

**Rafaella Resources
Limited**

ABN: 49 623 130 987

ASX: RFR

Projects

CANADA

- **Horden Lake***
Ni-Cu-PGM development
- **Belleterre-Angliers**
Ni-Cu-PGM exploration

SPAIN

- **Santa Comba**
W-Sn development
- **San Finx**
W-Sn development

*pending completion



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ASX ANNOUNCEMENT

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Horden Lake metallurgical tests demonstrate high recoveries

Rafaella Resources Limited (ASX:RFR) ('Rafaella' or the 'Company') is pleased to announce that the Company has obtained a detailed metallurgical report on the Horden Lake deposit that was conducted by Resource Development Inc. ('RDI') in 2012.

Investment Highlights

- ① Three composite samples tested, totalling 193.5kg, from three ore type zones encountered at Horden Lake.
- ① Testing involved sample preparation and characterisation, mineralogical studies, grindability, in-place bulk densities, and rougher and cleaner flotation tests.
- ① Objective was to determine the recoverability of key metals of interest (copper, nickel and precious metals) into saleable concentrates.
- ① Conclusions indicated that both sequential and bulk rougher flotation returned high metal recoveries. Further optimisation is required to determine recoveries to final grade concentrate.
- ① Composite 1 (head grade 1.76% Cu, 0.49% Ni, 0.17g/t Au) achieved rougher recoveries to a 23% wt. concentrate of **95% copper, 66% nickel, 74% gold and 84% cobalt**, using a conventional bulk sulphide flotation flowsheet.
- ① These findings demonstrate the potential for excellent recoveries across the payable metals in the Horden Lake deposit further supporting the WGM projections from 1993 where historical testwork produced copper concentrates grading 22-30% copper at recoveries ranging from 85-96%.

Managing Director Steven Turner said: "The Company has been fortunate to gain access to this metallurgical report as it confirms the recoverability of the various metals in the polymetallic deposit at Horden Lake. With the recently released pit constrained mineral resource estimate prepared using economic factors for the open pit and underground resource estimates, this metallurgical report provides a solid foundation for further optimisation of metallurgical process and recoveries in the planned 2023 PFS."

Metallurgical Test Work

RDI was engaged to conduct metallurgical test work by El Condor Minerals in 2012 with the primary objective of developing metallurgical parameters for a Preliminary Economic Assessment of the Horden Lake deposit. The test programme was designed to determine some basic parameters for a process flowsheet and focused on producing a saleable copper concentrate with significant by-products.

Several hundred kilograms of drill core samples were sent for the metallurgical test work. From these samples, three composite samples were prepared. Composite 1 comprised meta sediment-hosted massive to semi-massive sulphide and ore grade disseminated mineralisation totalling 70.2kg (this ore type is the most widespread in the resource). Composite 2 comprised pyroxenite-hosted blebby to disseminated sulphide totalling 102.6kg and Composite 3 comprised gabbro-hosted blebby to disseminated sulphides totalling 20.8kg.

