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## **Maiden Resource Confirms Kambale as One of World's Largest Graphite Deposits**

Castle Minerals Limited (ASX:CDT) is pleased to announce a maiden resource estimate for its Kambale Graphite Deposit.

### **Highlights:**

- **Maiden Resource for Kambale of 14.4mt @ 7.2% C (graphitic carbon) for 1.03mt contained graphite. Includes 6.0mt @ 8.6% C for 0.52mt contained graphite**
- **Ranks as one of the largest global graphite deposits**
- **Metallurgical test work reports up to 69% of total contained graphite reporting in fine to coarse flake sizings**
- **Resource outcrops at surface with 90% of resource less than 100m**
- **Resource consists of 3.4mt @ 7.1% C of oxide and 11.0mt @ 7.2% C primary**
- **Drilling tested only the first 1 km of strike of the western zone with the strike extensions and the eastern zone still to be drilled. Extensional drilling is underway**

Castle Managing Director, Mr Mike Ivey said the maiden resource confirms Kambale as a major graphite deposit.

"We drilled our first hole in March this year and it is a great result to announce a maiden resource within four months. Kambale ranks as one of the largest graphite deposits in the world. Our initial metallurgical test work reports up to 69% occurring as fine to coarse graphite providing excellent potential for a high value product to be produced," said Mr Ivey.

"With less than 20% of the graphitic schist horizon tested we clearly have potential to materially add to the current resource. On strike drilling is currently underway and we will continue this along with further metallurgical test work to determine flake recoveries towards completing a prefeasibility study as soon as possible."

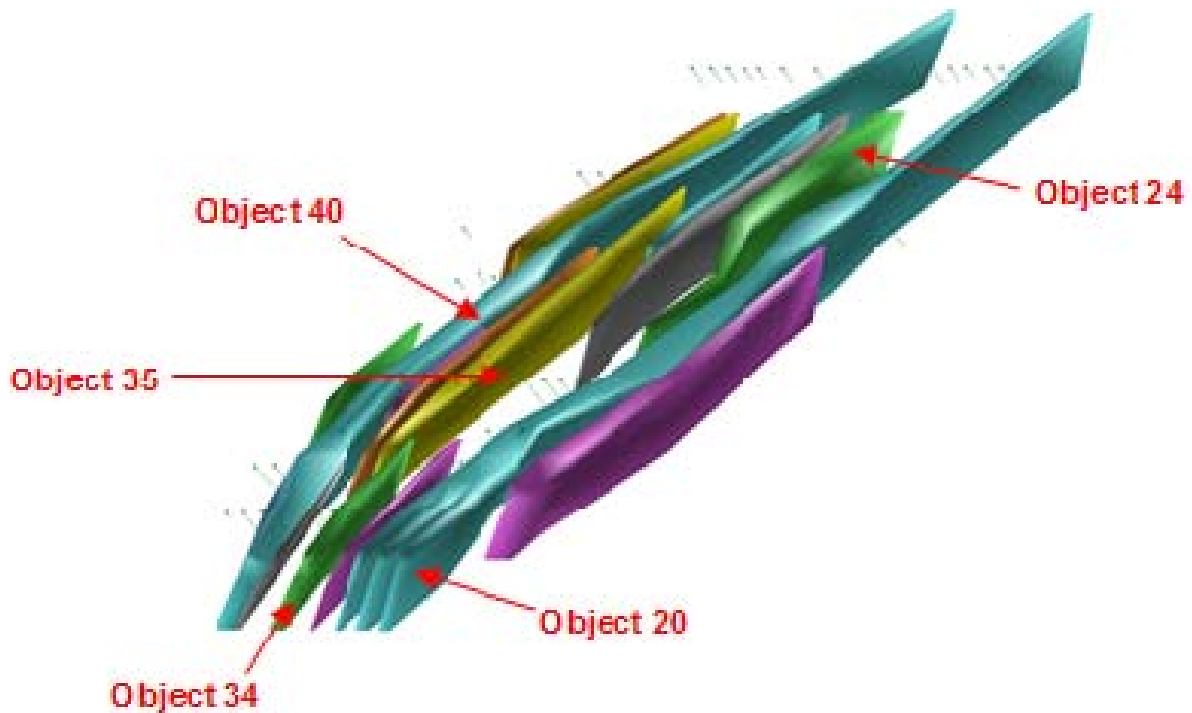
The Kambale prospect is located in north-west Ghana and forms part of Castle's large Wa Project. International mining consultants Runge Limited (RUL) completed an estimate of the Mineral Resource for the Kambale Graphite deposit. The Inferred Mineral Resource estimate complies with recommendations in the Australasian Code for Reporting of Mineral Resources and Ore Reserves (2004) by the Joint Ore Reserves Committee (JORC).

