

## EM Survey Commences at Kambale Graphite Project, Ghana

- High-resolution ground HLEM survey has commenced to help define extent of the Kambale graphite deposit.
- Will guide drilling to test for the limits of the host graphitic schist, to identify zones of best quality graphite and to obtain diamond core for test work on fresh material.
- Preliminary test work in 2021 on near-surface, weathered graphitic schists achieved fine flake graphite concentrate grades of up to 96.4% and recoveries of 88%.
- Three excavated and composited samples used for this test work graded 12.56%, 16.09% and 17.16% total carbon.
- Kambale is Ghana's and West Africa's only known sizable graphite deposit.
- Ghana is an established and safe mining jurisdiction with a highly skilled workforce, a strong mining services sector and excellent local and national infrastructure.

Castle Managing Director, Stephen Stone commented ***“The commencement of this high-resolution ground HLEM survey at the Kambale graphite project in Ghana’s north heralds in the next phase of Castle’s quest to determine its commercial credentials.”***

***“Survey results will enable us to better outline and estimate how extensive the deposit is and plan drilling to identify zones of the best quality material and obtain diamond core samples of fresh material for the next phase of test work.”***

***“Preliminary test work last year on near-surface weathered material grading up to 17.16% total carbon was encouraging with commercially acceptable concentrate grades of 96.4% total carbon and good recovery rates of 88% being achieved using a conventional grind and flotation concentration flowsheet.”***

***“Nearly all traditional sectors of the graphite market and the emerging EV sector are experiencing strong growth and looming concentrate supply constraints, so we are understandably very keen to fast-track Kambale.”***

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Explorer and project incubator, Castle Minerals Limited (ASX: CDT) (“Castle” or the “Company”), advises that a high-resolution, ground electromagnetic geophysics survey has commenced to assist in defining the extent of the Kambale graphite deposit in Ghana’s Upper West region (“Project”)(Figures 1 and 2. Photo 1).

The Horizontal Loop Electro Magnetic (“HLEM”) survey, which will take about two weeks, will provide a guide to target drilling to test for the limits of the host graphitic schist, to identify areas of the best quality graphite which are expected to correlate with areas of structural offset, and to provide diamond core samples of fresh material for the next phase of metallurgical test work.

Survey lines are 100m to 200m apart with readings taken every 25m in order to better define and extend the various known sub-parallel graphitic shear zones. These zones have been encountered in a series of wide-spaced, shallow RAB drilling traverses over a north-south strike of some 4km.

The zones are coincident with a low-resolution airborne EM anomaly that extends for several additional kilometres both to the south and to the north and which has yet to be confirmed for the presence of graphitic schist.

The present high resolution survey is being used to pin point the likely location of the graphite bearing schists to provide effective targets for further drilling.

### PROJECT BACKGROUND

The Kambale graphite deposit was identified in the 1960s by Russian geologists prospecting for manganese.

The Russians geologists undertook a program of trenching and drilled 25 holes to a maximum depth of 25m. A subsequent report noted “two main zones of graphitic schists averaging around 10% to 15% graphite within which there were higher grade zones and that the graphite is the flakey variety with fine crystals (usually less than 0.25mm).” Report on the Geology and Minerals of the South Western Part of the Wa Field Sheet, Pobedash, I.D. 1991.

The mineralisation consists of north-east trending, sub-parallel zones of meta-sediment which is host to the fine flake graphite. The Lower Proterozoic Birimian (~2.2Ma) meta sedimentary rocks, namely phyllites, and quartz - biotite schists, generally trend north-easterly and dip between 50° and 75° to the north west.

The genesis of the flake graphite in Kambale is believed to be the result of high-grade metamorphism (amphibolite-granulite facies), which has converted trapped amorphous carbon into the characteristic fine crystalline layers.

### Initial evaluation by Castle

Castle reviewed this historical work and a wide-spaced, regional-scale electromagnetic survey dataset inherited from previous licence holder, Newmont Limited. This work outlined a roughly elongate, north-south orientated, ~10km long region considered prospective for graphitic schist horizons which may host multiple lenses of graphite mineralisation, similar to what is already outlined from drilling and trenching at Kambale. These lenses or horizons can vary in length and be up to 50m wide, creating substantial deposits of graphite.

