

## FURTHER TESTWORK TO ENHANCE OPUWO SCOPING STUDY

Celsius Resources Limited (ASX: CLA) ("Celsius" or "Company") is pleased to announce that ongoing metallurgical test work has identified a number of opportunities that could significantly reduce operating and capital costs for the planned down-stream cobalt/copper refinery, to be integrated into the overall development of the Opuwo Cobalt Project.

Flotation testwork conducted as part of the Scoping Study has achieved improvements in concentrate grade and metal recovery percentages, whilst successive iterations of the leaching testwork have had the effect of significantly reducing the expected operating costs, owing to a higher concentrate feed into the process, and utilising a reduction in required leaching intensity. **Opportunities for further metallurgical process improvements have also been identified, which are expected to allow further beneficial iterations to capital and operating cost estimates.**

To fully evaluate these opportunities, some further metallurgical test work will be performed by SGS Perth over the next 8 weeks. Upon completion of this additional metallurgical test work, the process mass balance model will be updated, which will form the basis of plant sizing and capital and operating cost estimates across both the concentrate and refinery processes for inclusion in the Scoping Study, which is now expected to be completed early in Q4, CY2018.

Celsius Project Director, Pine van Wyk commented:

*"Celsius is excited by the potential positive impact of significantly reduced operating costs that our metallurgical test work has identified, which may also have positive implications for capital costs. The process improvements that the Company is investigating will not only have a positive impact on costs but will also potentially reduce the cut-off mining grades and thereby allow an enhanced mine design. The Opuwo Cobalt Project is of such a size and global significance that it warrants sufficient study time to ensure an overall optimised project design is achieved."*

### Process Flowsheet Development

Ongoing work as part of the Scoping Study is refining the process flowsheet, and the results to date indicate that saleable products, including cobalt sulphate, copper metal, and a zinc by product, can be produced from the Opuwo mineralisation. Announcements regarding the results of the metallurgical testwork programs were published to the market on 30 November, 2017, 20 February, 2018, and 13 June, 2018.

The process flow sheet is expected to comprise:

- conventional froth flotation to produce a mixed sulphide concentrate;
- oxidative leaching (using relatively low pressure and temperature conditions) to extract cobalt, copper and zinc metals into solution; and
- conventional processes of solvent extraction / electrowinning (SX-EW) to recover saleable products.

### *Flotation Test Work*

Previous flotation test work has confirmed that the simple sulphide mineralisation comprising the Opuwo deposit can be concentrated using conventional froth flotation techniques, to produce a mixed sulphide concentrate containing a majority of the cobalt, copper and zinc. Closed circuit flotation performance has yielded recoveries of 81% for cobalt (Co), 83% for copper (Cu), and 54% for zinc (Zn) at concentrations of 1.44% Co, 5.50% Cu and 4.37% Zn. These concentrate results were obtained from mixed composite fresh ore samples, gathered throughout the orebody with grades of 0.142% Co, 0.57% Cu and 0.65% Zn. Further optimisation of these results is considered possible.

Additionally, test work is currently underway on samples from transition zone mineralisation, where partial oxidisation of sulphide minerals is observed, to assess the levels of recovery that can be expected for these mineralisation types in the floatation process. Transitional and oxide mineralisation makes up less than 5% of the Mineral Resource.

Two additional composite samples are being tested to assess the effect of varying head grade on the flotation process, and to further develop grade/recovery models for the flotation processes in order to optimise the cut-off mining grades, and thereby optimise capital and operating cost estimates.

### *Leaching Test Work*

The second phase of the metallurgical test work program has evaluated the amenability of the Opuwo concentrate to be leached, to liberate the metals of interest into solution for further refining with solvent extraction. Leach testing of Opuwo concentrates has demonstrated excellent extraction of cobalt, copper and zinc, using relatively low pressure and temperature conditions.

A series of 10 leaching tests have been completed, with several additional tests in progress. The best leach extraction achieved thus far is as follows: cobalt: 98%, copper: 97%, zinc: 99%, obtained from a concentrate containing 1.17% Co, 3.29% Cu and 2.68% Zn. These high leach extractions suggested that the intensity of the leaching process could be reduced to save on reagent and operating costs. Subsequent leach tests will systematically reduce the leach intensity in order to find the optimal trade-off between concentrate grade, recovery, leaching conditions and operating cost. Initial results for reduced leach intensity have confirmed continued high recoveries and indicate that further reductions in leach intensity (and therefore operating costs) should be possible without any meaningful loss in recovery.

Further concentrate and leached samples have been sent for mineralogy analysis by QEMSCAN. Three samples of rougher concentrates, ground to different sizes, and five samples of leach residues from different leach tests are being evaluated. The aim of the mineralogy analysis is to determine the cobalt deportment and liberation/locking of cobalt-bearing minerals, which will provide a better understanding of leaching process recoveries and the leaching of gangue minerals. This will enable further optimisation of the capital and operating (reagent consumption and energy) costs of the refinery.

### *Mine Design and Other Studies*

Significant progress has been made on modelling mine design options for the Opuwo Cobalt Project with a number of options being evaluated. Key input drivers will be refined as updated processing cost and geo-technical data become available over the next few weeks.

Based on the preliminary results of the mining studies, it is expected that the Indicated portion of the Mineral Resource will be mined using a combination of open pit and underground methods (open stoping), and that the Inferred portion of the Mineral Resource will be mined using underground methods (open stoping) only.

Good progress has been made on a number of other projects aspects including:

- conceptual tailings disposal study has been completed.
- environmental screening study has been completed, with baseline monitoring commenced.
- high-level study on power and water availability has been completed.

### *Resource Development Drilling Continuing*

Further exploration drilling undertaken since Celsius reported its maiden JORC Mineral Resource for the Opuwo Cobalt Project on 16 April 2018 has continued to expand the mineralised zone. The drilling has focussed on resource expansion in the western and central zones and is expected to provide data for a future upgrade to the Mineral Resource.

**Brendan Borg**  
**Managing Director**

### **Competent Persons Statement**

*Information in this report relating to Metallurgical Testwork Results is based on information reviewed by Mr. Pine van Wyk, who is a Member of the South African Institute of Mining and Metallurgy (a Recognised Professional Organisation), and an Executive Director of Celsius Resources. Mr. van Wyk 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 by the 2012 Edition of the Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. van Wyk consents to the inclusion of the data in the form and context in which it appears.*