### Kambale Deposit July 2012 Inferred Mineral Resource Estimate (5% C cut-off grade)

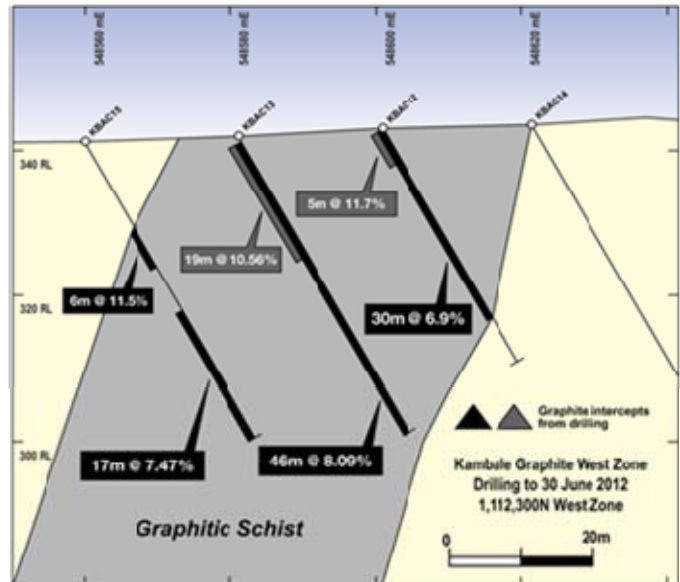
Type	Tonnes Mt	C %	Contained C t
Oxide	3.4	7.1	243,000
Fresh	11.0	7.2	793,000
<b>Total</b>	<b>14.5</b>	<b>7.2</b>	<b>1,036,000</b>

\*Errors may occur due to rounding

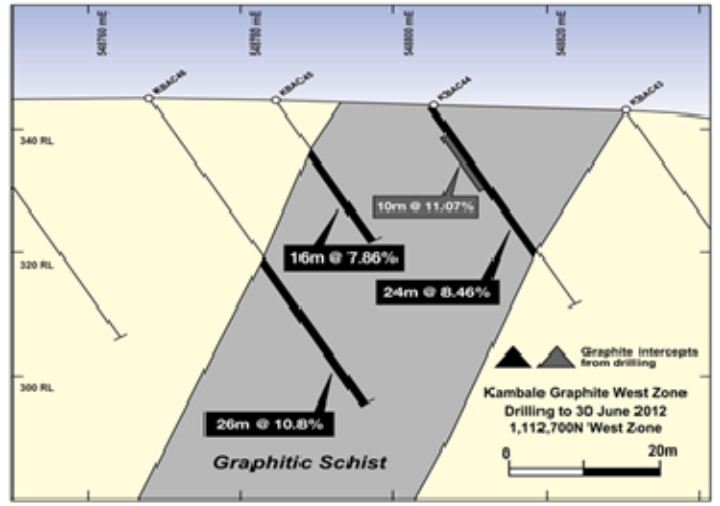
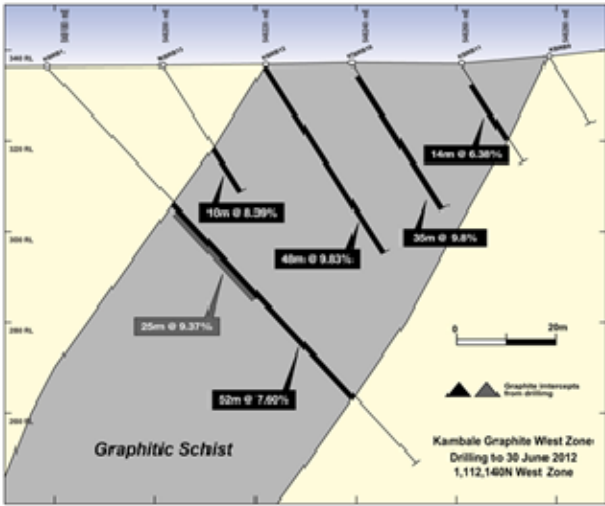
**Table 1:** Mineral Resource Summary for the Kambale Graphite Deposit



