



# ASX ANNOUNCEMENT



10 July 2015

## JUMBO AND LARGE FLAKE GRAPHITE IDENTIFIED AT EAST KIMBERLEY PROJECT

### Highlights

- Petrography demonstrates jumbo and large flake graphite present in Corkwood area
- Three samples returned over 75% of graphite above 500 micron in length (Jumbo Flake is >300 micron) and with 10% or more of graphite flakes greater than 1000 micron in length
- Flake size is one of the critical elements of graphite pricing; large and jumbo flake sizes attract the highest prices

Sayona Mining Limited (ASX: SYA) ("Sayona" or the "Company") is pleased to announce positive results of a petrographic study demonstrating the large flake graphite potential of the East Kimberley project, Western Australia.

Flake size is one of the critical elements of graphite pricing. Jumbo and large flake sizes attract premium pricing and are expected to be in strong demand, driven by the growing use in new technologies such as lithium-ion batteries and super capacitors.

The Company submitted seven surface rock samples for polished thin section preparation and petrographic description.

Highlights of the study include:

- 3 samples with 75% of the graphite flake size over 500 micron and 10% over 1,000 micron; and
- 2 samples with between 30-50% of the graphite flake size over 500 micron.

The results are encouraging and demonstrate that coarse flake graphite is present within the Corkwood area (see Figure 3 for sample locations and Table 2 for the full flake size descriptions).

The Company is very encouraged by the positive flake size analysis. Coupled with the attractive widths, strike extent and graphite assay results, (see ASX release, "Strategic Entry into the Graphite Market, 8 July 2015) the Company believes there is good potential for the project to host significant large flake graphite mineralisation.

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## The Competitive Advantage of Large Flake Graphite

Prices for graphite vary based on parameters including carbon purity, size, impurities and shape. Flake size is one of the critical elements of graphite pricing, especially for use in the new technology sectors. Jumbo and large flake sizes attract premium pricing and are expected to be in strong demand, driven by the growing use in new technologies such as lithium-ion batteries and super capacitors.

Table 1 demonstrates the premium pricing for graphite flakes above 300 micron.

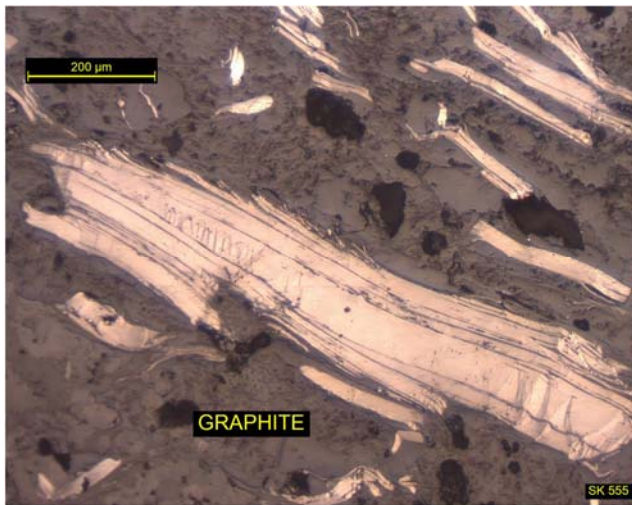
Table 1: Flake Size				
Graphite Product	Carbon Content %	Mesh Size	Graphite Size Micron	Approximate Price US\$/t*
<i>Jumbo Flake</i>	94 – 97%	+48	>300	\$2,000
<i>Large Flake</i>	94 – 97%	-48 to +80	180 – 300	\$1,300
<i>Medium Flake</i>	94 – 97%	-80 to +100	150 – 180	\$1,100
<i>Fine Flake</i>	94 – 97%	-100 to +200	75 – 150	\$750
<i>Amorphous</i>	80 – 85%	-200	=<75	\$450
<i>Synthetic</i>	99.95%			+\$7,000
Source: Various				

Other important economic considerations of large flake graphite include:

