



**Breakaway
Research**

February 2016

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Company Information

ASX Code	HXG
Share Price (29 Jan 2016)	A\$0.061
Ord Shares	215.45m
Options – In the money	0.00m
Options – Out of the Money	11.25m
Market Cap (UD)	A\$13.14m
Cash (31 Dec 15)	A\$0.51m
Total Debt	A\$0.00
Enterprise Value	A\$12.63

Directors and Management

Non-Exec Director & Chairman	Neville Miles
CEO/Head of Operations	Tony Cormack
Non-Exec Director	Garry Plowright
Company Secretary	Leni Stanley & Brent Van Staden

Company Details

Address	Level 16, 344 Queen Street Brisbane Qld 4000
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Major Shareholders

Och Ziff	8.09%
Pathfinder Exploration Pty Ltd	3.92%
Mr Robert Lord	3.25%

1 Year Price Chart



Hexagon Resources (HXG)

Successful Back to Basics Strategy

Recommendation: Speculative BUY

Key Points

- **Strategic regrouping and refocus, following a disruptive twelve months, yielding excellent results**
- **Resource upgrade at McIntosh in Western Australia has resulted in Australia's largest graphite resource**
- **This is supported by excellent metallurgical results, with a high purity concentrate being produced, suitable for high end battery graphite markets**
- **South Korean graphite projects provide a quality second project, again returning positive results**
- **Stage set for development studies at McIntosh, with a clear pathway to production**

Following a challenging period associated with the failed Hengda merger, Hexagon Resources (previously Lamboo), under new management, has now regrouped and has had success in its refocussed efforts on delineating and bringing into production a high quality graphite resource at its key McIntosh Graphite Project in Western Australia. As part of its development strategy the Company is also looking at value add opportunities, including spherical graphite production.

Following a VTEM survey in 2014, the new management took a step back and focussed activities on areas that it felt would deliver a quality resource that would provide the basis for a long term mining operation. The Company has now defined such a resource, with scope for future resource expansions.

In addition drilling results have led to a significant resource to be defined at Geumam in South Korea, with the South Korean projects providing blue sky, however given the focus on McIntosh; the Company is considering strategies in relation to the South Korean assets.

Both projects have returned excellent metallurgical results, exhibiting the potential to produce a high quality flake graphite concentrate, suitable for use in the lucrative and growing battery (and expandable) graphite markets, and which should command a premium price.

*We rate Hexagon as a **Speculative Buy**, with short to medium term price drivers being material progress on development studies which are now to commence at McIntosh and progressing offtake opportunities.*

Company Overview

Hexagon Resources (ASX: HXG) is a graphite development company with its flagship project being the McIntosh Graphite Project in the Kimberley region of Western Australia, which it now plans to progress through feasibility.

As part of an overall strategy Hexagon is also investigating the potential to produce value added products, including spherical graphite.

The three South Korean projects are being progressed in parallel – Hexagon is currently considering development options for these projects.



Investment Thesis

Strategy repositioning yielding results

Re-evaluation of Strategy

Following a challenging period, including an aborted merger and senior board changes, Hexagon Resources (“Hexagon” or “the Company”) has undertaken a reappraisal of its activities, and is now concentrating on developing its key McIntosh Graphite Project (“McIntosh” or “the Project”), located in Western Australia.

Key project is McIntosh in Western Australia

McIntosh Graphite Project

In McIntosh, Hexagon has a high quality graphite project, close to infrastructure, being located 280km along the Great Northern Highway from the Port of Wyndham in Western Australia. Metallurgical testwork to date indicates that the project has the potential to produce a premium high grade product suitable for the battery market. Such a product should obtain premium pricing. The Company is also investigating the potential of producing value added spherical graphite.

At 17.2Mt, McIntosh has Australia’s largest graphite resource

Australia’s Largest Graphite Resource

The project has a recently upgraded resource of 17.2Mt @ 4.63% Total Graphitic Carbon (“TGC”), making it the largest graphite resource in Australia. This has been defined over the Longtom (previously T1), Wahoo (previously T4), Barracuda (previously T5) and Emperor (previously T6) targets.

A key feature is that a large proportion of the resource, particularly at Emperor, has been defined over zones containing significant thicknesses of mineralisation, highlighting the potential for any future operation to be a relatively low strip ratio one.

There is good resource expansion potential

VTEM Indicates Upside Potential

The areas selected for resource drilling were delineated from an airborne VTEM survey that was flown in 2014. Drilling covers only 16% of the prospective 50km of stratigraphy. The VTEM has proved to be an excellent targeting tool, with very good correlation between the magnitude of the VTEM anomaly and mineralisation intersected.

Metallurgical testwork has returned excellent results

Encouraging Metallurgy

Various metallurgical testwork programmes have highlighted the capacity for McIntosh to produce a high quality graphite concentrate.

The most recent testwork, on bulk samples from Emperor has returned concentrates grading at 99% TGC with a recovery of >86% from a five stage float process, without any subsequent chemical or thermal purification. Similar testwork on Wahoo produced a 99% concentrate with a >86% recovery. The work has indicated that the high grades have been achieved over all flake sizes, with the 99% concentrate being a blended product.

Petrographic work carried out in parallel has also shown the potential for large to jumbo flake product to be produced, particularly from Emperor – however further sizing work and work to test the compatibility as feed for spherical graphite is now underway.

Previous testwork had indicated that there are no deleterious elements or inclusions in the graphite structure, and that the material is suitable for upgrading to a 99.95% TGC battery grade product.

Potential to Command a Premium Price

The key take-out from this is the potential for McIntosh graphite to command a premium price for at least a portion of future production – the occurrence of high concentrate grades



in the smaller flake sizes indicates a product that will, when used for spherical graphite production, have potentially both relatively low milling and purification costs.

Upside in South Korean Projects

The Company has three projects in South Korea

In the three South Korean projects (Geumam, Taewha and Samchoek) Hexagon has excellent potential for further operations close to key graphite consumers, including Li-Ion battery producers. The Company is, due to concentrating on McIntosh, considering options with regards to South Korea.

A maiden Indicated and Inferred Resource of 5.5Mt @ 5.32% TGC has been estimated at the key Geumam Project. Drilling away from this resource has intersected thick zones of mineralisation, demonstrating the potential for substantial resource expansions.

All three projects have been mined in the past; Taewha and Samchoek have modest JORC-compliant resources, and Geumam and Taewha have significant exploration targets.

Graphite – Potential Large Demand Growth

Graphite is classed as a critical mineral by the US and EU

Graphite has been classified by the EU and US as a critical mineral for industrial and national security, with production concentrated in China, which produced 75% of the 2014 global production of ~ 1,170,000t of natural graphite, of which approximately 50% is flake. The US has no production, importing some 70,000t in 2013.

Expected strong demand growth, largely driven by batteries

Current annual demand growth is around 6% CAGR, which suggests demand in 2020 will be in the order of 1.4 - 1.5Mt, or an additional 300 - 400,000t above current, with this split between flake and amorphous. However forecasters see the potential for batteries to significantly drive demand, with the possibility of a 9% CAGR up to 2020, resulting in a potential demand of 2.5Mt in that year.

Significantly, demand for batteries will be largely for high quality flake graphite, with potential for supply bottlenecks, and hence increases in prices. One battery development is Tesla's proposed production plant, which will have demand for up to 126,000tpa of flake graphite, ~30% of the current total global demand. In addition, the rapidly developing electric vehicle industry in China should drive additional demand for battery grade flake graphite.

Peers

Hexagon is one of a number of ASX-listed companies focussing on graphite

Hexagon is one of a number of ASX graphite explorers to producers, as presented in the table below.

One comparative valuation metric is the enterprise value per tonne of contained TGC. As can be seen, there is a wide range of values, ranging from \$0.2/tonne for Triton, which has the largest resource, to Valence at \$38/tonne, which is a producer, albeit with operations currently suspended.

However it should be noted that this metric needs to be treated with caution and used as a guide only – it will be affected by any number of factors, including concentrate quality and marketability amongst others, which are key considerations with assessing graphite projects. Also the low figure for Triton (and to a lesser extent Syrah) will be partly due to the very large resources – this metric can be misleading, especially in bulk commodities and industrial minerals where a resource is significantly larger than that required for a robust operation.