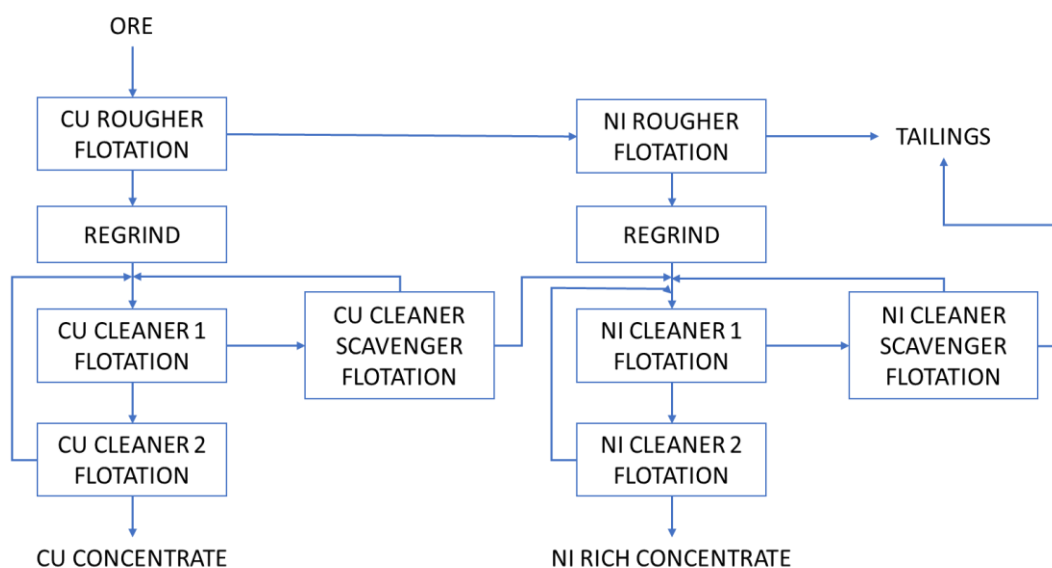
Each sample was stage crushed and assayed.

1. Mineralogical studies were performed on the feed material for the three composite samples. The primary objective was to determine the bulk mineralogy with an emphasis on Cu, Ni, Au, Ag and PGM mineralogy. The main sulphide minerals detected were pyrrhotite, chalcopyrite and pyrite. The chalcopyrite and pyrrhotite were reported to be relatively coarse, up to 600µm in size which suggests high copper recoveries could be achieved at moderate primary grinds. While pentlandite was reported to be fine grained and associated with coarser pyrrhotite, suggesting that finer regrinding and pyrrhotite rejection would be required in order to produce saleable nickel concentrates at economic recovery.
2. Bond's ball mill work indices were determined at 100 mesh for the three composite samples. The test results indicate that the ore in the deposit is slightly harder than normal for porphyry copper ores with a BWI of 13.1 to 16.4, suggesting that the ore is of average to above average hardness.
3. Abrasion indices were determined for the three composites by Phillips Enterprises LLC. The test results indicate that the ore is relatively abrasive with the indices being 0.1176 for Composite 1, 0.1800 for Composite 2 and 0.2466 for Composite 3.
4. Bulk-sulphide rougher flotation tests were carried out to provide a high level evaluation of process parameters (i.e., grind, flotation time, reagent type and dosage, pH, etc) to maximise copper, nickel and precious metals recoveries to rougher flotation concentrates. Results demonstrated that reasonable copper and nickel recoveries can be obtained in a rougher concentrate using a bulk-sulphide flotation scheme. Composite 1 (head grade 1.76% Cu, 0.49% Ni, 0.17g/t Au) achieved rougher recoveries to a 23% wt. concentrate of **95% copper, 66% nickel, 74% gold and 84% cobalt**, using a conventional bulk sulphide flotation flowsheet.
5. Bulk cleaner flotation was conducted, but conditions were unoptimized by RDI. Upgrading of copper and nickel was achieved, but recoveries to second and third cleaner concentrates were not optimized.
6. Sequential copper-nickel rougher and cleaner flotation was also conducted by RDI, but the conditions were unoptimized. Very high-grade copper concentrates were produced grading 27-32% Cu but recoveries were relatively low at 20-27%, likely due to the unoptimized conditions employed by the laboratory. Further testwork planned for 2023 is expected to improve recoveries and bring them in line with results reported by WGM in 1993 (88-90% copper recovery at 25% Cu concentrate grade).
7. The sequential copper-nickel test produced a nickel concentrate, but conditions were similarly unoptimized and the conditions employed by RDI were not conducive to pyrrhotite rejection (required for the production of saleable nickel concentrates from material with high pyrrhotite content such as Horden Lake). This will be addressed in metallurgical testwork planned for 2023.