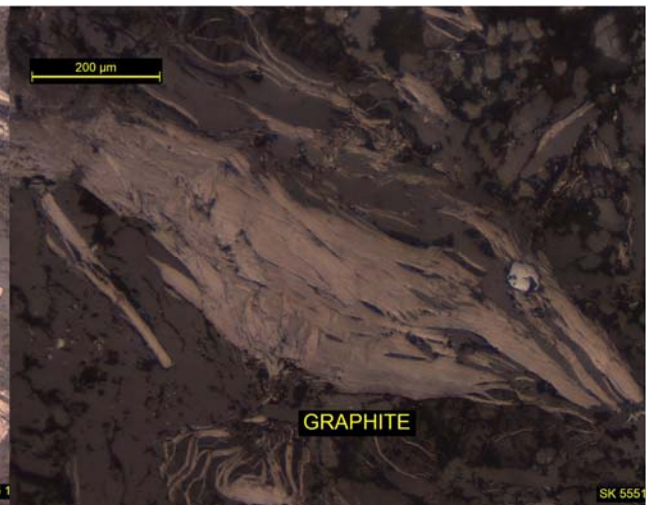
- Widest range of end uses when compared to finer and amorphous graphite;
- Substitution is expensive - synthetic graphite prices are substantially more expensive than jumbo flake prices; and
- Larger flake graphite is more amenable to processing into value-added graphite products like expandable and spherical graphite.

## East Kimberley Project Petrographic Analysis

Seven surface rock samples were submitted to Townend Mineralogy Laboratory for polished thin section preparation and petrographic description. Five of the samples were collected from the northern portion of the Corkwood lease, one from the southern portion and one from the Keller area. Sample locations in the Corkwood North area are outlined in Table 2 and sample locations displayed in Figure 3.



**Figure 1:** Sample SK555108 which assayed 7.25%TGC with 75% of the graphite flakes over 500 micron in length with 10% over 1,000 micron



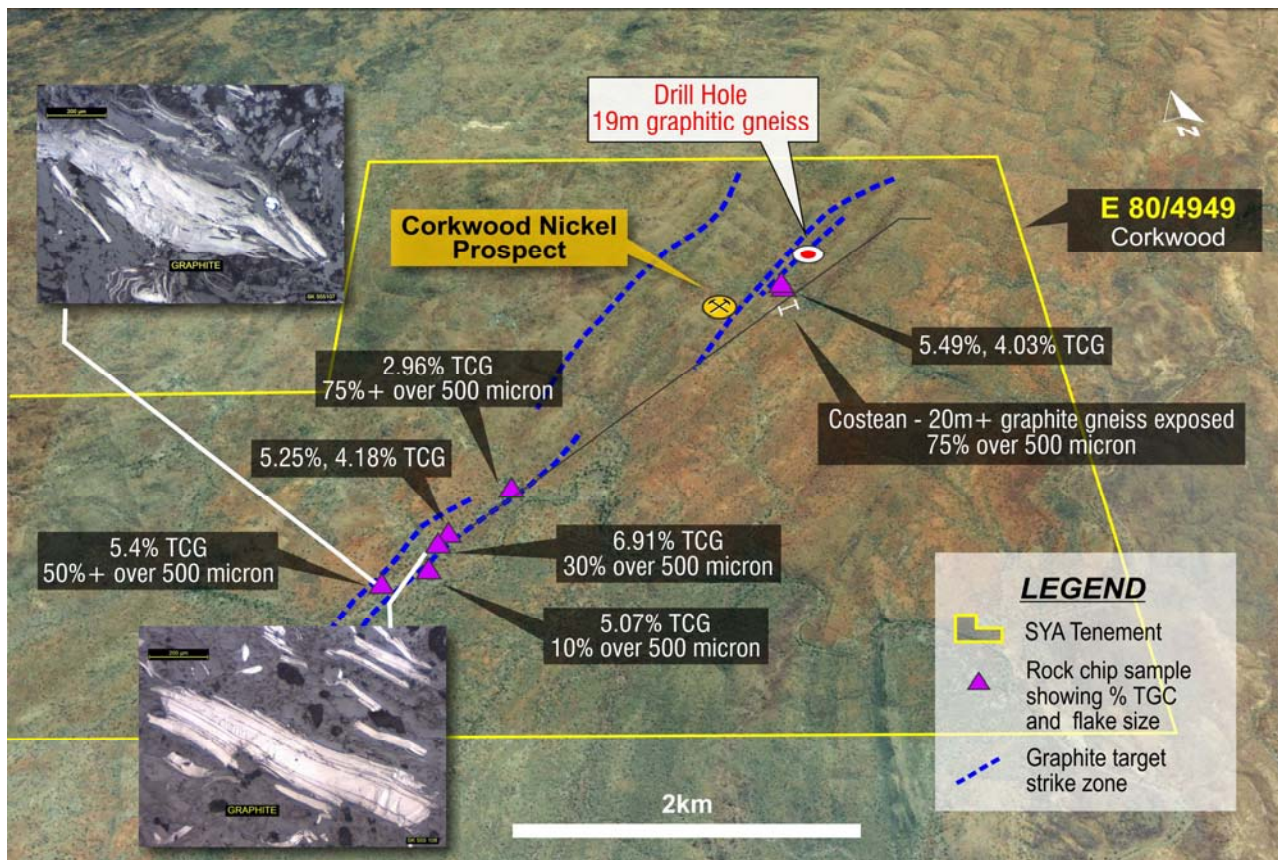
**Figure 2:** Sample SK555107 which assayed 5.4%TGC with 50% of the graphite flakes over 500 micron in length