Hexagon Resources Peer Group

Company	Location	Project/Area	EV Undiluted (\$m)	Global Resource (Mt)	Cg Grade (%)	Contained Cg Mt 100% basis	EV/t TGC (Co share)	Project Stage
Syrah Resources	Mozambique	Balama	\$647	1,191.00	10.5%	125.40	\$5.2	Development
Magnis Resources	Tanzania	Nachu	\$118	156.90	5.3%	8.35	\$28.3	PFS completed, debt finance term sheet, heading to development
Talga Resources	Sweden	Various	\$38	43.40	15.8%	6.86	\$5.5	Looking at hi-tech applications, including graphene
Triton Minerals	Mozambique	Balama	\$31	1,457.00	10.7%	155.75	\$0.2	DFS for Nicanda Hill and West underway
Kibaran	Tanzania	Mahenge/Epanko, Merelani	\$24	39.90	8.4%	3.35	\$7.2	BFS at Mahenge completed Resource at Merelani. Offtake and sales agreements
Valence Industries	Australia	Uley	\$21	4.72	11.4%	0.54	\$38.4	Operations suspended pending recapitalisation
Ardiden	Canada	Manitouwadge	\$13	-	-	-	N/A	Exploration, appraisal
Hexagon Resources	Australia Sth Korea	McIntosh - NT South Korea	\$11	23.07	4.8%	1.11	\$10.2	Commencing feasibility, McIntosh
Lincoln Minerals	Australia	Eyre Peninsula	\$10	4.05	12.6%	0.51	\$30.3	Working towards development
Sovereign Metals	Malawi	CMGP - Duwi	\$6	85.90	7.1%	6.13	\$1.0	Scoping of Duwi Completed
Archer Exploration	Australia	Campoona, Eyre Peninsula	\$6	8.55	9.0%	0.77	\$7.5	Exploration - South Australia
Black Rock Mining	Tanzania	Mahenge Area	\$4	-	-	-	N/A	Exploration, appraisal
Bora Bora	Sri Lanka	Matale and Paragoda	-\$0.23	-	-	-	N/A	Exploration - historic workings

Source: IRESS, Company reports, values as of close of business, Friday, January 29, 2016

1. Here the enterprise value is the enterprise value of the company as a whole and not of the graphite projects alone.

Risks

As in any resources stock there are a number of risks involved as listed below. Largely relating to McIntosh. McIntosh appears to be significantly de-risked technically, with funding, permitting and securing offtake agreements now the key risks.

- Funding** – This is the key risk now facing Hexagon, particularly with the current tight capital markets. The Company is going to require in the order of up to \$3M over the next 12 months to complete the planned work programmes, and therefore will need to source cash. There is the probability of a capital raising, however the Company is also continuing discussions with China Sciences Hengda Graphite Co Ltd. in relation to the US\$2 million refundable deposit that remains outstanding.
- Metallurgy** – Metallurgical testwork indicates that both McIntosh and the South Korean projects can produce quality clean concentrates, suitable for high end applications. Metallurgical testwork, including sizing analysis, is ongoing at McIntosh.
- Resource** – The recent resource upgrade at McIntosh has largely mitigated this risk, although it has a relatively low grade of 4.63% TGC when compared with most peers. This is partially offset by high metallurgical recoveries and by the shallow and thick nature of mineralisation, with the potential for concomitant low operating costs. Metallurgical results also indicate the potential for premium prices.



- **Offtake** – A key now is for Hexagon to secure offtake agreements, which will be vital for any development of McIntosh. The Company has now produced commercial samples for distribution for end users to test in their particular applications which is key to advancing offtake negotiations.
- **Infrastructure** – We see little infrastructure risk for McIntosh – it is located within 10km of the sealed Great Northern Highway accessed by an existing haul road and within 280km of the port at Wyndham. Wyndham is currently underutilised, and has the facilities for concentrate loading. Another positive is the proximity to Asian markets
- **Permitting and Sovereign Risk** – Given the location in a known mining jurisdiction and the generally transparent permitting processes required we consider this risk relatively low, however there is always the potential for delays in the permitting process as is the case for any resources project. On the other hand, Company principals have extensive experience in project development in Western Australia.



Project and Activities Review

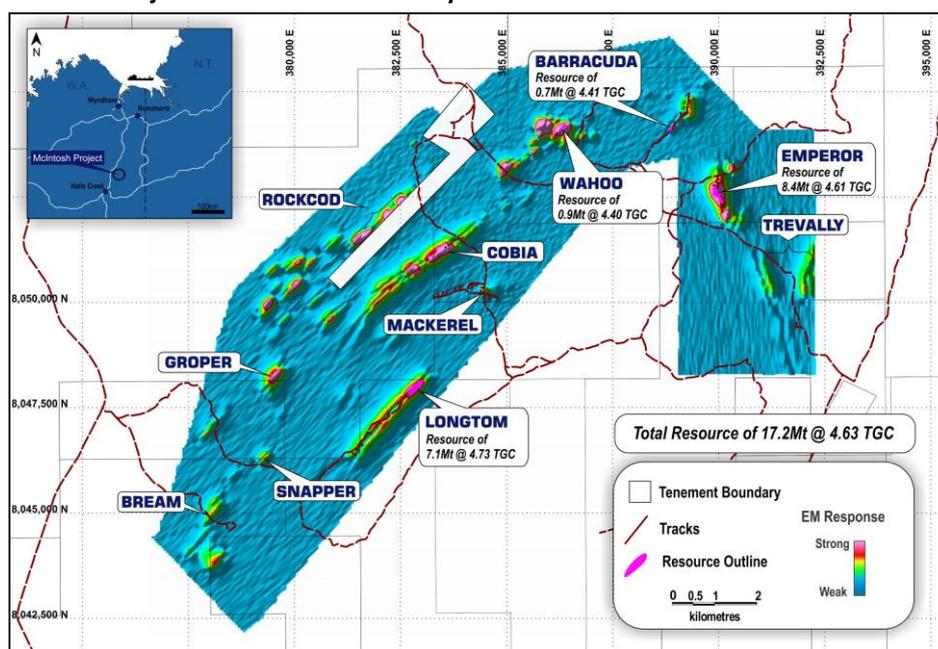
McIntosh Graphite Project (LMB 100%)

The McIntosh Graphite Project is centred approximately 280km south of Wyndham, with good access to infrastructure

The McIntosh Graphite Project is located approximately 280km south of the port of Wyndham, adjacent to the all-weather Great Northern Highway. The project comprises eight granted EL's and three EL applications, covering 665.3 km². There are no encumbrances on the tenements, with the exception of a 1% mill gate net royalty on E80/4733 (Black Rock), as a part of the acquisition from Uramin in 2014.

Hexagon commenced work on the area in June 2012, following reinstatement to the ASX. Since that time considerable progress has been made on the Project.

McIntosh Project location and EM surveys



Source: Hexagon Resources

Geology and Mineralisation

The graphitic units are hosted in the Paleoproterozoic Tickelara Metamorphics

The prospective graphitic schist units are hosted in metasediments of the Paleoproterozoic Tickelara Metamorphics, and are co-incident with clear EM anomalism, forming generally NE striking steeply dipping horizons, however with folded stratigraphy identified at a number of the targets. EM is an ideal tool for exploration in the area - there is very good correlation between conductance and tenor of mineralisation, with this now being used in targeting.

Work Completed and Strategy

Initial work concentrated on the Longtom target, on which the maiden resource was based

The original strategy was to rapidly prove up and commercialise a resource, with this being concentrated on the Longtom target, which was identified from the EM survey completed by Thundelarra (ASX: THX) in 2005. Activities included drilling, which resulted in an initial resource of 7.13Mt @ 4.73% TGC, metallurgical testwork, a scoping study and more recently a conceptual mining study. Induced Polarisation ("IP") surveying was also carried out over Mackerel and Cobia.

In addition to the Longtom resource limited drilling was also completed at Mackerel, Cobia, Barracuda and Emperor with an initial exploration target defined from this work and the 2005 EM.

In 2014 the Company completed a 642 line km airborne VTEM Supermax survey, which confirmed the potential of the existing targets as well as identifying multiple new target areas within the 30-50km strike length of prospective graphitic schist units in the



tenement package. This data was then used to update the exploration target, which was subsequently used in a conceptual mining study undertaken by CSA Global (“CSA”, see below). The Exploration Target Estimate completed by CSA is 80 – 127Mt @ 2.5 – 6.0% TGC.

