



**SYRAH** RESOURCES

# Q3 2022 Quarterly Activities Report

20 October 2022

Shaun Verner – Managing Director & CEO

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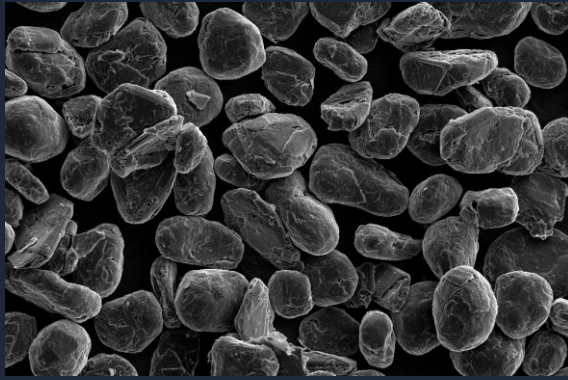


# Our Position

Syrah is a major ex-China natural graphite and active anode material (AAM) supplier for global customers, with upstream and downstream expansion potential underpinned by its world-class Balama resource



Natural graphite and active anode material (AAM) demand will increase four and eight times, respectively, over the next 10 years<sup>1</sup>



Syrah is the only operating vertically integrated natural graphite AAM supplier outside of China



Balama is a 350ktpa graphite producer in Mozambique supplying global battery anode and industrial customers since 2017



Vidalia is building an 11.25ktpa AAM facility in the US with commercial sales arrangements in place with tier 1 customers

1. Source: Benchmark Minerals Intelligence Flake Graphite Forecast, Q3 2022. Note: AAM demand is for natural graphite AAM.

# Our Value Proposition



## Vertical Integration

- AAM from Vidalia for battery makers and auto OEMs
- Natural graphite from Balama for AAM producers



## Operating and Development

- Largest integrated natural graphite operation globally
- First vertically integrated natural graphite AAM supplier outside of China



## Cost Position

- Cost competitive AAM supply from Vidalia
- Sustainable and low cost curve position at Balama with project development capital already fully invested



## ESG Position

- Leading ESG standards and sustainability frameworks
- Low greenhouse gas emissions footprint
- Single chain of custody offers full auditability and transparency



## Expansion Potential

- Significant downstream expansion potential at Vidalia and in Europe
- Upstream brownfield expansion potential at Balama



## Leading ESG standards

- ✓ ISO:45001 and ISO:14001 certification at Balama
- ✓ ISO:9001 certification at Vidalia
- ✓ Vidalia expansion project being developed in line with best practice health, safety and environmental standards
- ✓ Critical Risk Management Framework embedded across the Group

## Best practice sustainability frameworks

- ✓ Sustainability frameworks guided by the Global Reporting Initiative (GRI), United Nations Sustainable Development Goals (SDGs), International Council on Mining and Metals (ICMM) and Initiative for Responsible Mining Assurance (IRMA)
- ✓ Robust Community Development and Stakeholder Engagement Strategy

## Low carbon footprint

- ✓ Lower carbon emissions footprint (life cycle) of natural versus synthetic graphite
- ✓ Independent life cycle assessment (LCA) completed
- ✓ Implementing initiatives to lower carbon footprint further

## Auditable back to source

- ✓ Fully integrated by Syrah from mine to customer
- ✓ Vidalia products will have a single chain of custody back to the source



# Q3 2022 Highlights

## Health & Safety

## Balama & Vidalia

1.0

Balama TRIFR

38<sub>kt</sub>

Balama production

\$615<sub>/t</sub>

Balama C1 cash costs  
(FOB Nacala/Pemba)

55<sub>kt</sub>

Natural graphite sold  
and shipped

\$688<sub>/t</sub>

Weighted average  
sales price

- Positive Balama net operating profit after C1 and C2 costs
- Balama plant recovery of 80% for quarter and 85% in August 2022
- Balama C1 cash costs impacted by operational interruption due to industrial action<sup>1</sup>, disproportionately high product logistics costs and higher diesel costs
- Three ~10kt spot breakbulk shipments from Pemba port completed
- Significant forward sales order book of nearly 70kt natural graphite
- First mover in establishing an independent, vertically integrated ex-Asia supply chain for AAM driving commercial and technical interaction
- Detailed engineering for Vidalia's initial expansion to 11.25ktpa AAM production capacity ("Vidalia Initial Expansion") more than 89% complete
- Construction of the Vidalia Initial Expansion project advancing within schedule and budget with a targeted to start of production in Q3 2023
- Definitive Feasibility Study ("DFS") underway to expand Vidalia to a to 45ktpa AAM, inclusive of 11.25ktpa AAM, production capacity
- MOU with Ford and SK On to evaluate AAM supply from Vidalia to the BlueOval SK joint venture<sup>2</sup>
- MOU with LG Energy Solution to evaluate AAM supply from Vidalia<sup>3</sup>

## Market & Corporate

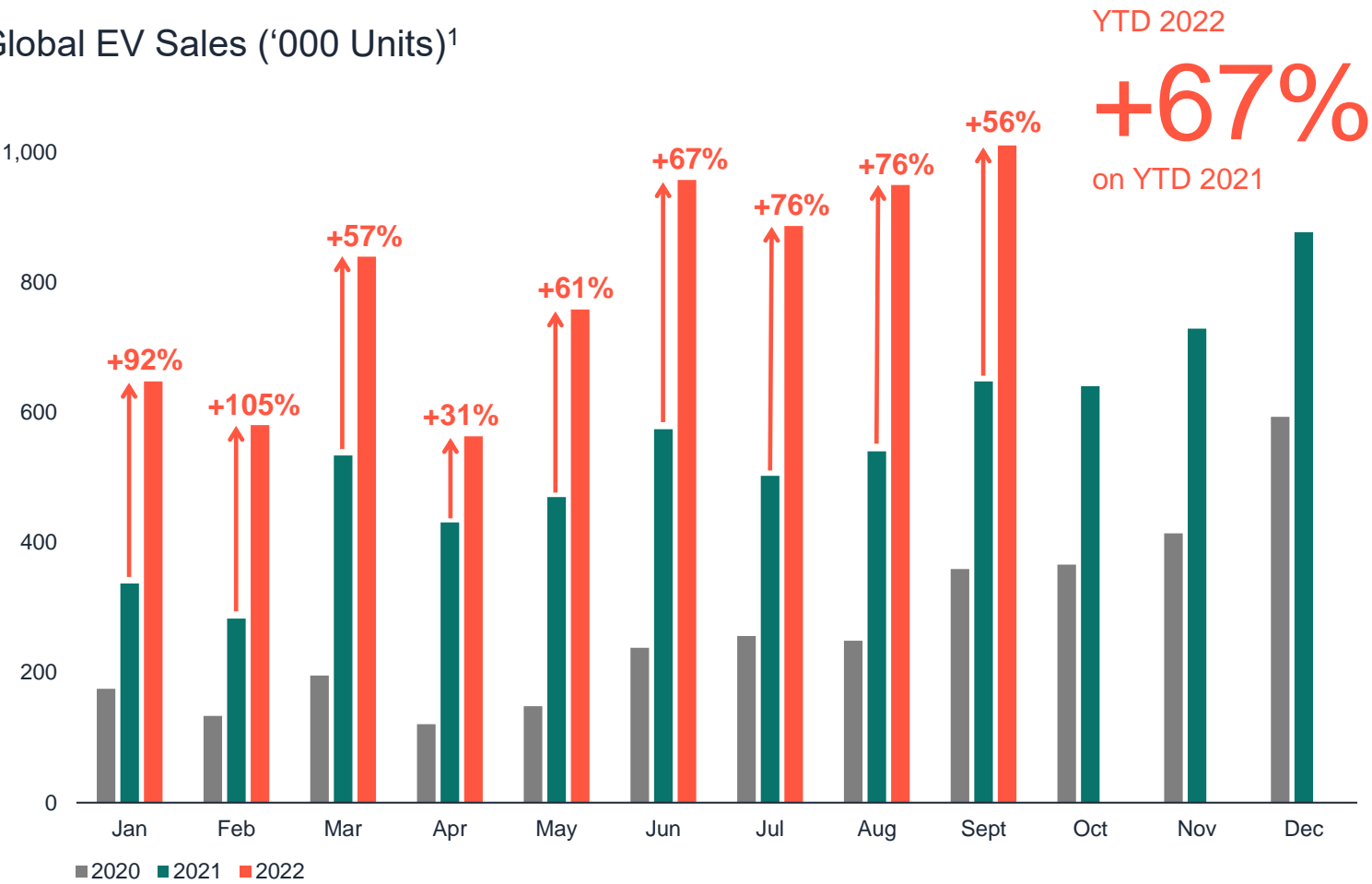
- Global EV sales grew 68% in Q3 2022, versus Q3 2021, to ~2.8 million units<sup>4</sup>
- Global EV sales over 1 million units<sup>4</sup> in September 2022
- Chinese anode production increased to above 130kt per month in Q3 2022
- Significant commitments made to further expanding EV sales and battery manufacturing capacity in the USA
- US Inflation Reduction Act passed in August 2022 expected to directly and indirectly benefit Vidalia
- Binding US\$102m loan from US Department of Energy ("DOE") to support the financing for the Vidalia Initial Expansion project<sup>5</sup>
- Selected for a DOE grant of up to ~US\$220m to support financing of Vidalia's proposed expansion to a 45ktpa AAM production capacity<sup>6</sup>
- Quarter end cash balance of US\$136m

1. Refer ASX releases 26 September 2022, 11 October 2022 and 20 October 2022.  
2. Refer ASX release 22 July 2022.  
3. Refer ASX release 20 October 2022.

