



## DECEMBER 2013 QUARTERLY ACTIVITIES REPORT

31 January 2014

### HIGHLIGHTS

#### **WONARAH PHOSPHATE PROJECT, NORTHERN TERRITORY** *(Minemakers 100% equity)*

- Feasibility Study for Wonarah continued with focus on the Improved Hard Process (IHP) aspects
- Metallurgical testwork for feed beneficiation continued

#### **JDCPHOSPHATE, INC. (JDCP)** *(Minemakers approx. 6.5% equity)*

- JDCP's IHP demonstration plant in Florida is in commissioning phase with positive initial results, albeit slower than originally anticipated
- Phosphate agglomerate feed introduced into the kiln, resulting in the recovery of small quantities of phosphoric acid
- Further equity investment of US\$400,000 by Minemakers

#### **CORPORATE ACTIVITIES**

- Cash balance at 31 December, 2013 was AU\$25.4M
- Cost base further reduced and cash burn minimised

**Cliff Lawrenson, MD of Minemakers commented "Commissioning of the IHP demonstration plant by JDCP is taking longer and is more complex than JDCP anticipated. While the delay is disappointing, there has been limited success in the form of weak phosphoric acid production as well as many technical and operational learnings along the way. An inevitable consequence of the delay has been JDCP's requirement to raise further equity from its shareholders as they make progress. To date, Minemakers has participated in equity raisings to maintain its relative interest in JDCP. We are in close communication with JDCP management and our equity partners and we are encouraged that they remain firmly of the view that first saleable acid production is reasonably close as teething issues are progressively resolved."**

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#### **MINEMAKERS LIMITED**

ABN 48 116 296 541  
Level 2, 34 Colin Street, West Perth, Western Australia 6005  
(PO Box 1704 West Perth WA 6872)  
Phone: +61 8 9264 7000, Facsimile: +61 8 9264 7099  
Web: [www.minemakers.com.au](http://www.minemakers.com.au) ASX/TSX Code: MAK

#### **For further information:**

**Mr Cliff Lawrenson**  
Managing Director and CEO, Minemakers Limited  
**Mr Rupert Dearden**  
MAGNUS Investor Relations & Corporate Communication  
Phone: +61 422 209 889 / +61 8 6160 4900

# 1. WONARAH PHOSPHATE PROJECT, NORTHERN TERRITORY (100% Equity)

## 1.1 INTRODUCTION

Minemakers Limited's (Minemakers or the Company) 100% owned Wonarah phosphate project (Wonarah) is the largest known phosphate deposit in Australia. To date, only 15% of the area of phosphate mineralisation, based on wide-spaced drilling, has been sufficiently drill tested to enable a Mineral Resource to be estimated.

Minemakers aims to take advantage of Australia's political stability and Wonarah's favourable installed and available infrastructure to develop a major centre for the production of superphosphoric acid (SPA). Wonarah's advantages, apart from its size and grade, include:

- Situated in a stable political jurisdiction
- Northern Territory Government support and designation as a Major Project
- A life of mine Mining Agreement in place with Traditional Owners which covers mining, processing and fertiliser production
- Proximity to a regional population centre at Tennant Creek
- Access to an established bulk commodity port at Darwin
- Bitumen highway access
- Proximity to a standard gauge railway with spare freight capacity
- Proximity to a natural gas supply, the pipeline for which closely follows the railway line
- Proximity to ample groundwater
- Silica available on site and petroleum coke readily available regionally
- Growing importance of technical grade phosphoric acid and fluid fertilisers both globally and locally

