



ASX: KNL  
FSE: FMK

**BUILDING A SUSTAINABLE ECO-FRIENDLY GLOBAL  
GRAPHITE BUSINESS**

**BUSINESS UPDATE – CAPE TOWN 2019**

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Information in this presentation that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Andrew Spinks, who is a Member of the Australasian Institute of Mining and Metallurgy included in a list promulgated by the ASX from time to time. Andrew Spinks is a director of Kibaran Resources Limited and 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 this presentation of the matters based on his information in the form and context in which it appears.

Information in this presentation 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 and 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 this presentation of the matters based on his information in the form and context in which it appears.

Information in this presentation that relates to Ore Reserves has been compiled by Mr Steve O’Grady, who is a Member of the Australasian Institute of Mining and Metallurgy. Steve O’Grady 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 which is relevant to the estimation, assessment, evaluation and economic extraction of the 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”. Steve O’Grady consents to the inclusion in this presentation of the matters based on his information in the form and context in which it appears.



# BATTERY MARKET OPPORTUNITY: E-MOBILITY

Global expansion of electric vehicle markets forecast to drive a 700% increase in annual natural graphite demand by 2025 ..... to over 800,000 tonnes per annum *Roskill, UBS*

40% of EV cost is the electric battery and 70% of the battery cost is the cells



## BATTERY RAW MATERIAL COMPOSITION

47%

GRAPHITE

16%

COBALT

16%

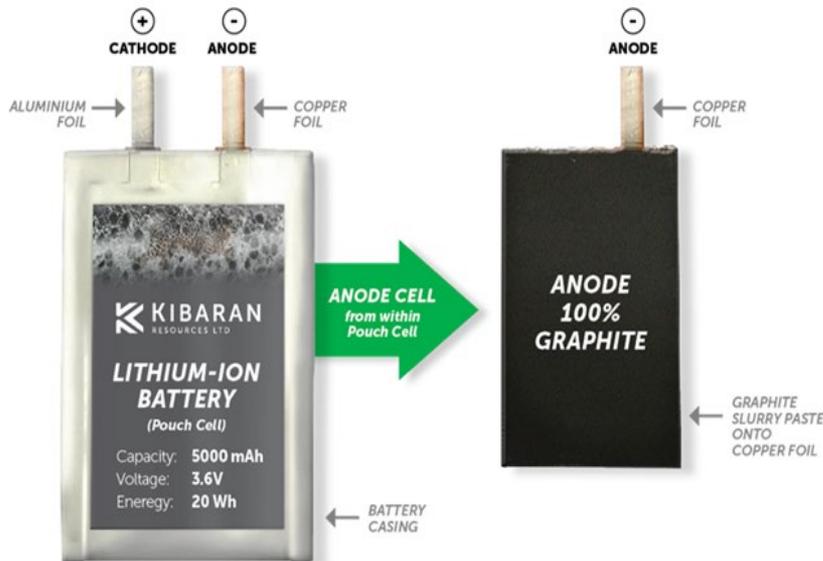
NICKEL

7%

LITHIUM

14%

MANGANESE



~55kg Mined flake graphite per EV

EV penetration rates increasing from 2% in 2018 to 25% by 2025  
 Roskill, UBS

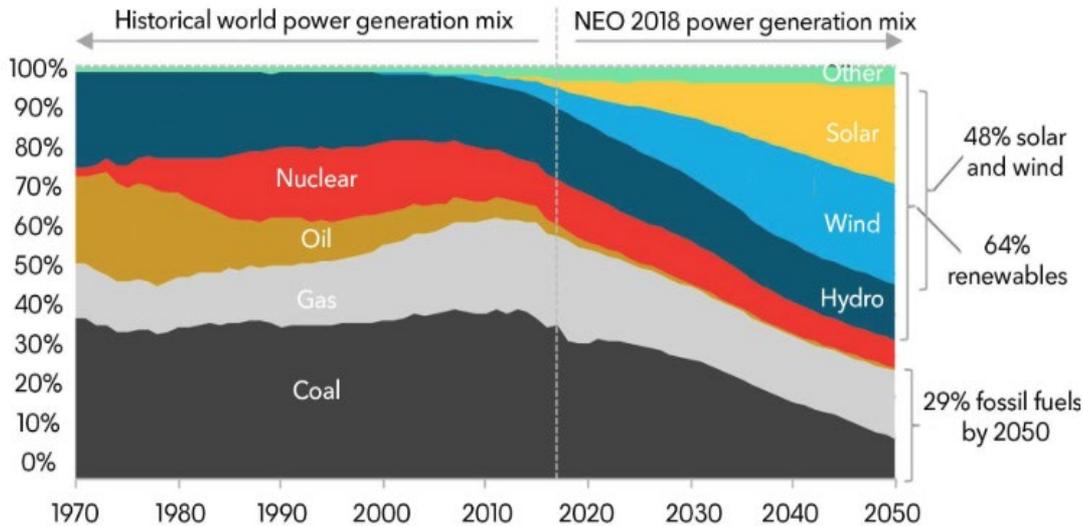


# BATTERY MARKET OPPORTUNITY: ENERGY STORAGE

Accelerating demand for lithium-ion battery storage from the energy industry

> US\$8 trillion investment in wind and solar to 2050

> US\$500 billion in new battery storage capacity by 2050



Source: Bloomberg NEF, IEA.

Renewable energy dependency forecast to increase from 25% to 64% by 2050 generating significant additional demand for battery graphite



# NEW GRAPHITE MINING & MANUFACTURING BUSINESS POISED FOR DEVELOPMENT



| Shares on issue  |  | Key holders   |  | Financial                                 |  |
|--|--|---|--|---|--|