**Table 2 – Summary Graphite Assay and Petrographic Description**

Sample	Area	Assay TGC	Graphite Flake Form
SK555103	Corkwood (North) 412343E 8086479N	2.96%	<ul style="list-style-type: none"> <li>Over 75% is +500 micron length 10% is over 1000 micron (1mm) in length</li> </ul>
SK555106	Corkwood (North) 412032E 8086143N	6.91%	<ul style="list-style-type: none"> <li>Over 30% is +500 micron length</li> </ul>
SK555107	Corkwood (North) 411817E 8085943N	5.4%	<ul style="list-style-type: none"> <li>Over 50% is +500 micron length</li> <li>Remainder commonly 200 micron+</li> </ul>
SK555108	Corkwood (South) 404458E 8073524N	7.25%	<ul style="list-style-type: none"> <li>Over 75% is over +500 micron in length</li> <li>10% is over 1000 micron in length (1mm)</li> </ul>
SK555117	Keller Creek 389019E 8088344N	2.4%	<ul style="list-style-type: none"> <li>Fine flake, rarely longer than 100 micron</li> </ul>
SK555119	Corkwood (North) 412004E 8086018N	5.07%	<ul style="list-style-type: none"> <li>30% is over 500+ micron in length</li> </ul>
SK555120	Corkwood (North) 413636E 8087735N	n/a	<ul style="list-style-type: none"> <li>Over 75% is +500 micron length 10% are 1mm or longer (1000 micron)</li> </ul>

Note; co-ordinates are MGA zone 52 (GDA94) The graphite flake size is a visual estimate of the graphite morphology





**Figure 3:** Petrography sample locations, Corkwood North

The Corkwood rocks are classed as graphite marbles, with the calcite as a replacement mineral of metasomatic origin and related to alteration during weathering. Original feldspar, mica and sulphide have also changed during weathering causing the graphite flakes to be disrupted. The graphite shows good orientation with flakes frequently in excess of 500 micron in length and with widths typically up to 50 micron or more, with a population of finer material within the marble.

The Keller lease sample is a quartz arenite with fine flake graphite identified in the one sample tested.

**For more information, please contact:**

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Sayona Mining Limited is an Australian, ASX-listed, company focused on sourcing and developing high purity flake graphite for use in the rapidly growing new technology sectors.

Please visit us as at [www.sayonamining.com.au](http://www.sayonamining.com.au)

## **COMPETENT PERSON STATEMENT**

The information in this report that relates to Exploration Results is based on information compiled by Mr Simon Attwell, a Competent Person, and who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Attwell is an employee of Attgold Pty Ltd ("Attgold") which provides geological services to Sayona Mining Limited. Attgold is a financial beneficiary if Sayona exercises its option to purchase agreement over the East Kimberley Graphite project.

Mr Attwell has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Attwell consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

**JORC Code, 2012 edition – Table 1 (section 1; Sampling Techniques and Data)**

Criteria	JORC Code explanation	Commentary
<i>Sampling techniques</i>	<ul style="list-style-type: none"> <li><i>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i></li> <li><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li><i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li><i>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</i></li> </ul>	<ul style="list-style-type: none"> <li>19 rock grab samples were collected as a first pass assessment of the project to host graphite mineralisation. The samples have an irregular spacing reflecting the reconnaissance nature of the assessment. Rock samples were collected as grab samples from in-situ outcropping rock, so as to be representative of the observed mineralised zone.</li> <li>Multiple rock fragments at each sample location were collected so that the sample submitted for assay was as representative as possible of the sample site.</li> <li>The presence or absence of mineralisation was initially determined visually by the field geologist.</li> <li>The rock grab sampling is a standard approach during the initial reconnaissance which was carried out. The graphite mineralisation is commonly disseminated and layered within the gneissic fabric of the rock so that the collected rock fragments sampled are considered representative of the area sampled.</li> </ul>
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li><i>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</i></li> </ul>	<ul style="list-style-type: none"> <li>Not applicable, no drilling has been carried out</li> </ul>
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li><i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li><i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i></li> </ul>	<ul style="list-style-type: none"> <li>Not applicable, no drilling has been carried out</li> </ul>
<i>Logging</i>	<ul style="list-style-type: none"> <li><i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i></li> <li><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li><i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>Notes relating to each sample were recorded in a field note book and later transcribed to digital form. This information is of insufficient detail to support any Mineral Resource Estimation.</li> </ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li><i>If non-core, whether riffled, tube sampled, rotary</i></li> </ul>	<ul style="list-style-type: none"> <li>Not applicable, no drilling has been carried out</li> <li>The sample preparation of the rock samples follows industry best practice, involving oven drying,</li> </ul>