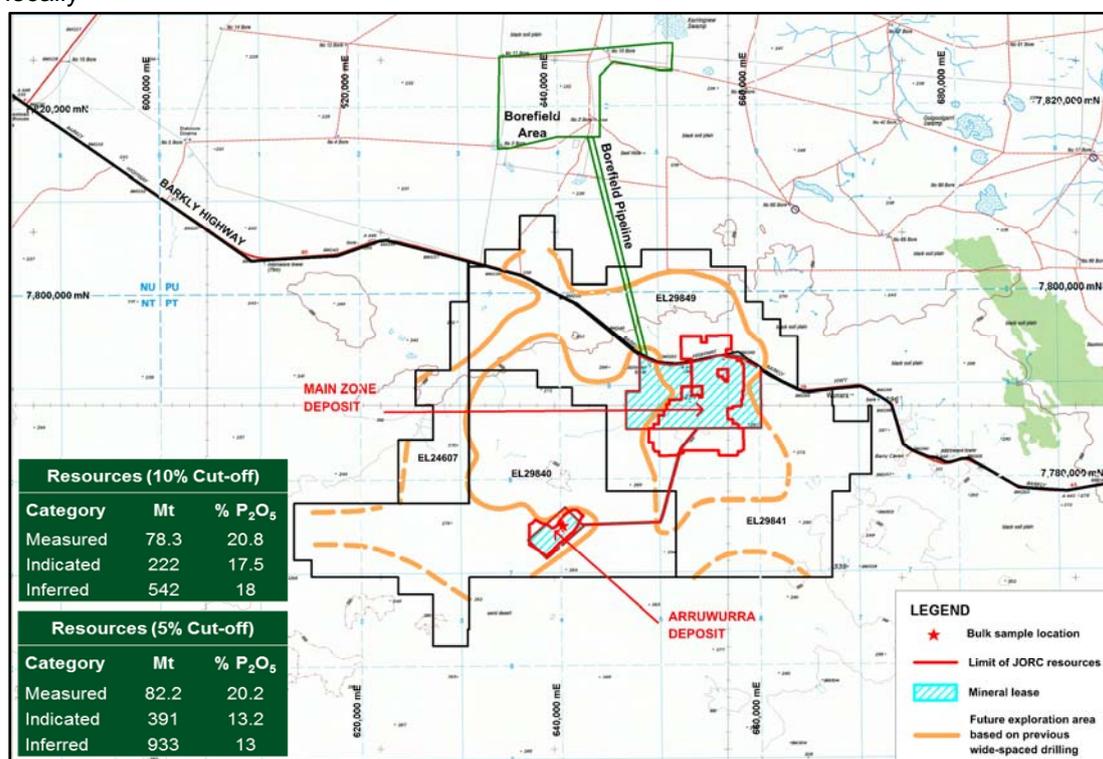


Figure 1: Wonarah Deposit

The current estimated Mineral Resources are set out in Figure 1. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Inferred Resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be classified as Mineral Reserves. There is no assurance that any part of the Inferred Resources will ultimately be converted to Mineral Reserves.

## 1.2 JDCPHOSPHATE, INC. – FLORIDA DEMONSTRATION PLANT PROGRESS

Minemakers owns approximately 6.5% of JDCP, the holder of the patents for the IHP technology. JDCP successfully concluded the funding for its demonstration plant in Fort Meade, Florida in August 2012. Construction of the demonstration plant commenced in March 2012 and was substantially complete by September 2013.

The plant is a 1:18 scale of an anticipated full-scale plant, but is nonetheless expected to operate as a commercial plant and over time generate a positive cash flow.

On 30 January 2014, Tip Fowler, JDCP CEO, reported:

*“Startup of the front end of the JDCP Demonstration Plant was sufficiently advanced by November, 2013, to allow curing of the kiln refractories and full initial operation of the integrated plant. The integrated plant operated intermittently during late November and December. Three important hot operating intervals were completed where important milestones were achieved and operating data collected for analysis. The operation identified several modifications which require equipment and procedural modification. These modifications are currently in progress and operation is planned to recommence in mid-February. Initial operation was important to training operators in the new process and data accumulated will allow more precise operating protocol changes that will improve reliability and performance when operation resumes.*

*The kiln was first operated to cure the refractories in mid-November during which it was systematically brought up through the cure schedule. The first hot operating interval immediately followed this exercise. During this run we discovered several front end equipment problems that limited control of the kiln. Nonetheless, several tons of phosphorus was yielded from the kiln charge to the acid plant and 17,000 gallons of >5% P<sub>2</sub>O<sub>5</sub> acid was produced. Inadequate temperature control during this first run resulted in excessive kiln temperatures with clinker formation exacerbated by excessive dust generation from inadequate feed agglomerates.*

