

10 MARCH 2021

ASX ANNOUNCEMENT

ASX: EGR

## Positive Response to Proposed US\$60m Epanko Debt Financing

**EcoGraf Limited** (ACN 117 330 757) ("**EcoGraf**" or the "**Company**") (ASX: **EGR**) is pleased to report encouraging progress to secure Tanzanian Government approval for the KfW IPEX-Bank US\$60 million Epanko Graphite Mine ("Epanko") debt financing proposal. KfW IPEX-Bank is part of KfW, the development bank of the Federal Republic of Germany and one of the world's largest development financiers.

Following discussions with the Tanzanian Ministry of Minerals, Mining Commission, Ministry of Finance and the Bank of Tanzania, KfW IPEX-Bank and the Company have developed a debt financing structure that fully complies with Tanzania's new mineral legislation relating to banking arrangements and will enable construction of the long-life, high quality Epanko flake graphite operation.

After conducting further joint briefings with KfW IPEX-Bank to present the proposed financing arrangements to the Government of Tanzania and its wholly-owned development bank, TIB Development Bank, the Company has received confirmation from TIB Development Bank that it would like to progress the Epanko funding transaction.

The next steps will involve completion of due diligence processes, preparation of loan documentation and formal approvals from the Governments of Germany and Tanzania.

### Epanko to Make a Significant Contribution to Tanzania

EcoGraf has invested over US\$20m in Tanzania over the last 7 years to prepare Epanko for construction, including:

- Completion of a bankable feasibility study for an initial 60,000 tonne per year operation. The study was led by GR Engineering Services Limited and involved input from contractors and consultants in Tanzania and overseas. It confirmed that Epanko will be a highly profitable, long-life and scalable new graphite mining operation.
- Receipt of Environmental Approval.
- Grant of Mining Licence.
- Receipt of approval for Relocation Action Plan that involves new housing, school, church and medical dispensary for affected persons.
- Rigorous due diligence completed by SRK Consulting (UK) during the Independent Engineer's Review, confirming that the bankable feasibility study adequately addresses all technical aspects of the proposed development and the social and environmental planning aspects satisfy International Finance Corporation Performance Standards and World Bank Group Environmental, Health and Safety Guidelines.
- Sales contracts for export of graphite products to Europe and Asia.

Epanko is forecast to expand over time to meet growing market demand for battery graphite and is expected to operate for 40-50 years. Financial modelling indicates that over that time, economic benefits of over US\$3 billion will accrue to Tanzania, through employment, procurement, royalties, taxes and dividends. Over 95% of the 300 permanent staff will be Tanzanian, with an estimated 4,500 indirect jobs to be supported by the operation.

### **Sector Leading ESG Credentials**

The Epanko bankable feasibility study social and environmental planning programs have been conducted in compliance with the Equator Principles, a globally recognised risk management framework adopted by leading financial institutions for assessing and managing social and environmental risks in new developments.

Achieving this standard and satisfying International Finance Corporation Performance Standards and World Bank Group Environmental, Health and Safety Guidelines is critical to securing international financing support for the new development and reflects EcoGraf's commitment to ensuring the highest level of Environmental, Social and Governance operating standards.

Epanko will provide inter-generational economic and social benefits for the regional community near Mahenge in Tanzania and will support Tanzania's positive industrialisation progress.

### **Epanko Enhancement Studies**

In conjunction with the financing process, EcoGraf will also be undertaking Epanko enhancement studies in relation to:

- defining the potential for 'fresh rock' graphite within the Epanko resource to deliver a high purity 99% carbon graphite without additional processing. Metallurgical testwork indicates that this Epanko material will provide an excellent long-term feedstock for EcoGraf™ battery anode material and is expected to lead to a reduction in purification reagents and production costs.
- evaluating the benefits of low-impact, continuous mining methods at Epanko through the use of proven surface mining equipment.

A summary of the Epanko bankable feasibility study outcomes is attached to this announcement.

This announcement is authorised for release by Andrew Spinks, Managing Director.

