# CASTLE





# **Charging Ahead**

# The Kambale Graphite Project



Benchmark Battery Gigafactories Asia Pacific 2023, Tokyo, 20-21 September 2023

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Competent Person Statement - The scientific and technical information in this Report that relates to the geology of the deposits and exploration results is based on information compiled by Mr Stephen Stone, who is an Executive Director of Castle Minerals Limited. Mr Stone is a Member of the Australian Institute of Mining and Metallurgy 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'. Mr Stone is the Qualified Person overseeing Castle's exploration projects and has reviewed and approved the disclosure of all scientific or technical information contained in this announcement that relates to the geology of the deposits and exploration results. Castle Minerals Limited has a firm policy to only utilise the services of external independent consultants to estimate Minerals Resources. The Company also has established practices and procedures to monitor the quality of data applied in Mineral Resource estimation, and to commission and oversee the work undertaken by external independent consultants.

Information in this report that relates to geological interpretation, exploration activities, graphite mineralisation, Mineral Resources and results at the Kambale Graphite Project was reviewed by Dr Allan John Parker who is a Member of the Australian Institute of Geoscientists. Dr Parker is an employee of Palaris Australia Pty Ltd which provides geological consultancy services to Castle. Dr. Parker is also Director of Geosurveys Australia Pty Ltd, a non-Executive Director of Centrex Limited and was formerly Managing Director of Lincoln Minerals Limited. Dr Parker has sufficient experience relevant to the styles of mineralisation and to the activities which are being presented to qualify as a Competent Person as defined by the JORC code, 2012. Dr Parker consents to the release of the information compiled in this announcement in the form and context in which it appears.

In all cases Mineral Resources are estimated and reported in accordance with the "Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code. Mineral Resources reported in accordance with the 2012 Edition (Kandia 8000 Zone and Kpali) were prepared by Castle Minerals Limited and reviewed by Runge Limited.

The Company confirms that all material assumptions underpinning the Mineral Resources and any forecast information continue to apply and have not materially changed. Further information on Castle Minerals Limited and its Ghana projects and Minerals Resources can be found on its website at <a href="https://www.castleminerals.com">www.castleminerals.com</a>, which contains copies of all continuous disclosure documents to ASX, Competent Persons' Statements and Corporate Governance Statement and Policies.

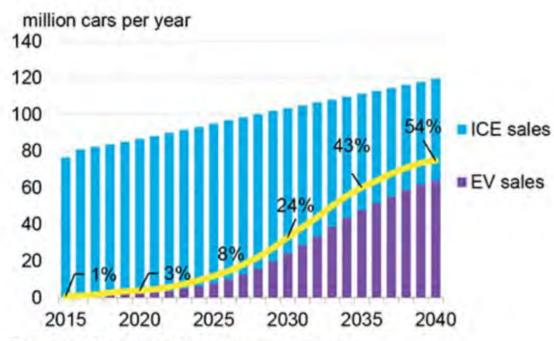
The information in this Release that relates to metallurgical test work was managed by Independent Metallurgical Operations Pty Ltd ("IMO") and is based on, and fairly represents, information and supporting documentation compiled and/or reviewed by Mr Peter Adamini BSc (Mineral Science and Chemistry) who is a member of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Adamini is a full-time employee of IMO who has been engaged by Castle Minerals Ltd to provide metallurgical consulting services. Mr Adamini consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Market and industry Data - This presentation includes market share information and industry data and forecasts, which have been obtained from independent industry publications. Although these sources are believed to be reliable, no independent verification of the data has been made nor the underlying economic assumptions relied upon therein ascertained. Third-party sources generally indicate that they have obtained their information from sources believed to be reliable, but do not guarantee the accuracy and completeness of such information. It is believed that the market and industry data presented throughout this presentation is accurate, but no assurance as to the accuracy or completeness thereof is provided. Castle cannot and does not provide any assurance as to the accuracy or completeness of such included information. Market forecasts, in particular, are likely to be inaccurate, especially over long periods of time.

