

# **Battery Grade Spherical Graphite – Mozambique**



## **Disclaimer & Competent Person Statement**

Statements and material contained in this Presentation, particularly those regarding possible or assumed future performance, resources or potential growth of Metals of Africa Limited, industry growth or other trend projections are, or may be, forward looking statements. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. Such forecasts and information are not a guarantee of future performance and involve unknown risk and uncertainties, as well as other factors, many of which are beyond the control of Metals of Africa Limited. Information in this presentation has already been reported to the ASX.

#### **Cautionary Statement**

The Company advises that a proportion of the production target referred to in this announcement is based on an inferred mineral resource. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

#### **Competent Persons Statement**

The information in this report that relates to a Concept Study is based on information compiled by Ms. Cherie Leeden, who is Managing Director of the Company. Ms Leeden is a Member of the Australian Institute of Geoscientists and has the relevant experience in the Technical Assessment and Valuation of Mineral Assets of this level of Pre Development study referred Concept Study. Ms. Cherie Leeden also has sufficient relevant experience in the style of mineralisation and the types of deposits under consideration, and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ms Leeden consents to the inclusion in this report of the matters based on information in the form and context in which it appears.

The Maiden JORC Graphite Resource at Montepuez Central Project was announced by the Company 16 November 2015 and 8 December 2015 and should be referred with this report. The Maiden JORC Graphite Resource at Balama Central Project was announced by the Company on 21 March 2016 and should be referred with this report. The information pertaining to the Montepuez Central and Balama Mineral Resource is based on information compiled by Mr Robert Dennis who is a Member of Australian Institute of Geoscientists and a full time employee of RungePincockMincarco Limited. Mr Dennis has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Dennis consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The Montepuez Central Concept Study is based on a preliminary technical and economic assessment to test the economic viability of the Montepuez Central Mineral Resource with ±40% accuracy. It includes appropriate assessment of realistically assumed mine development, processing and transport operational factors estimated with presently defined graphite product pricing which supports realistically justified progress to a Pre-Feasibility Study. The Concept Study is not a Pre-Feasibility or Feasibility Study as further comprehensive studies are required to achieve this level of economic confidence including Resource to Ore Reserve conversion and further product testwork.

#### Mineral Resources

945 Welling ton Street, West Perth WA 600

The basis of the Study was the Mineral Resource estimate for the Montepuez Project (Buffalo, Lion and Elephant prospects), which contains 61.6Mt at 10.2% TGC for 6.3Mt of contained graphite at a cut-off of 6% TGC. RungePincockMinarco Limited ("RPM") was engaged to prepare the Mineral Resource estimate in 2015. The Mineral Resource underpinning the production target, classified as Indicated and Inferred, was prepared under the supervision of a Competent Person and reported in November and December 2015 in accordance with the requirements in Appendix 5A (the JORC Code 2012 edition). Classification of the Mineral Resource was carried out taking into account the geological understanding of the deposit, quality of the sampling and density data, and drill hole spacing. Metallurgical considerations of flake size distribution, purity of product and petrographic analyses were also given due consideration.

Vast portions of the VTEM anomalism at the Project remain undrilled. There are opportunities to delineate further Mineral Resources parallel to existing trends at Elephant and Buffalo. All prospects are open along strike and down-dip. Extensional drilling is likely to add tonnes to the Mineral Resource, specifically to the south of known mineralisation at Elephant and Buffalo.



### **Corporate Overview**



### **Cherie Leeden - BSc Hons - Managing Director**

Geologist, successful explorer and developer of mineral resources Extensive experience working for majors/juniors Predominantly African based and focussed for past 5 years

### Gilbert George – Mec - Non Executive Chairman

Experienced public company director >30 years international business experience Corporate funding experience in mining industry

### Brett Smith – BSc Hons - Non Executive Director

Geologist

25 years experience in exploration and resource definition Experienced public company director

### **ASX: MTA**

Shares on Issue: 211M

Market Cap: \$12.7M

Cash in bank: \$1.5M (1)

**Share Price:** \$0.06(2)

Trading Range (12 weeks): A\$0.042-\$0.060

#### **Options on issue**

57.8M listed (15 cents, Jan 2017) 8.5M unlisted (various)

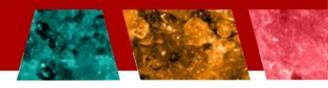
#### **Shareholder Profile**

**Top 20** 47% (inc. board 4%) **Retail Shareholders** 53%

(1) as at 31 December 2015 (2) as of 21 March 2016



### The Defining Attributes for MTA



### **Resource Quality Demonstrated**

Projects within Mozambique's Cabo Delgado graphite province

Definition of Resources: Predominantly Large/Jumbo flake, high TGC confirmed

Spherical graphite quality, ideally suited for "green energy" EV battery applications

### **Positive Concept Study Metrics**

Compelling concept study outcomes predicted

Optionality, scalability and scope for capital expenditure refinements

### **Robust Operating Landscape - Mozambique**

Logistics, power, water, mining code, corporate taxes and regulations, investment

### **Clear Development Pathway**

Resources defined, PFS underway

Graphite Offtake discussions proceeding

### The Spherical Graphite Market Dynamics and Opportunity

Spherical graphite can be produced from natural flake graphite at a fraction of the price of synthetically derived spherical graphite (currently the dominant source for LiO batteries)





# **Graphite Resource Quality**



### **Two Current Graphite Resources**



### **Mozambique - Cabo Delgado Graphite Province**

"Widely recognised and the richest graphite province in Mozambique"

"The Mozambique mobile belt host the largest graphite deposits in the world; it extends into both Mozambique and Tanzania and is geologically constrained"

- 1. Montepuez Central Project (indicated and inferred)
- 61.6 Mt @ 10.3% TGC and 0.26% V<sub>2</sub>O<sub>5</sub>
  - **6.3 Mt of contained graphite** at a cut-off of 6% TGC

