



# VRX SILICA

Supplying Global Demand



**AGM PRESENTATION**

November 2020



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# IMPORTANT INFORMATION

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## Competent Persons Statement

The information in this report that relates to Arrowsmith North, Arrowsmith Central and Muchea Exploration Results and Muchea Aircore Drilling Area Mineral Resources are based on data collected and compiled under the supervision of Mr David Reid, who is a full-time employee of VRX Silica. Mr Reid, BSc (Geology), is a registered member of the Australian Institute of Geoscientists and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and the activity being undertaken to qualify as a Competent Person under the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Reid consents to the inclusion of the data in the form and context in which it appears.

The information in this report that relates to Arrowsmith North, Arrowsmith Central and Muchea Auger area Mineral Resources is based on information compiled by Mr Grant Louw who is a full-time employee of CSA Global, under the direction and supervision of Dr Andrew Scogings, who is an Associate of CSA Global. Dr Scogings is a Member of the Australasian Institute of Mining and Metallurgy and a Member of the Australian Institute of Geoscientists. He is a Registered Professional Geologist in Industrial Minerals. Dr Scogings has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). Dr Scogings consents to the disclosure of information in this report in the form and context in which it appears.

The information in this report that relates to Arrowsmith North, Arrowsmith Central and Muchea Probable Ore Reserves is based on data collected and compiled under the supervision of Mr David Reid, who is a full-time employee of VRX Silica. Mr Reid, BSc (Geology), is a registered member of the Australian Institute of Geoscientists and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and the activity being undertaken to qualify as a Competent Person under the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Reid consents to the inclusion of the data in the form and context in which it appears.



**VRXSILICA**

*“Sand is the main material  
that modern cities are made of”*

Vince Beiser

“The World in a Grain” 2018

The story of sand and how it  
transformed Civilisation

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# VRX SILICA – INVESTMENT HIGHLIGHTS

## Significant market interest in product as environmental permitting nears completion

- 1 100% owner of three high value Silica Sand Projects – Muchea, Arrowsmith North and Arrowsmith Central – all located within close proximity to Perth, Western Australia.
- 2 Multi-decade scale contiguous sand deposits, with combined 1,056Mt Resource, SiO<sub>2</sub> grade 99.6% to 99.9% and low iron impurities.
- 3 Leveraging growing demand in the Asia region for high-grade low iron silica sand for glass manufacture and as a component in foundry casting. Global supply has become constrained due to depletion and environmental restrictions on dredging.
- 4 Bankable Feasibility Studies have validated exceptional economics with combined post tax NPV<sub>10</sub> of \$728m, capex of just \$87m, annual EBIT of \$137m and IRR of 83%, all based on conservative Silica Sand sales prices.
- 5 Capex cost of ~\$30m for each 2Mtpa project with simple “off the shelf” processing plants and convenient access to existing under utilised rail to port transport infrastructure supporting high capacity logistics.
- 6 Mining Leases and Miscellaneous Licences granted for each project and environmental permitting processes well advanced with no anticipated material issues.
- 7 Strong interest from potential customers in SE Asia (including Japan, South Korea and Taiwan). Offtake agreements catalyst to financing, construction & production. Near term share market re-rating likely towards significantly higher underlying fair value.

# CORPORATE SUMMARY



## BOARD AND MANAGEMENT

Person	Role	Experience
<b>Paul Boyatzis</b>	Chairman	Governance: Over 30 years experience in investment, equity markets and managing public companies
<b>Bruce Maluish</b>	Managing Director	Technical and Finance: Over 35 years in mining industry including previous roles as ASX MD and General Manager
<b>Peter Pawlowitsch</b>	Director	Finance and Corporate: Mining and software executive
<b>Steven Papadopoulos</b>	Commercial Manager	Legal and Commercial: Over 20 years experience as corporate lawyer and commercial advisor in resources and other industries
<b>Yoonil Kim</b>	Marketing Manager	Marketing: 16 years' experience selling silica sand in the Asian market

\* Closing share price on 26 November 2020

\*\* Estimated as at 30 November 2020 post issue of shares under placement announced to ASX on 20 November 2020 and exercise of options expiring on 30 November 2020

## CAPITAL STRUCTURE

Share Price	21cps*
Ordinary Shares on Issue	499 million**
Options on Issue	78.2 million
Market Capitalisation	\$104 million**
Cash	\$9.3 million**
Debt	Nil
Enterprise Value	\$94.7 million**

## SHAREHOLDERS

Board and Management	12.5%
Top 20 Total	34.4%

## BROKER COVERAGE

Argonaut	
Euroz Hartleys	

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# WHAT IS SILICA SAND?

**Silica Sand** is quartz that over time, through the erosion by water and wind, has been broken down into tiny granules.

Industrial sand is a term normally applied to high purity silica sand products with closely controlled sizing. It is a more precise product than common concrete and asphalt gravels.










Silica ( $\text{SiO}_2$ ) is the name given to a mineral composed solely of silicon and oxygen. Found most commonly in the crystalline state, it also occurs in an amorphous form resulting from weathering or plankton fossilisation.

Silica is hard and chemically inert and has a high melting point, attributable to the strength of the bonds between the atoms. These are prized qualities in applications like foundries and filtration systems. Industrial sand's strength, silicon dioxide ( $\text{SiO}_2$ ) contribution, and non-reactive properties make it an indispensable ingredient in the production of thousands of everyday products.