# Why invest now in a graphite company?



- Graphite: A 'Critical Mineral' for achieving "clean energy", "net zero" ambitions.
- Lithium-Ion Batteries ("LiB") dominate EV batteries, stationary power storage units and other applications.
- Graphite 95% of a LiB anode. 30kg 60kg per EV.
- ~3kg of fine-flake battery-grade concentrate reqd. to produce 1kg of micronised, spheronised, purified, coated Battery Anode Material (BAM).
- Another 100M 120M passenger EVs by 2030\*
- Current production of natural fine flake graphite wholly inadequate to meet forecast EV sales.
- LiB demand for natural flake graphite will >80% of total worldwide supply by 2030 (~50% in 2023).
- Natural flake graphite likely to exceed (high CO<sub>2</sub> footprint) synthetic graphite as predominant anode input.



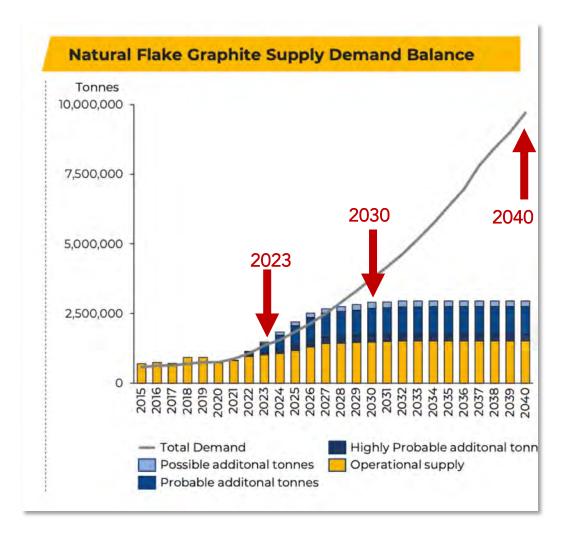
Source: Bloomberg New Energy Finance

Forecast annual global light duty vehicle sales

# **Demand – Supply Disconnect**



- <400 'gigafactories' (LiB manufacturing plants) planned by 2030.
- Many more new graphite mines needed to meet demand.
- Supply disconnect: Gigafactories much faster to build than mines are to find, develop and to have their BAM 'qualify'.
- Most possible / probable mining projects still a long way from development decisions and/or financing.
- Prevailing graphite price inadequate to incentivise the many new mines needed
- USA / EU EV producers have a massive over reliance on China (~95% BAM production).
- Much of proposed new non-China located production is already contracted to Chinese off-takers.
- Billions US\$ (IRA\*) and Euros (CRMA\*) now being directed to secure reliable, quality, non-China sourced concentrates, BAM, anodes and batteries.
- EV producers beginning to step down the chain (ref. lithium).

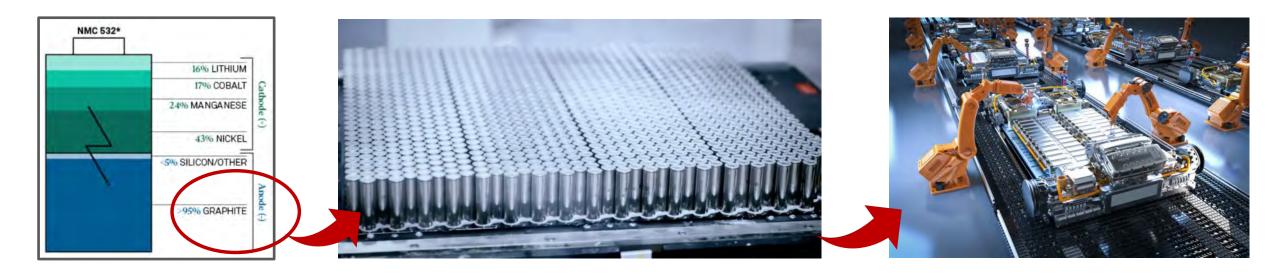


Commentary sources: Bloomberg. Fastmarkets. McKinsey. Macquarie. Benchmark. Reuters. International Energy Agency. S&P Global.