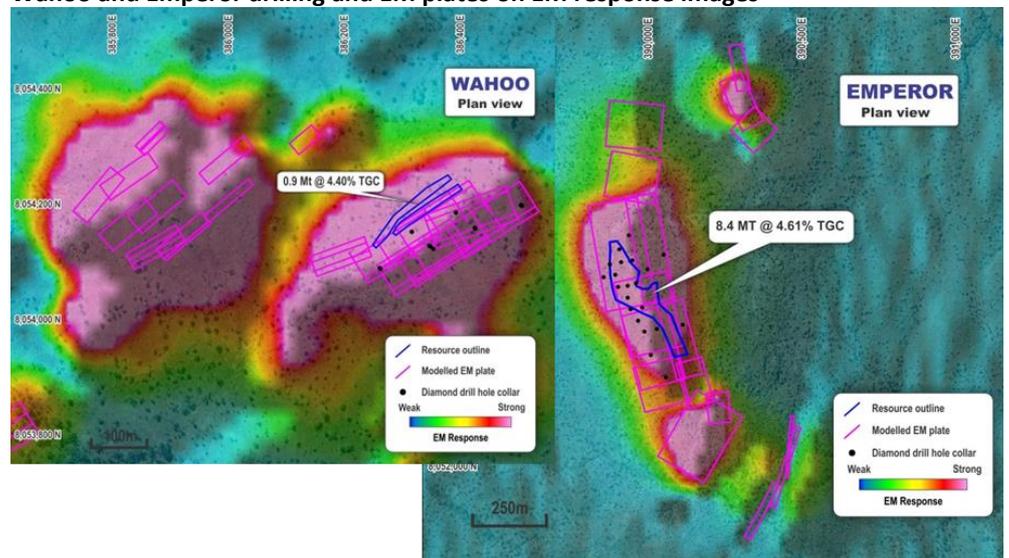
With the introduction of new management, the Company has “gone back to basics”, and adopted a strategy of drilling and carrying out metallurgical testwork on what are considered the key targets, that have the potential to deliver the best quality resources.

Recent Drilling

The Company concentrated its 2015 drilling at the Emperor and Wahoo targets, which are considered the most prospective. Both are located over fold hinges, with thickening and upgrading of mineralisation in the hinge zones. These are marked by discrete, high amplitude VTEM anomalies, as shown below. The figure also shows the untested areas of the anomalies, indicating the upside resource potential at these targets.

Subsequently, the new management has concentrated on key targets defined by the 2014 VTEM survey

Wahoo and Emperor drilling and EM plates on EM response images



These targets included Emperor and Wahoo

Source: Hexagon Resources

Drilling at these targets has returned excellent results, with the results of the drilling being used in the recent resource upgrade (detailed below). In addition a number of holes have been drilled over a strike length of around 1,200m at the Barracuda target, with intersection-weighted assays averaging 4.1% TGC, albeit narrower than those at Emperor and Wahoo.

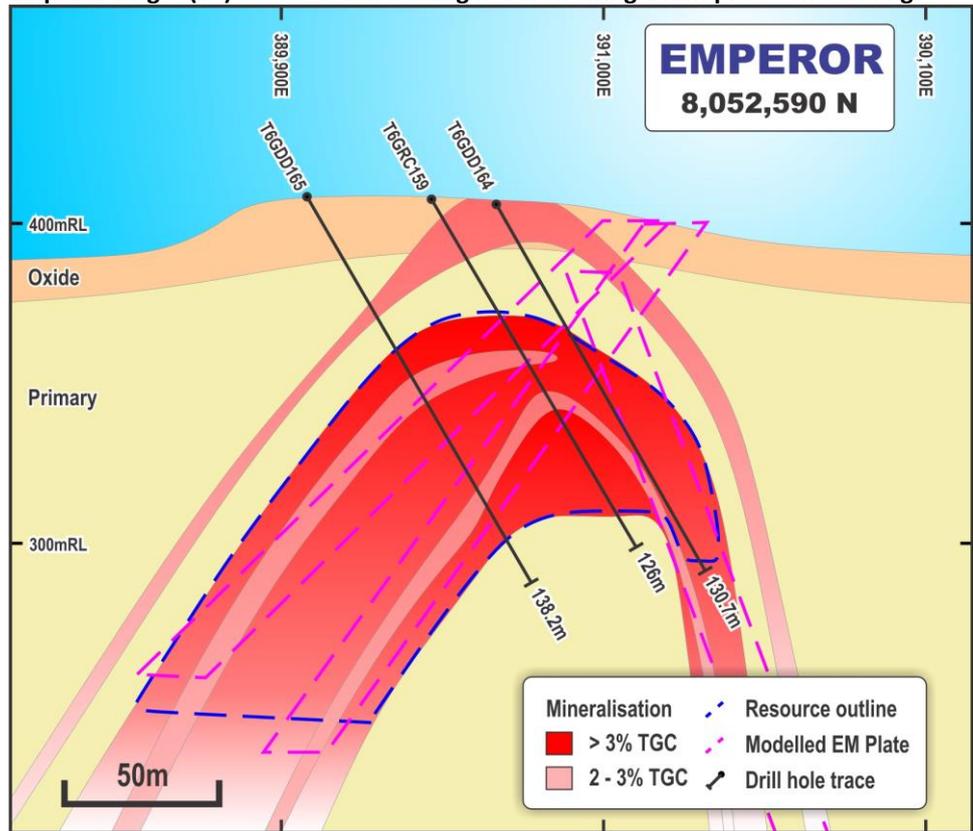
The 2015 drilling returned excellent results, intersecting thick zones of mineralisation, coincident with fold hinges

Emperor is located within an antiformal fold hinge, leading to a thickening of the sequence, and potential upgrading of grade and flake size. The recent drilling has returned intersections of up to 139m @ 4.0% TGC (including 9m @ 6.0% TGC) in T6GDD193; however this intersected both limbs of the anticline. The drilling indicates that the thicker, western limb at Emperor is in the order of 70m thick. Hole TGRC159 (refer to figure below) intersected 72M grading at 4.8% TGC from 37m.

Barracuda also occurs over an antiform, with Cobia and Wahoo being located over synformal hinges, hence also making these key targets due to the potential for upgrading in the high strain hinge zones.

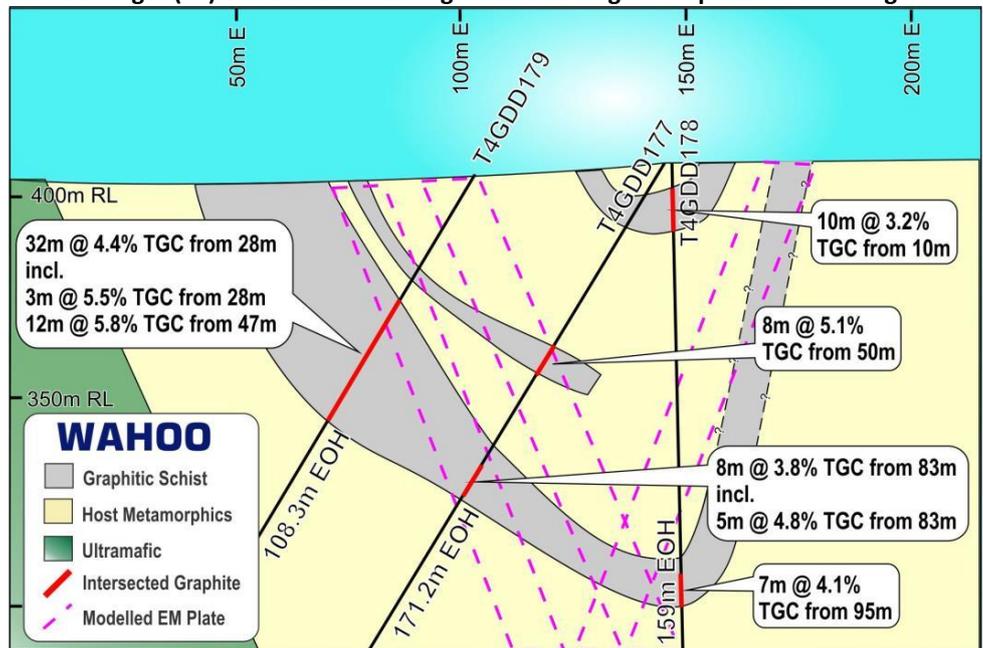
Drilling at Wahoo also returned thick intersections of graphitic schists, as shown in the section below.

