

#### The World's Pre-eminent Graphite Resource

#### Credit Suisse – 20<sup>th</sup> Annual Asian Investment Conference

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### **Our vision and values**

Syrah's vision is to be the **leading supplier** of **superior quality graphite products**, working closely with our customers and supply chain to innovate and bring **enhanced value** to **industrial** and **emerging technology markets** globally.

#### Syrah is committed to:

- WORKING SAFELY at all times
- PARTNERING WITH STAKEHOLDERS for community and environmental sustainability
- **INTEGRITY** and **FAIRNESS** in all our business dealings
- Being **ACCOUNTABLE** for all our decisions and actions
- **SETTING GOALS** and supporting people to achieve them

We will work as a team and act as owners.



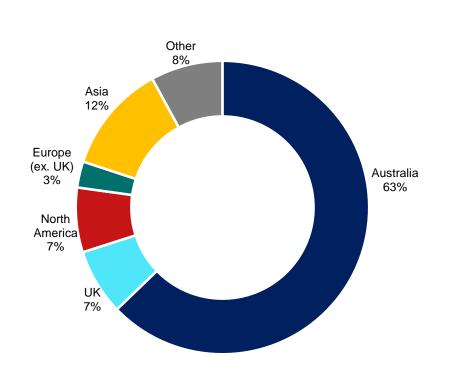


### **Capital structure**

#### **Key details**

Shares on issue (as at 17 January 2017)	263.8m
Options on issue (as at 2 December 2016)	8.7m
Unlisted performance rights (as at 2 December 2016)	0.3m
Undiuted market capitalisation (Share price of US\$2.57 as at 2 December 2016)	US\$678.0m
Cash as at 31 December 2016	US\$163.3m
Debt as at 31 December 2016	Nil
Enterprise value	US\$514.7m

#### **Geographic analysis of investors**<sup>(1)</sup>





Source: Company filings, IRESS

(1) As at 8 March 2017

## What is graphite?

- Graphite is a grey crystalline allotropic form of carbon and is known for its electrical **conductivity**, **lubrication** and **resistance** to corrosion and high temperatures.
- Graphite ore is mined and then processed via simple flotation before being dried and classified into a **high grade concentrate** for sale to end users
- □ Natural graphite is beneficiated graphite concentrate (typically 90% to 95% total graphitic carbon) that is then sized and screened into various mesh sizes (large flake and fine flake) for industrial applications
- **Spherical graphite** is fine flake concentrate that is milled into spherules, purified to at least 99.95% carbon and then coated with a layer of carbon for battery anode applications









## Syrah's integrated supply chain will service traditional industrial and growth battery markets from start up



Balama ore (Mozambique)



#### Processing

- Grindina
- Flotation
- Screening
- Bagging



Export





#### **Traditional markets**

- Refractory
- Lubricants
- Recarburisers

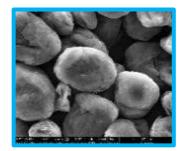


#### Lithium ion battery

- Electric vehicles -
- Grid storage -



**Direct sales to spherical** graphite producers



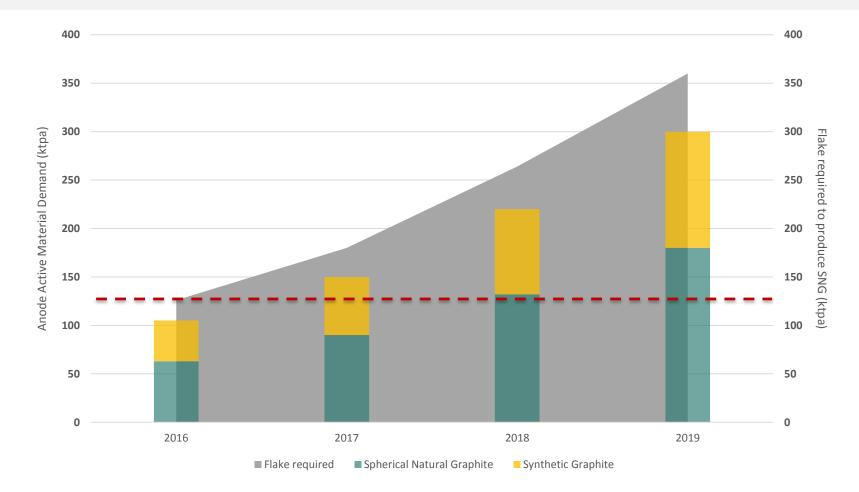
**Battery Anode Material** (BAM) Commercial Facility (Louisiana)

