

# Renascor Resources

## Siviour Definitive Feasibility Study Presentation



Presented to the South Australian  
Exploration & Mining Conference

20 November 2010



# Forward Looking Statements

This Presentation may include statements that could be deemed "forward-looking" statements. Although Renascor Resources Limited (the "Company") believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those expected in the forward-looking statements or may not take place at all.

## No Offer to Sell or Invitation to Buy

This Presentation is not, and should not be considered to, constitute any offer to sell, or solicitation of an offer to buy, any securities in the Company, and no part of this Presentation forms the basis of any contract or commitment whatsoever with any person. The Company does not accept any liability to any person in relation to the distribution or possession of this Presentation from or in any jurisdiction.

## Disclaimer

Whilst care has been exercised in preparing and presenting this Presentation, to the maximum extent permitted by law, the Company and its representatives make no representation, warranty or undertaking, express or implied, as to the adequacy, accuracy, completeness or reasonableness of this Presentation; accept no responsibility or liability as to the adequacy, accuracy, completeness or reasonableness of this Presentation; and accept no responsibility for any errors or omissions from this Presentation.

# Competent Persons Statement

The results reported herein, insofar as they relate to exploration activities and exploration results, are based on information provided to and reviewed by Mr G.W. McConachy (Fellow of the Australasian Institute of Mining and Metallurgy) who is a director of the Company. Mr McConachy has sufficient experience relevant to the style of mineralisation and type of deposits being considered to qualify as a Competent Person as defined by the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012 Edition). Mr McConachy consents to the inclusion in the report of the matters based on the reviewed information in the form and context in which it appears.

# Bibliography

Renascor confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements noted below and referenced in this presentation and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. Renascor confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

1. Renascor ASX announcement dated 14 March 2018, "Siviour Prefeasibility Study and Maiden Ore Reserve"
2. Renascor ASX announcement dated 21 February 2019, "Spherical PFS Demonstrates Increased Returns for Siviour"
3. Renascor ASX announcement dated 30 April 2019, "High-Grade Measured Resource in Upgraded JORC Resource"
4. Renascor ASX announcement dated 3 May 2019, "Optimised Development Plan for the Siviour Graphite Project"
5. Renascor ASX announcement dated 11 November 2019, "Siviour Definitive Feasibility Study"



Section 1:

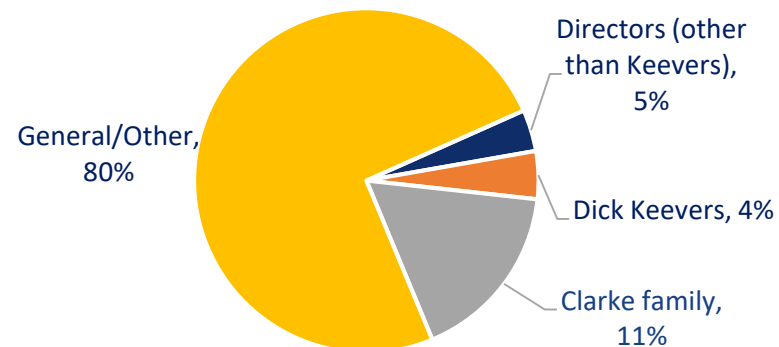
## **Overview**

# Renascor Corporate Overview

## Capital Structure

Shares on issue	1,159M
Performance rights	12M
Unlisted options (A\$0.05 exp 5 Dec 19)	15M
Share price (25 Nov 2019)	\$0.013
<b>Market Cap (at \$0.013/sh)</b>	<b>\$15.1M</b>
Cash (30 September 2019)	\$1.8M
Debt (30 September 2019)	Nil
<b>Enterprise Value</b>	<b>\$13.3M</b>

## Shareholder Breakdown (25 Nov 2019)



## Share Chart



# Investment Highlights

## Future supply gap

- ✓ Perfectly positioned to help meet the graphite supply gap arising from inability of existing supply to meet demand driven by lithium-ion battery demand

## Low cost, world class graphite asset<sup>(1)</sup>

- ✓ One of the world's largest graphite Resources
- ✓ Flat-lying deposit orientation drives low operating LOM cost of A\$508/t (or US\$355/t), placing it within the **first quartile of international cost curve**
- ✓ Proximity to infrastructure further underpins Project economics

## Staged development reduces initial capex<sup>(1)</sup>

- ✓ Two stage development including:
  - ✓ Stage 1 with average production of 80ktpa during years 1 to 4
  - ✓ Stage 2 expansion during year 5 up to average production of 144ktpa, funded by Stage 1 cashflows

## Robust economics<sup>(1)</sup>

- ✓ Post-tax tax **NPV<sub>10%</sub> of A\$388m (or US\$271m) and IRR of 33%**
- ✓ Start-up capex of A\$114m (or US\$79m) plus a mining pre-strip of \$A4m or US\$3m
- ✓ Basket sales price of A\$1,149/t (or US\$804/t) based on Benchmark Mineral intelligence
- ✓ Average EBITDA of A\$83m (or US\$58m), EBITDA margin of 57%

## Next steps

- ✓ Offtake – advance discussions with potential purchasers and strategic partners, with a focus on the lithium-ion market
- ✓ Permitting – ML granted, which remains subject to a PEPR, the second step in a two-stage assessment and approval process (expect to lodge later this year)
- ✓ Financing – Dutch government credit agency prepared to provide debt cover up to ~60% of Stage 1 capex (subject to FEED stage), together with parallel discussions with other financiers

(1) Renascor ASX announcement dated 11 November 2019.

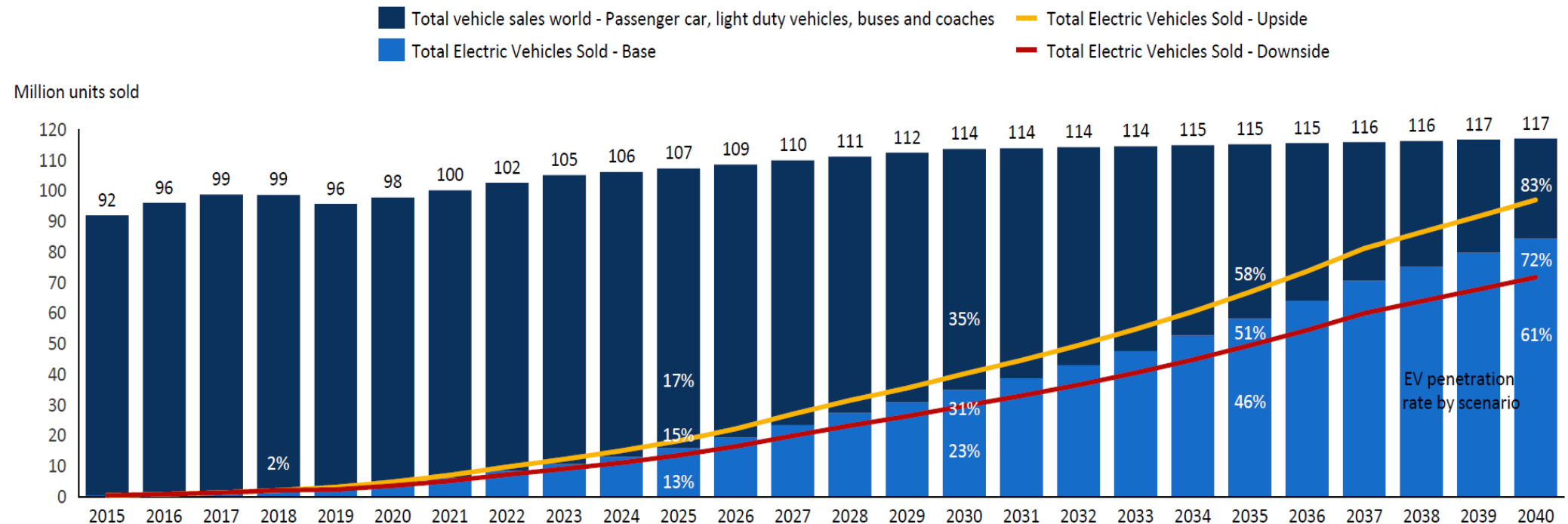


Section 3:

## **The Graphite Market**

# Electric Vehicle Demand is Increasing

Increased demand for lithium-ion batteries is being driven by increasing uptake of Electric Vehicles