# SILICA SAND HAS VARIOUS APPLICATIONS

Glassmaking and the foundry industry is the target application for VRX's silica product

	<b>GLASSMAKING</b>	Flat, containers, architectural, thin film
	<b>METAL CASTING/FOUNDRY</b>	Automobile Parts
	<b>HYDRAULIC FRACTURING</b>	Fracking sand/proppant
	<b>CONSTRUCTION SAND</b>	Concrete
	<b>FILTRATION</b>	Water production
	<b>METALLURGICAL</b>	Ferrous and Non-ferrous Alloys
	<b>CHEMICAL PRODUCTION</b>	Sodium silicate, silicon gels
	<b>RECREATIONAL</b>	Inert growing media, golf bunkers
	<b>CERAMICS AND REFRACTORIES</b>	High temp resistance

## Glassmaking and Foundry are VRX's high-value target markets

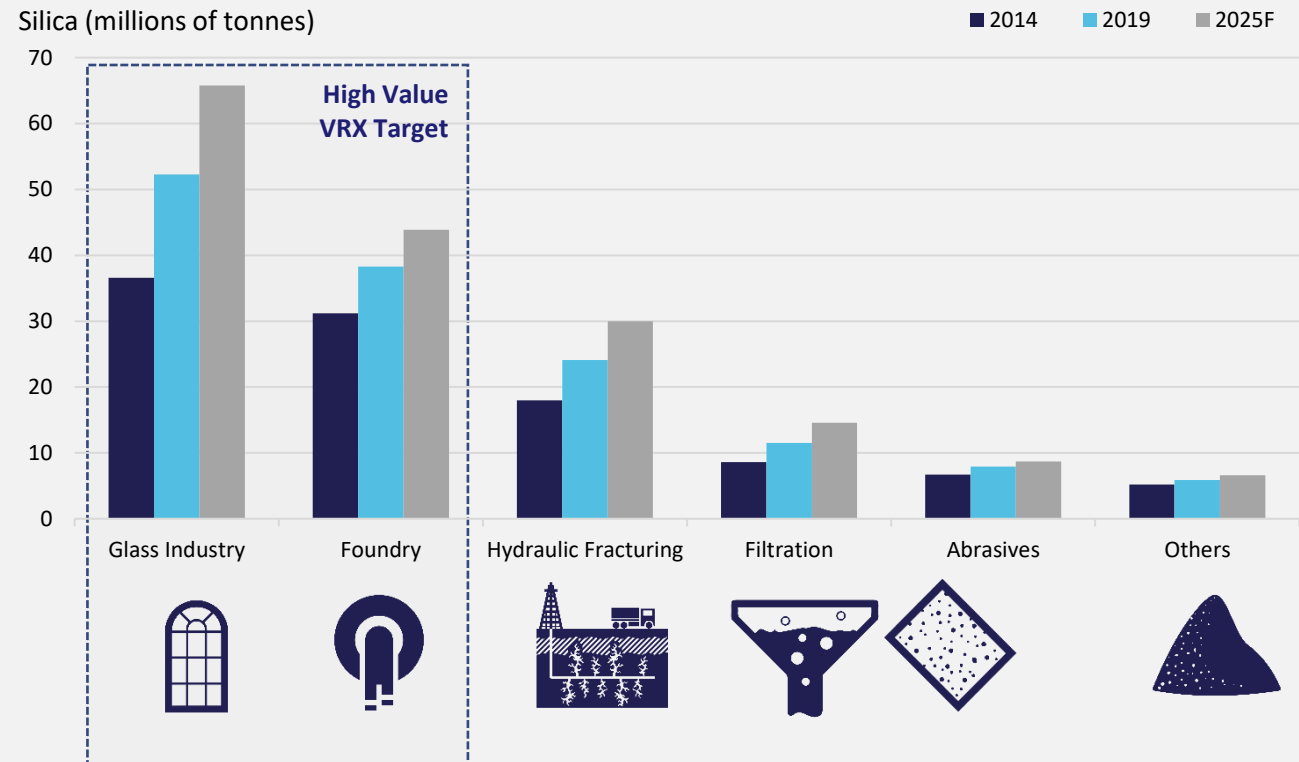
- Asian glass making production increasing 5-6% p.a. (~8-10 Mtpa Growth)
- Flat Glass growth in Asia 5-6% p.a. with current market size 60-65 Mt
- Container Glass growth in Asia 5-6% p.a. with current market size 65-75 Mt
- **Cover Glass (solar panels) growth in Asia +30% p.a.** with current market size ~8Mt
- Smart Glass growth in Asia 5-6% p.a. with current market size ~2 Mt
- Specialist Glass growth in Asia +10% p.a. with current market size 500-600 kt
- Demand for casting products for automobiles, auto components and construction equipment is rising substantially

# SILICA SAND APPLICATIONS DRIVING GROWTH IN DEMAND

## Glass and Foundry Industry growth is set to drive the demand for silica sand in the APAC Region

- Developing countries in the APAC region are anticipated to experience substantial Infrastructural spending, driving glass demand
- The foundry industry in Asia has grown as countries have gained manufacturing specialisation and automotive demand has risen. This industry represents a key growth market for silica sand over the coming years
- Collectively, the foundry and glass industries represent 65% of the APAC silica sand market and are high-value targets for VRX's products

Silica Market Demand by End Use (APAC Countries)





