

Battery Manufacturing Facility Study

Kibaran Resources Limited (ASX: KNL), ('Kibaran' or the 'Company') is pleased to report the results of its Battery Grade Graphite Scoping Study ('Battery Study' or 'Study') which highlights robust economics and a compelling case for the development of a Manufacturing Facility to participate in downstream value added processing.

STUDY HIGHLIGHTS

- **Manufacturing of first battery grade Spherical Graphite is scheduled to commence 12 to 18 months into Stage 1 Epanko Graphite Project expanded production**
- **Exponential growth in graphite demand forecasted over the next 5 years from Electric Vehicle (EV) and Battery Storage industries**
- **Key Study Results**
 - Pre-tax NPV₁₀ of US\$115m
 - Pre-tax IRR of 51%
 - Capital Expenditure of US\$35m
 - Annual pre-tax cashflow of US\$18mpa based on Stage 1
 - Payback 1.9 years
- **Stage 1 production to commence at 15,000tpa, increasing to 50,000tpa over 3 stages, producing Spherical, Expanded and other purified graphite products**
- **Testwork confirmed Epanko Graphite is of superior quality and exceptionally well suited for the production of Spherical Graphite and other purified graphite products**
- **Staged expansion expected to be supported by project cashflow**
- **Discussions commenced with strategic industry partners to jointly fund the feasibility study and ultimately capex through direct investment into the project**
- **TanzGraphite Technologies Pty Ltd incorporated to host ownership**

The Study was based on the additional product from the modelled 100,000tpa (refer Scoping Study announcement 22 January 2015) over the 40,000tpa level from the Bankable Feasibility Study. There have been no material changes to those assumptions from the Scoping Study announced in January.

Mr Andrew Spinks, Managing Director commented "The completion of the Epanko BFS now provides the Company with certainty to position itself to become part of the global graphite supply chain and secure strategic partnerships for the battery grade Spherical Graphite market. The planned Gigafactories associated with the emerging electric vehicle and Energy Storage System will have a significant impact on graphite demand."

Mr Spinks added further "We are once again focussing our efforts on the European, Japanese and US markets, as they are seeking alternative supply for manufactured graphite products, where processing is undertaken in line with sustainable environmental methods. We will be providing a clear alternative to existing Chinese sources and are focussed on securing interest from the worlds new Gigafactories."

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premium quality graphite uniquely tanzanian

BATTERY MANUFACTURING FACILITY STUDY

The Battery Study forms part of Kibaran’s vertically integrated growth strategy and has assessed the development of a manufacturing facility to produce battery grade Spherical Graphite, expanded graphite and other value add purified products, utilising premium quality graphite from its planned graphite projects in Tanzania. Graphite will initially be sourced from the proposed staged increases in production from the Epanko graphite project where the company has completed a bankable feasibility study reporting an NPV of US\$197.5m (refer announcement 23 July 2015).

High value spherical and expanded graphite would be shipped from the port of Dar es Salaam directly to end users, eliminating their reliance on, and providing a viable alternative to current supply of these products from China.

The study has examined several locations for the potential to establish a manufacturing hub in Tanzania near the main port of Dar es Salaam. Given Kibaran’s graphite projects are connected by rail or road to Dar es Salaam and the city’s ability to provide low cost grid power, significant infrastructure advantage exists for Kibaran. The EV market will also require new sources of graphite that is of higher environmental standards to existing supply.

The study provides a compelling investment case and warrants the commencement of a detailed feasibility study. With existing funding prioritised to developing the Epanko Graphite Project, the Company has entered into discussions with a number of potential strategic partners regarding funding of this study via direct investment.

The study focused initially on sourcing graphite from Kibaran’s Epanko project, however in line with expected increased global demand the Company’s other projects are expected to provide feed for the facility.



Figure 1: Project Locations showing Manufacturing Facility

BATTERY GRADE GRAPHITE TESTWORK

The metallurgical testwork carried out as part of the Epanko Bankable Feasibility Study has confirmed that Epanko Graphite is of superior quality, suitable for these value added or processed graphite products and production of Spherical Graphite. Further testwork is planned to confirm consumption rates of consumables and other operating parameters of the Manufacturing Facility.

Metallurgical characteristics are considered exceptional and give Epanko a significant competitive and commercial advantage:

- Expansion rates for Jumbo (+50 mesh) flake is 490 ml/g which is up to 30% higher than standard graphite produced in China
- Ultra high purity of 99.98% Carbon achievable
- Ash melting point of 1,305°C is up to 150°C higher than graphite produced in China

The testwork also confirmed that graphite from Epanko has an outstanding high degree of crystallinity. Crystallinity is measured by the distance between the carbon atom (graphene) layers. The value for d002 (spacing) is 3.353 Å and is better than the theoretical value of graphite (3.354 Å). (Note Å = Angstrom 10 Å = 1 nm (nanometre)).

