



HEXAGON
resources limited

A Graphite Development Business

Understanding Markets is a Key Factor for Success

mines and money
NEW YORK

1-2 May, 2019



A Clear Business Strategy

To produce and sell quality graphite products into a diverse range of premium markets



Vertically integrated business model:

- Leveraging off a high-quality source – the McIntosh Project, Western Australia
- Implementation requires deep understanding of graphite markets and ability to match the product offering to those specific markets.

HXG – positioned along the entire Value-Chain



High Quality Source



Leading edge processing technologies



Deep market insight and connections.

The Graphite Market (HXG Perspective)

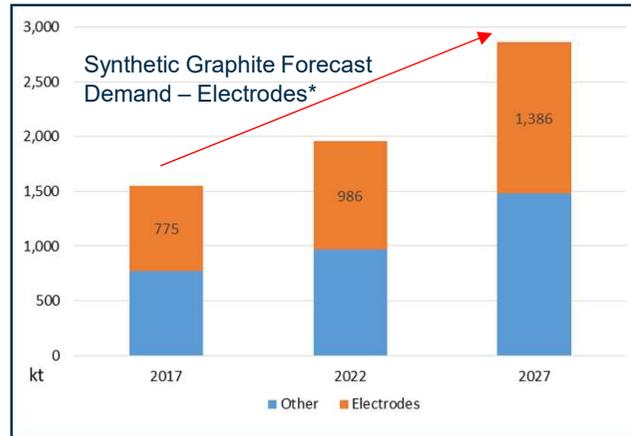
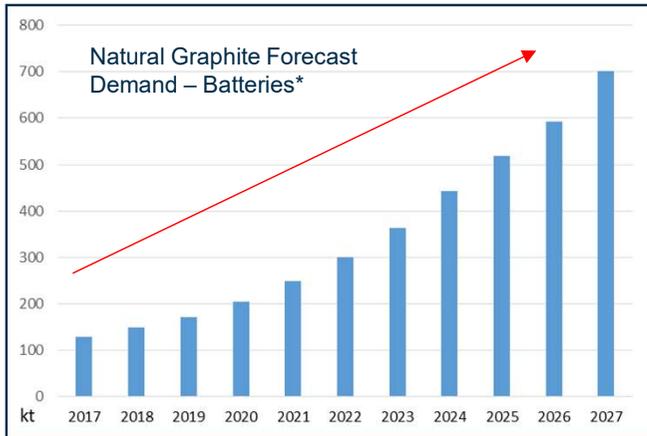
A global context for HXG's products

- **Scale** – 2.44mtpa of graphite produced globally in 2017*:
 - 1.55 mtpa of synthetic graphite
 - 0.90 mtpa of natural flake (mined) graphite
 - 76% of all graphite is from China.
- **Synthetic graphite:**
 - Precursor material is a by product from petroleum refining (PetCoke + other varieties)
 - Produced by “graphitisation process”– involves heating in an Acheson Furnace for 3 weeks at 2,500 to 2,8000C; Synthetic graphite quality is related to time, temperature and feedstock
 - Is expensive but of a consistent quality which is critical for high end applications such as batteries and electrodes.
- **Natural flake graphite:**
 - Is already flaky and crystalline; “graphitisation” has already occurred over the course of millions of years under the influence of temperature and pressure in the Earth’s crust.

Hexagon is aiming to supply premium quality natural flake products to traditional markets as well as displace synthetic graphite in certain applications.

“Setting the Scene” - Graphite Target Markets

Diversity, Depth and Growth – two examples: EVs and industrial



Hexagon has focused on:

- Matching the graphite markets with the technical attributes of its flake graphite; and
- Maximising its comparative advantage in “ease of” purification and milling.



High growth, Deep Markets

- **Batteries** – Forecast growth rate of between 20 - 30% pa based on EV & ESS
- **Electrodes** – Forecast* growth rate of 16-18% pa in steel production.

* Roskill; Natural & Synthetic Graphite Report 2018.

Hexagon's plan to develop its graphite strategy

Discussion Outline: - developing a graphite business



Run Down the Value Chain

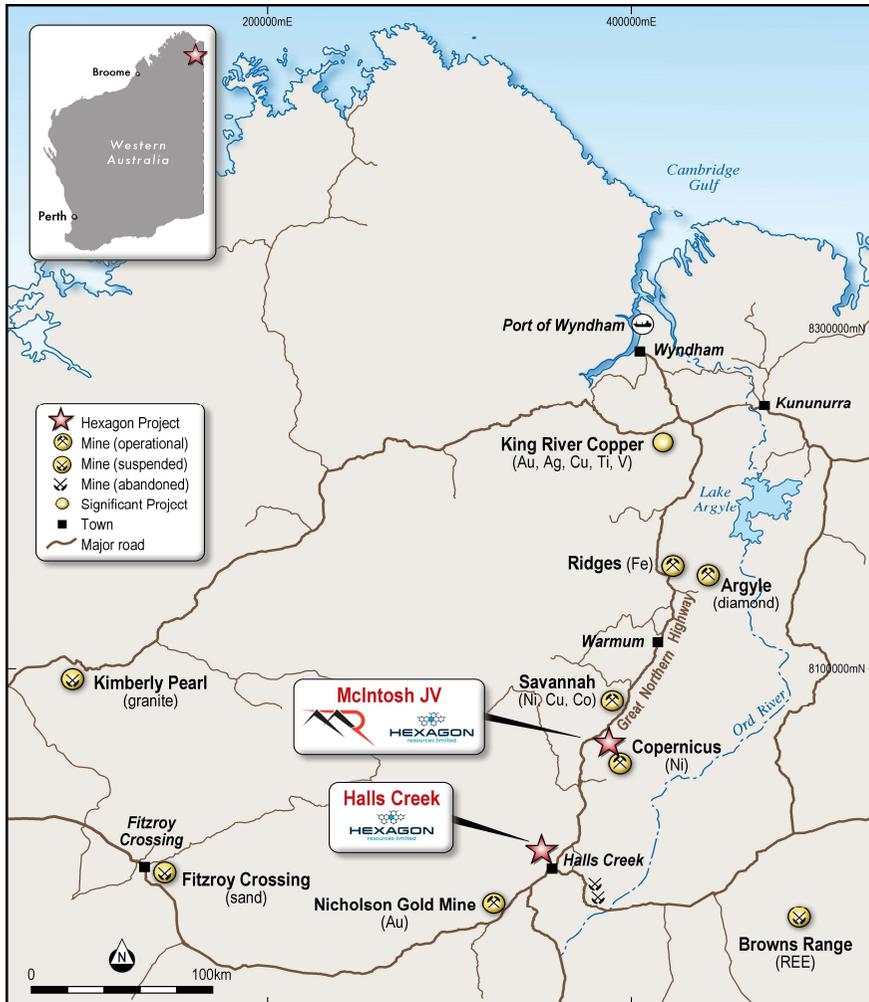
- 1. Upstream;** mining & processing into graphite concentrates
 - The McIntosh Flake Graphite Project
 - Funding
 - Flake concentrate product lines
- 2. Downstream;** additional processing of graphite concentrates into intermediate products used in diverse range of energy related and industrial applications
 - Purification
 - Innovative flow sheet and product lines
 - New test results and commercial implications
 - Scoping study – including considerations on plant locations
- 3. Marketing;** “Success is reliant on market knowledge”
 - Strong SE Asian relationships
 - Recent initiatives into the USA