Planned Future Metallurgical Studies

Based on the RDI test work, it was concluded that a sequential process approach would be the most suitable flowsheet choice for Horden Lake, but further optimization is required to improve recoveries to final concentrate. The conceptual process flowsheet is shown below:

Conceptual Sequential Process Flowsheet



Rafaella Resources will be commencing metallurgical drilling this winter with the objective of completing detailed metallurgical in Spring 2023. It is anticipated that this testwork will include:

- Selection of domain (“Master”) composites and discrete variability samples to be representative of expected resource grades and grade/lithological variability.
- Detailed, automated SEM mineralogy and microprobe analysis to provide definitive bulk model mineralogy, nickel and copper deportment, liberation and association data that will inform metallurgical flowsheet development.
- Comminution testwork on domain and variability composites.
- Flowsheet development and optimisation of the sequential copper-nickel flowsheet for the domain composites, with subsequent variability testing of the optimized conditions on the selected variability samples.
- Dewatering and regrind (if required) testwork for preliminary selection of vendor equipment.

Further updates will be provided once Rafaella have selected a suitably qualified laboratory for the planned testwork program.

Conclusions and Report Recommendations

- ① Pyrrhotite was the dominant sulphide mineral in Composite 1. Chalcopyrite and pentlandite were present in notable quantities. Though sulphide minerals occurred in lower proportions in the other two samples, the mineralogy was similar to Composite 1.
- ① The deposit appears to be of average to above average hardness as determined by Bond Ball Mill Work indices and abrasion indices, but not beyond normal parameters.
- ① Sequential flotation process produced two concentrates, namely copper concentrate, and nickel concentrate. The second-cleaner copper concentrates for all three composites assayed over 25% Cu. The nickel concentrates assayed $\pm 1.65\%$ Ni. Given the unoptimized test work this requires further testing which is planned in 2023. It is expected that optimisation work will see improved recoveries and the production of a marketable Ni concentrate.
- ① Bulk rougher flotation produced high metal recoveries to a typical rougher mass pull of 20% wt., at a moderate primary grind. Further optimisation is required to separate the various metals into copper and nickel concentrates, but these initial results are encouraging and confirm floatability of the economic sulphide minerals.

This announcement has been authorised by the Board of Directors of the Company.

Ends

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About Rafaella Resources

Rafaella Resources Limited (ASX:RFR) is an explorer and developer of world-class mineral deposits. Rafaella holds a battery metals exploration portfolio in Canada located within the prolific Belleterre-Angliers Greenstone Belt comprised of the Midrim, Laforce, Alotta and Lorraine high-grade nickel copper PGM sulphide projects in Quebec (together the 'Belleterre-Angliers Project'). These projects are now complemented by the flagship Horden Lake property, subject to a binding acquisition agreement, which contains a JORC compliant pit constrained resource of 27.8Mt at 1.49% CuEq, comprising copper, nickel, palladium and gold with further upside to come following work in 2023 to incorporate known occurrences of silver and cobalt. The combination of these projects offers significant upside for the Company shareholders in a supportive mining jurisdiction as modern economies look to transition to renewables.

Rafaella also owns the Santa Comba and San Finx tungsten and tin development projects in Spain. The recently acquired San Finx project lies 50km south from the Company's Santa Comba tungsten and tin mine in Galicia, NW Spain, all within the same geological belt, strengthening the Company's strategic position in the Iberian Peninsula and its long-term goal of being a significant supplier of the critically listed metals of tungsten and tin.

To learn more please visit: www.rafaellaresources.com.au

Competent Person Statement

The information in this announcement that relates to the metallurgical testwork data was reviewed by Mr David J. Middleditch B.Eng. of Libertas Metallurgy Ltd. On behalf of Caracle Creek International Consulting. David is a graduate of Camborne School of Mines' Minerals Engineering program, has 18 years' experience in the mineral processing industry, and is a Professional Member of the Institute of Materials, Minerals and Mining (MIMMM #676614) in the United Kingdom.

Forward Looking Statements Disclaimer

This announcement contains forward-looking statements that involve a number of risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.