

Syrah Resources (SYR)

Rating: Buy | Risk: High | Price Target: \$1.40

4 May 2023

Initiation of Coverage

Key Information

Current Price (\$ps)	0.96
12m Target Price (\$ps)	1.40
52 Week Range (\$ps)	0.96 - 2.67
Target Price Upside (%)	46.2%
TSR (%)	46.2%
Reporting Currency	USD
Market Cap (\$m)	645
Sector	Materials
Avg Daily Volume (m)	9.1
ASX 200 Weight (%)	0.03%

Fundamentals

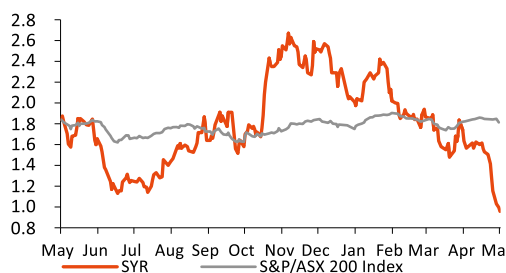
YE 30 Jun (USD)	FY22A	FY23E	FY24E	FY25E
Sales (\$m)	106	152	204	241
NPAT (\$m)	(24)	(6)	15	17
EPS (cps)	(4.2)	(0.8)	2.1	2.3
EPS Growth (%)	69.8%	79.9%	349.5%	8.3%
DPS (cps) (AUD)	0.0	0.0	0.0	0.0
Franking (%)	100%	100%	100%	100%

Ratios

YE 30 Jun	FY22A	FY23E	FY24E	FY25E
P/E (x)	(20.4)	(76.7)	30.7	28.4
EV/EBITDA (x)	(30.9)	77.8	9.4	6.1
Div Yield (%)	0.0%	0.0%	0.0%	0.0%
Payout Ratio (%)	0.0%	0.0%	0.0%	0.0%

Price Performance

YE 30 Jun	1 Mth	2 Mth	3 Mth	1 Yr
Relative (%)	(40.9%)	(47.5%)	(47.8%)	(46.5%)
Absolute (%)	(41.4%)	(48.7%)	(52.6%)	(48.0%)
Benchmark (%)	(0.5%)	(1.2%)	(4.8%)	(1.5%)



Price performance indexed to 100

Source: FactSet

Major Shareholders

AustralianSuper Pty Ltd.	17.1%
Paradice Investment Management Pty Ltd.	7.8%
GRAY BRUCE NATHANIEL	5.3%
The Vanguard Group, Inc.	2.7%
Vanguard Investments Australia Ltd.	1.5%

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Event

Syrah Resources is the only vertically integrated natural graphite active anode material producer of scale in the world outside of China. Syrah is constructing a large scale 11.25ktpa active anode material facility in Louisiana and is pre-FID on expansion to 45ktpa. Tesla is a foundation customer. At the end of March Syrah had cash US\$84m and will be drawing on a US Department of Energy loan and grant, supplied under the US Clean Energy Inflation Reduction Act, to fund the capital required.

Highlights

- Lithium dominates discussion for battery metals. Although battery demand has caused lithium prices to soar, graphite prices remain relatively stable, despite the fact graphite represents around half of the weight of a Lithium-ion battery, or 7-10 times the amount of Lithium.
- As widely reported, battery related demand for graphite is being driven by strong take up of Electric Vehicles and is growing rapidly. Battery-related demand for graphite breached a key inflection point at the end of 2022 when it rose to over 50% of the total market. Further, demand is expected to grow from 50% of the graphite market to 70% in the next two years due to growing EV demand.
- When the 50% threshold was crossed in the cobalt and lithium markets in 2016 and 2020, price increases of 350% and 1,300% then followed for those commodities over the ensuing 24-month period. Combined with the substantial under-investment in new supply, we believe it is difficult to see how graphite will not experience supply deficits and rising prices over a similar period.
- 70% of natural graphite globally is currently mined and produced in China. Further, virtually all graphite concentrate that is processed downstream into either precursor battery material or active anode material is done so in China.
- Such concentration of the critical minerals market poses a strategic challenge to the rest of the world that has seen the US, Europe, Australia and other countries announce funding aimed at diversifying supply and countering China's dominant position over minerals crucial to clean energy that includes graphite.
- This will result in strong demand for battery anode precursor material and active anode material production outside China.
- Given the forecast graphite supply shortages coming, and that there are few shovel-ready projects poised to meet the forecast demand anywhere in the world, this suggests graphite prices must move up to incentivise new production.
- Syrah Resources is the only vertically integrated natural graphite active anode material producer outside of China.
- The company's Balama mine in Mozambique is globally significant with the world's largest graphite resource and a 350ktpa production capacity. The company is also moving downstream: commissioning 11.25ktpa capacity in Louisiana is expected in September.
- Syrah's move downstream promises to be transformational. The company is constructing a large-scale Active Anode Material facility in Mississippi, Louisiana. The budget for the initial 11.25ktpa facility was revised from US\$176m to US\$180-\$186m in the March quarter, with commissioning expected in the September quarter 2023. SYR has released the DFS for expanding the facility to 45ktpa and seek to move to FID later in 2023.

Recommendation

We initiate on Syrah Resources with a Buy recommendation and \$1.40 price target.

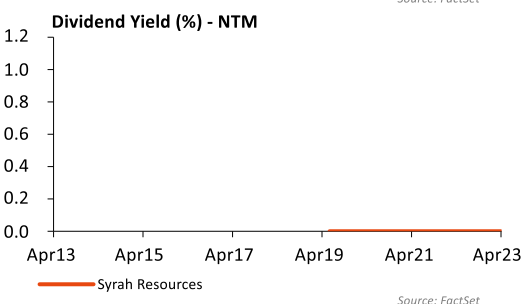
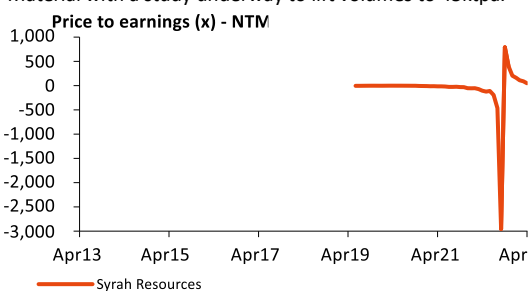
**Syrah Resources
Materials**

FactSet: SYR-AU / Bloomberg: SYR AU

Key Items	Data
Recommendation	BUY
Risk	HIGH
Price (\$ps)	0.96
Target Price (\$ps)	1.40
52 Week Range (\$ps)	0.96 - 2.67
Shares on Issue (m)	673
Market Cap (\$m)	645
Enterprise Value (\$m)	618
TSR (%)	46.2%

Company Description

Syrah Resources is the only vertically integrated natural graphite active anode material supplier outside of China. The Balama mine has 350ktpa nameplate capacity and has been in operation since 2017. The downstream Vidalia plant is targeting production of 11.25ktpa of Active Anode Material with a study underway to lift volumes to 45ktpa.