Snapshot of Hexagon

Hexagon Summary - as an investment or as a supplier of premium graphite materials

The Upstream – The McIntosh Project

Located in an established mining region – Western Australia



Current Mineral Resources

JORC Classification	Tonnes (Mt)	TGC (%)	Contained Graphite (kt)
Total Indicated & Inferred	23.8	4.5%	1.1

Full Mineral Resources Table & Location Plan in Attachment 1

Exploration Target* (additional to Mineral Resources)

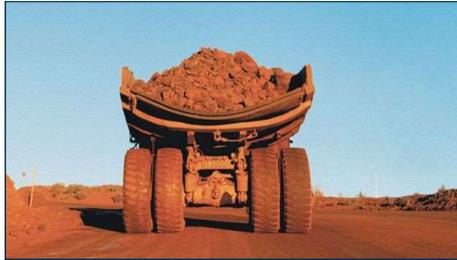
Prospect	Tonnage Range (Mt)	Grade Range TGC (%)
Total	50-100	2.0 – 5.0

***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.

Full Exploration Target Table & Location Plan in Attachment 2

The Upstream – The McIntosh Project

Planned - conventional open-pit mines & graphite flotation concentrator



Upstream: Multi open-pit mining, simple flotation at c. 2.4Mtpa to produce c. 100,000tpa of high-grade (97-98% TGC) graphite concentrate, likely across 3 flake sizes – subject to completion of Feasibility Study.

The Upstream – The McIntosh Project

Funded by ASX-listed Mineral Resources Limited (ASX:MIN)



Earn-in Joint Venture funding

- Mineral Resources Limited (**MRL**) to fund all Feasibility Study work, capital development and ramp-up costs to achieve Commercial Production to earn a 51% interest in the McIntosh Project (subject to a positive feasibility study)
- MRL to manage the McIntosh JV (**MJV**) to provide “pit to wharf” service to the MJV.

Risks Mitigated

- No exposure to dilutive capital raisings to build upstream, mine and plant or ramp-up problems or delays
- Reduced operational risks – *MRL is an experienced WA mine operator*
- No third party project debt, convertible notes, securities etc. – *simple financing at the Project level.*



“the joint venture with MRL is a major de-risking event for Hexagon”

The Upstream – The McIntosh Project

Graphite is not a commodity, so expenditure is focussed on test work to understand the value

The value and specifications for **GOLD, LEAD, COPPER** etc. are clear and well known.

Value for **GRAPHITE** needs to be demonstrated through test work and market research.

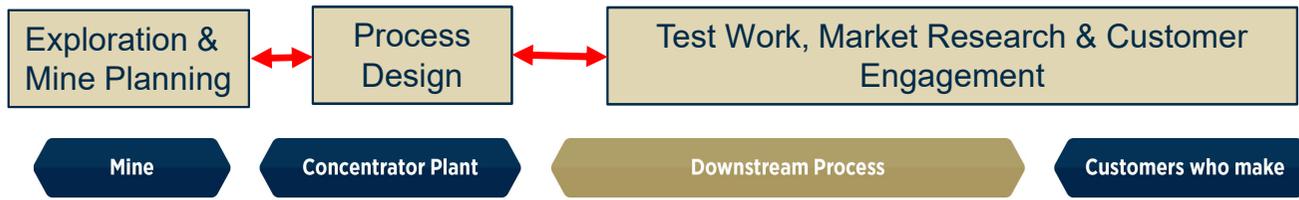
McIntosh Graphite has a unique range of technical attributes, including:

- ✓ **Purity** – high-grade concentrates c. 97-98% TGC from Upstream
 - ultra-high “5-9’s” i.e. 99.999% TGC is achievable at a low cost in Downstream
- ✓ **HOPG-like** – rare, “Highly Ordered, Pyrolytic Graphite” large, crystalline structures – suitable to displace synthetic graphite
- ✓ **Large flake** endowment and an expandable +60# component
- ✓ **Specific flake morphology**; rendering it easy and low cost to spheroidise and mill (“easy” *comparatively speaking*)
- ✓ **Excellent electrochemical properties** as shown by test work and coin cell cycling tests.

All of which, makes it highly sought after by a diverse range of intermediate processors and End-Users.