# ARROWSMITH NORTH & CENTRAL AND MUCHEA SILICA SAND PROJECTS

Each project may be developed and operated separately and profitably



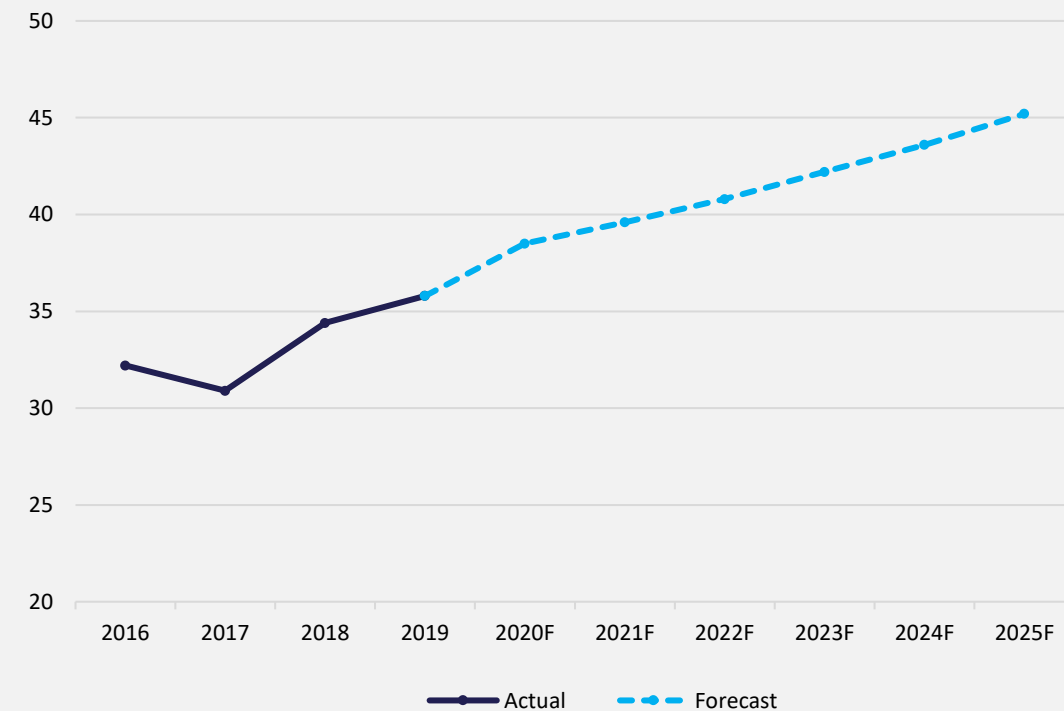
- 100% ownership
- Large scale, high-grade and low impurity silica sands projects
- BFSs completed Aug-Oct 2019 with following combined highlights:
  - 25-year mine life (potential for 100+ years)
  - Aggregate capital expenditure of \$87 million (3 projects)
  - Initial financing requirement c.\$28.3 million (Arrowsmith North)
  - Avg. annual EBITDA<sup>1</sup> of \$140 million
  - Post-tax Project NPV<sub>10</sub> of \$728 million
  - Post-tax IRR of 83%
- Simple and conventional mining process
- Access to established infrastructure (logistics, power, water) – rail lines run adjacent to project tenements
- Each project may be developed and operated profitably and also separately
- Quality product with binding offtake discussions ongoing
- Environmental approvals well advanced – expected Q1 CY2021

# SILICA SAND PRICE AND DEMAND DYNAMICS

Silica Sand is forecast to increase in price across Asia-Pacific countries in line with rising demand and supply constraints due to depletion and environmental restrictions on dredging

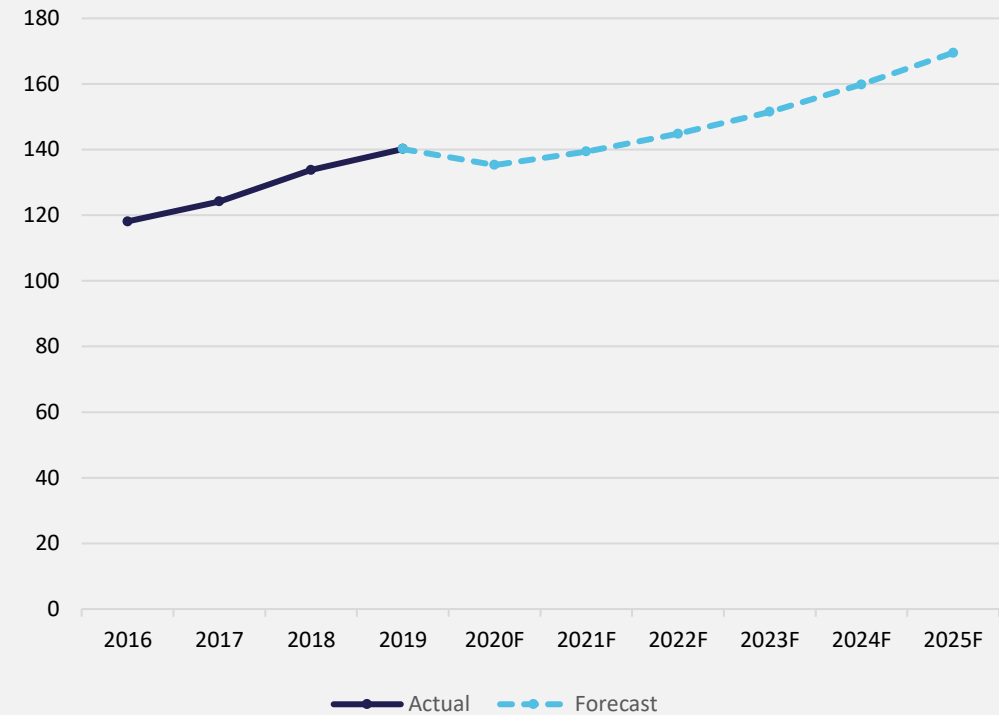
### Historic and Forecast Silica Sand Pricing