**For further information, please contact:**

### **INVESTORS**

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ENGINEERING CLEAN ENERGY

ASX: EGR  
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# Epanko Bankable Feasibility Study Summary

March 2021

[www.ecograf.com.au](http://www.ecograf.com.au)



# Disclaimer



## Securities Disclaimer

This presentation is for informational purposes only and does not constitute an offer to sell, or solicit to purchase, any securities. Such offer can be made only through proper subscription documentation and only to investors meeting strict suitability requirements. Any failure to comply with these restrictions may constitute a violation of applicable securities laws.

## Forward looking statements

Various statements in this document constitute statements relating to intentions, future acts and events. Such statements are generally classified as “forward looking statements” and involve known and unknown risks, uncertainties and other important factors that could cause those future acts, events and circumstances to differ materially from what is presented or implicitly portrayed herein. The Company gives no assurances that the anticipated results, performance or achievements expressed or implied in these forward-looking statements will be achieved.

## Production targets and financial information

Information in relation to the feasibility study conducted on the production of battery graphite using the Company’s EcoGraf technology, including production targets and forecast financial information derived from the production targets, included in this document is extracted from an ASX announcement dated 5 December 2017 “Battery Graphite Pilot Plant”, as updated on 17 April 2019 “EcoGraf Delivers Downstream Development” and 5 November 2020 “Completion of EcoGraf™ Processing Facility Development Report”, available at [www.ecograf.com.au](http://www.ecograf.com.au) and [www.asx.com.au](http://www.asx.com.au). The Company confirms that all material assumptions underpinning the production targets and forecast financial information derived from the production targets set out in the announcement released on 5 December 2017, as updated on 17 April 2019 and 5 November 2020 continue to apply and have not materially changed.

Information in this document relating to the Bankable Feasibility Study conducted on the Epanko Graphite Project, including production targets and forecast financial information derived from the production targets, included in this document is extracted from an ASX announcement dated 21 June 2017 “Updated Bankable Feasibility Study” available at [www.ecograf.com.au](http://www.ecograf.com.au) and [www.asx.com.au](http://www.asx.com.au). The Company confirms that all material assumptions underpinning the production targets and forecast financial information derived from the production targets set out in the announcement released on 21 June 2017 continue to apply and have not materially changed.

## Competent persons

Any information in this document 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 EcoGraf 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 document of the matters based on his information in the form and context in which it appears.

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

Information in this document 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 and evaluation of the 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, Mineral Resources and Ore Reserves”. Steve O’Grady consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.

# Value proposition



ECOGRAF LOCATIONS



## Battery Graphite Manufacturing Australia

- ✓ 20,000tpa Battery Graphite
  - ✓ US\$35m Annual EBITDA
  - ✓ 42.4% Internal Rate of Return
  - ✓ US\$642m Pre-tax project NPV<sub>8</sub>
  - ✓ US\$448m Pre-tax<sup>1</sup> equity NPV<sub>8</sub>
- Payback ~3.3yrs

Vertically integrated battery anode material business positioned for the global transition to clean energy

## TANZGraphite

### Epanko Graphite Project Tanzania

- ✓ 60,000tpa Natural Flake Graphite
- ✓ US\$44.5m Annual EBITDA
- ✓ 38.9% Internal Rate of Return
- ✓ US\$211m Pre-tax equity NPV<sub>10</sub>
- ✓ US\$3B Forecast Contribution to Tanzania

Development ready businesses forecast to generate US\$80m EBITDA per annum



### Recycling – Recovery of Battery Anode Materials

- ✓ Significant results achieved
- ✓ Production waste – large market
- ✓ Lower battery cost and emissions
- ✓ Blended anode material - opportunity
- ✓ Engineering design for pilot plant commenced