| Listed 276m<br>F-diluted 279m  |  | Colonial 11%<br>Board 10%<br>Value-on-Gr. 4%<br>GR Engineer. 2%                   |  | Share Price - A\$0.13<br>Mkt Cap - A\$36m |  |
|  |  |   |  |   |  |
| Scalable mining project for long term supply of graphite products                        |  | Value-add manufacturing of battery (spherical) graphite for lithium-ion batteries |  |   |  |
| Development ready<br>Epanko Graphite Project   |  | Tanzania / Asia / Europe  |  |   |  |
| <p><b>Total pre-tax NPV<sub>10</sub> US\$356m</b><br/><i>(geared, nominal terms)</i></p> |  |   |  |   |  |

## ➤ Strong mix of mining, commercial and graphite experience

- Kibaran Chairman Robert Pett, Managing Director Andrew Spinks and in-country Project Director Grant Pierce OAM established Tanzania's Golden Pride Mine and are recipients of the President's Award in Tanzania for environmental excellence. German-based non-executive director Christoph Frey (ProGraphite) is a globally recognised graphite expert
- Listed on the Australian and German (Frankfurt) stock exchanges



# TANZGraphite UPSTREAM GRAPHITE BUSINESS SUMMARY

## Epanko Graphite Project

|   |  |
|---|--|
| Description   | Natural flake graphite project   |
| Location  | Epanko Valley, Mahenge, Ulanga District, Morogoro Region, Southern Tanzania  |
| Status – <b>ready to construct</b>  | Bankable Feasibility Study completed June 2017<br>Independent Engineer’s Review via KfW and SRK completed August 2017<br>Financing interest from German and Australian Government lenders<br>  |
| Social and environmental planning   | Completed to Equator Principles standards and achieved: <ul style="list-style-type: none"> <li>• International Finance Corporation Performance Standards</li> <li>• World Bank Group Environmental, Health &amp; Safety Guidelines</li> </ul>  |
| Production  | Stage 1 is 60,000 tonnes per year of natural flake graphite<br>Scalable development model enables rapid expansion to meet market demand  |
| Construction cost   | Stage 1: US\$89 million (plus US\$20m for grid power connection)   |
| <b>Strong economic returns</b>  | US\$44.5m pa EBITDA // 38.9% IRR // 3.5yr payback // US\$211m pre-tax NPV <sub>10</sub>  |
| Major international customers   | Thyssen Krupp (Germany) and Sojitz Corporation (Japan)<br>Offtake agreements in place for Stage 1<br>    |
| Employment  | 200 – 250 Tanzanians (directly) benefitting up to 3,000 family members (indirectly)  |
| Direct economic contribution to Tanzania over first 20 years of operation | <b>US\$850 million</b> via employment, procurement, income taxes, royalties, fees and dividends (expected operating period is over 40 years)   |