*After making critical equipment modifications and cleaning the clinkers from the system, the kiln was re-heated and feed agglomerates were introduced for the second time in the second week of December. Excellent temperature control of the kiln was achieved during this operating period proving the efficacy of the equipment modifications. Operating problems in the front end of the plant terminated this operating period and the plant was put in hot standby status while repairs were carried out.*

*The third operating interval occurred later in December once temporary repair and operating improvements were made. Good temperature control was maintained throughout the operating period and the phosphorus yield was moved up near the nominal range. Having learned where the constraints in the system were during this sequence of three hot operating intervals, persistent problems in the front end of the plant drove the decision to cease operations until additional mechanical and procedural changes could be implemented. These plant modifications are now largely complete as are procedural modifications designed to improve the reliability of the operation. We are well placed to collect future information needed to optimize operations with the knowledge of what our real constraints have been.*

*Even though a number of problems interfered with operations three important milestones have been demonstrated:*

- 1. High yield of phosphate was extracted from the feed agglomerates (albeit without adequate temperature control) and reported to the hydrator as phosphoric acid over a five-hour period.*
- 2. The kiln was operated under a leveled, controlled temperature operation for several days.*
- 3. A significant and controlled phosphorus reduction was obtained under a leveled and controlled temperature operation for nine hours without melting or clinkering.*

*The schedule for completion of the maintenance items and protocol changes is determined by the installation of a new mixer, which is projected to be installed by early February. We will test the new mixer and its effect on making robust feed agglomerates immediately following the installation and, if the results are acceptable, we plan to heat up the kiln and begin introducing feed agglomerates to the kiln in mid-February. The repairs and adjustments made since the last run and targeted for completion*

*in early February are intended to be sufficient to allow longer-term operation of the Demonstration Plant at reduced rate under conditions that will make product phosphoric acid. The achievement of that aim depends on successfully controlling a number of factors that we have put control systems around, but which we are still learning about. Nothing that we have learned however diminishes our confidence in achieving our ultimate goal of producing projected volumes of acid and at expected yields.”*



Figure 2: IHP Demonstration Plant October 2013



Figure 3: View of the feed drier at the JDCP Demonstration Plant

Members of the Minemakers management team have continued to make regular visits to the Fort Meade site to monitor commissioning progress at the Demonstration Plant and to interface with the JDCP technical team who are leading the Inside-Battery-Limits study for Minemakers. This face-to-face interaction has been supported by regular conference calls to track progress with their study and ensure complete integration of the IHP component into the overall Wonarah Feasibility Study (FS).

### 1.2.1 JDCP Financing

The slower than anticipated commissioning of the Demonstration Plant resulted in JDCP raising additional finance from its investors to cover ongoing commissioning and operating costs.

Due to the importance of the IHP as an enabling technology to Wonarah and to avoid dilution, Minemakers contributed a further US\$400,000 between September and November 2013, which equates to slightly more than its pro-rata amount.

A further equity raise by JDCP is currently being discussed and Minemakers is considering participating for the same reasons.

## 1.3 WONARAH FEASIBILITY STUDY

Building upon the work undertaken in the 2011 Scoping Study, the Company commenced a FS during 2012.

With the insight derived from the Scoping Study, the FS is to focus solely on the development of Wonarah using the patented JDCP IHP technology.

The logic for this singular process investigation is that whilst the Scoping Study demonstrated that a conventional Wet Acid Process project was technically feasible and produced reasonable financial metrics, the quantum of the capital required to implement such a project, being over US\$2 billion, is likely to be beyond the reach of the Company, particularly in the current economic climate. Therefore, this option was set aside as being practically unachievable.

The FS is divided into two separate but interlinked areas of study. The area within the battery-limits of the IHP plant is being studied by the JDCP team, which includes a number of equipment suppliers and members of the team who designed and have constructed the JDCP demonstration plant, in Florida. Minemakers benefits from the expertise and "hands-on" experience of this team. The second area is that outside of the battery-limits of the IHP plant and comprises all of those studies necessary to support an IHP operation. Key amongst those studies is the metallurgical testwork to establish the beneficiation route required for the ore and silica sand.