**Photo 1: Geophysics crew commencing first survey line at Kambale**

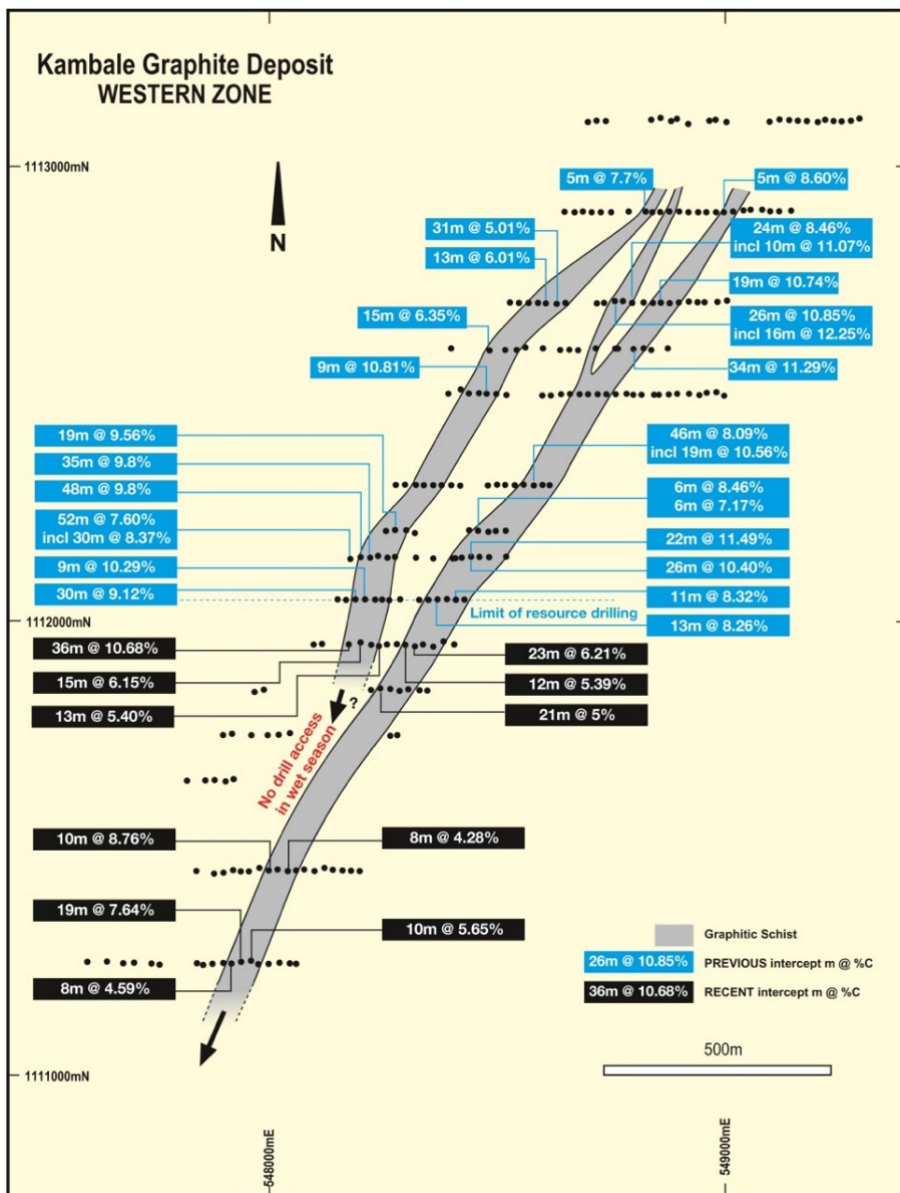


Encouraged by firm graphite prices in 2012, Castle undertook three consecutive phases of drilling comprising RAB (251 holes, 5,621m), aircore (89 holes, 2,808m) and reverse circulation (3 holes, 303m). Mapping noted occasional outcrops of manganese and graphitic schist as well as graphite in termite mounds.

Following the completion of the first two phases of Castle’s drilling, an independent Mineral Resource estimate defined a maiden inferred resource (JORC 2004) of 14.4Mt at 7.2%C (graphitic carbon) for 1.03Mt contained graphite, including 6.0Mt @ 8.6%TC for 0.52Mt contained graphite (JORC 2004)(Table 1)(refer ASX release 24 July 2012). This extended over a strike of 1.25km and to a maximum depth of 110m.

The third phase of drilling extended mineralisation to a total strike length of 2km.