# EPANKO – POSITIVE DEVELOPMENTS EMERGING IN TANZANIA

- Productive meetings with Ministry of Minerals, Mining Commission and Bank of Tanzania
- Key financing issues:
  - International banks and bank accounts
  - Government equity participation
  - Governing law – disputes and adjudication
  - Logistics and export procedures
- Bank of Tanzania confirms offshore financing arrangements will continue to be acceptable
- Genuine effort to ensure new mining investment in 2019
  - New Minister of Minerals (Hon. Doto Biteko) appointed 8 January has visited Epanko and confirmed support for development to proceed
  - Ministry organised TZ Mining Conference 22-23 January with President as guest of honour to renew Government push for more development
- Progressing EPC arrangements with GR Engineering under LOI



Planning for construction in 2019

A poster for the 22nd Annual Meeting of the Mining Ministry, Tanzania, dated 22 January 2019. The poster features the national emblem of Tanzania at the top left. The text reads: "JAMHURI YA MUUNGANO WA TANZANIA WIZARA YA MADINI Waziri wa Madini Mhe. Doto M. Biteko anawakaribisha wachimbaji wa madini, wafanyabiashara na wadau wote wa madini kwenye MKUTANO MKUU WA KISEKTA WA MWAKA 22 JANUARI, 2019 MGENI RASMI Rais wa Jamhuri ya Muungano wa Tanzania na Amiri Jeshi Mkuu Mhe. Dkt. John Pombe Joseph Magufuli MAHALI: UKUMBI WA MIKUTANO WA MWALIMU JULIUS NYERERE - DAR ES SALAAM WAALIKWA WOTEMNATAKIWA KUIINGIA UKUMBINI KABLA YA SAA 2:00 ASUBUHI". There is a circular portrait of a man in a suit and glasses. At the bottom, there are images of gold bars, a diamond, and various mineral specimens. The text "Imetolewa na Katibu Mkuu Wizara ya Madini Prof. Simon Mwanjila" is at the bottom left.



# GERMAN LED EUROPEAN BATTERY ALLIANCE



*New capacity of 47 GWh announced to date*

*Volkswagen alone requires 150 GWh battery capacity by 2025*

➤ *sufficient for 3 million EV's and requiring over 80,000 tonnes of battery graphite*

Source: Bloomberg New Energy and Benchmark Minerals



*Positioned to capitalise on new investment in lithium-ion batteries for e-mobility*

Global patent pending over unique eco-friendly purification processing technology

German pilot plant program successfully completed

Testing undertaken by potential customers confirms product quality and performance

First production facility planned for 2019

Highly cash generative business model with payback of less than 4 years

35% gross margin delivers EBITDA of US\$30.5m per annum at 20,000tpa



# EcoGraf DOWNSTREAM GRAPHITE BUSINESS SUMMARY

## Manufacture of Purified Spherical Graphite

|  |  |
|--|--|
| Description  | Production of spherical graphite for use in lithium-ion batteries  |
| Location   | Initially supplying existing Asia-Pacific markets, thereafter new growth in Europe   |
| Status   | Feasibility study completed December 2017<br>German pilot plant program and process optimisation completed January 2019<br>Product samples distributed to battery anode manufacturers in South Korea, Japan, China, North America and Germany with strong offtake expected |
| Production   | 20,000 tonnes per year of spherical graphite, configured to expand with global demand  |
| Construction cost <sub>(2017 study)</sub>            | 5,000tpa: US\$25 million<br>20,000tpa: additional US\$41 million   |
| <b>Strong economic returns</b> <sub>(Dec 2017)</sub> | US\$30.5m pa EBITDA // 34.3% IRR // 3yr payback // US\$145m pre-tax NPV <sub>10</sub>  |