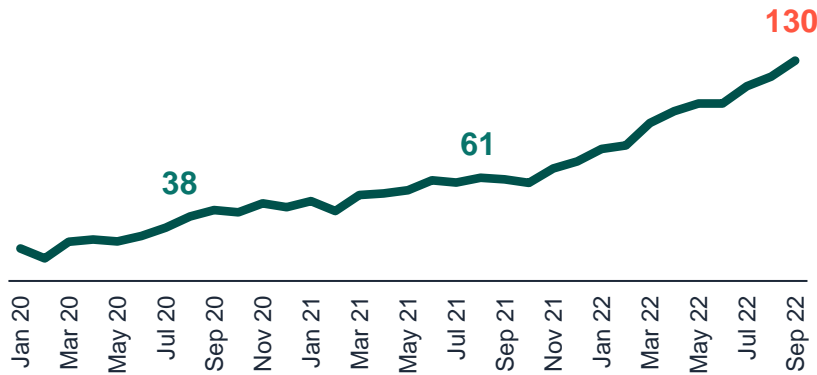
4. Source: LMC, China Passenger Car Association and SWS Research. September 2022 includes Syrah's estimate for EV sales in selected countries (~207k total).  
5. Refer ASX release 28 July 2022.  
6. Refer ASX release 20 October 2022.

# EV sales and anode production volumes continue to strengthen

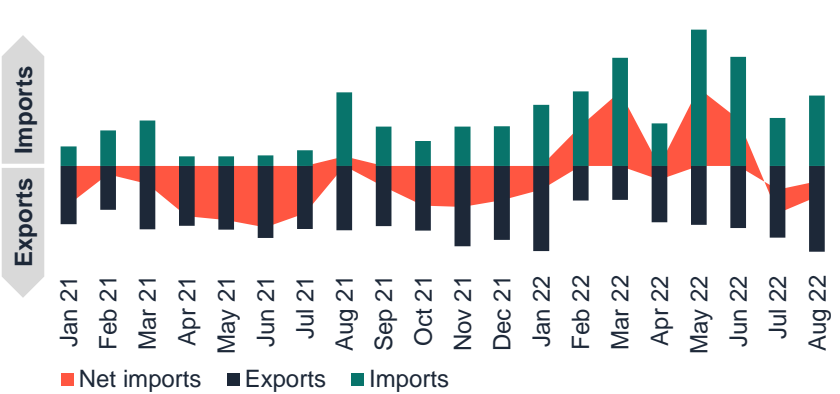
Global EV Sales ('000 Units)<sup>1</sup>



Chinese Anode Production (kt)<sup>2</sup>



Chinese Natural Graphite Imports and Exports<sup>3</sup>

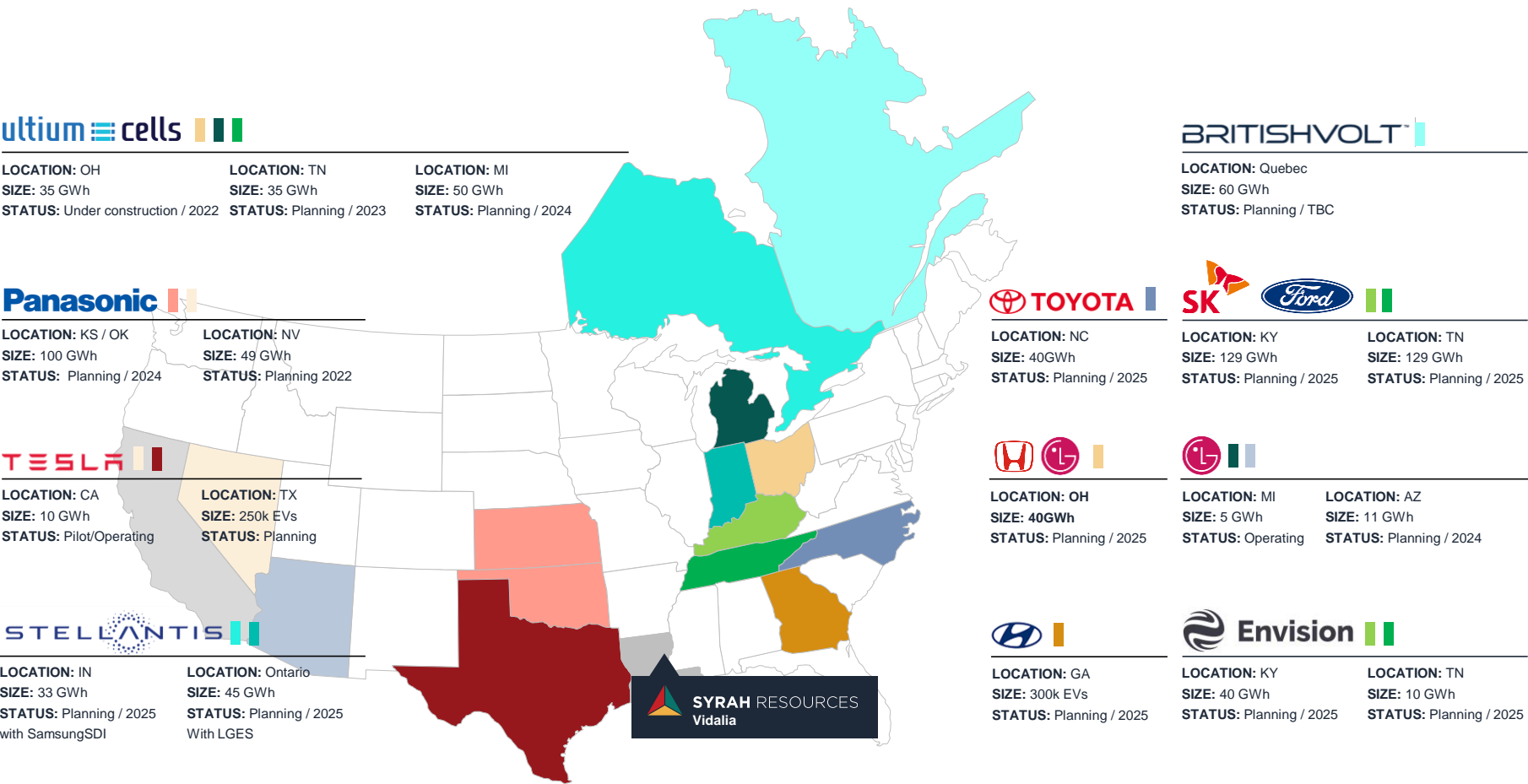


1. Source: LMC, China Passenger Car Association and SWS Research. September 2022 includes Syrah's estimate for EV sales in selected countries (~207k total).  
2. Source: ICCSino.  
3. Source: Asian Metal.

# North American battery market is maturing rapidly

Vidalia will support a large-scale EV manufacturing base in the region

Location of Planned Battery Manufacturing Capacity in North America



North American battery manufacturing capacity<sup>1</sup>



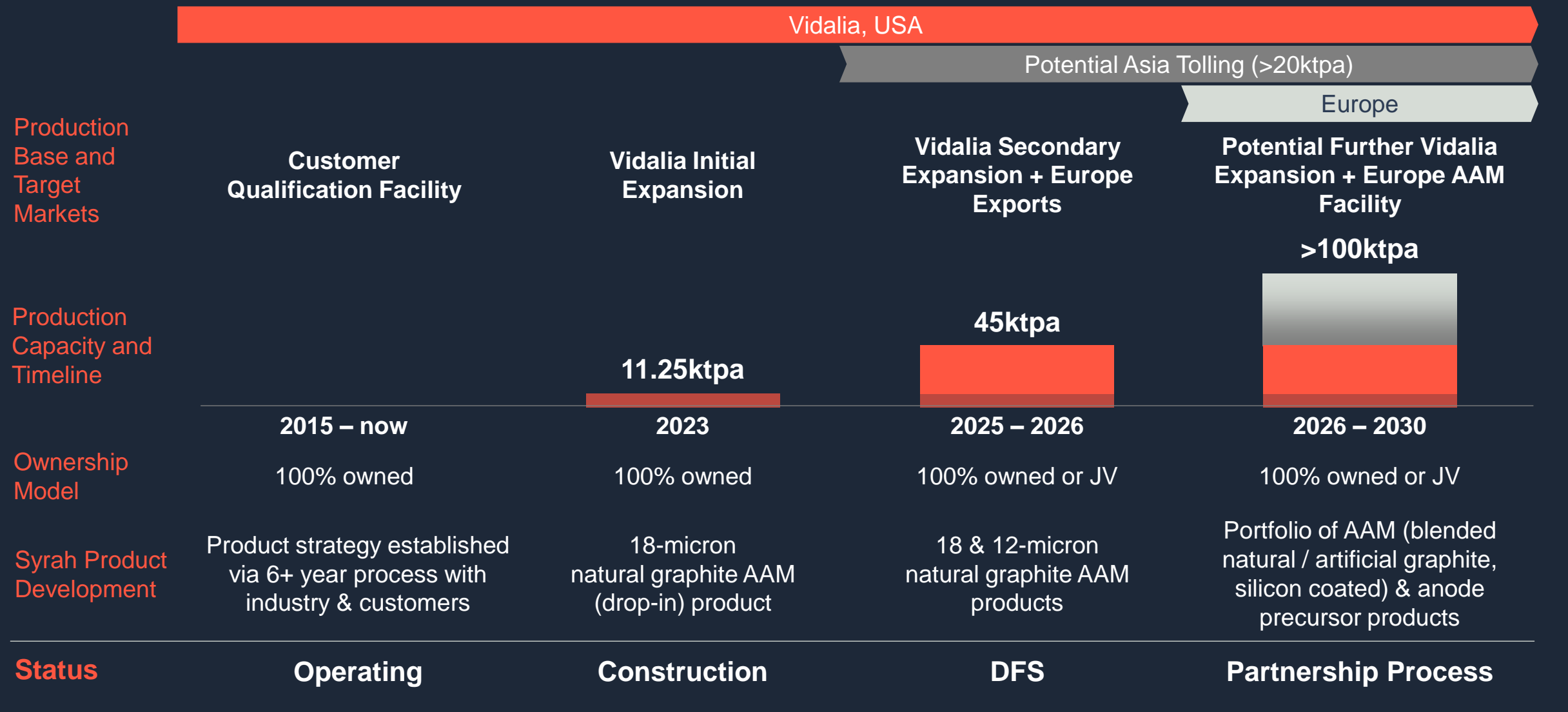
1. Source: Benchmark Mineral Intelligence Battery Megafactory Assessment, September 2022.