**Resource remains open** along strike and at depth

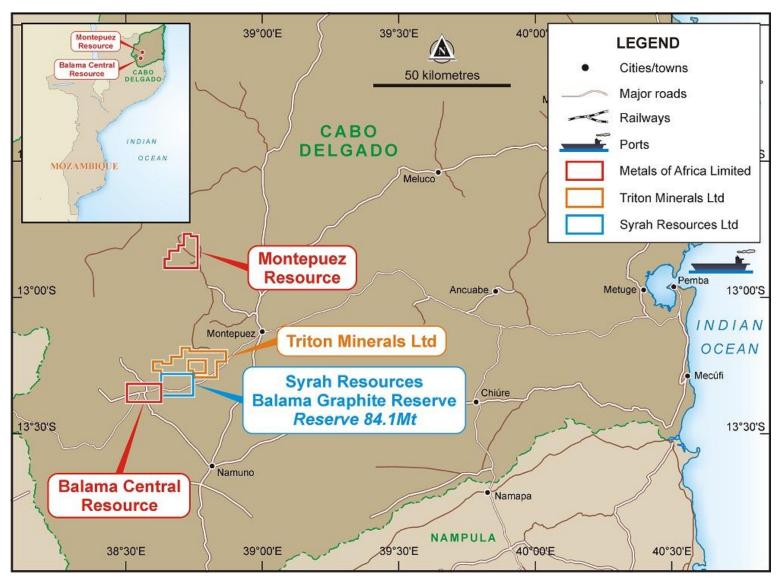
- 2. Balama Central Project (indicated and inferred)
- 16.3Mt at 10.4% TGC and 0.21%  $V_2O_5$ 
  - 1.7Mt of contained graphite at a 6% TGC cut-off

**Resource is open** along strike and at depth and was defined via a <4 week drill program!

Exploration Target of 43-78Mt at 9-13% TGC

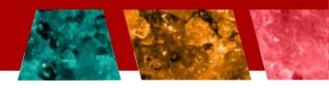


# **Project Location and Recognised Neighbours**





### **Montepuez Project - Overview**



### 61.6 Mt @ 10.3% TGC and 0.26% V<sub>2</sub>O<sub>5</sub>

6.3 Mt of contained graphite at a cut-off of 6% TGC

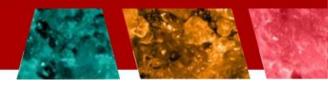
Resource is open along strike and at depth - only 5% of prospective geology tested

Montepuez Graphite Project								
Maiden Mineral Resource Estimate (6% TGC Cut-off)								
Class	Tonnes TGC V <sub>2</sub> O <sub>5</sub> Cont. Graphite Cont.							
	Mt	%	%	Mt	Kt			
Indicated	27.6	10.4	0.23	2.9	62			
Inferred	34.1	10.2	0.30	3.5	101			
Total	61.6	10.3	0.26	6.3	163			

- 1. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis.
- 2. Flake sizes for the Mineral Resource are tabulated in the Appendix to the presentation
- 3. The Statement of Estimates of Mineral Resources has been compiled under the supervision of Mr. Robert Dennis who is a full-time employee of RPM and a Member of the AusIMM and AIG. Mr. Dennis has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).
- 4. All Mineral Resources figures reported in the table above represent estimates at 12th November, 2015. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate. Rounding may cause some computational discrepancies.
- 5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code JORC 2012 Edition).
- 6. TGC = total graphitic carbon.



### **Balama Central Project**



### 16.3Mt at 10.4% TGC and 0.21% $V_2O_5$

– 1.7Mt of contained graphite at a 6% TGC cut-off

**Resource is open** along strike and at depth

Exploration Target of 43-78Mt at 9-13% TGC

Balama Central Graphite Project								
Maiden Mineral Resource Estimate (6% TGC Cut-off)								
Class	Tonnes	TGC	$V_2O_5$	Cont. Graphite	Cont. V <sub>2</sub> O <sub>5</sub>			
	Mt	%	%	Mt	Kt			
Indicated	8.9	9.3	0.16	0.84	14			
Inferred	7.3	11.8	0.27	0.86	20			
Total	16.3	10.4	0.21	1.7	34			

#### Note:

- 1. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis.
- 2. Flake sizes for the Mineral Resource are tabulated in the Appendix to the presentation
- 3. The Statement of Estimates of Mineral Resources has been compiled under the supervision of Mr. Robert Dennis who is a full-time employee of RPM and a Member of the AusIMM and AIG. Mr. Dennis has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).
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- 5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code JORC 2012 Edition).
- 6. TGC = total graphitic carbon.



### Largest Flake Graphite In Mozambique



Classification	Sieve Size (µm)	MTA Balama (%)	MTA Montepuez (%)	SYR (%)	Sieve Size (µm)	TON (%)
Jumbo	>300	33.8	32.7	8.5	>400	7.3
Large	180-300	19.1	23.5	12	212-400	15.9
Medium	150-180	5.7	7.5	11.5	106-212	36
Fine	75-150	16.6	20.7	22.5	75-106	17.1
Very Fine/Amorphous	<75	24.9	15.5	45.5	<75	23.7

### Flake size is critical to a viable Project

Natural Graphite pricing is based on flake size

Large-jumbo flake commands premium prices and generally equates to lower impurities/higher recovery

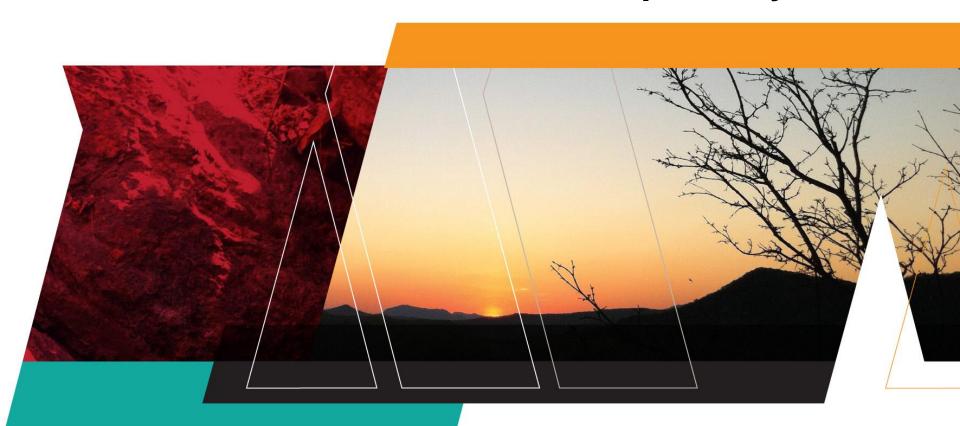
Montepuez and Balama boasts the highest proportion of large-jumbo flake graphite in Mozambique

More than half the Montepuez deposit is >large – jumbo size flakes

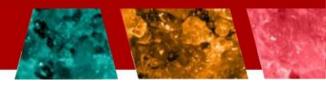




# **Positive Concept Study Metrics**



### **Montepuez Concept Study Highlights**



Conceptual mine plan & economic analysis completed to +/- 40% accuracy by RungePincockMinarco