Emperor Target (T6) cross section looking north showing VTEM plates and drilling



Source: Hexagon Resources

Wahoo Target (T4) cross section looking north showing VTEM plates and drilling



Source: Hexagon Resources

Grades from the RC drilling may well be under reported

It is the Company's view that grades in the RC drilling may well be under reported. Given a shallow water table, most holes are wet, with graphite being naturally floated off, and not reporting to the assay sample. Twinning by diamond holes carried out to date indicates that RC drilling may undercall actual grades by up to 25%. RC drilling may also lead to undercalling of flake size, due to the rock being pulverised during drilling.

Total drilling to date at McIntosh includes 161 RC holes for 17,611m, and 36 diamond holes for 4,277m. It should be noted that only 31 diamond holes were required to increase the resource by 136%.



Resources

The Company has recently completed a resource upgrade, with a total JORC 2012-compliant Indicated and Inferred Resource of 17.2Mt grading at 4.63% TGC being estimated as presented in the table below. This includes the original Longtom resource, with new resources being defined at Emperor, Wahoo and Barracuda.

McIntosh Mineral Resources

Deposit	JORC Classification	Material Type	Tonnes (Mt)	TGC (%)	Contained Graphite (Tonnes)
EMPEROR	Indicated	Oxide	0	0	0
		Primary	3.4	4.32	145,250
	Inferred	Oxide	0	0	0
		Primary	5.1	4.79	240,900
	Indicated + Inferred	Oxide + Primary	8.4	4.61	386,150
LONGTOM	Indicated	Oxide	0	0	0
		Primary	4.5	4.71	210,350
	Inferred	Oxide	0.5	4.51	24,350
		Primary	2.1	4.84	103,000
	Indicated + Inferred	Oxide + Primary	7.1	4.73	337,700
WAHOO	Inferred	Oxide	0.1	4.16	3,550
		Primary	0.8	4.43	37,000
	Inferred	Oxide + Primary	0.9	4.4	40,550
BARRACUDA	Inferred	Oxide	0.3	4.49	11,350
		Primary	0.5	4.37	21,450
	Inferred	Oxide + Primary	0.7	4.41	32,800
Total Resource	Indicated + Inferred	Oxide + Primary	17.2	4.63	797,200

The 2016 resource upgrade has resulted in Australia's largest graphite resource, with 17.2Mt grading at 4.63% TGC

Source: Hexagon Resources

Metallurgy and Processing

One of the key considerations in graphite mineralisation is the metallurgy, and quality of the product. This quality comprises three parts – flake size, deleterious element content and carbon grade in the graphite concentrate.

Extensive metallurgical testwork at McIntosh has returned excellent results, showing the project can produce a premium battery and expandable graphite quality flake product

The Company has carried extensive testwork to date, with the most recent being optimisation work on bulk samples completed by Australian Laboratory Services ("ALS"). This included work on Wahoo and Emperor, with the Wahoo work returning concentrate grades of 99% TGC at a >86% recovery, and the Emperor work concentrate grades of 99% TGC at a >86% recovery achieved with simple flotation.

This testwork included conventional crushing and grinding, followed by a five stage (one rougher and four cleaner) standard flotation. No additional thermal or chemical upgrading was used, and the results are for a blended product.

Petrographic and limited size analysis testwork was also completed. This has indicated the potential for a significant fraction, particularly in the fold hinge zones, to be of the higher value large and jumbo sized material. This work has identified flake graphite >500µm in size at Emperor, with flakes commonly >200 µm, falling into the large, jumbo and superjumbo categories. This work also indicated that flake at the other targets is generally >100µm in size, and commonly >200 µm.

Further sizing testwork is required however, and is currently underway. The only published size distributions are those as presented in the table below – these include



Further sizing testwork including production of graphene is currently underway

analytical data for Longtom, and assumed sizes for Emperor for the conceptual study.

McIntosh flake size distribution

Size Designation	Size - microns	Longtom size testwork	Emperor size assumed
Jumbo	+300µm	11.3%	5%
Large	+180µm	11.1%	15%
Medium	+150µm	5.3%	30%
Small	+75µm	18.8%	30%
Fine	-75µm	53.5%	20%

Source: Hexagon Resources

A conceptual mining study was completed in 2015

Conceptual Mining Study

Following the VTEM survey and subsequent exploration target upgrade, CSA completed a Conceptual Mining Study (“the Study”) in 2015.

The results of this indicate that the Project has the potential to be technically and financially viable, however given ASX and ASIC requirements no financial results could be released to the market as the study incorporated potential ore sources which at the time were included as exploration targets.

The Study looked at two scenarios – a 2.4mtpa operation, with the option for a downsized 1.2mtpa. The operation would include standard open cut mining, with comminution including three stage crushing followed by grinding in a ball mill. Treatment would be a standard flotation circuit, with the product then sized and bagged to produce a range of concentrates. The Study envisages transporting the product 280km by road to Wyndham, for export by ship to Asian markets.

Key parameters used are given in the table below. It should be noted that the concentrate recovery and grade assumptions are significantly lower than those achieved in the most recent testwork.

McIntosh Conceptual Study Parameters

Parameter	Input	Notes
Ore mining, Mill throughput	1.2 & 2.4mtpa open pit	Primary scenario of 2.4mtpa, option for a reduced throughput of 1.2mtpa
Mine Life	13 & 26 years	Dependent upon throughput scenario
Strip ratio	3:1	
Feed Grade	4.8% TGC	
Metallurgical recovery, concentrate grade	80% recovery to a 90% con	Supported by bench scale testwork
Concentrate production	100ktpa and 50ktpa	Based on the 2.4mtpa and 1.2mtpa mill throughput scenarios
Flake Size Distribution	Based on assumed T6 distribution in table above	
Concentrate Pricing	Basket price based on forecast 2015 and 2020 prices for different flake sizes. This did not use the Hengda offtake price of US\$2,000/tonne	
Capex	A\$123m	2.4mtpa scenario
Operating Costs	Mining – A\$3.60/tonne moved, Processing – A\$16.70/tonne processed, Selling/transport – A\$58/tonne product	

Source: Hexagon Resources

Upcoming work will include permitting, development studies and offtake negotiations

Upcoming Work

The chart below presents the proposed work programme at McIntosh, with an aim of first production in late 2017. This will include completion of a feasibility study in 2016/2017.

Key activities now include mining agreement negotiations with the Traditional Owners, required as part of the Mining Licence application (“MLA”) currently being prepared. The MLA will also require a completed Environmental Impact Assessment – the Company has already collected the baseline data required for the study.

The Company is now commencing negotiations with potential offtake partners, which will be vital for any proposed operation to commence.



McIntosh planned work programme

Activity	2015				2016				2017			
	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017
Conceptual Study	Completed											
Aboriginal Heritage		Completed										
Exp/Resource Drilling		Completed	Completed									
Bulk Sample			Completed									
Resource Modelling				Completed								
MLA / Native Title					To be Completed	To be Completed	To be Completed	To be Completed				
Hydrogeology					To be Completed	To be Completed	To be Completed	To be Completed				
Reserves/Eng. Design					To be Completed	To be Completed	To be Completed	To be Completed				
Environmental					To be Completed	To be Completed	To be Completed	To be Completed				
Process Design						To be Completed	To be Completed	To be Completed				
Feasibility							To be Completed					
Execution									To be Completed	To be Completed	To be Completed	To be Completed
Site Construction									To be Completed	To be Completed	To be Completed	To be Completed
Mine Pre-Strip										To be Completed	To be Completed	To be Completed
Production											To be Completed	To be Completed
First Ore On ROM												To be Completed
First Shipment												To be Completed