# Syrah aims to become a leading supplier of anode products



Our expansion strategy is underpinned by Balama’s world-class resource



# Q3 2022: Balama Production and Operations

- 38kt natural graphite produced at 80% recovery during Q3 2022
- Positive Balama net operating profit after C1 and C2 costs over the quarter
- Product quality consistent with previous quarter with stable grade and higher recovery
- New cyclone system in the secondary milling circuit commissioning from the start of the quarter and 85% recovery achieved in August
- Produced at a 15kt per month production rate in July and August. Industrial action interrupted operations in September 2022
- Strong operational performance during campaign production runs with average and maximum daily production run-rate of 18kt per month and 27kt per month, respectively, and a record 20kt 30-day rolling production record achieved
- C1 cash costs (FOB Nacala/Pemba) of US\$615/t
  - ~US\$40/t attributed to fixed costs incurred through operational interruption in September 2022, ~US\$21/t attributed to ex-mine gate product logistics / sales being disproportionate to Balama production and ~US\$62/t attributed to diesel price escalation since March 2022
  - Reviewing C1 cash cost guidance
  - C1 cash costs expected to reduce as production rate increases beyond 15kt per month and as improvement initiatives are embedded
- Balama operations interrupted by illegal industrial action driven by a small contingent of local employees and contractors<sup>1</sup>
  - Employees and contractors returned to Balama site and camp, and full operational capability restored. Further illegal industrial action has disrupted a full operational restart and limited logistics movements<sup>2</sup>

1. Refer ASX release 26 September 2022.

2. Refer ASX releases 11 October 2022 and 20 October 2022.



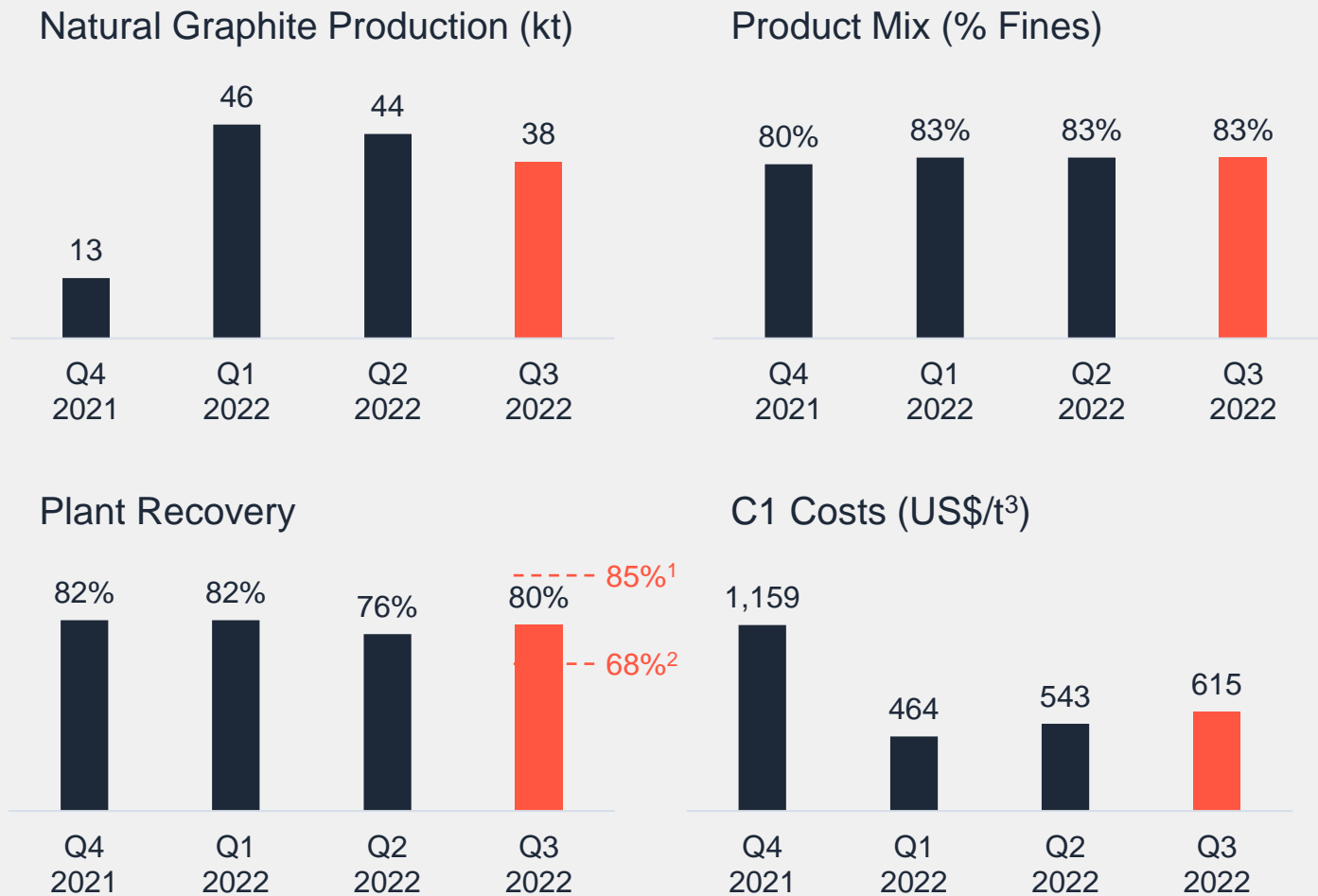
38<sub>kt</sub>

Balama production

\$615<sub>/t</sub>

Balama C1 cash costs (FOB Nacala/Pemba)