**Pre-Feasibility Studies (PFS) now underway** 

Confirmation Montepuez boasts the richest large & jumbo flake graphite deposit in Mozambique

### **Concept Study highlights include:**

- Low 2.2:1 strip ratio (will be further improved on in optimisation in PFS)
- Production schedule completed at plant feed rate of 1.2 Mtpa at average grade of 10% TGC for first 30 years
- Proposed production rate of 100,000 tonnes per annum of product over a proposed 60 year mine life
- Estimated capital cost of US\$166M + 20% contingency (including spherical graphite plant construction)<sup>(1)</sup>
- Very low OPEX implying significant margins achievable
- Simple, open pit mining operation
- Favourable deposit characteristics to fast track to mining
- Concept Study has confirmed support for the Project's potential development in order to proceed to a Pre-feasibility Study (PFS).



# **Summary of Montepuez Project Features**

Resource	JORC Resource: 62Mt at 10.3% TGC
Mining Method	Simple open pit operations with low strip ratio: operations will commence as free-dig mining using conventional truck and shovel mining
Processing Method	Conventional process including crushing, grinding, flotation, filtration, drying, screening and bagging in Mozambique. 50% of concentrate shipped to USA for spheroidization and coating (for use in Li-ion batteries as anode material)
Processing Rate	1.2 million tonnes per annum
Products	25,000 tpa Coated Spheroidal graphite 25,000 tpa Carburiser product 20,000 tpa Jumbo-Super Jumbo flake 30,000 tpa Large flake
Production	100,000 tonnes of graphite product per annum
Operating costs (1)	FLAKE GRAPHITE ~US\$300 per product tonne (FOB from the Port of Pemba) COATED SPHERICAL GRAPHITE ~US\$3500 per product tonne
Life of mine (LOM)	60 years

(1) Excludes royalties and taxes (circa 35%)



# **Concept Study confirms attractive economics**

Capital expenditure (US\$M)					
Processing plant	35				
Site infrastructure (1)	25.7				
Owner's costs	15.5				
Power facility	10				
CAPEX Subtotal	86.2				
Contingency – 20%	33.24				
Spherical Graphite Plant (USA) - OPTIONAL	80				
CAPEX TOTAL (including spherical plant)	199.4				

Operational metrics (3)								
Operational period	Years	60						
Plant feed rate	tpa	1.2 M						
Average strip ratio (LOM)	Ratio	2.2:1						
Average head grade (LOM)	%	8.5%TGC						
Average recovery (LOM) (target)	%	95%						
Average production (LOM)	tpa	100,000						

Coated spherical operating costs (US\$/t)					
Flake concentrate FOB (MOZ)	300				
Spheroidization & coating (USA)	3200				
TOTAL: Coated Spherical Graphite OPEX	3500				

Flake concentrate operating costs (US\$/t)					
Mining	59				
Processing	90				
Transport (2)	105				
Administration and Sustaining Capital	46				
TOTAL: Flake Graphite OPEX	300				

- (1) Inclusive of haul roads, ROM pad, camp and tailings storage facility
- (2) Inclusive of trucking costs to the Port of Pemba
- (3) The Concept study includes Inferred Resources (55%) and Indicated Resources (45%.) Please refer Cautionary Statements on page 2.
- (4) The Company has provided key inputs to CAPEX



## The Benchmark Established in Mozambique





Flagship Project	Balama (Mozambique)	Montepuez and Balama (Mozambique)
Drill assays	287.5m at 10.1% TGC	169.1m at 10.8% TGC
<b>Dominant Flake Size</b>	Very Fine to Fine	Large to Jumbo/ Super Jumbo
Resource	1.15Bt at 10.2% TGC	Montepuez: 61.6Mt at 10.3% TGC Balama: 16.3Mt at 10.4%TGC
Status	Development	Feasibility in progress
Off-take	Chalieco Marubeni	In discussions
<b>Current Share Price</b>	\$4.07	\$0.060
Market Cap	\$941.3m	\$12.7m

Share prices as at18 March 2016

A resource in excess of 50 MT is unnecessary to support a world class graphite mine, and excessive to production requirements

Low OPEX and a quality graphite is key – MTA's project have these credentials

MTA's larger flake size equates to high purity of final product & better margins when compared to smaller flake size

Under these parameters MTA represents a cheap entry into a world class graphite province and graphite resource





# **The Operating Landscape - Mozambique**



### **Mozambique - Snapshot**

#### **OVERVIEW**

Stable multi-party democracy since 1994 Population - 27 million

#### **ECONOMY**

One of Africa's five fastest growing economies and consistent Growth expected to remain at 7-9%p/a; next 5 years

#### STRATEGIC POSITION

Access to markets – China, India as well as Europe Strategic access to markets in SADC - 270m people

#### ECONOMIC AND INDUSTRIAL GROWTH

#### POWER AND INFRASTRUCTURE

 Capex intensive projects in energy / roads / ports / housing driven by resource exploration

#### **CAPITAL INTENSIVE INVESTMENTS IN NATURAL RESOURCES**

- Development of significant mineral resources
- Significant exploration of onshore gas reserves
- Offshore Liquefied Natural Gas production scheduled for 2020 likely to increase GDP per capita from \$650 in 2015 to \$4500 in

### **ECONOMIC GROWTH**

- Fuelled by growing oil and gas sector and market-friendly government policies

### **RESOURCES**

Energy - Hydro, Gas and Thermal Minerals - Coal, Gold, Graphite, Heavy Sands, Rare Earths, Precious Stones

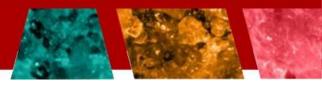




2035

Industry growth

### **Mozambican - Foreign Direct Investment**



Foreign Direct Investment – 2009-2014 \$31bn (\$4.9bn in 2014)

\$1.5bn non-concessional loans for infrastructure in process

Credit Rating (Fitch) B-; Outlook stable **Corporate Tax** - 32%

### Investment Incentives / protection

- Legal protection for investors (incl. property/intellectual rights)
- No restrictions on loans/interest payments abroad
- Multilateral Investment Guarantee Agency (MIGA) plus Overseas Private Investment Corporation (OPIC) insurance on investment risk
- Tax incentives for projects (exemption from payment of customs duties and VAT and tax credit for 5 fiscal years)