Financial Year End: 30 June

Investment Summary (USD)	FY21A	FY22A	FY23E	FY24E	FY25E
EPS (Reported) (cps)	(14.4)	(5.7)	(0.8)	2.1	2.3
EPS (Underlying) (cps)	(13.7)	(4.2)	(0.8)	2.1	2.3
EPS (Underlying) Growth (%)	(0.6%)	69.8%	79.9%	349.5%	8.3%
PE (Underlying) (x)	(5.7)	(20.4)	(76.7)	30.7	28.4
EV / EBIT (x)	(7.1)	(17.3)	(59.3)	13.0	10.9
EV / EBITDA (x)	(8.6)	(30.9)	77.8	9.4	6.1
DPS (cps) (AUD)	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Franking (%)	100%	100%	100%	100%	100%
Payout Ratio (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Profit and Loss (USD) (m)	FY21A	FY22A	FY23E	FY24E	FY25E
Sales	29	106	152	204	241
Sales Growth (%)	169.2%	265.6%	42.8%	34.8%	18.2%
Other Operating Income	3	12	12	12	12
EBITDA	(48)	(13)	5	44	68
EBITDA Margin (%)	nm	(12.6%)	3.5%	21.5%	28.1%
Depreciation & Amortisation	(10)	(11)	(12)	(12)	(30)
EBIT	(58.1)	(23.8)	(7.0)	31.6	37.7
EBIT Margin (%)	nm	(22.5%)	(4.6%)	15.5%	15.6%
Net Interest	(6)	(3)	(1)	(9)	(14)
Pretax Profit	(64)	(27)	(8)	22	24
Tax	(3)	3	3	(7)	(7)
Tax Rate (%)	4.2%	(9.6%)	(30.0%)	(30.0%)	(30.0%)
NPAT Underlying	(67)	(24)	(6)	15	17
Significant Items	0	0	0	0	0
NPAT Reported	(67)	(24)	(6)	15	17
Cashflow (USD) (m)	FY21A	FY22A	FY23E	FY24E	FY25E
EBIT	(58)	(24)	(7)	32	38
Payments to Suppliers	(61)	(131)	(146)	(161)	(174)
Receipts from Customers	25	98	152	204	241
Tax Paid	0	0	3	3	(7)
Change in Working Capital	0	0	11	(6)	(4)
Depreciation & Amortisation	10	11	12	12	30
Other	(10)	(9)	(14)	(22)	(44)
Operating Cashflow	(35)	(31)	17	31	44
Capex	(22)	(99)	(185)	(45)	(5)
Acquisitions and Investments	(0)	0	(15)	(15)	(15)
Disposal of Fixed Assets/Investments	0	0	0	0	0
Other	2	(4)	0	0	0
Investing Cashflow	(19)	(103)	(200)	(60)	(20)
Equity Raised / Bought Back	14	176	72	0	0
Dividends Paid	0	0	0	0	0
Change in Debt	19	(3)	186	253	70
Other	0	0	0	0	0
Financing Cashflow	33	172	258	253	70
Exchange Rate Effect	(0)	(0)	0	0	0
Net Change in Cash	(22)	37	75	224	94
Balance Sheet (USD) (m)	FY21A	FY22A	FY23E	FY24E	FY25E
Cash	53	90	165	390	483
Accounts Receivable	8	21	13	18	21
Inventory	20	25	6	8	10
Other Current Assets	0	0	0	0	0
PPE	313	394	582	630	620
Total Assets	395	531	767	1,046	1,134
Accounts Payable	18	26	10	11	12
Short Term Debt	3	2	2	2	2
Long Term Debt	83	84	270	523	593
Total Liabilities	136	132	302	565	637
Ratios	FY21A	FY22A	FY23E	FY24E	FY25E
ROE (%)	(48.8%)	(9.2%)	(1.3%)	3.0%	3.2%
Gearing (%)	10.3%	(1.1%)	17.5%	20.7%	17.2%
Net Debt / EBITDA (x)	(0.7)	0.4	20.0	3.1	1.6

Syrah Resources – preferred producer

- We initiate on Syrah Resources **with a Buy recommendation and \$1.40 target price.**
- Syrah Resources is the only vertically integrated natural graphite active anode material producer outside of China.
- The company's Balama mine in Mozambique is globally significant with the world's largest graphite resource and a 350ktpa production capacity. The company is also moving downstream: commissioning 11.25ktpa in Louisiana is expected in September.
- 2022 production at Balama was a record 163kt, but less than half capacity. Basket prices received, although up 35% through the year, remain below the US\$1k/t assumed in the 2015 Feasibility Study.
- December 2022 quarterly costs were impacted by a strike, a security shutdown and high government-pegged diesel costs. Management provided cost guidance in the March quarter that with a normalization of energy costs, Balama could lift annual production to 20ktpm (annual run rate 240kt) at a C1 cost of US\$430-US\$480/t.
- Balama reported weaker operational performance in the March 2023 quarter primarily due to operational stoppages as a result of finished product inventory constraints, ore feed variability and unplanned equipment issues. Plant recovery was 71% during the quarter and improved to 76% on 14kt natural graphite production in the month of March.
- Syrah's move downstream promises to be transformational. The company is constructing a large-scale Active Anode Material facility in Mississippi, Louisiana. The budget for the initial 11.25ktpa facility was revised from US\$176m to US\$180-\$186m in the March quarter, with commissioning expected in the September quarter 2023. SYR has released the DFS for expanding the facility to 45ktpa and seek to move to FID later in 2023.
- The DFS forecasts an NPV of US\$208-\$794m and 4-6 year payback assuming a flat AAM price of US\$5,000 to US\$7,000/t. The EBITDA margin is 44-60% at estimated AISC US\$3,023/t, assuming the Balama natural graphite cost is US\$425/t. The total capital cost came in at US\$539m including US\$38m contingency.
- We forecast average realised prices of US\$6,144/t over the first ten years of production and average costs of US\$3,525/t. The Tesla contract is at a fixed price and the obligation to take product commences once commercial production is achieved.
- Tesla has signed up as an initial Vidalia customer: 8ktpa for an initial term of 4 years at an undisclosed price. Tesla has also exercised an option to take an additional 17ktpa from an expanded 45ktpa facility. In addition, SYR has non-binding MOU's in place for additional material with Ford, SKon and LG Energy Solution, subject to qualification and testing.
- At the end of March 2023 Syrah had cash US\$84m, including US\$36m in restricted cash. The first US\$21m advance of the US\$102m loan from the US Department of Energy was drawn during the March quarter. SYR is also progressing negotiations for a US\$220m grant which will help fund expansion to 45ktpa and has a new convertible note deed for up to US\$99m in three series.
- The company has floated building a similar facility in Europe with the help of a strategic partner.

