ASX/Media Release

24 March 2017

### **BALAMA PROJECT UPDATE AS AT MID MARCH 2017**

## **BALAMA GRAPHITE PROJECT (100%) – OPERATIONS UPDATE**

- Commissioning remains on schedule for Q2 2017
- Capital budget remains unchanged at US\$193 million (plus US\$7 million contingency)
- Overall process plant construction progress is 70% as at mid-March 2017.

# Health, safety, environment and community development

- The Balama Project has now achieved 1.2 million hours with no Lost-Time Injuries or significant incidents in 2017
- As construction activities progress, a strong focus remains on ensuring all high risk activities such as
  Working at Heights and Confined Space Entry are performed safely according to Company
  requirements. The Company is working closely with all onsite contractors to ensure strong health and
  safety performance is maintained
- The Environmental Monitoring Program continued in line with license conditions with sample data acquired across surface and ground water, air quality, noise and dust parameters
- The Company is in final discussions with the National Institute of Employment and Vocational Training (INEFP) in Mozambique and is looking forward to forming a partnership that will see the establishment and co-management of the Balama Training Centre H2 2017. This facility will cater for the training of some 500 local people from the project Host Communities over five years
- Successful conclusion of the first group of 20 local people that completed an intense 6-month articulated haul truck training program.



Figure 1 – Managing Director and Chief Executive Officer Shaun Verner with the Chief of the Host Communities at Balama



Figure 2 – Graduation day for articulated haul truck trainee operators



Figure 3 – Operators loading trucks in the Balama West pit

## Wet season

The current wet season experienced lower rainfall with only 542 mm received compared to 767 mm for the previous wet season. There has been no impact on logistics to and from the Balama site.

Primary construction activities at the processing plant and mine development have not been affected. However, some minor delays have occurred at the Tailings Storage Facility whilst installing the liner. The Tailings Storage Facility is due for completion in April 2017 and will be ready for commissioning in Q2 2017.



# Mine development (license to mine in place)

Mine development continues to progress very well with the following activities now completed or near completion:

- Mining facilities including warehouse and wash down pads complete
- Topsoil removal from Balama West Stage 1 is complete
- Subsoil removal has commenced and is due for completion in May 2017
- Mining of ore is scheduled in May 2017 for commissioning of the Primary Crusher
- A temporary laboratory will be established April 2017 to receive grade control and ore characterisation samples from the mine. Laboratory personnel and equipment have been mobilised to site to commence these activities. The permanent, main laboratory is expected to be operational by May 2017.