Upstream Graphite Target Markets

Customer focus starts at the Mine & Graphite Concentrator



3 graphite concentrate products planned*:

✓ Product 1 - “Expanded Line”

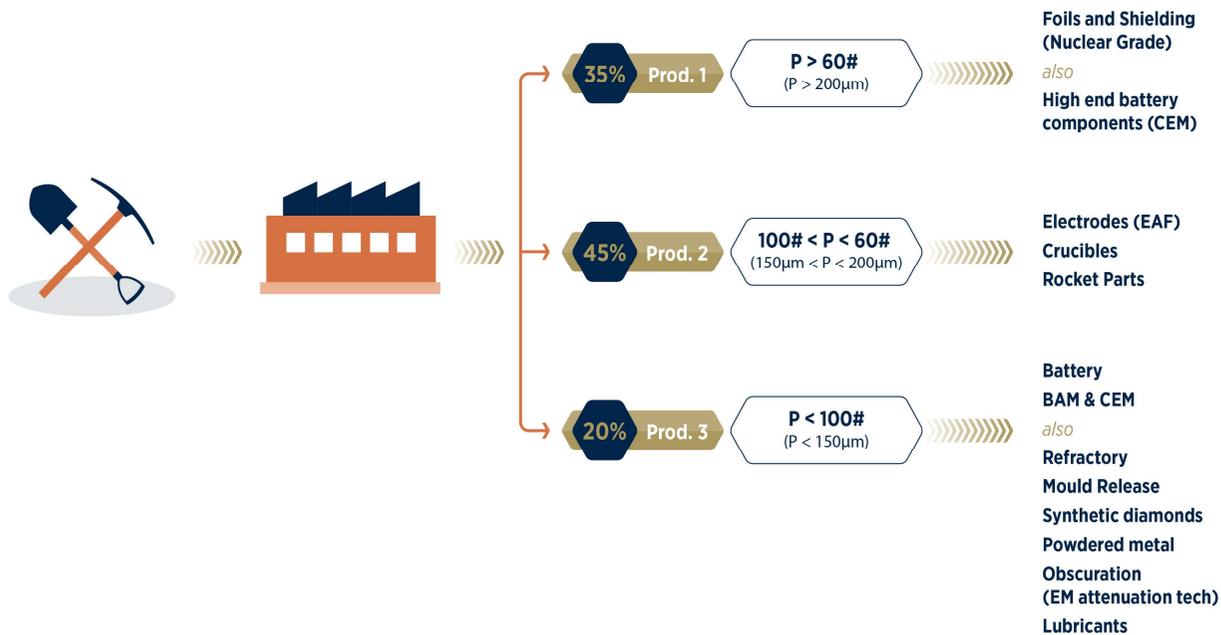
destined for foils and shielding (nuclear grade) and Conductivity Enhancement Materials (CEM)

✓ Product 2 - “Industrial or Electrode Line”

HXG’s focus is on electrodes in EAF substituting for synthetic graphite on the basis of enhanced technical properties and lower furnace costs.

✓ Product 3 - “Battery Line”

Mainly lithium ion Battery Anode Material (BAM) and CEM. Also suitable for a range of high-end industrial applications.



*subject to McIntosh Feasibility Study work.

Upstream Graphite Target Markets

Marketing based on quality and diversity; reflects pricing

HXG's estimate of Basket Price Upstream 3 Product mix

Planned Product*	Size Specification (ASTM)	% of Output	HXG-97-98 % TGC \$US/t FOB	
			Lower price range	Higher price range
Product 1 (Expanded)	P > 60#	35	1867	1996
			1931	
Product 2 (Electrodes)	100# < P < 60#	45	1332	1516
			1424	
Product 3 (Battery)	P < 100#	20	880	990
			935	
Basket Price Range Assumed Price		100	1429	1579
			1504	

Based on HXG Market Inquiries; SE Asia, USA and China

*Subject to completion of Feasibility Study

Planned Concentrate - 3 Products*

1. Expanded precursor
2. Electrode/Industrial
3. Battery materials

Feasibility study and metallurgical testwork in progress – managed by MinRes.



Upstream MJV Project aiming to be robust financially on a standalone basis

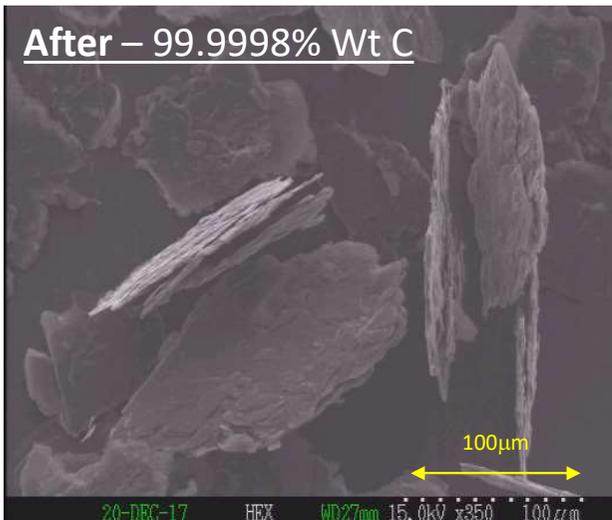
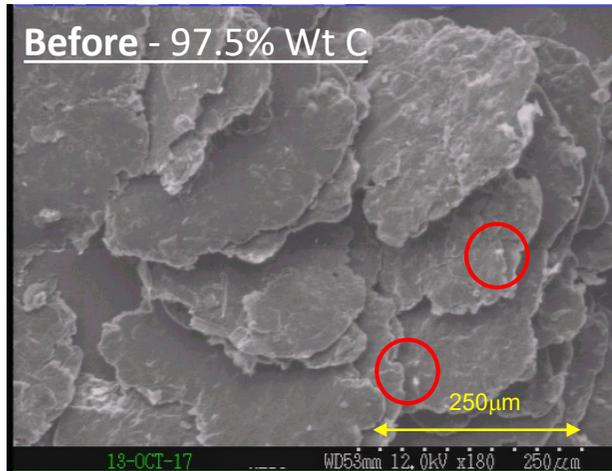
Downstream Graphite Processing



Hexagon is looking to develop a standalone advanced graphite processing business.

Downstream Graphite Processing

Innovative downstream flow sheet leveraging off HXG's clean flake



99.9998 wt.% C was achieved by a proprietary thermal purification technique.

