



McIntosh; high quality Australian graphite for growing global markets

Update on product development to achieve
a portfolio of premium priced products

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Annual General Meeting of Shareholders



Product Development & Marketing



Graphite is not a commodity

*It is not a “field of dreams”
Just because you build it – does not
mean that “they will come”*



Graphite is an input into a huge variety of products across many industries.

To achieve sales (offtake) requires:

- Intense process of product development and qualification; and
- Collaboration with customers to ensure the correct specifications.

Objective for both supplier and offtaker is long-term, committed/reliable supply, quality and pricing.

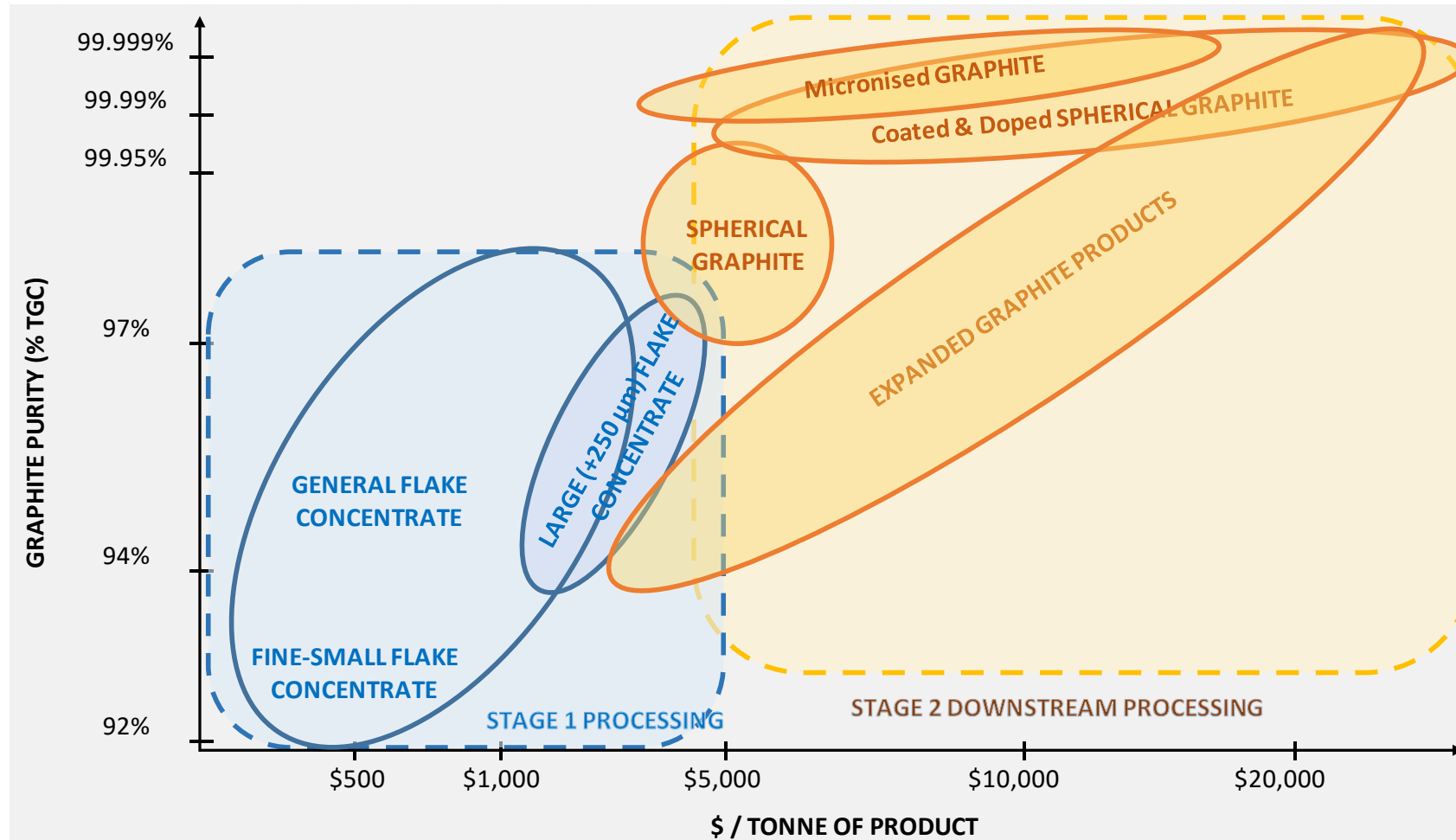
Long term relationship as both parties generally invest a lot of time and capital.



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At the downstream – our [current] universe of opportunities:



Product Development – “road map”

Broad, price & product fields relevant to McIntosh material.

Schematic concept diagram for illustrative purposes only – based on HXG Research and technical expert reviews.

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Downstream processing

Downstream = additional “value-add” processing to meet the customer’s needs.

Value-add processes being tested.