MEGA PROJECTS (1998 – 2013)								
Company	Investment	Project						
BHP Billiton (1998)	\$2.2 bn	Aluminium Smelter (1-3)						
SASOL (2002)	\$1 bn	Pande and Temane (PSA + PPA) On shore gas						
KENMARE (2004)	\$330 m	Titanium and Zircon						
Vale (2007)	USD 4.4 bn	Moatize Coal mine and related Infrastructure						
Anadarko + ENI (2009)	\$40 bn	Areas 1 + 4 – LNG						
SASOL (2012)	\$800 m	Phase 4 – Off shore gas						
JSPL (2013)	\$300 m	Chirodzi Coal mine						
Gigawatt Mozambique (2013)	\$235 m	Gas fired power station						

**Sovereign risk:** Near-term liquidity challenges due to increase of public debt to 55% of GDP in 2014 and fall in mineral prices, however strong growth is anticipated over the long term to support sovereign risk rating

**Regulatory:** Mozambique's mining law revised in 2014 guaranteeing security of tenure and allowing companies to repatriate profits

Further pro-business reforms including deregulation and decentralisation of political power anticipated



### Project Locations, Logistics and resulting cost benefits

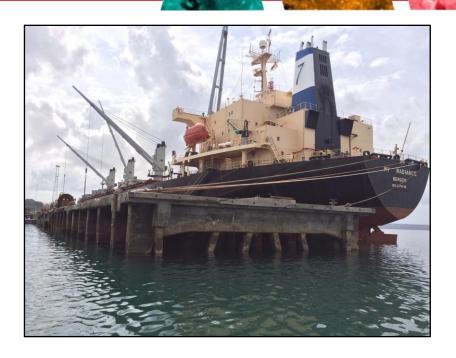
- Located in the world class graphite province of Cabo Delgado, Mozambique
- Province hosts more graphite than the rest of the world's graphite resources combined
- The Projects are located about 260km west of the port city of Pemba
- 200km of the 260km is on a well maintained sealed bitumen highway
- There are no communities or agriculture located on the Montepuez Project license
- Concept Study predicts very low OPEX compared to the rest of the world - due to a combination of favourable logistics and high grade/quality





### Port Pemba as a potential exit point

- Existing port facility can accommodate potential concentrate production of 100,000 tpa <sup>(1)</sup>
- Existing port accommodates Handymax ships
- Stockpile facility near Port has been identified
- New, expanded multi-user port facility located a few kilometres from existing port currently under construction
- Mozambique boasts the deepest ports in East Africa



#### 1. Cautionary Statement

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# The Spherical Graphite Market Dynamics and Opportunity

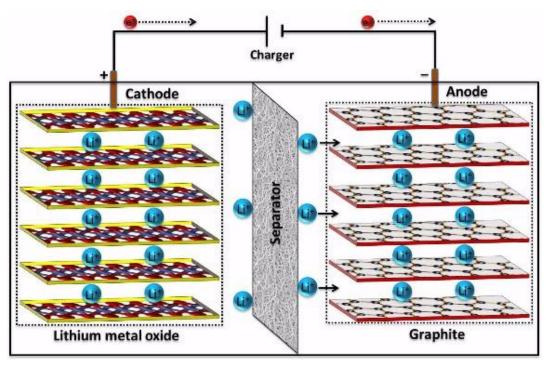


## **Spherical Graphite – Critical for LiB**

- The Li-ion battery (LiB) positive terminal (cathode) is composed of Lithium and other metals. The Li-ion battery negative terminal (anode) is composed of graphite
- MTA is focused on developing flake graphite to anode ready material spherical graphite
- There is about 4x more graphite than lithium used to make each Lithium Ion battery
- Low OPEX and high purity > large flake graphite supply is very limited
- Green technologies are driving graphite demand

Graphite is also a key component of vanadium redox battery technology (large scale energy

storage)



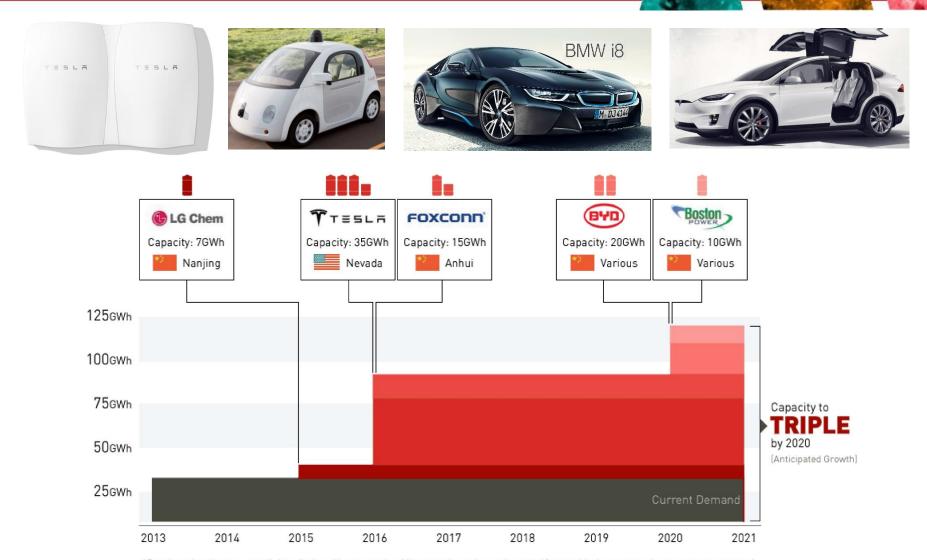


## Graphite plays a vital role in clean energy

- Reliable, cheap sources of high quality graphite concentrate is a key factors supporting Rapid growth of the market for electric vehicles (EV's) Rapidly growing Energy Storage System (ESS) market
- Global ESS market will be worth about US\$34bn by 2023
- A key catalyst graphite demand/further growth is driven from Li-ion batteries (LiB)
- Tesla, LG, Samsung, LG, Panasonic, Google, BMW are at the forefront of this paradigm shift
- LiB use high purity spherical (natural) graphite and/or synthetic graphite
- Synthetic graphite currently dominates the LiB anode market; mega factories are transitioning to natural graphite due to cost savings
- Average li-ion battery prices fell 53% between 2012 and 2015, and by 2019 IHS forecasts they will decline by half again – largely driven by natural/cheaper input material
- Globally significant enterprises and governments (China/USA) are publically promoting battery storage/green energy initiates and EV use
- These types of policy change will significantly increase battery demand
- Battery related Graphite demand is anticipated to increase by about 40% pa



