#### **Collerina PFS Update**

### Mining Study

As part of the ongoing PFS, the Company has also completed a preliminary open pit optimisation study on the Homeville deposit. These results from the open pit optimisation study will provide the Life of Mine ore grades in the completed PFS.

## **Collerina Project Location**

The Collerina project lies about 40km south of Nyngan in the central and western region of NSW within the Lachlan Fold Belt which hosts a number of world class copper-gold mines including the Cadia, Ridgeway and Northparkes operations. The district also hosts the globally significant Syerston Co-Ni deposit owned by Clean Teq Holdings Limited (ASX: CLQ) which contains a reported 109 million tonnes of 0.10% Co and 0.65% Ni. The deposit is currently under definitive feasibility study.



The mineralisation identified by the Company's current drilling program is spatially associated with the previously announced JORC compliant high grade cobalt and nickel resource of 16.3 million tonnes of 0.93% Ni and 0.05% Co at a 0.7% Ni cut-off grade (4.4 million tonnes Indicated resource of 0.99% Ni and 0.06% Co and 11.9 million tonnes Inferred Resource of 0.91% Ni and 0.05% Co).

For further information, please contact Peter Nightingale on +61 2 9300 3310.

Yours sincerely

Peter J. Nightingale Director pjn9281

#### **Statement of Compliance**

Information regarding the Mineral Resource at the Collerina project was prepared and first disclosed under the 2004 Edition of the 'Australasian Code for Reporting of 'Exploration Results, Mineral Resources and Ore Reserves'. See ASX announcement 23 June 2011. It has not been updated since to comply with the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' on the basis that the Company is not aware of any new information or data that materially affects the information and, in the case of the resource estimate, all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed.

For further information on testwork results and processes see ASX announcements dated 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.

#### **Competent Person Statement (Mineral Resources)**

The information in this report that relates to Mineral Resources is based on information compiled by Collerina Cobalt staff and contractors and approved by Mr Michael Corey, PGeo., who is a Member of the Association of Professional Geoscientists of Ontario (APGO) in Canada. Mr Corey is employed by the Company and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Corey has consented to the inclusion in this report of the matters based on his information in the form and context in which they appear.

#### Competent Persons Statement (Process Development Test Work)

Information in this announcement relating to the Process Development Test Work is based on test work results compiled by Mr Boyd Willis, an Independent Consultant trading as Boyd Willis Hydromet Consulting. Mr Willis is a Fellow and Chartered Professional of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Willis has sufficient experience which is relevant to metal recovery from the style of mineralisation and type of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. This includes over 21 years of experience in metal recovery from Laterite ore. Mr Willis consents to the inclusion of the technical data in the form and context in which it appears.