Figure 1: Syrah valuation assumptions

WACC	
Risk Free Rate	4.0%
Equity Risk Premium	6.0%
Beta	1.1
Cost of Equity	10.6%
Target Gearing	20%
Cost of Debt	4.0%
Tax Rate	30%
WACC	9.0%

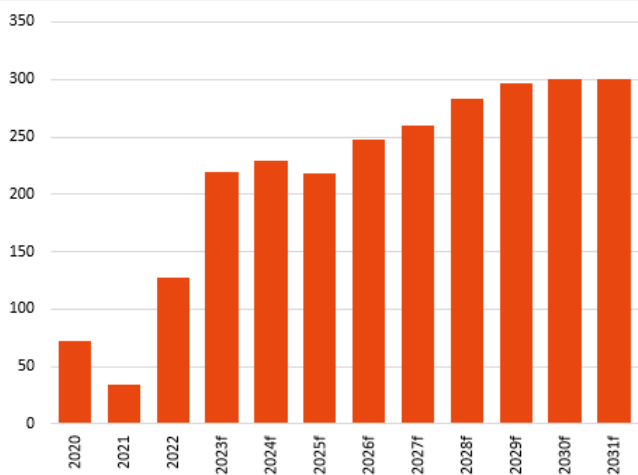
Source: Company reports, Shaw and Partners analysis

Figure 2: Syrah valuation

Syrah Resources Valuation	A\$m	A\$ps
Balama	750	1.01
Vidalia	198	0.27
Cash	80	0.11
Exploration upside	25	0.03
Corporate costs	-15	-0.02
Total Valuation	1,038	1.40

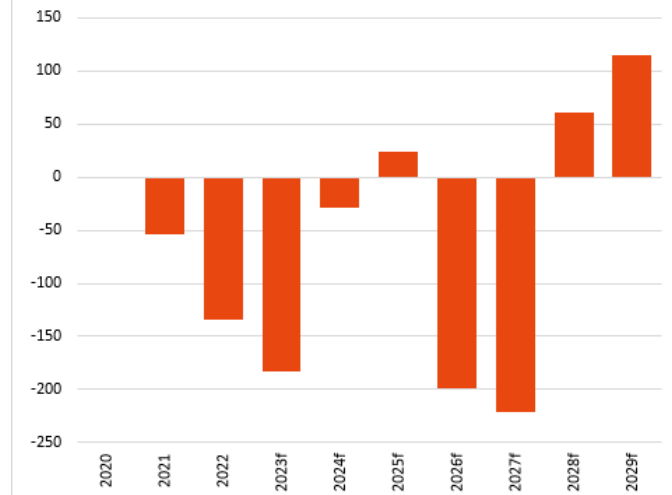
Source: Company reports, Shaw and Partners analysis

Figure 3: Balama concentrate produced (t)



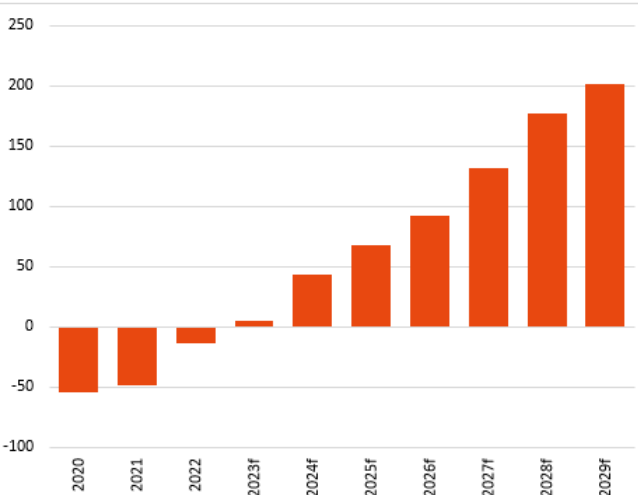
Source: Company data & Shaw and Partners analysis

Figure 4: Free cash flow strongly positive post Vidalia expansion



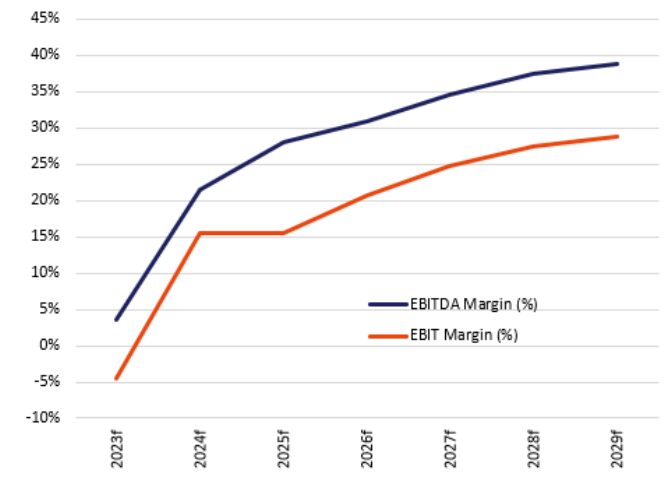
Source: Company data & Shaw and Partners analysis

Figure 5: EBITDA



Source: Company data & Shaw and Partners analysis

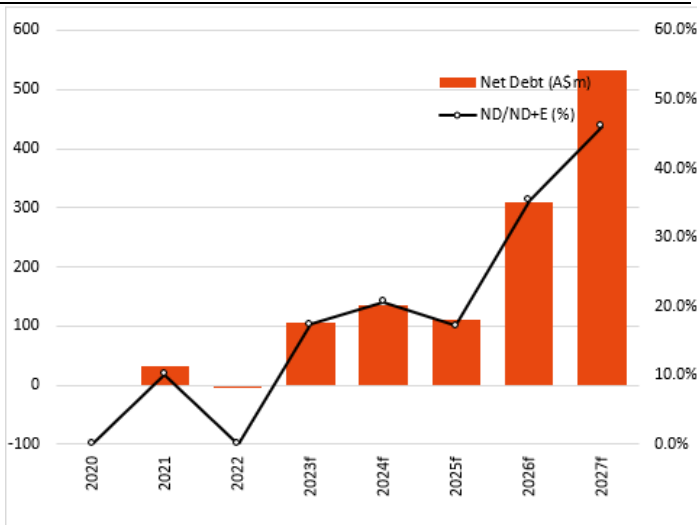
Figure 6: Margins (%)



Source: Company data & Shaw and Partners analysis

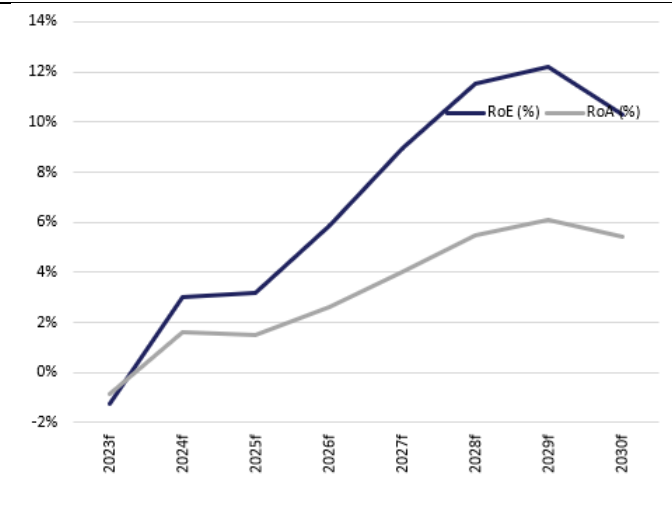
Figure 7: Net debt and gearing (US\$m, %)

Syrah has historically funded itself with equity



Source: Company data & Shaw and Partners analysis

Figure 8: Returns (%)



Source: Company data & Shaw and Partners analysis

Balama overview

Syrah Resources has been operating the Balama mine in the Southern Cabo Delgado Province of Mozambique since 2017. The operation is 265km west of the port town of Pemba and 490km from Nacala.

