

# Magnis Resources

L I M I T E D

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## NACHU GRAPHITE PROJECT PRE-FEASIBILITY STUDY

- **NPV of US\$1.04B with 84% IRR**
- **Capital payback of 1.4 years with low sensitivity to capital costs**
- **Cash margin of over US\$ 1,600 per tonne of product**
- **Capital cost estimate of US\$171.4 million**
- **Operating cost estimate of US\$448 per tonne for the first 3 years**
- **Cost improvement opportunities**
- **Board decision to proceed with development**
- **Discussions for financing progressing with overseas parties**

Magnis Resources Ltd (ASX:MNS) announces that the Pre-feasibility Study (PFS) conducted on its 100% owned Nachu Graphite Project in Tanzania (Project) confirms the viability of the Project on the basis of its excellent financial credentials. The Board has accordingly decided that, subject to raising the requisite financing and obtaining Governmental approvals, the Project should be brought into development.

### Key Findings

This study has only considered the mineralisation in Blocks F and F South (36% of current total resource), which are classified as Indicated or Measured categories as ore to be mined. Any material in Inferred Resource category, or resources in other blocks (D, B, J) that were defined in the November Resource statement (Reference 1) have not been considered. Key items from the PFS include:

- An after tax NPV of US\$1,040 million, IRR of 84% (discount rate 10%) and a capital payback period of 1.4 years.
- 16 year project life based on Blocks F and FSL in Indicated and Measured categories.
- The Project's design criteria, the capital cost estimate and the operating cost estimate were based on a project producing 180,000 tonnes of graphite concentrate per annum with an average ore grade of 5.1% graphite.
- The capital cost estimate of USD \$171.4 million includes all processing facilities, infrastructure, dams, roads, owners' costs, environmental and social costs needed to

develop the Project from when the Board gives its final commitment. A high level breakdown of costs are provided in the following table:

| <b>Capital Costs</b>                                   | <b>US\$ m</b> |
|--|---------------|
| Process Plant Directs and Indirects                    | 88.7          |
| Associated Infrastructure, Dams, Camp, Port Facilities | 37.8          |
| Power Plant  | 8.3           |
| Pre-production Owners, Roads, Environmental, Social    | 20.0          |
| Contingency  | 16.6          |
| <b>Total</b>   | <b>171.4</b>  |

The capital cost estimate has included construction and fabrication rates based on quotations received from Tanzanian, east African and South African companies.

The operating cost estimate includes all costs from mining through to ship loading on a Free on Board (FOB) status. The PFS has considered the following contract activities, which are included in operating costs:

- Contract mining
- Contract product transport and ship loading
- Contract camp operation and project security

The operating cost for the first 3 years is US\$448 per tonne of product and this includes a substantial allowance for lower production in year 1 (80%) as the plant ramps up to full production. The life of mine cost of US\$473 per tonne reflects some higher strip rates in subsequent years. A substantial exercise was undertaken to source Tanzanian companies to quote on supply of goods and services for the study particularly in relation to contract services.

| <b>Operating Costs</b>     | <b>US\$ / tonne</b> |
|----------------------------|---------------------|
| Mining                     | 153                 |
| Processing                 | 111                 |
| Power                      | 64                  |
| General and Administration | 48                  |
| Product Logistics          | 72                  |
| <b>Total</b>               | <b>448</b>          |

## **Mining**

The costs allowed for mining are based on a mine schedule supplied by Orelogy Pty Ltd (Orelogy). This schedule may vary slightly as it is based on preliminary stage designs. Orelogy will now use the PFS to complete the full mine design and calculation of the Probable Mining Reserve as defined by the JORC 2012 requirements. The impact of further design work may slightly increase the strip ratio however this is expected to be minor and will be later in the mining sequence. Life of mine strip ratio is 2:1.

## Processing and Site Facilities

The plant design is based on a relative standard crushing, rod mill grinding and flotation process. Several stages of regrind and cleaner flotation have been included. A permanent camp, close to the operations will be established to accommodate the workforce.

## Infrastructure

The initial design work on the tailings facility and associated volume estimates were done by Knight Peisold Pty Ltd, based in Johannesburg, South Africa. The design allows for an initial starter wall and downstream construction using waste for the first 6 years, followed by upstream lifts in subsequent years. The PFS has considered two options for project water supply, being either a borefield supply or water abstraction and storage from the large Mbemkuru River close to the Project. Further studies will define the optimal option.

## Port

The port of Mtwara, approximately 200 kilometres from the Nachu site, has sufficient capacity to facilitate the export of product. An allowance has been made to establish a storage and handling area for product near the port. The study has assumed contract transport, container stuffing, ship loading and customs services.