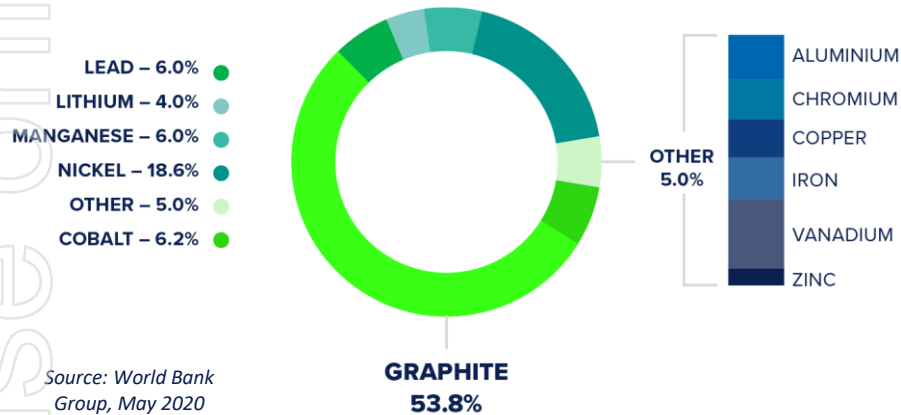
Proprietary EcoGraf™ purification technology provides sector leading ESG credentials with application to battery recycling industry

#1: Post-tax equity NPV<sub>8</sub> is US\$317m (refer ASX Announcement *Completion of EcoGraf™ Processing Facility Development Report* 5 November 2020)

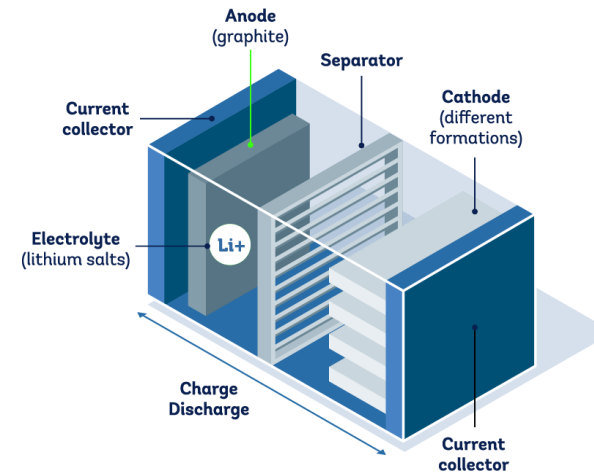
# Compelling lithium-ion battery market opportunity



## Graphite forecast to dominate battery mineral demand to 2050



## EV market forecast to drive +700% growth in natural graphite demand by 2025 Roskill



Source: World Bank Group, May 2020



27kg

Purified natural graphite per EV  
Requires 50-55kg of flake graphite

Battery graphite is processed from natural flake graphite into a +99.95% high purity product suitable for anode manufacturing

EcoGraf™ provides a high quality, cost competitive alternative to existing battery graphite produced using toxic hydrofluoric acid

# Flake graphite business summary



## Long life Epanko Graphite Mine to supply industrial and battery markets

### Defined, de-risked and ready for construction

- ✓ Bankable Feasibility Study completed by GR Engineering Services
- ✓ Bank appointed Independent Engineer's Review completed by SRK Consulting
- ✓ Supporting Tanzania's industrialisation strategy
- ✓ Granted Mining Licence



### Sector leading ESG credentials

- Equator Principles development model, satisfying:
- ✓ International Finance Corporation Performance Standards
  - ✓ World Bank Group Environmental, Health & Safety Guidelines



### Scalable production plant

60,000tpa initial development with low cost expansion to meet market demand

### Sales agreements with major international customers

thyssenkrupp (Germany) and Sojitz Corporation (Japan)



## Capital investment

## Financial returns @ 60,000tpa

60,000tpa

Pre-tax NPV<sub>10</sub>

Annual EBITDA

IRR

US\$89m

US\$211m

US\$44.5m

38.9%

# EcoGraf provides mine-to-market ESG supply chain assurance



- EcoGraf's Epanko mine development satisfies Equator Principles social and environmental planning standards
- Long-life, high quality supply of natural flake graphite for industrial and battery markets
- Ideally located to support European customers' supply chain management under the Paris Agreement on climate change
- German and Australian Government funding support
- US\$60m debt funding proposal developed in conjunction with Germany's KfW IPEX-Bank and presented to the Government of Tanzania with the aim of simplifying and fast-tracking the financing process
- Positive response from Tanzanian Government owned TIB Development Bank provides pathway for EcoGraf, KfW IPEX-Bank and the Government to proceed to finalise the proposed debt financing arrangements.