**Spheroidisation** Purification



Coating

## Battery anode material (BAM) demand projections far exceed supply; 117kt shortfall (or 234kt of flake graphite) by 2019



(1) Benchmark Minerals 2016

- (2) 1 tonne of anode material = 1 tonne of spherical graphite
- (3) 2 tonnes of flake graphite is required to produce 1 tonne of spherical graphite



## Traditional and developing markets for graphite offer a multi-channel marketing opportunity

#### **Traditional markets**

- Refractories act as protective insulating materials in industrial processes which involve extremely high temperatures, corrosive and abrasive environments
- Lubricants used to reduce friction between moving surfaces e.g. additive in petroleum oil or aerosol
- □ Industrial products devices, shapes and products e.g. brake pads, pencils and graphite foils
- Recarburisers carbon additive used to increase the carbon content of steel up to the required specification for different applications
- Lead acid batteries used in the electrodes as an electrically conductive additive to help extend the battery's life-cycle and improve the charging process

#### **Developing markets**

- Battery anode materials coated spherical graphite is used in the manufacture of anodes in lithium ion batteries for electric vehicle and energy storage applications
- **Expandable graphite** used as a fire retardant and to prevent oxidation and heat loss in metallurgical application



## Across the graphite value chain, a consistent, high quality supplier can capture attractive margins

	Flake Graphite	Uncoated Spherical	Coated Spherical	
Products				
Cost	US\$300/t	US\$2,300/t <sup>(1)</sup>	US\$3,200/t <sup>(2)</sup>	
Current Price	US\$575/t - US\$1,100/t <sup>(3)</sup>	US\$2,800/t - US\$4,000/t <sup>(4)</sup>	US\$7,000/t - US\$10,000/t <sup>(1)</sup>	
	Mozambique	Louisiana		

Syrah's strategy is to capture enhanced value by positioning itself as the leading, high quality and consistent supplier to the high growth technology markets.

- (1) Based on Syrah's market inquiries
- (2) Syrah internal economic assessment refer to ASX announcement dated 18<sup>th</sup> June 2015 for coated figures
- (3) Based on Benchmark Minerals 2017 price data
- (4) Based on Benchmark Minerals 2017 price data for 15µm (D50) spherical graphite product



## Balama production is skewed towards growth markets, and Marketing is progressing strongly

**100%** of production from Balama will be crystalline flake graphite

- The Balama processing plant will have the flexibility to meet customer requirements and respond to market demand for particular product specifications
- Partnerships with major end users and key regional commodity traders
- Technology markets (lithium ion battery applications) require -100 mesh graphite with high purity (TGC) providing premium pricing

	Balam			
Mesh Size	μm	Average Size Distribution (%) <sup>(1)</sup>	Expected Production (Kta) <sup>(2)</sup>	Applications
+50	>300	8.5%	30	
+80	<300 to >180	12.0%	43	Industrial uses (e.g. Steelmaking, iron castings, foundries, automotive parts, lubricants etc.)
+100	<180 to >150	11.5%	41	lubileants ctc.)
-100	<150	68.0%	241	Spherical graphite (i.e. lithium ion batteries), recarburiser products and steelmaking