Early years of operation were characterised by low recoveries, inconsistent floatation and process control, resulting in cost overruns. Operations were also suspended in May 2020 due to low graphite prices and Covid, before recommencing in May 2021. In the December quarter 2022, operations were impacted strikes, security concerns and constrained international shipping.

Balama produced 41kt natural graphite in the March quarter, with production constrained by finished product inventory positions. Operational performance was also impacted ore feed variability and unplanned equipment maintenance. Plant recovery averaged 71% during the quarter but improved to 76% on 14kt natural graphite production in the month of March,

C1 cash costs (FOB Nacala/Pemba) for the quarter were US\$668 per tonne, up from US\$583/t in 2022, impacted by lower production, recoveries below 80% and increases in the diesel price since March 2022. The diesel price set by the Mozambique Government remained high and increased through the quarter, contrary to expectations for a gradual reduction. The prevailing diesel price is ~90% above the price in March 2022.

Syrah will moderate production from Balama until demand conditions and sales orders at economic prices warrant higher capacity utilisation. During this time, Syrah will execute operational improvements, bring forward planned maintenance, and focus on minimising costs.

Figure 9: Operation location



Source: Company report

Balama History

Syrah Resources floated on the ASX in September 2007 with a predominant focus on gold and copper exploration in Saudi Arabia.

2011 November – Acquisition of portfolio of South-East African exploration projects including graphite, vanadium and mineral sands. The transaction was completed via scrip and cash offer for unlisted African explorer Janaca Resources.

2013 January – Balama West mineral resource creates the world's largest graphite deposit.

2013 December – \$35m placement at \$2.55.

2014 September – Paul Kehoe (Jacana Resources) steps down as MD, replaced by Tolga Kumova. Jim Askew appointed to the Board.

2015 May – Feasibility Study highlights include US\$138m capex for 380ktpa production capacity at C1 cost US\$286/t. Payback period two years after commercial production.

2015 August – \$211m placement & entitlement offer at \$3.25.

2016 June – \$194m placement at \$6.05.

2016 October – Jim Askew steps in as Executive Chairman after Tolga Kumova resigns.

2017 February – Shaun Verner appointed Managing Director and CEO.

2017 September – \$211m placement & entitlement offer at \$3.38.

2017 November – First production of bagged flake graphite >95% fixed carbon.

2018 May – Purchase agreement signed for Vidalia BAM development.

2018 September – \$94m placement at \$2.23.

2019 January – Balama declaration of commercial production.

2019 June – \$55.8m convertible note at 8% and 1:5 entitlement at \$0.81 to raise \$55.8m.

2019 September – SYR reduces production 5ktpm in response to lower graphite prices.

2020 March – Suspension of production at Balama and Vidalia due to Covid.

2020 July – First production of anode precursor material at Vidalia following May restart.

2020 December – Vidalia BFS for 10ktpa AAM production for US\$138m capex and US\$3,149/t opex vs observable natural graphite spot AAM price US\$5,471/t.

2020 December – \$56m placement at \$0.90.

2021 December – Binding AAM offtake agreement with Tesla.

2022 February – Vidalia FID and \$125m placement and 1:5.9 entitlement offer at \$1.48.

2022 July – MOU with Ford and SK On.

2022 July – Syrah receives US\$102m loan from US DOE.

2022 October – MOU with LG Energy Solution.

2022 October – Syrah selected for up to US\$220m grant from US DOE.

Figure 10: Balama Graphite Operation – drying and screening



Source: Syrah Resources presentation September 2019

Balama Mining, Processing and Shipping

Balama is the largest natural graphite mining and processing operation in the world.

The 120mt of graphitic carbon resource and 18mt reserve underpins a 50-year mine life, with 80% of material fine flake (-100mesh), used in the battery anode market.

Balama plant capacity is 350ktpa in a market that currently is around 1mtpa of demand. 2022 production was a record 163kt, less than half capacity.

Figure 11: Ore reserve estimate at 7.2% TGC cut-off

	31-Dec-22			31-Dec-21		
	Tonnes (Mt)	TGC (%)	Graphitic carbon (Mt)	Tonnes (Mt)	TGC (%)	Graphitic carbon (Mt)
ATIVA+MUALIA	55.5	17.9	9.9	59.1	16.9	10.0
Proved	-	-	-	-	-	-
Probable	55.5	17.9	9.9	59.1	16.9	10.0
MEPICHE	53.4	14.9	8.0	47.0	14.4	6.8
Proved	-	-	-	-	-	-
Probable	53.4	14.9	8.0	47.0	14.4	6.8
STOCKPILES	1.4	11.1	0.2	0.9	9.3	0.1
Proved	-	-	-	-	-	-
Probable	1.4	11.1	0.2	0.9	9.3	0.1
TOTAL	110.3	16.4	18.0	107.0	15.7	16.8
Proved	-	-	-	-	-	-
Probable	110.3	16.4	18.0	107.0	15.7	16.8

Source: Syrah Resources Annual Report 2022

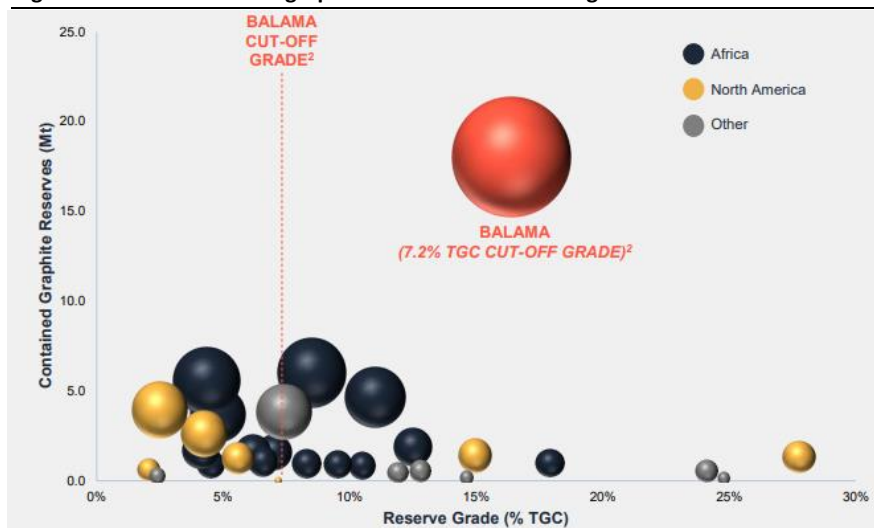
Mining is undertaken via simple open pit operation with a small truck and excavator fleet. The strip ratio is low, 0.5:1. Processing is conventional, involving a simple crush circuit followed by grinding. Flotation results in a concentrate grade greater than 95%.

Concentrate is bagged and trucked to port where it is sold at port on a CIF basis. 2022 sales benefitted from breakbulk shipments through the Pemba port (300km) following container constraints on vessels sailing from Nacala (490km) which impacted 2021 sales. There are currently no logistical impediments to Balama sales of at least 20kt per month with the easing of container shipping constraints and the integration of breakbulk shipping through Pemba (10kt per shipment).