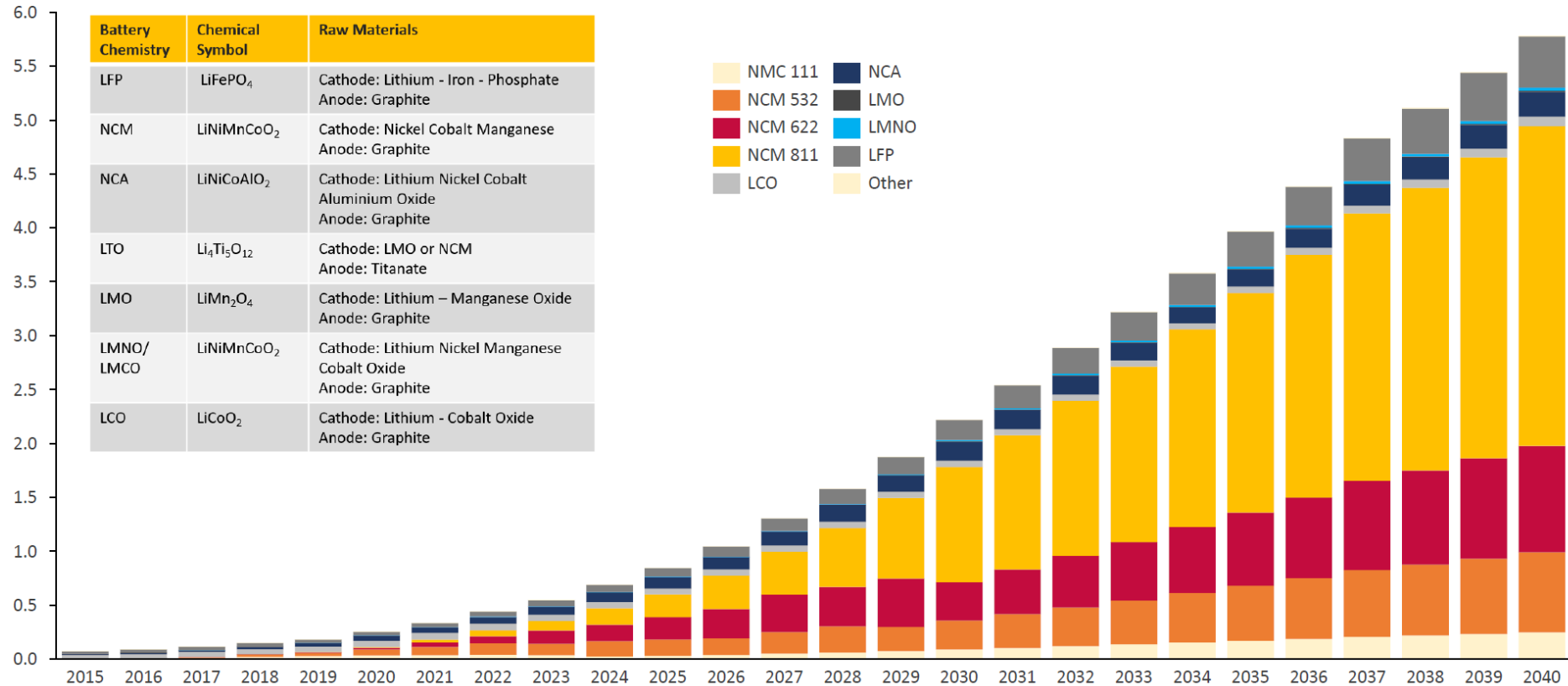
(Source: Benchmark Mineral Intelligence)



# Graphite and Batteries

Graphite is a critical component in the supply of lithium-ion batteries

Million MWh



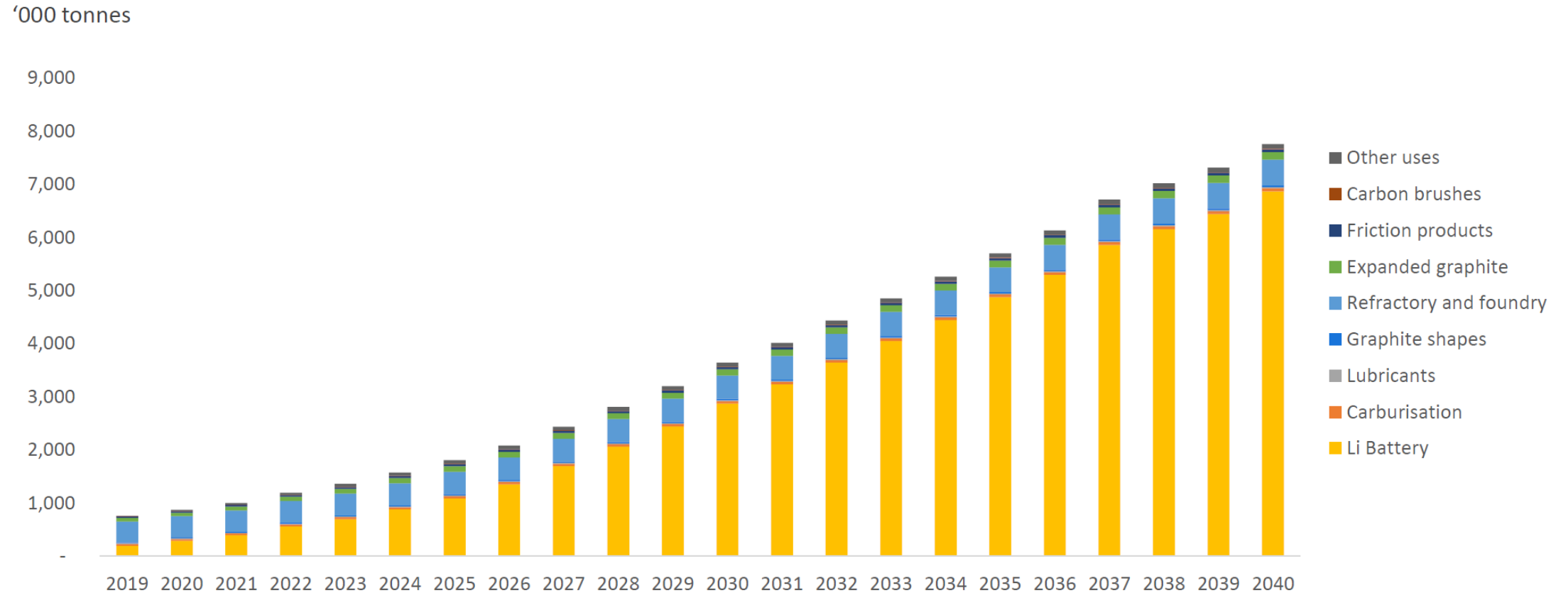
(Source: Benchmark Mineral Intelligence)





# Graphite Demand is Increasing

Increased graphite demand is being driven by accelerated demand for lithium-ion batteries

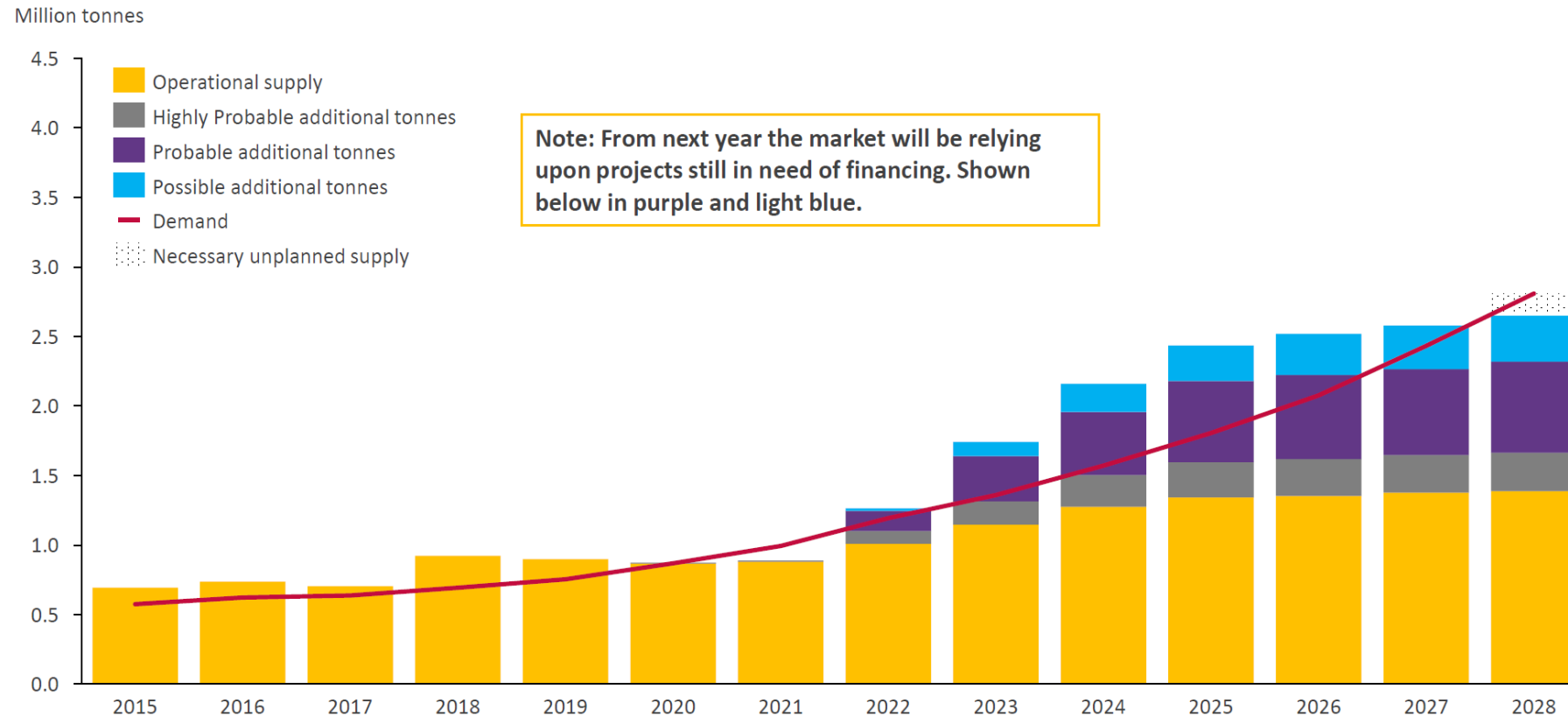


(Source: Benchmark Mineral Intelligence)



