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HIGH PURITY, HIGH VALUE, HIGH MARGIN – MACINTOSH GRAPHITE "EASILY PURIFIED" TO 99.999 wt%C

The latest round of testing of flake graphite from Hexagon Resources' flagship McIntosh project has confirmed that it can be concentrated to ultra-high purity through a simple, low-cost process.

Graphite of these grades commands premium prices well in excess of even regular anode material feedstock.

Hexagon (ASX: HXG) has concluded the latest stage of its material test work program which has provided further clarity regarding the company's product development strategy for the McIntosh Graphite Project, located in the Kimberley region of Western Australia.

Highlights include:

- Refined concentrate grades of 99.9998 wt% C and 99.9991 wt% C were achieved by a proprietary thermal purification technique.
- The test work was undertaken in the US by Hexagon's technology partner, NAmLabs.
- NAmLabs commented that "the McIntosh material purifies easily due to impurities being on the surface of flake as opposed to being trapped inside flake".
- In addition to purity, it was observed that some of the battery properties such as Surface Area (BET) were significantly enhanced through the thermal purification process of the flake concentrate.
- Purity is a core price driver for graphite materials. There is a considerable price premium for ultra-pure material because of its application in advanced technical applications in the nuclear industry, synthesis of synthetic diamonds for specialty applications, and advanced electronics as well as specialty components in batteries (beyond just the anode).
- The simple purification techniques mean lower cost (and lower environmental impact) and thus significantly higher margins.
- Successful purification test work to achieve ultra-high purity concentrates firmly establish Hexagon's McIntosh concentrate as a premium product across a range of end-use applications.

1. COMMENTARY

The purification test results follow recent work that has highlighted the large flake endowment at McIntosh and the Expandability of the +60 Mesh flake material. In short, the company has demonstrated that it can diversify its product range from a single bulk concentrate aimed at the Li-Ion Battery anode market to now include the higher priced expandable graphite sector and other large flake markets underpinned by easy purification metrics to achieve ultra-high purity products suitable for advanced technical applications for premium prices.

Hexagon's Managing Director, Mike Rosenstreich commented: "This further validates the company's strategy, namely taking advantage of McIntosh's strong positives – that a clean benign ore-type is a key differentiating factor and outweighs simple mining metrics, such as grade."

"Our material is special; we achieved these results through an easy purification process. You can't purify all graphites to ultra-high purity levels with conventional methods. For example with acid leaching we have not seen competitor's acid leached flake at more than 99.98 wt%C. That's important because the *Five Nines* allows us to operate in the "nuclear purity world". Basically, any extra "Nine" elevates your selling price by an order of magnitude. *Fine Nines* flake could have a selling price of around US$30k per tonne.

"That translates into lower costs, higher margins and a lower environmental impact. This enables us to promote strongly the ultra-high purity of the McIntosh Graphite brand, initially, for the primary concentrate products amenability to simple or easy purification, underscored by the strong green, made in Australia credentials.

"These purification results, just like the flake size results and the 220% Expansion Factor results, are exactly what we have been aiming to achieve. There is a tremendous value uplift across a range of flake products for higher purity specifications achieved in an easy and environmentally friendly process. These test work outcomes provide a very sound marketing platform in terms of product specification and revenue assumptions and we consider we are now in a position to finalise a number of marketing agreements."

2. BACKGROUND

On 7 and 23 November 2017 Hexagon reported on the large flake endowment of its McIntosh project deposits and high expansion factor achieved for the +60 mesh sized flake, respectively. It also reported confirmatory work on the high-purity of its graphite mineralisation through lack of known deleterious elements from assaying and Scanning Electron Microscope Scans (SEM) of the crystalline graphite flakes – indicating likely benign purification properties.

This announcement is a continuation of the test work program arising from the partnership with a US company, referred to as "NAmLab[1]", which specialises in graphite and battery technologies; from research, to test work and commercial manufacturing. NAmLab has been certified by the US Department of Defence to be ISO 9001:2008 compliant in Quality Systems and importantly, has a commercial production arm.

3. PURIFCATION TEST WORK OUTCOMES

3.1 Purification Test Results

Test work was undertaken on samples of McIntosh flake graphite concentrate, namely; HXGCon1 generated from batch test work completed in 2016 on a 100kg composite sample of drill core from the Emperor Deposit and HXGCon2A generated from the 2.3t bulk sample processed in early 2017.

The purity results are summarised in Table 1; the tare weight of the platinum crucible was subtracted from the final combined crucible and ash weight to give the amount of non-carbon ash left in the crucible. HXGCon1 had a barely measurable amount of ash left revealing a flake with purity of 99.9998 wt%C, while HXGCon2A had slightly more ash, highlighting a purity of 99.9991

[1] Hexagon Resources does not wish to disclose the name or specific location of the laboratory testing facilities in order to maintain its competitive advantage. For competitive reasons graphite companies do not typically disclose details of the laboratories doing their product test work.

wt%C. Since virtually no ash could be detected, the LOI tests prove the purified McIntosh concentrates are extremely high-purity.