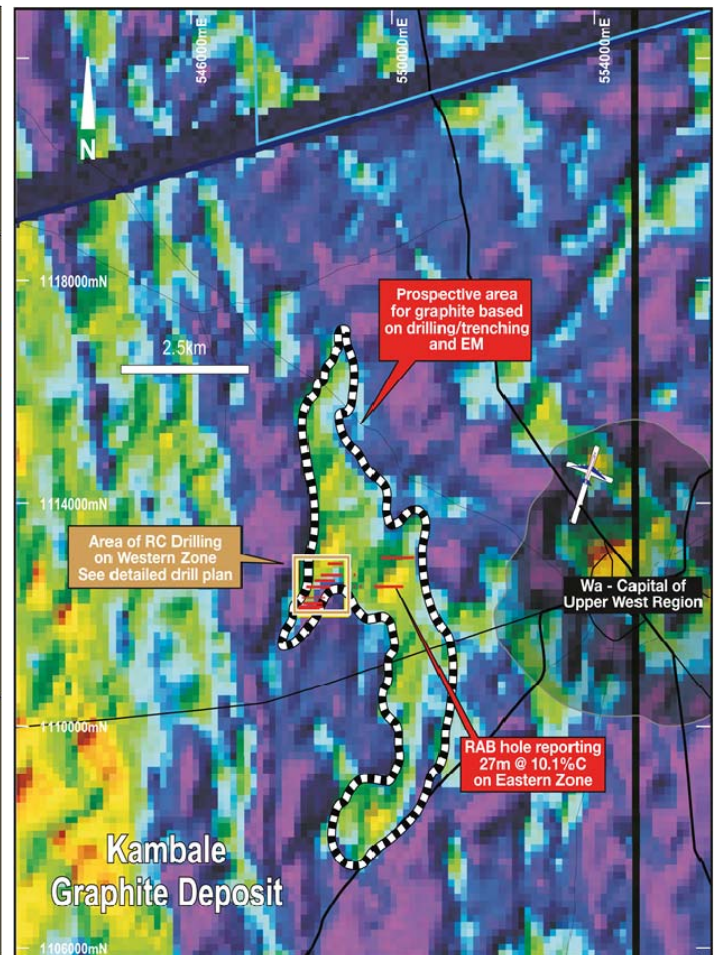
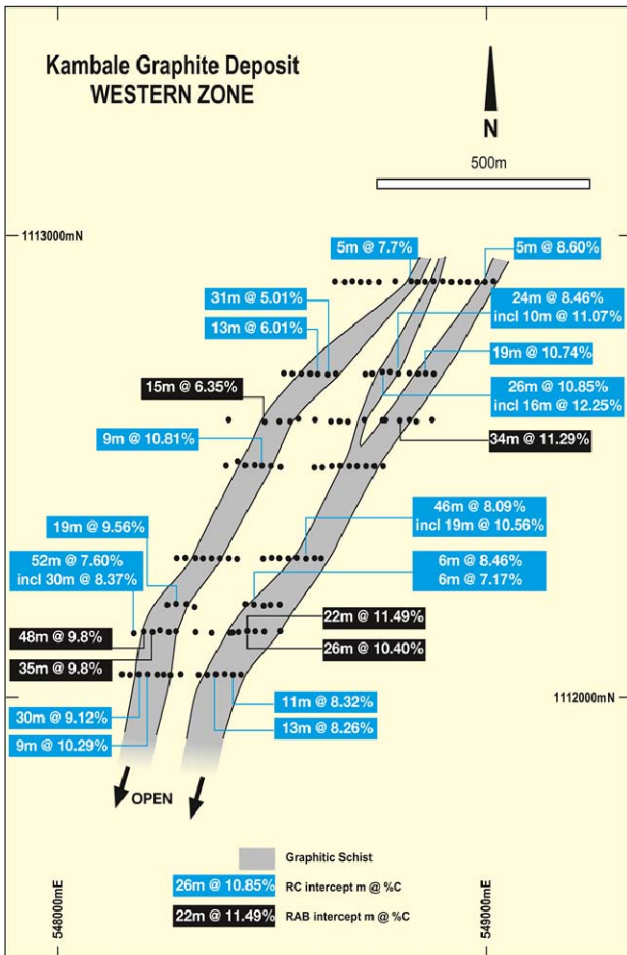
Oblique view of Kambale wireframes and drilling. Wireframes extend for ~1,000m along strike and maximum 110m vertical depth