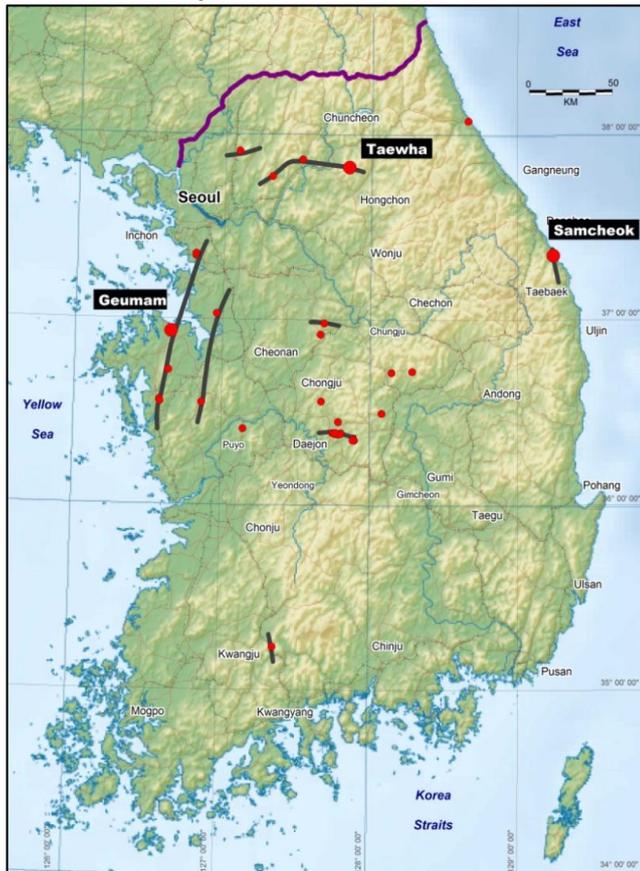
Source: Hexagon Resources

South Korean Projects (Hexagon 100%)

Hexagon has three South Korean graphite projects

Hexagon’s South Korean flake graphite projects encompass three areas, namely Geumam, Samcheok and Taewha. The figure below shows the locations of the three projects and the regional graphite trends on which they lie. The deposits are also located close to battery manufacturers, being potential customers.

South Korean Project Locations



Source: Hexagon Resources

The projects are at various stages of advancement, however each has been the subject of previous mining operations and all host JORC-compliant resource estimates, as summarised in the table below. In addition exploration targets have been defined at Geumam and Taewha.

Activities to date have been concentrated at Geumam.



All three host JORC-compliant resources, and have had historical mining operations

South Korea Project Resource Table

Deposit	JORC Category	Tonnes (t)	Grade (% TGC)	Comments
Geumam Area B	Indicated & Inferred	5,500kt	5.4%	Contains an open cut mine and mill - contains fine to jumbo grade flake graphite
Geumam	Target	17-28M	5-15%	Over all targets
Samcheok	Inferred	200,000	5%	Historical open cut operations - contains fine to coarse grade flake graphite – ‘Mining Right’ recently granted
Taewha	Inferred	170,000	7%	Historical open pit and underground mining - Contains coarse to jumbo grade flake graphite
Taewha	Target	2,100,000	7%	

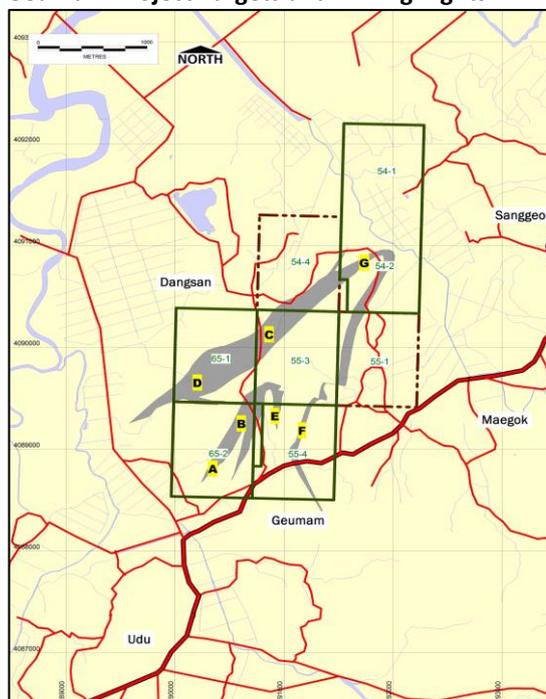
Source: Breakaway Research

TGC – Carbon graphite

Geumam Project

The Geumam project is located in a rural setting 67km southwest of Seoul, and is surrounded by extensive infrastructure and industry. The project area is covered by eight 100% held mining rights covering 583ha, with expiry dates ranging from May 2020 through to February 2032.

Geumam Project Targets and Mining Rights



Source: Hexagon Resources

The attractiveness of this project is enhanced by an end user factory located within 15km, as well as plans to develop the nearby Seongmum and Hapdoek Industrial Complexes.

Geology and Mineralisation

Geumam currently hosts a JORC Inferred Resource of 5.5Mt @ 5.4% TGC for 296,000t of contained carbon in graphite, in addition to a significant exploration target.

Regionally, the mineralisation lies on a north-south graphite trend which extends for ~100km (as illustrated in the project location figure), and is hosted in Precambrian metamorphics of the Gyeonggi and Sobaegsan Gneiss complexes.

The mineralisation, which is classified as fine flake to coarse flake, is hosted within the Wolhyeonri Formation of the Seosan Gneiss Complex. The 60m thick host sequence includes a sequence of metasedimentary and metavolcanic units, with the flake graphite possibly being organic in origin, being the product of high grade metamorphism of algal mats or bituminous seeps.



Past Activities

Geumam was historically mined as a small open pit, with simple flotation achieving recoveries of fine to coarse flake in the order 79.5%

The Geumam deposit at Area B was mined as an open pit operation from 1986 to 1993 (with the site still hosting the original 6tpd product mill) and employed a relatively simple flotation processing route to achieve a recovery of ~79.5%, to produce a concentrate grading 88.7% TGC. A sulphuric acid leaching circuit was added in 1987, which upgraded the final product to high purity flake graphite grading at between 93-97% TGC.

Drilling and Resources

Hexagon has completed two phases of drilling at Geumam totalling 4,074m in 32 diamond drillholes. This has targeted Areas B, C and E as shown in the figure above. Thirteen of the 16 Area B holes were used in the resource estimation as released to the market in August 2014, with intersections including 54m @ 7.24% TGC (Hole GM-09), 35m @ 10.04% TGC (Hole GM-10) and 49m @ 7.61% TGC (Hole GM-18) being drilled. The resource, as presented in the table below, extends over a strike length of 440m and has a vertical extent of 175m.

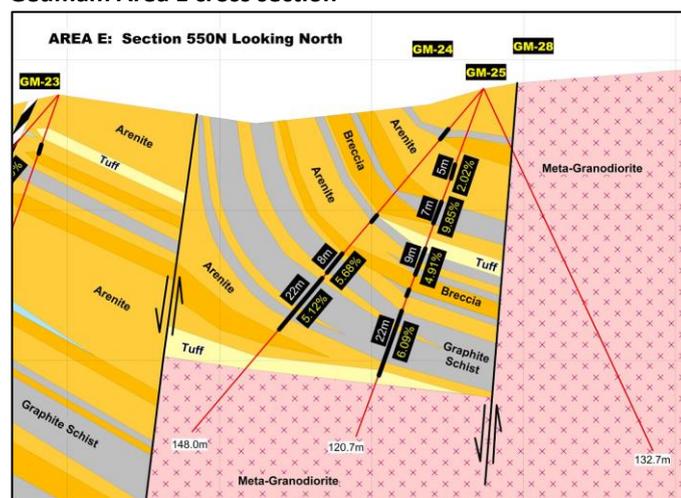
Drilling in Area E (6 holes) has intersected significant widths and grades of graphite mineralisation, with notable intersections including 38m @ 10.30% TGC from 73m in hole GM-26, and 22m @ 6.09% TGC from 78m in hole GM-25. Area E holes have included multiple intersections, as shown in the figure below.

Geumam Area B JORC-compliant resources

Ore Type	Tonnes (Mt)	Grade (% TGC)	Contained graphite (t)
Indicated Mineral Resource			
Oxide	0.5	7.2	36,000
Primary	1.0	6.3	65,000
Total	1.5	6.6	101,000
Inferred Mineral Resource			
Oxide	0.1	7.8	11,000
Primary	3.8	4.8	183,000
Total	4.0	4.9	195,000
Total Mineral Resource			
Oxide	0.6	7.3	47,000
Primary	4.9	5.1	249,000
Total	5.5	5.4	296,000

Source: Hexagon, totals may differ due to rounding

Geumam Area E cross section



Source: Hexagon Resources

Metallurgy

The Company completed a structured metallurgical testwork programme at ActLabs in Thunder Bay, Canada, which has considerable experience in testing and flowsheet design



for graphitic ores. This work tested four ore types from Geumam, including both weathered and fresh samples from deposits B and C.