# Lithium-Ion battery megafactories are coming



<sup>\*</sup>Benchmark estimates, not all data disclosed by companies \*\*Instant planned capacity stated for graphical purposes, slower ramp up expected

Source: Benchmark Mineral Intelligence, 2015



### **The Spherical Graphite Process**

- Spherical graphite is a physically and chemically altered form of graphite that is optimal for use in anodes for Li-ion batteries. The rounded shape allows for more efficient packaging of particles which increases the energy capacity of the anode
- An opportunity exists to create a spherical graphite facility located outside China
- Spherical test work along with technical and regulatory due diligence is underway
- Spherical graphite derived from natural graphite is produced at approximately 1/3 the cost of synthetically produced spherical graphite
- This cost saving is incentivising end-users to increase the natural Vs synthetic ratio in products in order to drive consumer prices down whilst maintaining profit margins
- Lithium ion battery end users typically seek 94-95% first cycle efficiency. Higher that this range disrupts the cathode/anode ratio therefore is not optimum.

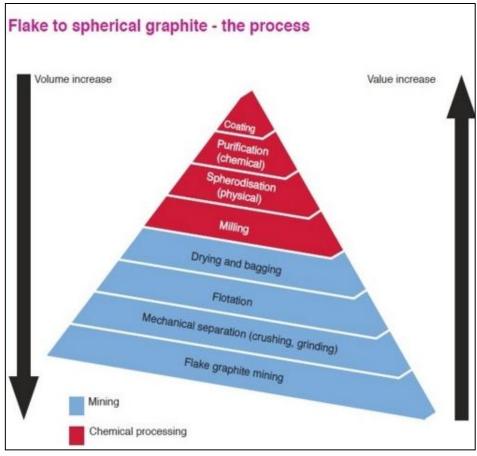


Image Source: Industrial Minerals



# The Spherical Graphite Value Add Equation

### **Indicative Current Market Prices**

indicative Current Market Frices								
	Amorphous <75um	Fine <75-150um	Medium <150-180um	Large <180-300um	Jumbo >300um			
FLAKE SIZE								
						<b>OPEX USD</b>		
USD PRICE GUIDE P/T (94-97% Concentrate)	\$550	\$900	\$1,100	\$1,250	\$2,200	\$300		
RESOURCE DISTRIBUTION	15.5%	20.7%	7.5%	23.5%	32.7%			
99.95%C	Co	oated spheri	cal graphite (fo	r Li-ion applicat	ion)	\$3200		
USD PRICE GUIDE P/T		<b>\$5,000</b> - <b>\$</b> 1	L <b>0,000 (MTA</b> is	using USD\$700(	) average)			

**General Current Market Pricing (independent pricing source: Industrial Minerals 2015)** 

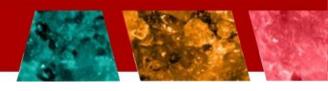




# **Clear Development Pathway**



# **Potential development pathways**



		20	16			2017			2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Balama Resource Estimate										
Balama Concept Study										
Montepuez Pre Feasibility Study										
Environmental Impact Study										
Metallurgical Test work										
Spherical Graphite Test work										
End-user product test work										
Off-take Agreements										
Project Finance										
Detailed Design										
Engineering and Plant Construction										
Mining Approval										





# **Social Responsibility and Country Engagement**



# Committed to making a positive difference

### Examples of our ongoing local initiatives include:

- Opening and repair of water bores/wells
- Repair of roads and schools
- Commitment to training and development of local labour and staff
- Government geologists training program
- Proud sponsor of a local soccer team
- Hygiene education program









Cherie Leeden

Managing Director

Metals of Africa Limited

E: admin@metalsofafrica.com.au



### Balama Central JORC Resource Statement, exploration target and Flake size

			ohite Project	ataran 1900 ay	
	March 2016 Mi	neral Resourc	e Estimate (6	6% TGC Cut-off)	
		Indic	ated Mineral F	Resource	
Type	Tonnage	TGC	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite	Cont. V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	kt	kt
Weathered	2.1	9.9	0.17	205	4
Primary	6.9	9.2	0.15	631	11
Total	8.9	9.3	0.16	836	14

	Inferred Mineral Resource								
Type	Tonnage Mt	TGC %	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite kt	Cont. V <sub>2</sub> O <sub>5</sub>				
Weathered	2.0	12.2	0.27	244	5				
Primary	5.3	11.7	0.28	619	15				
Total	7.3	11.8	0.27	863	20				

	Total Mineral Resource								
Type	Tonnage Mt	TGC %	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite kt	Cont. V <sub>2</sub> O <sub>5</sub>				
Weathered	4.1	11.0	0.22	449	9				
Primary	12.2	10.3	0.21	1,250	25				
Total	16.3	10.4	0.21	1,699	34				

### November 2015 Mineral Resource Estimate (6% TGC Cut-off) Notes:

Note:

- 1. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis.
- 2. Flake sizes for the Mineral Resource are tabulated in Tables 2 to 4 below.
- 3. The Statement of Estimates of Mineral Resources has been compiled under the supervision of Mr. Robert Dennis who is a full-time employee of RPM and a Member of the AusIMM and AIG. Mr. Dennis has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).
- 4. All Mineral Resources figures reported in the table above represent estimates at 14th March, 2016. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate. Rounding may cause some computational discrepancies.
- 5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code - JORC 2012 Edition).
- 6. Reporting cut-off grade selected based on other known economically viable deposits around the world.
- 7. TGC = total graphitic carbon.