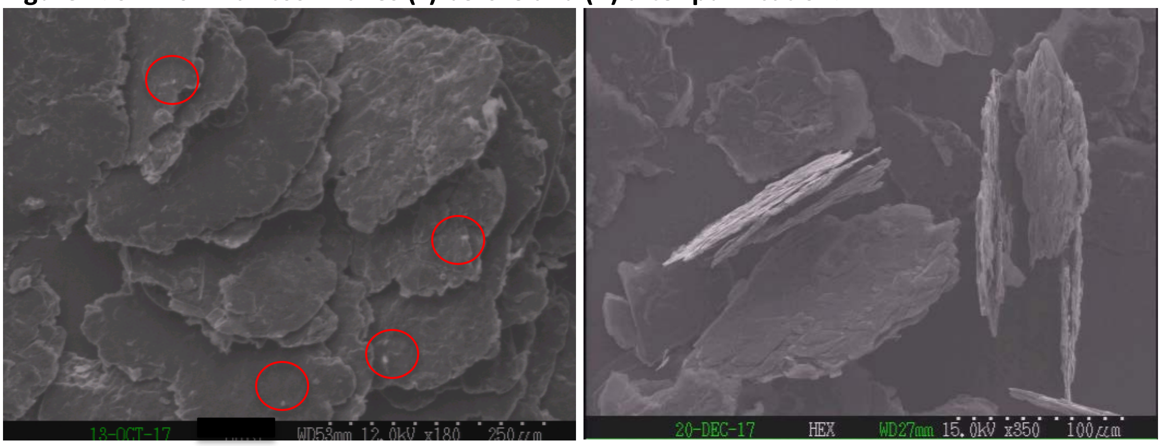
Table 1: Loss of Ignition (LOI) 950 Analysis of purified graphite concentrates from NAmLab

HXGCon1		HXGCon2A (+270#)	
Crucible mass *(g)*	10.54785	Crucible mass *(g)*	10.54755
Ore mass *(g)*	4.29712	Ore mass *(g)*	5.69234
Crucible + Ash *(g)*	10.5486	Crucible + Ash *(g)*	10.54789
Ash *(g)*	0.00001	Ash *(g)*	0.00004
% Carbon	**~99.9998**	**% Carbon**	**~99.9991**
Time to oxidise	9:27	Time to oxidise	6:58

Interestingly, NAmLab was actually targeting a 99.95 wt%C or 99.99 wt%C result but ultimately produced a Five Nines graphite (99.999 wt%C), which confirms that the mineral impurities in the McIntosh concentrates “are extremely easy to remove due to their concentration on the surface of the flake as opposed to trapped in-situ of the flake in gangue and fissures.” as reported by NAmLab.

The SEM scans highlight the presence of small bright specks on the surface of the graphite flakes which are the mineral impurities as shown in Figure 1. If these were embedded as gangue into the flake structure it is unlikely such a high purity could have been achieved in this easy manner.

Figure 1: SEM of McIntosh flakes (L) before and (R) after purification.



The final elemental scans have not detected any residual elements that raise any concerns in regard to any likely product specifications. The levels are either below detection limits or well below established passing specifications. In general the battery industry has 10 critical and 8 more non-critical elements that it is alert for as excessive concentrations of certain elemental impurities pose a risk of side reactions, over-pressurising and leakage in the batteries.

As expected, the tap density, Scott volume, and Microtrac particle sizes of the purified materials did not change significantly compared to the materials before purification. The tap density and Scott volume would not have increased because the material, though purified, is still in flake form. However, BET surface area values generally went down by a factor of 1.5-2; eg HXGCon2 changed from a BET of 4.24 g/cm^3 to 2.27. Ideal BET values are between 2 and 4 g/cm^3). This is change considered to be due to high surface area fines comprising the mineral impurities, which have been eliminated from the structure of the graphite carbon.

3.2 Test Work Methods

Characterisation: on receipt of the samples from Hexagon, NAmLab undertook physio-chemical and analytical characterisation test work on each of the samples. The tap density, Scott volume, BET surface area, and particle size (using Microtrac with sonication) of the materials was determined. SEM was also done on several of the samples. This provides the control data in the analysis of the characteristics of the purified graphite concentrate material.

Elemental Analysis: splits of the 2 main concentrate samples were sent to EAG Laboratories in New York State for elemental analysis. EAG is regarded as one of the world's most reputable facilities in graphite analysis performing the majority certification testing on nuclear grade graphite for carbon companies worldwide. Approximately 70 elements were analysed using glow-discharge mass spectrometry (GDMS) and IGA analysis. IGA is typically used for trapped gasses in ore, while GDMS break down individual minerals. These analyses provide the overall level of impurities present prior to the purification process.