The Company believes the unique properties of Epanko graphite will provide competitive advantages within the emerging Spherical Graphite market and is expected to attract interest from strategic partners.



Figure 2: World Map showing the Major Markets outside China (US, Japan and Europe)

Current world consumption of battery grade spherical graphite is approximately 35,000ktpa, with growth rates predicted to increase dramatically as gigafactories come on line.

Battery grade Spherical Graphite is manufactured from natural flake graphite, the diagram below provides initial flowsheet design.

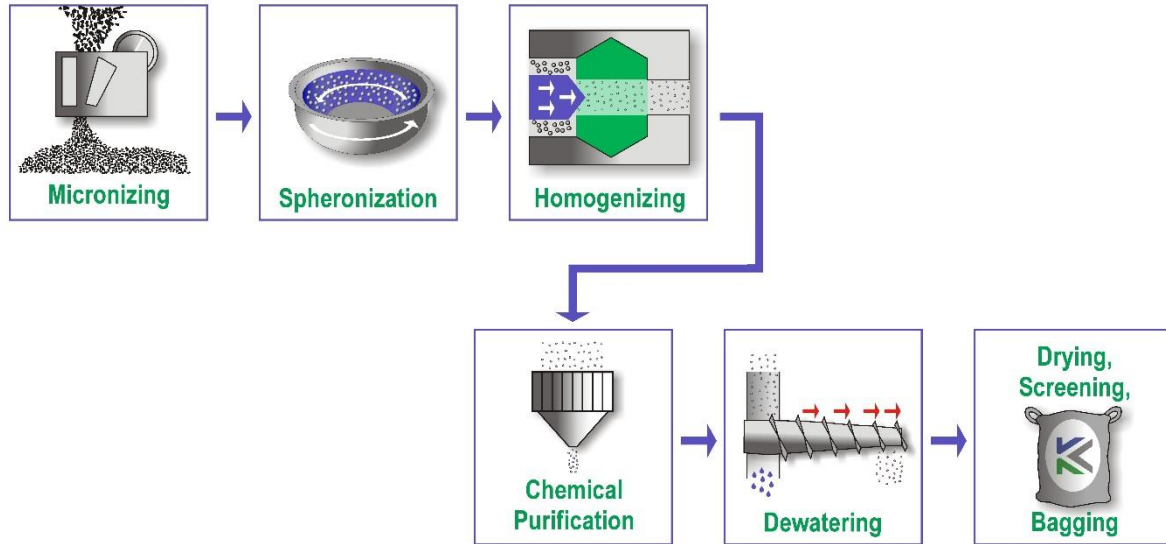


Figure 3: Battery Grade Spherical Graphite Flowsheet

Importantly, the study also highlights the requirement for low cost energy for processing as a result of the high energy inputs. We expect that production must be cost competitive and of a higher environmental standard than existing supply.

PROPOSED MANUFACTURING FACILITY

The Battery Study is based on staged increases in production from the Company’s graphite projects in line with forecast demand growth. Expanded Epanko graphite production will be the initial feed and the basis for initial total production of 15,000tpa. In terms of Spherical Graphite alone, production modelling commences at 6,000 tonnes, increasing to 24,000tpa.

Table 1: Manufacturing Facility Staged Growth

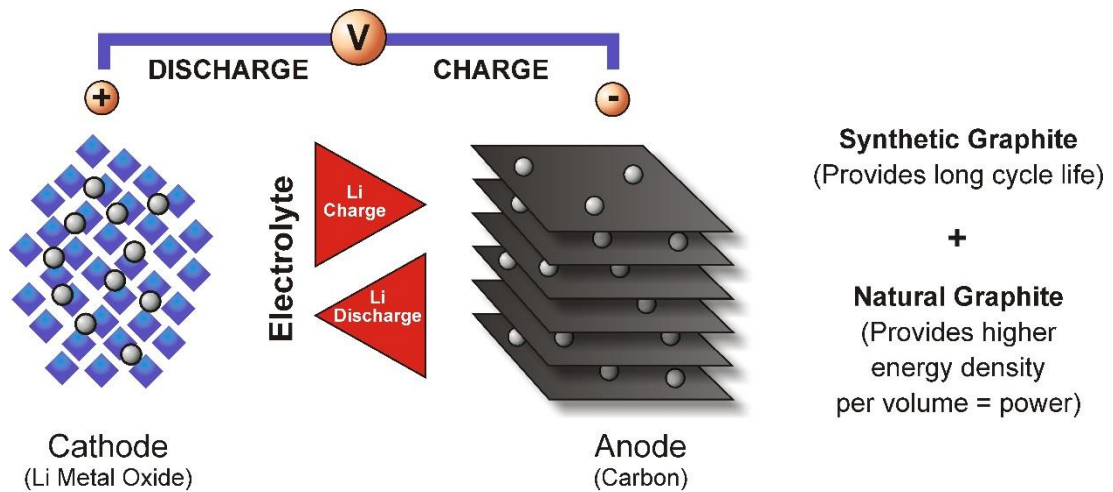
Stage	Spherical Graphite	Expandable Graphite	Purification	Total
1	6,000	5,000	4,000	15,000
2	15,000	10,000	5,000	30,000
3	24,000	18,000	8,000	50,000