**Epanko to transform the regional economy, operating for over 40 years and contributing over US\$3 billion to Tanzanian economic and social development**





# Bankable feasibility study (BFS) key highlights



- 50% increase in production to 60,000tpa positions Epanko to be a major baseload supplier of high value graphite products to traditional and emerging graphite markets
- Low pre-production capital of US\$88.9m
- C1 operating costs FOB Dar es Salaam of US\$500/t
- BFS delivers a high returning project:
  - Pre-tax NPV<sub>10</sub> of US\$211m
  - Internal rate of return:38.9%
  - Annual EBITDA of US\$44.5m
- Economics do not include sales into the high-growth lithium-ion battery market
- **Metallurgical test work demonstrates potential to produce 99% carbon concentrate from fresh ore with no additional milling or cleaning stages**
- Executed marketing strategy with strong alignment to German industry and the battery supply chain in Japan, Korea and Taiwan
- 44ktpa - binding sales and offtake agreements in place covering initial production
- 16ktpa - under negotiation with existing partners and leading European carbon groups
- Debt financing program with Germany's KfW IPEX-Bank
- Manufacturing of EcoGraf™ battery grade graphite to add further value



99% carbon purity provides a long-term supply of high quality feedstock for the manufacture of battery graphite



High carbon purity will reduce EcoGraf™ battery graphite purification costs





# Rigorous 60,000tpa BFS and strong economic returns positions Epanko for development

- Robust technical and financial BFS completed, conforming with IFC standards
  - Average production of 60,000tpa graphite concentrate
  - High proportion of >150 micron concentrate at carbon grades demanded by the market
  - Potential to produce a 99% carbon concentrate from <150 micron flake to supply high growth battery anode market
- BFS utilised industry leading consultants
  - Including GR Engineering, Knight Piesold, CSA Global and IMO Metallurgy
  - Technical due diligence completed by independent bank appointed engineer SRK
- BFS economics are based on sale into refractory and other established markets
  - Significant upside potential through access to high value markets, including spherical and expandable graphite

## Epanko bankable feasibility study outcomes

Development period	(months)	19
Average annual throughput	(tonnes)	695,000
Strip ratio	(waste to ore)	0.4:1
Average feed grade	(% TGC)	8.3
Graphite recovery	(%)	94.7
Average product carbon grade	(%)	96
Graphite production	(tonnes per year)	60,000
Mining cost	(US\$/t processed)	7.93
Processing cost	(US\$/t processed)	19.61
General & administration cost	(US\$/t processed)	4.75
Transport and port charges	(US\$/t sold)	107
C1 FOB cost	(US\$/t sold)	500
All in Sustaining cost <sup>1</sup>	(US\$/t sold)	572
Pre-production capital cost	(US\$ million)	88.9

1: Includes royalties (US\$39/t), sustaining capital (US\$15/t), off-site corporate functions (US\$10/t) and rehabilitation (US\$8/t)

# Capital and operating costs

- Pre-production capital costs US\$88.9m
- 60,000tpa bankable feasibility study delivers a significantly improved capital efficiency:
  - US\$1,482/t from US\$1,937/t
- Scalable plant design enables low cost future expansion to match growth in graphite market demand
- Rigorous process applied to generate operating cost estimates
- Power costs based on diesel power for 2 years of operations with connection to the Tanzanian power grid in year 3
- Mining costs based on contractor mining



## Summary of pre-production capital costs (US\$ million)

	60,000tpa	40,000tpa
Mining	0.7	2.4
Process plant	48.8	45.1
Infrastructure	13.2	10.9
EPC	11.5	11.0
Contingency	7.1	6.2
Owner's costs	7.6	1.9
<b>Total</b>	<b>88.9</b>	<b>77.5</b>

## Operating costs (US\$/t FOB Dar es Salaam)

Mining	96	117
Processing	239	277
Transport & port charges	107	102
General & administration	58	74
<b>C1 cost FOB Dar es Salaam</b>	<b>500</b>	<b>570</b>
Royalties	39	43
Other sustaining costs <sup>1</sup>	33	9
<b>All in sustaining cost</b>	<b>572</b>	<b>622</b>

1: Includes sustaining capital (US\$15/t), off-site corporate functions (US\$10/t) and rehabilitation (US\$8/t)

