



# Minemakers Limited (MAK)

## NMPL Pilot plant producing 28% P<sub>2</sub>O<sub>5</sub>

Definitive Feasibility Study producing test product

**Important:** During the past two years Intersuisse and an associate company, Phillip Capital Pty Ltd, were engaged by Minemakers Limited for capital markets services on commercial terms. For Disclosures, refer to the back page under "Important Information".

### Recommendation

**BUY**

### Price

**35.5c**

### Calculated NPV

**\$2.08**

### ASX / S&P Sector

**Metals & Mining**

**MAK announced that Namibian Marine Phosphates limited, in which MAK has a 42.5% direct interest, and 48.1% total interest is producing P<sub>2</sub>O<sub>5</sub> concentrate that will be supplied to potential customers for testing.**

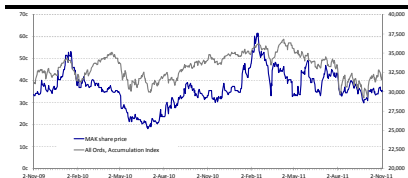
**NMPL has dredged 265t of ore, at an average grade of 18% P<sub>2</sub>O<sub>5</sub> and is processing this material to produce 125t of 28% P<sub>2</sub>O<sub>5</sub> concentrate.**

**This is part of the Definitive Feasibility Study work which is due to be completed in March 2012.**

### Snapshot

Last Price	\$0.355
Market Cap.	\$81 million
Shares on Issue	227.0m
Options	6.4m; ex 32c to \$2.00
52 Week High	\$0.615 (adjusted)
52 Week Low	\$0.300 (adjusted)

### Price Chart



MAK has defined a JORC resource of 2,023Mt, fully diluted, of phosphate rock, grading 14.3% P<sub>2</sub>O<sub>5</sub>; most is in MAK's Wonarah project, which is the subject of an MOU with NMDC of India. An investment agreement is expected during the 4<sup>th</sup> quarter of 2011.

A 2 year BFS is expected, including the potential to produce phosphoric acid on site using the JDC Phosphate process which is currently being developed.

MAK also has a 42.5% direct interest in a phosphate project in offshore Namibia. The feasibility study is expected in March 2012.

MAK is spinning out its tin and tungsten exploration assets into TNT Mines.

See [www.minemakers.com.au/](http://www.minemakers.com.au/)

Analyst: Pieter Bruinstroop :

### Pilot Plant Operating

NMPL has previously mined a test sample of the phosphate by dredging, giving very clear indicators of the costs and the technical performance of the mining operations.

The other major part of the DFS is to process the ore to produce a saleable product. To test the technical, operational and economic performance of the upgrading process, NMPL has constructed a pilot plant.

The pilot plant has successfully produced a 28% P<sub>2</sub>O<sub>5</sub> concentrate and will continue to process the entire bulk sample.

### Comments

The beneficiation process is described in some detail, showing that it uses very common procedures of screening, hydro-cyclones, attritioning and then drying to produce a final product.

Intersuisse's analysis of NMPL's main project is based on data in the scoping study, the results of which were announced in November 2010. Operating costs were estimated as US\$ 57.76/t FOB

Intersuisse is attracted to the project as the expected capital required is manageable, the process is relatively simple and the project generates good returns due to its low costs.

Intersuisse's un-risked valuation of MAK's direct interest, assuming a price of \$180/t for benchmark phosphate rock, is currently \$246m, though this will be revised when the results of the DFS are published.

### Conclusions

Intersuisse confirms its BUY recommendation on MAK.

**NMPL Pilot Plant**

NMPL have constructed a pilot plant, as part of the Definitive Feasibility Study, to

- Provide information for the final design of the beneficiation process, including flowsheet design, capital costs, operating costs, efficiencies and process economics; and
- Produce beneficiated material that can be trialled by potential customers to determine the suitability for their plant and establish the potential customer base.

**Namibian Marine Phosphate Limited (MAK 42.5% direct, 48.1% economic interest) has produced beneficiated product from its pilot plant**

Some material will also be tested by JDC Phosphate to further assess its suitability for the production of Super Phosphoric Acid (70% P<sub>2</sub>O<sub>5</sub>), which can be then sold either to direct users or to DAP plants.