# Q3 2022: Balama Production and Operations



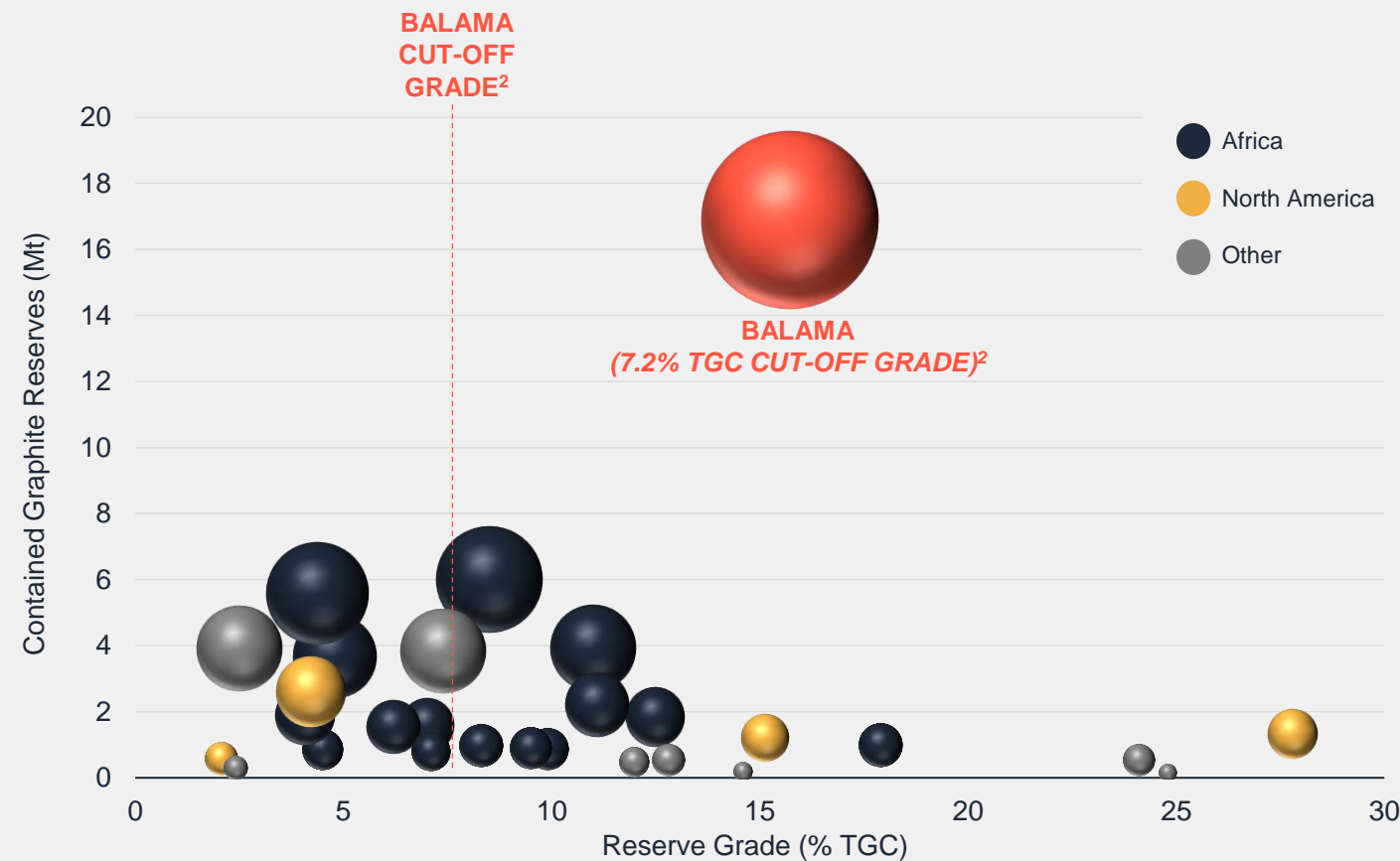
1. Average recovery in August 2022 on natural graphite production of ~18kt.  
2. Average recovery in Q1 to Q3 2019 on average natural graphite production of ~15kt per month.  
3. FOB Nacala/Pemba.





# Balama is the largest natural graphite mining/processing operation globally

Ex-China Natural Graphite Reserves and Reserve Grade<sup>1</sup>



- Source: Company filings; Notes: Selected ASX / TSX-listed graphite projects with declared Reserves only and excludes Chinese producers. Bubble size reflects contained graphite reserves.
- As at 31 December 2021. The Ore Reserve is based on, and fairly represents, Syrah's ASX announcement dated 24 March 2022 (Annual Report 2021), which was prepared by competent persons, Mr Jon Hudson and Mr Christopher Hull. The Mineral Resource is based on, and fairly represents, Syrah's ASX announcement dated 24 March 2022 (Annual Report 2021), which was prepared by competent person, Mr Jonathon Abbot.
- Life of Mine based on Ore Reserves being depleted at 2Mt per annum of mill throughput.
- Balama C1 cash cost guidance at a 15kt per month production rate is under review.

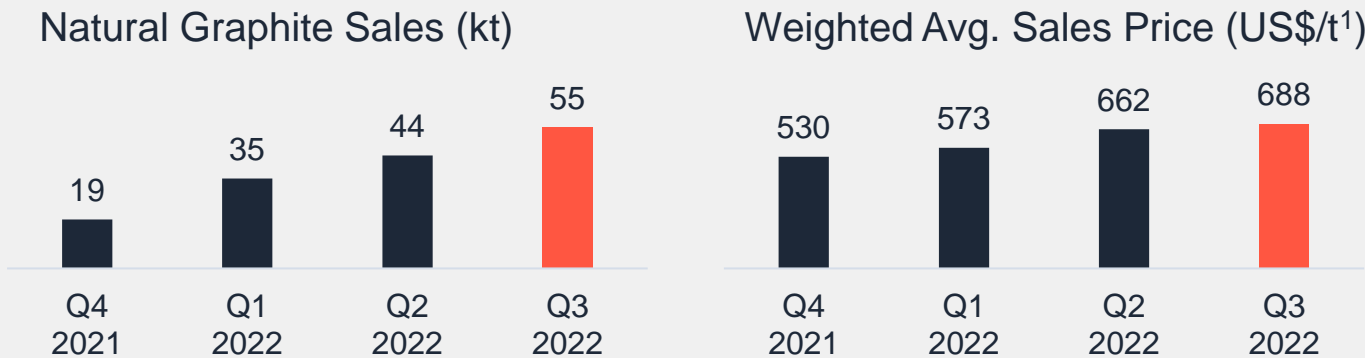


## Asset Overview

Location	Southern Cabo Delgado Province, Mozambique
Reserve & Resource <sup>2</sup>	107Mt (16% TGC) Graphite Ore Reserve 1,421Mt (10% TGC) Graphite Mineral Resource
Life of Mine <sup>3</sup>	~50 years
Mining	Simple open pit mining, low strip ratio
Processing	Conventional – includes crushing, grinding, flotation, filtration, drying, screening and bagging
Plant Capacity	2Mtpa ore throughput yielding ~350ktpa; 342kt produced since 2018
Product	94% to 98% fixed carbon graphite concentrate
C1 Cost <sup>4</sup>	Under review

# Q3 2022: Balama Sales and Marketing

- Record quarter with 55kt natural graphite sold and shipped
- Container shipping market disruption continued to impact access to container capacity and freight cost for Balama products on vessels sailing from Nacala
- Very strong demand and forward contracting with end-user customers ahead of winter period of lower Chinese production – nearly 70kt of forward sales orders
- Weighted average sales price increased to US\$688/t (CIF) in Q3 2022
  - Fines and coarse prices stable with peak seasonal Chinese natural graphite production
  - Sea freight rate volatility and surcharges continued with average shipping costs at almost four times long-term average
- Fines sales accounted for approximately 83% of overall product sales during the quarter
- Integration of breakbulk shipments through Pemba in combination with expected container shipping availability through Nacala will support Balama sales and production of at least 20kt per month



1. CIF.



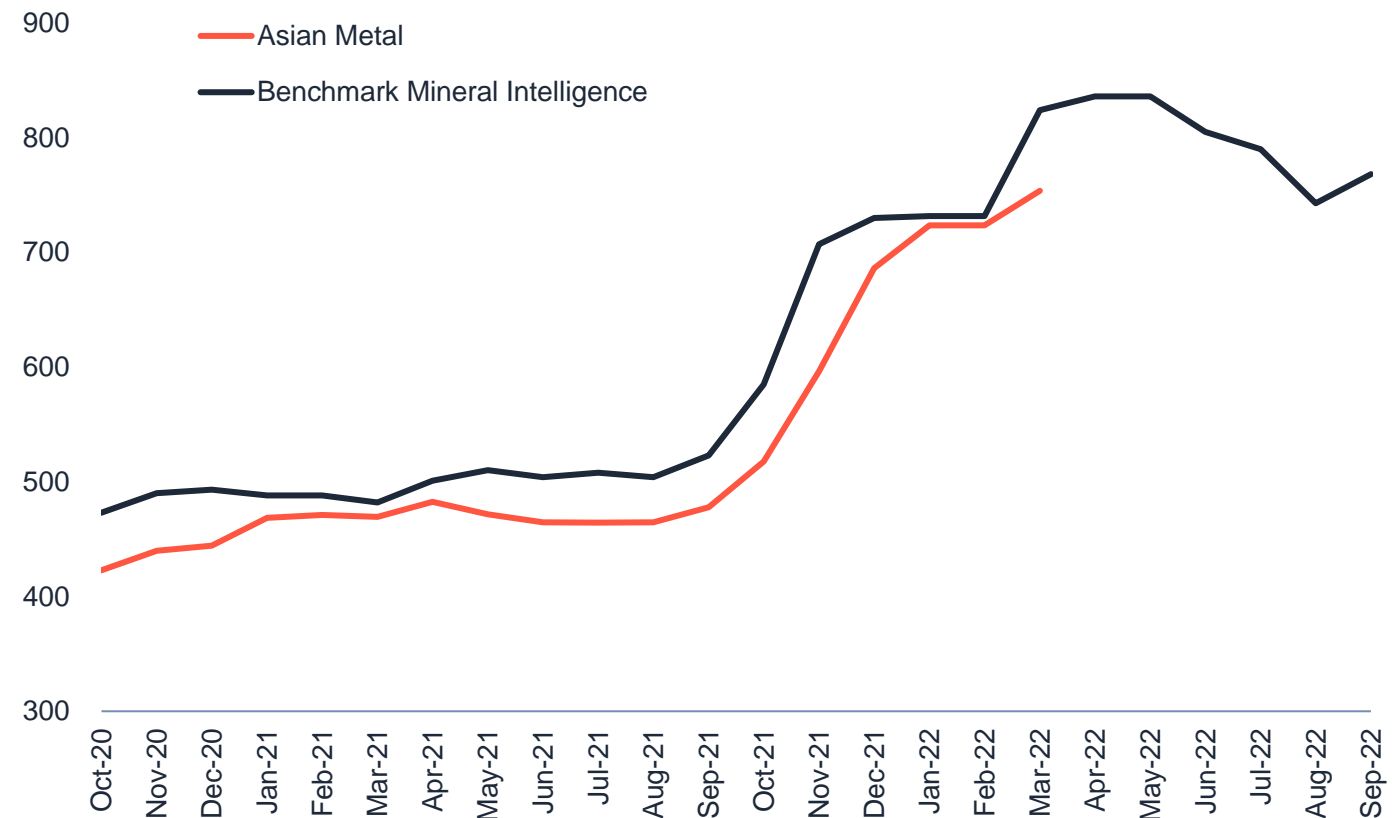
55<sub>kt</sub>  
Natural graphite sold  
and shipped