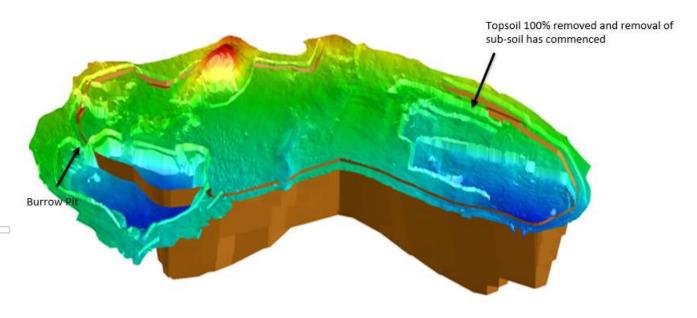


Figure 4 – Balama West Stage 1 pit shell

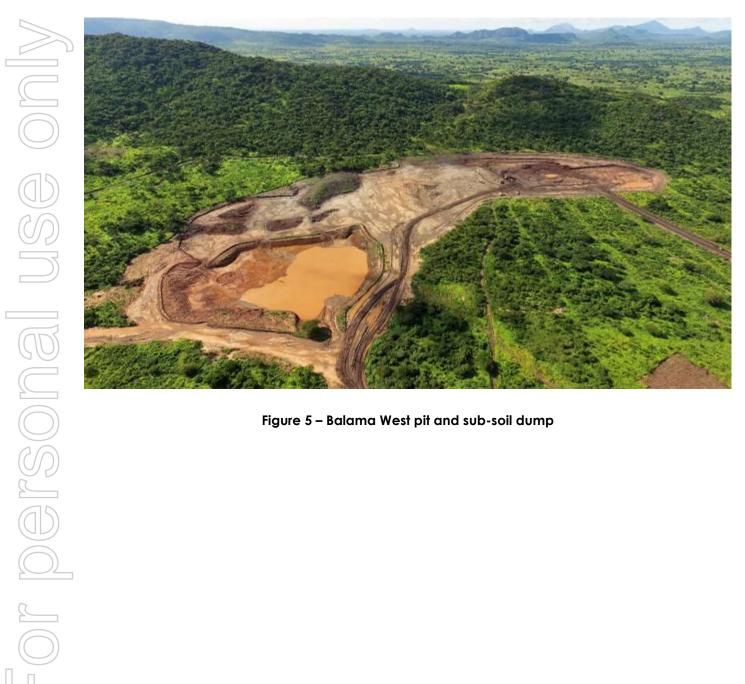


Figure 5 – Balama West pit and sub-soil dump

# **Processing plant**

Progress continues at the Balama Project with overall construction progress now at 70% as at mid-March 2017.

The Balama processing plant will use conventional processes including:

- Primary Crushing/ Crushed Ore storage/Recycled Crusher
- Primary Milling
- Flotation
- Secondary Milling and Classification
- Filtration, Flake & Fine drying
- Classification and product bagging.

Waste material will be pumped to the Tailings Storage Facility after the graphite flotation process.

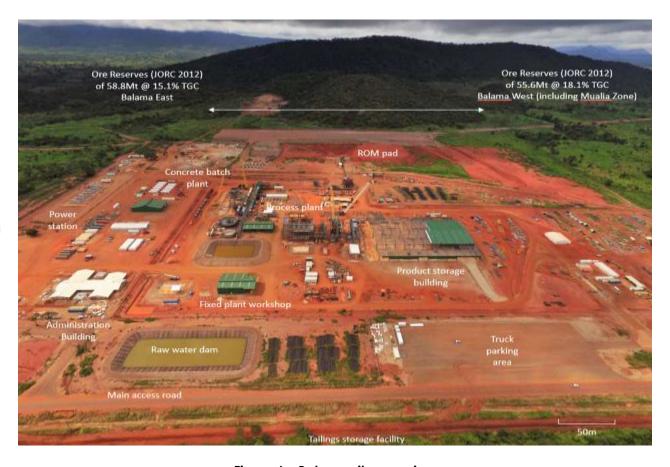


Figure 6 – Balama site overview

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#### General overview

- Engineering and procurement is complete and delivered to site
- 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
- All major contracts for the installation of the process plant and supporting infrastructure have been awarded and respective contractors are now on site and working in multi areas.

### **Primary crushing**

- Concrete works complete
- Primary crushing structural steel and mechanical equipment installation is complete
- Erection of crushed ore bin feed conveyor is complete and electrical and instrumentation installation has commenced.

### Crushed ore storage

- Concrete works complete
- Erection of crushed ore bin conveyor (COB) and the crushed ore bin is complete
- Reclaim feeders situated under the crushed ore bin are installed
- Emergency reclaim bin and the feeder are installed.





Figure 7 – Primary crusher and sizer (left) and ore bin (right)

## Recycle crushing

- Concrete works complete
- Erection of structural steel is complete
- Erection of the recycle feed conveyor is complete.



## **Primary milling**

- Concrete works complete
- Erection of structural steel is complete
- Mechanical installation of the scrubber, classification screen and pumps are all installed and nearing completion
- Installation of the primary mill is complete and installation of the rougher surge tank is complete except for painting.



Figure 8 - Recycle crusher



### Flotation circuit

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- Concrete work complete
- Structural steel erection is complete and all flotation cells are installed
- Installation of hoppers, launders and pumps significantly advanced and piping installation is underway.



Figure 9 – Primary mill and flotation

## Secondary milling and classification

- Concrete work complete
- Structural steel erection and placement of hoppers and pumps have commenced.