\* Inflation Reduction Act and Critical Raw Materials Act

# **Supply Chain Bottleneck**





Tesla's Berlin Gigafactory has plans to expand from 250,000 cars per year to 500,000 and then to 1,000,000.



~400 Gigafactories Operating by 2030?

Commentary sources: Bloomberg. Fastmarkets. McKinsey. Macquarie. Benchmark. Reuters. International Energy Agency. S&P Global.

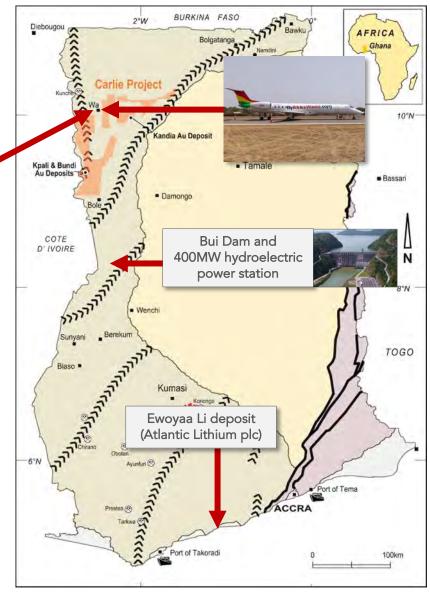
# Fast-Tracking the Kambale Graphite Project

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- Recent evaluation commenced early 2022 driven by burgeoning EV vehicle sales and forecast graphite supply deficit:
  - ✓ 2x ground EM geophysical surveys to locate deposit extensions.
  - ✓ 3x RC and diamond core drilling programmes to define mineralisation (21,000m drilled).

Kambale Graphite Project

- ✓ 15.6Mt at 9% TGC (1.4Mt contained graphite) Mineral Resource Estimate (JORC 2012).
- Infill RC drilling results pending.
- MRE update pending.
- ✓ 2x test work campaigns to produce a commercial specification bulk fine flake concentrate production.
- Specialist evaluation of bulk concentrate for use in EV battery anode manufacture (commencing Q4 2023);
- Scoping Study (commencing Q4 2023) to assess technical and commercial merits of establishing a mine and on-site process plant to produce a value-added bulk concentrate and possible pre-cursor BAM product.



# Maiden MRE: 14.1Mt Contained Graphite (update pending)



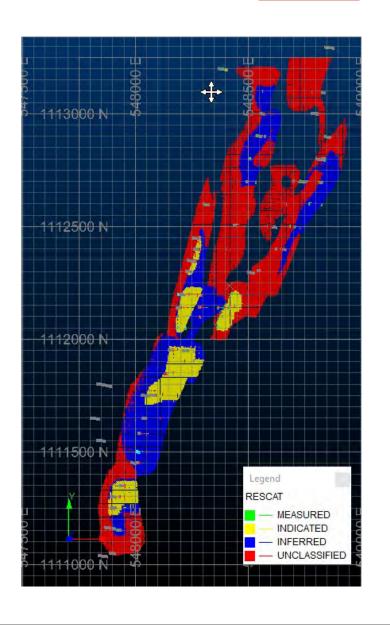
Classification (5% TGC Cut- Off)	Tonnes (kt)	Contained TGC (kt)	TGC	%
Indicated	5,979	542	9.1%	39%
Inferred	9,632	863	9.0%	61%
Total	15,611	1,405	9.0%	

Independent JORC Code 2012 Mineral Resource Estimate<sup>1,2</sup> (Refer ASX release 12 April 2023)

- 39% Indicated JORC classification.
- Extensive drilling has confirmed multiple, sub-parallel, thick, consistently mineralised graphitic schist zones. 2.5km N-S and <0.5km E-W.
- RC drilling recently completed to bring additional mineralisation into an updated MRE (red shaded area) and test for extensions (results pending).
- Shallow depth and good widths conducive to lower-cost open-cut mining.