Figure 12: Balama asset overview

Asset Overview	
Location	Southern Cabo Delgado Province, Mozambique
Reserve & Resource ²	110Mt (16.4% TGC) Graphite Ore Reserve 1,036Mt (11.6% TGC) Graphite Mineral Resource
Life of Mine ³	~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 383kt produced since 2018
Product	94% to 98% fixed carbon graphite concentrate
C1 Cost Guidance	Forecast US\$430-480/t at 20kt per month production rate

Figure 13: Ex China natural graphite reserves and reserve grade



Source: Syrah presentation February 2023

Source: Syrah presentation February 2023

Syrah produces 23 natural graphite products across eight different mesh sizes. Balama's natural graphite product mesh sizes range from +50 mesh (coarse or large flakes) to -100 mesh (fines flakes).

Graphite concentrate is sold on a mix of term contract and spot. Chinese markets are typically spot priced. Volume contracts over a longer tenure will typically have repricing mechanisms on a frequent basis. Around 80% of volume is sold to China, the balance goes into industrial markets around the world. While graphite markets for steel making, lubricants and other industrial offer GDP+ style growth, the majority of growth over the next decade is forecast to come from the anode material of lithium-ion battery markets.

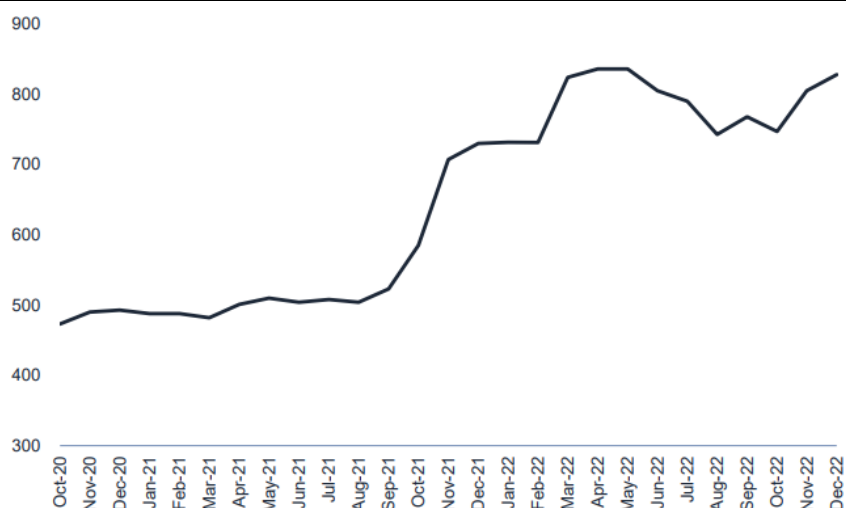
Figure 14: Demand profile for natural graphite

Graphite Uses		Market Growth (Stage)	Jumbo	Large	Medium	Fines	Powder
Size	(micron) (mesh)		>300	300-180	180-150	150-75	<75
			+50	+80	+100	-100	-200/-325
	Grade (% TGC)		94%+	94%+	94%+	94%+	80%+
Balama product mix			5%	15%		80%	0%
Lithium-Ion Batteries	High (Early)					→	
Refractories and Foundries	Moderate (Mature)		→				
Expandable Graphite	High (Nascent)		→				
Recarburisers	Moderate (Mature)					→	
Friction Products	Moderate (Mature)			→			
Graphite Shapes	Moderate (Mature)				→		
Lubricants and Coatings	Moderate (Mature)		→				
Carbon Brushes	Moderate (Mature)		→				

Source: Syrah Resources company presentation

EV sales grew 63% year on year in 2022 to nearly 11 million units according to LMC Automotive and Chinese AAM production increased 94% year on year in 2022 (ICCSino), driving strong demand for natural graphite into the battery anode market. Demand growth and Chinese natural graphite production disruptions through the year resulted in low inventory positions and greater demand for imported natural graphite into China. Reported natural graphite prices ticked up through 2022.

Figure 15: Natural graphite fines prices (US\$/t)



Source: Syrah Resources, Benchmark Mineral Intelligence

EV and battery manufacturing companies continue to commit to substantially expanding global EV and battery manufacturing capacity to meet growing demand around the world. Coated spherical graphite is a processed form of high purity graphite that is a key component of the negatively charged anode of a Lithium-Ion battery. Syrah has been selling -100 mesh products into the Chinese battery anode supply chain since 2018.

Vidalia

Currently around 90% of natural graphite anode material comes from China, the balance comes from Japan and Korea and that balance uses spherical graphite, a precursor product which is produced in China. Syrah's ambition to create an ex-China source of upstream natural graphite is a significant change in terms of diversification and supply risk for auto makers and battery manufacturers. A further differentiating factor is it also a fully auditable ESG trail back to the mine source material.

Syrah has estimated a cost of US\$180m-US\$186m to construct a large-scale Active Anode material facility in Louisiana with initial capacity 11.25ktpa. Completion and commissioning is expected in the September quarter 2023. The March quarter report included robust DFS results for expansion to 45ktpa.

Figure 16: 45ktpa AAM Vidalia facility

45ktpa AAM Vidalia facility	Unit	Metric		
		5,000	6,000	7,000
AAM price	US\$ per tonne (2023 real)			
NPV ³	US\$ million (pre-tax)	309	725	1,140
	US\$ million (post-tax)	208	503	794
IRR ³	% (pre-tax, nominal)	14.9%	20.5%	25.7%
	% (post-tax, nominal)	13.9%	18.7%	22.9%
Payback period from commencement of a 45ktpa AAM facility operations	Years	6.3	4.6	3.8
Annual long-term revenue	US\$ million (2023 real)	\$233	\$278	\$323
Annual long-term EBITDA	US\$ million (2023 real)	\$103	\$148	\$192
Annual long-term EBITDA margin	%	44.1%	53.1%	59.5%

Source: Syrah Resources company presentation

Balama graphite concentrate is to be used as feedstock, where it will be milled to a particle size between 10 and 20 microns, before being chemically purified to a 99.95% grade. The product is then carbon coated and thermally treated to protect against degradation and the output is a finished AAM used by battery cell manufacturers.

Figure 17: Syrah to become supplier of anode products



Source: Syrah Resources company presentation

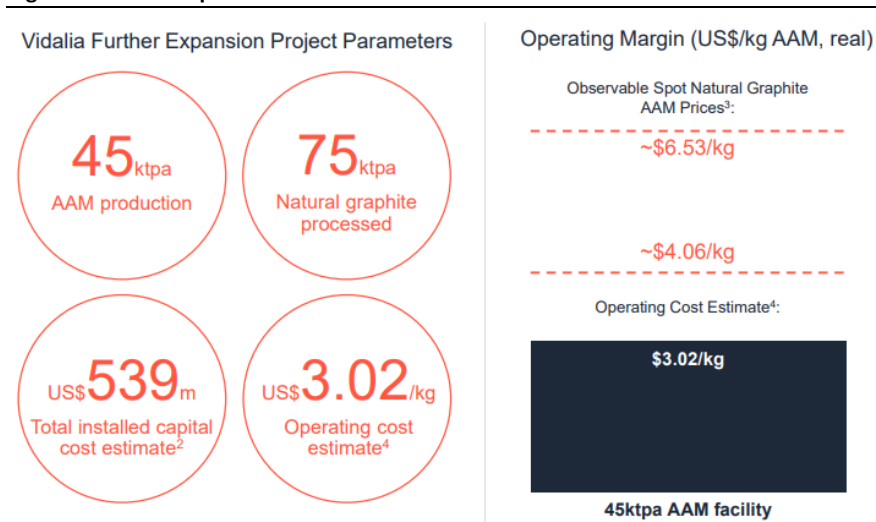
Customer engagement on the Vidalia facility has been high, with Tesla securing an offtake for 8ktpa AAM at a fixed price for 4 years, plus an additional option for 17ktpa AAM from an 45ktpa facility. Tesla offtake obligation remains conditional on SYR achieving final qualification of AAM by 31 May 2025. Agreement may be terminated if production has not started by 31 May 2024.