# Graphite Supply and Demand Forecast

Graphite flake demand is forecast to exceed supply by 2023



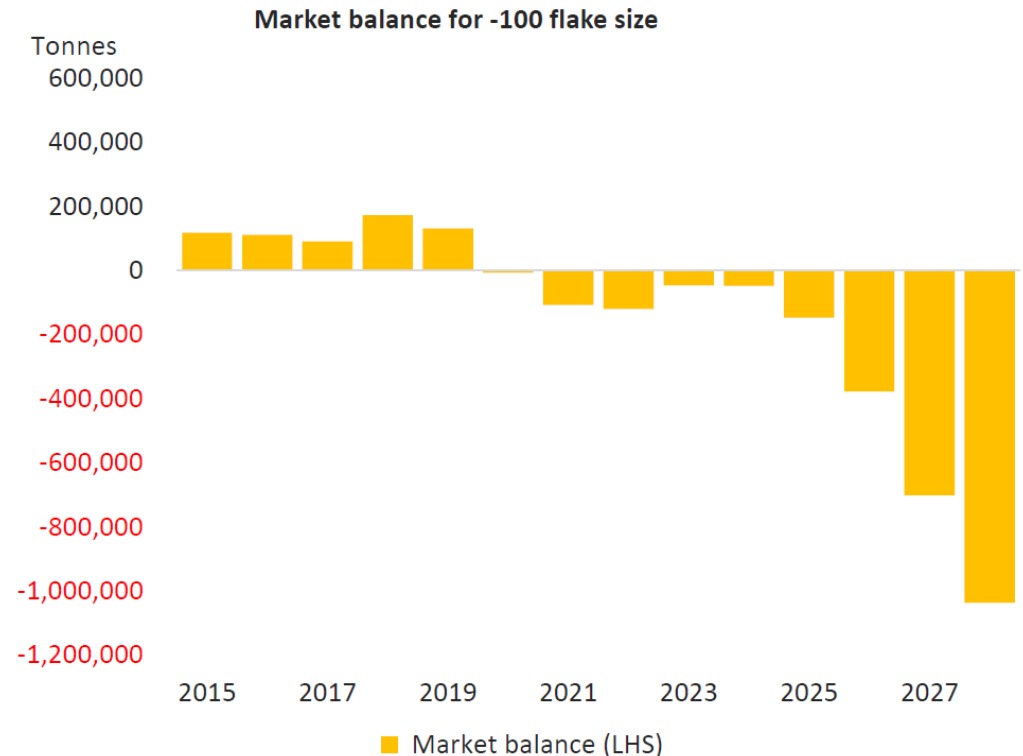
(Source: Benchmark Mineral Intelligence)



# Graphite Supply and Demand Balance -100 mesh (-150µm)

The greatest graphite supply deficit can be seen in the -100 mesh (-150µm) flake size

- High demand for lithium ion battery anode manufacture is driving the supply deficit in the -100 mesh (-150µm) flake size
- Siviour DFS product specification is over 70% in the -100 mesh (-150µm) flake size
- Siviour is perfectly positioned to help meet the graphite supply gap arising from inability of existing supply to meet demand driven by lithium-ion battery demand



(Source: Benchmark Mineral Intelligence)

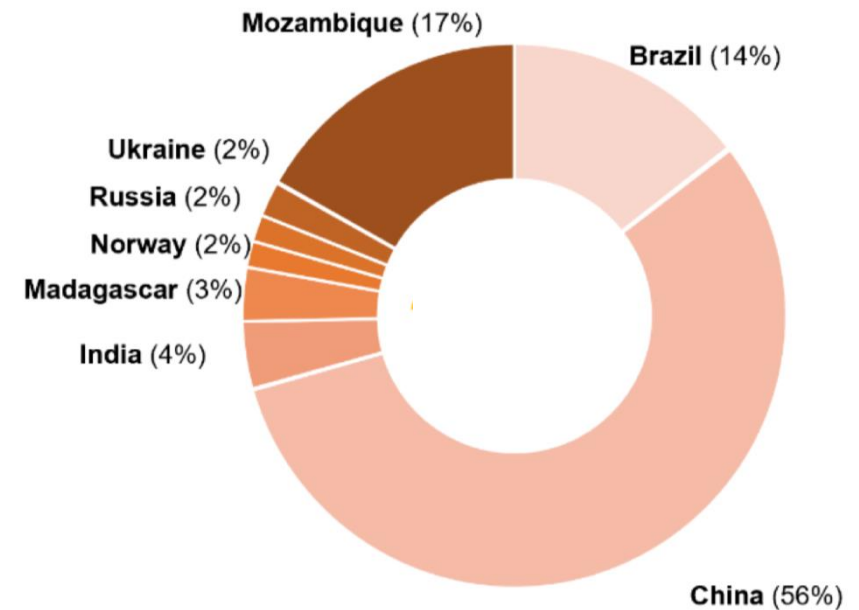


# New Graphite Supply is Needed

China dominates current supply, but supply is restricted and unstable

- **Increased domestic demand**
  - Graphite is becoming a strategically important mineral due in large part to its use in lithium-ion batteries
- **Supply limitations**
  - Issues with product consistency and lack of medium and large flake
- **Environmental restrictions**
  - New safety and environmental restrictions have further reduced supply