The beneficiation process uses conventional equipment to carry out a relatively simple process comprised of particle sizing, attrition and dewatering circuits.

Figure 1 shows a sample of the material that had been dredged, as Run of Mine (RoM) material.

The first processing step is some simple screening, to screen out the material over 1mm in size, such as shells, as shown in Figure 2.

**The pilot plant produces material that can be supplied to potential customers for testing as a feed to produce DAP.**

**Figure 1 : RoM feed material, from dredging**



Source : MAK 4 November 2011 ASX announcement

**Figure 2 : Reject material from RoM**



Source : MAK 4 November. 2011 ASX announcement

The second stage of processing is to separate the slimes, or mud, which is the sub 100µ, using hydro-cyclones. This leaves material that is between 0.1mm and 1.0mm in size.

The material is then further beneficiated using spirals, as shown in Figure 3. The next step is then an attrition cycle and finally a wash to remove the salt to provide a final product, as shown in Figure 4.

**The beneficiation process is a simple process of screening, for over-size (shells, stones), under-size (slimes, mud) and then washing.**

**Figure 3 : Beneficiation using spirals**



Source : MAK 4 November. 2011 ASX announcement

**Figure 4 : Final product**



Source : MAK 4 November. 2011 ASX announcement

Intersuisse is very encouraged by the efficiencies in both time and cost in the construction of the pilot plant.

The DFS is on track for March 2012.

The scoping study gave cash costs of \$57.76/t and cap.ex \$144m for 3.0Mt/yr of product.

Royalty is 2.5% and corporate tax 35%

**Conclusions**

The Definitive Feasibility Study for Namibian Marine Phosphates Limited (NMPL) is on track to be completed by March 2012.

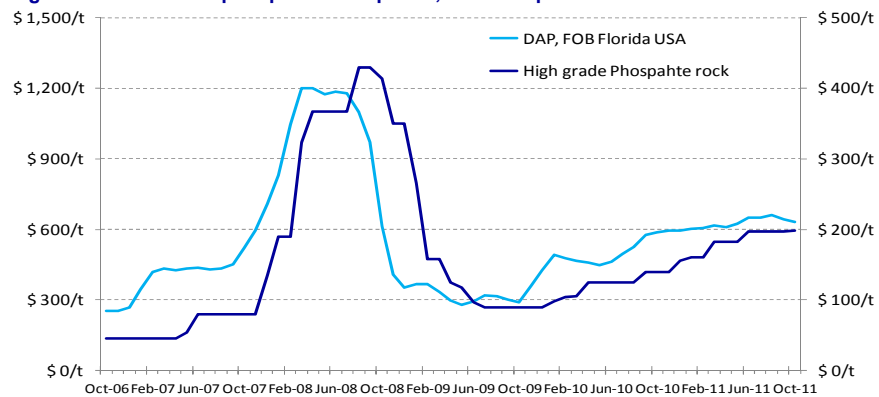
The next phase is product testing and development of the potential customer base.

On 11 November 2010, MAK announced the results of the scoping study for NMPL

- Start-up capital costs are estimated as US\$ 144m for a 3.0Mt/yr of beneficiated product, grading 28% P<sub>2</sub>O<sub>5</sub>, operation;
- Operating costs estimated at US\$57.76/t FOB Walvis Bay.

Current phosphate rock prices are around \$200/t, as shown in Figure 5.

**Figure 5 : Benchmark phosphate rock prices, and DAP prices**



Source : World Bank “pink sheets”, Intersuisse

However, NMPL’s product can be expected to sell at a discount to this as it is 28% P<sub>2</sub>O<sub>5</sub>, compared with the benchmark of 32%, and hence only 87.5% as much useable product.

In Namibia, royalty is 2.5% *ad valorem* and corporate tax 35%.

Very crude arithmetic indicates that MAK’s share of the cash generated by NMPL each year is roughly MAK’s current market capitalisation.

MAK is also developing the Wonarah project, though NMPL is expected to being production first, in 2013.

Intersuisse retains a BUY recommendation on MAK.

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*Prepared by Pieter Bruinstroop*

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