spherical graphite



graphite coated anode



li-ion battery production





# PROVIDES A COMPETITIVE NEW SUPPLY OF BATTERY GRAPHITE TO MEET EX-CHINA DEMAND



Source: Industrial Minerals

*All battery graphite is presently produced in China using hydrofluoric (HF) acid to achieve 99.5%C with Hubei and Shandong the largest producing areas and increasingly subject to environmental regulation*

| BATTERY GRAPHITE                          | EcoGraf™ | EXISTING SUPPLIES |
|---|----------|-------------------|
| Purification grade                        | >99.98%  | >99.95%           |
| Purification of fines                     | Yes      | No                |
| Eliminates use of toxic hydrofluoric acid | Yes      | No                |
| Environmentally sustainable               | Yes      | No                |



# **PRODUCT QUALIFICATION PROGRAM**

*Over 80 battery graphite samples tested by potential customers*

|  | Ore | Flake Conc | High Purity Conc | SPG fines | SPG14.5 | SPG15 | SPG20 | Coated SpG | EcoGraf Purified SPG |
|--|-----|------------|------------------|-----------|---------|-------|-------|------------|----------------------|
| <b>Lithium-ion Battery Anode Manufacturers</b> |     |            |                  |           |         |       |       |            |                      |
| South Korea                                    | ✓   | ✓          |                  |           | ✓       |       |       |            |                      |
| Japan  | ✓   | ✓          | ✓                |           | ✓       | ✓     | ✓     |            | ✓                    |
| Japan  |     |            |                  |           |         |       |       |            |                      |
| China  |     | ✓          |                  |           | ✓       |       | ✓     |            |                      |
| <b>Lithium-ion Battery Market Participants</b> |     |            |                  |           |         |       |       |            |                      |
| Germany  |     | ✓          | ✓                |           | ✓       |       | ✓     | ✓          | ✓                    |
| Germany  |     | ✓          | ✓                |           | ✓       |       | ✓     | ✓          | ✓                    |
| Germany  |     |            |                  | ✓         |         |       |       |            |                      |
| US   |     | ✓          |                  |           |         |       | ✓     | ✓          |                      |
| Japan  |     | ✓          |                  |           |         |       |       |            |                      |
| Germany  |     |            |                  |           | ✓       | ✓     |       |            |                      |



# GROWING BATTERY DEMAND TO DRIVE PRICES HIGHER

*Chinese demand up 39% and exports now expected to break through 100,000 tonnes of SpG, dominated by 3 major groups*