Graphite\* Raw Material Supply in 2018



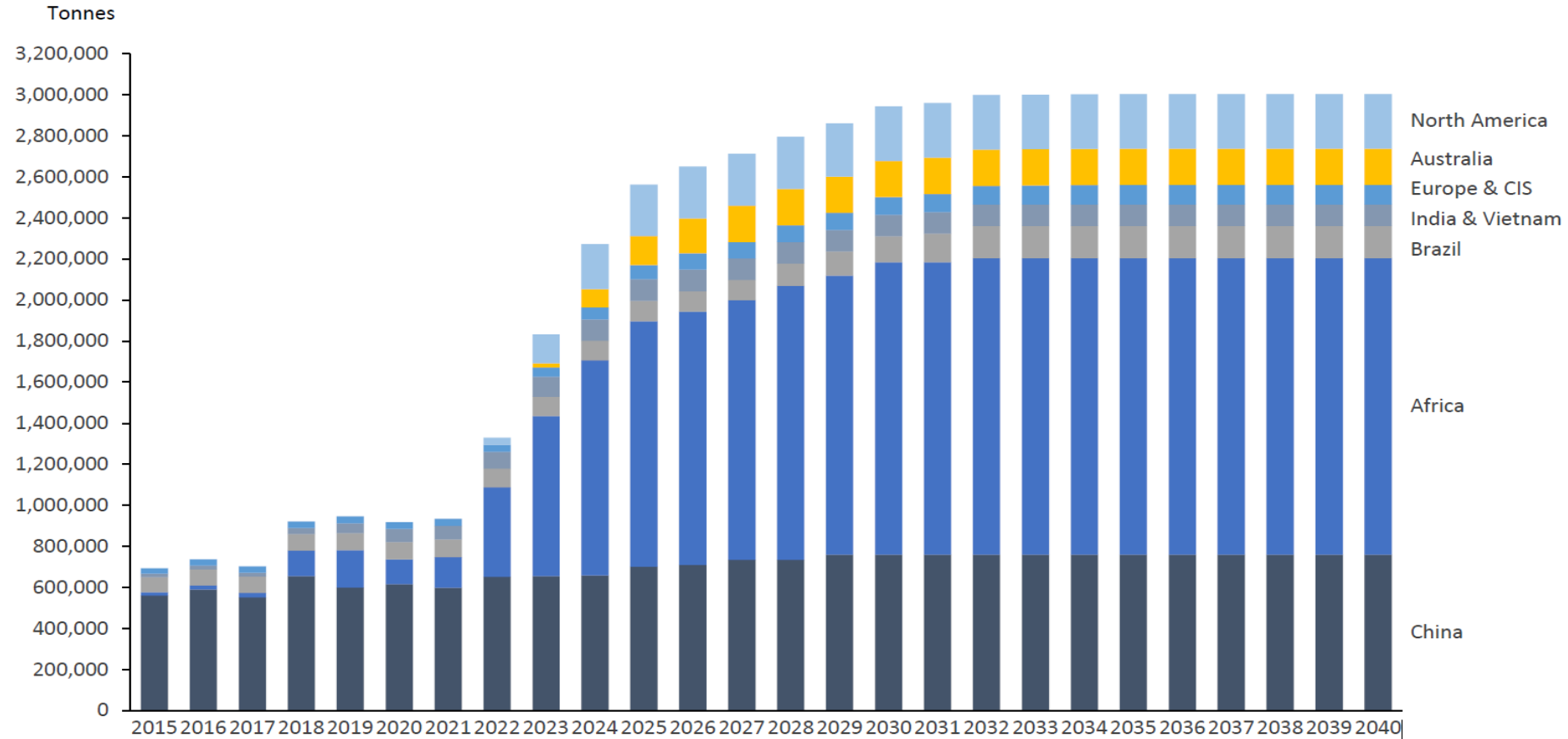
Source: Benchmark Mineral Intelligence

\*Natural Flake Graphite, the predominant feedstock for lithium ion batteries



# Graphite Supply Forecast by Country

Future increases in graphite demand will need to be met by suppliers outside of China



(Source: Benchmark Mineral Intelligence)



# Advantage of New Graphite Supply from Australia

Renascor offers competitive new supply from secure jurisdiction: Australia

- In recent years, potential new supply has been dominated by large developments in East Africa
- Sovereign risk poses added challenge to securing development capital and offering secure, long-term supply
- Low sovereign risk jurisdiction with established regulatory framework increasingly important in graphite supply chain
- Established infrastructure drives lower costs and lower risk
- Mine-friendly jurisdiction that has encouraged new mine developments



Section 3:

## **Siviour Graphite Project - DFS**

# Project Development Summary

- Siviour DFS completed in November 2019 considers two stages

- **Stage 1:**

- Production of 80ktpa, low operating costs of A\$494/t (US\$345/t), and low initial capital of A\$114m (US\$79m)
- Provides cash flow for development of Stage 2 and establishes Renascor as a high quality graphite producer

- **Stage 2:**

- Expansion during year 5 will increase production to 144ktpa, with the construction of a similar-sized processing plant to Stage 1
- Increased scale will reduce operating costs to A\$464/t (US\$325/t)

Parameters <sup>1</sup>	Stage 1 Years 1 to 4		Stage 2 Years 5 to 10		LOM 40 years	
	A\$	US\$	A\$	US\$	A\$	US\$
Average Annual Production	80ktpa		144ktpa		105ktpa	
Throughput run of mine (ROM) ore	825ktpa		1,650ktpa			
Average feed grade of ROM ore (TGC)	10.7%		9.1%		7.4%	
Cash cost per tonne of concentrate	A\$494	US\$345	A\$464	US\$325	A\$508	US\$355
Basket price per tonne of concentrate	A\$1,149 or US\$804 (over first five years), A\$1,321 or US\$925 (LOM)					
Stage 1 Capital expenditure	A\$114m	US\$79m	N/A		A\$191m	US\$133m
Stage 2 Capital expenditure	N/A		A\$77m	US\$54m		
Mining Pre-Strip	A\$4m	US\$3m	N/A		A\$4m	US\$3m
Sustaining capital	A\$8m	US\$5m	A\$22m	US\$15m	A\$116m	US\$81m
Payback period	3.7 years <sup>2</sup>		N/A			
NPV <sub>10</sub> (after tax)	A\$388m or US\$271m					
IRR (after tax)	33%					
Average EBITDA per annum	A\$49m	US\$34m	A\$87m	US\$61m	A\$83m	US\$58m
Project cashflow	A\$2.1b or US\$1.5b					

(1) Projected production figures based on Definitive Feasibility Study assessment to an accuracy of +/- 15%. (see Renascor ASX announcement dated 11 November 2019, p 3 and 29). The financial information presented applies a USD:AUD exchange rate of 0.70.

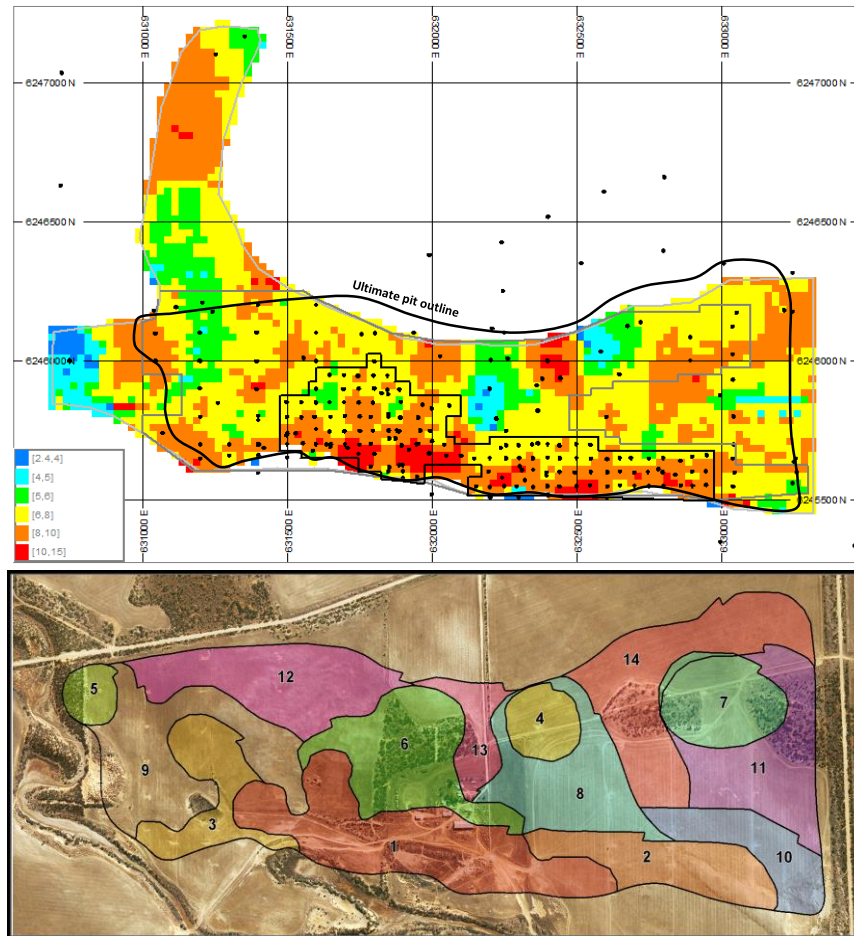
(2) Reflects period of time to payback development capital for stage-one as calculated from first production, assuming cashflow from stage-one is not used to pay stage-two development capital.





# Siviour Graphite Deposit

High-grade portion of the Siviour Resource to be targeted in the initial phases of a 14 phase mining plan



## Mineral Resource Estimate

Category	Resources (Mt)	TGC (%)	Contained Graphite (Mt)
Measured	15.8	8.8%	1.4
Indicated	39.5	7.2%	2.8
Inferred	32.1	7.2%	2.6
<b>Total</b>	<b>87.4</b>	<b>7.5%</b>	<b>6.6</b>

(Source: Siviour Mineral Resource estimate as of 29 April 2019, see Renascor ASX announcement dated 30 April 2019, p 1).