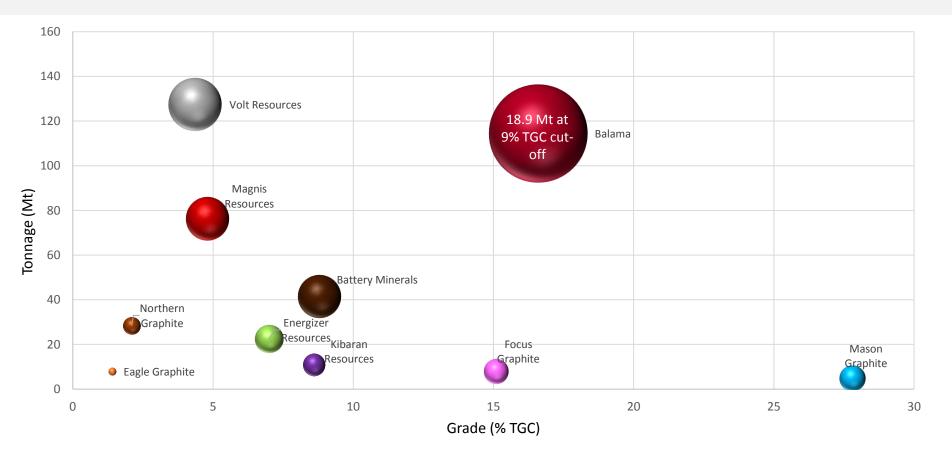
(1) Average estimated size distribution over the LOM based on Snowden Feasibility Study. Refer to "Balama Feasibility Study and Corporate Presentation" as announced to ASX on 29 May 2015 for relevant assumptions and qualifications to the conclusions of this study.

(2) Average estimated production over the first 10 years of the project based on Snowden Feasibility Study. Refer to "Balama Feasibility Study and Corporate Presentation" as announced to ASX on 29 May 2015 for relevant assumptions and qualifications to the conclusions of this study.



# Balama Project

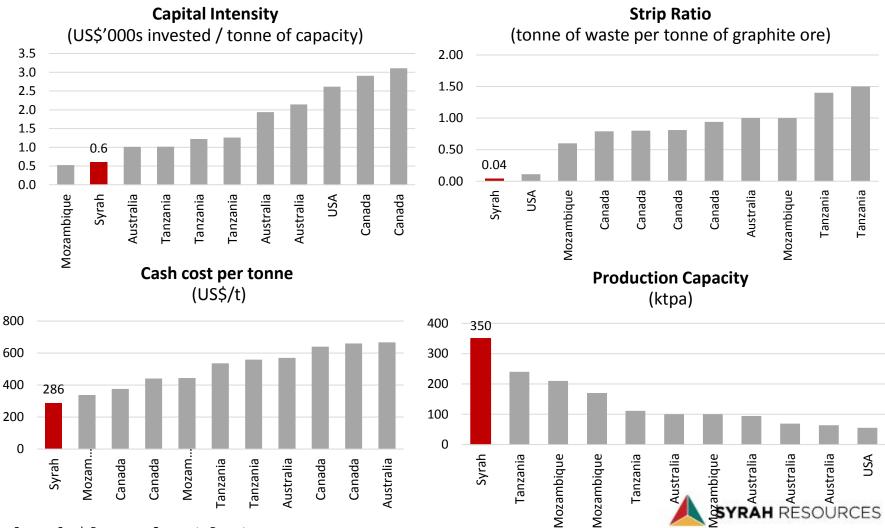
### Balama Ore Reserves substantially exceed listed<sup>1</sup> potential projects by grade and volume



- ASX and TSX listed projects only and excludes Chinese producers (1)
- (2) Cut-off grade for Northern Graphite (Ontario, Canada) is 1% TGC
- (3) Cut-off grade for Energizer Resources (Madagascar) is 4.5% TGC
- (4) Cut-off grade for Kibaran Resources (Tanzania) is 5% TGC
- (5) Cut-off grade for Battery Minerals (Mozambique) is 4.4% TGC
- Cut-off grade for Focus Graphite (Quebec, Canada) is 3.1% TGC (6)
- (7) Cut-off grade for Mason Graphite (Quebec, Canada) is 6% TGC
- Cut-off grade for Volt Resources (Tanzania) is 1.3% to 1.8% TGC (8)
- (9) TGC = Total graphitic carbon