Note: Table 1 assumes production of natural graphite from the Epanko deposit is increased to meet this demand. Whilst the Feasibility Study for Epanko was based on 40,000tpa, the deposit has been modelled to produce up to 100,000tpa (ASX: announcement 22 January 2015)

BATTERY GRADE SPHERICAL GRAPHITE MARKET

Kibaran aims to position itself as part of the global supply chain, with the key objective of participating in the industry’s forecasted growth and profitability.

Li-ion batteries are used in hybrid electric vehicles (“HEV”), P-HEV and electric vehicles (“EV”) where the batteries are large and the potential demand for graphite significant. Graphite is the main anode material in the Li-ion battery.



For every one million EVs produced (approximately 1.5% of the current new car market) requires in the order of 100,000 tonnes of graphite for battery manufacture. This represents a potential 20 percent increase in flake graphite demand. China has plans on having five million EVs by 2020. A tripling of annual flake graphite production will be required just to support a 5% EV share of the new car market. All Li ion anode material manufacturing currently takes place in Asia, with Li-Ion batteries produced in many countries outside of Asia including US, Russia and Germany.

The global search for a better quality product with higher energy efficiency, longer charge life or shorter recharge times continues to justify graphite as the most effective and efficient anode material. Kibaran believes its premium quality graphite will play a significant role in fulfilling this growing market.

The plant is planned with initial production of 6,000 tonnes of Spherical Graphite with staged growth supported by expected growth in the battery market. The global consumption forecasts are shown in Table 2.

Table 2: Forecast Demand for Spherical Graphite by LiB Market

Year	Forecast (tonnes)	
	2015	2020
Spherical Graphite Demand	47,025	84,788

Source: Roskill and Company Research

EXPANDABLE GRAPHITE MARKET

Forecast growth in demand for Expanded Graphite is considered significant for use in applications such as building products, fire retardants and military applications due to its electrical and thermal conductive properties.

At present Expandable Graphite is mainly produced in China but also in Germany, Brazil, India, Canada, Czech Republic and the US largely dependent on large flake graphite sourced from China. As demand increases analysts believe that large flake supply from China will not meet demand.

European building codes are leading the world in design and evolution of new products and the Company believes climate change debate will drive further changes to building codes, requiring the increased use of thermally efficient building products such as SGL’s ECOPHIT® product from Germany. ECOPHIT® ensure that heat and cold are rapidly and uniformly distributed within the interior space, so significantly reducing the energy demand of buildings.

The plant is planned with initial manufacture of 5,000 tonnes of Expanded Graphite.

OTHER VALUE ADD PRODUCTS

The demand for other value add products will consist of purified and non-purified graphite products. These products will target existing markets in developed countries. The plant is planned with Initial manufacture of 4,000 tonnes of other value added products (i.e. micronized) and are high value product

INDICATIVE SCHEDULE

Based on the indicative timeline below the manufacturing facility is scheduled to commence production within approximately 2 to 3 years.

Table 3: Indicative Schedule

Milestones	Year 1	Year 2	Year 3
Incorporation of previous testwork	[Timeline bar]		
Bulk Sample	[Timeline bar]		
Market Study	[Timeline bar]		
Establish	[Timeline bar]		
Primary Testwork	[Timeline bar]		
Pilot plant production at 3rd party lab or plant	[Timeline bar]		
Plant layout planning / Selection of location	[Timeline bar]		
Construction of Production Plant	[Timeline bar]		
Production	[Timeline bar]		

FINANCIAL ANALYSIS

The analysis is based on graphite being sourced from the proposed staged production increases from Epanko. All figures are reported in US dollars.