Purification: a proprietary thermal process was utilised the details of which Hexagon and NAmLab do not wish to disclose. The method is regarded as a medium temperature and involves very mild addition of chlorine to the nitrogen gas carrier.

Post-Purification Characterisation: exactly the same tests were carried out on the samples following purification to provide comparative data on the physio-chemical properties.

Post-purification Elemental Analysis; focussed on 19 critical elements to track the changes before and after purification. Solid ICP was utilised and the results correlated with GDMS.

LOI 950 Test: NAmLab also conducted Loss on Ignition (LOI) tests using Coors ceramic crucibles for "as received" concentrate and platinum crucibles on purified concentrate samples to measure the percent carbon within these materials as shown in figure 2. The LOI analysis of the purified samples using platinum crucibles generated the final purity results.

Figure 2. LOI950 test with platinum crucible (used for ultra-high purity graphite)

4. COMPETENT PERSONS' ATTRIBUTIONS

Exploration Results and Mineral Resource Estimates

The information within this report that relates to exploration results, Exploration Target estimates, geological data and Mineral Resources at the McIntosh Project is based on information compiled by Mr Shane Tomlinson and Mr Mike Rosenstreich who are both employees of the Company. Mr Rosenstreich is a Fellow of The Australasian Institute of Mining and Metallurgy and Mr Tomlinson is a Member of the Australian Institute of Geoscientists. They both, individually have sufficient experience relevant to the styles of mineralisation and types of deposits under consideration and to the activities currently being undertaken to qualify as a Competent Person(s) as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and they consent to the inclusion of this information in the form and context in which it appears in this report.

Metallurgical Test Work Outcomes

The information within this report that relates to metallurgical test work outcomes and processing of the McIntosh material is based on information provided by a series of independent laboratories. Mr Rosenstreich (referred to above) managed and compiled the test work outcomes reported in this announcement. A highly qualified and experienced researcher at NAmLab planned, supervised and interpreted the results of the test work. Mr Noel O'Brien provided overview and technical guidance on the planning of the programs and the interpretation of the results generated. Mr O'Brien is a Fellow of The Australasian Institute of Mining and Metallurgy. Mr O'Brien and the NAmLab principals have sufficient experience relevant to the styles of mineralisation and types of test work under consideration and to the activities currently being undertaken to qualify as a Competent Person(s) as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and have consented to the inclusion of this information in the form and context in which it appears in this report.

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Appendix 1: JORC Table 1 Summary

- The samples in the reported test work originate from the Emperor Deposit.
- Geology – interpretation was undertaken based on a combination of geological logging data from drill holes, surface mapping and modelled conductive plates from the VTEM survey of 2014.
- Drilling method – the drilling method used is a combination of reverse circulation "RC" and diamond. The mineralisation for Emperor is defined by 9 RC drill holes for a total of 1,134 m, 21 diamond drill holes for a total of 2,940.5 m and 9 RC precollar / diamond tail holes for 1,369.3 m.
- Sampling – one-metre drill chip samples were collected throughout the RC drill programme in sequentially numbered bags. Core samples from diamond drill holes were collected based on geology and a minimum interval of 1m and a maximum of 2m.
- Sub-sampling - analysis was undertaken at ALS laboratory where samples initially undergo a coarse crush using a jaw crusher to better than 70% passing 6mm. Samples exceeding 3 kg were spilt using a Jones Riffle Splitter 50:50. Pulverising was completed to 85% passing 75µm in preparation for analysis.
- Sample analysis method – all samples were sent to ALS for preparation and for Total Graphitic Carbon (TGC), Total Carbon and Total Sulfur (S) analyses. A 0.1 g sample is leached with dilute hydrochloric acid to remove inorganic carbon. After filtering, washing and drying the remaining sample is roasted at 425°C to remove organic carbon. The roasted residue is analysed for carbon using a high temperature LECO furnace with infrared detection for percentage units.
- Duplicate analysis and analysis of Certified Reference Material (standards) and blanks was completed and no issues identified with sampling reliability or contamination.
- Estimation methodology – grade estimation was undertaken using Surpac software to model graphitic mineralisation using a nominal 3% TGC cut-off grade and to estimate TGC by ordinary kriging at Emperor.
- Resource Classification – classification is based on confidence in geological and grade continuity using the drilling density, geological model, modelled grade continuity and conditional bias measures (slope of the regression and kriging efficiency) as criteria. Indicated Mineral Resources are defined where the drill spacing is sufficient to assume geological and grade continuity and where diamond drill samples have been assessed for graphite quality. As a general rule, drill spacing of 40 m by 40 m or less resulted in an Indicated classification for Emperor and areas with broader spacing are classified as Inferred. The results from metallurgical test work at the McIntosh project have been considered for Mineral Resource classification. The likelihood of eventual economic extraction was considered in terms of possible open pit mining, likely product specifications, possible product marketability and potentially favourable logistics to port and it is concluded that graphite at the McIntosh Project is an Industrial Resource in terms of JORC Code Clause 49.
- Cut-off parameters – the Mineral Resource is reported above a 3% TGC cut-off grade.
- Mining modifying parameters – planned extraction is by open pit mining and mining factors such as dilution and ore loss have not been applied.
- Metallurgical methods - no metallurgical assumptions have been built into the resource model. Data from mineralogy and preliminary metallurgical test work has been considered for Mineral Resource classification. The latest mineralogical examination of drill samples indicates that graphite occurs across a range of sizes from fine to very large flake, with the majority (80%) being in the size range of 150 to greater than 450 microns. Results of metallurgical test work on core samples collected from Emperor and Wahoo indicate a potentially saleable product into the advanced battery market, such as lithium Ion batteries. Recent screen size analysis of concentrate indicates 84% of the graphite flake is greater than 180 microns. The convergence of these two data sets indicates the presence of predominantly larger flake material at the Emperor Deposit. ALS recently completed pilot processing program of a 2.5 tonne bulk composite sample collected from diamond core drilling at Emperor and generated 100kg of concentrate to provide samples for potential offtake companies. This material achieved a high graphite grade of 97.6% TGC but because it was targeting a flake size of c. 106