\$688<sub>/t</sub>  
Weighted average  
sales price (CIF)

# China graphite fines price stable with constructive market balance

- Strong demand and disrupted domestic supply has supported increased China domestic graphite fines pricing
- Graphite fines demand is strong
  - EV sales increased 68% in Q3 2022<sup>1</sup>
  - Chinese anode production at above 130kt per month in Q3 2022
- Graphite supply in China
  - High capacity utilisation through peak seasonal Chinese production period
  - Significant natural graphite imports into China to meet anode supply chain demand
  - Low inventory positions ahead of the winter period of lower Chinese production

Natural Graphite Fines Prices (US\$/t)<sup>2</sup>



1. Source: LMC, China Passenger Car Association and SWS Research. September 2022 includes Syrah's estimate for EV sales in selected countries (~207k total).

2. Source: Benchmark Mineral Intelligence and Asian Metal (Price Reporting Agencies). China domestic prices for natural graphite fines (94-95% grade; -100mesh) are shown. Syrah's historical weighted average sales prices include sales under a mix of contract types and pricing mechanisms and are not necessarily representative of natural graphite spot prices nor consistent with the natural graphite price assessments of price reporting agencies. Furthermore, prices of China sales, within Syrah's historical weighted average sales prices, are exclusive of China VAT.



# Q3 2022: Vidalia

## Vidalia Initial Expansion

- Detailed engineering more than 89% completed with Worley Group
- Procurement substantially completed with contracts for more than ~US\$130 million in total installed capital costs awarded<sup>1</sup>
- Key construction activities were piling, fencing, buried water services, power connections, concrete foundation and slab pouring, mechanical, structural steel & substation delivery, piping manufacturing, and preparing for delivery and installation of major equipment
- Construction progressing within the planned schedule and budget under the management of integrated Syrah and Worley Group team
- Targeted start of production in Q3 2023

## Construction Funding

- Vidalia Initial Expansion fully funded to start of production
- Received binding US\$102 million loan from US Department of Energy ("DOE") to support the financing for the Vidalia Initial Expansion project<sup>2</sup>. Syrah and DOE targeting first advance from the loan within the December 2022 quarter

## Operations and Production

- Integrated spherical, purification and furnace operation is producing 18-micron and 12-micron AAM, using Balama natural graphite, as required for testing and qualification

1. Includes a mix of fixed cost / lump-sum, unit rate and cost reimbursable contracts. Costs for unit rate and cost reimbursable contracts are estimates.
2. Refer ASX release 28 July 2022.



Vidalia Initial  
Expansion fully  
funded to start of  
production

89%  
Detailed engineering  
completed

# Q3 2022: Vidalia

## Customer Engagement and Product Qualification

- Offtake agreement with Tesla to supply 8ktpa AAM from Vidalia at a fixed price for an initial term of four years<sup>1</sup>
- MOUs with Ford / SK On<sup>2</sup> and LG Energy Solution<sup>3</sup> to evaluate AAM supply from Vidalia and target binding offtake agreements by 31 December 2022
- Offtake agreement with Hiller to supply all by-product micronized spherical graphite fines from 11.25ktpa AAM Vidalia facility for an initial term of five years
- Qualification and iterative testing programs are progressing in parallel with commercial engagement – rapid iteration enabled by operational and laboratory capability

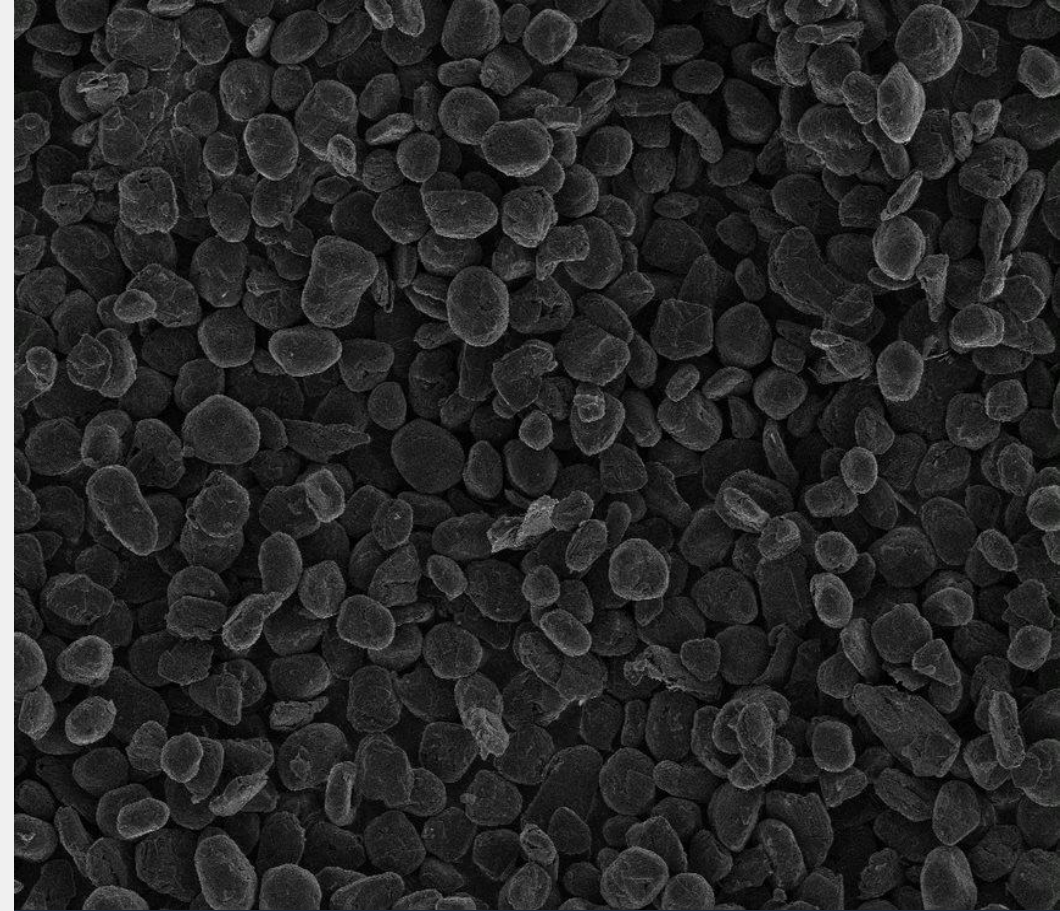
## Further Expansion

- Demand for Vidalia AAM expected to significantly exceed 11.25ktpa
- Technology assessment and test work advanced for DFS on expansion of Vidalia's production capacity to 45ktpa AAM, inclusive of 11.25ktpa AAM
- DFS underway with Worley Group and detailed engineering, procurement and construction phases to follow sequentially, subject to Syrah Board approval and customer and financing commitments
- Selected for a DOE grant of up to ~US\$220m<sup>3</sup>

## Product Development

- Base (drop-in) 18-micron AAM and premium 12-micron AAM products
- Partnering with customers, industry, laboratories and universities on product development

1. Refer ASX releases 23 December 2021 and 29 December 2021.  
2. Refer ASX release 22 July 2022.  
3. Refer ASX release 20 October 2022.