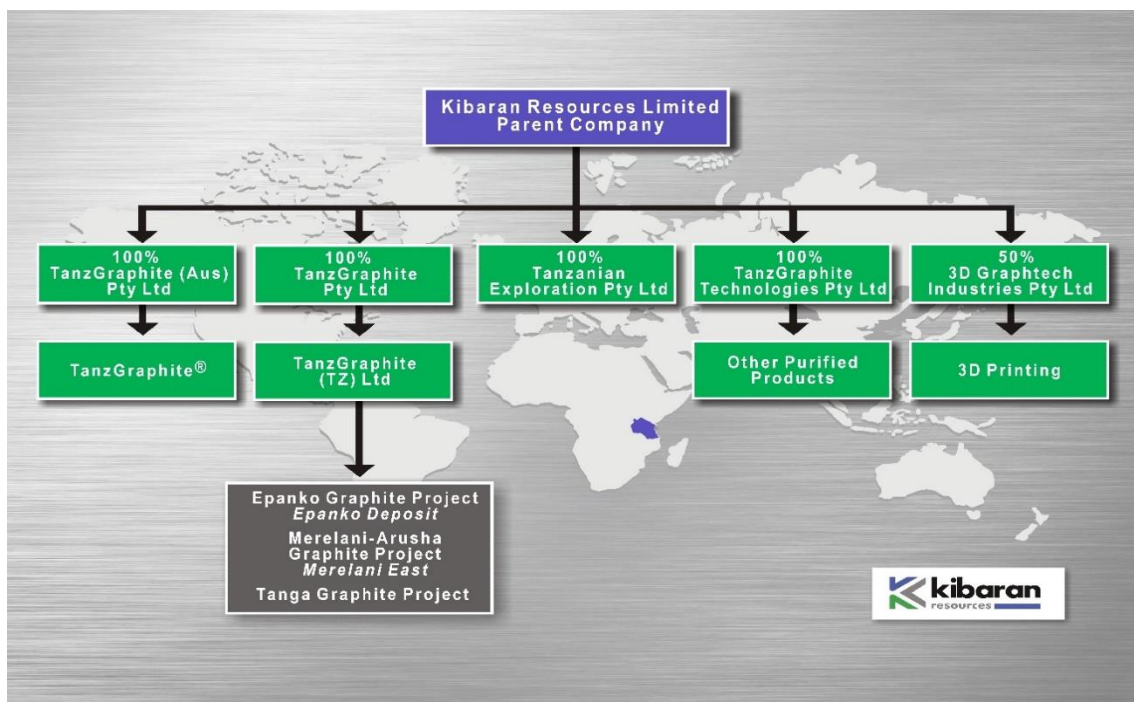
Table 4: Financial Analysis

Item		Stage 1
Plant Production	(tpa)	15,000
Base Price Assumption (average)	(US\$/t)	\$2,550
Cost/Production (average)	(US\$/t)	\$1,350
Plant Life	(Yrs)	25
Payback	(Yrs)	1.9
Pre-Production Capital	(US\$m)	35
Discount Rate	(%)	10
Pre-IRR	(%)	51
Pre-Tax NPV	(US\$m)	\$115

The staged manufacturing increases has a significant impact to the NPV's, however the Company believes Stage 1 is supported by current global demand outside of China.

CORPORATE STRUCTURE

The Company has established the specific purpose subsidiary TanzGraphite Technologies Pty Ltd as the entity for manufacturing and processing of purified graphite products. All graphite products produced will be marketed under the Company's registered trademark TanzGraphite™.



For further information, please contact:

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Cautionary Statement:

Kibaran cautions investors in relation to using the financial estimations as a basis for investment decisions in KNL shares. Statements implying economic viability require a reasonable basis; otherwise they can be seen as being misleading to shareholders. The Scoping Study utilised assumptions in some areas, hence the results do not definitively confirm the economic viability. In order to determine the economic viability of the project, the Company needs to confirm all the technical and financial aspects of processing, metallurgy, infrastructure, economics, marketing, legal, environmental, social and government. As such, some of the economic assumptions used in the Scoping Study may or may not be realised.

The information in this report that relates to Exploration Results is based on information compiled by Mr Andrew Spinks, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. Andrew Spinks is employed by Kibaran Resources Limited. Mr Spinks has sufficient experience which is 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". Andrew Spinks consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources is based on information compiled by Mr David Williams, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. David Williams is employed by CSA Global Pty Ltd, an independent consulting Company. Mr Williams has sufficient experience which is 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". David Williams consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the Ore Reserve has been compiled by Mr Steve O'Grady. Mr O'Grady, who is a Member of the Australasian Institute of Mining and Metallurgy, is a full time employee of Intermine Engineering and produced the Mining Reserve estimate based on data and geological information supplied by Mr Williams. Mr O'Grady has sufficient experience that is relevant to the estimation, assessment, evaluation and economic extraction of Ore Reserve that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. Mr O'Grady consents to the inclusion in this report of the matters based on his information in the form and context that the information appears.

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