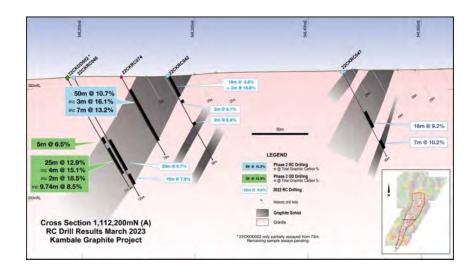


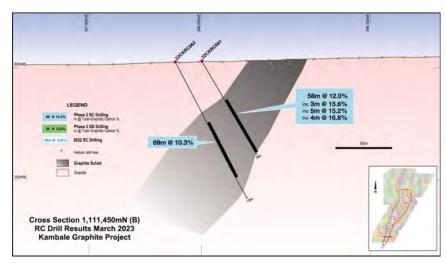
<sup>2.</sup> Undertaken by Palaris (Australia) Pty Ltd



# Shallow, Multiple, Wide Lens

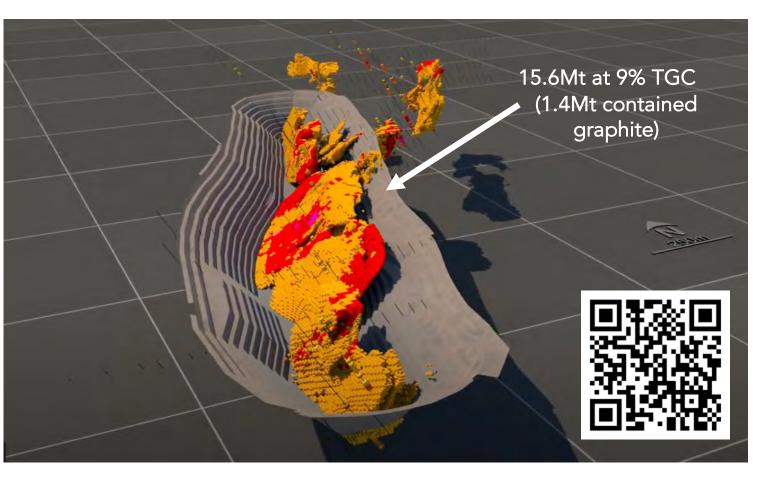






Mineralisation from surface.

Open at depth. Robust, thick intercepts



Concept open-pit outline (for illustration purposes only). Use QR Code to access fly-through video on YouTube.

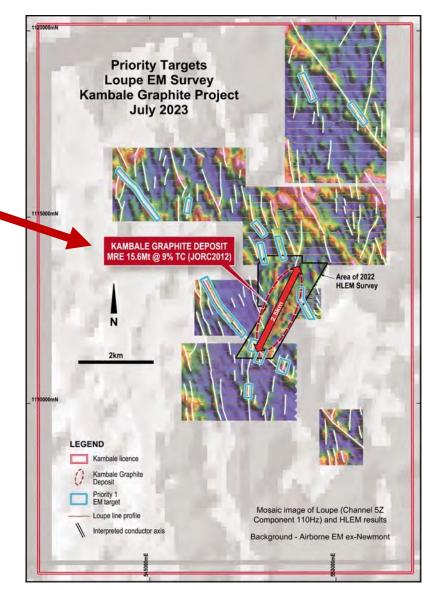
# Searching For More Graphite





Reconnaissance mapping and stateof-the-art Loupe EM geophysics campaign has identified a series of high-priority targets within the broader 149km² tenure.



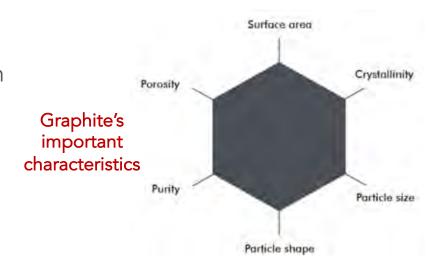


## Commercial Grade Bulk Fine Flake Concentrate Produced



Phase 2 test work (IMO P/L and Metallurgy P/L, Perth):

- 215kg unweathered, composited diamond core samples extracted from representative mineralised zones and used for test work.
- ~95.1% TGC bulk fine flake graphite concentrate produced.
- Conventional grind-flotation circuit.
- Concentrate to be evaluated for use in battery anode manufacture:
   Micronised, spheronised, purified, coated, electrochemical and battery performance tests.