- **Price premium:** *Five Nines* is the “nuclear purity world” but will market as “+3 Nines-5” or “+4 Nines”.
- **Low cost:**
 - ✓ Surficial impurities - require only “light” purification
 - ✓ HXG planning to adopt proprietary but proven, highly efficient, furnace technology.
- **Low Environmental impact:**
 - ✓ No HF acid leach
 - ✓ Less energy/t compared to other thermal technologies.

A premium is paid for ultra-high purity materials in batteries and other high-end applications – impurities reduce performance risks.

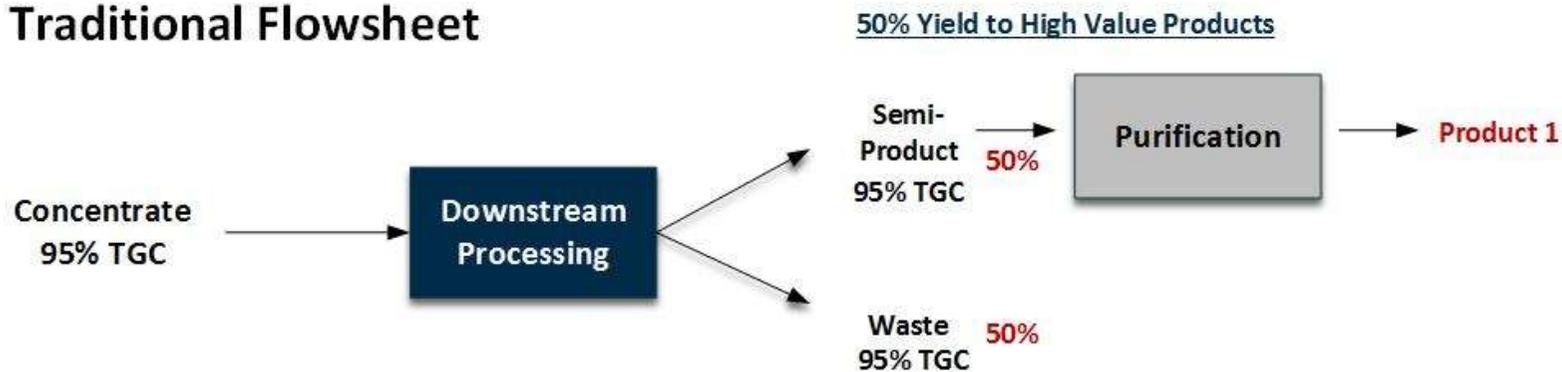
Downstream Graphite Processing

Efficient, low cost purification underpins Hexagon's strategy

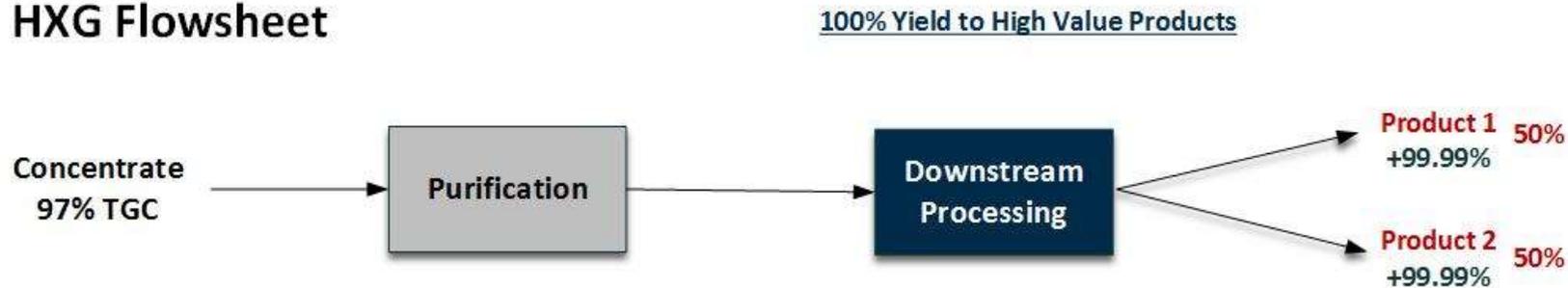


HXG's modified flow sheet – refining first; because it is low cost and results in high yield to high value products.