**Fig 1: Kambale Western Zone showing RC drilling graphite intercepts ( Total Carbon %)**  
(refer to and extracted from ASX release 24 August 2012)



In 2012 Castle undertook a very limited program of test work on RC chips, which was not an ideal sample, and returned mixed results. Thereafter, little work was undertaken until the more recent improvement in graphite prices prompted a re-evaluation of the Project in early 2021.

## **Graphite market**

The graphite market is diverse and specialised with each sector requiring graphite concentrates with specific qualities. Deposit type, size and geometry, flake size, shape, grade and purity / impurity type of the graphite, along with production costs, proximity to specific market, supply logistics, jurisdiction and many other factors all combine to determine the commercial viability of a particular deposit.

The current consensus is that the multi-sector global demand for graphite is supportive of a medium to long-term positive outlook for the mineral.

The reader is directed to numerous recent publications, conference proceedings, market research papers and corporate websites of companies engaged in graphite exploration, project development or production for informed commentary and analysis of the graphite market.

## **Licensing**

The Project is located within a 137km<sup>2</sup> prospecting licence (PL10/47) held by Carlie Mining Limited, a wholly owned subsidiary of Castle, registered in Ghana. The Government of Ghana has the right to acquire a 10% free carried interest in all licenses in Ghana and is entitled to a 5% Gross Royalty on production.

The Kambale licence is currently progressing through a renewal process. Following an offer of the licence renewal by Ghana MINCOM, statutory consideration and annual ground rents were paid. Receipt of the licence agreement is now awaited.

## **Logistics**

The Project is located 6km west of the Upper West region capital of Wa which is 400km north, via good sealed roads, of a major rail head at Kumasi. It is then approximately 240km by rail to the international port of Tema, 30km west of the capital Accra, which provides direct access to global export markets. An alternative international port at Sekondi - Takoradi is located approximately 230km west of Accra.

The Wa region has an excellent infrastructure comprising a commercial airport, reliable grid power, water and many other services.

Ghana is an established and safe mining jurisdiction with a well-trained and very capable minerals industry workforce. Its mining services and supply sector is strong and the national and local infrastructure is generally excellent with grid power, water, sealed roads, transport and commercial air services locally at Wa.

## **ESG**

Castle management and its in-country representatives have spent over 12 years successfully operating in Ghana and in particular its Upper West region where they have established an excellent reputation for creating numerous employment and small business opportunities, community engagement, the promotion of youth and women's development, managing community expectations, maintaining the highest environmental operating standards whilst always respecting local culture and laws.

Approved for release by the Board of Castle Minerals Limited

### **Stephen Stone**

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## MINERAL RESOURCE ESTIMATE

**Table 1: Kambale Project Inferred Mineral Resource Estimate (5%C cut-off grade) (JORC 2004)**  
(Refer ASX release 24 July 2012)

Type	Tonnes (Mt)	Graphitic Carbon (%)	Contained Carbon (t)
Oxide Material	3.4	7.1	243,000
Fresh Material	11.0	7.2	793,000
<b>Total</b>	<b>14.5</b>	<b>7.2</b>	<b>1,036,000</b>

*NB: Errors may occur due to rounding*

The Mineral Resource estimate was made in July 2012 and complied with recommendations in the Australasian Code for Reporting of Mineral Resources and Ore Reserves (2004) by the Joint Ore Reserves Committee (JORC). Castle is not aware of any new information or data that materially affects the information included in the JORC 2004 Mineral Resource estimate and that all material assumptions and technical parameters underpinning the Mineral Resource estimate continue to apply.

The resource estimate released in July 2012 did not include any assumptions about mining, mining dilution, metallurgy or processing methods. No bulk density measurements were undertaken.

The Mineral Resource estimate is not compliant with Australian Code for Reporting of Exploration Results, Mineral Resource and Ore Reserves - 2012 edition. No additional technical work has been done since the Mineral Resource estimate was made. There is insufficient information available for the resource to be re-estimated to be compliant with the Australian Code for Reporting of Exploration Results, Mineral Resource and Ore Reserves - 2012 edition. It is possible that following additional technical work, and should a Competent Person be able to undertake a re-estimation of the Mineral Resource to comply with JORC Code 2012, that the Mineral Resource may materially change and/or reduce.