End Uses.

- | | |
|--|---|
| 1. Milling (Micronising) & Spheroidisation | Li-ion batteries anode material |
| 2. Expanded/Expandable Graphite | Advanced battery applications
Foils and shielding-electrical goods
Fire retardants
Gaskets and seals |
| 3. Purification | Many end uses require high to ultra-high purity graphite material – this includes battery anode and expandable graphite material. |

This is highly simplified, but reflects our current test work program which is already leading to new end-use opportunities to be assessed.



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At the upstream end

Upstream = *the mine face*

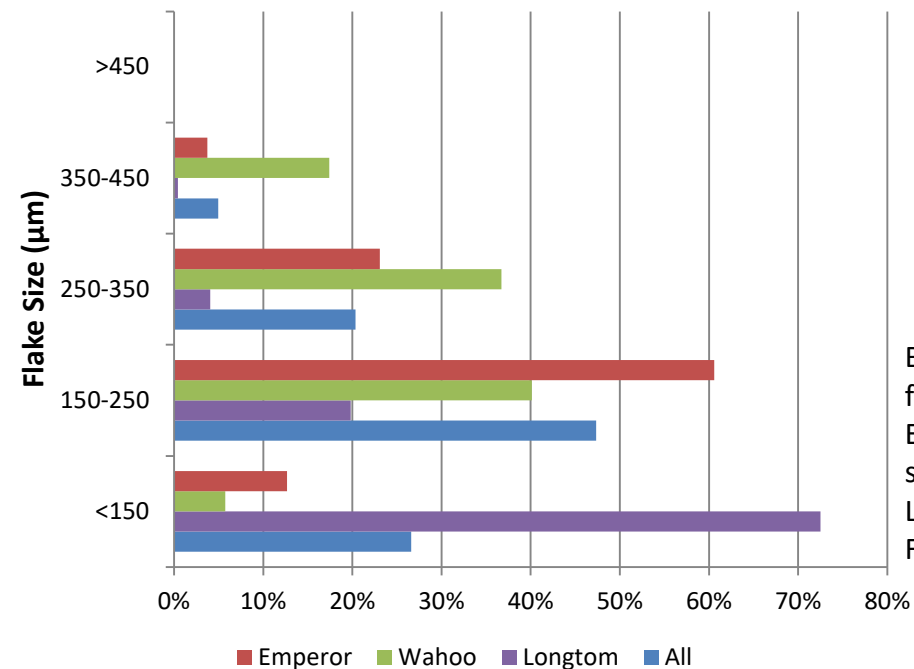


Aim is to:

1. Identify value e.g. flake size and purity in the ore; and
2. Understand the variability of the deposits and the processing characteristics to ensure consistent, quality production and low costs.

New – Identified a major large flake endowment at the McIntosh Project resources; an important value-add.

Flake Size Distribution by Deposit



Based on petrographic examination of flake length from drill core; note Emperor & Wahoo deposits have significant large flake endowment. Longtom – mainly Medium, Small & Fine.

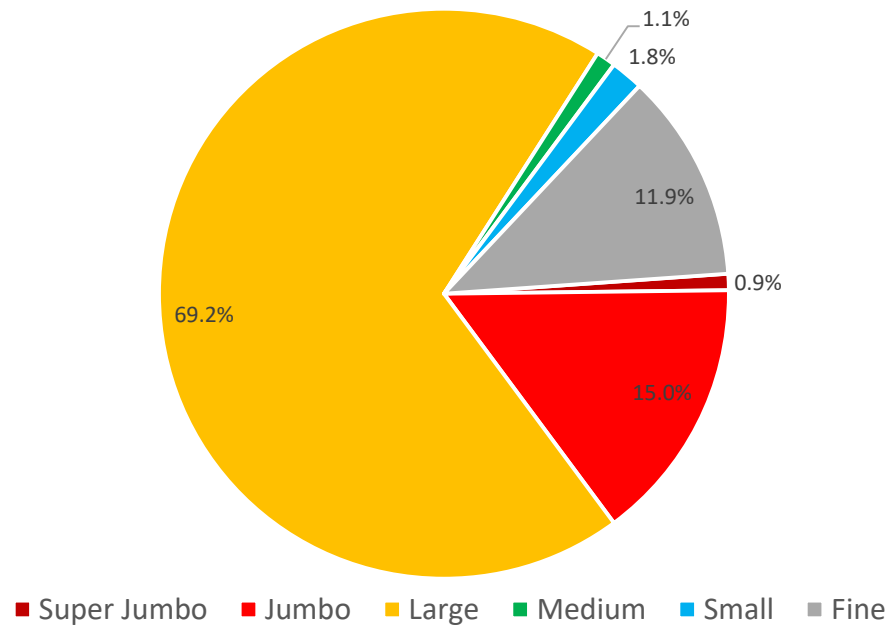
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At the upstream end

Large flake in the ore is supported by flake size analysis of concentrate from McIntosh

Flake Size Categories - HXGCon1



Sample HXGCon1 was generated from 200kg of drill core from the Emperor Resource in 2016.