Traditional Flowsheet

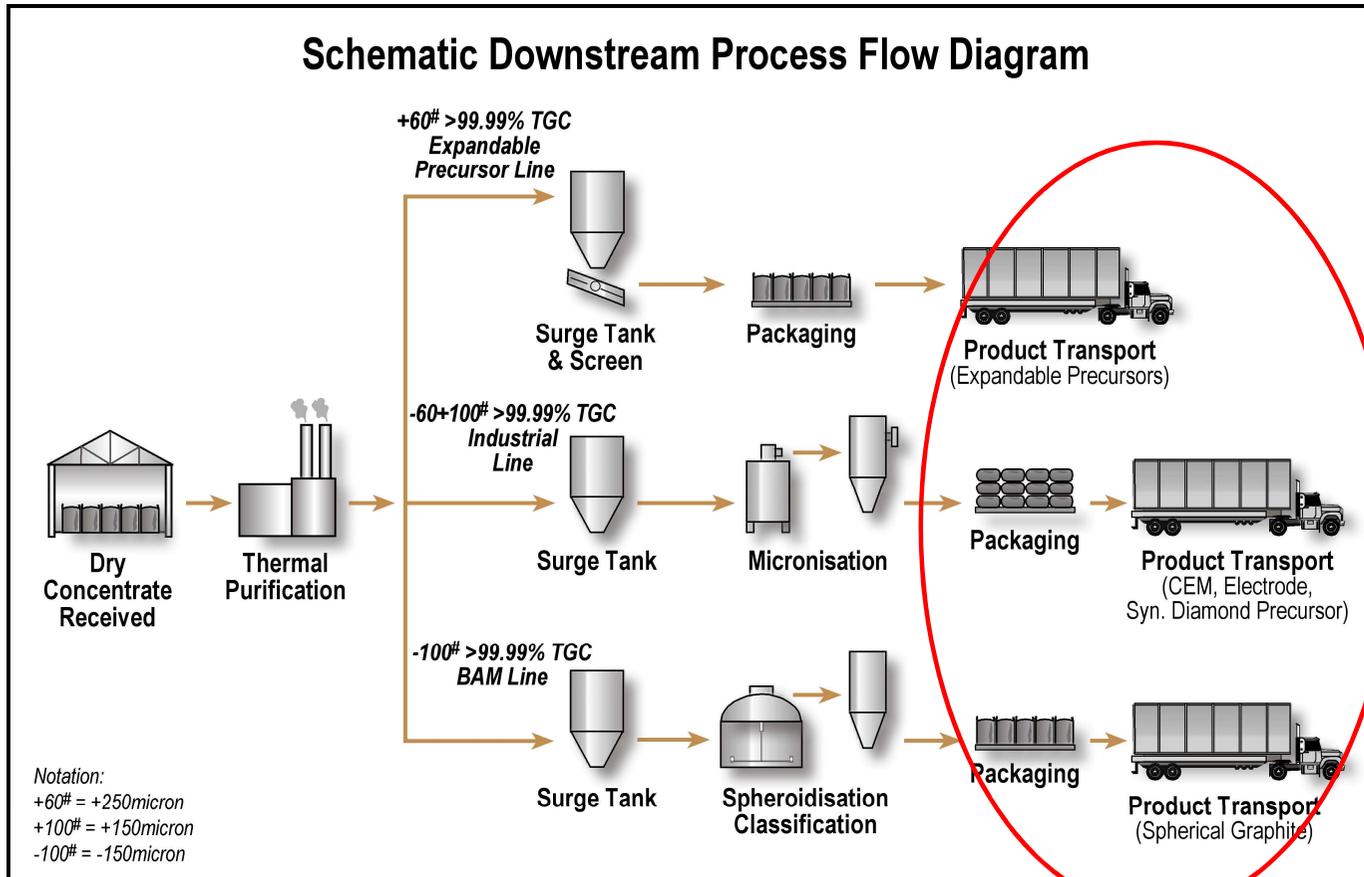


HXG Flowsheet



Downstream processing - Innovation

Low cost purification establishes a high-yielding, diverse flow sheet.



*Initial planned output:
A diverse, high-purity, high-value product range planned.*

Initial process focus is on milling, classification and shaping (spheroidisation), consistent with testwork completed to date.

Downstream processing – Diverse Products

Purity, crystallinity & “ease” of milling underpin downstream case.



Recent testwork results confirm “ease” of milling and crystallinity as key commercialisation factors:

- Milling trials show rapid particle size reductions to nominated median (D50) size specification inferring industry sector’s leading milling costs.
- Milling cost advantages of McIntosh flake compared to typical African or Chinese sourced flakes demonstrated to be 2-3 times lower for hammer milling and approximately 2 times lower for air milling.
- Production of ultra-fine, high purity materials at sub 5 μm sizings as coatings and dispersions in battery and industrial applications which is a very high-value market, served by a very limited number of manufacturers.
- Ability to produce synthetic diamonds – currently technical grade, potentially also gem-stone quality, subject to the highest purity precursor material.

Downstream processing – Diverse Products

Recent testwork demonstrates range of premium high-end products

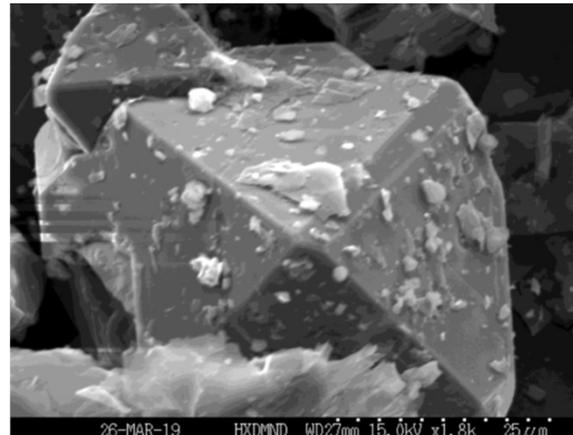


Batteries & Industrial

Particle Size D ₅₀ Value	Primary End Use Application(s)
< 45 µm	Lead acid battery negative plates, 'C'/'D'/'F' alkaline battery cathode CEMs
< 25 µm	Standard grade 'AA'/'AAA'/9V alkaline battery cathode CEM
< 15 µm	Premium grade 'AA'/'AAA'/9V alkaline battery cathode CEM
< 8 µm	Lithium primary battery anodes
< 5 µm	Lithium-ion battery cathode CEM
< 2 µm	Pigments of conductive paints and coatings, to include battery can coatings

Applications for different grades of CEMs in batteries.

Synthetic Diamonds



- 2015 global demand for technical grade synthetic diamonds was c. 4 billion carats (c. 10,000 tonnes)
- Requiring c. 20,000-25,000 tonnes of precursor material.
- Selling for US \$0.05 per carat (c.2.5 grams).

Recent examples from a product suite targeting; battery (anode & cathode); industrials – EAF electrodes, mould release, lubricants, premium refractories and Expanded Graphite precursor for high end foils and CEM.

“Increasing value in downstream applications for finer milled graphite, with high crystallinity and purity. Compares to higher prices for upstream, large flake concentrates, but with limited market scale at higher purities”.

Downstream processing – Premium markets

Detailed Market Knowledge - realistic assumptions on volumes & price



Product	ID	Product Price US\$/t			Conviction Rating
		Low	High	Modelled	
Expandable					
Std. +80#X	E1_Z3	4,500	7,500	5,000	4
	E1_Z4	3,000	3,500	3,500	5
Prem +80#X	E2_Z6	6,000	11,000	7,500	3
	E2_Z9	3,500	4,000	4,000	4
Industrial					
Std. Diamond Precursor	I1_P4	4,200	5,000	5,000	4
	I1_P6	4,200	4,200	4,200	5
Prem. Diamond Precursor	I2_P1	8,000	10,000	10,000	3
Std. CEM	I3_E3	6,000	9,000	6,500	4
	I3_E6	3,000	4,000	3,500	3
UHP-E CEM	I4_E8	4,000	14,000	5,000	5
Prem. CEM	I4_E9	9,000	19,000	9,000	3
Coating Precursor	I4_E12	15,000	22,000	18,215	4
BAM					
USG - 23	B1_L3	3,200	3,800	3,600	4
USG - 16	B1_L6	3,200	3,800	3,600	4
SG-SSP	B3_L12	15,000	18,034	15,329	4
G-SSF	B3_L13	3,000	7,000	3,250	4

Pricing Considerations:

- HXG needs to achieve market penetration into a well-established, conservative market;
- in several cases it is introducing new products into that market which have the same specifications as established products but through a different treatment route e.g. thermal purification-which can create a marketing inertia; and
- in some cases the HXG products are unknown due to their very high specifications and customers may need some convincing of the merits of these enhanced products.