## Ore Reserve Estimate

Category	Reserves (Mt)	TGC (%)	Contained Graphite (Mt)
Proven	-	-	-
Probable	45.2	7.9%	3.6
<b>Total</b>	<b>45.2</b>	<b>7.9%</b>	<b>3.6</b>

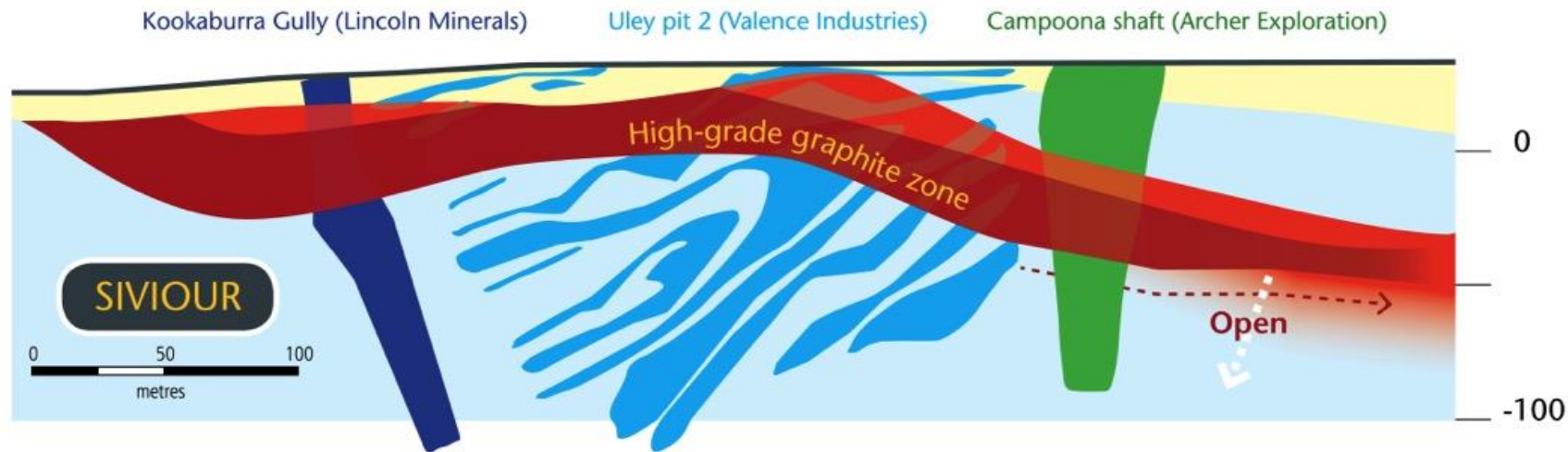
(Source: Siviour Ore Reserve as of 14 March 2018 See Renascor ASX announcement dated 14 March 2018, p 4.)



## Near-Surface, Flat-Lying Ore Body

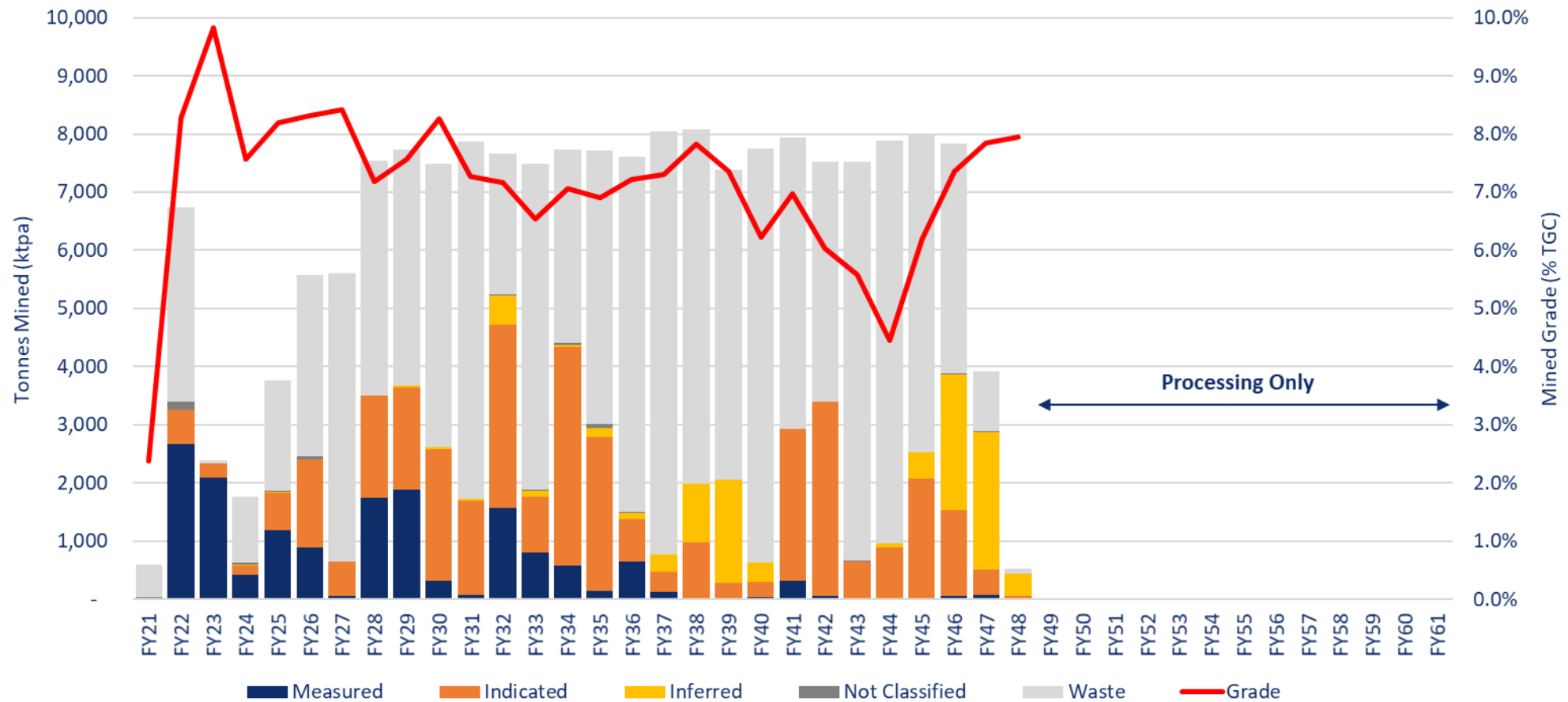
Sivour's low operating cost is due in large part to shallow, horizontal orientation of a single massive ore body that offers comparatively low mining costs

This orientation facilitates a single shallow mining design that can be mined via conventional open pit mining methods



# Mining Schedule

Ore mined in years 1 to 10 is 98% Measured and Indicated Resource category



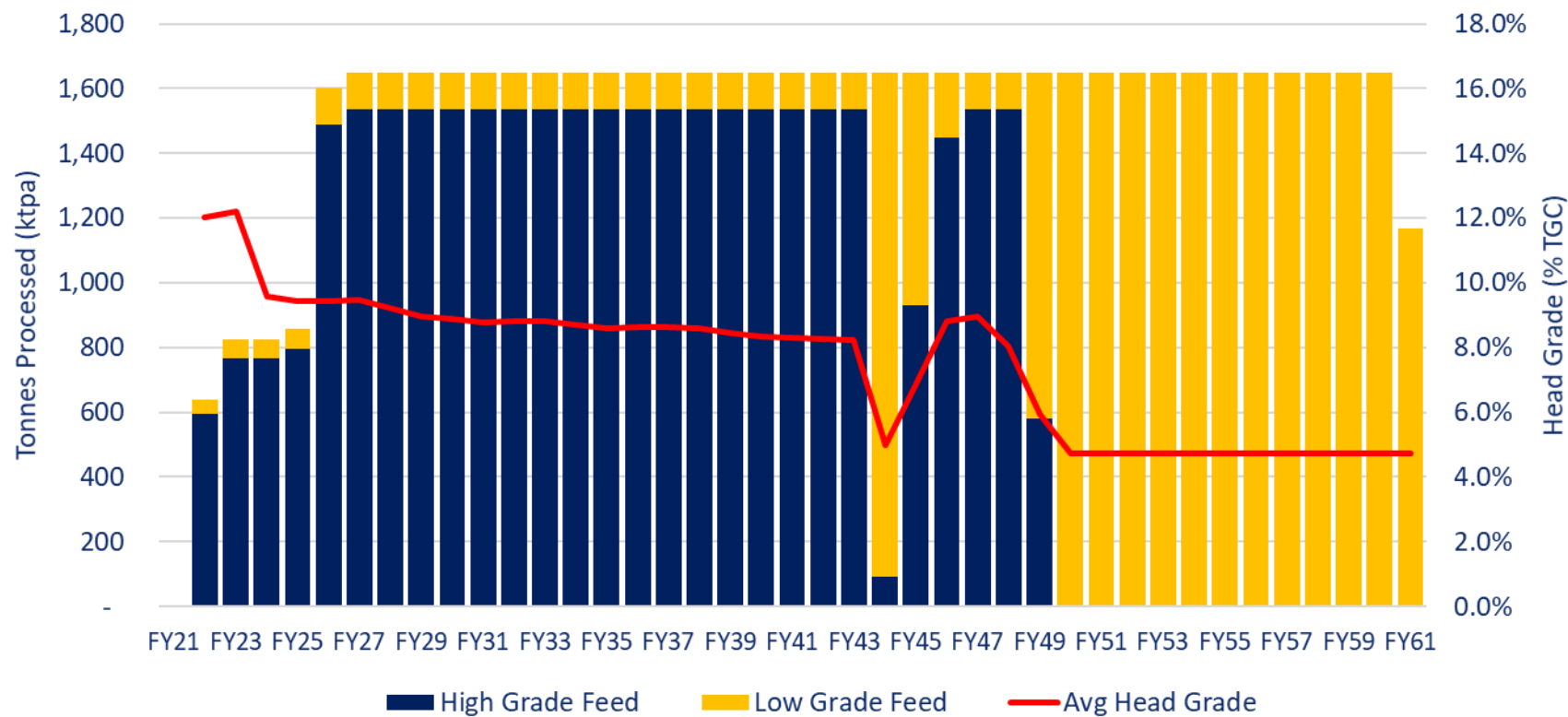
Renascor ASX announcement 11 November 2019, p 16.