- McIntosh graphite concentrate contains a significant proportion of larger flake sizes with 85% of flake greater than 180 microns (Large, Jumbo and Super Jumbo).
- This opens up significant commercial opportunities that had not been previously pursued.

McIntosh Flake Graphite Project

The Resource – as upstream as it gets.

Scale is important – it demonstrates long-term supply capability.

JORC Classification	Tonnes (Mt)	TGC (%)	Contained Graphite (kt)
Total Indicated & Inferred	21.3	4.5%	964

ASX Report 25 May, 2017; Cut-off is 3%TGC and rounding errors may occur.

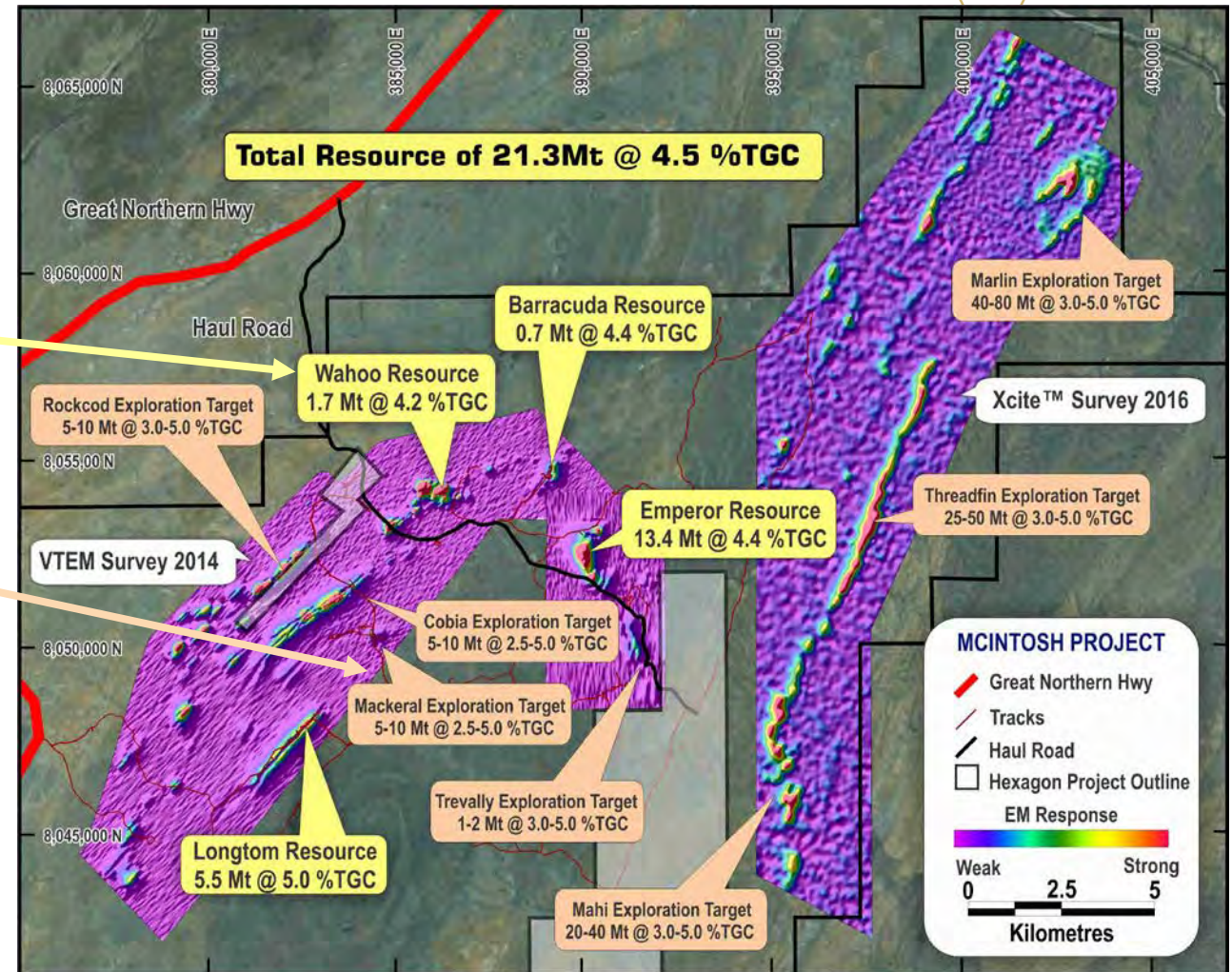
Exploration Target* (additional to JORC Resources)