microns, this sample was not representative of the potential recoverable flake size distribution. This is because at that time the Company's marketing focus was solely on a product for the lithium ion battery anode market and the perceived optimum feed size for those plants of c. 106 microns.

The latest expansion, assaying and sizing work was undertaken at an ISO 9001:2008 compliant and US Government accredited laboratory in the US, highly experienced in graphite applications and test work, utilising conventional assaying and sizing techniques.

The test work currently being undertaken comprises two distinct programs:

I. What is referred to as the "Upstream" test work is aimed at understanding the broad mineralogical associations, textures and flakes size distributions around the Mineral Resources to create a geometallurgical model. Such a model will provide geological and spatial context for further sampling and processing test work.
II. What is referred to as the "Downstream" test work is to examine the downstream or secondary processing responses to develop a marketing strategy based on the technical attributes of the material and to match it with end-users requirements.

Appendix 2: JORC Table 1 Emperor Resource

Section 1 Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	• *Nature and quality of sampling* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*	**1. Reverse Circulation** • RC drilling used high pressure air and a cyclone with a rotary splitter. • Samples were collected at one-metre intervals. • Approximately 50% of samples were not submitted for assay due to the visual non-mineralised nature of the material collected. All graphitic intervals were submitted for analyses. • Duplicate and standards analysis were completed and no issues identified with sampling reliability. • Samples were sent to the ALS laboratory in Perth for assay preparation and then sent to ALS in Brisbane for Total Graphitic Carbon (TGC) analyses. • All samples were pulverised to better than 85% passing 75µm with a 10 g aliquot taken for assay. • Sampling was guided by Hexagon's protocols and QA/QC procedures. • RC drilling samples of 3 to 5 kg weight were shipped to the laboratory in plastic bags; samples were pulverised and milled for assay. **2. Diamond Drilling** • Drill samples in this program were collected based on geology, varying in thickness from 0.1 m to 2 m intervals. Sampling was completed so samples could be composited to one metre intervals within the geological units. • Core samples were quarter split HQ3 core using a diamond bladed saw and sent to the ALS laboratory in Perth for assay preparation and then sent to ALS in Brisbane for Total Graphitic Carbon (TGC) analyses. • All samples were pulverised to better than 85% passing 75µm with a 10 g aliquot taken for assay. • Duplicate samples, CRM standards and blank material were used during the drill programs. Duplicates collected after each 50 samples. Standards were inserted for samples ending in *00,*20,*40,*60 and *80 and blanks for samples ending in *01,*21,*41,*61 and *81.Sampling was guided by Hexagon's protocols and QA/QC procedures.
Drilling Techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. 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).*	**1. Reverse Circulation** • RC drill holes (total of 2,154 m from 18 holes) – completed with face sampling hammers and collected through a cyclone. Sample recovery was estimated at a percentage of the expected sample, sample state recorded (dry, moist or wet), samples tested with 10:1 HCl acid for carbonates and graphite surface float. • RC drilling was completed by Egan drilling using an X400 drill rig and United Drilling Services using a DE840 drill rig. **2. Diamond Drilling** • Diamond drill holes (total of 2,940.5 m for 21 holes) – collected HQ_3 core using a 3m core barrel and drilled by Terra Drilling using a Hanjin Powerstar 7000 track mounted rig. Core orientation was recorded using a Reflex EZ Shot instrument. • RC pre-collars were drilled with HQ_3 diamond tails for a total of 1,369.3 m from 9 holes.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	**1. RC Drilling** • A face sampling hammer was used to reduce contamination at the face. • 1 m drill chip samples, weighing approximately 2 kg were collected throughout the drill programme in sequentially numbered bags. • Split samples were recovered from a cyclone and rig-mounted cone splitter. The sample recovery and physical state were recorded. • Every interval drilled is represented in an industry standard chip tray that provides a check for sample continuity down hole. **2. Diamond drilling** • Core recovery was excellent. Recoveries were measured for each run between core blocks and measurements recorded. Core was photographed and logged for RQD and geology.