# Production Schedule

Stage 1 throughput of 825ktpa, expanding in year 5 to 1,650ktpa, for a 40-year life-of mine

Average processing grade during years 1 to 4 is 11% TGC, gradually decreases in years 5 to 27 from 9% TGC to 7% TGC, and from year 28 onwards 100% of the ore will be sourced from a 4.7% TGC low grade

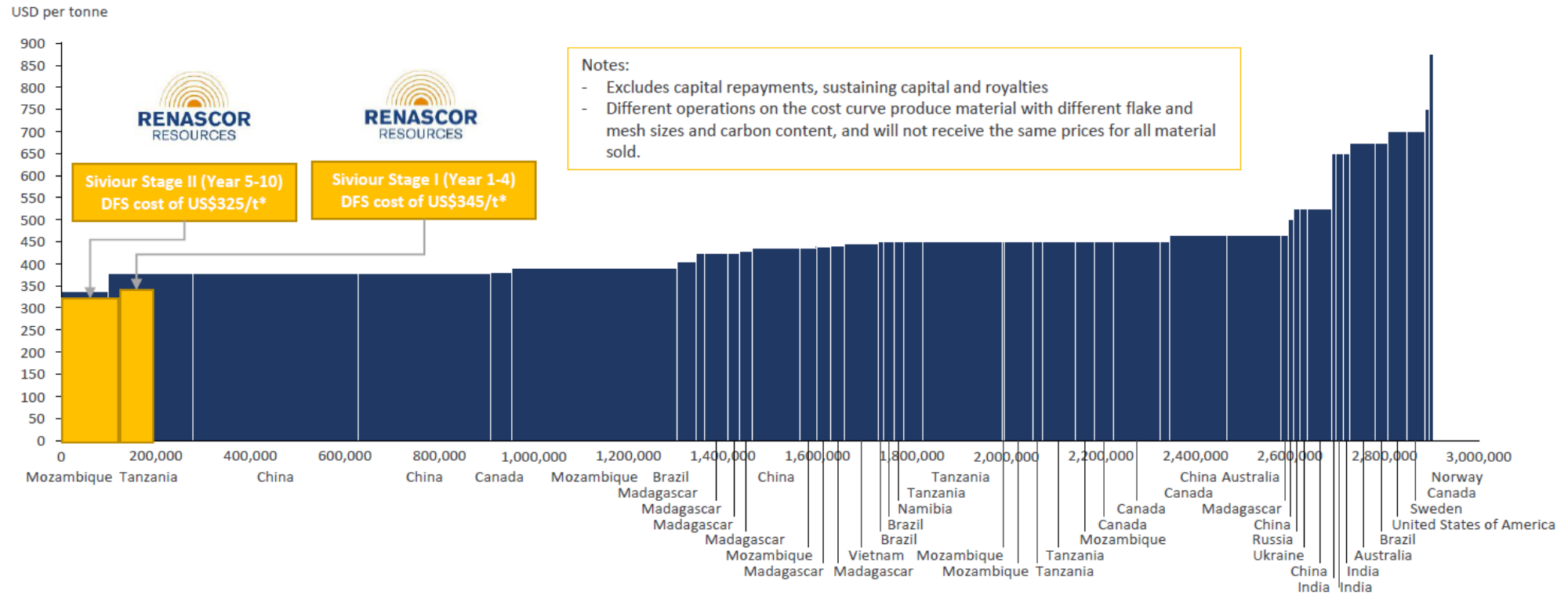


Renascor ASX announcement dated 11 November 2019, p 18.



# Low Operating Cost

First quartile operating costs globally in mining friendly South Australia for both Stage 1 and Stage 2



\* Costs provided by Renascor from the Siviour DFS document. The cost assessment from the Siviour DFS may not use the same methodology as the Benchmark Minerals cost model.

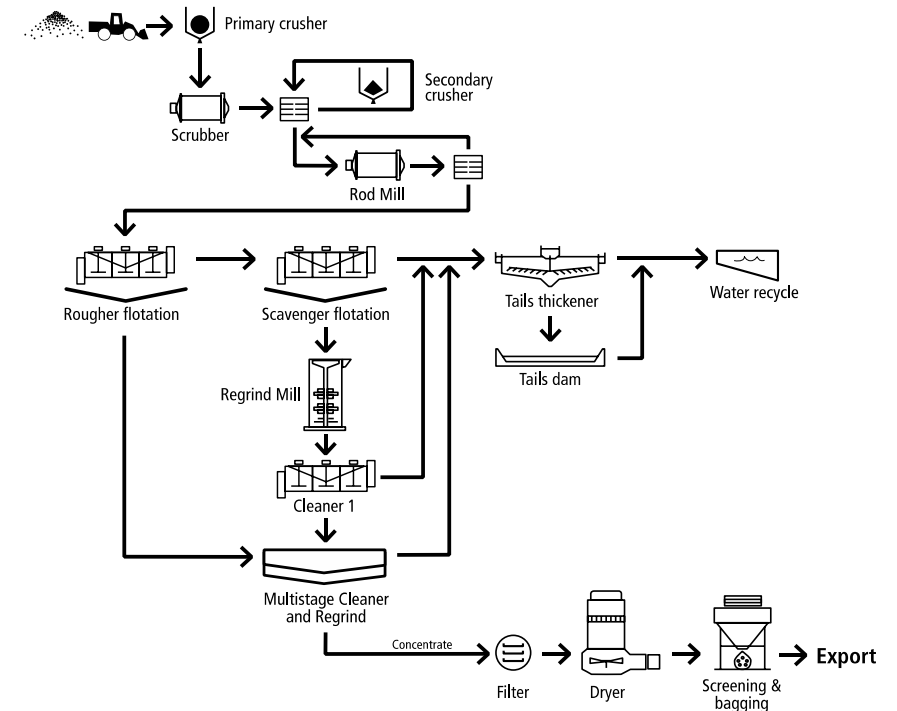
Benchmark Mineral Intelligence, and Renascor announcement dated 11 November 2019, p 27.



# Metallurgy

Metallurgical testing has established ability to produce high quality graphite products at low operating cost using conventional (non-chemical, non-thermal) flowsheet<sup>1</sup>

Flake Category	Particle Size		Weight %	Stage-one Annual Production	Stage-two Annual Production
	Microns (µm)	Mesh			
Jumbo	+300	+50	3.5%	2.8ktpa	5.0ktpa
Large	-300 to +180	-50 to +80	17.2%	13.8ktpa	24.8ktpa
Medium	-180 to +150	-80 to +100	6.9%	5.5ktpa	9.9ktpa
Small	-150	-100	72.4%	57.9ktpa	104.3ktpa



(1) Renascor ASX announcement dated 11 November 2019, p 17 and 19.

# Mine to Market

Established infrastructure in coastal South Australia provides low-cost, low-risk logistics

- Siviour Project is strategically located:
  - 8km from major highway leading to established port
  - 12km from main electricity grid
- Land rights have been secured through purchase option





# Project Approvals

Project is well advanced into approvals process

- **Mineral Lease granted**
  - Consistent with Mineral Lease Application (MLA)
- **Extensive environmental review completed**
  - Three-year period of preparation and review of all potential environmental, social, economic and technical aspects of the Siviour Graphite Project
- **Development on schedule**
  - Program for Environment Protection and Rehabilitation (PEPR) to be submitted later this year
  - Positive ongoing community and stakeholder engagement
  - Working towards other government authorisations (e.g. EPA licensing, Works Approval)