MOU's are also in place with Ford, SK On and LG Energy Solution to evaluate Vidalia AAM with the potential for binding offtake agreements in the near-term. AAM is not homogenous. This material requires a high level of processing expertise and extensive qualification processes with customers prior to commercial arrangements and consumption in battery cell manufacturing. The full qualification process for AAM can take up to two years.

Syrah signed binding documentation for a loan facility up to US\$102m from the US Department of Energy, made under the DOE's Advanced Technology Vehicles Manufacturing loan program. The DOE loan closed in December 2022 and first advance was made in the March 2023 quarter. SYR was also selected for a Bipartisan Infrastructure Law Battery Materials Processing and Battery Manufacturing grant of US\$220m to fund a significant proportion of costs associated with the Vidalia expansion.

We forecast average realised prices of US\$6,144/t over the first ten years of production and average costs of US\$3,525, including US\$425 internal feed costs per tonne of graphite. We expect production to ramp up to 11ktpa by 2025 up to a maximum of 40ktpa by 2029.

Figure 18: Vidalia operational metrics



Source: Syrah Resources company presentation

Operating costs

Balama operations were interrupted by industrial action during the December 2022 quarter, with production suspended for most of October before resuming. Then in November, a security incident resulted in the site being evacuated for two days. As a result C1 cash costs for the December quarter were US\$709/t of which US\$89/t was attributed to the unplanned operational disruptions and US\$86/t was attributed to elevated diesel costs, set at a fixed price by the Mozambique Government.

C1 cash costs in the March quarter were US\$668/t, impacted by lower production, recoveries below 80% (~US\$20 per tonne) and increases in the diesel price since March 2022 (~US\$88 per tonne). The diesel price set by the Mozambique Government remained high and increased marginally through the quarter. The prevailing diesel price is ~90% above the price in March 2022.

We forecast C1 cash costs of US\$481/t over the next five years. Balama's cash costs are expected to reduce as the production rate increases beyond 20kt per month, with increasing sales and no inventory constraints.

Management have provided C1 cash cost guidance of US\$430-US\$480/t at a 20kt per month production rate, assuming a normalisation of diesel prices, the 11.25MW Solar Battery System operating at full capacity and labour rates in-line with the Company Level Agreement. The Solar Battery system is scheduled to be commissioned before the end of the June quarter and is expected to reduce site operating costs by around one-third.

Feed grade averaged 20% in 2022, up from 18% in 2021 and was 20% in the March quarter. We forecast 19% in-line with the March 2023 reserve and resource update. Recoveries have bounced back from below 70% prior to 2020 to 80% in 2022 and back to 71% during the March quarter (76% month of March). We forecast 79% for LOM.

Financial modelling assumptions and risks

The key assumptions in our model include:

- Construction capital spent on Balama is largely complete. We forecast slightly elevated sustaining capital US\$5mpa over the next three years as the company upgrades the Tailings Storage Facility before reducing, although on-going project spend on an as-needs basis is likely.
- We assume a ramp-up in Balama throughput to 1.4mt and peak graphite production 300kt in 2030 vs nameplate 350kt.
- We assume a Balama basket price of US\$776/t over the next five years, an 11% discount to our graphite fines price assumption US\$861/t. Balama product prices are bilaterally negotiated under contract. For reference, the Balama price discount has averaged 14% over the past two years.
- Balama C1 costs average US\$481/t and AISC US\$500/t over the next five years on our forecasts.
- Vidalia Stage 1 capex is estimated to be US\$180m, in-line with upgraded guidance. We expect this to be funded by cash and US DOE loans. We are cautious on the potential for cost over-runs as the commissioning date draws closer. We have included an additional US\$40m in capex spend on the plant over the next two years to get it through the commissioning period.
- We expect ramp up of Vidalia production to 11ktpa in 2025 and capex to pause for 12 months before construction begins on the expansion to 45ktpa in 2026. We have modelled US\$600m of capex on the expansion over the three years to 2028 and await further details post FID in 2024.
- We assume average realised BAM prices of US\$5,125/t over the first five years and average costs including feed and processing of US\$3,525.

On our base case forecasts, we model Balama generating US\$90mpa EBITDA at steady state in 2028 and Vidalia generating US\$30m at a 11ktpa in 2025 and US\$150m at 40ktpa in 2030.

Figure 19: Balama financials (US\$m) – Shaw forecasts

Balama (US\$m)	2022	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
Plant feed (kt)	1,014	1,451	1,507	1,434	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Tonnes produced (kt)	128	219	229	218	247	260	283	297	300	300	300
Revenue	107	148	177	172	197	210	229	241	243	248	254
Expenses	78	124	113	105	118	125	136	145	147	147	147
EBITDA	29	24	65	67	79	85	93	96	96	101	107
D&A	11	12	12	12	12	12	12	12	12	12	12
EBIT	18	12	52	55	66	73	81	84	84	89	95
Balama WA sales price (CIF, USD/t)	564	674	766	782	798	810	810	810	810	828	847
AUD/USD	0.72	0.68	0.72	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Revenue (US\$/t)	836	677	775	790	798	810	810	810	810	828	847
AISC (US\$/t)	0	0	0	0	0	0	0	0	0	0	0
Expenses (US\$/t)	613	566	492	484	479	481	482	487	489	492	491
EBITDA (US\$/t)	224	111	282	306	319	329	328	323	321	337	356
D&A (US\$/t)	82	56	53	56	50	47	43	41	41	41	41
EBIT (US\$/t)	142	55	229	250	269	281	285	282	280	296	315
Capex	0	5	5	5	4	4	4	5	5	5	4
Nominal Tax @ 30%	-2	-4	-16	-16	-20	-22	-24	-25	-25	-27	-28
Cash Flow	27	16	44	45	55	59	65	66	66	69	74

Source: Shaw and Partners analysis

Figure 20: Vidalia financials (US\$m) – Shaw forecasts

Vidalia (US\$m)	2022	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
BAM produced (t)	0	1,000	5,500	11,000	16,000	26,000	36,000	40,000	40,000	40,000	40,000
Revenue	0	4	27	69	100	169	243	280	287	294	302
Expenses	0	0	19	39	56	92	127	141	141	141	141
EBITDA	0	4	8	30	44	77	116	139	146	153	161
D&A	0	0	0	18	18	25	35	40	55	55	55
EBIT	0	4	8	12	26	52	81	99	91	98	106
BAM price (US\$/t)	0	1,750	4,875	6,250	6,250	6,500	6,750	7,000	7,175	7,354	7,538
AUD/USD	0.72	0.68	0.72	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Revenue (US\$/t)	0	3,500	4,909	6,295	6,250	6,500	6,750	7,000	7,175	7,354	7,538
AISC (US\$/t)	0	0	0	0	0	0	0	0	0	0	0
Expenses (US\$/t)	0	0	0	0	0	0	0	0	0	0	0
EBITDA (US\$/t)	0	3,500	1,384	2,770	2,725	2,975	3,225	3,475	3,650	3,829	4,013
D&A (US\$/t)	0	0	0	0	0	0	0	0	0	0	0
EBIT (US\$/t)	0	0	0	0	0	0	0	0	0	0	0
Capex	0	180	40	0	250	300	50	15	15	15	15
Nominal Tax @ 30%	0	0	-1	-1	-3	-16	-24	-30	-27	-29	-32
Cash Flow	0	-177	-33	29	-209	-238	42	94	104	109	114