Flat & Container Glass, Average Price, \$US/ tonne FOB



### Asia Pacific Silica Sand Consumption

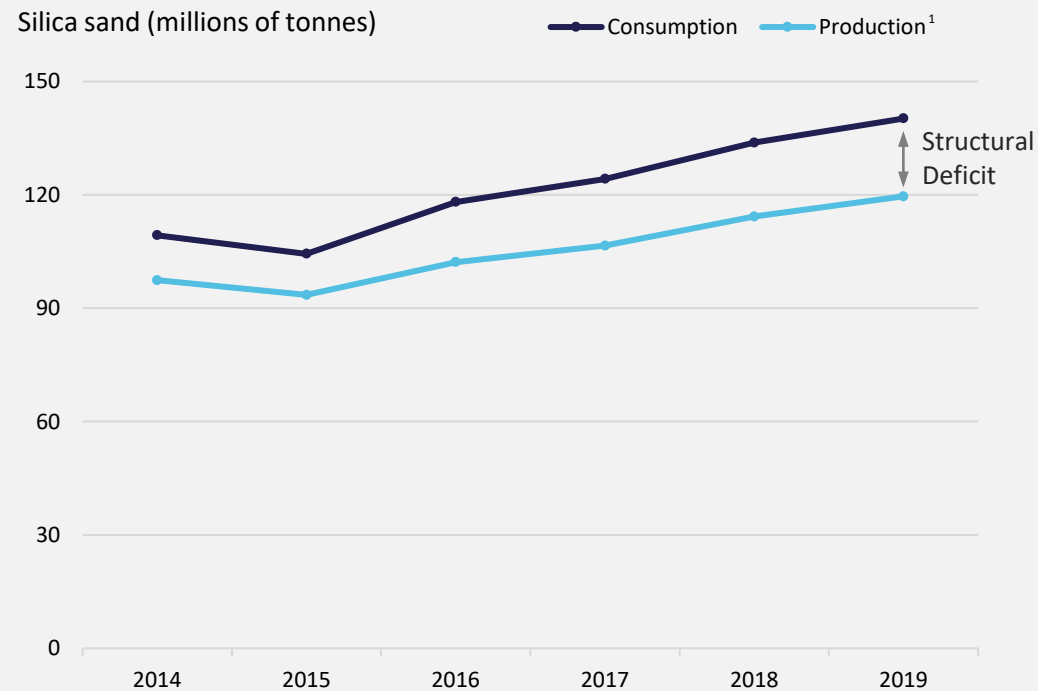
Flat & Container Glass Silica (millions of tonnes)



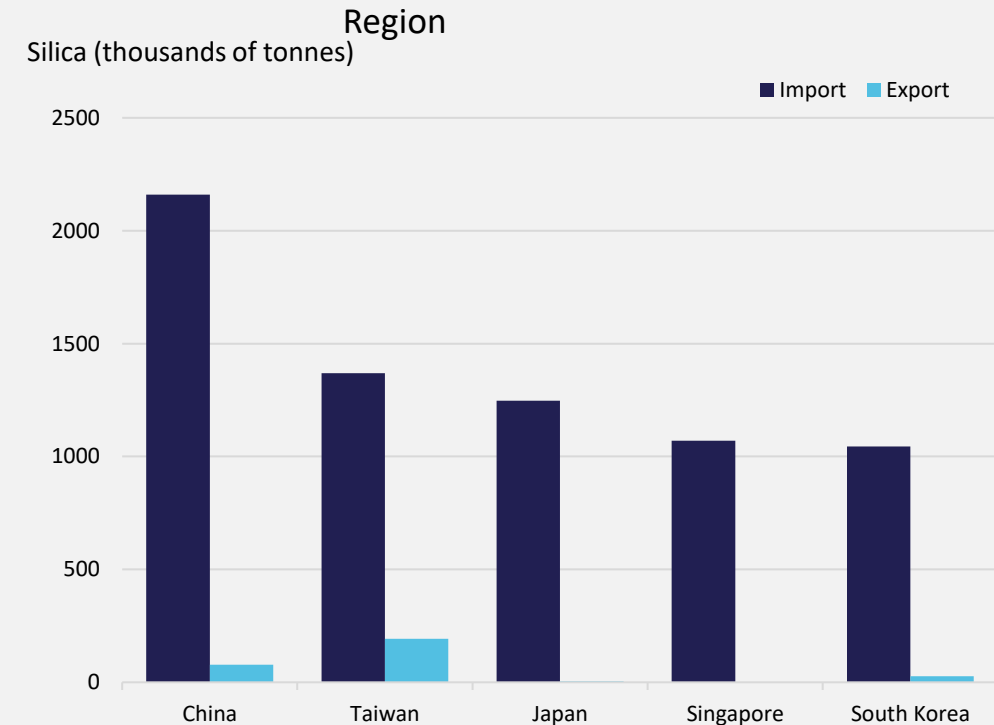
# DEMAND NOT MET BY EXISTING PRODUCTION

Key countries in the Asia Pacific region have unmet demand from local production only