## **Excellent Development Credentials**



## • Minimal infrastructure capital requirements:

- ✓ Largely green-grid power from 400MW Bui hydro dam.
- ✓ Plentiful potable water.
- ✓ Quality sealed and unsealed local and regional roads.
- ✓ Daily commercial flights from Accra to Wa.

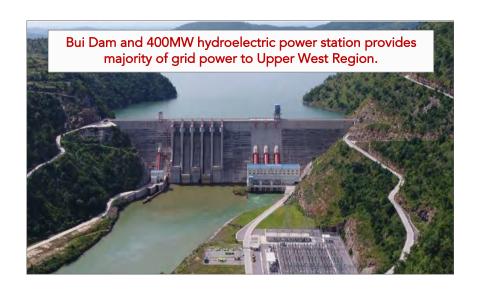
## • Ghana: A favourable operating and mining jurisdiction:

- ✓ Safe, democratic, stable Westminster-based government system.
- ✓ Regional base for international diplomatic missions.
- Established world-class mining laws and regulations.
- ✓ Mature mining industry (Africa's no.1 gold producer). Tier 1 operations.
- ✓ Skilled, well-trained work force.
- ✓ Full range of support services.
- ✓ Strong endorsement from local communities and government.

### Strategic importance:

- ✓ Only sizable graphite project in Ghana and one of just a few in West Africa.
- ✓ Uncommitted production.
- ✓ Excellent highways to two international ports of Tema and Takoradi, providing easy direct access to US, European and other markets.

<sup>1</sup>Government of Ghana has the right to acquire 10% free carried interest in all licences and is entitled to 5% Gross Royalty on production. Kambale Graphite Project is located on prospecting Licence PL10/47 held by Castle's wholly owned Ghanaian subsidiary, Kambale Graphite Limited.





## **ESG** & Social Licence to Operate

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- Team has many years successful local operational experience:
  - Acting and communicating respectfully, transparently, inclusively and constructively with all stakeholders.
  - Honouring and awareness of traditions, heritage and rural practices.
  - Maximising local content, local employment and training opportunities.
  - Minimising environmental impact and operational footprint, continuously rehabilitating and appropriately compensating.
- Partnering with Savannah Alliance Ghana on community needs assessments.
- Baseline Assessment Study scheduled Q4 2023.



Meeting with Lawra Naa Karbo III. Vice President of Ghana's National House of Chiefs



Castle installed bore hole and pump at Sombo village



Meeting with Chief and Elders of Sombo Village



Meeting with Chief and Elders of Jingu Village

# Maximising Local Content

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- 100% in-country management and technical team.
- 100% in-country procurement.
- Proposed 100% mining, construction and other services.























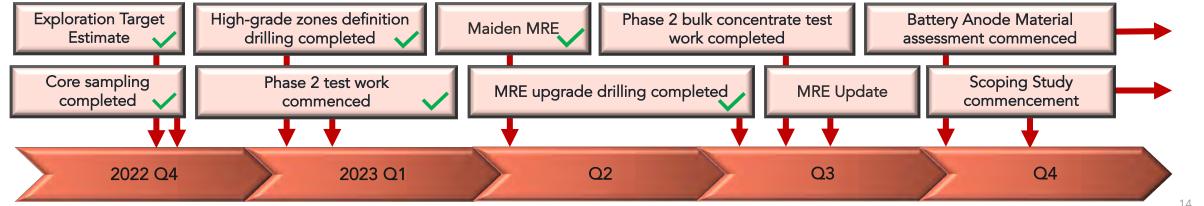


## **Fast-Tracking**



- Considerable de-risking progress in last 18 months: 21,000m drilling + maiden MRE + Test work + Geophysics + ESG.
- Short term milestones:
  - ✓ Update to MRE.
  - Specialist assessment of Phase 2 bulk fine flake concentrate for anode production.
  - Scoping Study commencement.
  - Development / offtake partnership discussions.
  - Social licence and ESG initiatives.