## PREVIOUSLY REPORTED INFORMATION RELATING TO THIS RELEASE

Additional details, where applicable, can be found in the releases referenced in this Report and/or in the following releases lodged by the Company with the ASX:

Headline	Date
December 2021 Quarterly Report & Appendix 5B	31.01.22
Kambale Graphite Test Work Update	05.08.21
Graphite Test Work Underway	03.06.21
Castle to Reappraise Kambale Graphite Project, Ghana	15.03.21
Drilling doubles strike length of Kambale Graphite deposit	17.09.12
Metallurgical test work confirms commercial potential of Kambale graphite deposit	03.09.12
High-grade graphite intercepts extend Kambale deposit	24.08.12
Maiden resource confirms Kambale as one of the World's largest graphite deposits	24.07.12
Large high-grade graphite deposit confirmed at Kambale	06.07.12
Kambale Graphite Drilling - wide zones of graphite intersected on Wa project	21.03.12

## About Castle Minerals Limited

Castle Minerals Limited is an Australian Securities Exchange (ASX: CDT) listed and Perth, Western Australia headquartered company with interests in several projects in Western Australia and Ghana that are prospective for battery metals (lithium and graphite), base metals and gold.

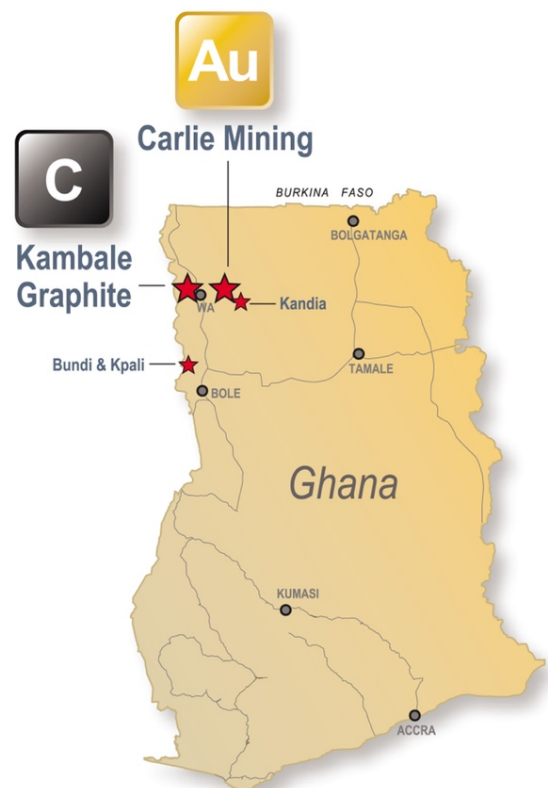
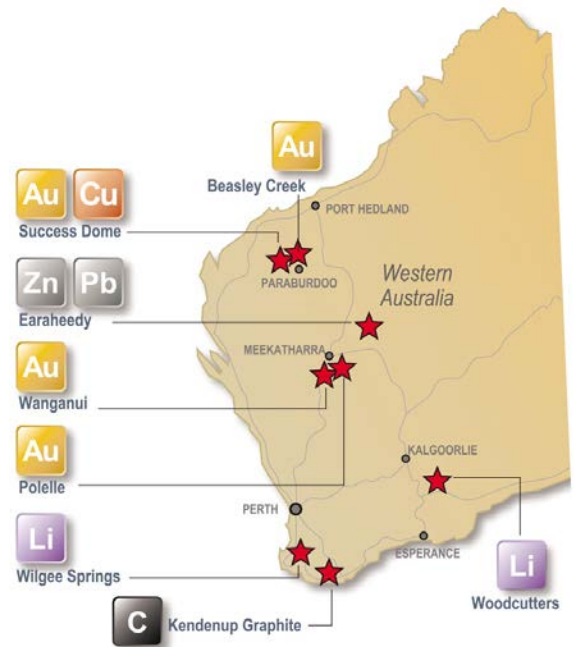
The **Earaheedy Basin** project encompasses terrane prospective for base and precious metals in the Earraheedy and Yerrida basins base metals provinces. The project comprises the **Withnell**, **Terra Rossa** and **Tableland** sub-projects. The Withnell application is adjacent to the evolving Chinook-Magazine zinc-lead project of Rumble Resources Ltd (ASX: RTR) and north of the Strickland Metals Limited (ASX: STK) Iroquois prospect. The four Terra Rossa applications are east of the Thaduna copper deposits.