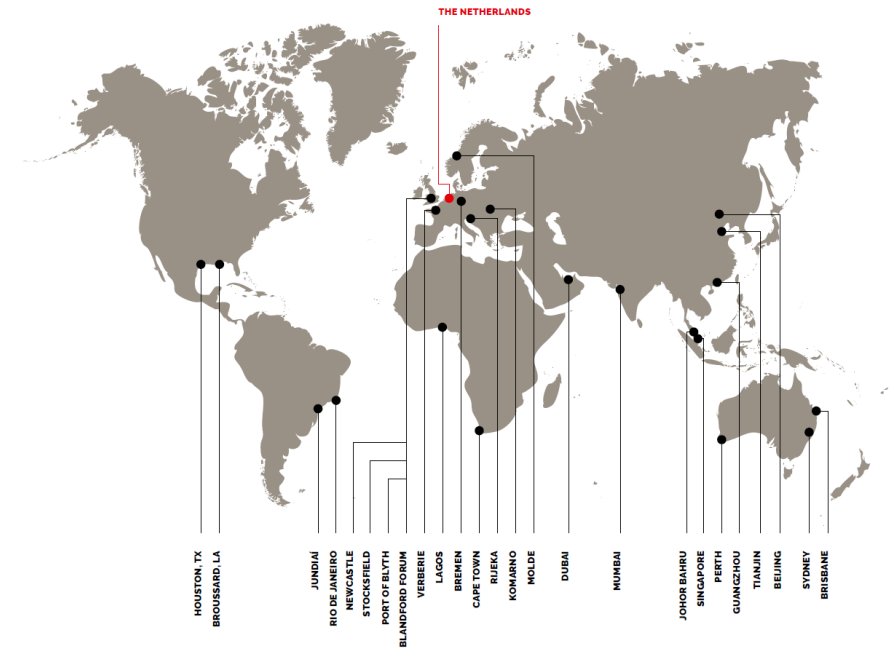




# Strategic Engineering Partnership with Royal IHC

- Landmark agreement with international EPC contractor, Royal IHC to accelerate development of Siviour
- \$1 million committed by Royal IHC to undertake early project works, including metallurgical test work and detailed engineering and design work
- Royal IHC will collaborate with Australian engineering firm, Wave International to assist in completion of the Siviour DFS
- Royal IHC to assist Renascor with obtaining project finance to fund development
- Intention for Royal IHC to become IPC contractor for development of Siviour
- Royal IHC key Industry Experience includes dredging, offshore and mining;
  - Revenue of €800 million (2017) and more than 3,000 employees in 39 locations worldwide
  - Delivered 150 projects > €50 million since 2000
  - Delivered 2350 projects < €50 million since 2000

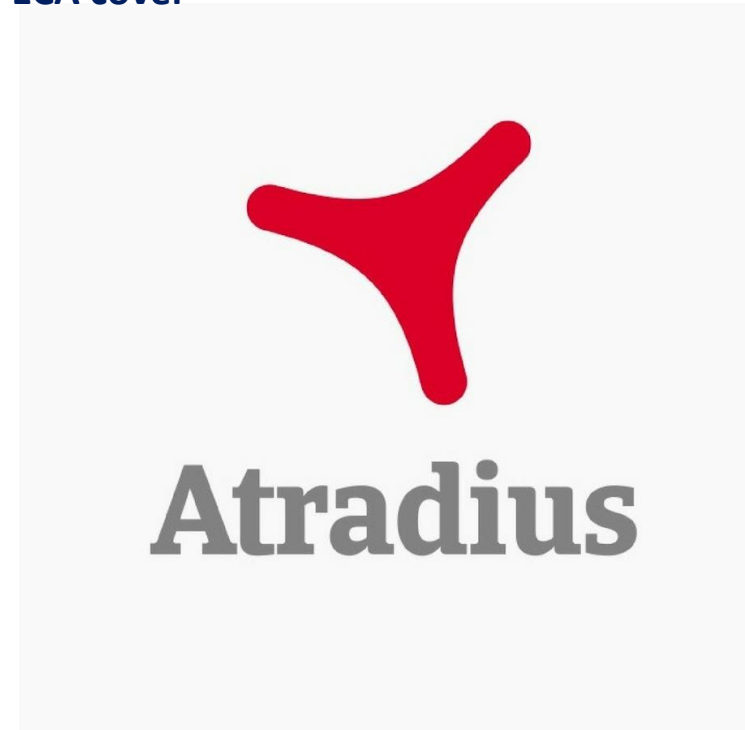
## Royal IHC Worldwide Presence



## In-principle Support from Dutch Export Credit Agency

Up to ~60% of initial project capex is expected to qualify for Dutch ECA cover

- Letter of Interest (LOI) received for ECA cover from Dutch Export Credit Agency Atradius, the Government of the Netherlands official ECA
- ECA support typically supports favourable debt financing terms, including competitive margin and increased loan tenor
- The LOI will provide greater access to debt markets and enable Renascor to accelerate its financing plan



# Offtake Strategy and Status

Aim is to negotiate offtake terms that support debt funding

- **Signed a non-binding MOU in April 2018 to provide graphite concentrates to China's Qingdao Chenyang Graphite ("Chenyang")**
  - Chenyang is one of the largest graphite companies in the Qingdao area of China's Shandong province and produces a range of products for customers in China, Japan and South Korea
  - MOU proposes offtake for up to 10,000 tonnes of graphite concentrates from Stage 1 of Siviour and up to 30,000 tonnes from Stage 2
- **Offtake Strategy**
  - To-date, engaged nearly 40 potential offtakers and advancing discussions with multiple parties
  - Finance support from Atradius (European ECA) increases viability of project and offers a broader range of potential offtakers from Europe, United States and Asia
- **Targeting binding offtake agreements in 2020**



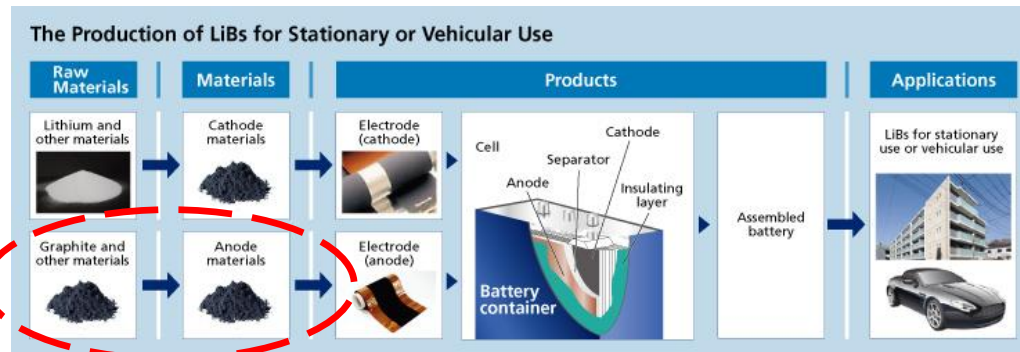
Section 4:

## **Advanced Manufacturing - Spherical Graphite**

# Downstream Production of Spherical Graphite

Sivour graphite concentrates can be upgraded to higher value spherical graphite

- Spherical graphite is manufactured from graphite produced at mine site through a further milling and purification process
- Renascor Spherical PFS shows potential for significant value uplift through vertically integrated graphite mine and downstream spherical operation<sup>1</sup>
- Provides more direct exposure to lithium-ion battery supply chain



(Source: Itochu Corporation, "Producing Lithium-Ion Batteries")

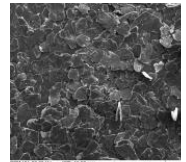
(1) Renascor ASX announcement dated 21 February 2019.

The graphite supply chain from mine to lithium-ion battery anode

## Stage 1 – Graphite concentrates

Graphite-containing ore is mined and processed to ~95% TGC

*Price: ~US\$600 to US\$1,800*

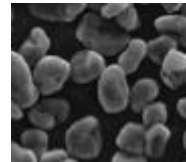


Sivour graphite concentrates

## Stage 2 – Purified spherical graphite

Graphite concentrates are micronized, spheronised and purified to >99.95% TGC

*Price: ~US\$3,000 to US\$4,200*



Sivour purified spherical graphite

## Stage 3 – Coated spherical graphite

Spherical graphite is coated with carbon pursuant to proprietary end-user specifications

## Stage 4 – Anode Material

Coated spherical graphite is combined with additives and coated on copper foil to create anodes

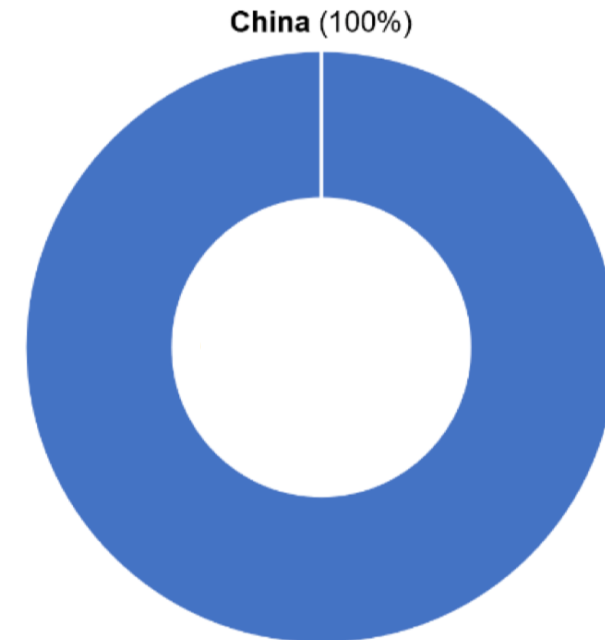


# Supply of Spherical Graphite Dominated by China

**China currently supply 100% of the natural flake graphite used in lithium ion battery anodes**

- Non-Chinese battery suppliers are dependent on Chinese mines and Chinese spherical production for critical raw material
- Chinese supply under stress as stricter domestic environmental regulations impacting Chinese purification practices
- Chinese downstream demand for spherical graphite is increasing with growth of Chinese lithium ion battery sector