### **Balama Central Graphite Project Exploration Target**

	Tonnage Range	Grade Range	Cont. Graphite
Domain	Mt	TGC %	Range Mt
High Grade	17 to 31	13 to 19	2.2 to 5.9
Medium Grade	26 to 47	6 to 9	1.6 to 4.2
Total	43 to 78	9 to 13	3.8 to 10.1

Table 2 - Lennox Weathered Flake Size Classification										
Classification	Sieve Size (µm)	% in Interval	Cumulative %							
Jumbo	>300	32.8	32.8							
Large	180-300	18.7	51.5							
Medium	150-180	5.8	57.4							
Fine	75-150	16.7	74.1							
Very Fine	<75	25.9	100.0							

Table 3	- Lennox	Primary	Flake	Size	Classification

Classification	Sieve Size (µm)	% in Interval	Cumulative %
Jumbo	>300	34.7	34.7
Large	180-300	19.3	54.0
Medium	150-180	5.7	59.7
Fine	75-150	16.4	76.1
Very Fine	<75	23.9	100.0

Table 4 - Lennox Combined Flake Size Classification

rable 4 Lennox Combined Flake Cize Classification									
Classification	Sieve Size (µm)	% in Interval	Cumulative %						
Jumbo	>300	33.8	33.8						
Large	180-300	19.1	52.8						
Medium	150-180	5.7	58.6						
Fine	75-150	16.6	75.1						
Very Fine	<75	24.9	100.0						



## Balama Central JORC Resource - Cut-off grade chart

#### **Balama Graphite Project** March 2016 Mineral Resource Estimate

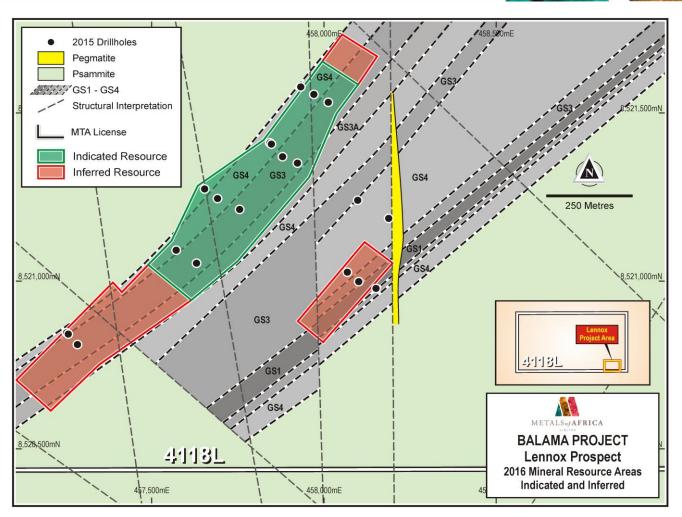
Grade		Incr	emental R	esource		Cut-off		Cur	nulative R	esource	
Range	Tonnes	TGC	$V_2O_5$	Contained	Contained	Grade	Tonnes	TGC	V <sub>2</sub> O <sub>5</sub>	Contained	Contained
TGC%	t	%	%	Graphite (t)	Vanadium (t)	TGC%	t	%	%	Graphite (t)	Vanadium (t)
1.0 - 2.0	13,477	1.79	0.03	241	4	1	35,795,292	7.29	0.14	2,609,203	49,874
2.0 - 3.0	1,764,208	2.81	0.06	49,654	1,088	2	35,781,815	7.29	0.14	2,608,962	49,870
3.0 - 4.0	2,948,894	3.54	0.07	104,289	2,100	3	34,017,607	7.52	0.14	2,559,308	48,783
4.0 - 5.0	6,369,403	4.56	0.08	290,286	4,898	4	31,068,713	7.90	0.15	2,455,019	46,682
5.0 - 6.0	8,438,688	5.52	0.09	465,744	7,630	5	24,699,310	8.76	0.17	2,164,733	41,784
6.0 - 7.0	7,115,854	6.48	0.11	461,131	7,520	6	16,260,622	10.45	0.21	1,698,989	34,155
7.0 - 8.0	2,231,995	7.35	0.12	163,987	2,719	7	9,144,768	13.54	0.29	1,237,858	26,635
8.0 - 9.0	365,188	8.35	0.13	30,483	463	8	6,912,773	15.53	0.35	1,073,871	23,916
9.0 - 10.0	10,415	9.11	0.11	949	12	9	6,547,585	15.94	0.36	1,043,388	23,453
10.0 - 11.0	0	0.00	0.00	0	0	10	6,537,170	15.95	0.36	1,042,439	23,442
11.0 - 12.0	2,239,835	11.74	0.42	263,009	9,452	11	6,537,170	15.95	0.36	1,042,439	23,442
12.0 - 13.0	0	0.00	0.00	0	0	12	4,297,335	18.14	0.33	779,430	13,990
13.0 - 14.0	0	0.00	0.00	0	0	13	4,297,335	18.14	0.33	779,430	13,990
14.0 - 15.0	3,979	14.69	0.23	585	9	14	4,297,335	18.14	0.33	779,430	13,990
15.0 - 20.0	3,880,419	17.86	0.32	693,212	12,264	15	4,293,356	18.14	0.33	778,845	13,981
> 20.0	412,937	20.74	0.42	85,633	1,716	20	412,937	20.74	0.42	85,633	1,716
Total	35,795,292	7.29	0.14	2,609,203	49,874					76 Es	

#### Note:

- 1. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis.
- 2. Flake sizes for the Mineral Resource are tabulated in Tables 2 to 6 below.
- 3. The Statement of Estimates of Mineral Resources has been compiled under the supervision of Mr. Robert Dennis who is a full-time employee of RPM and a Member of the AusIMM and AIG. Mr. Dennis has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).
- 4. All Mineral Resources figures reported in the table above represent estimates at 21 March 2016. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate. Rounding may cause some computational discrepancies.
- 5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).
- 6. Reporting cut-off grade selected based on other known economically viable deposits in the region. For further details, refer to grade tonnage information contained within Table 7 above.
- 7. TGC = total graphitic carbon.



### **Balama: Lennox Prospect**

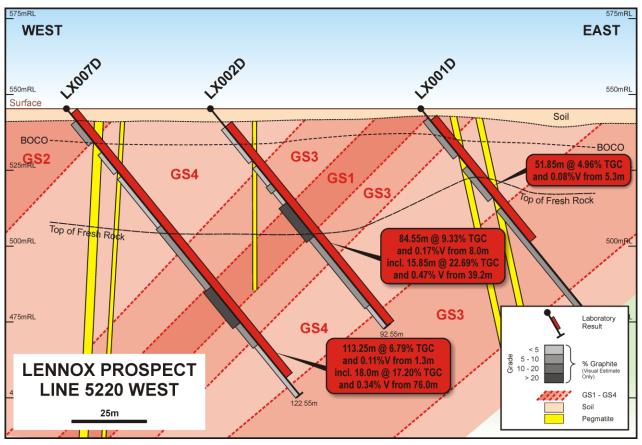


**Appendix Figure 1.** Figure 1 provides the Inferred and Indicated Mineral Resource polygon for the Lennox prospect with a simplified surface geology map showing a large area to the west of mapped graphitic schist which is yet to be drill tested and is coincident with a VTEM conductor target. Further drilling is required to test portions of the VTEM