Key outcomes from this work included:

- Average in-situ flake sizes of 102µm at Area B and 75µm at Area C based on a 850µm crush size
- Comminution testwork indicating that ore types range from soft to moderate hardness with no difficulties in milling
- Area B grind size of 80% passing 212 µm, and Area C grind size of 80% passing 180µm
- Cleaning testwork targeting a 85% TGC product with recoveries in excess of 80%

The Company also looked at the possibility of extracting pyrite from the flotation tailings, as well as the aggregate potential of the non-mineralised overburden. Both are potentially valuable by-products.

Samcheok Project

Samcheok has an geological target with a strike length of at least 300m and a width of 60-80m

The Samcheok deposit is located on the east coast of South Korea, ~215km from Seoul and ~13km south east of the port of Samcheok. The project currently hosts an Inferred JORC Resource of 200,000t @ 4.8% TGC. The resource is hosted within a steeply dipping (60-75°) graphite schist with the current target measuring at least 300m along strike x 80m width. Historical reports (1977) indicate the graphite bed is 60-80m thick and can be traced over an outcrop length of 300m (yet to be adequately tested), providing confidence further drilling will lead to resource upgrades.

The site previously hosted an open pit mining operation and (as with the other projects) employed a simple flotation processing route to produce a large flake carbon-graphite concentrate on site.

In 2014 Hexagon was granted a 'Mining Right' (equivalent to Australian Mining Lease) over a 68ha site within the Samcheok project area for a period of 7 years.

Taewha Project

Taewha, with a resource of 170kt @ 6.8% TGC was formerly mined as an open pit and underground.

Taewha hosts a current 2012 JORC-compliant Inferred Resource of 170,000t @ 6.8% TGC for ~11,560t of contained carbon-graphite however Hexagon has an exploration target of ~2Mt @ 7% TGC for this project area, (based on the dimensions of the interpreted graphitic schist).

The deposit was formerly mined as an open pit and underground operation and used a conventional flotation processing route to achieve a recovery rate of ~89.3% and produce a concentrate with a grade of ~92.4% TGC.

Breakaway's View

It has been a rocky road for the Company following the failed Hengda merger, but the management changes and strategic rethink are yielding positive results, with the Company being successfully repositioned and well placed to win back the trust of investors.

The Company has taken a measured and methodical approach over the last twelve months or so, which has resulted in the components being put in place to allow it to move towards development of McIntosh, which we view now as largely technically de-risked.

In McIntosh, Hexagon has a potentially robust graphite project that has the capacity to produce premium battery and expandable quality flake. One key here is the ability to produce a 99% TGC concentrate by flotation alone. This results in significantly lower costs in the further thermal or chemical upgrade to a 99.95% TGC product (which, in the case of a 95% concentrate is in the order of US\$3,000-5,000/tonne, compared with US\$500-



1,000/tonne for a 99% concentrate), thus resulting in the potential for a significant premium to be paid for the McIntosh product.

Also, the achievement of high grades in the smaller flake sizes is very positive. The mantra of “bigger is better” has been largely based on the common positive correlation between concentrate grade and flake size, where the extra cost of micronizing large flake more than outweighs the cost of upgrading the smaller, lower grade flake.

If Hexagon’s graphite is suitable for spherical graphite production, the occurrence of high grades in the smaller sizes should make it a premium feedstock for the market, with potentially low micronizing and upgrading costs.

The high concentrate grades and recoveries also mitigate the relatively low grade of the McIntosh resource when compared with a number of peers. McIntosh is also characterised by thick mineralisation at Emperor, and hence the potential for a low strip ratio, low cost mining operation. Another key for McIntosh is its proximity to a highway and under-utilised port, within a short shipping distance to markets in Asia.

In our view key steps now will be to finalise the metallurgical testwork (which will largely concentrate on producing concentrates suitable for use in batteries), and also to provide representative samples and specifications to potential offtakers, with securing offtake agreements being critical to the development of any potential operation.

Also funding of the upcoming development studies is also critical, particularly given the tight capital markets – the Company does need to go to the market to raise capital, however there is the possibility of successful negotiations with Hengda regarding the US\$2 million deposit.

We see the potential for a significant uplift in the share price, with key drivers being material progress on development studies and offtake negotiations.

*We rate Hexagon as a
SPECULATIVE BUY*

Given the above we rate Hexagon as a **Speculative Buy**.



Graphite and the Market

What is Graphite and What is it Used For?

Graphite, a form of carbon, is an excellent conductor of heat and electricity, and has the highest strength and stiffness of any natural material

Graphite (chemical symbol 'C') was named by Abraham Gottlob Werner in 1789 from ancient Greek "to write/draw". The key properties of graphite include; an excellent conductor of heat and electricity, the highest natural strength and stiffness of any material, maintaining its strength and stability to temperatures in excess of 3,600°C and high resistance to chemical attack. It is also one of the lightest of all reinforcing agents and has high natural lubricating properties.

If you took a very close look at a graphite pencil lead you will see layer upon layer of carbon atoms, multiple two dimensional planes that are loosely bonded to their neighbours. The reason graphite works so well as a writing material, and industrial lubricant, is because the layers of atoms slip easily over one another. The layered structure facilitates easy cleavage along the planes. Each of these single layers of atoms is known as graphene. Separating the individual layers of graphite sets the electrons free and allows carbon to behave differently.

Major graphite forms are amorphous, flake and vein

Natural graphite is generally found in three forms, amorphous, flake and vein. In all cases graphite generally forms platy, hexagonal crystals, giving graphite its flaky appearance.

Amorphous Graphite

Amorphous graphite is the lowest quality material, and occurs generally as microcrystalline (<75µm crystal size) masses. It is commonly formed by the metamorphism of coal or carbon rich rocks, and is the most abundant form of graphite. Graphite commonly occurs as seams, with grades commonly in the range of 30-90% Cg, and purities in the order of 60-90% C.

Flake Graphite

Graphite pricing is determined by flake size and purity

Flake is the most abundant crystalline form of graphite, and is generally associated with metamorphosed graphitic and carbonaceous sediments. Generally grades are in the range of 1-12% Cg, however higher grades are also found in a number of cases. Graphite quality is commonly determined by flake size and concentrate TGC grades, with the coarser flake (>150 micron) products generally more sought after due to their commonly higher TGC grades.

Testwork to date by Hexagon however indicates that this relationship does not hold at McIntosh, with smaller flake sizes also returning very high concentrate grades of 99%. Graphite flake flotation concentrates are generally in the range of 85-98% TGC.

Vein Graphite

This style of mineralisation is uncommon, and poorly understood. The best known (and only mined) examples are in Sri Lanka, which are high grade veins (+90% Cg) producing high purity (+98% carbon) concentrates. Flake size can be variable in this style, as can grade and purity, but are generally very coarse.

Graphite Demand and Production

Traditional demand is driven by the steel industry, where it is used as a refractory, and also as a steel additive

Traditional demand for graphite is largely tied to the steel industry where it is used as a refractory, including as liners for ladles and crucibles, and as a component in bricks which line furnaces. The second major use in the steel industry is as an additive in steel, where it is used to increase the carbon content. In the automotive industry it is largely used in brake linings, gaskets (for which expanded graphite is an important component) and clutch materials. Graphite also has a numerous other uses, including in lubricants, fire retardants, and reinforcements in plastics. However it is the use in batteries (including automotive) that



will outstrip industrial uses by many times in the near future.