Prospect	Tonnage Range (Mt)	Grade Range TGC (%)
Total	110 - 220	2.5 – 5.0

ASX Report 12 April, 2017

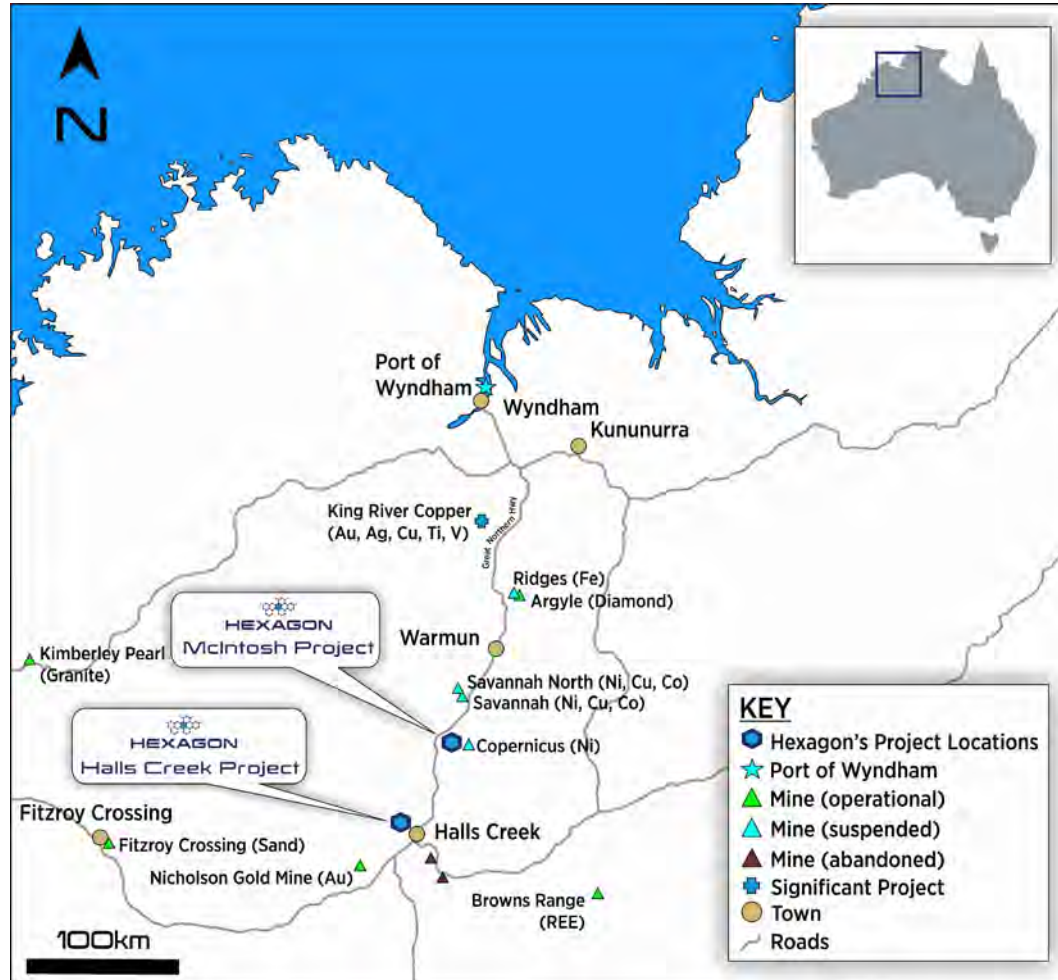
- Excellent correlation between EM “highs” and drilled mineralisation.
- Drilling has excellent potential to increase existing resources and convert “targets” into resources.

***Cautionary Statement:** The potential quantity and grade of the Exploration Targets is conceptual in nature, there has been insufficient exploration work to estimate a mineral resource and it is uncertain if further exploration will result in defining a mineral resource.



McIntosh Flake Graphite Project

Project Development



- McIntosh Flake Graphite Project - is well located “politically” & geographically in an established mining area.
- Completed PFS for Stage 1 Processing – NPV of \$260M & IRR of 46% (pre-tax).
- Currently in FS mode. Major technical, Opex and Capex improvements in process.
- Large scale production at 100ktpa of high-grade graphite flake concentrate benefiting from clean, benign ore type.
- Product development focussed on premium priced sectors such as high-purity into the tech and battery sectors supported by recent positive test results;

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Customer engagement through test work outcomes



Graphite users want to diversify their supply chain.

Strong, credible test work outcomes open doors – *as well as the appeal of a stable jurisdiction such as Australia.*

Predicting processing performance is essential to consistently meeting offtake specifications. To achieve this HXG has commenced on two distinct test work programs – at opposite ends of the commercialisation path:

- “**upstream**” - gathering of mineralogical, elemental and flake size data from drill core samples to create a geo-metallurgical model (Geo-Met Model) for the McIntosh Mineral Resource; and
- At the “**downstream**” end, detailed test work examining the properties of McIntosh graphite concentrates relevant to end-users such as purity, flake size and flake morphology and amenability as advanced battery and expanded sectors.