**Spherical Graphite\* Supply in 2018**



Source: Benchmark Mineral Intelligence

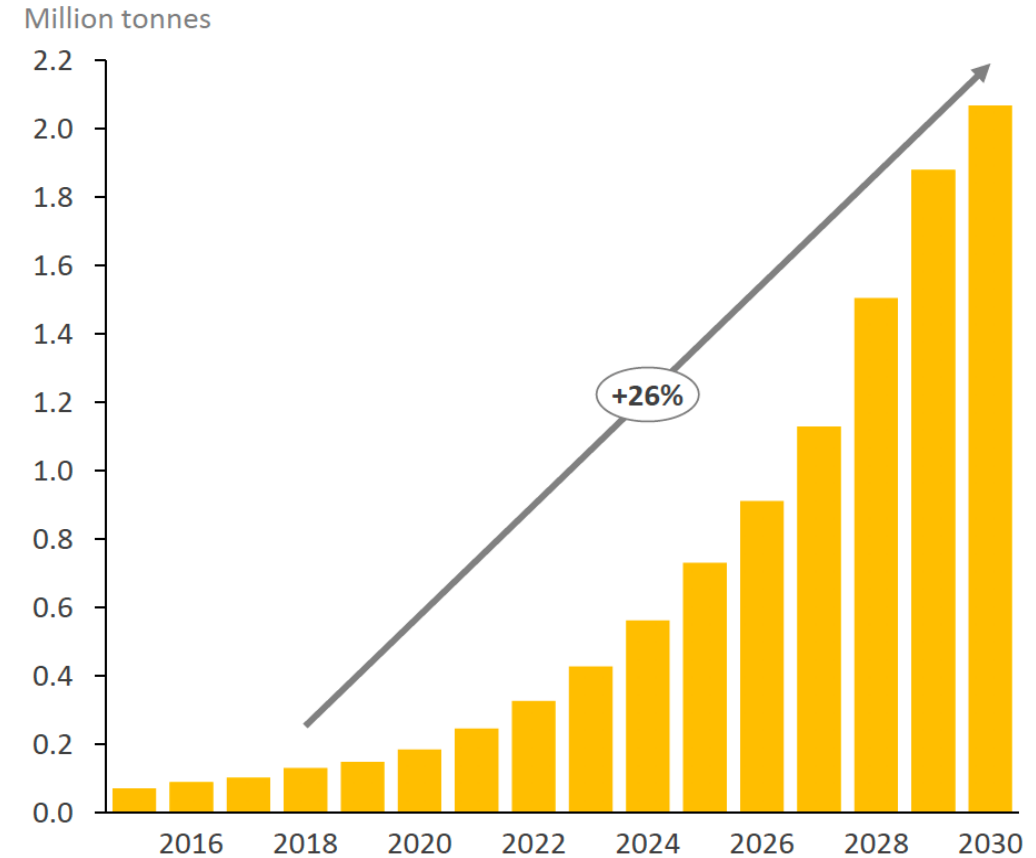
\*Uncoated Spherical Graphite, the predominant anode material for lithium ion batteries



# Strong Growth Projections for Spherical Graphite

**Lithium-ion battery demand is driving projected increases in the demand for spherical graphite**

- Projected compounded annual growth rates of up to 26% between 2015 and 2030
- No current Non-Chinese supplier

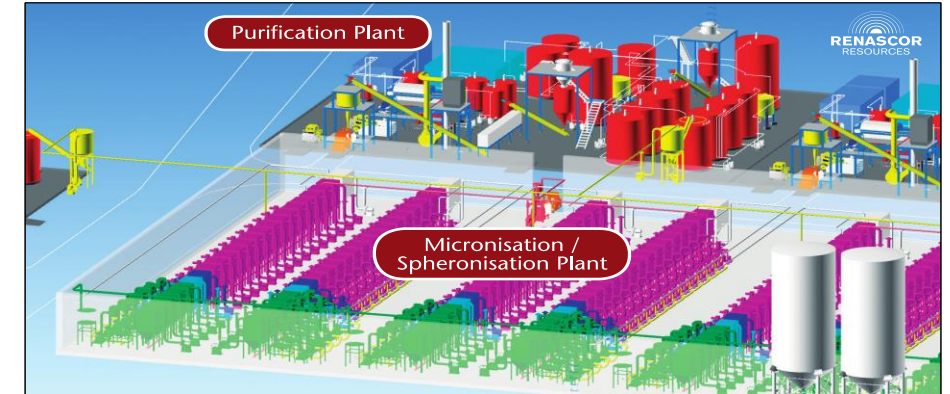


(Source: Benchmark Mineral Intelligence)

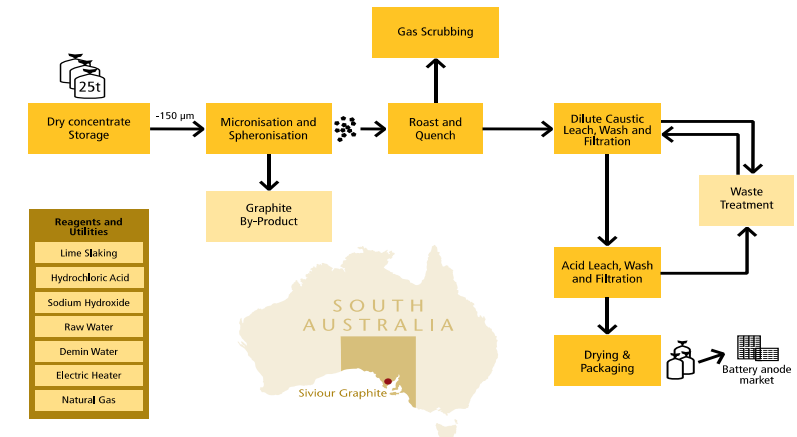


# Renascor's Spherical Graphite PFS Demonstrates Opportunity to Unlock More Value from Siviour

- Spherical graphite PFS shows potential for valued-added production of spherical graphite
- Leverages off key comparative advantages of Siviour mine, namely low-cost and low-sovereign risk



Annual production of spherical graphite	29,085t	
Life of mine/project	30 years	
Capital cost of spherical operation	AU\$89.9m	US\$67.4m
Total capital (concentrate and spherical)	AU\$221.5m	US\$166.0m
NPV <sub>10</sub> (after tax) of spherical operation	AU\$487m	US\$365m
NPV <sub>10</sub> (after tax) of integrated operation	AU\$889m	US\$667m
IRR (after tax) of integrated operation	53%	
Average spherical graphite cash operating cost (net of by-product credit)	AU\$1,883/t	US\$1,412/t
Projected spherical graphite sales price	AU\$4,800/t	US\$3,600/t



See Renascor ASX announcement dated 21 February 2019 (pages 2 -3)



Section 6:

## **Conclusions and Next Steps**

## Next Steps

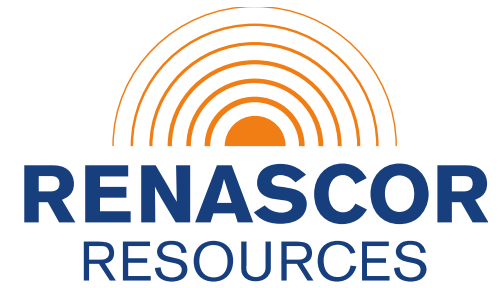
- **Strong upcoming news flow expected to include:**
  - **Offtake;** With the completion of DFS, there are plans to generate customer samples for potential offtake developments in 2020
  - **FEED;** After the DFS release the Project advances to the FEED level engineering
  - **Regulatory;** Mineral Lease granted, and PEPR to be submitted later this year
  - **Spherical graphite;** Completion of Spherical PFS offers potential for improved project economics and more direct involvement in lithium-ion battery supply chain
  - **Project finance;** Debt and equity financing options being pursued to complement ECA approach



# Summary

- **Siviour DFS confirms a world-class graphite deposit**
- One massive ore body offers consistent high-quality supply
- Globally competitive low-cost operations
- Staged project development offers fundable initial capex
- In-principle finance support from Dutch Export Credit Agency
- In parallel, other debt and equity financing options to complement ECA approach
- Located close to key infrastructure in mining-friendly South Australia





**Renascor Resources Limited**

36 North Terrace

Kent Town, South Australia 5067

Phone: + 61 8 8363 6989

Email: [info@renascor.com.au](mailto:info@renascor.com.au)

Website: [www.renascor.com.au](http://www.renascor.com.au)

ASX Code: **RNU**