## Traditional Market - Flake Graphite Prices

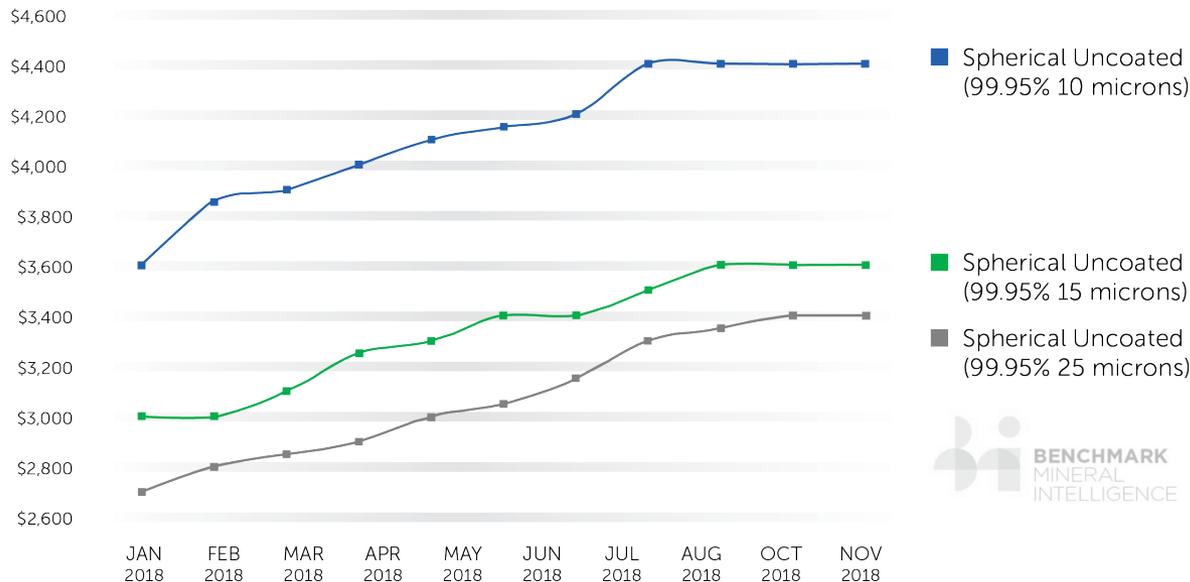
- +50 mesh now increasing over 60% and breaking through US\$2,000/t.



## Battery Market - Spherical Graphite (SPG) Prices

- SPG10 grade now reaching levels close to US\$4,400/t.

**GRAPHITE PRICES (USD/Tonne) : JAN 2018 - NOV 2018**



# GRAPHITE VALUE CHAIN

*Opportunity to capture downstream processing market value is compelling*



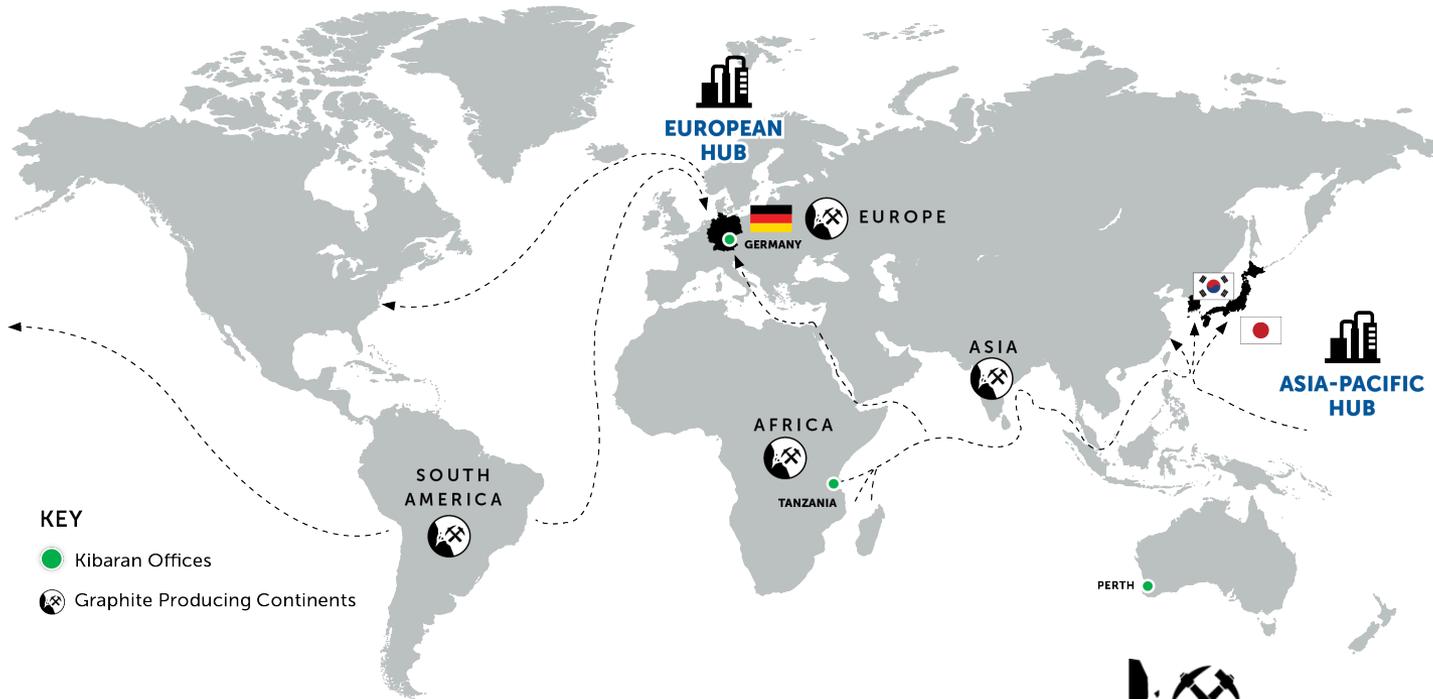
Source: ProGraphite Presentation IM Conference September 2018