# Corporate





Michael Atkins
Non-Executive Chair
(Corporate & Finance)



**Stephen Stone** *Managing Director*(Corporate & Geology)



James Guy Non-Executive Director (Geology and Mining)



Paul Amoako Atta
Director, In-Country Manager &
Founder Carlie Mining Ltd
(Geology and Licencing)



**David Renner**Director – Kambale Graphite Ltd
(Geology, Operations & Corporate)

**1,124.5M**Ordinary Shares (CDT)

A\$12.4M

Market Cap (\$0.011/ share)

**205.5M** 

Options Listed (CDTO & CDTOA)

**A\$2.1M** 

**Working Capital** 

36.0M

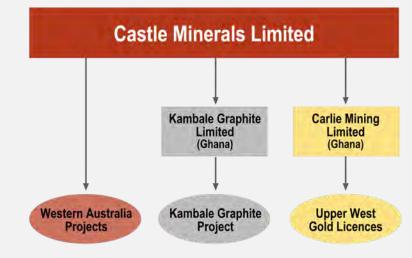
Options (Unlisted)

**A\$10.3M** 

**Enterprise Value** 

## **Major Shareholders**

· ·	
Stephen Stone	4.6%
George Bonney	4.1%
Michael Atkins	1.9%
Citicorp Nominees	1.6%
Top 20	24.0%
Total Shareholders	3,252



Data as at 9 July 2023

# Why Castle?



- ✓ Portfolio of quality Future Metals projects in Australia and Ghana.
- ✓ Flagship Kambale Graphite Project, Ghana:
  - ✓ Very strong graphite demand fundamentals if clean energy ambitions are to be achieved.
  - ✓ Robust \*15.6Mt at 9.0%TGC (1.4Mt contained) MRE (Update pending).
  - ✓ Large enough to underpin long-term mining and processing operation.
  - ✓ Broader licence discovery opportunities.
  - ✓ Metallurgical test work has achieved commercial grade 95.1% TGC fine flake concentrate.
  - ✓ Excellent supporting infrastructure incl. largely 'green-grid' hydro electric power.
  - ✓ Strategically located to supply North American and EU battery and EV vehicle producers.
  - ✓ Safe, mature mining jurisdiction. "Africa 101"
  - ✓ Management and local team with many years successful Ghana operating experience.
  - ✓ Active ESG practices with excellent community relations and support.
- ✓ High level news flow with several near-term investment catalysts.
- ✓ Very modest Enterprise Value.



## Considerable Value Compressed Into Modest Market Capitalisation

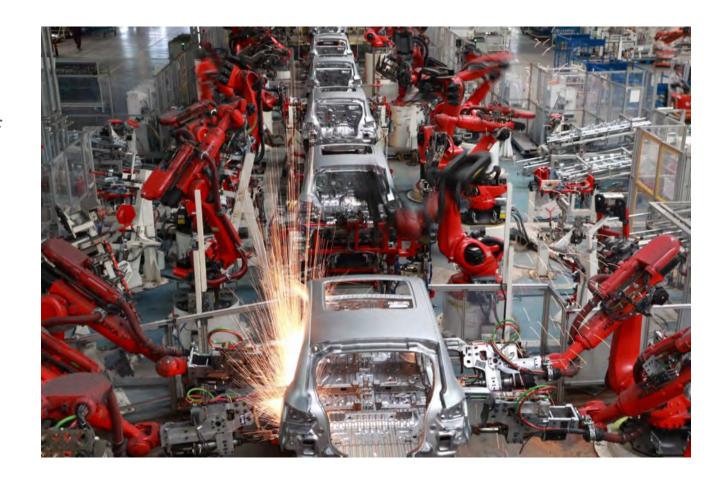


"The Kambale graphite project is rapidly emerging as a credible proposition at a time when graphite is now firmly on the Critical Minerals list and a massive supply deficit looks very likely."