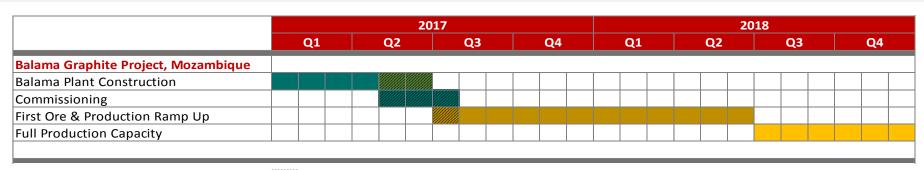
## Four project assessment metrics highlight how attractive Balama is against competing projects



Source: Syrah Resources, Corporate Reports

Note: Competitor location based on location of potential mine, not company headquarters

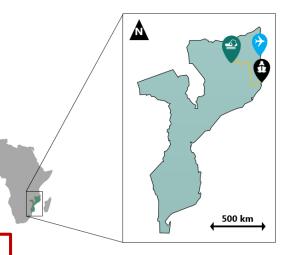
## Balama is fully funded and imminent commissioning allows customers to establish baseload supply



Overlap between tail end of construction, start of commissioning and first production

- Overlap of construction tail does not impact the schedule for commissioning or first production
- Rapidly developing the world class Balama Project located in Mozambique
- Balama Project remains on schedule for commissioning in Q2 2017 and first production in Q3 2017

Balama will be the **solution** for end users demanding a **consistent** and **high quality** source of supply.





## **Summary of Balama Project features**

Reserves and Resources <sup>(1)</sup>	<ul> <li>Reserves: 114.5Mt at 16.6% TGC (18.6Mt contained graphite)</li> <li>Resources: 1,191Mt at 11.0% TGC (128.5Mt of contained graphite)</li> </ul>
Mining Method	Simple open pit operation 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
Processing rate	2 Mtpa
Product	95% to >98% TGC concentrate to be produced across a range of flake sizes
Production	Nameplate capacity of 380,000 tonnes of graphite concentrate per annum
Total cash operating costs	Average ~US\$286 per product tonne (FOB Port of Nacala) over life of mine
Life of mine	Almost 60 years

(1) Refer ASX announcements dated 29 May 2015 and 29 November 2016



## Low risk and low cost mining drives a significant competitive advantage

- Conventional **truck** and **shovel** mining methods
- Mining 2Mtpa at a very low average strip ratio of 0.04:1 projected over the life of mine
  - Strip ratio is inclusive of economic low grade ore (> 2% to < 9% TGC) which will be stockpiled for processing in the future</p>
  - Approximately 2 million tonnes of low grade (> 2% to < 9% TGC) material will be stockpiled per annum over the first 10 years of operations
- Following completion of open pit mining at Balama West, operations will shift to the pits in Balama East followed by Mualia
- Sufficient Ore Reserves to support operations for almost 60 years of production and provides opportunity for both mine life extensions and production increases
- Syrah's Mining Concession (issued on 6 December 2013) covers a 25 year period and is renewable for a further term of 25 years



### Balama construction is now 70% complete, with commissioning to commence in May 2017

#### **Processing Plant and** Supporting infrastructure



#### **Balama West mining pit**





## Balama construction is now 70% complete, with commissioning to commence in May 2017

- Overall construction progress of the Balama process plant is 70% complete:
  - Engineering and procurement is complete and delivered to site, aside from attrition cells
  - Fabrication of structural steel and plate work is complete and delivered to site
  - Off-site piping fabrication is complete with all deliveries to site nearing completion
  - The main concrete works for the process plant and associated infrastructure is completed aside from some minor works
  - All conveyor systems have been erected with belts ready to be installed along with some electrical instruments