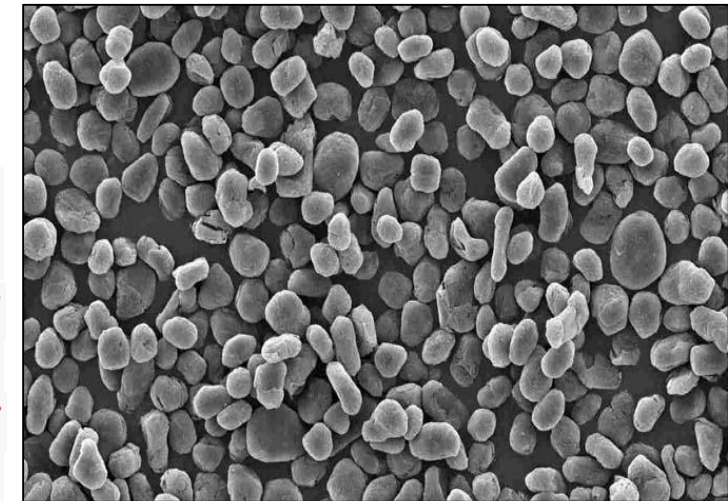
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Downstream processing - spheroidisation

- **Pre-Feasibility** - examined only production of a high-purity flake concentrate for the lithium ion battery market. Now assessed milling and shaping of McIntosh flake.
- **Recent battery test work** results for spheroidised material are highly encouraging – the sample “passed” on all the key preliminary assessment criteria.

Parameter Tested	Units	McIntosh Sample (average)	Reference Material	
Yield	%	58	c.50%	✓
Particle Size (D50)	Microns (μm)	15.3	15.1	✓
Particle Size Distribution (D90/D10)	Ratio	2.2	2.4	✓
Tap Density	g/cm ³	0.92	1.07	✓
Surface Area	m ² /g	8.9 ¹	2 - 5	✓
Reversible Capacity ²	mAh/g	370	>360	✓



- Latest work in the US on concentrate material also highlights positive battery attributes such as “exceptionally low surface area” (BET).

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Downstream processing - Expandability

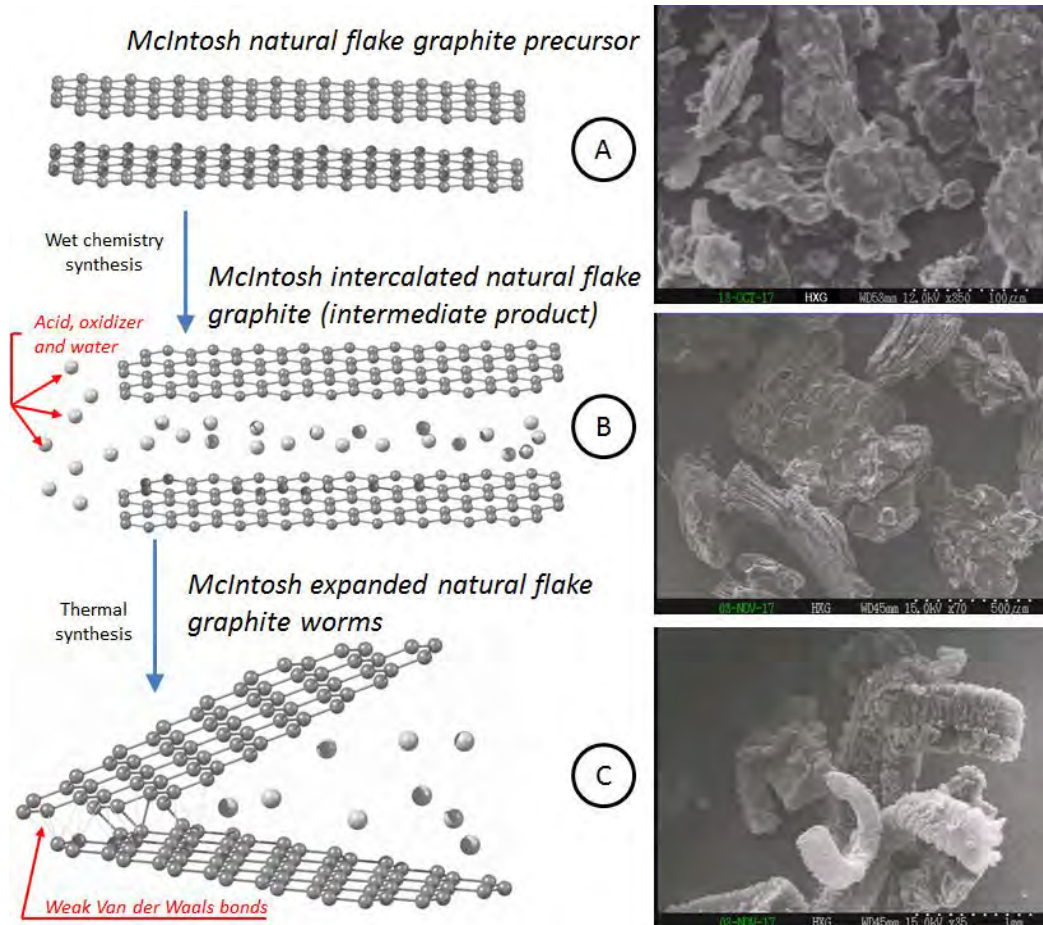
It Expands! 220% Expansion Factor for +60 Mesh (+250 micron) sized flake achieved in first-ever test work for McIntosh flake graphite resource.