### **Balama: Lennox Prospect**

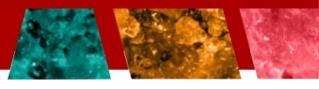


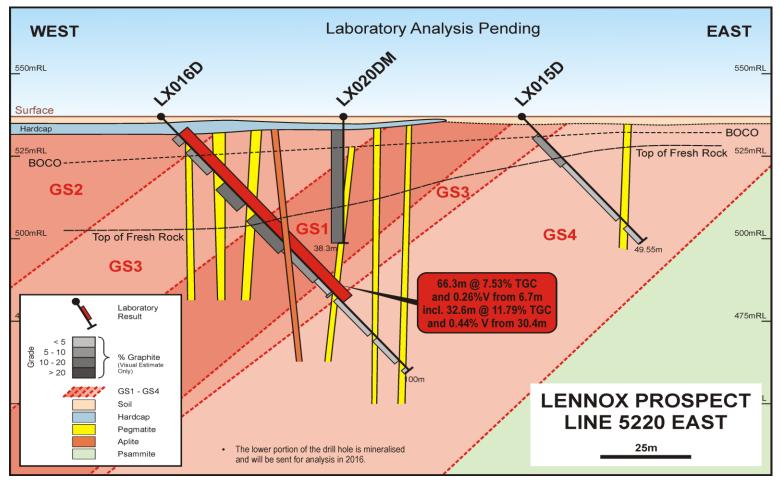


Appendix Figure 2. Geological cross Section of the Lennox Prospect section line 5220 Central –
Discovery Section sub cropping GS3 mineralisation within a creak line



### **Balama: Lennox Prospect**

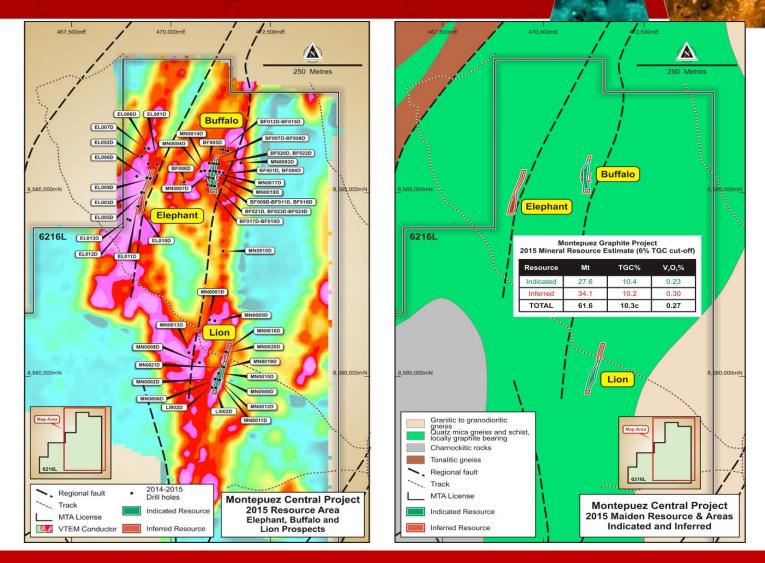




Appendix figure 3. Geological cross Section of the Lennox Prospect high priority target for 2016 section line 5220



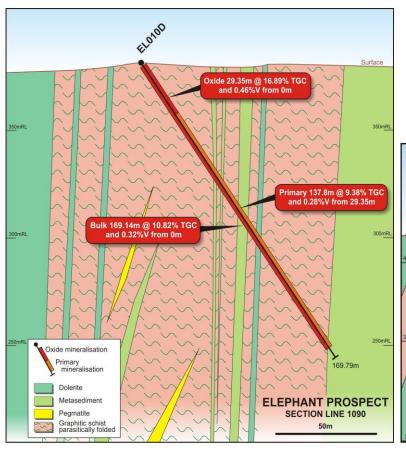
# Montepuez: Drilling tested only 5% of prospective geology



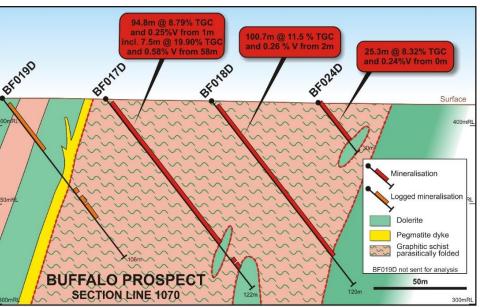
60 diamond holes for 6,450 metres



## **Montepuez: Elephant and Buffalo Resources**



- Excellent grade (>10% TGC)
- At surface = cheap mining
- Mineralisation remains open in every direction



100% owned tier 1 graphite resource in the world's richest graphite province



# **Montepuez JORC Resource Statement**

#### Montepuez Graphite Project

#### November 2015 Mineral Resource Estimate (6% TGC Cut-off)

		7/4	Indic	ated Mineral R		
Deposit	Туре	Tonnes Mt	TGC %	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite Mt	Cont. V₂O₂ Kt
Duffala	Weathered	2.9	9.8	0.23	0.3	7
Buffalo	Primary	21.0	10.3	0.21	2.2	45
1100	Weathered	0.6	11.4	0.26	0.1	1
Lion	Primary	3.1	11.3	0.32	0.3	10
	Total	27.6	10.4	0.23	2.9	62

		Inferred Mineral Resource							
Deposit	Туре	Tonnes Mt	TGC %	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite Mt	Cont. V <sub>2</sub> O <sub>5</sub> Kt			
Duffele	Weathered	1.1	8.2	0.19	0.1	2			
Buffalo	Primary	3.4	8.8	0.20	0.3	7			
111	Weathered	0.1	12.6	0.34	0.0	0			
Lion	Primary	0.4	12.1	0.34	0.1	1			
Clanboot	Weathered	2.7	10.5	0.32	0.3	9			
Elephant	Primary	26.4	10.3	0.31	2.7	81			
	Total	34.1	10.2	0.30	3.5	101			

		Total Mineral Resource							
Deposit	Туре	Tonnes Mt	TGC %	V <sub>2</sub> O <sub>5</sub>	Cont. Graphite Mt	Cont. V <sub>2</sub> O <sub>5</sub> Kt			
D. #-I-	Weathered	4.0	9.4	0.22	0.4	9			
Buffalo Prima	Primary	24.4	10.1	0.21	2.5	52			
1 tee	Weathered	0.6	11.5	0.27	0.1	2			
Lion	Primary	3.5	11.4	0.32	0.4	11			
Elephant	Weathered	2.7	10.5	0.32	0.3	9			
	Primary	26.4	10.3	0.31	2.7	81			
	Total	61.6	10.3	0.27	6.3	163			