Ore bin (top) and primary mill and flotation (bottom)



## Progress in construction is de-risking completion, and enhancements are on schedule and budget

- Attrition cells have been added to the Balama process plant flow sheet:
  - Increases product quality (>98% TGC across all flake sizes)
  - Reduces downstream processing costs of BAM production
- Project capital cost is US\$193 million (plus US\$7 million contingency):
  - Project budget will be **funded** from the Company's existing cash reserves
  - Progressing US\$50 million debt facility for Balama and general corporate activities, as a conservative contingency





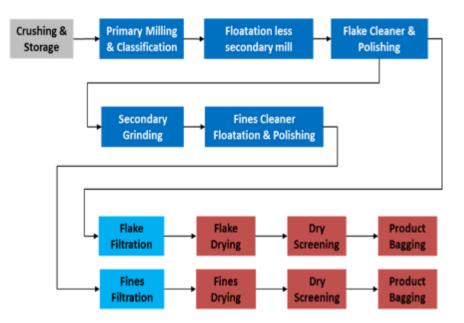
Filtration (top) and drying (bottom)

**Significant progress** in the development of the Balama Project has **materially de-risked** the construction of this asset, positioning Syrah to deliver on its **advantage** as the **early mover** in the sector.



## Balama commissioning will be staged sequentially to commence as section construction completes

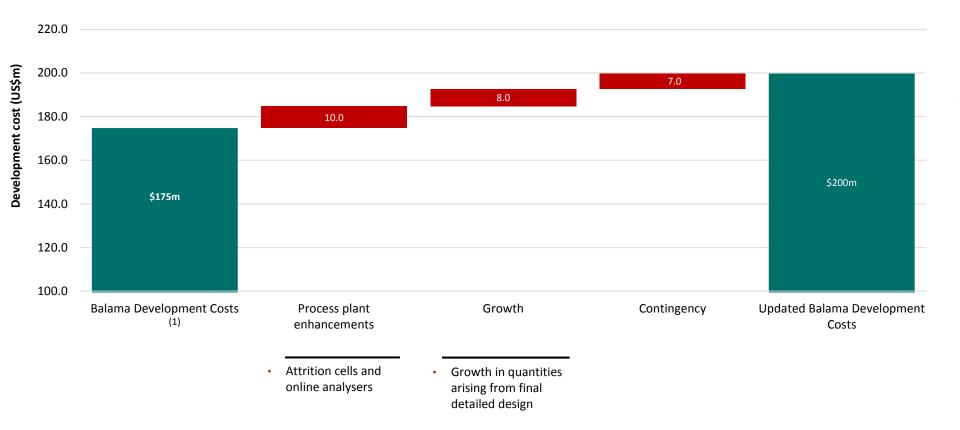
- Wet commissioning of the processing plant remains on schedule for Q2 2017, followed shortly afterwards by ore commissioning
- Commissioning will be staged to be completed in parallel with construction completion
- □ The stages used in the **Commissioning** are **C1** to **C4**:
  - Construction Verification (C0)
  - Dry Commissioning (C1) No-load energisation
  - Wet Commissioning (C2) Running with water and air
  - Ore Commissioning (C3) Initial introduction of ore
  - Optimisation (C4) Tuning to enable capacity and product specifications to be achieved.