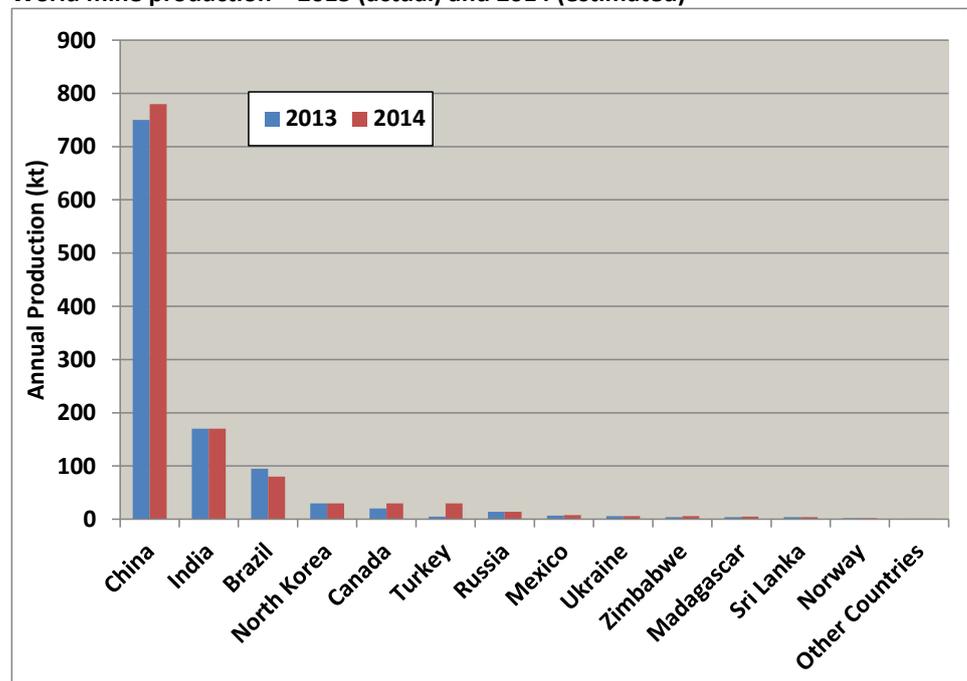
Other potential uses currently being researched include the use of graphite and graphene in 3D printing, and a number of other potential uses for graphene particularly in electronics.

The current market is dominated by refractories, which comprise ~40% of the total market, with metallurgical applications next at ~25%. Batteries currently comprise ~8% of the market.

China is the dominant world producer, supplying some 70% of world output

According to the USGS worldwide production of natural graphite (as opposed to synthetic graphite, but which has a similar sized market) was 1.17Mt in 2012, which is a similar scale to the nickel market (~1.3Mtpa). Of this production, flake accounted for 60% and amorphous 40% and some production from vein. China is the dominant world producer (yet is still a net importer), accounting for ~70% of total world output, however, the graphite is primarily amorphous and low grade flake. Concerns about the long term reliability of high quality graphite supply out of China are driving consumers to look for other sources.

World mine production – 2013 (actual) and 2014 (estimated)



Source: USGS

Industrial demand has been growing at around 5%, and significant further growth is expected, driven largely by future demand for lithium-ion batteries

Industrial demand for graphite has been steadily growing at around 5% p.a. and significant further growth in the industry is expected from the incremental demand created by numerous green initiatives including lithium-ion batteries, fuel cells, solar energy, semi-conductors, and nuclear energy. Many of these applications have the potential to consume more graphite than all the current uses combined. Importantly, only flake graphite that can be upgraded to 99.95% purity is suitable for making lithium-ion batteries.

Lithium-ion Batteries

The lithium-ion battery market is forecast as being driven by increasing demand for electric vehicles, each of which requires in the order of 40kg on average of spherical graphite, requiring 100kg of flake to produce due to production losses

Many commentators see the lithium-ion battery market, with the growing demand for electric vehicles and home / commercial energy storage as the key graphite demand driver going forward. In a lithium-ion battery, lithium is the cathode and flake graphite the anode, however, 10 – 30 times more graphite is required in these batteries than lithium. Approximately 60% of the battery market is supplied by natural flake and 40% by the more expensive and less conductive synthetic graphite.

Electric vehicles on average each require in the order of 40kg of spherical graphite (‘SPG’) for their batteries, with the production of 40kg of SPG requiring 100kg of high grade, high purity (>99.95%) flake graphite due to losses in the production process. The key requirements for



spherical graphite are at least a 94% TGC, and ideally a size of minus 150µm to optimise the costs of milling and upgrading. Traditionally larger flake has been used due to higher concentrate grades, with the extra cost of milling the larger flake being offset by the significantly cheaper thermal or chemical upgrade costs.

Some commentators have estimated that up to 6 million electric vehicles could be manufactured in 2020. This equates to a ~10% market penetration, and assuming 60% of demand is met by flake would require an estimated extra 360,000tpa of flake graphite, or approximately 60% additional to current supply of ~600,000tpa.

China previously announced that it has mandated that 30% of Government vehicle purchases to be electric, fuel cell or hybrid by 2016, with the ratio to be raised in following years, with provincial governments being required to follow suit. Other measures reportedly being taken by China include waiving a 10% purchase tax for new-energy vehicles.

Tesla has commenced construction of its battery manufacturing facility in the USA, that will require up to 126,000tpa of flake graphite

Tesla, the US electric vehicle manufacturer has recently commenced construction of a battery manufacturing facility in Sparks, Nevada, with first battery production planned for 2017, in what will be the world's largest single battery manufacturing facility. Tesla estimates demand for 126,000tpa of flake graphite (50,000t of SPG) on a best case basis, and 83,000tpa on a conservative basis to supply the plant.

Tesla is also developing its domestic battery production, with these being recently introduced into Australia.

The lithium-ion battery industry is currently growing at a rate of 30 – 40% annually and it is estimated that Lithium-ion batteries are also crucial to the consumer electronics industry for applications as varied as power tools, cell telephones, laptops, tablets and media players.

Graphene

Another potential demand driver is graphene, although our view is that significant commercial utilisation is some way off. Graphene is a single atom thick layer of graphite, and is the strongest material in nature, at approximately 200 times the strength of structural steel.

Graphene, a single atom thick layer of graphite, is another potential demand driver, although significant commercial production may be some way off

Graphene was first formed in the laboratory 10 years ago, and is now a hot topic of research in the scientific community and R & D laboratories. The material has a number of potential applications including, amongst others:

- Used in electronic applications, transmitting electrons faster than silica
- Included in composite materials that are potentially ten times tougher than Kevlar
- Used as an anti-corrosion coating which would be the world's thinnest
- Allows plastics to conduct electricity
- Used in low cost display screens that could be flexible

Outlook for Graphite

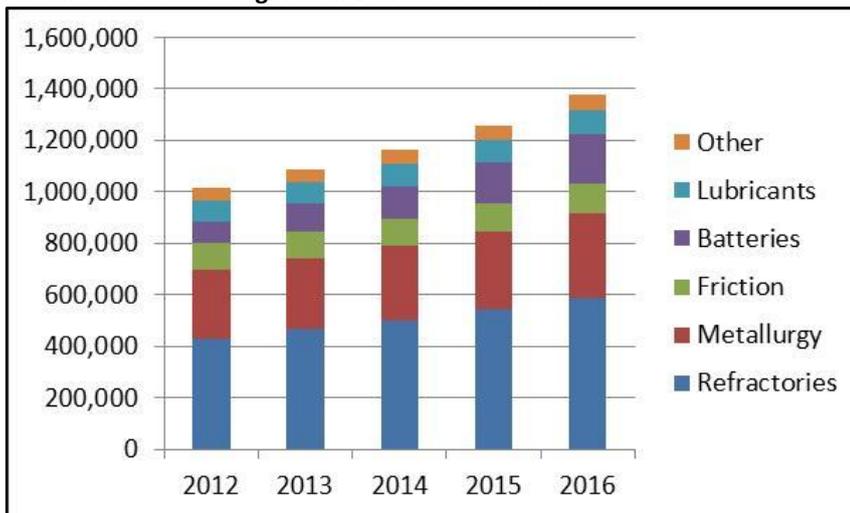
The British Geological Survey has listed flake graphite as a material most likely to be in short supply globally

During 2010 the European Commission included flake graphite amongst 14 materials it considered high in both economic importance and supply risk while the British Geological Survey listed flake graphite as one of the materials to most likely be in short supply globally. The US government has also declared flake graphite a critical material.

Concerns come from the dominance of the industry by China; however there is also the view that China is rationalising its domestic industry to lower costs of production and in response to environmental concerns. Over the long term this may end up decreasing Chinese supply.