Kambale RC drilling and cross section showing wide zones of graphitic schist from surface



Kambale cross sections showing wide zones of graphitic schist from surface



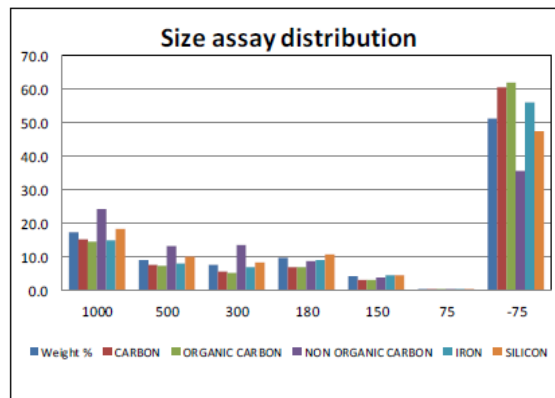
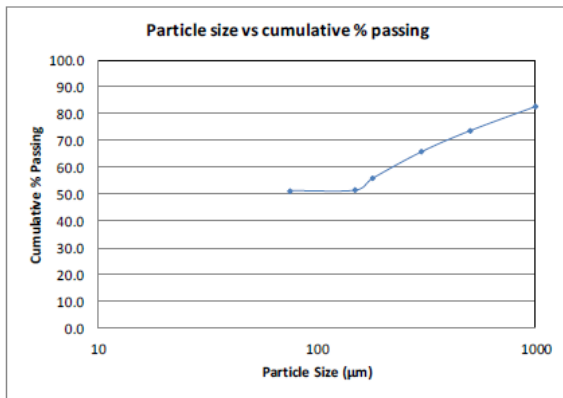
Drill hole location plan of the Western Zone with significant graphite intercepts and right, location of drilling traverses and historic trench locations over regional electromagnetic image. Black and white border shows area considered prospective for graphite.

## Metallurgy

Fresh and primary drill composite samples were submitted to AMMTEC metallurgical laboratory in Perth and assayed by size with 38% of the fresh material and 68.6% of the weathered material reporting in the +75 micron fractions. Flotation test work and optical microscopy are underway to determine what percentage of graphite material can be liberated and recovered via flotation from the various size fractions. Flake graphite has high value and is that material reporting in the +75micron size fraction.

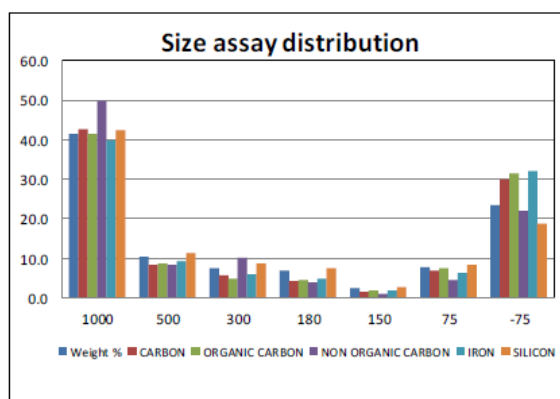
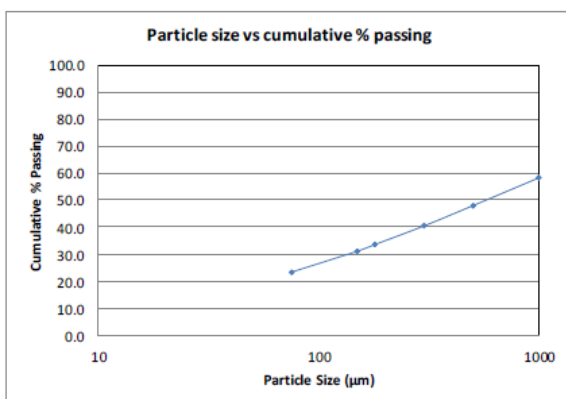
### Fresh Sample – Carbon assay by size