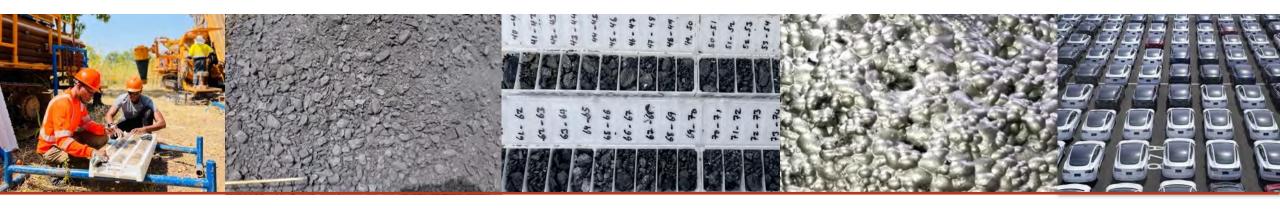
"Castle's investors can look forward to a high-level of near-term, value-adding news flow and investment catalysts from Kambale and the Company's other Future Metals projects."

Castle Managing Director, Stephen Stone





# CASTLE





## Thank You

Contact:

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Mb +61 (0) 418 804 564 or Ph +61 8 9322 7018

**ASX: CDT** 



# GHANA: Carlie Mining Limited - Quality Gold Assets



#### 100% Carlie Mining Limited

- A focused consolidation (2,686km²) of Birimian age geological terrane prospective for structurally controlled orogenic-style gold.
- Adjacent to Azumah Resources Limited's Wa Gold Project (1.37Moz Ore Reserve & 2.8Moz Mineral Resource)<sup>1</sup>.

#### Royalty:

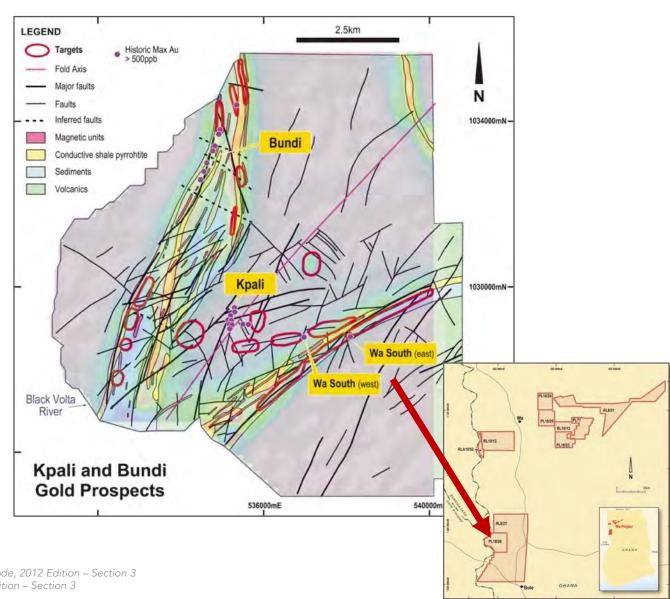
 4% NSR on Azumah's Julie West 73,100oz Ore Reserve (M&I @ US\$1,250/oz)¹.

#### Kandia prospect:

• 62,900oz Indicated and 44,600oz Inferred in two zones<sup>2</sup> incl. 15m at 2.39g/t Au from surface and 40m at 1.17g/t Au from 20m.

#### Kpali & Bundi prospects:

- 107,200oz Inferred<sup>3</sup>.
- Castle intercepts incl: 28m at 2.26g/t Au from 81m, 15m at 2.08g/t Au from 87m, 3m at 6.52g/t Au from 97m, 14m at 2.29g/t Au from 98m, 16m at 3.23g/t Au from 9m and 10m at 2.10g/t Au from 22m.<sup>4</sup>



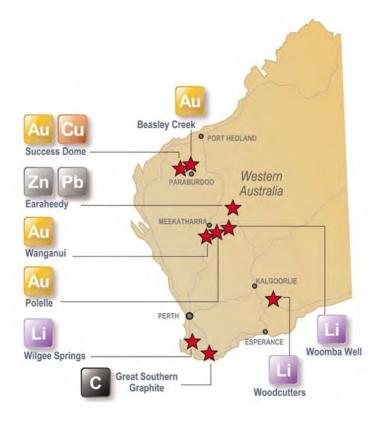
<sup>1.</sup>Refer Ibaera Capital website - 04.09.2023).