These factors are reflected in the pricing selected for Modelling.

The Downstream Business Case

First financial evaluation of downstream business case – May '19



Downstream Scoping Study is in progress – outcomes due May 2019

Key Inputs:

- ✓ Source concentrates – “purchased” at market basket price – c. US\$1,504/t.
- ✓ Thermal purification
- ✓ 3 downstream process lines
 1. Battery materials – producing various classifications of spherical graphite for BAM and CEM;
 2. Industrial materials – producing various size specifications to be used in blends to produce UHP electrodes, premium refractories and lubricants; and
 3. Expandable graphite precursor (+60 mesh) screening /packaging production.

Site selection

- ✓ Ideally plant site is close to either the upstream source or the major downstream customer
- ✓ Major considerations are power costs and freight / logistics costs.

Downstream sites – Tier 1, low risk jurisdictions

Two sites under evaluation; one in the USA and one in Australia



Natural Graphite Consumption*
 Nth America: 73kt
 Europe: 106kt
 Sth America: 77kt

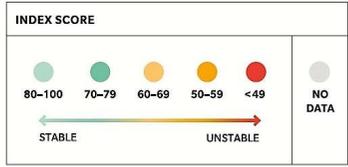
Natural Graphite Imports*
 Japan: 52kt
 Sth Korea: 39kt
 India: 39kt
 China: 6kt
 R-SEA: 20kt



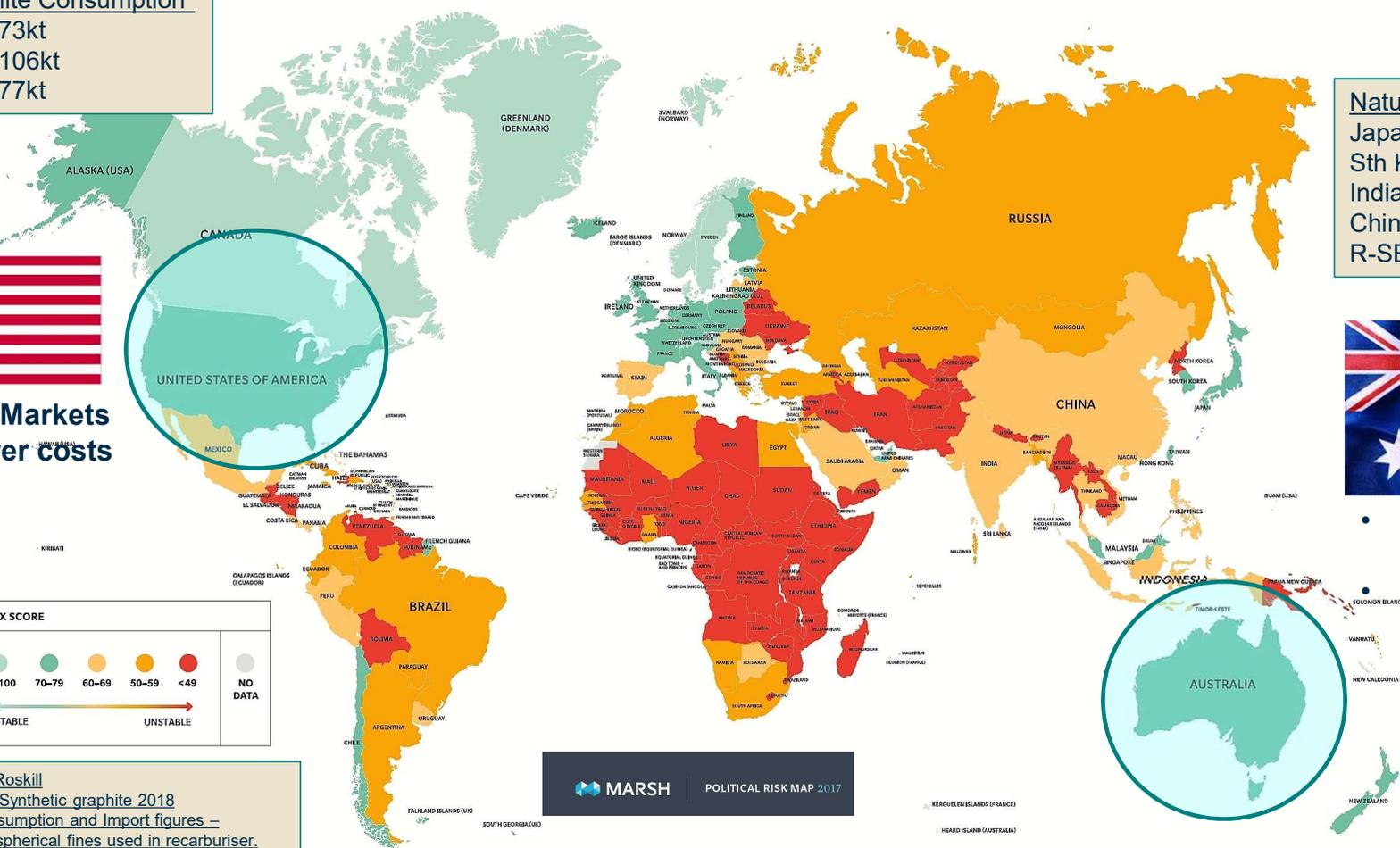
- Close to Markets
- Low power costs



- Close to Source & markets
- Moderate & uncertain power costs



*Source: Roskill
 Natural & Synthetic graphite 2018
 2017 Consumption and Import figures –
 excludes spherical fines used in recarburiser.