Balama ore commissioning sequence overview



## Balama cost increases were primarily due to enhancements and design additions





### Balama flake offtake agreements are in place, with further commercial negotiations well progressed

- Offtake agreement with **Chalieco** for 80ktpa of flake graphite over 3 years
- Offtake agreement with Marubeni for 20ktpa of flake graphite over 3 years
- □ Statement of Sales Intent with a major global refractory producer for 15ktpa of flake graphite
- Statement of Sales Intent with Hiller Carbon for 25ktpa to 35ktpa of natural graphite recarburisers
- MOU in place and commercial discussions in progress with BTR New Energy Materials Inc., the world's largest BAM producer
- □ Further commercial negotiations well progressed in China (battery market), South East Asia and Taiwan (traditional and battery markets), **Europe** (traditional market) and **India** (traditional market)
- Additional value-added product development underway



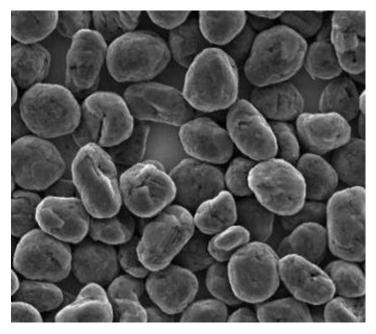
## BAM strategy

### A vertically integrated strategy to capture and shape the market opportunity quickly (announced November 2016)

- Syrah will pursue a multi-channel sales strategy with a presence in flake and battery anode material markets
- Develop a **Commercial BAM Plant** to supply the battery anode market:
  - Initial 20ktpa Louisiana, Commercial Plant for a 60ktpa capacity, using proven technology and processes  $\geq$
  - Leading Engineering Firm appointed to provide technical and engineering support for a Product  $\succ$ Qualification Plant in Louisiana to accelerate sales and cash flows from the Commercial Plant
  - Approvals and permitting processes underway  $\geq$
  - Bankable Feasibility Study (BFS) to commence in H2 2017; debt financing will be sought in parallel with  $\geq$ BFS
  - **Commissioning** scheduled for **Q3 2018**  $\geq$
- Currently conducting test work and generating BAM product samples at a Pilot Plant in China and purification in Perth



- Technology Centre being established in Perth for process training, product optimisation and R&D
- BAM offtake agreements are in place
- Commercial discussions with customers underway regarding sales into the spherical graphite and byproduct markets for Balama -100 mesh graphite prior to production commencement at the Commercial Plant
- Medium term outlook to establish an additional Commercial Plant in Asia that meets demand requirements and optimises profitability

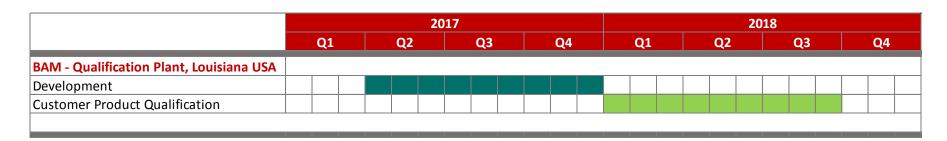


Scanning Electron Microscope (SEM) image of Balama spherical graphite

This strategy accelerates cash flows and profitability from downstream processing whilst minimising risk.



## Establishing a Louisiana Product Qualification Plant will accelerate commerciality

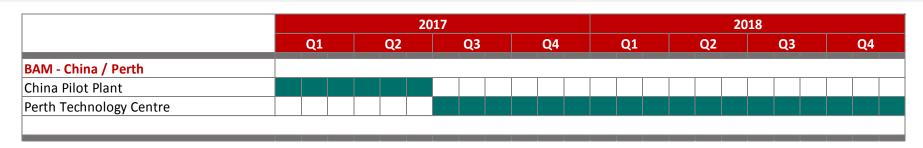


- Detailed design completed and in discussions with US authorities on location and permitting
- □ The plant will consist of a full scale production line
- Necessity for a Qualification Plant:
  - Satisfies customers' timing requirement for commercial scale product qualification (minimum 6 month period) prior to issuing Product Purchase Orders
  - Accelerates sales and cash flows from the Commercial Plant by allowing product qualification and sales to occur prior to the commencement of full production
  - > Pathway to early cash flows through sales to Morgan Hairong for coating Louisiana product in China

USA based **Product Qualification** will **accelerate sales** and **cash flows** from the Commercial Plant by **fast tracking product qualification** by customers



### A Perth based Technology Centre will provide sales and marketing data and optimise process development



Currently specifying **design**, coordinating **spheroidisation** of material and **purification tests** 

- Syrah's spherical graphite milling machines in China will be relocated to Perth in mid-2017:
  - > Process training early training and manual preparation for knowledge transfer to the Commercial Plant
  - > **Optimisation development** ongoing test work to optimise product yields, quality and consistency
- Building out our **proprietary data-bank** which aids our **marketing** and **product development** efforts

Perth based Technology Centre focused on process training and optimisation development.