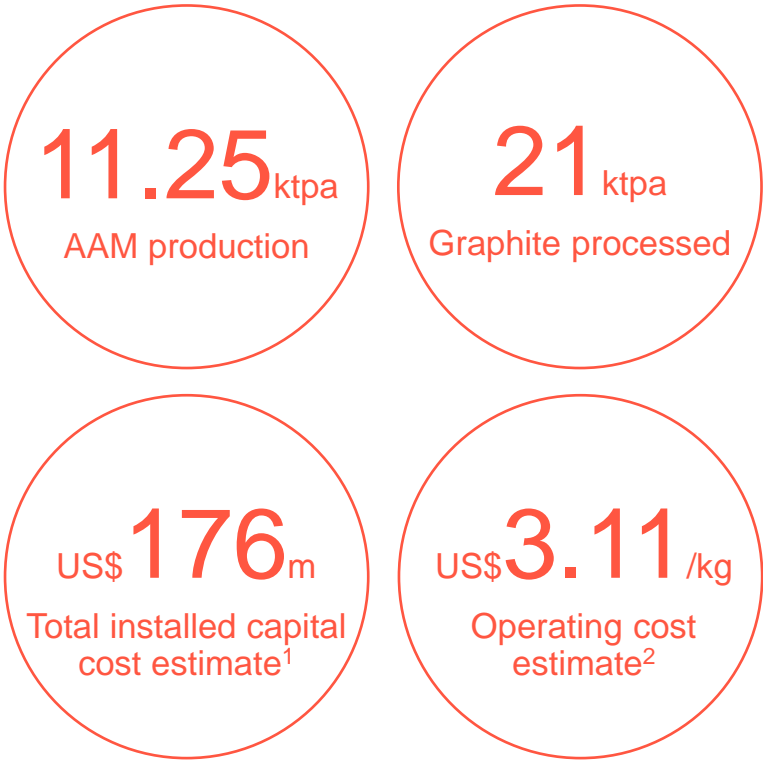


Commercial sales  
arrangements in  
place with tier 1  
customers

**45** ktpa AAM  
Expanded Vidalia  
production capacity in  
DFS

# Vidalia offers competitive operational metrics

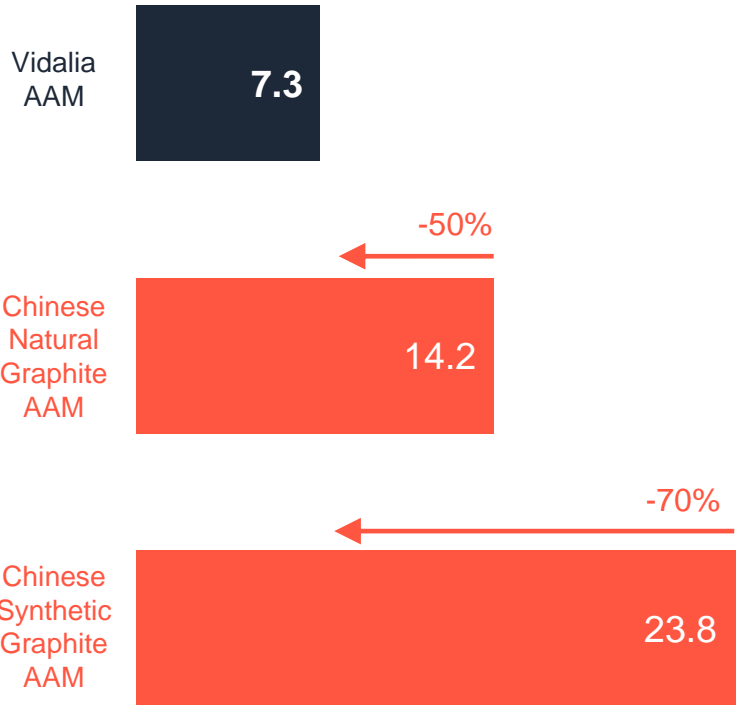
## Vidalia Initial Expansion Project Parameters



## Operating Margin (US\$/kg AAM Real)



## Global Warming Potential (kg CO2 eqv./kg AAM)<sup>4</sup>



1. Includes all actual and estimated engineering, equipment, materials, construction, construction-related capitalised costs from 1 December 2020 and an unutilised contingency.

2. Includes cost of US\$400/t (FOB Nacala) for Balama natural graphite, reflecting an approximate all-in cost of production at Balama at full plant utilisation. Includes costs of transporting Balama natural graphite from Nacala to Vidalia, AAM delivery costs from Vidalia to representative US battery manufacturing facilities and maintenance costs.

3. Price range is the mid-point prices for “domestic/low-range” and “domestic/mid-range” natural graphite AAM as of 12 October 2022, converted at a USD/CNY exchange rate of 7.18. The prices shown are the Chinese domestic observable spot price for natural graphite AAM as reported by ICCSino. The price range shown is not necessarily indicative of a landed USA price for AAM nor the price that Vidalia AAM will be sold at.

4. Source: Minviro Ltd’s lifecycle assessment on Syrah. Note: Global Warming Potential (“GWP”) is defined as the cumulative radiative forcing, both direct and indirect effects, over a specified time horizon resulting from the emission of a unit mass of gas related to some reference gas [CO2: (IPCC 1996)]. GWPs shown are a forecast life of operation average for Vidalia based on detailed engineering and include scope 1, scope 2 and scope 3 greenhouse gas emissions. Syrah’s LCA meets the requirements of ISO14040/14044 standards and has been critically reviewed by a third-party.



# Vidalia Initial Expansion

Q3 2023 start of production

## Key Project Milestones Achieved

**Offtake Agreement**



**Final Investment Decision**



**Construction on Schedule and Budget**



**Construction Completion and Commissioning**



**Start of Production**



**11.25ktpa AAM Run-rate Production**

Dec 2021

Feb 2022

Q3 2022

Q2 and Q3 2023

Q3 2023

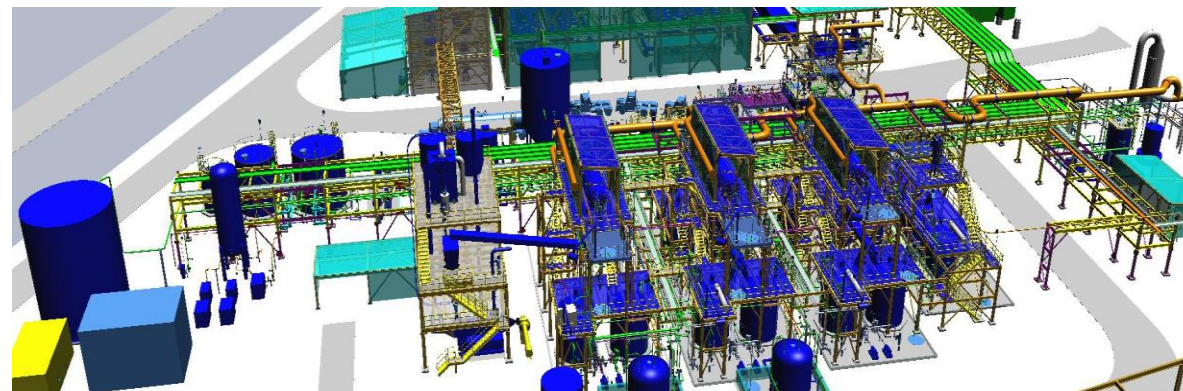
~18 Months After Start of Production

## Key Steps in Construction



- Order critical long-lead items
- Execute construction contracts sequentially
- Final construction permitting
- On-site construction activities
- Receive equipment deliveries
- Recruit operating team
- Secure additional binding offtake agreements

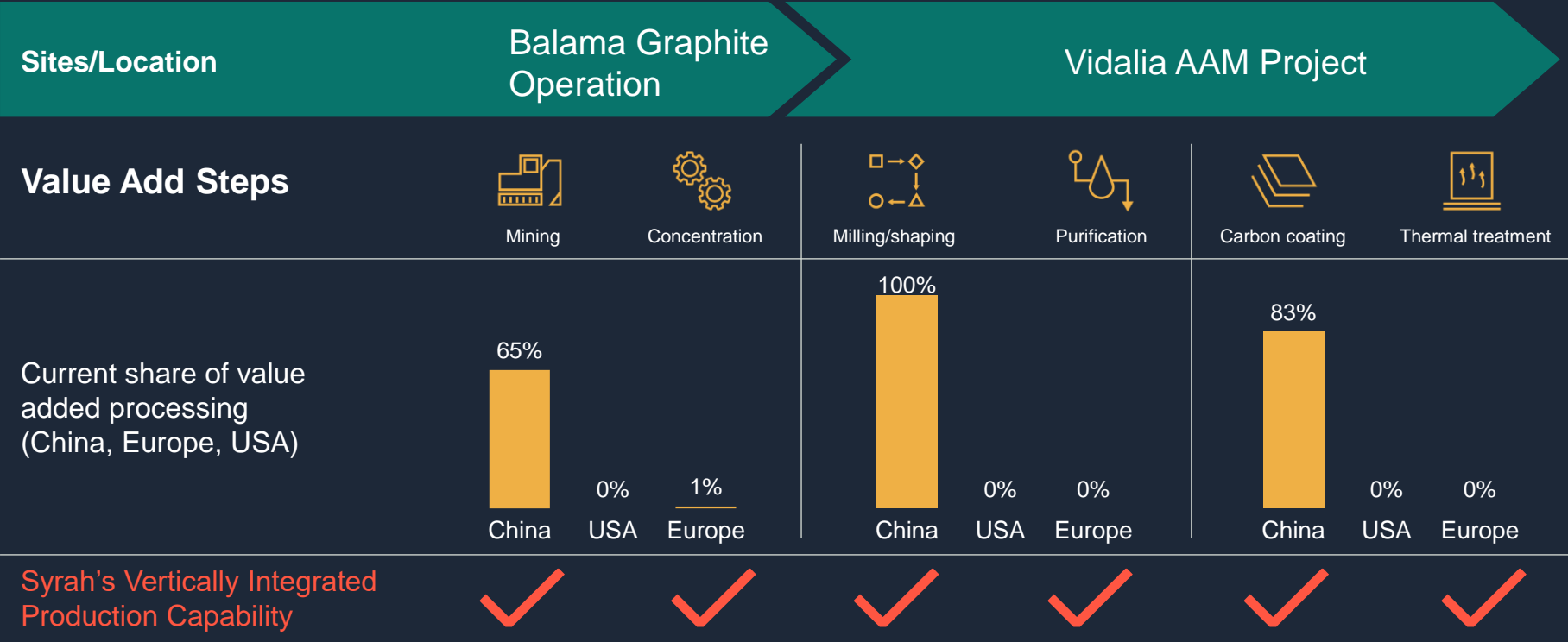
## Ongoing Activities



- Product development and testing (small particle sizes)
- Equipment trialing (purification, carbonisation and coating) and R&D for optimisation of a larger expansion of Vidalia
- DFS and detailed engineering on a 45ktpa AAM facility at Vidalia