### Asia Pacific Silica Sand Market

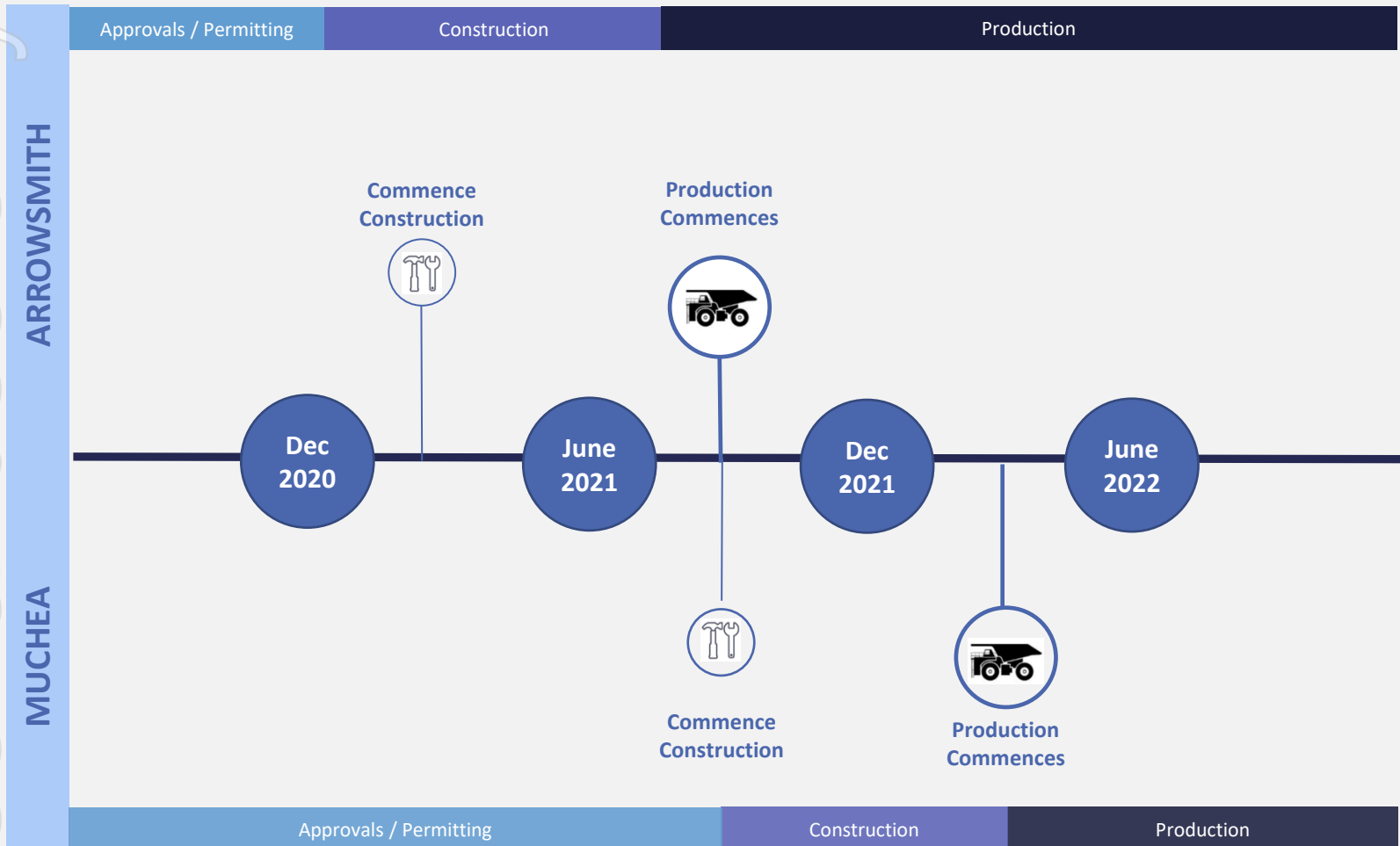


### Largest Net Importers of Silica Sand in Asia Pacific



# INDICATIVE PROJECT TIMELINE

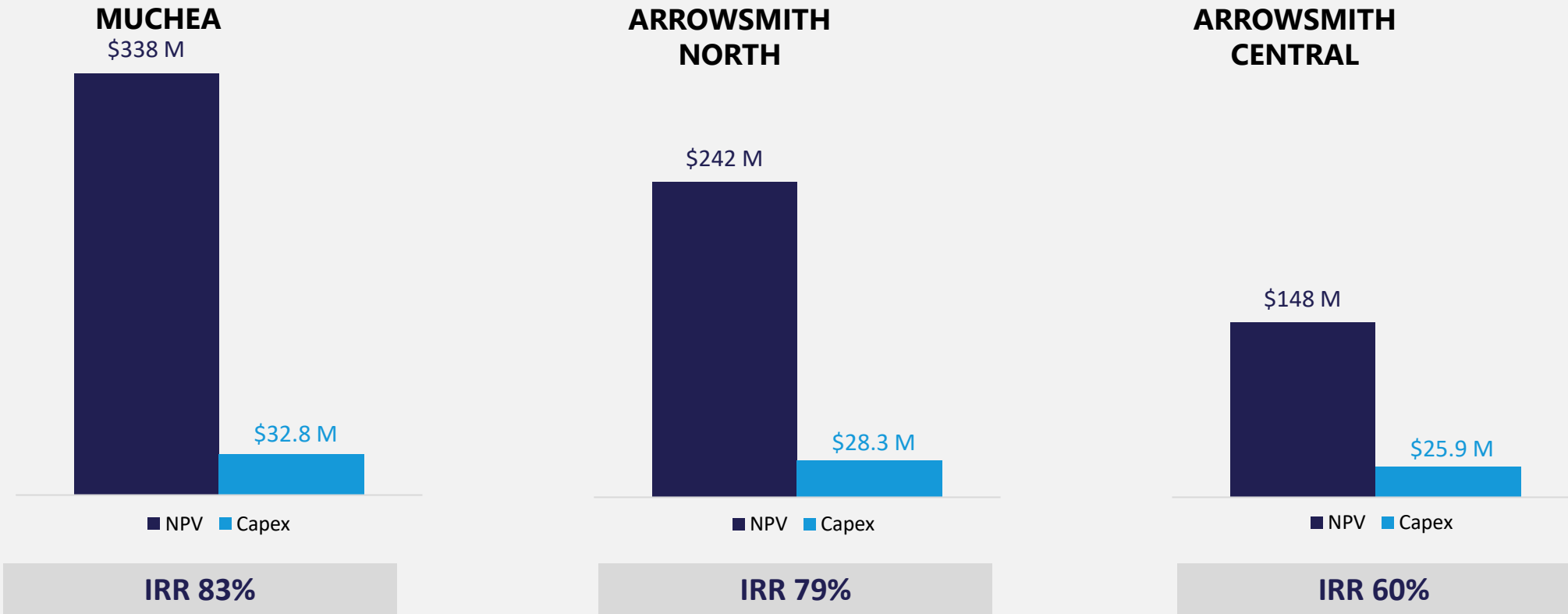
Approvals, offtakes and funding progressing, with development commencing early 2021