The **Beasley Creek** project lies on the northern flanks of the Rocklea Dome in the southern Pilbara. The strategy is to define orogenic-style, structurally controlled gold targets within the various Archean sequences. The sheared granite - greenstone contact and the "Paulsen Gold Mine" type setting within the gabbro/dolerite units that intrude the Hardey Sandstone in the northern part of the project area, are also of particular interest.

The **Success Dome** project lies in the Ashburton structural corridor and is located midway between the Paulsen's and Ashburton gold deposits. It is prospective for gold and base metals. Major thrust faults and sub-parallel shear zones highlighted in the regional magnetic and gravity data, combined with additional detailed geophysics data from previous explorers, brought this available area to Castle's attention.

The **Polelle** project (E51/1843, 162.5km<sup>2</sup>), 25km south of Meekatharra and 7km southeast of the operating Bluebird Mine, hosts a mainly obscured and minimally explored greenstone belt. The belt is comprised of a combination of prospective lithological units and major structural features including the Albury Heath shear which hosts the Albury Heath deposit immediately adjacent to the east boundary of Castle's licence. Aeromagnetic surveys have indicated that the southwest trending Albury Heath shear and a splay structure are traceable onto the Polelle project area for some 12km. At the **Wanganui** project (E51/1703, 18.4km<sup>2</sup>), 33km south-west of the active Meekatharra mining centre and 15km south-west of the operating Bluebird gold mine, the opportunity is to test for down-plunge and along strike extensions to the existing Main Lode North and South deposits, as well as for other similar targets. The Main Lode mineralisation, which can be intermittently traced for at least 1km, is one of at least four structurally related mineralised zones.

The **Wilgee Springs** project (ELA70/5880, 120km<sup>2</sup>), along strike from and within the same metamorphic belt as the World-Class Greenbushes lithium mine, 25km to the south in Western Australia's South-Western region, provides an opportunity to explore using the latest geochemical and geophysical techniques for spodumene bearing pegmatites beneath a lateritic cover that has previously hampered exploration.



The **Woodcutters** project (ELA15/1847/1847, 242km<sup>2</sup>) is prospective for lithium bearing pegmatites, 25km southeast of the Bald Hill lithium mine in the Bald Hill pegmatite field region and 25km northwest of the Buldania lithium deposit.

The **Kendenup** project (EL70/5514/5963) comprises two granted licences encompassing the historical Kendenup graphite workings and the adjacent Martigallup graphite occurrences.

In **Ghana, West Africa**, Castle has a substantial and contiguous tenure position in the country's Upper West region. Ghana has a long history of gold exploration and mining with several world-class gold mining operations owned by Tier 1 mining companies. Castle's Ghana licence holdings encompass large tracts of highly prospective Birimian geological terrane, the host to many of West Africa's and Ghana's multi-million-ounce gold mines. The project area is also host to the open-ended **Kambale** graphite project for which test work on near-surface samples produced a 96.4% total carbon fine flake graphite concentrate.

Castle retains a **4% net smelter precious metal royalty** over the adjacent Julie West licence, a key component of Azumah Resources Limited's Wa Gold Project.

### Cautionary Statement

All of Castle's projects in Australia are considered to be of grass roots or of relatively early-stage exploration status. There has been insufficient exploration to define a Mineral Resource. No Competent Person has done sufficient work in accordance with JORC Code 2012 to conclusively determine or to estimate in what quantities gold or other minerals are present. It is possible that following further evaluation and/or exploration work that the confidence in the information used to identify areas of interest may be reduced when reported under JORC Code 2012.

The **Kambale graphite deposit** is at an early stage in its evaluation with little known about how extensive the deposit is or how the graphite quality varies within it. Work to date has been undertaken on an easily accessible area which may or may not be representative of the broader deposit once that is known.

To date, the area investigated at Kambale has produced from weathered samples a fine flake size concentrate of a potentially commercially acceptable grade at a reasonably high recovery. Definitive test work on fresh material and material from other parts of the deposit has yet to be undertaken.

### Forward Looking Statement

Statements regarding Castle's plans, forecasts and projections with respect to its mineral properties and programs are forward-looking statements. There can be no assurance that Castle's plans for development of its mineral properties will proceed. There can be no assurance that Castle will be able to confirm the presence of Mineral Resources or Ore Reserves, that any mineralisation will prove to be economic or that a mine will be successfully developed on any of Castle's mineral properties. The performance of Castle may be influenced by a number of factors which are outside the control of the Company, its Directors, staff or contractors.

### Competent Persons 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 Managing 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.