# Vertically integrated supply strategy

**Syrah’s vision** is to be the world’s leading supplier of superior quality graphite and anode material products, working closely with customers and the supply chain to add value in battery and industrial markets



## Benefits of vertical integration to Syrah:

- Margin capture / cost protection
- Attractive financial returns
- Enhanced channel to market and customer diversity

## Benefits of vertical integration to battery makers / auto OEMs:

- Security of supply
- Optimisation of supply chain management
- Single chain of custody / full ESG auditability

# Syrah is a near-term AAM supply option for USA and European markets

## Vidalia AAM Facility

- Establishing US-based AAM supply
- Vertically integrated with Balama
- Localised AAM supply for US customers to complement AAM imports from Asia

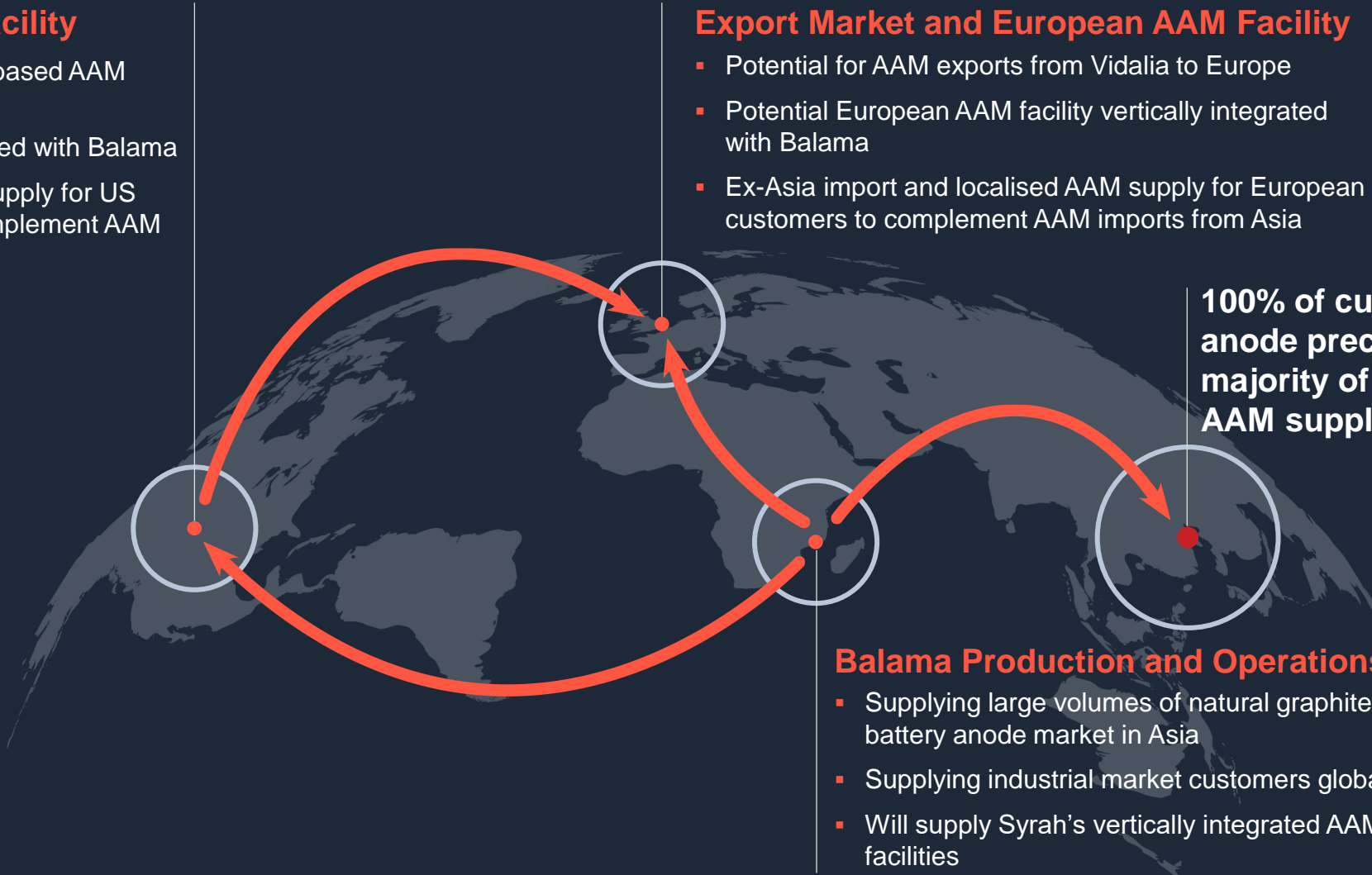
## Export Market and European AAM Facility

- Potential for AAM exports from Vidalia to Europe
- Potential European AAM facility vertically integrated with Balama
- Ex-Asia import and localised AAM supply for European customers to complement AAM imports from Asia

**100% of current global anode precursor and majority of current global AAM supply**

## Balama Production and Operations

- Supplying large volumes of natural graphite to the battery anode market in Asia
- Supplying industrial market customers globally
- Will supply Syrah's vertically integrated AAM facilities





# Q4 2022 outlook

## End-market growth

EV sales growth, constructive demand environment for anode material and ongoing Chinese supply challenges driving strong demand and sustained higher pricing for Balama products

## Balama production

Increasing Balama production to 20kt per month with consideration of market demand, forward customer contracting and shipping availability

## Vertical integration in the US

Advance construction of the Vidalia Initial Expansion within schedule and budget

## Balance sheet

Maintain liquidity for Balama operations under various market scenarios and advance debt and grant funding