Criteria	JORC Code explanation	Commentary
	<p><i>split, etc and whether sampled wet or dry.</i></p> <ul style="list-style-type: none"> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<p>crushing and pulverising, carried out by ALS, Perth with the pulp sent to ALS Brisbane for analysis.</p> <ul style="list-style-type: none"> <li>No measures have been taken to ensure sampling is statistically representative of the in situ sampled material. The collection methodology is considered appropriate for this early stage assessment of the project.</li> <li>The sample size is considered appropriate to the material being sampled and to produce results to indicate the degree of mineralisation in the areas sampled.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>Analysis was carried out by ALS, Brisbane which is a certified laboratory in compliance with AS/NZS-9001:200. Graphite was determined by multi-stage Leco furnace with infra-red detection, method C-IR18, which is considered a total determination of the graphite content</li> <li>Not used</li> <li>No additional quality control measures beyond that of the Laboratory QA/QC were implemented.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>The results are considered acceptable and have been reviewed by multiple geologists. The company conducts internal data verification, data entry and storage protocols which have been followed.</li> <li>No adjustments to assay data has been undertaken</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>Samples were located during collection by handheld GPS (Garmin GPS76) with a typical accuracy of +/- 5m.</li> <li>The grid system used is Australian Geodetic MGA Zone 52 (GDA94).</li> <li>The level of topographic control offered by the handheld GPS is considered sufficient for the work undertaken</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> </ul>	<ul style="list-style-type: none"> <li>There was no predetermined grid spacing to the program with sample sites being selected as outcrop was located, in order to give a first pass dataset to evaluate the area</li> <li>The data spacing and distribution is not sufficient to establish the degree of geological and grade</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>continuity appropriate for Mineral Resource estimation procedures.</li> <li>Samples have not been composited.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling was carried out over small areas of outcrop, across the strike of the unit where possible, but due to poor outcrop it is not known if they are representative of the entire horizon.</li> <li>Not applicable, no drilling has been carried out</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>All samples were collected by the field geologist and stored in a secure location until completion of the program when they were delivered to ALS laboratories, Perth by commercial courier.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No audits or reviews of the data have been conducted at this stage</li> </ul>

## JORC Code, 2012 edition – Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>The project comprises granted tenement E80/4511 and applications ELA80/4915, ELA80/4948-9. Sayona has an Option to Purchase agreement over these areas with Western Iron Pty Ltd and Attagold Pty Ltd as discussed herein. The author is a related party to Attagold Pty Ltd, of which he is a director and part beneficiary.</li> <li>The tenement applications are subject to approval by DMP, and require agreements with the KLC / Native Title holders and the Violet Valley Aboriginal Reserve. The project lies within the regional Ord River Catchment area and the Corkwood project lies to the west of the Purnululu National Park, but is not contained within it.</li> <li>The Company believes that the applications will proceed to grant in a similar way that prior and current tenure in the district has progressed to grant and where exploration including drilling has taken place.</li> </ul>
Exploration done by other parties	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Past exploration in the region, mainly carried out in the search for nickel sulphide, has provided useful data. Together with government data provided by GSWA</li> </ul>



Criteria	JORC Code explanation	Commentary
		the information has allowed recognition of the projects graphite potential
<i>Geology</i>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>Graphite is being targeted within carbonaceous horizons of the Paleoproterozoic Tickalara metamorphics of the Halls Creek Orogen. Deep burial metamorphism has caused carbon to crystalize as graphite flakes which have been subsequently preserved as the rock cooled. The original mineralisation has also been subsequently affected by deformation, including folding and faulting.</li> </ul>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> <li><i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drilling has not been carried out. A summary of rock sample locations is tabulated and presented graphically within the above report.</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li><i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i></li> <li><i>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>No averaging or cut-off grades have been applied assay results.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</i></li> </ul>	<ul style="list-style-type: none"> <li>Exploration is at an early stage and information contains insufficient data points to allow these relationships to be reported</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>• <i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Sample plans are attached</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>• <i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All the assay results are reported herein.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>• <i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The exploration reported herein is still at an early stage but results are consistent with geological and geophysical data and results from other graphite exploration in the district</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Further more detailed mapping and follow up sampling is required together with other programs described in the report above.</li> </ul>