Marketing expertise in SE Asia and now the USA

Build team, with sample supply to progress marketing to sales contracts



SE Asia - Hexagon has established direct market contacts in Japan, Korea, Taiwan and China for:

- Upstream graphite concentrates
- Planned downstream products

USA - Increasing focus through key relationships & Upstream opportunities

- Charge Minerals - a strategic partnership collaborating on new marketing opportunities and new US upstream project in Alabama.
- NAMLab* – established graphite processing and battery manufacturing business based in the US. Key strategic partner for Hexagon’s downstream business.
- US Critical Minerals – a US consultancy focused on strategic minerals projects and marketing, specialising in battery applications.
- Engaged 2 highly “graphitized” executives to identify and advance new graphite market opportunities in USA, SE Asia and Europe.

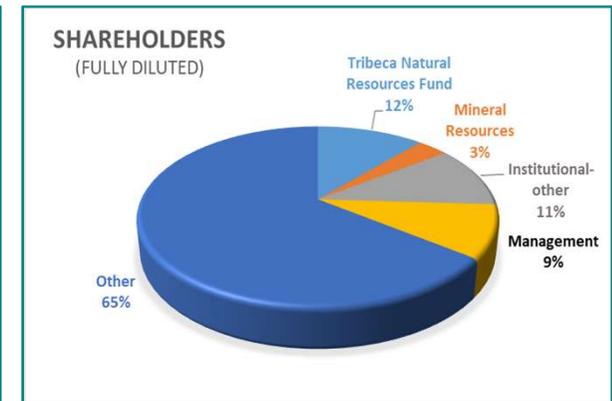
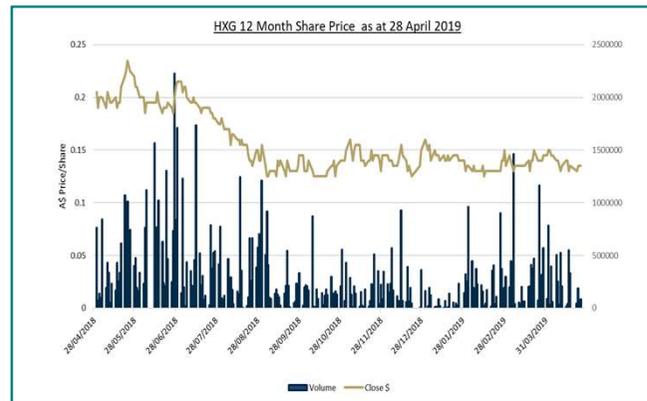
*Hexagon has a confidentiality obligation not to disclose the identity of the organisation referred to NAMLab. It is a well credentialed, ISO accredited test work and speciality graphite processing facility based in the USA.

Hexagon at a glance

An Australian listed graphite company



ASX Code	HXG
Shares on Issue	291.8M
Options on issue	24.4M (unlisted)
Share price (24 April 2019)	A\$0.14
12 Month high/low	A\$0.28/A\$0.09
Market Capitalisation	A\$44.3M
Debt	Nil
Cash (31 Mar. 2019)	A\$4.9M



- Strong share register – 25% Institutional holders with Tribeca Natural Resources Fund -12%
- Management – 9%
- Strong capital structure for a junior – 292M shares on issue
- Reasonable cash balance - \$4.9M
- No debt or other exotic funding/equity commitments

Why Hexagon?

as an investment or as a supplier of premium graphite materials



Pursuing a vertically integrated graphite business to produce and sell quality graphite products;

Upstream

- High quality graphite source – McIntosh Project
 - ✓ Concentrate grade
 - ✓ Flake crystallinity
 - ✓ Flake Size distribution
- Funded - potentially fully funded to Commercial Production by Mineral Resources
- Tier 1, low risk jurisdictions – Australia and USA

Downstream

- Ultra high purity - +99.99% TGC
- Innovative flow sheet leveraging off “easy” purification of McIntosh flake
- Detailed graphite market expertise focused on SE Asia and USA
- Diverse and high-quality product offering to attract premium pricing and robust cash flows

Hexagon has the expertise to understand the graphite market and position itself to maximise value

Hexagon Resources Limited

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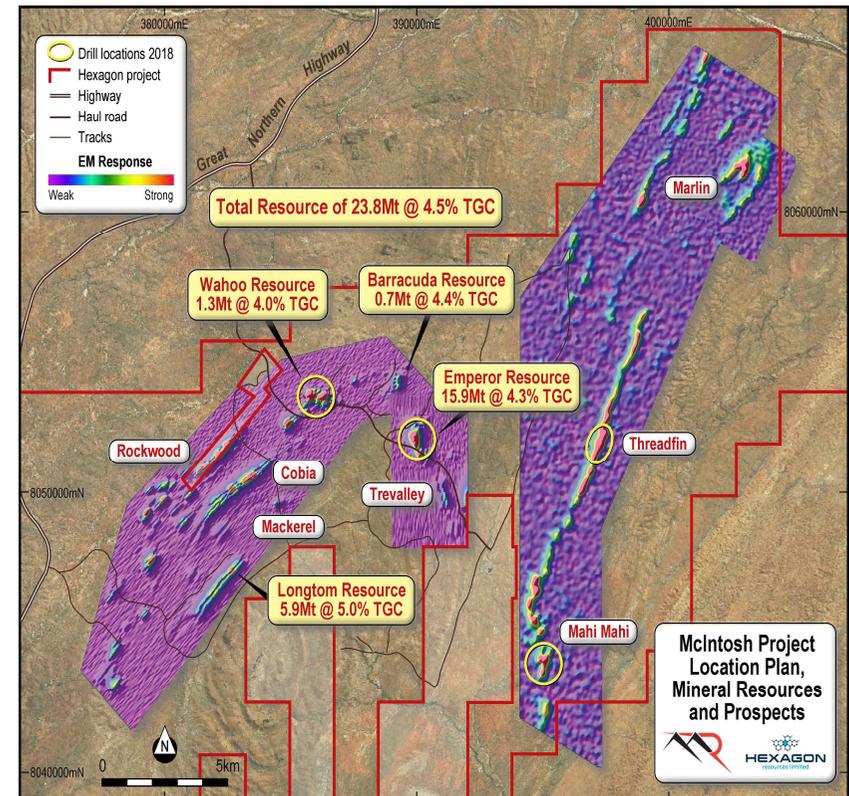
Appendix 1: McIntosh Mineral Resource Estimate



McIntosh Flake Graphite Project Mineral Resource as at 5 April, 2019 reported by deposit and above a 3% TGC cut-off grade. As per ASX Report dated 5 April, 2019

Location Plan – McIntosh Mineral Resources. Background is EM conductors from VTEM and Xcite surveys.