## Basket Price

The basket price for product used in the study (US\$2,119/t) is a reflection of the large proportions of large, jumbo and super jumbo sized product. In total, these large flake size products account for over 90% of total revenue. The quoted prices have been sourced from overseas graphite industry experts, Industrial Minerals and our offtake parties.

| Product                                    | Sieve Size |           | Price (\$US/tonne) | Tonnes         | Revenue US\$       |
|--|------------|-----------|--------------------|----------------|--------------------|
|  | (microns)  | Mesh      |                    |                |                    |
| Super Jumbo (97-99% TGC)                   | > 500      | 35        | 6,000              | 16,200         | 97,200,000         |
| Jumbo (96-98% TGC)                         | > 300      | 50        | 3,000              | 57,600         | 172,800,000        |
| Large (94-97% TGC)                         | 180 – 300  | +80, -50  | 1,400              | 57,600         | 80,640,000         |
| Medium (92-96% TGC)                        | 150 – 180  | +100, -80 | 900                | 16,200         | 14,580,000         |
| Fine (90-94% TGC)                          | < 150      | -100      | 500                | 32,400         | 16,200,000         |
| <b>TOTAL</b>                               |            |           |                    | <b>180,000</b> | <b>381,420,000</b> |
| <b>Weighted Average Price (\$US/tonne)</b> |            |           |                    |                | <b>2,119</b>       |

## Cost Improvement opportunities

The study also highlighted significant opportunities for improvements in both capital and operating costs.

- The on-going installation by the Tanzanian Government of gas fired power stations and infrastructure could result in a significant reduction in operating costs. The current project considers onsite power generation using generators capable of operating with HFO or diesel.
- Owner mining would allow for reduced operating costs but with a capital cost impact.
- The impact of higher grade zones from other blocks will reduce operating costs.
- Improvements arising from further enhancements to the metallurgical process.

Scheduling of lower strip ratio ore from other blocks will reduce operating costs. Magnis believes that BatteryLimits and Logiman have delivered a very robust and thorough PFS with a particular emphasis on the infrastructure and logistics of the project.

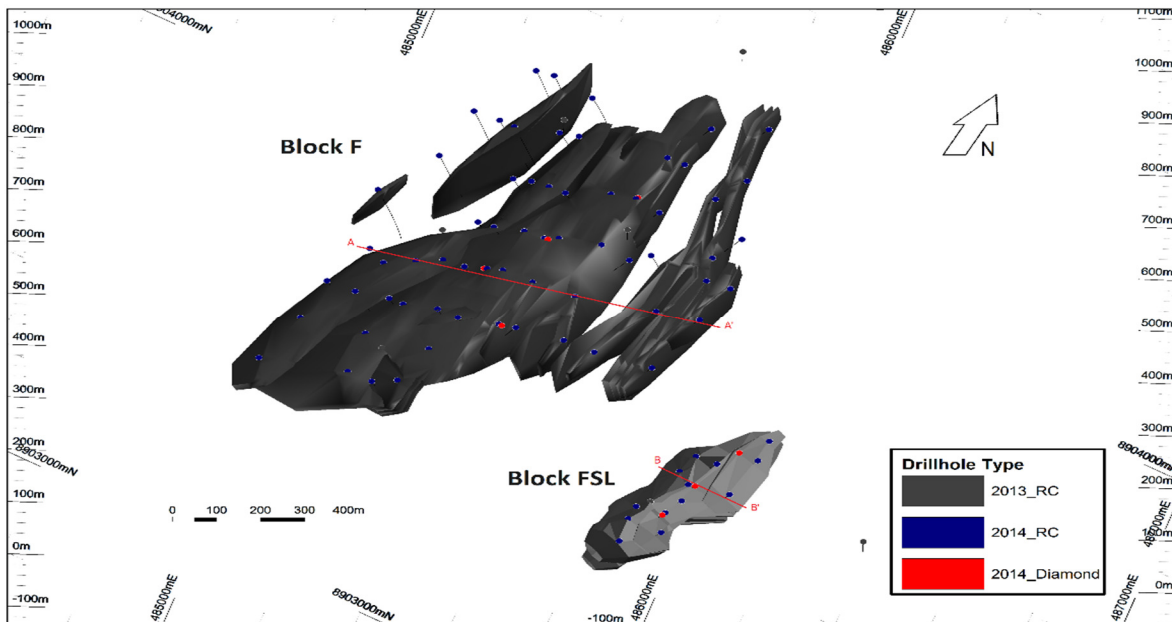


Figure 1 - Block F deposits F and FSL (F South) with corresponding section lines.