Screen Size µm	Screen Weight g	Weight Distribution %	Weight Passing %	CARBON		ORGANIC CARBON		NON ORGANIC CARBON		IRON		SILICON	
				%	dist%	%	dist%	%	dist%	%	dist%	%	dist%
1000	173.5	17.4	82.7	8.7	15.3	7.92	14.7	4.05	24.4	2.80	15.1	31.0	18.5
500	91.0	9.1	73.6	8.46	7.77	7.62	7.43	4.20	13.3	2.84	8.01	32.0	10.00
300	78.5	7.9	65.7	7.26	5.75	6.27	5.27	4.95	13.5	2.84	6.91	31.3	8.43
180	98.5	9.9	55.9	7.17	7.13	6.66	7.03	2.55	8.74	3.00	9.16	31.8	10.8
150	44.5	4.5	51.4	7.44	3.34	6.93	3.30	2.55	3.95	3.28	4.52	30.8	4.70
75	2.0	0.2	51.2	11.9	0.24	10.7	0.23	6.00	0.42	3.24	0.20	28.3	0.19
-75	512.0	51.2		11.7	60.5	11.3	62.0	2.00	35.6	3.54	56.2	27.0	47.5
Total	1000.0	100.0		9.91	100.0	9.33	100.0	2.87	100.0	3.23	100.0	29.1	100.0
Head				12.3		10.3				3.02		28.2	
Calculated P <sub>80</sub> :		854	µm										



### Weathered sample – Carbon assay by size

Screen Size µm	Screen Weight g	Weight Distribution %	Weight Passing %	CARBON		ORGANIC CARBON		NON ORGANIC CARBON		IRON		SILICON	
				%	dist%	%	dist%	%	dist%	%	dist%	%	dist%
1000	416.5	41.7	58.4	17	42.6	14.3	41.4	14.50	49.7	3.32	39.8	27.4	42.3
500	103.5	10.4	48.0	13.9	8.56	11.9	8.56	10.00	8.52	3.12	9.29	29.7	11.4
300	75.0	7.5	40.5	12.6	5.62	9.30	4.85	16.50	10.2	2.80	6.04	31.1	8.64
180	68.5	6.9	33.7	10.8	4.40	9.36	4.46	7.20	4.06	2.46	4.85	29.8	7.57
150	24.5	2.5	31.2	12.0	1.75	11.1	1.89	4.50	0.91	2.66	1.88	31.9	2.90
75	78.0	7.8	23.4	15.1	7.01	13.7	7.43	7.00	4.49	2.78	6.24	29.3	8.47
-75	234.0	23.4		21.6	30.1	19.3	31.4	11.50	22.1	4.74	31.9	21.6	18.7
Total	1000.0	100.0		16.8	100.0	14.4	100.0	12.2	100.0	3.48	100.0	27.0	100.0
Head				17.0		13.0				3.40		25.9	
Calculated P <sub>80</sub> :		2046	µm										



## Graphite Demand

Global demand for graphite has been increasing since 2008 largely as a result of lithium ion battery consumption. Graphite is a key component of Li-ion batteries with each kWh of Li-ion battery capacity requiring approximately 1.4kg graphite. Li-ion batteries are used widely in electronics and the electric and hybrid vehicle battery market with production forecast to double by 2020.

Byron Capital Markets<sup>1</sup> expects to see graphite production increase from 1.0 to 2.6 million tonnes by 2020 as more graphite is used to produce lithium-ion batteries and other applications.

