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Outstanding Vendor Test Results for Lithium Hydroxide Produced from Mt Marion Concentrates

HIGHLIGHTS

- Vendor Testing by Veolia Water Technologies has produced a 99.99% pure lithium hydroxide monohydrate, suitable for use by the lithium ion battery sector
- The test work was conducted on run-of-mine spodumene concentrates (6% Li₂O) from Mt Marion
- The successful test work has validated the proposed production process, facilitated the calculation of material balances and process design criteria
- Management will seek board approval to appoint engineers to perform the project FEED Study

Neometals Ltd (**ASX: NMT**) (“**Neometals**”) is pleased to announce the results from the vendor process testing from Veolia Water Technologies that validates the proposed direct lithium hydroxide process from Mt Marion spodumene concentrates. The test work has produced a very high-quality lithium hydroxide product suitable for the lithium ion battery sector.

Each major unit operation of the extraction flowsheet has been tested to collect essential data for finalising the commercial process design. The test results have been used to develop material balances for each unit operation and the process design criteria from which the project Front End Engineering Design (FEED) Study can be completed.

Neometals Chief Executive Officer, Chris Reed said:

“We are extremely pleased with the outstanding test work conducted by Veolia Water Technologies. The results we have received from the sample concentrate sent from Mt Marion validates the production process, material calculations and design criteria. We have a sound basis to now advance the Front-End Engineering Design and Feasibility studies which are scheduled for completion in 2019.

All the right elements



Neometals looks forward to advancing its strategy to become an integrated lithium producer and provide a secure supply of high-quality lithium hydroxide to meet the requirements of the nickel-rich cathodes which dominate the EV battery market.”

SUMMARY

Neometals is proposing to use a modern, conventional direct-conversion sulphate process to produce battery quality lithium hydroxide from spodumene. The proposed process that will be used at the Company’s proposed Plant will convert spodumene concentrate to be supplied from the Mt Marion Mine under the Company’s Offtake Option Agreement.

Leading Chinese producers use this direct sulphate conversion process including the Company’s co-shareholder in the Mt Marion Mine, Ganfeng Lithium, which has been producing battery grade lithium hydroxide from Mt Marion concentrates for more than a year.

The Company is planning to build and operate (subject to feasibility study, statutory approvals and Board approval) a processing plant to produce 10,000tpa of lithium hydroxide to provide a secure, reliable supply to the EV and storage battery sector from 2021.

The Company has already conducted a project Pre-feasibility Study (PFS) based on a conventional sulphate process and another study based on its patented ELi chloride process. The ELi process requires further risk-reduction process development before it can be deployed in commercial operation.

The direct sulphate process is a mature technology, and the process testing is being used to determine process design criteria, material balances, capital costs estimates and operating cost estimates that will be integrated into the project Front-End Engineering Design (FEED Study) and Feasibility Study.

The test work was conducted on a 300kg sample of Mt Marion spodumene concentrate (6% Li₂O) representative of regular production and involved calcining, leaching, solution purification and product crystallisation to produce lithium hydroxide (LiOH.H₂O) directly, and a sodium sulphate by-product using sulphate process chemistry. The tests were performed under the supervision of Veolia at SGS Lakefield, Canada and Veolia’s HPD Chicago USA facilities with contributions by Veolia HPD, SGS and FLSmidth.

The spodumene leaching showed excellent lithium recovery and solubility, whilst filtration tests were also performed to determine the appropriate media and conditions. Recommendations were made for the selection of reagents and resins for solution purification. Veolia completed the mass balance for the commercial scale plant to facilitate the specification of equipment for the commercial plant.

The following indicative battery grade lithium hydroxide specification for battery cathode manufacturing was used as the objective for commercial product grade in the tests:

| Specifications of High Purity 'Battery Grade' LiOH.H ₂ O | | | | | |
|---|------|---------|-----------|-----------------|---------|
| Lithium | LiOH | >56.5% | Calcium | Ca | <10 ppm |
| Chloride | Cl | <20 ppm | Iron | Fe | <10 ppm |
| Lead | Pb | <10 ppm | Nickel | Ni | <10 ppm |
| Sodium | Na | <10 ppm | Silica | Si | <20 ppm |
| Magnesium | Mg | <10 ppm | Sulphate | SO ₄ | <10 ppm |
| Aluminium | Al | <10 ppm | Potassium | K | <10 ppm |

Lithium hydroxide produced by the tests demonstrated a product of very high quality. The final LiOH.H₂O crystal impurity analysis from the tests was:

| | | | |
|-----------|---------|-----------|----------|
| Cl | <10 ppm | Fe | <1 ppm |
| Pb | <1 ppm | Ni | <1 ppm |
| Na | 9 ppm | Si | 8-12 ppm |
| Mg | <1 ppm | S | <10 ppm |
| Al | <1 ppm | K | <2 ppm |
| Ca | <1 ppm | | |

ENDS

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