### **Timetable recap**

	2017				2018				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Balama Graphite Project, Mozambique									
Balama Plant Construction									
Commissioning									
First Ore & Production Ramp Up									
Full Production Capacity									
BAM - Qualification Plant, Louisiana USA									
Development									
Customer Product Qualification									
BAM - Commercial Plant, Louisiana USA		← BFS →							
Development									
Production			<b>←</b>						
BAM - China / Perth									
China Pilot Plant									
Perth Technology Centre									

Overlap between tail end of construction, start of commissioning and first production



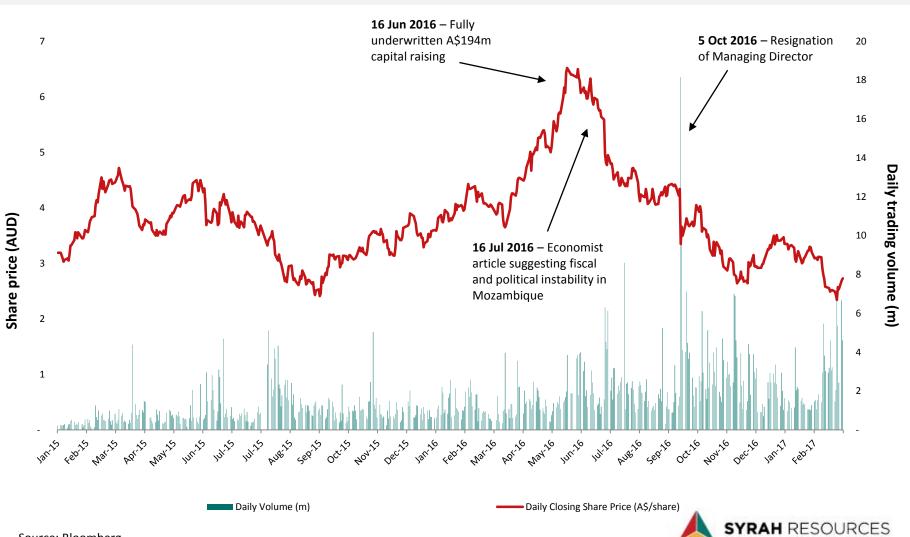


- World's largest high quality graphite resource low cost and baseload supply of flake graphite from Balama and BAM material from downstream operations
- Balama Project remains on schedule for commissioning in Q2 2017 with further sales agreements under negotiation
- Significant potential for higher concentrate grades from Balama to reduce downstream processing costs / increase margins
- Solid Balance Sheet with **no debt**, **fully funded** to deliver the Balama Project
- **Goldson** Focussed on the development of an initial **BAM Commercial Plant** in Louisiana
- Product Qualification will accelerate the pathway to sales and cash flows by allowing product qualification to occur prior to production from the Commercial Plant
- **Given Series and BAM offtake agreements are in place**
- Commercial discussions with customers underway regarding sales into the spherical graphite and by-product markets for Balama -100 mesh graphite prior to production commencement at the Commercial Plant



# Appendices

### **ASX** share price and volume



Source: Bloomberg

### **Board of directors and executive management team**



Jim Askew Non-Executive Chairman Over 40 years of experience as a Director / CEO of Australian and international publicly mining companies



Sam Riggall
Non-Executive Director

Over 20 years of experience in mining project generation and evaluation, business development and capital market transactions