### 1.3.1 Improved Hard Process

Minemakers is focused on the downstream production of high-value SPA at Wonarah utilising the IHP technology.

In summary, IHP entails:

- Mining
- Simple beneficiation to 15-20% P<sub>2</sub>O<sub>5</sub>
- Grinding with raw petroleum coke and silica
- Pelletisation
- Roasting in a ported rotary kiln
- Delivery of a phosphorus rich gas
- Hydration process
- Superphosphoric acid production at a contained  $\pm 70\%$  P<sub>2</sub>O<sub>5</sub> (a high strength product with thermal acid properties with both agricultural and industrial applications)
- By-product is low environmental impact and usable inert spent pellets (J-Rox)

Minemakers is investigating potential commercial uses of J-Rox as an aggregate. J-Rox can also be used as inter fill for mine pits and other infrastructure works as part of the rehabilitation process.

### 1.3.2 Metallurgical Testwork

Good progress has been made on the metallurgical testwork:

- The results of variability testing as reported previously, confirmed that the optimised operating regime provided satisfactory performance across the likely range of ore profiles.
- The beneficiated samples of silica sand and ore dispatched to JDCP have been used by JDCP to undertake binder testing, and by Metso to determine work indices. The results of these tests have now been received and incorporated into JDCP's component of the FS. An apparently suitable binder regime has been defined for the Wonarah ore that appears to produce a satisfactory feed material for the kiln. On-going work will focus on optimising this binder regime.
- The first round of High Pressure Grinding Rolls (HPGR) test work was undertaken by JKTech at their laboratory in Brisbane. The products of that initial round of tests were returned to Adelaide and were subjected to the optimised attritioning regime. The products from the attrition tests have been sent for assay and the results are awaited.
- Following receipt of the assays from the first round of testwork, a second round of HPGR testwork will ensue, using optimised conditions that will be determined following receipt of the assays mentioned above.

### 1.3.3 Mine Plan

Work was undertaken in order to simplify the optimisation algorithm as it was believed to be unreasonably restricting the material that could be included in the optimised pit shell. An amended physical schedule will be produced as a result of the revised optimisation and included in the early stage internal financial model. However, completion of this model will require validation data from operation of the IHP demonstration plant as well as capital and operating cost inputs that will emerge from the work currently being undertaken by JDCP. The model is intended for internal use only to guide the next phase of the FS.

Ground disturbing work such as further resource in-fill drilling, water bore drilling, civil geotechnical investigation and slimes storage facility site investigation will not now occur until an extended period of demonstration plant operation.

### 1.3.4 Engineering, Procurement and Construction (EPC)

Discussions with potential EPC parties, including JDCP partners, were on-going. These discussions have been promising and will continue as we better define Wonarah through the FS work and the demonstration plant performance.

### 1.3.5 Markets

Following downward pricing pressure during most of 2013, world phosphate values started to recover in December 2013. However, although some upgraded phosphates reversed their downward pricing trend, current world values remain down on a year-on-year basis.

Minemakers has continued its focus on the emerging Australian fluid fertiliser sector regularly interacting with equipment providers, formulators, distributors and end users. In particular Minemakers has been spending time with end users in Western Australia and South Australia who have already implemented either fluid-only or mixed fluid-granular fertiliser programmes within their broadacre farming systems.

Minemakers continues to be encouraged by the performance of SPA or SPA derived fertiliser formulas, especially within the plant establishment phase of dryland cropping system.

## 1.4 STRATEGIC PARTNERSHIP PROCESS

Minemakers continues to engage actively with potential partners for Wonarah seeking an appropriate value sharing model. The key attributes for a potential partner remain the ability to add technical input, support in financing and provide off-take for product.

Minemakers will ensure that its choice of strategic partner and any ensuing business combination is value enhancing and sustainable for the Company and its shareholders.