<sup>2.</sup>Refer ASX release dated 2 July 2014 re reporting of Kandia 8000 Zone Mineral Resource and appended JORC Code, 2012 Edition – Section 3

<sup>3.</sup>Refer ASX release dated 2 July 2014 re reporting of Kpali Mineral Resource and appended JORC Code, 2012 Edition – Section 3

<sup>4.</sup>Refer ASX release dated 18 January 2014 re "Kpali Drilling Results" incl. of JORC Code, 2012 Edition - Table 1

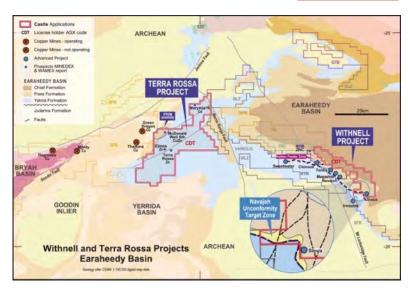
# **AUSTRALIA:** Future Metals & Gold Projects



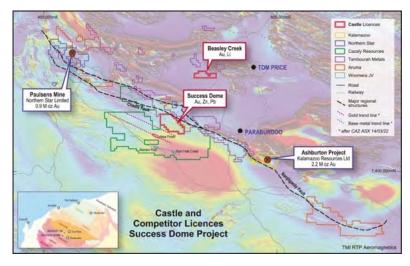
"Castle has accumulated an enviable position in the rapidly emerging Earaheedy Basin base metals province where Rumble Resources Limited has made a Tier-1 scale, open-ended SEDEX and MVT-style zinc-lead-copper discovery."

"Beasley Creek and Success
Dome provide additional
quality gold and base metals
exposure that have been
incubated to a stage where
several targets are ready for
testing"

# CNSTLE



#### Earaheedy Basin: Withnell and Terra Rossa

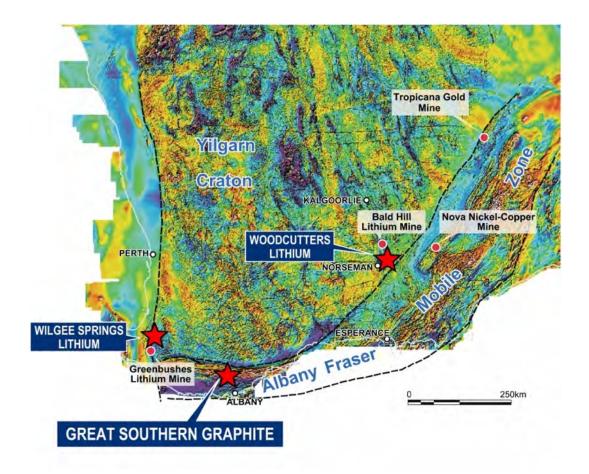


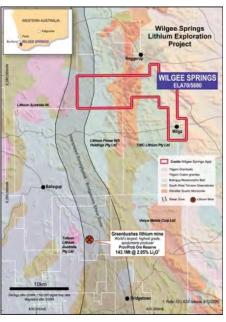
Beasley Creek and Success Dome

# **AUSTRALIA: Incubating Lithium and Graphite Opportunities**

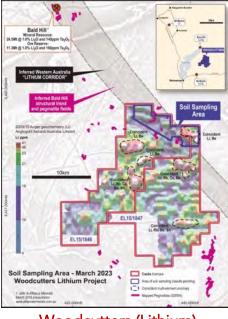


"Castle is incubating a portfolio of quality, early-stage Future Metals projects in the Great Southern Region of Western Australia"

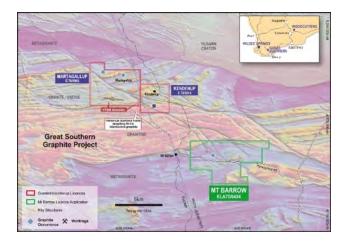




Wilgee Springs (Lithium)



Woodcutters (Lithium)



Kendenup & Martagallup (Graphite)