#### **Filtration**

- Structural steel erection nearing completion. Screw feeders and chain conveyors have been installed
- Filter discharge chutes have been installed and erection of flake and fines storage tanks are complete except for final painting
- Work has commenced on the suspended slab and is expected to be completed by the end of March 2017, which will allow the filters to be placed.



Figure 10 - Filtration



### Flake and fines drying

- Concrete works complete
- Installation of structural steel is complete and mechanical equipment including the dryer combustion chamber, pneumatic conveyor hopper and associated chute work and bins for the flake and fines dryers have been erected.



Figure 11 - Drying



## **Bagging**

- Concrete works complete
- Preassembly of structural steel commenced
- Product bin assembly is underway with erection due to be completed by the end of March 2017.



Figure 12 – Drying and bagging

## Enhancement project – Attrition cells

- Engineering is complete
- Equipment has been ordered and is on schedule to be installed and operating in Q3 2017.

# Mine support infrastructure

Significant progress has been made with emphasis on the activities described below.

## 15.4 MW power station

- All seven generators have been installed on concrete foundations
- E-Room building placed
- Electrical works including Installation of cable trays and main Transformer are underway
- Erection of Workshop and Maintenance Offices 100% complete
- All concrete works complete

### 700,000 litre diesel fuel storage facility

- Civils for 11 bulk tanks, filling stations and lube warehouse complete
- Concrete works nearing completion



Figure 13 – Diesel fuel storage facility and power station (background)



## Plant site buildings

- Reagents warehouse
  - o Erection of building complete
  - Electrical fitout underway
- Site medical centre
  - o Erection of building complete
  - o Electrical and plumbing fitout 80% complete
- Site emergency response centre
  - Erection of building complete
  - Electrical and plumbing fitout 80% complete
- Shift personnel canteen
  - o Erection of building complete
  - o Electrical and networking fitout 90%
  - o Building being initially utilised as the commissioning office
- Day-worker canteen
  - o Erection of building 20% complete
- Guard houses
  - o Erection of three buildings are complete
- Main site administration building
  - o Main roof complete
  - Joinery fit-out 60% complete
  - o Electrical and networking cabling complete
  - o Plumbing 50% complete.



Figure 14 – Main site administration building

- Product storage building (capable of holding 10,000 tonnes of product)
  - o Structural steel erection complete
  - o Roof sheeting has commenced



Figure 15 – Product storage building

Erection of main laboratory complete



Figure 16 – Laboratory (left) and warehouse (right)

- Accommodation village
  - o Landscaping of gardens and walkways ongoing
  - o Installation of potable water treatment plant complete
  - o Installation of waste water treatment plant complete



Figure 17 – Accommodation village

- Process and raw water ponds lining of these ponds is complete. Concrete works for the process water tank and pumps is complete. The tank installation is well advanced
- Tailings Storage Facility bulk earthworks for Tailings Storage facility Cell 1A is complete. Liner installation is nearing completion with 97% of the total 280,000 m² required installed.





Figure 19 – Raw water pond

# Chipembe Dam update

The Water Licence for extraction from the Chipembe Dam has been extended from 5 to 10 years with construction of pipeline to commence shortly. The installation contract has been awarded and the contractor is mobilising plant required for the upcoming works.

As at mid-March 2017, the Chipembe Dam was at 52% capacity and holding approximately 13 million m<sup>3</sup>. The slight delay in the issuance of the construction permit for the Chipembe Dam water pipeline is not an issue as the intention is to commence commissioning utilising the already established bore water system located on the Mining Concession, which currently has a capacity of 200,000 m<sup>3</sup> per annum. This will be sufficient for the Balama Project's water requirements in CY 2017.

The Company's strategy regarding water is to utilise a combination of the Chipembe Dam, bore water system and collecting water using the Tailings Storage Facility during the wet season (an area of 550,000 m<sup>2</sup>).