220% is “well above average” and a highly marketable attribute.

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Downstream processing - Expandability



(B) Dry acid intercalated +60 Mesh prior to heat expansion



(C) Acid intercalated graphite being expanded in a furnace at 950°C.



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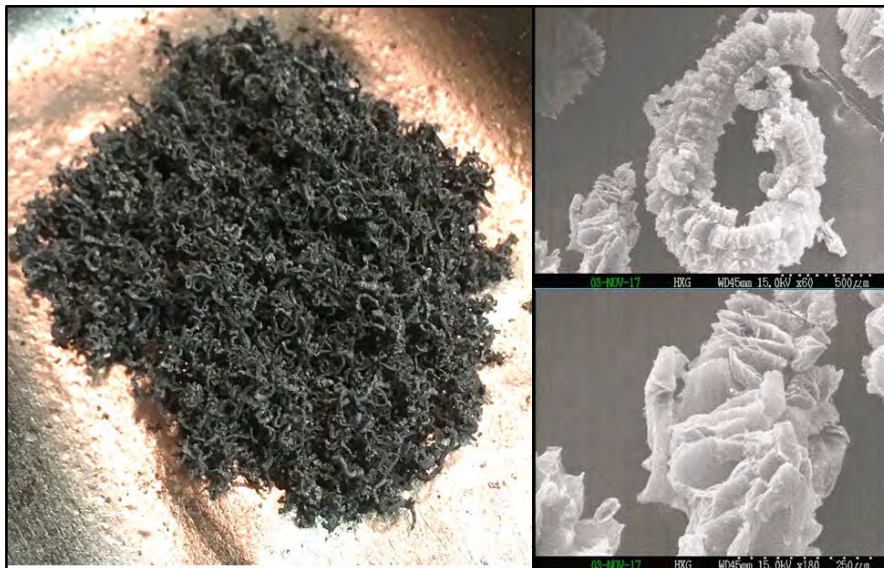


Downstream processing - Expandability

- Flake sizing analysis indicated more than 78% of concentrate flake was larger than 60 Mesh (250 microns).
- Synthesis of expandable McIntosh flake graphite did not require the use of exotic chemicals or complicated treatments; only standard reagents were utilised to achieve expansion outcomes.

Sample ID (HXGCon1)	Initial Mass (g)	Final Mass (g)	Expansion Volume (mL)	BET Surface Area (m ² /g)	Volatiles Content ¹ (g)	Weight% Volatiles ²	Expansion Coefficient ³ (mL/g)
+60 Mesh	1.0008	0.7275	160	21.63	0.2733	27.31%	219.93
+80 Mesh	1.0040	0.7740	24	9.41	0.2300	22.91%	31.01

- Higher expansion factors are considered likely with optimisation of pre-conditioning process and reagents.



Expanded graphite “worms”
produced from +60 mesh fraction
of HXGCON 1 precursor flake:
optical (left), SEM (right).

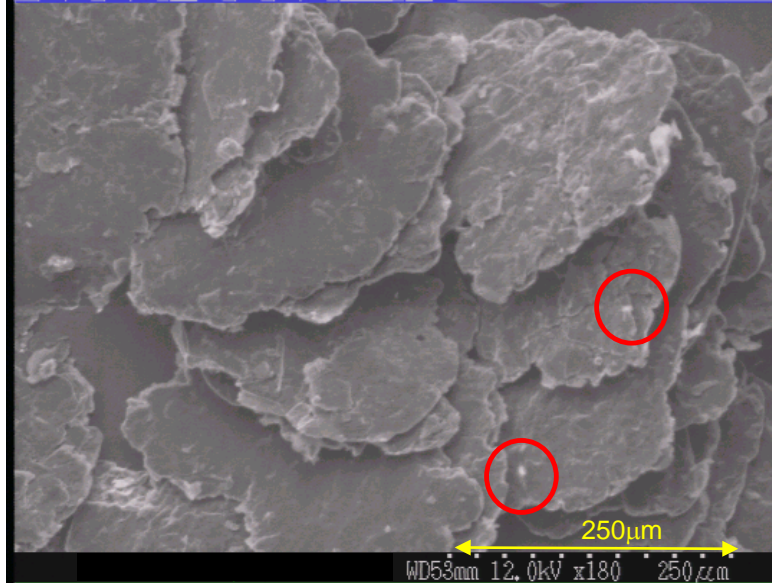
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Downstream processing - Purification

Work in Progress



Purification is generally undertaken by chemical (acids) or thermal (heat) processes.