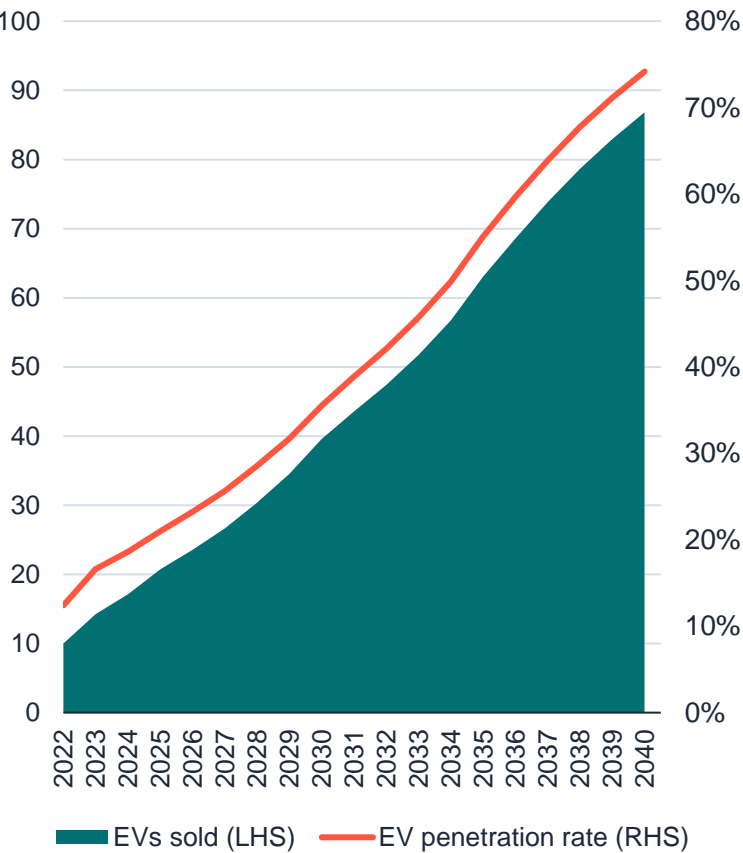


# Appendix

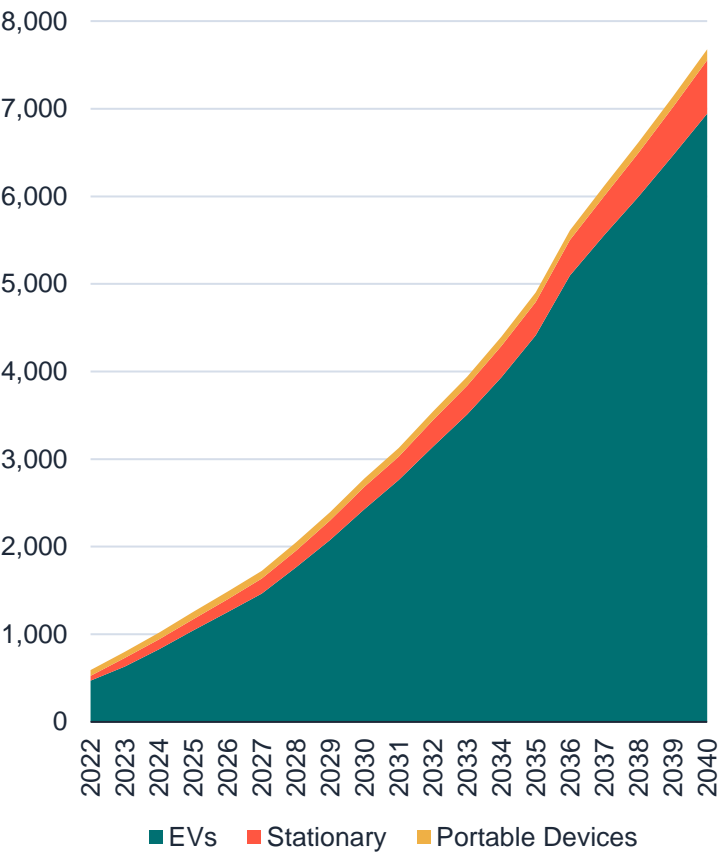


# Battery and natural graphite fines (-100mesh) demand is in the early stages of growth – driven by EV adoption

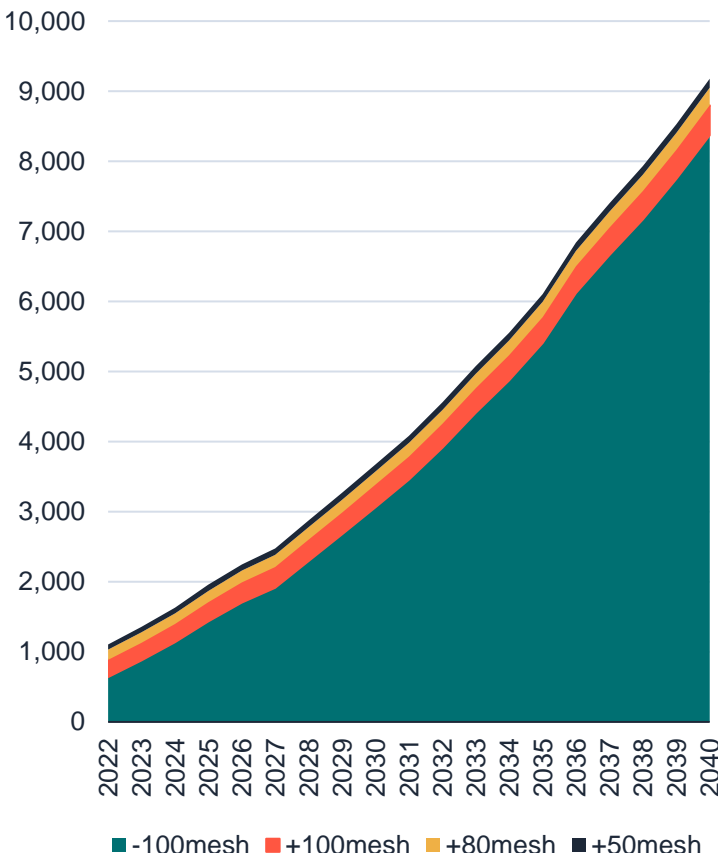
Global EV Sales (Millions)



Lithium-ion Battery Capacity (GWh)



Natural Graphite Demand (kt)

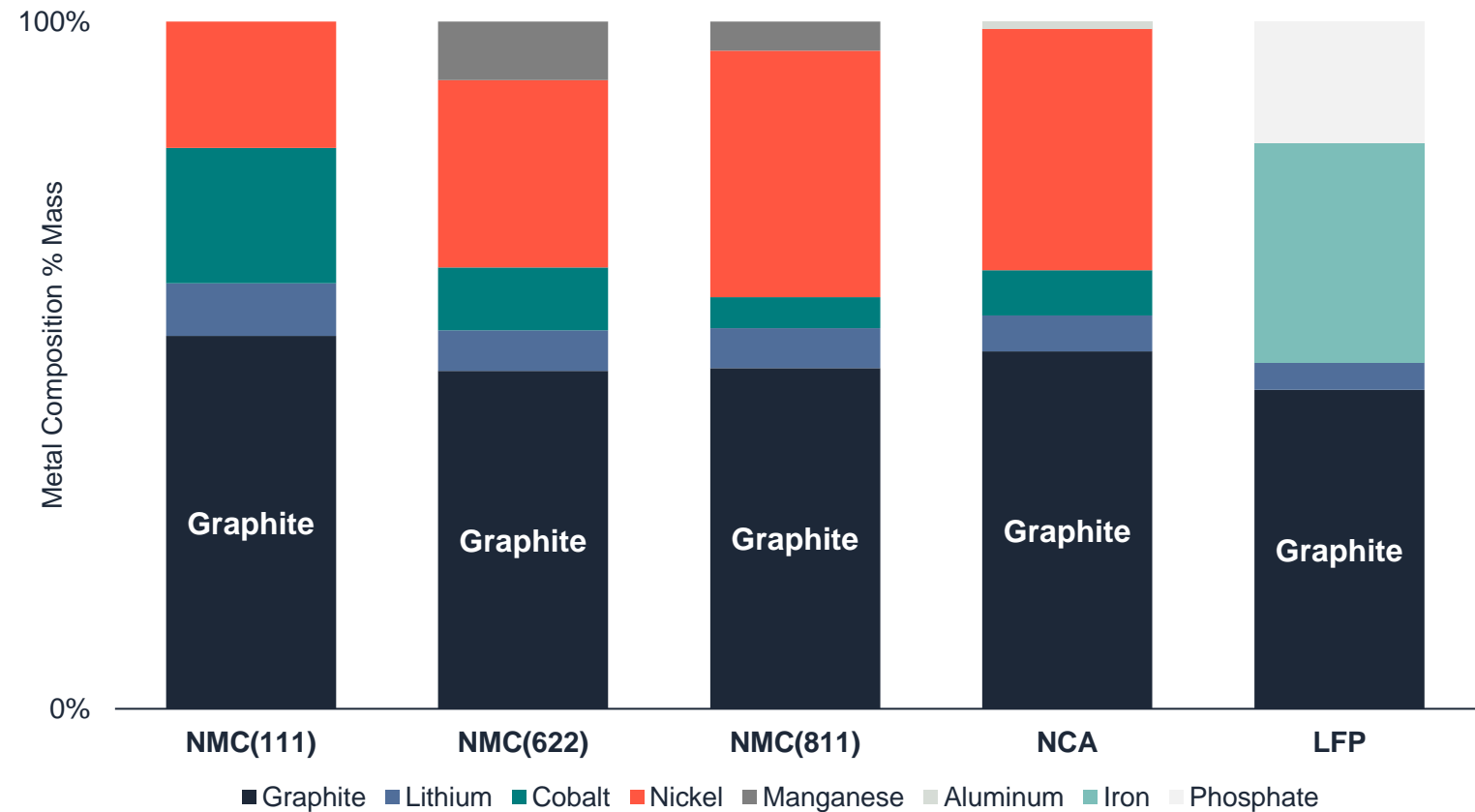


Source: Benchmark Mineral Intelligence Flake Graphite Forecast, Q3 2022.

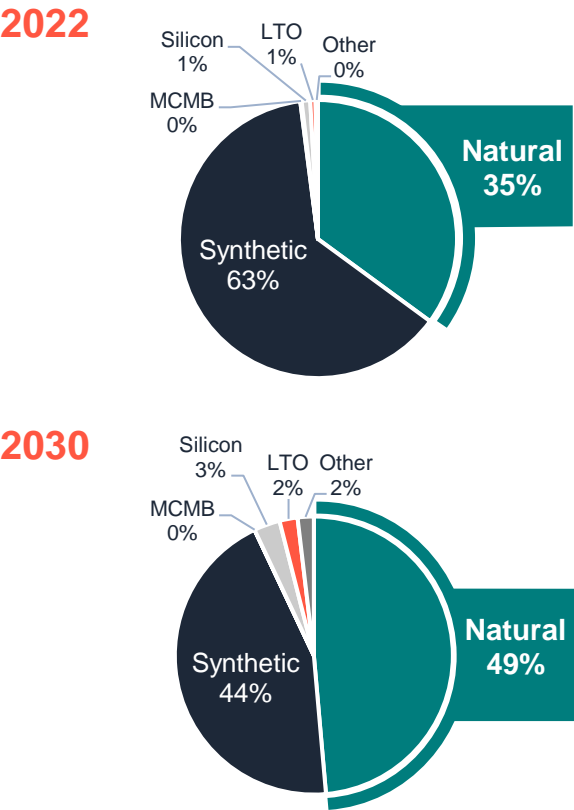


# Graphite is a high intensity material in EV batteries, with costs / emissions expected to drive shift towards natural graphite

Battery Mineral Composition of Batteries<sup>1</sup>



Natural Graphite Demand for Batteries<sup>2</sup>



1. Source: Syrah Resources analysis, data from Gaines, L., Richa, K., & Spangenberg, J. (2018) Key issues for Li-ion battery recycling (excludes oxygen). Notes: NMC: Lithium nickel manganese cobalt oxide battery; NCA: Lithium nickel cobalt aluminium oxide battery; LFP: Lithium iron phosphate battery.  
 2. Source: Benchmark Mineral Intelligence Flake Graphite Forecast, Q3 2022.

# Syrah's global business to supply growing battery anode demand