**Figure 2 - Location of the Nachu Graphite Project within Tanzania**

### **Pre-feasibility Study Background**

The PFS was conducted by BatteryLimits, a specialist process engineering and study management consultancy in joint venture with LogiMan, a project engineering company based in Johannesburg, South Africa. As well as the work undertaken and managed by the BatteryLimits-LogiMan JV, specialist consultants have undertaken detailed work and contributed to the study in the areas of environment, social and community assessments, roads, port and logistics, resource, mining engineering and metallurgical test work. The mining study, including mining cost estimates and development of the mining schedule were conducted by Orelogy Group Pty Ltd, a Perth-based mining consultancy that will now use the PFS to calculate the “probable mining reserve”.

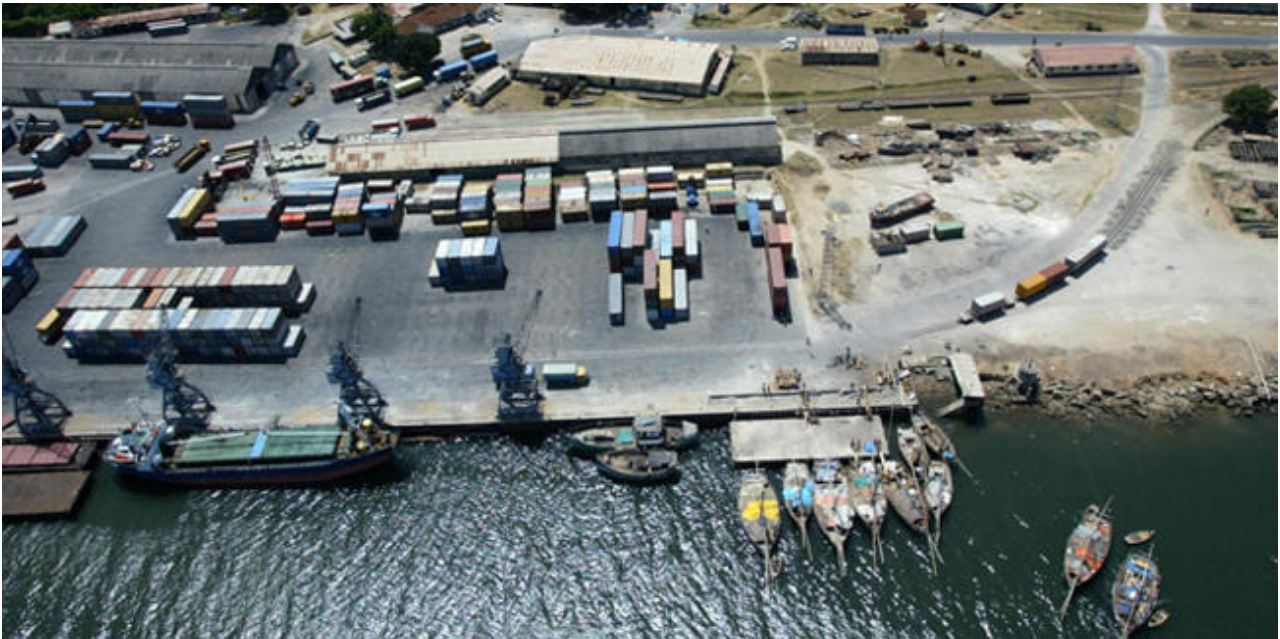
Phil Hearse, BatteryLimits-LogiMan JV Study Manager for the Nachu Graphite Project and Managing Director of BatteryLimits, commented, “the completion of the Pre-feasibility Study in the four month time frame has been a culmination of a cooperative team effort between Magnis and its consultants. Although the nominal accuracy of the Pre-feasibility Study was +/-25%, the work has been done to a more accurate level and is specified in the study as +/-20%, which is more accurate than a normal PFS.”

CEO Dr Frank Houllis commented, “Firstly, I would like to thank BatteryLimits, LogiMan and study leader Rod Chittenden for delivering on schedule such a thorough PFS. The Board has recommended proceeding to project development.”

“With the recent announcements of our maiden JORC resource, our binding offtake agreements with SINOMA and Sinosteel (Reference 2 and 3) along with our metallurgical results, allows us to produce a product that is the best in the world, the Nachu Graphite Project is confirmed as world class and more importantly, its excellent financial credentials bode well for securing project funding in the near future.”

## Discussions

Ongoing discussions are progressing for project financing with a number of overseas parties including our binding offtake partners. Today's favourable PFS and the announcements of two binding offtake agreements will ensure the progression of these discussions. Work will continue to secure funding in the new year.



**Figure 3 – Port of Mtwara**

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Reference 1 – ASX Announcement 26 November 2014, *Nachu Graphite Project Maiden Mineral Resource*, Brent Laws, Magnis Resources Limited and Andrew Proudman, AMC Consultants Ltd.

Reference 2 – ASX Announcement 17 December 2014, *Binding offtake agreement with SINOMA*

Reference 3 – ASX Announcement 29 December 2014, *Binding offtake agreement with Sinosteel*