McIntosh concentrates - impurities, circled tend to aggregate on top of the flakes as opposed to being intergrown particles of gangue and graphite mineral, indicating “easier” purification;

Purification test work is an important aspect of the product development strategy for two core reasons:

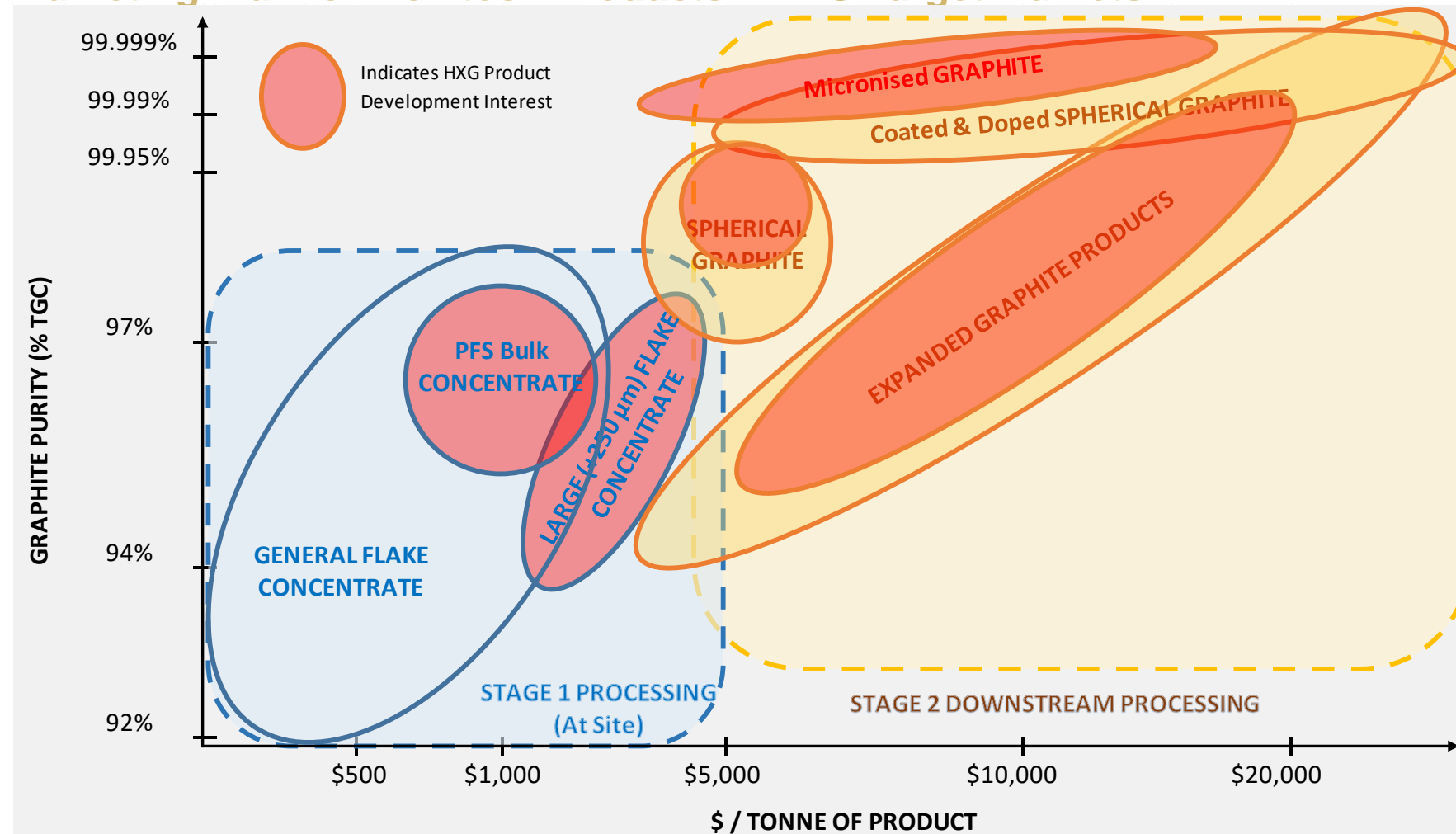
- 1. Environmental and Safety:** In the battery sector, the use of acids, in particular, hazardous hydrofluoric acid is the dominant technique with resultant adverse impacts on the environment and worker safety. HXG is testing several thermal purification routes, considered to be environmentally friendly.
- 2. Price premium:** production of a range of ultra-high purity intermediate products will generate a significant price premium. This includes purified spherical and expandable graphite, for example, products Hexagon is targeting.