# Epanko supported by existing infrastructure

- Existing road access to Mahenge provides an effective logistics solution to Dar es Salaam
  - Construction of bridge across the Kilombero River, linking Ifakara and Ulanga districts simplifies project logistics
  - Freeway flyover constructed to provide efficient access to Dar es Salaam port
  - Proximity to the Ifakara rail siding provides a long-term strategic logistics option as Epanko production increases
- Graphite products to be exported from the port of Dar es Salaam
- Grid power costs expected to be US\$0.09kwh vs diesel costs of US\$0.30kwh



**Established regional infrastructure**



**Export infrastructure at Dar es Salaam**



# High quality graphite deposit with scale



- Mineral Resource supports potential for depth and strike extensions of the Ore Reserve pit shells
- Mineralisation commences at surface with minimal cover
  - Average LOM strip ratio 0.4:1
- Favourable mineralogy delivers quality and drives robust project economics
  - High proportion of large flake sizes
  - Graphite easily liberated and delivers high yield
  - Higher carbon grade achieved through simple processing
  - Low levels of in-situ deleterious elements

## Epanko Mineral Resource estimate >8% TGC

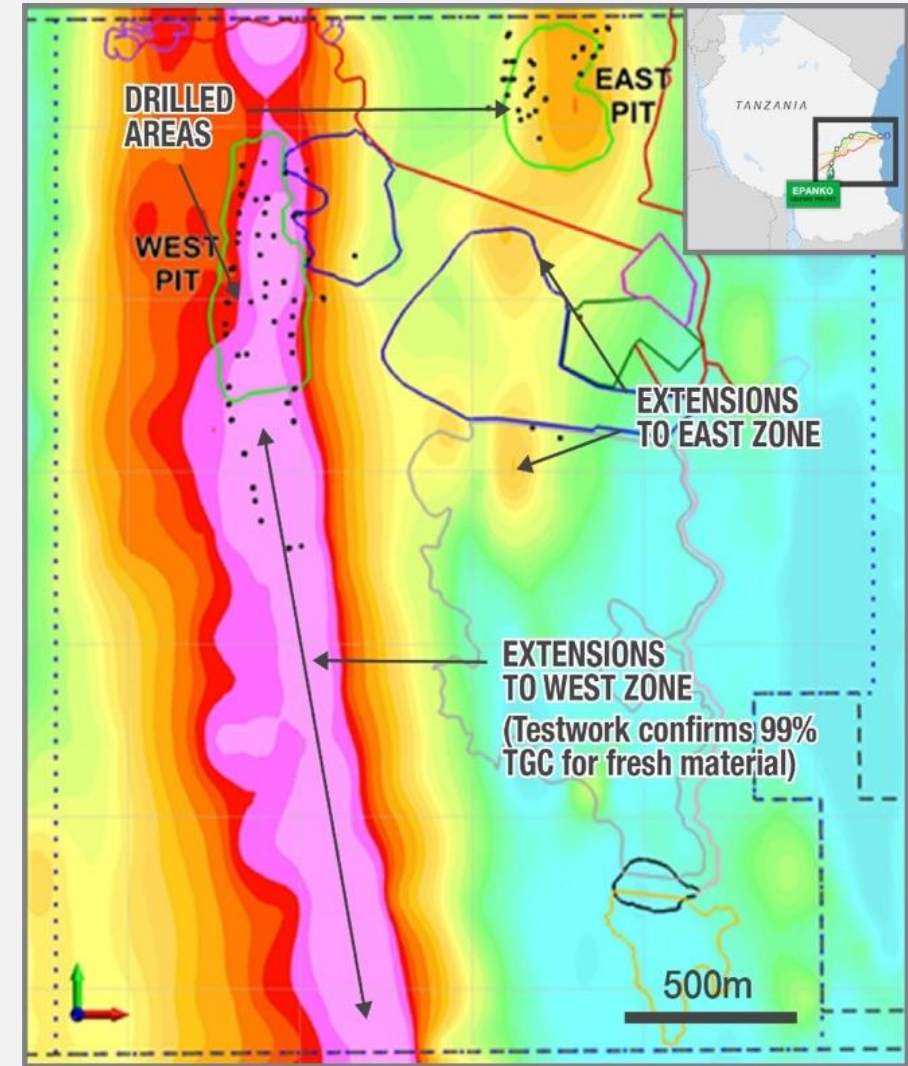
JORC classification	Tonnage (Mt)	Contained graphite (t)
Measured	7.5	738,900
Indicated	12.8	1,280,000
Inferred	10.4	1,030,600
<b>Total</b>	<b>30.7</b>	<b>3,049,500</b>