Source: Shaw and Partners analysis

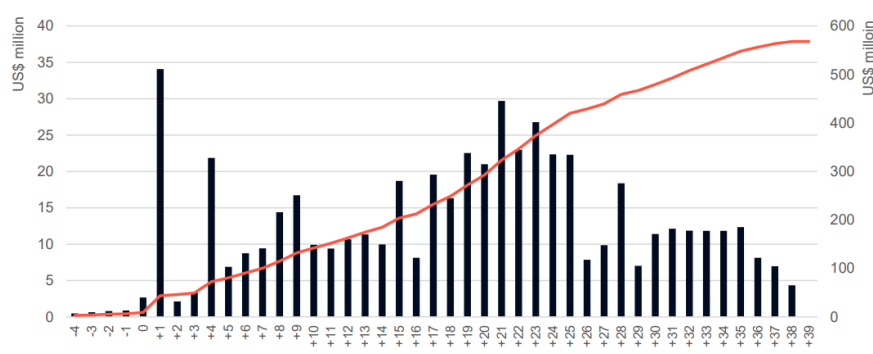
Financing - balance sheet and cash flow

Currently US\$84m cash and US\$71m debt

At the end of March 2023 Syrah had cash \$US84m, US\$36m of which was restricted. SYR flagged that it had drawn the first US\$21m advance on the US\$102m loan from the US Department of Energy to fund the 11.25ktpa Vidalia facility. The company is also negotiating the US\$220m grant, and a separate Advanced Technology Vehicles Manufacturing loan from the DOE to fund a significant portion of the Vidalia expansion.

We forecast capex of US\$235m to be spent on Vidalia over the next three years, largely bringing Stage 1 online. The DFS total installed capital cost estimate for expansion to 45ktpa was US\$539m, in addition to the capital cost estimate for Stage 1. We have modelled US\$600m to be spend over three years from 2026.

Figure 21: Summary total capital costs for Vidalia expansion project



Source: Syrah Resources company presentation

At the end of 2022 Syrah had US\$71m in borrowings, comprising largely 5-year 8% unsecured convertible notes under which interest is accrued quarterly in arrears. If Syrah elects to make interest payments to cash then the rate is 7.5%pa. There are two tranches of notes issued in June 2019 and June 2021.

Syrah announced a new convertible bond deed for up to US\$99m in three series in April 2023 comprising:

- US\$33m Series 4 to be issued in May 2023.

- US\$33m Series 5 to be issued at Syrah's option prior to 31 December 2023 subject to shareholder approval.
- US\$33m Series 5 to be issued at Syrah's option prior to 30 June 2024 subject to shareholder approval.

The initial conversion price of the new notes is \$1.536 per share with a maturity date of 12 May 2028. US\$33m Series 5 to be issued at Syrah's option prior to 31 December 2023 subject to shareholder approval. Interest will accrue on the Series 4 note at 14.0%pa until shareholders approval all resolutions. Once shareholders approve the resolutions, interest falls to 11.0%pa.

Syrah's strategy is to use the Series 4 note to provide flexibility to assess Balama forward sales orders and production prior to issuing either of the Series 5 or 6 notes.

Figure 22: Syrah balance sheet (US\$m)

BALANCE SHEET (US\$m)	2022	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
Cash and cash equivalents	90	165	390	483	354	132	194	309	428	571	725
Trade and other receivables	21	13	18	21	26	33	41	46	46	48	49
Other	25	6	8	10	12	16	19	21	22	22	23
Total current assets	136	185	416	515	392	181	255	376	496	641	797
Property, plant and equipment	274	447	480	455	678	945	952	920	872	825	777
Exploration and evaluation expend	120	135	150	165	175	185	195	205	215	215	215
Total non-current assets	433	621	669	659	892	1,169	1,186	1,164	1,126	1,079	1,031
TOTAL ASSETS	570	806	1,085	1,173	1,285	1,350	1,441	1,539	1,623	1,720	1,828
Trade and other payables	26	10	11	12	14	18	22	23	24	24	24
Total current liabilities	30	14	15	16	19	22	26	28	28	28	28
Deferred tax	4	4	13	14	20	29	39	45	43	47	51
Borrowings	84	270	523	593	663	663	663	663	663	663	663
Total non-current liabilities	102	288	550	621	697	706	716	722	720	724	728
TOTAL LIABILITIES	132	302	565	637	716	728	742	750	748	752	756
NET ASSETS	438	504	520	537	569	622	698	789	875	969	1,072
Net debt	-5	106	135	111	310	532	471	356	237	93	-61
Gearing (ND/ND+E %)	0%	17%	21%	17%	35%	46%	40%	31%	21%	9%	0%

Source: Company reports, Shaw analysis

Figure 23: Syrah cash flow (US\$m)

CASH FLOW (US\$m)	2022	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
Operating activities											
Receipts from customers	98	152	204	241	297	379	472	521	530	543	556
Payments to suppliers and employe	-131	-146	-161	-174	-205	-248	-295	-319	-322	-324	-324
Income taxes paid	0	3	3	-7	-7	-14	-23	-33	-39	-37	-40
Working capital movement	0	11	-6	-4	-5	-7	-8	-4	-1	-2	-2
Net cash flow from operating activities	-31	17	31	44	65	92	125	145	149	163	173
Investing activities											
Payments for PPE	-99	-185	-45	-5	-254	-304	-54	-20	-20	-20	-19
Exploration	0	-15	-15	-15	-10	-10	-10	-10	-10	0	0
Net cash flow from investing activities	-103	-200	-60	-20	-264	-314	-64	-30	-30	-20	-19
Free cash flow	-135	-183	-29	24	-199	-222	61	115	119	143	154
Financing activities											
Net proceeds from issue of shares	176	72	0	0	0	0	0	0	0	0	0
Proceeds from borrowings	0	186	253	70	70	0	0	0	0	0	0
Net cash flow from financing activities	172	258	253	70	70	0	0	0	0	0	0
Net increase/(decrease) in cash	38	75	224	94	-129	-222	61	115	119	143	154

Source: Company reports, Shaw analysis

Valuation

Price target in-line with our NPV

Our \$1.40 price target for Syrah is in-line with our NPV. Our valuation is currently largely predicated on Balama, although the importance of Vidalia to our valuation grows over time. Our valuation includes only nominal cash and exploration values, particularly given the current reserve contains at least a 50-year mine life.