The purity of McIntosh graphite suggests it needs only “light” purification which means low costs.

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Marketing Plan for McIntosh Products – HXG Target Markets



Branched out from single Bulk Concentrate as per PFS.

Now, a portfolio of products is the key to selling c. 100kt concentrate per year.

Large flake & expandability drives diversification.

High-purity is a means to achieve premium pricing.

McIntosh material “starts” clean so a big comparative advantage cost wise.

Schematic concept diagram for illustrative purposes only – based on HXG Research and technical expert reviews.

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Product diversification and price enhancement

A simple Example -

Objective – produce c. 100ktpa of high grade flake graphite concentrates:

- If 60% is Large (>180 microns) sized flake concentrate for expandable graphite sector (*a premium priced product*); and
- If 40 % is Small-Medium (c.100 microns) sized flake concentrate for the battery market.

Then assume – conservatively, Opex of US\$800*/t concentrate. So to produce 10 tonnes costs US\$8k.

Marketing – (very simplistically):

- Sell 6 tonnes as a premium product at say c.US\$3,000/t = US\$18k of revenue
- Sell 4 tonnes as “standard” LiB anode use for say c.US\$800/t = US\$3.2k of revenue
- Generated US\$21.2k in revenue to cover US\$8k of Operating costs = US\$13.2k margin or 62% operating margin.

* Assume 1 A\$=US\$0.8



Project Development Pathway



Incorporating new test work findings.

The plan is to:

1. Complete Feasibility Study for recovery of 3 high-purity flake concentrate products.
2. Commence pilot programs for Stage 2 processing;
 - Spheroidisation
 - Expandable graphite; and
 - Purification of the above.
3. Initially sell graphite concentrates from Stage 1 Plant- whilst undertaking Stage 2 pilot and qualification test work.
4. Develop downstream Stage 2 processing capacity.



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Next steps.

1. Complete initial test work on purification.
2. Update Stage 1 process flow sheet and undertake test work.
3. Continue on Stage 2, downstream test work – aim to expand the product mix and improve the specifications.

Core objective is to leverage recent outstanding results to progress offtake and financing discussions, note;

- Recent results have had an impact in attracting off-take and financing attention;
- Aiming for technical collaboration with off-take party(s) to advance product development test work; and
- Financing at either the Project level or HXG or both as debt and equity.

Positive new test work outcomes driving the marketing strategy toward product diversification and premium priced products.



McIntosh Project Summary



Off-take Parties – take note.

1. **Large scale deposits** - established Mineral Resources of 21.3Mt at 4.5% TGC underpinned by Exploration Target of 110 to 220 Mt at 2.5-5% TGC* - *Long-term, reliable supply*
2. **Advanced project** well on the path to commercialisation - completed PFS for Stage 1 Processing – NPV of 260M & IRR of 46% (pre-tax). Now in FS mode. Major technical, Opex and Capex improvements likely.
3. **Large scale graphite production** - 100ktpa of high-grade graphite flake concentrate benefiting from clean, benign ore type – *meaningful scale for off-take parties over a long-term*
4. **Product development** focussed on premium priced sectors such as high-purity into the tech and battery sectors supported by recent positive test results;
 - ✓ Suitable for LiB battery anode material – *completed 16 Aug 2017*
 - ✓ Greater than 85% Large to Super Jumbo sized flake endowment – *7 November 2017*
 - ✓ 220% Expansion factors with std, low cost reagents – *23 November 2017*
 - ✓ Current phase of test work is on purity – *purity + flake size + electrical attributes = premium pricing*
5. **Close to transport infrastructure** - Project and Stage 1 Process site well located in terms of sealed roads and export port – *no villages to relocate, railways to build or hospitals to run....*
6. **Made in Australia** - “McIntosh Flake Graphite”; a safe, stable jurisdiction.
7. **Green credentials** with no toxic chemicals, strict environmental guidelines and key input into renewable energy sector.
8. **Experienced team** – *in terms of technical development, project financing and product marketing.*



Important Notices



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 NAmLabs 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 NAmLabs 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.

Technical Detail - references to Hexagon Website and recent ASX Reports

This Report aims to provide a high level summary of various technical aspects of the Company's projects. For more details on the underlying technical parameters the reader is referred to the ASX Reports on the Hexagon Resources Limited website, www.hexagonresources.com, in particular: May 31, 2017 on PFS Results, August 16, 2017 on Battery Test Work, November 6, 2017 on Large Flake endowment and November 23, 2017 on Expandability test work; all of which contain the full JORC Tables on reporting of test work results.

Forward-Looking Statements

This document includes forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Hexagon Resources Limited's planned development and exploration programmes and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "estimate," "expect," "intend," "may," "potential," "should," and similar expressions are forward-looking statements. Although Hexagon Resources Ltd believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements.



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