- Bankable feasibility studies for the Muchea, Arrowsmith North and Arrowsmith Central projects completed
- Mining Leases granted for each project
- Environmental permitting processes well advanced with no material issues anticipated
- Construction for Arrowsmith North Project to commence early-mid 2021 once permitting, offtake and financing secured
- Construction for Muchea Project expected to commence mid-late 2021

# EXCEPTIONAL PROJECT ECONOMICS

All three projects have exceptional standalone economics over 25 years



\* Full details of the bankable feasibility studies for the Arrowsmith North, Arrowsmith Central and Muchea projects, including material assumptions underpinning production targets and forecast financial information, are contained in VRX's ASX announcements of 28 August 2019, 17 September 2019 and 18 October 2019, respectively. All such material assumptions continue to apply and have not materially changed. Whilst VRX considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will be correct or that the range of outcomes indicated within the studies will be achieved.

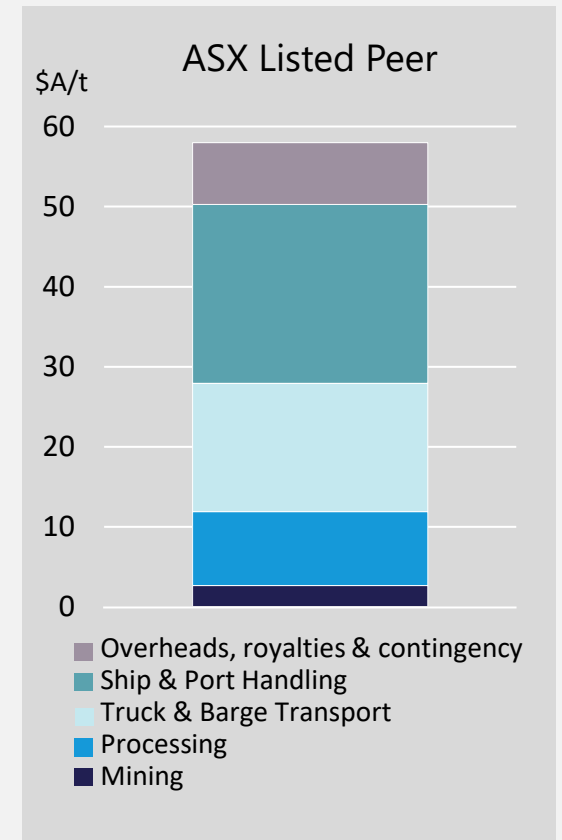
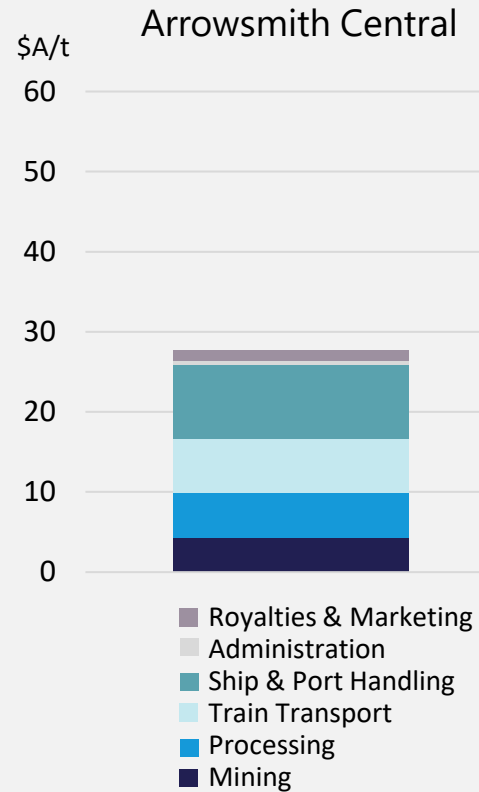
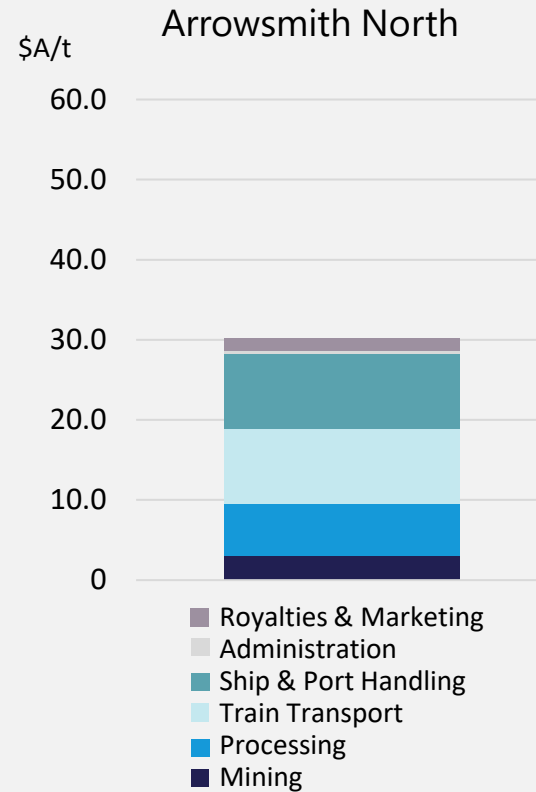
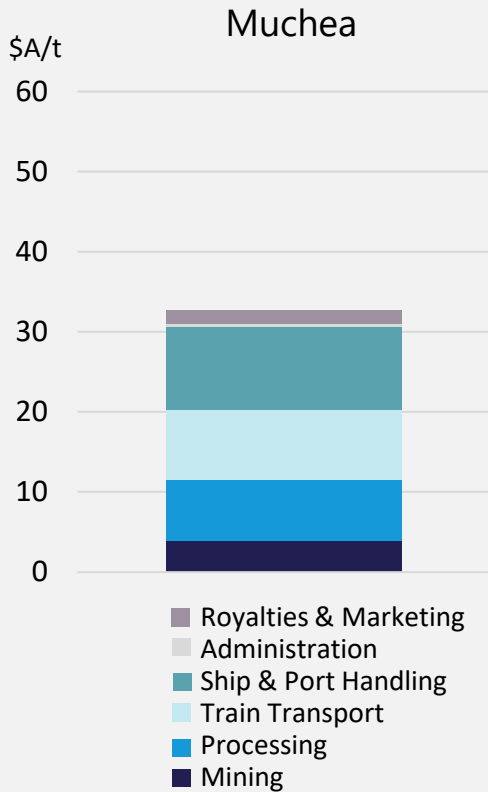
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# SIGNIFICANT COMPARATIVE ADVANTAGE