Industrial Alliance Securities<sup>2</sup> has estimated that **23 new mines (@15-20ktpa) will be required by 2020 to satisfy global demand.**

Whilst it is too early to determine product specifications that might be recovered from Kambale the following table provides 2012 pricing for commercial grade graphite.

2012 Industrial Minerals Graphite Prices per Tonne				
FCI CIF main European port				
Purity % and mesh size	Price range US\$/tonne		Mesh Size equivalent microns	
99% to 99.9% C, +50 mesh	\$4,500	\$6,000	+300	Coarse
94% to 97% C, +80 mesh CIF	\$2,500	\$3,000	+180	
90% C, +80 mesh	\$2,000	\$2,500	+180	
<b>94% to 97% C, +100-80 mesh</b>	<b>\$2,200</b>	<b>\$2,500</b>	<b>+150-180</b>	Medium
<b>90% C, +100-80 mesh</b>	<b>\$1,500</b>	<b>\$2,000</b>	<b>+150-180</b>	
<b>85% to 87% C, +100-80 mesh</b>	<b>\$1,500</b>	<b>\$1,900</b>	<b>+150-180</b>	
94% to 97% C, -100 mesh	\$2,000	\$2,400	-150	Fine
90% C, -100 mesh	\$1,400	\$1,800	-150	
<b>Amorphous powder 80% to 85C</b>	<b>\$600</b>	<b>\$800</b>	<b>-75</b>	
<b>Synthetic 99.95% C2</b>	<b>\$7,000</b>	<b>\$20,000</b>		

SOURCE: WWW.NDIM.IL.COM



Price range for +80mesh (+0.18mm), 94-97%C graphite US\$/t  
Source: Industrial Minerals Magazine

<sup>1</sup> Byron Capital Markets Presentation Dec 2011; <sup>2</sup> Industrial Alliance Securities Report May 2012

## **Project Background**

Castle's Wa Project in north-west Ghana covers more than 10,000km<sup>2</sup>. Exploration is focused on four regional scale prospect corridors. The Kambale graphite occurrence is located 5-8km west of Wa. Wa is the regional capital of the Upper West Region and has a population of ~50,000 and is fully serviced with grid power, sealed roads and good quality mobile communications. An all-weather bitumen airstrip is located at Wa.

The Kambale graphite prospect is within the Wa-Lawra greenstone belt and is being explored for gold and base metals by Castle. Under the terms of Castle's Licence conditions the company has first option to explore for and work other minerals subject to satisfactory arrangements between the Government and Castle. Castle has made application to the Ghana Minerals Commission to include graphite and manganese under a new licence application it has previously submitted.

### **For further information please contact:**

Michael Ivey  
Managing Director & CEO  
+618 9322 7018 or 0419 868 787

### **Media**

Melanie Gray Stokes  
Walbrook IR  
+61 424 135 294

### **About Castle:**

Castle Minerals listed on the Australian Stock Exchange in May 2006 (ASX code 'CDT') and has since acquired the rights to six mineral projects in Ghana, West Africa including Akoko, Antubia, Banso, Bondaye, Opon Mansi (application) and Wa covering more than 11,000km<sup>2</sup>.

All granted projects are 100% owned by Castle Minerals (subject to Ghanaian Government right to a free-carried 10% interest). Castle's corporate objectives are exploration and development of its six projects in Ghana and the acquisition and exploration of other mineral resource opportunities, particularly in West Africa. The country of Ghana has a long history of gold mining and exploration and is Africa's second largest gold producer behind South Africa.

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Information in this announcement that relates to Exploration Results is based on information compiled by Haydn Hadlow, Castle Minerals Limited Exploration Manager, who is a Member of The Australasian Institute of Mining and Metallurgy. Haydn Hadlow is a permanent employee of Castle Minerals Limited and has sufficient experience that 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 2004 JORC Code. Haydn Hadlow consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Information in this announcement that relates to the Kambale Mineral Resource Estimate is based on information compiled by Aaron Green, Operations Manager WA, Runge Limited. Aaron Green is a full time employee of Runge Limited, a Member of the Australian Institute of Geoscientists (AIG), and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2004 Edition of the Australasian Code for the Reporting of Mineral Resources and Ore Reserves. Aaron Green consents to the inclusion in the announcement of the matters based on the information in the form and context in which it appears.