Figure 24: SYR valuation assumptions

WACC	
Risk Free Rate	4.0%
Equity Risk Premium	6.0%
Beta	1.1
Cost of Equity	10.6%
Target Gearing	20%
Cost of Debt	4.0%
Tax Rate	30%
WACC	9.0%

Source: Company reports, Shaw and Partners analysis

Figure 25: SYR valuation

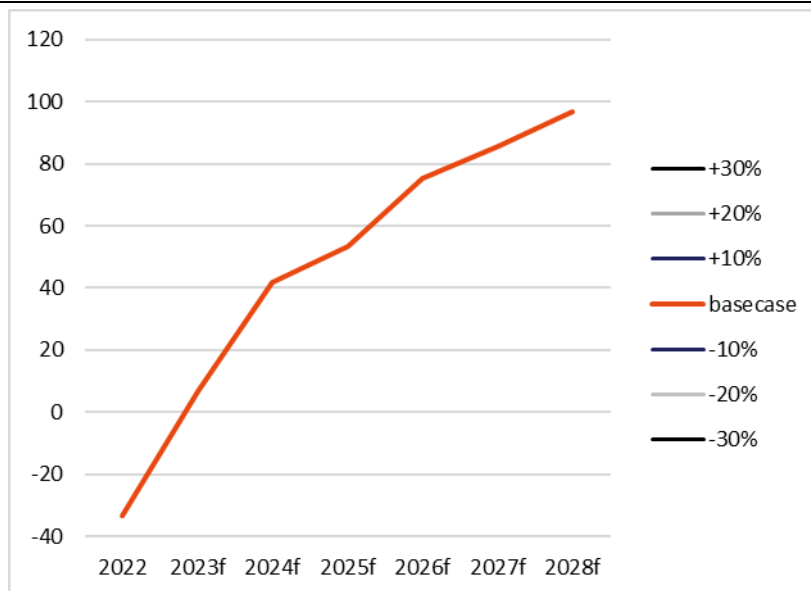
Syrah Resources Valuation	A\$m	A\$ps
Balama	750	1.01
Vidalia	198	0.27
Cash	80	0.11
Exploration upside	25	0.03
Corporate costs	-15	-0.02
Total Valuation	1,038	1.40

Source: Company reports, Shaw and Partners analysis

Earnings sensitivity

A 10% increase in the graphite fines price across our forecast horizon drives a 13% increase in our Syrah Resources valuation. Similarly, a 10% increase in our forecast AMM price drives a 6% change in valuation. A 10% appreciation of the AUD relative to the USD drives a 9% decrease in our NPV.

Figure 26: Syrah NPAT sensitivity to graphite price



Source: Syrah Resources company presentation

Key risks

- The graphite price is opaque, volatile and driven as much by China-centric demand as fundamental supply and demand. As such, the price of graphite is relatively difficult to forecast and the actual price may differ substantially from our forecasts.
- Syrah is targeting substantial production growth from Balama and there is a risk this may flood the market. We forecast substantial demand growth driven by EV and battery growth, the timing of the forecast demand and supply growth is difficult to predict.

- Current battery technology is such that all EV's use substantial amounts of graphite. However, risk remains in the long-term should next generation batteries use alternative chemistries such as silicon anode or solid-state lithium batteries.
- Syrah is scheduled to commission the 11.25ktpa Vidalia facility in the September quarter 2023. There is risk that production takes longer to ramp up than forecast at a higher-than-expected cost. Cost inflation is becoming a global theme and particularly apparent in the mining industry.

Core drivers and catalyst

- Syrah Resources is the only vertically integrated natural graphite active anode material producer outside of China.
- The company's Balama mine in Mozambique is globally significant with the world's largest graphite resource and a 350ktpa production capacity. The company is also moving downstream: commissioning the 11.25ktpa Vidalia plant in Louisiana is underway with possible expansion to 45ktpa.
- Tesla has signed up as an initial Vidalia customer: 8ktpa for an initial term of 4 years at an undisclosed price. Tesla has exercised an option to take an additional 17ktpa from an expanded 45ktpa facility. In addition, SYR has non-binding MOU's in place for additional material with Ford, SKon and LG Energy Solutions, subject to qualification and testing.
- The company has floated building a similar facility in Europe with the help of a strategic partner.

Rating Classification

Buy	Expected to outperform the overall market
Hold	Expected to perform in line with the overall market
Sell	Expected to underperform the overall market
Not Rated	Shaw has issued a factual note on the company but does not have a recommendation

Risk Rating

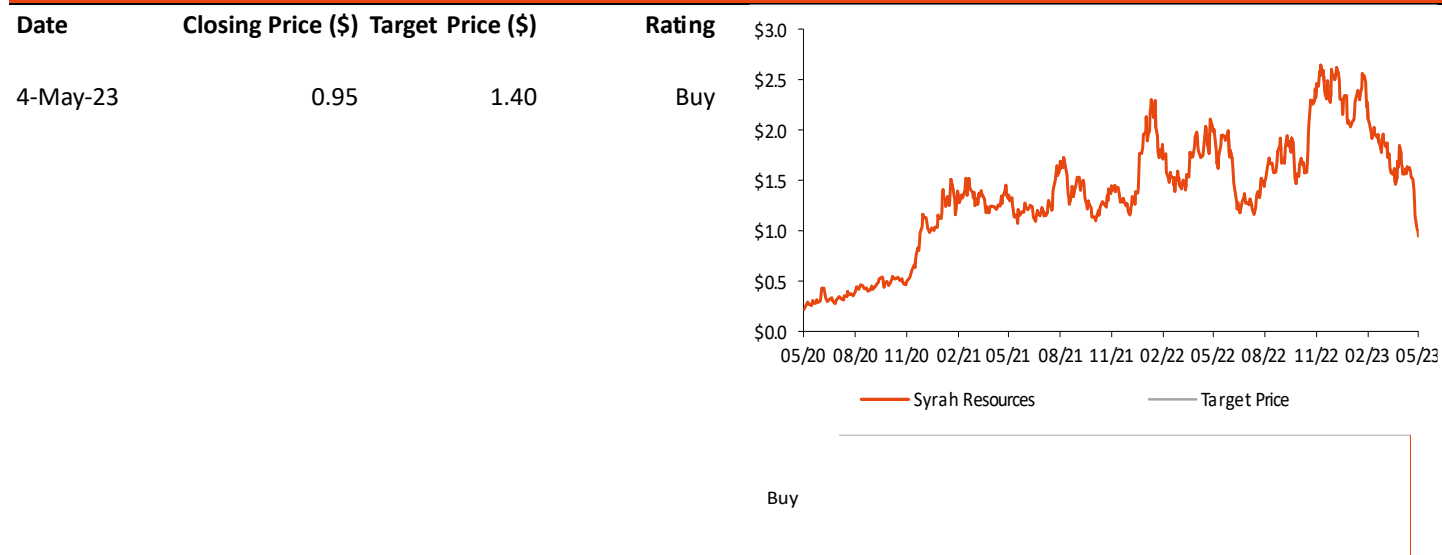
High	Higher risk than the overall market – investors should be aware this stock may be speculative
Medium	Risk broadly in line with the overall market
Low	Lower risk than the overall market

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Distribution of Investment Ratings

Rating	Count	Recommendation Universe
Buy	101	91%
Hold	9	8%
Sell	1	1%

History of Investment Rating and Target Price - Syrah Resources



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