		• Analysis from one pair of twin holes drilled at Hexagon's Longtom resource (an adjacent and similar style graphite deposit) noted a lower graphite content in the RC samples when compared with diamond core. Insufficient work has been completed on comparing RC and diamond methods to rule out drilling by RC.
Logging	• *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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All RC and diamond drilling (100%) was logged for geology in the field by qualified geologists. Lithological and mineralogical data was recorded for all drill holes using a coding system developed specifically for the Project. Primary and secondary lithologies are recorded in addition to texture, structure, colour, grain size, alteration type and intensity, estimates of mineral quantities, graphite intensity and sample recovery. The oxidation zone is also recorded. • No adjustments have been made to any assay data • Geological logging is qualitative in nature. • Diamond drilling logging also recorded recovery, structure and geotechnical data. • Diamond core was orientated using the Reflex orientation tool. • Core was photographed both dry and wet.
Sub-sample techniques and sample preparation	• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	**1. RC Drilling** • All samples marked with unique sequential sample number • RC drilling samples were bagged at the drill site in calico bags with a second outer plastic bag to prevent loss of fines. The sample sizes are considered to be appropriate to the grain size of the material being sampled. • 1m RC drilling samples were submitted to either Actlabs Canada or ALS laboratories in Perth. The samples were riffle split on a 50:50 basis, with one split pulverised and analysed for Total Graphitic Carbon (TGC), Total Carbon (TC) and Total Sulphur (TS) using a LECO Furnace, and the other split held in storage. • For RC samples, standards and field duplicates were inserted at an approximate rate of 1 in every 20 samples collected. Duplicate assay results exhibit good correlation with the original assays and no consistent bias is evident. • Sample preparation: 1. Coarse crush using a jaw crushed to better than 70% passing 6mm. 2. For samples exceeding 3kg received mass, riffle split using a Jones Riffle Splitter 50:50 3. Pulverise up to 3kg of coarse crushed material to better than 85% passing 75µm particle size 4. Small aliquot (~10g) taken for assay. **2. Diamond Drilling** • Diamond drill core was cut into half core (used for metallurgical testing) and the remaining half sawn into quarter core using diamond blade core-saw. Quarter core was used for samples and duplicates. Core cutting was carried out under consignment at Westernex in Perth. • Duplicate assay results exhibit good correlation with the original assays and no consistent bias is evident. • Sample preparation: 1. Coarse crush using a jaw crushed to better than 70% passing 6mm. 2. For samples exceeding 3 kg received mass, riffle split using a Jones Riffle Splitter 50:50 3. Pulverise up to 3 kg of coarse crushed material to better than 85% passing 75µm particle size 4. Small aliquot (~10 g) taken for assay. • Sampling procedures and sample preparation represent industry good practice:
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• The assaying and laboratory procedures used are industry standard and are appropriate for the material tested. • Sampling was guided by Hexagon's protocols and QA/QC procedures. • For RC samples, standards and field duplicates were inserted at an approximate rate of 1 in every 20 samples collected. • Field duplicates were inserted into diamond core samples at a rate of 4 every 100 samples, standards at a rate of 4 every 100 samples and blanks at 2 every 100 samples.