## 2. INVESTMENTS

### 2.1 AUSTRALIA MINERALS & MINING GROUP LIMITED (ASX:AKA)

Minemakers holds 4.64% equity interest in Australia Minerals & Mining Group Ltd, valued at approximately \$0.5M at the end of the December 2013 Quarter.

### 2.2 NIUMINCO GROUP (ASX:NIU)

Minemakers holds a 2.7% equity interest in Niuminco Group.

### 2.3 JDCPHOSPHATE INC.

Minemakers holds approximately 6.5% equity interest in JDCPhosphate, Inc.

### 2.4 CASH POSITION

At the end of the December 2013 Quarter, Minemakers had cash of \$25.4 million.

The Company has continued to reduce costs wherever possible as is reflected in the attached Quarterly Cashflow Report (Appendix 5B). It should be noted that there is unavoidable spend associated with maintaining and developing a large project like Wonarah with an advanced feasibility study underway.

Cliff Lawrenson  
**Managing Director**

#### **Competent Persons' Statement**

*The Mineral Resource estimates contained in this document are based on, and fairly represent, information and supporting documentation prepared by the competent persons named below.*

*The Mineral Resource estimates were first set out in Minemakers' market announcement dated 5 October 2012 ("Prior Announcement"). Minemakers is not aware of any new information or data that materially affects the information included in that Prior Announcement and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the Prior Announcement continue to apply and have not materially changed.*

*The qualified person in relation to this announcement is Russell Fulton, who is the Geological Manager of the Company and a Member of the Australian Institute of Mining and Metallurgy, and who has reviewed and approved the information related to the current Mineral Resource estimates in this press release. Mr Fulton has sufficient experience deemed 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' and a 'Qualified Person' as defined in National Instrument 43-101 – Standards of Disclosure for Mineral Projects. Mr Fulton consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*Information in this announcement related to the current Mineral Resource estimates reflects information compiled by Jonathan Abbott who is a full time employee of MPR Geological Consultants Pty Ltd. Mr Abbott, a Member of the Australian Institute of Geoscientists, has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is reporting to qualify as a Competent Person as defined in the 2012 edition of the Australian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves" and a 'Qualified Person' as defined in National Instrument 43-101 – Standards of Disclosure for Mineral Projects. Mr Abbott consents to the inclusion in the report of the matters based on the information compiled by him, in the form and context in which it appears.*

*This information was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported.*

*For further information on Wonarah, please refer to Minemakers' NI43-101 compliant technical report entitled "Technical Report Mineral Resource Estimation for the Wonarah Phosphate Project, Northern Territory, Australia", dated March 2013 and available on SEDAR at [www.sedar.com](http://www.sedar.com).*

**Cautionary Statement Regarding Forward-Looking Information**

*All statements, trend analysis and other information contained in this report relative to markets for Minemakers' trends in resources, recoveries, production and anticipated expense levels, as well as other statements about anticipated future events or results constitute forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as "seek", "anticipate", "believe", "plan", "estimate", "expect" and "intend" and statements that an event or result "may", "will", "should", "could" or "might" occur or be achieved and other similar expressions. Forward-looking statements are subject to business and economic risks and uncertainties and other factors that could cause actual results of operations to differ materially from those contained in the forward-looking statements. Forward-looking statements are based on estimates and opinions of management at the date the statements are made. Minemakers does not undertake any obligation to update forward-looking statements even if circumstances or management's estimates or opinions should change. Investors should not place undue reliance on forward-looking statements.*

**Schedule of Minemakers Limited tenements as at 31 December 2013**

<b>Location</b>	<b>Tenement Name</b>	<b>Tenement</b>	<b>Nature of Company's Interest %</b>
Northern Territory	Wakaya	EL24607	100
Northern Territory	Arruwurra	EL29840	100
Northern Territory	Wonarah	EL29841	100
Northern Territory	Dalmore	EL29849	100
Northern Territory	Wonarah Mineral Lease	ML27244	100
Northern Territory	Dorcherty Island	EL30067	Application
Northern Territory	Tree Point	EL25555	Application
Northern Territory	Wadeye North	EL29050	Application
South Africa	Savanna	ML25/2003	74