Epanko rocks have undergone extremely high metamorphic pressure and temperature forces that have created unique 'cheetah' like rock textures

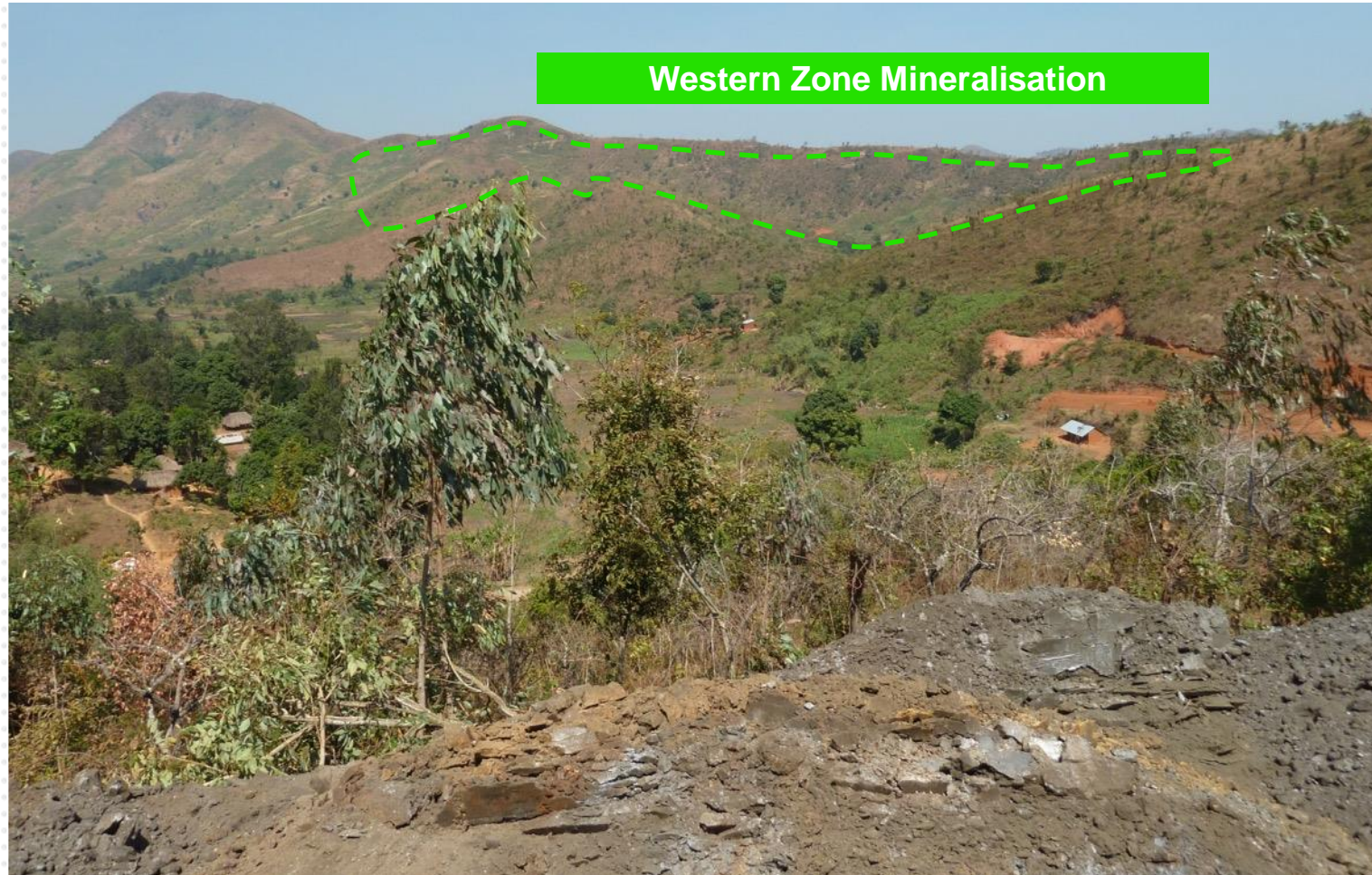
# VTEM shows highly conductive undrilled western zone with significant graphite potential