Actual and Forecast Segmental Demand Outlook

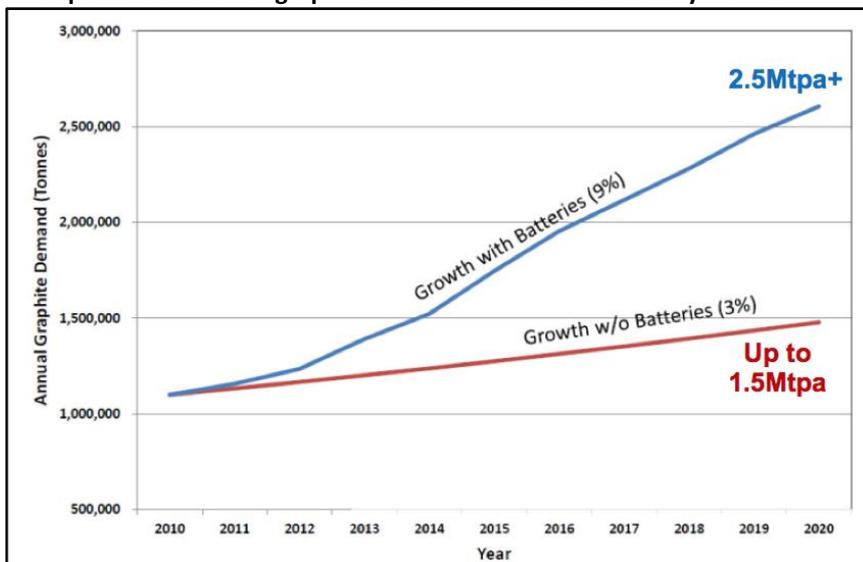


Source: Shaw Stockbroking Report on Syrah Website

The previous graph shows Industrial Minerals’ forecast short term trends in natural graphite end usage. This shows general 6% CAGR growth in all except batteries, with batteries being the largest growth area at 24% CAGR from 2012 to 2016. Extrapolating these figures through to 2020 results in battery demand of ~460,000t, and non-battery demand of ~1,500,000t, for a total demand approaching 2,000,000t.

Other forecasts indicate a much more aggressive growth due to the battery market, as shown below – the extrapolated Industrial Minerals forecast falls between the two cases presented below.

Anticipated demand for graphite with and without the battery market



There is the potential for graphite demand to grow to 2-2.5mtpa by 2020, up from current levels of 1.2mtpa

Source: Hexagon Resources

Graphite Quality and Associated Pricing

Product pricing is dependent upon a number of parameters, including flake size and purity. In general, the larger the flake size and higher the purity the higher the price – this is largely due to the lower cost of treating the concentrate to achieve desired specifications for end uses, and the common increase in grade with flake size. The most common quality parameters that prices are quoted on are large flake (>177µm) and high purity (94-97% carbon). Specifications higher than either of these will command premium prices.

There is a wide range of price forecasts for the different graphite products. Industrial Minerals has forecast large flake (>177µm) prices of around US\$1,800/t and medium flake



(150-177µm) prices of around US\$1,200/tonne from 2017. This variability in forecasting can be seen when the above is compared with forecast prices from Stormcrow Capital Ltd., an independent Toronto based research firm, as shown below.

It needs to be noted that the table below does not include pricing forecasts for higher grade smaller flake sizes as will be potentially produced at McIntosh. As noted earlier, McIntosh has the capacity to produce a 99%, blended product, that will have the advantages of both low milling and upgrade costs, and thus should trade at a significant premium than those forecast for similarly sized material but which have lower grades.

Jumbo flake graphite has been forecast at US\$6.175/tonne

Graphite Specifications and Indicative Pricing

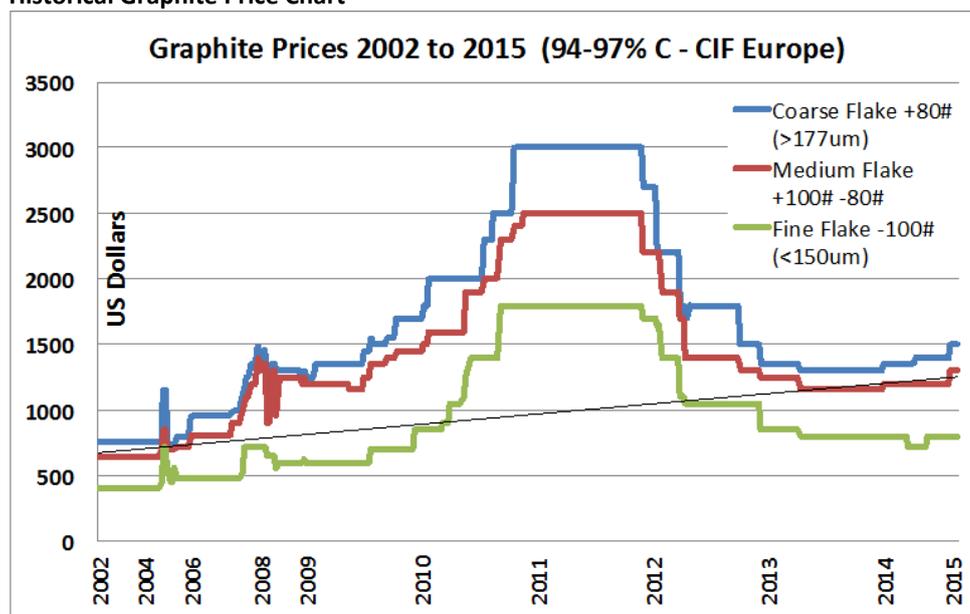
Graphite Product	Carbon Content (%)	Mesh Size	Graphite Size	2014 Price (US\$/t)	Forecast 2020 Price (US\$/t)
Jumbo Flake	99-99.9%	+48	>300µm	\$2,300	\$6,175
Large Flake	94-97%	+80-48	177 - 300µm	\$1,300	\$1,165
Medium Flake	94-97%	+150-80	106 - 177µm	\$950	\$517
Small Flake	94-97%	+200-150	74 - 106µm	\$750	\$493
Fine Flake	80-85%	-200	<74µm	\$550	\$359
Synthetic	99.95%			\$7,000 - \$20,000	

Source: Various, inc. Stormcrow Capital

It needs to be noted that graphite is not transparently traded – prices are set between customers and suppliers, and prices received for similar products in the future will vary between the different producer/customer agreements.

The chart below shows a price chart for the commonly quoted large flake/high purity graphite and illustrates a generally upward price trend over the period 2002 to 2015 due to increasing demand. The emergence of electric vehicles and the potential boom in lithium-ion battery demand into the foreseeable future is likely to continue to buoy the graphite price, with an upward trend again commencing in 2014.

Historical Graphite Price Chart



Source: Lincoln Minerals based on Industrial Minerals data



Board and Management

Non-Executive Director & Chairman

Neville Miles

Mr Miles is Singapore based, where he is currently COO of Invicara, an IT company providing solutions to the building industry. Mr Miles has extensive senior management experience, having run a variety of businesses for Siemens internationally for over 15 years. These include large operational businesses in a variety of fields and in a number of regions globally, including China.

Most recently, he was Head of SmartGrid Applications, Asia Pacific, where he dealt with energy storage and distribution (industrial battery storage and eCar) initiatives, among other things. Neville was also involved in M&A and JV activities throughout his time at Siemens and has for more than 10 years been a sophisticated investor in the Australian small cap market.

Neville brings to the board a wealth of knowledge in a business strategy, strategy execution and marketing, as well as experience in building successful business in the Asia Pacific Region.

CEO/Head of Operations

Tony Cormack

Tony is a Geologist with 20 years' experience in the exploration and mining industry in Western Australia. Tony has held a number of senior roles including Resource Development Manager with Atlas Iron and Geology Team Leader for BHP Billiton's Area C project and has gathered experience in a broad range of commodities including gold, nickel, tantalum, graphite and iron.

Tony has a proven track record of taking exploration through to production; he was involved at a senior level with Aztec Resources at their Koolan Island Iron Ore project and a number of Atlas Iron's Pilbara projects.

Tony has completed a Bachelor of Science (Applied Geology) at Curtin University in Perth, Western Australia and is a member of the Australian Institute of Mining and Metallurgy.

Non-Executive Director

Garry Plowright

Mr Plowright has extensive experience in the resource sector, having a background in mining law and administration, as well as regulatory process and mine development. Mr Plowright has held board and senior management positions in both Australia and South Korea.

Director CV's sourced from company website.



Analyst Verification

We, Grant Craighead and Mark Gordon, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of Hexagon Resources and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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