		• Statistical analysis of standards, blanks and duplicates during the QAQC process showed that the data was satisfactory. • No issues were identified with sampling reliability
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Hexagon QA/QC checks show that all samples are within acceptable limits. No adjustments to assay data have been made based on the analysis of duplicates, standards and blanks. • Standards from ALS laboratory were found to be acceptable. • Duplicate analysis was completed and no sampling issues were identified. • CSA verified several graphite intersections in core and RC chip samples during a visit to Hexagon's warehouse during January 2015. • During a site visit in October 2015, a geological consultant from CSA verified that the diamond drilling, geological logging and sampling practices were of industry standard. The consultant also verified graphite intersections in core samples. • Analysis from one pair of twin holes drilled at Hexagon's Longtom resource noted a lower graphite content in the RC samples when compared with diamond core. It is suggested that RC samples are biased due to the loss of fine material. The majority of samples used in the estimation for Emperor are diamond core. • The Hexagon database is hosted in a SQL backend database, ensuring that data is validated as it is captured and exports are produced regularly. Assay results are merged into the database from the lab certificates limiting transcription or mapping errors from occurring. • No adjustments have been made to the results.
Location of Data points	• *Accuracy and quality of surveys used to locate drillholes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• 45 drill hole collars were surveyed using Differential GPS by a surveyor from Savannah Nickel mines for the 2015 program and a contract surveyor (MNG survey) from Broome. The degree of accuracy of drill hole collar location and RL is estimated to be within 0.1 m for DGPS. 3 collars were surveyed using a handheld Garmin 62S and Garmin 76c Global Positioning System (GPS) with a typical ±5 m accuracy. Topography from contours generated from a LiDAR survey was used to validate collar points and assign RL values to the 3 holes surveyed by GPS that had an RL >2 m different to the topography. • Downhole surveys completed for all holes where possible (48 holes). EZshot survey data was used where downhole surveys were not successful. All holes used in the resource have been downhole surveyed using a gyro by ABIM Solutions. • Topographic control was adequate for the purposes of Mineral Resource estimation. • The map projection used is the Australia Geodetic MGA 94 Zone 52.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• Drill spacing on an approximate 40 m by 40 m grid throughout the majority of the deposit, dropping to 40 m across strike by 80 m along strike to the south of the deposit. • Geological interpretation and mineralisation continuity analysis indicates that data spacing is sufficient for definition of a Mineral Resource.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• Holes generally drilled dipping at -60° targeting the fold hinge and limbs. • Diamond drill core has been orientated using a Reflex ACE tool 9Act II), with α and β angles measured and positioned using a Kenometer. MapInfo software was used to calculate dip and dip direction for each structure. • The relationship between the drilling orientation and the orientation of key mineralised structures is not considered to have introduced a sampling bias.

Sample Security	• *The measures taken to ensure sample security.*	• Unique sample number was retained during the whole process • RC and diamond samples were placed into calico bags and then into self-sealing plastic bags prior to being put into bulka bags. The bulka bags were then transported by road. RC samples were sent to the ALS laboratory in Brisbane for preparation and analysis and diamond core samples were sent to ALS in Perth for preparation and then to ALS in Brisbane for analysis. A small amount of core samples were sent to Actilabs. • Drill core transported to Westernex was secured on pallets with metal strapping and transported to Perth by road train. • The sample security is considered to be adequate.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Sampling techniques and data collected methods have been audited by CSA during a site visit in October 2015 • Field data is managed by an independent data management consultancy Rocksolid Solutions. • All data collected was subject to internal review

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *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.* *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.*	• Drilling at the Emperor deposit occurred on exploration leases E80/3864 and E80/4841. These tenements are held by McIntosh Resources Pty Ltd who is a wholly owned subsidiary of Hexagon Resources. Hexagon Resources are the managers of exploration on the project.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The East Kimberley has been largely explored for base metals and diamonds with no active previous exploration for graphite. Graphite had been noted by Gemutz during regional mapping in the Mabel Downs area for the BMR in 1967, by Rugless mapping and RAB drilling in the vicinity of Melon Patch bore, to the east of the Great Northern Highway in 1993 and has been located during nickel exploration by Australian Anglo American Ltd, Panoramic Resources Ltd and Thundelarra Resources Ltd over the last 20 years.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The McIntosh Project graphite schist horizons occur in the high grade terrain of the Halls Creek Mobile Zone of Western Australia. The host stratigraphy is the Tickalara Metamorphic which extend for approximately 130 km along the western side of the major Halls Creek Fault. The metamorphic rocks reach granulite metamorphic facies under conditions of high-temperature and high pressure although the metamorphic grade in the McIntosh Project area appears to be largely upper amphibolite facies with the presence of key minerals such as sillimanite and evidence of original cordierite. • Hexagon has identified potential graphite schist horizons based on GSWA mapping and EM anomalism over a strike length in excess of 15 km within the project area, with potential for an additional 35 km strike length of graphite bearing material from lower order EM anomalism.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:*
	  • *easting and northing of the drillhole collar*
	  • *elevation or RL (elevation above sea level in metres) of the drillhole collar*
	  • *dip and azimuth of the hole*
	  • *down hole length and interception depth*
	  • *hole length.*
		• 21 diamond drill holes for 2,940.5 m and 18 RC drill holes for 2,154 m and 9 RC precollar diamond tail (RD) holes for 1,369.3 m completed at the Emperor deposit. Hole locations tabulated in an Appendix to this announcement report.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques,*	• Data compiled in Excel and validated in Datashed by an external data management consultancy.

	maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	• RC samples were all 1 m in length, diamond core samples vary between 1m and 2 m samples. • Metal equivalents are not reported as this is an industrial mineral project where the mineral properties define grade (e.g. flake size and purity). • A nominal 3% Total Graphitic Carbon cut-off has been applied in the determination of significant intercepts
Relationship between mineralisation widths and intercept lengths	• *If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect.*	• Mineralised widths at Emperor are estimated to be typically between 5 m and 70 m, compared with RC samples of 1m width. There is a very close relationship between the graphitic schist unit and Total Graphitic Carbon (TGC%) assays. The presence of graphitic schist is clearly evident in both the RC chips and diamond drill core so that the assay widths can be clearly related to the geological logs. • The graphitic schist horizon has been interpreted as an anticlinal fold. Angled drill holes (generally 60º) have targeted the mineralised unit with the priority to intersect the limbs perpendicular to the strike of the graphitic schist horizon, although in some areas this was not possible and holes were drilled down dip. However interpreted EM data and the width of intersections where holes were drilled perpendicular to the unit have allowed for a good indication of unit thickness to be made and applied in areas where the information is not available.
Diagrams	• *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 drillhole collar locations and appropriate sectional views.*	• Not relevant as Mineral Resource being reported.
Balanced reporting	• *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.*	• Exploration results are not being reported for the Mineral Resources area.
Other substantive exploration data	• *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.*	• The September 2014 VTEM Supermax survey over the McIntosh Flake Graphite Project covered a total of 642 line kilometres and identified a total of 12 high-priority anomalies. Five of these were previously identified by induced polarisation (IP) and historical electromagnetic (EM) techniques and confirmed to be flake graphite schist by geological field mapping, petrographic analysis, rock chip sampling and exploration drilling. • VTEM geophysical work was carried out by Geotech Limited with the data validated and processed by Southern Geoscience Consultants (SGC). • Test work and petrographic examinations to gather data on the mineralogy, flake size distributions and elemental associations are being undertaken and reported progressively. The methods comprise petrographic examination-including systematic flake length estimates, screen sizing analyses, assaying (as above). Samples were selected from within the current resource across low to high TGC and S grade ranges. Samples were collected from locations representing the limbs and fold hinge. • Metallurgical test work is underway and being reported progressively on McIntosh concentrate material produced from previous test work. This work examines downstream processing opportunities based on understanding the technical attributes of the flake comprising the concentrate material. This includes simulating downstream processing for battery anode material (Spheroidisation) to generate battery related parameters. As well, tests were completed assessing flake size in the concentrate, flake morphology, purity and particle size distribution and other aspects. Test work has also been completed indicating that flake coarser then 60 Mesh is amenable to expansion (220% expansion factor) opening up new downstream opportunities. • This work is being undertaken by several different laboratories and test work facilities in Australia and oversea

		that have been reviewed and assessed for their experience by Hexagon.
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*	• Further diamond core drilling has been recommended to twin and verify existing RC holes at Emperor. This core is planned to be assayed for TGC and examined petrographically to assess graphite flake characteristics. • Additional dry density work on core to be carried out on mineralised and background domains. • Estimate S% content into resource model • Program to assess moisture content of Emperor material. • Multi-element analysis of mineralisation and waste material. • Continuation of the test work programs gathering mineralogical data to formulate a geometallurgical model, primary processing test work to improve the Stage 1 process flow sheet and continue the downstream processing test work on material derived from the stage 1 process flow sheet.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* *Data validation procedures used.*	• Primary data was captured into spreadsheet format by the supervising geologist, validated and subsequently loaded into Hexagon's database. • Database extracted as an .mdb access file from Datashed and validated before importing into Surpac. • Additional data validation by Optiro; included checking for out of range assay data and overlapping or missing intervals.
Site Visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	• Numerous site visits were completed by S. Tomlinson during the 2015 -2017 drilling periods. The diamond and RC drill rigs were inspected, sampling procedures checked, RC chips and diamond core logged.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* *The factors affecting continuity both of grade and geology.*	• Geological interpretation based on lithology logging, structural logging, geochemical sampling, prospect scale surface mapping and modelled VTEM data collected during the 2014 VTEM Supermax survey. • Drill coverage to ~40 m by 40 m. • Mineralisation wireframe produced based on soft 3% TGC cut-off grade delineating ore/waste boundary. Internal dilution in the main mineralised envelope has been modelled as two domains. Further modelling of mafic intrusive bodies have also been modelled. • The base of oxidation and mafic intrusives were also modelled as part of the Emperor resource. • Confidence in the grade and geological continuity is reflected in the Mineral Resource classification.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The Emperor resource extends 480 m north-northwest to south-southeast. The mineralisation occurs within an anticline of the hosting graphite schist units ranging in thickness between 5 m and 70 m. • Mineralisation is open along strike and at depth along the fold limbs.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur*	• The resource was modelled using Geovia's Surpac v6.7 modelling software. • Drill hole sample data was flagged from interpretations of the top and base of the mineralisation horizon. • Samples were composited to 1 m down hole length. • Top grade cuts were not required (low coefficient of variation and no outlier grades) • Statistical analysis was completed to investigate low correlation variances, boundary conditions between domains, and fresh/oxide. • TGC mineralisation continuity was interpreted from variogram analyses to have a horizontal range of 170 m (north-west to south-east). • The maximum extrapolation distance is 20 m along strike and 20 m across strike. • Grade estimation was into parent blocks of 40 mE by 20 mN by 5 mRL. Block size was selected based on kriging neighbourhood analysis. • Total Graphitic Carbon (TGC) estimated by Ordinary Kriging (OK) for mineralised domains (1 to 4) at the parent block scale.