- Significant mineralisation exists outside of the Mineral Resource estimate modelled on an 8% TGC cut-off compared to the 5% TGC cut-off utilised for the Ore Reserve
  - Mineral Resource at lower 5% TGC is 113.3Mt at 7.2% TGC grade for 8.1Mt contained graphite
  - Importantly the 7.2% TGC grade under the 5% TGC cut-off above is higher than comparable Tanzanian deposits of relative scale
- Strong conductivity identified in VTEM survey highlights the potential for the delineation of additional mineralisation along strike and at depth
- Only 1.13km of the 4km strike identified by VTEM survey has been drilled on the West Pit
  - Remains open at depth with the deepest reported graphite intersection at 200m
  - Potential to provide significant tonnages of additional graphite mineralisation





## Outlook of western zone ridge line



# Favourable mineralogy

- Epanko dominant host mineral is a calc silicate mineral
  - Result of a pre-existing sedimentary unit subjected to contact metamorphism and local structural effects
- Metamorphism defines crystallinity
  - Epanko rocks have undergone extremely high metamorphic pressure and temperature that has created unique 'cheetah' like rock textures
- Benefits of favourable mineralogy and metamorphism
  - Graphite is easily liberated and delivers high yield
  - Higher carbon grade achieved through simple processing
  - Low levels of in-situ deleterious elements
- All graphite projects have different mineralogy
  - Favourable Epanko mineralogy delivers quality and drives strong project economics

**Epanko's unique 'cheetah' like rock textures**

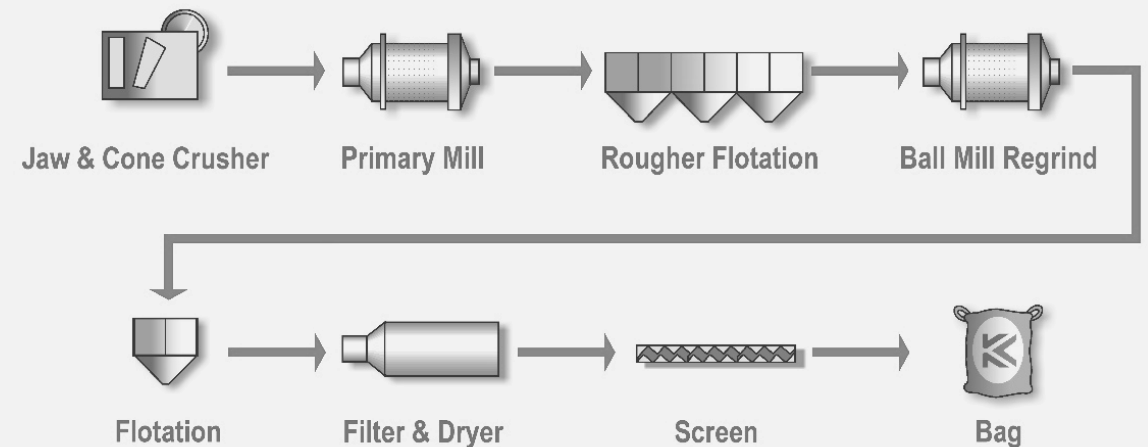




# High grade and large flake provides flexibility in process flowsheet design and final products

- Process flowsheet based on established industry processes and equipment
- High level of independent testwork to support bankable feasibility study, including 200 tonne bulk sample
  - Bulk sample was toll treated through an operating graphite production plant
- High level of variability testwork completed
  - Confirmed the potential to produce a 99% carbon concentrate for <150 micron flake from fresh ore
- Increased understanding of flowsheet dynamics to produce desirable properties for both industrial uses and high growth lithium-ion battery markets
  - Epanko has the highest proportion of >150 micron flake and has designed a flowsheet to preserve flake size in this product range

## Production flowsheet overview



# The future is **electric.**



**BATTERY PRODUCTS**

**RECYCLING**

**NATURAL GRAPHITE**



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