Dr. Christina Lampe-Onnerud Non-Executive Director Founder of Boston Power and over 20 years of experience in

the lithium ion battery sector



Rhett Brans Non-Executive Director Over 40 years experience in the design and construction of mineral processing facilities and extensive African experience



José Caldeira Non-Executive Director Pre-eminent legal and regulatory professional in Mozambique with over 25 years experience



Shaun Verner Managing Director & CEO

Previously a senior sales and marketing executive at BHP Billiton



Darrin Strange Chief Operating Officer

25 years of experience in mining, manufacturing and engineering firms in Australia and internationally



Rob Schaefer Chief Commercial Officer

Extensive sales, marketing and finance experience in the resources industry with senior roles at WMC Limited, BHP Billiton and most recently MMG Ltd



David Corr Chief Financial Officer

Over 15 years of experience in the resources industry in Australia and internationally

### **Mozambique debt restructure**

On 25 October 2016, the Mozambique government officially acknowledged their inability to pay the next instalments of their debts (~US\$10b), and have called for a restructuring of payments and new financial aid from the International Monetary Fund (IMF).

This was driven by:

- Depreciation of the metical by approximately 70% against the USD over the course of 2016, having already depreciated by 36% in 2015
- > Inability to provide sufficient FX resources for the economy to limit inflationary pressure and volatility
- Substantial decline in foreign reserves due to an increase in external debt payments in a depreciating currency environment, combined with lower foreign direct investment inflows and weaker export growth
- Lazard Ltd and White & Case LLP has been hired to oversee meetings with creditors to restructure terms on its debt to qualify for a resumption of IMF aid.
- **Targeting** implementation of an agreed **debt resolution strategy** by end of **April 2017**



Mozambique's long-term growth prospects are still promising on the back of progress in the development of its nascent energy sector

The Mozambique's government payment capacity is therefore expected to significantly increase after 2021, subject to a timely implementation of the offshore gas projects

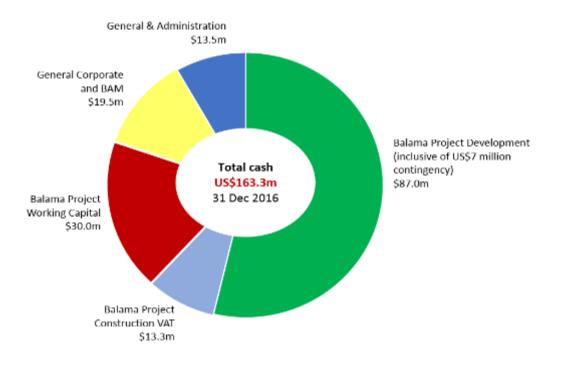
No impact on the development of the Balama Project; Mozambique government remains fully supportive



## Solid balance sheet with no debt (as at 31 Dec 2016)

**Fully funded** to deliver the development of the **Balama Project** 

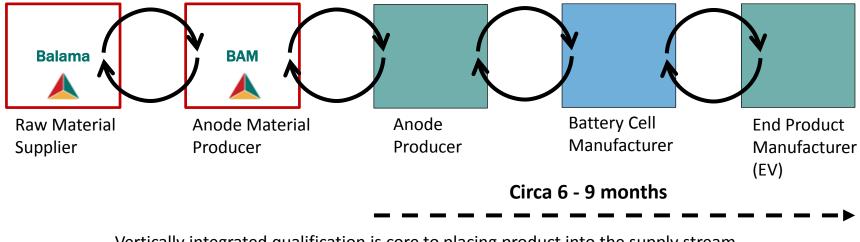
US\$50 million to fund working capital requirements for the Balama Project through to positive cash flows across a range of reasonable assumptions





## Why does product qualification take time?

- Demonstrating consistency in product across the qualification period places Syrah in a strong position
- Observed demand pressure on raw material supply is assisting in building relationships and facilitating collaboration with key customers



Vertically integrated qualification is core to placing product into the supply stream