# **EcoGrafi** ADVANCING TO DEVELOPMENT IN 2019

- 2017 - December Feasibility study completed, initial patent application lodged
- 2018 - January Kibaran Board approves German pilot plant program
- 2018 - May **EcoGrafi**™ trademark registered internationally
- 2018 - August Successful purification of 10 existing sources of supply of natural flake graphite from Europe, Africa, Asia and the Americas
- 2018 - September **EcoGrafi**™ successfully applied to low value fines, delivering 99.97% C
- 2018 - October Agreement signed for supply of natural flake graphite feedstock
- 2018 - December Major European carbon products group successfully tests **EcoGrafi**™  
Submission of updated patent incorporating pilot plant results  
Planning commenced for commercial operations



# BUILDING A GLOBAL GRAPHITE SUPPLY NETWORK



USD25 million invested over 6 years to create development ready upstream and downstream battery mineral businesses

- KEY**
- Kibaran Offices
  - ⚒ Graphite Producing Continents

**TANZGraphite**

High quality 40+ year supply of natural flake graphite at Epanko and Merelani in Tanzania

**EcoGrafi**

Unique non-HF purified spherical graphite (*patent pending*)



**EPANKO GRAPHITE PROJECT**

Natural Flake Graphite (NfG)

|                   |           |
|-------------------|-----------|
| Production        | 60ktpa    |
| NPV <sub>10</sub> | US\$211m  |
| EBITDA            | US\$44.5m |



**DOWNSTREAM PRODUCTION FACILITY**

Spherical Graphite (SpG)  
(F) Fines  
(UN) Unpurified  
(P) Purified

|                   |           |
|-------------------|-----------|
| Production        | 20ktpa    |
| NPV <sub>10</sub> | US\$145m  |
| EBITDA            | US\$30.5m |

**Combined pre-tax NPV<sub>10</sub> US\$356m**



# CATALYSTS TO UNLOCK VALUE

## Building a Sustainable Global Graphite Business

### UPSTREAM BUSINESS EPANKO GRAPHITE PROJECT



Natural  
Flake  
Graphite  
(NfG)

### DOWNSTREAM BUSINESS BATTERY GRAPHITE FACILITY

Spherical Graphite (SpG)  
(F) Fines  
(UN) Unpurified  
(P) Purified



- Finalise EPC Contract
- Project financing

- Update business case with pilot plant optimisation results
- Formalise strategic partnerships
- Financing

**Total pre-tax NPV<sub>10</sub> US\$356m**

*(geared, nominal terms)*





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**THANK YOU**