VRX's projects have significantly lower operating costs than domestic and international peers due to competitive logistics solutions

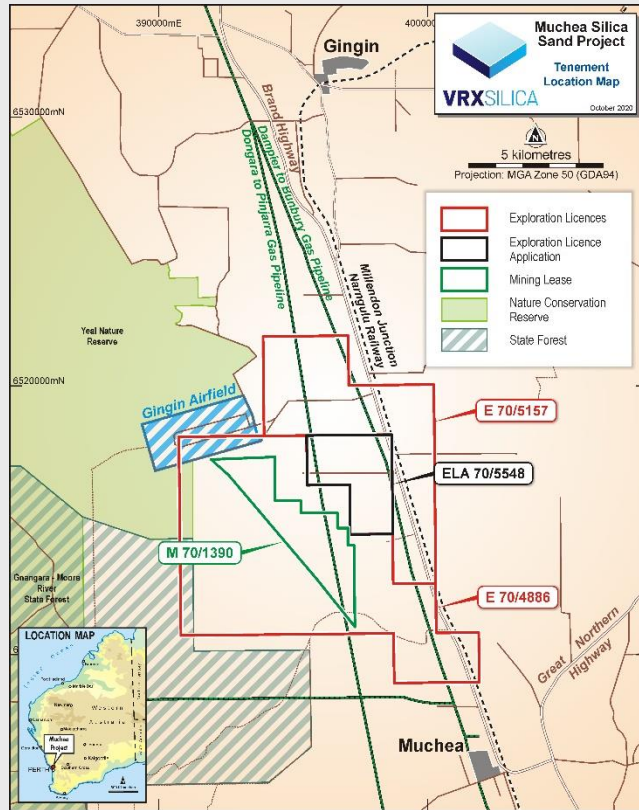
## Estimated operating costs per tonne of product



# INFRASTRUCTURE READY

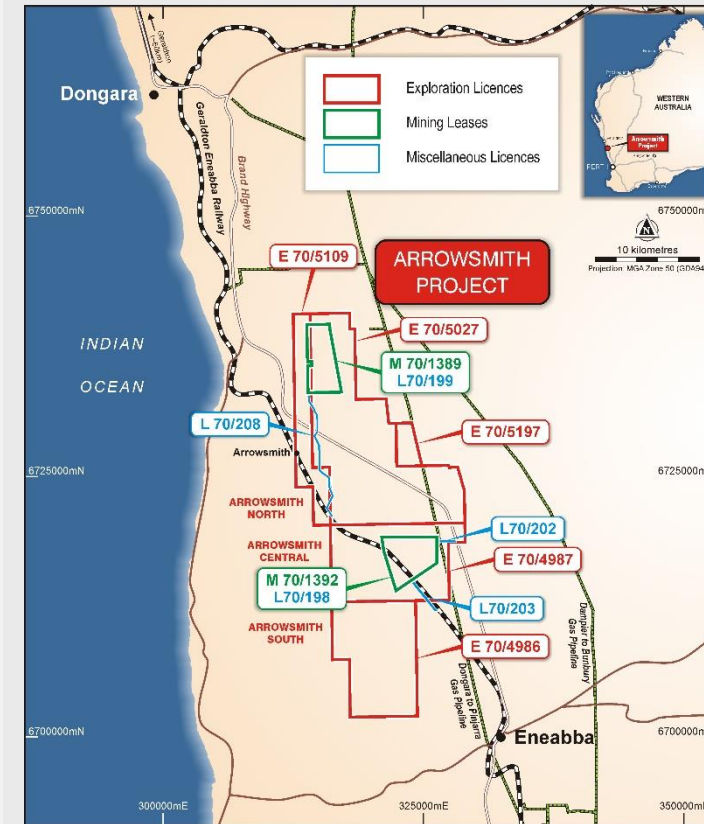
Connecting VRX's projects to Asian Silica Sand customers

## MUCHEA



- Adjacent to Brand Highway
- Granted Mining Lease
- Underutilised railway adjacent to project connects to Kwinana (100km)
- Grid power available from adjacent lines
- Supplementary solar power
- Water from Yaragadee deep aquifer