## Appendix 1: Kambale - Resource Statement and Parameters

The resource estimate was completed using the following parameters:

- The Mineral Resource estimate for the Kambale Graphite Prospect in north-west Ghana was completed in July 2012 by Castle Minerals Limited using mining consultants Runge Limited. A Surpac block model was generated, using the Inverse Distance Squared (ID<sup>2</sup>) interpolation method.
- The resource area consists of 13 separate NE trending, sub-parallel zones of meta-sediment hosted graphite mineralization, named using numbers increasing from east to west. Five of the zones report tonnages above the 5% cut-off grade for the reporting of the resource. Of these, Zones 20 and 40 are the largest, comprising approximately 70% of the resource. Graphite mineralised zones have been constrained between 1,111,950mN and 1,113,000mN representing a maximum 1200 metre strike length. The vertical extent of the resource is 110m from surface at ~350mRL to 240mRL.
- Mineralisation is hosted within Lower Proterozoic Birimian (~2.2Ma) meta-sediments.
- Of the 163 drill holes in the database, 54 of 89 reverse-circulation air core holes and 3 of 3 RC holes were used in the resource estimate. Drilling density varied from 200m by 20m and 100m by 20m over the deposit. Data from 71 RAB holes were not used in the grade estimates, but were utilised for geological interpretation and wireframe construction. Drill holes are orientated -60° to the east (UTM grid), with the exception of the 3 RC holes which are orientated -50° to the east.
- The RC hammer and RC air core sampling procedures are considered to be of industry standard with samples collected as follows; bulk samples were collected at 1m intervals below a free standing cyclone in large plastic retention bags. The 1m bulk samples were split using a riffle splitter at the time of drilling and then sent for assay.
- Samples were sent to SGS Laboratory in Tarkwa, Ghana for preparation, and then pulps were sent to SGS Laboratory in Johannesburg, South Africa for assay. Samples were prepared by drying, crushing to 75% passing <2mm and then pulverising to 85% passing <75 microns (-200 mesh). Analysis for total graphitic carbon was by SGS method CSA05V using a resistance/IR furnace to determine total carbon in the sample and speciates contained Carbon into elemental, organic and carbonate forms. Speciation is performed by removing carbonate carbon using an acid leach, organic carbon is removed by calcining the sample at 400 degrees Celsius. The remaining carbon in sample is reported as elemental carbon.
- Quality control samples (field duplicates at 1 in 20, and blanks at 1 in 50) were collected on a regular basis and the results have been reviewed and are considered to be satisfactory.
- Drillhole collars in the resource area have been surveyed by Coffey Mining (Coffey) using a Sokkia Stratus DGPS with an accuracy of 15mm.
- All reverse circulation air core holes have design azimuths and dips with no down hole surveys completed. Down hole surveys were conducted on the 3 RC holes, using a Reflex EZ-Shot survey instrument.
- Wireframes were constructed using cross sectional interpretations based on a nominal 2% C cut-off grade.
- Samples within the wireframes were composited to even 1.0m intervals.
- No top cut was applied as it was considered not applicable in this style of mineralization.
- A Surpac block model was used for the estimate with a block size of 50m NS by 10m EW by 5m vertical with sub-cells of 6.25m by 1.25m by 0.625m.
- Inverse Distance Squared (ID<sup>2</sup>) interpolation with an oriented 'ellipsoid' search was used for the estimate. A long axis radius of 150m was used for the first pass and this was increased to 300m for the second pass. A long axis radius of 600m was used for the third and final pass. Greater than 97% of the blocks were filled in the first two passes.
- No bulk density test work has been completed. A bulk density value of 2.0t/m<sup>3</sup> was assigned to the oxide material, and 2.6t/m<sup>3</sup> assigned to the fresh material. These values are considered reasonable for this style of mineralisation.
- The Inferred Mineral Resource classification complies with JORC (2004) Guidelines and is based on geological confidence, including drill spacing, sample density and continuity of the geological model.
- No assumptions have been made about mining, metallurgy or processing methods.
- Totals have been rounded.