



26 March 2013

Direct Nickel Metallurgical Test Results

KNP Mixed Hydroxide nickel produced using Direct Nickel Process

Highlights

- Heron has been working with Direct Nickel over the past 12 months to investigate the viability of applying Direct Nickel's patented nickel extraction process to the Kalgoorlie Nickel Project (KNP)
- Results of testing using Direct Nickel's laboratory have indicated that KNP nickel laterite samples from the Highway deposit can be successfully processed to produce a marketable Mixed Hydroxide Product
- Heron will now fund further technical studies using high-chloride process water with the aim of extending the types of material that can be processed with the Direct Nickel Process
- Heron and Direct Nickel continue to engage with each other with the aim of supporting the further development of both the KNP and the Direct Nickel Process

Heron Resources Limited (ASX:HRR) is pleased to announce recent results of testing by Direct Nickel Limited (ASX:DIR) of samples from the Kalgoorlie Nickel Project (KNP).

The test program conducted by Direct Nickel over the last twelve months on samples supplied by Heron from the KNP Highway deposit demonstrate that the key steps of the Direct Nickel Process, an innovative process for the treatment of nickel laterite ore without the use of high pressure acid leach (HPAL) components, may be successfully applied to the KNP nickel laterite material.

The results show successful nickel extractions well above 90% and rapid leach kinetics from run-of-mine KNP goethite samples at atmospheric pressure and moderate temperatures of around 100°C.



Heron's first KNP nickel production, from left to right green nickel MHP assaying 40% nickel, dark red hematite assaying 56.6% iron and grey-yellow aluminium hydroxide assaying 20.6 % aluminium



The intermediate process steps of iron hydrolysis and aluminium removal were very satisfactory, producing an iron by-product assaying 56.6% iron and an aluminium by-product assaying 20.6% aluminium. Only minor nickel losses were experienced in these refining steps.

Under the Direct Nickel Process the refined solution was then treated with magnesia to produce a saleable Mixed Hydroxide Product (MHP) assaying 40.1% nickel and 1.7% cobalt, a marketable nickel intermediate product.

Prior to the current studies, chloride levels were felt to be a potential issue in using the Direct Nickel Process to treat the saline KNP materials. During the test work it became clear that over 80% of the chloride in solution could be isolated in a small fraction of the process streams, offering the opportunity to develop a cost effective flow sheet. Further study is now warranted to optimise the chloride removing process steps.

If it is possible to isolate the chlorides and separate them from any accompanying nitrates, then the potentially superior economics of the Direct Nickel Process may be able to be applied even to the KNP laterites that occur in a saline environment.

The results demonstrate that the Direct Nickel Process may be able to be successfully applied to the KNP nickel laterites.

Further work has been commissioned by Heron as follows:

1. Transmission Electron Microscopy and Energy Dispersive Spectroscopy is a technique developed by CSIRO that has been successful in identifying hard to leach goethite-based material. Analysis of the Highway samples by this method should identify any refractory components of test material to be able to better distinguish which Heron laterite deposits would be most suitable for treatment under the Direct Nickel process;
2. Direct Nickel will conduct further leaches in saline waters to optimise chloride rejection; and
3. Direct Nickel will conduct thermal decomposition of barren liquors from these higher salinity deposits to again determine the deportment of nitrate and chlorides in this part of the circuit.

The KNP is a potentially world class mining asset containing 727 million tonnes grading 0.72% nickel and 0.044% cobalt. The project has the advantage of being a particularly large resource and the project has many other favourable characteristics including good local infrastructure, low sovereign risk, access to skilled labour, low environmental risk for tailings disposal, and a supportive relationship with government, environmental agencies and the community.

The material tested was selected from the Highway deposit on the basis of its geo-metallurgical style (high goethite-silica amenable to screen upgrade beneficiation) and relatively low chloride content. Five samples from a sonic core hole completed during the 2009 Vale Inco Pre-feasibility Study were used, with Sample VHISN005_1 a low grade reworked laterite assaying 0.46% nickel, and Samples VHISN005_2 to 5 being run-of-mine goethite-silica material assaying 0.56% to 0.91% nickel. For the bulk leach test-work, VHISN005_1 was included in an 8kg bulk sample, though in an operating situation, it would be excluded in grade control. With the low grade influence of Sample VHISN005_1, the bulk sample assayed 0.69% nickel.

The next test-work campaign is to be completed on material which has been beneficiated, to better reflect an operating plant situation. Additionally, higher salinity process water will be trialled, also reflecting likely operating conditions.



The Chairman of Heron, Mr Craig Readhead said the latest results were most encouraging for the future development of the KNP.

“The nickel and cobalt recoveries using the Direct Nickel proprietary technology have been excellent, and the fact that Direct Nickel have proceeded through to producing the KNP’s first nickel Mixed Hydroxide Product is confirmation we have a flow-sheet worthy of serious development studies” Mr Readhead said. Mr Readhead confirmed that Heron wishes to further its relationship with Direct Nickel, aimed at supporting the further development of both the KNP and Direct Nickel.

The Chairman of Direct Nickel, Mr Vincent Sweeney said the early endorsement of the Direct Nickel Process by Heron with its substantial KNP nickel resource asset was another positive step forward for Direct Nickel.

“The Direct Nickel Process has the potential to transform the global processing of nickel laterites and the state-of-the-art pilot facility at CSIRO Perth has been built to demonstrate this. We are delighted that Heron and Direct Nickel are working so well to bring together our technology with one of the world’s leading undeveloped nickel laterite resources” he said.

A handwritten signature in black ink that reads "Ian Buchhorn".

Ian Buchhorn

Managing Director



*Direct Nickel-
CSIRO Pilot
Plant, Perth*