#### Table 2 Buffalo Weathered Material Type Flake Size Classification

Classification	Sieve Size (µm)	% in Interval	Cumulative %		
Very Fine	<75	16.0	100.0		
Fine	75-150	21.6	84.0		
Medium	150-180	8.1	62.4		
Large	180-300	25.2	54.3		
Jumbo	>300	29.0	29.0		

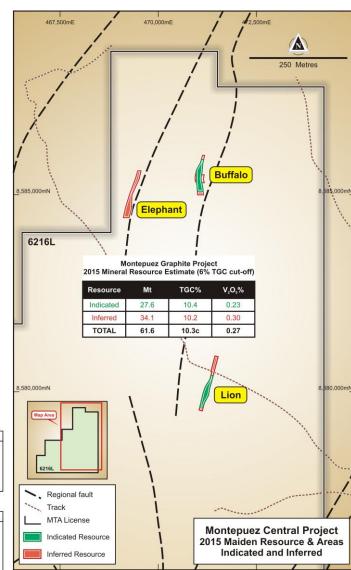
Table 3 bulla	ery Fine <75 11.3 100.0 Fine 75-150 18.8 88.7							
Classification	Sieve Size (µm)	% in Interval	Cumulative %					
Very Fine	<75	11.3	100.0					
Fine	75-150	18.8	88.7					
Medium	150-180	7.8	69.9					
Large	180-300	24.6	62.1					
Jumbo	>300	37.5	37.5					

lable 4 Lion V	Fine <75 20.6 100.0 ine 75-150 22.8 79.4							
Classification	Sieve Size (µm)	% in Interval	Cumulative %					
Very Fine	<75	20.6	100.0					
Fine	75-150	22.8	79.4					
Medium	150-180	7.9	56.6					
Large	180-300	23.2	48.7					
Jumbo	>300	25.5	25.5					

Classification   Sieve Size (µm)   % in Interval   Cumulative %									
Very Fine	<75	16.0	100.0						
Fine	75-150	20.6	84.0						
Medium	150-180	6.6	63.3						
Large	180-300	21.7	56.8						
Jumbo	>300	35.1	35.1						

Table 6 Combined	Montepuez	Project	Flake	Size	Classification

Table 6 Combined Montepuez Project Flake Size Classification									
Classification	Sieve Size (µm)	% in Interval	Cumulative %						
Very Fine	<75	15.5	100.0						
Fine	75-150	20.7	84.5						
Medium	150-180	7.5	63.8						
Large	180-300	23.5	56.3						
Jumbo	>300	32.7	32.7						





## Montepuez JORC Resource – Cut-off grade chart

### Montepuez Graphite Project November 2015 Mineral Resource Estimate

Grade		Incremental Resource					Cumulative Resource				
Range	Tonnes	TGC	V <sub>2</sub> O <sub>5</sub>	Contained	Contained	Grade	Tonnes	TGC	V <sub>2</sub> O <sub>5</sub>	Contained	Contained
TGC%	t	%	%	Graphite (t)	Vanadium (t)	TGC%	t	%	%	Graphite (t)	Vanadium (t)
1.0 - 2.0	80,302	1.97	0.05	1,582	44	1	83,527,774	8.81	0.23	7,357,009	190,620
2.0 - 3.0	1,396,495	2.55	0.06	35,639	887	2	83,447,472	8.81	0.23	7,355,427	190,576
3.0 - 4.0	2,653,909	3.69	0.09	97,805	2,466	3	82,050,977	8.92	0.23	7,319,788	189,689
4.0 - 5.0	7,529,132	4.53	0.12	340,970	9,296	4	79,397,068	9.10	0.24	7,221,983	187,223
5.0 - 6.0	10,245,400	5.50	0.14	563,119	14,849	5	71,867,936	9.57	0.25	6,881,012	177,927
6.0 - 7.0	7,146,042	6.51	0.17	465,033	12,497	6	61,622,536	10.25	0.26	6,317,894	163,079
7.0 - 8.0	7,505,020	7.54	0.20	566,217	14,861	7	54,476,494	10.74	0.28	5,852,861	150,582
8.0 - 9.0	8,431,197	8.52	0.22	718,663	18,307	8	46,971,474	11.26	0.29	5,286,644	135,721
9.0 - 10.0	10,464,986	9.53	0.23	997,611	24,367	9	38,540,277	11.85	0.30	4,567,981	117,415
10.0 - 11.0	9,586,488	10.47	0.26	1,003,564	25,024	10	28,075,291	12.72	0.33	3,570,370	93,048
11.0 - 12.0	5,790,582	11.51	0.29	666,225	16,595	11	18,488,803	13.88	0.37	2,566,806	68,024
12.0 - 13.0	3,523,078	12.38	0.31	436,144	10,973	12	12,698,221	14.97	0.41	1,900,581	51,428
13.0 - 14.0	2,104,757	13.44	0.36	282,811	7,583	13	9,175,143	15.96	0.44	1,464,437	40,455
14.0 - 15.0	2,488,293	14.81	0.46	368,471	11,403	14	7,070,386	16.71	0.46	1,181,626	32,872
15.0 - 20.0	4,101,168	17.47	0.47	716,360	19,148	15	4,582,093	17.75	0.47	813,155	21,469
> 20.0	480,925	20.13	0.48	96,796	2,321	20	480,925	20.13	0.48	96,796	2,321
Total	83,527,774	8.81	0.23	7,357,009	190,620						

#### Note:

- 1. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis.
- 2. Flake sizes for the Mineral Resource are tabulated in Tables 2 to 6 below.
- 3. The Statement of Estimates of Mineral Resources has been compiled under the supervision of Mr. Robert Dennis who is a full-time employee of RPM and a Member of the AusIMM and AIG. Mr. Dennis has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).
- 4. All Mineral Resources figures reported in the table above represent estimates at 12<sup>th</sup> November, 2015. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate. Rounding may cause some computational discrepancies.
- 5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).
- 6. Reporting cut-off grade selected based on other known economically viable deposits in the region. For further details, refer to grade tonnage information contained within Table 7 above.
- 7. TGC = total graphitic carbon.