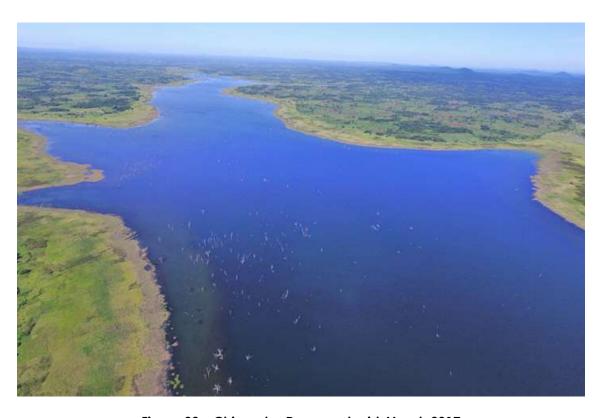


Figure 20 – Chipembe Dam as at mid-March 2017

# Operations readiness and commissioning

Commissioning will be undertaken using a sequential approach as illustrated in the figure below.

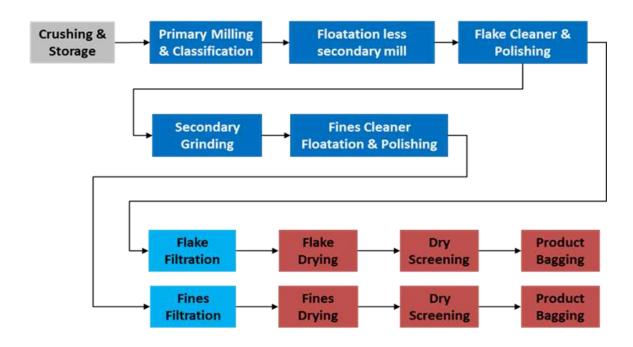


Figure 21 – Ore commissioning sequence overview

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.

Commissioning activities will commence in Q2 with C0 activities starting at the crusher. The commissioning team will energise and test all equipment and systems to ensure that each individual item is correctly installed and functioning as designed. The equipment is then tested in larger groups until the entire facility has been tested.

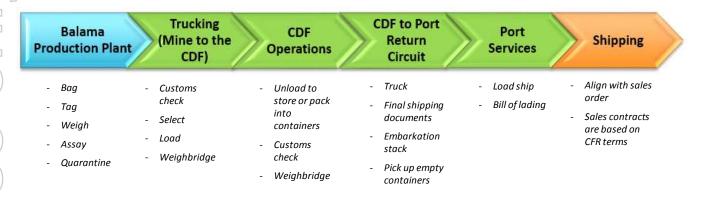
Once the process plant has been fully energised and tested, ore and process fluids will be introduced into individual equipment and integrated systems to demonstrate stable operation. This process is expected to commence in Q2 2017 and be completed in Q3 2017.

In addition, there are a number of other activities being advanced for both operational readiness and commissioning:

- Commissioning sequence and systems are being aligned with priorities given to the Structural, Mechanical and Piping (SMP) and Electrical and Instrumentation (E&I) contractors
- Key personnel for commissioning and operations (e.g. Commissioning Manager) have been recruited and have commenced mobilising to site
- Testing of the main control system is underway
- Development of commissioning procedures are well progressed
- Key reagents, grinding media and operational maintenance spares are advancing through the procurement process
- Graphite training specialists have been engaged
- Sales and operations planning team (including logistics) are being established
- Supporting IT systems are evolving.



# Logistics - mine to port



Note: CDF = Crossing docking facility, CFR = Cost and Freight

Figure 22 – Overview of the logistics path

- The award of a logistics and distribution contract for the transportation of product from Balama to Nacala Port is expected shortly
- The Company and the preferred service provider are optimising operational and commercial contract parameters through continued engagement
- Discussions with the authorities of Nacala Port regarding the movement of product through the port continue
- The Company will finalise initial shipping agreements with international shipping lines during Q2 2017.

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## **About Syrah Resources**

Syrah Resources Limited (ASX code: SYR) is an Australian-based industrial minerals and technology company. Syrah is currently constructing the Balama graphite project (Balama) in Mozambique, with commissioning scheduled to commence in Q2 2017. Balama will be the leading global producer of high purity graphite. Balama production is targeted to supply traditional industrial graphite markets and emerging technology markets. Syrah has successfully completed extensive product certification test work with several major battery producers for the use of Balama spherical graphite in the anode of lithium ion batteries.