	for acid mine drainage characterisation). • In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. • Any assumptions behind modelling of selective mining units. • Any assumptions about correlation between variables. • Description of how the geological interpretation was used to control the resource estimates. • Discussion of basis for using or not using grade cutting or capping. • The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.	• The search ellipses were oriented within the plane of the mineralisation. • Three estimation passes were used; the first search was based upon the variogram ranges in the three principal directions; the second search was two times the initial search and the third search was four times the initial search, with reduced sample numbers required for estimation. • Aproximately70% of the block grades were estimated in the first pass for domain 1 (main envelope) and 49% for domain 4. • The estimated TGC block model grades were visually validated against the input drillhole data, comparisons were carried out against the drillhole data and by northing, easting and elevation slices. • There is no production data and so no reconciliation has taken place. • Sulphur will be estimated into the model, as sulphide minerals have the potential to affect metallurgical processes for recovering graphite. The available metallurgical testwork results indicate that the sulphide minerals do not present any issues in recovering graphite. Sulphur is not correlated with TGC.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• The Emperor deposit is above the water table. Down hole dipping during the 2015 field season did not intercept water. • Moisture content has not been tested
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The Mineral Resource is reported above a 3% TGC cut-off grade to reflect current commodity prices and open pit mining methods.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous.*	• It is assumed that extraction will be by open pit mining and that the mineralisation is economic to exploit to currently modelled depths. • Mining factors such as dilution and ore loss have not been applied. • No assumptions about minimum mining widths or dilution have been made.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous.*	• A range of test work results have now confirmed graphite concentrate grades of between 97 and 99% TGC produced from a process of crushing and grinding material from the McIntosh project. See results in metallurgical test work conducted by ALS Global in Adelaide. Refer to announcement released 18 January 2016, 31 May 2017 and 6 November, 2017 as examples. • Metallurgical testwork on Emperor material shows that the sulphides present are easily liberated from the graphite by flotation. • The results from metallurgical testwork have been considered for Mineral Resource classification.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation.*	• No assumptions have been made regarding waste and process residue • Environmental studies are being completed as part of the McIntosh Pre-Feasibility study.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc),*	• Dry density was assigned a value of 2.85 t/m^3 (fresh) and 2.65 t/m^3 (oxide) based on 25 dried core samples and water emersion technique carried out by SGS. • Geophysical gamma density data was also obtained but has not been included in the resource.

	moisture and differences between rock and alteration zones within the deposit. *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• Mineral Resources have been classified on the basis of confidence in geological and grade continuity using the drilling density, geological model, modelled grade continuity and conditional bias measures (slope of the regression and kriging efficiency) as criteria. • The results from metallurgical testwork have been considered for Mineral Resource classification. The likelihood of eventual economic extraction was considered in terms of possible open pit mining, likely product specifications and possible product marketability. • Measured Mineral Resources - none defined. • Indicated resources have been defined in the centre of the deposit where material was estimated in the first pass estimation. Drill spacing for indicated material is generally 40 m by 40 m. • Inferred material occurs in the northern and southern limits of the deposit where drilling data is sparser (to 40 m by 80 m), but still sufficient to assume continuity of mineralisation. Confidence for the resource in these areas is also from the VTEM survey completed over the area. • The classification considers all available data and quality of the estimate and reflects the Competent Person's view of the deposit.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• CSA carried out a site visit in 2015. • The resource estimate has been peer reviewed by independent consultants Optiro in 2017.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation.*	• The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resource as per the guidelines of the JORC Code (2012 Edition). • The Mineral Resource is a global estimate of tonnes and grade. • Relative tonnages and grade above the nominated cut-off grades for TGC are provided in this announcement. Volumes of the collated blocks sub-set by mineralisation domains were multiplied by the dry density value to derive the tonnages. The contained graphite values were calculated by multiplying the TGC grades (%) by the estimated tonnage. • No production data is available to reconcile results with.