Deposit	JORC Classification	Tonnes (Mt)	TGC %	Contained Graphite (Kt)
Emperor	Indicated	12.1	4.28	518
	Inferred	3.8	4.35	165
	Total	15.9	4.30	684
Wahoo	Indicated	1.3	3.97	51
	Inferred	-	-	-
	Total	1.3	3.97	51
Longtom	Indicated	5.1	4.93	253
	Inferred	0.8	5.25	40
	Total	5.9	4.97	293
Barracuda	Indicated	0.7	4.40	32
	Inferred	-	-	-
	Total	0.7	4.40	32
Total	Indicated	19.2	4.44	854
	Inferred	4.6	4.50	206
	Total	23.8	4.45	1,060



Note: Rounding may result in differences in totals for tonnage and grade

Mineral Resource Estimates - the Company is not aware of any new data or information that materially affects the information presented herein.

Appendix 2: McIntosh Exploration Target



**McIntosh Flake Graphite Project Exploration Target as at 5 April, 2019.
As per ASX Report dated 5 April, 2019.**

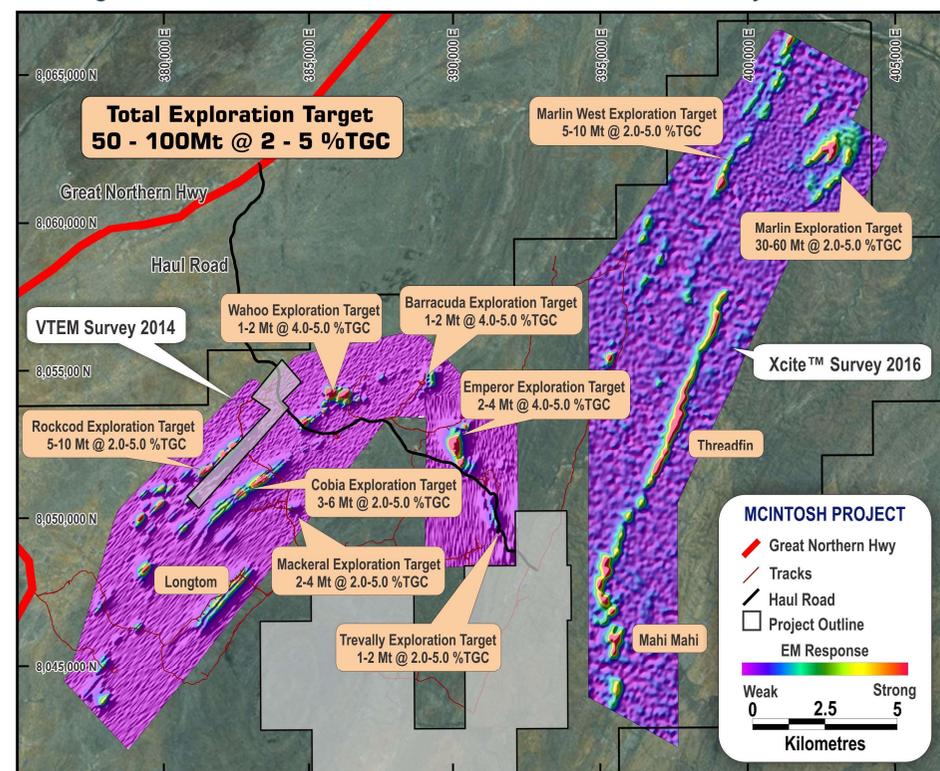
***Cautionary Statement:** The potential quantity and grade of the Exploration Targets is conceptual in nature, there has been insufficient exploration work to estimate a mineral resource and it is uncertain if further exploration will result in defining a mineral resource.

Prospect	Tonnage Range		Grade Range
	Minimum	Maximum	(%TGC)
Emperor ¹	2	4	4.0 – 5.0
Wahoo ¹	1	2	4.0 – 5.0
Barracuda ¹	1	2	4.0 – 5.0
Cobia	3	6	2.0 – 5.0
Marlin	30	60	2.0 – 5.0
Marlin West	5	10	2.0 – 5.0
Rockcod	5	10	2.0 – 5.0
Mackerel	2	4	2.0 – 5.0
Trevally	1	2	2.0 – 5.0
Total	50	100	2.0 – 5.0

Note: Rounding may result in differences in totals for tonnage and grade

Location Plan – McIntosh Exploration Targets* as reported to ASX 5 April, 2019.

Background is EM conductors from VTEM and Xcite surveys.



Exploration Targets - the Company is not aware of any new data or information that materially affects the information presented herein.

Appendix 3: Competent Persons Attribution



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 and Halls Creek Projects is based on information compiled by Mr Mike Rosenstreich who is an employee of the Company. Mr Rosenstreich is a Fellow of The Australasian Institute of Mining and Metallurgy and has 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 he consents 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 Michael Chan and Mr Rosenstreich (referred to above) managed and compiled the test work outcomes reported in this announcement. Mr Chan as well as a highly qualified and experienced researcher at NAMLab planned, supervised and interpreted the results of the metallurgical test work. Mr Chan is a Metallurgical Engineer and a Member of the Australasian Institute of Mining and Metallurgy. Mr Chan and the NAMLab principals have sufficient relevant experience relevant to the style 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.