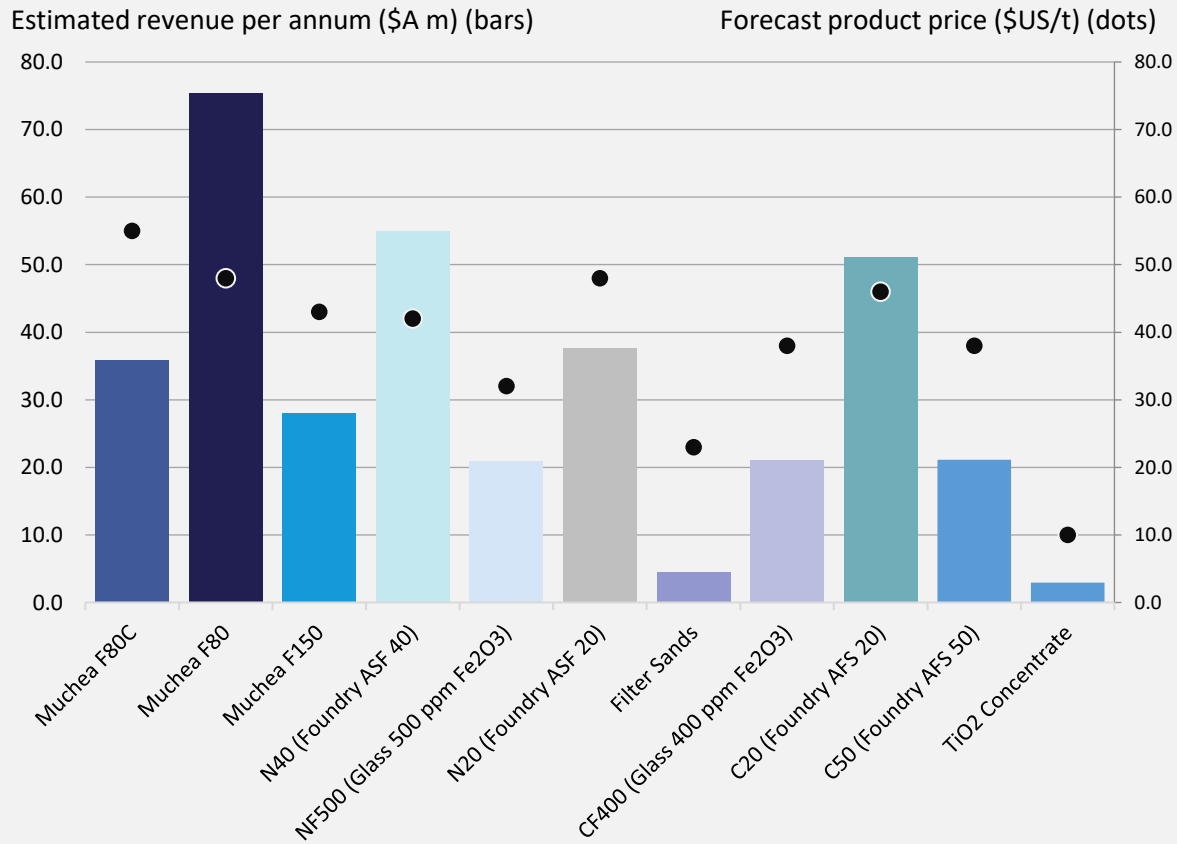
## ARROWSMITH



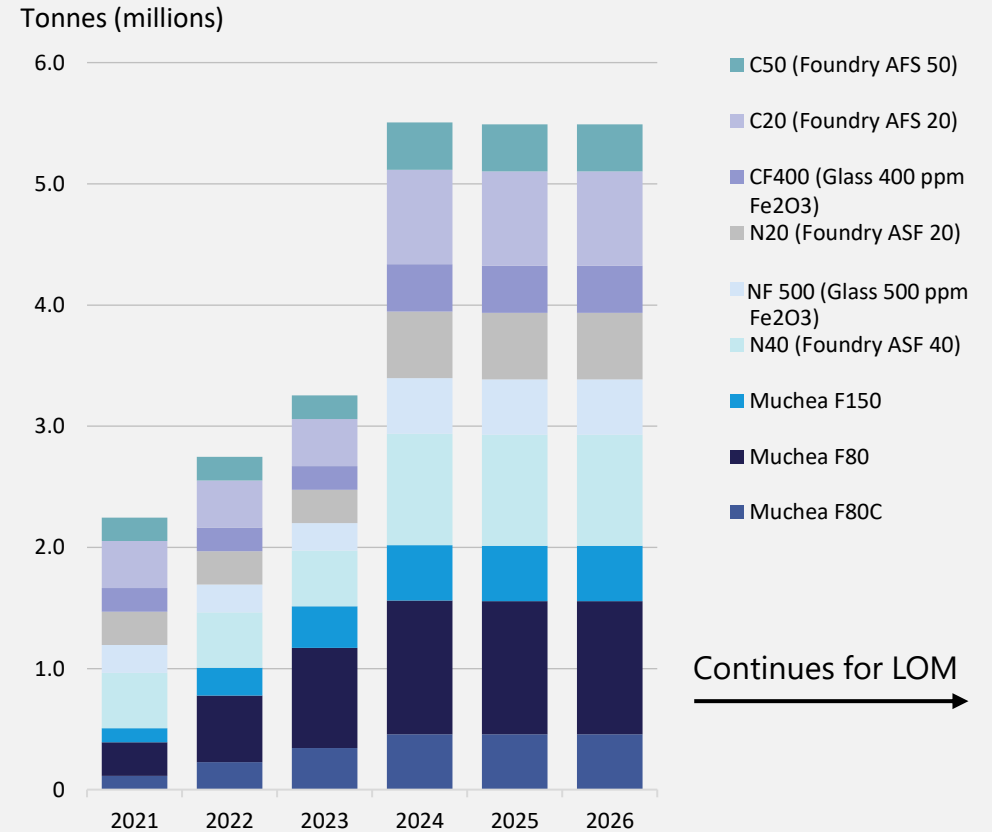
- Established rail network direct to Geraldton Port (100km) runs through project area
- Adjacent to Brand Highway
- Granted Mining Leases
- Dedicated gas and solar power supply
- Water from Yaragadee North deep aquifer

# SILICA SANDS PRODUCT AND REVENUE BREAKDOWN

Life of mine breakdown and steady state contributions to revenue  
**Steady-state revenue contribution by product**



**Production breakdown by product**



Continues for LOM

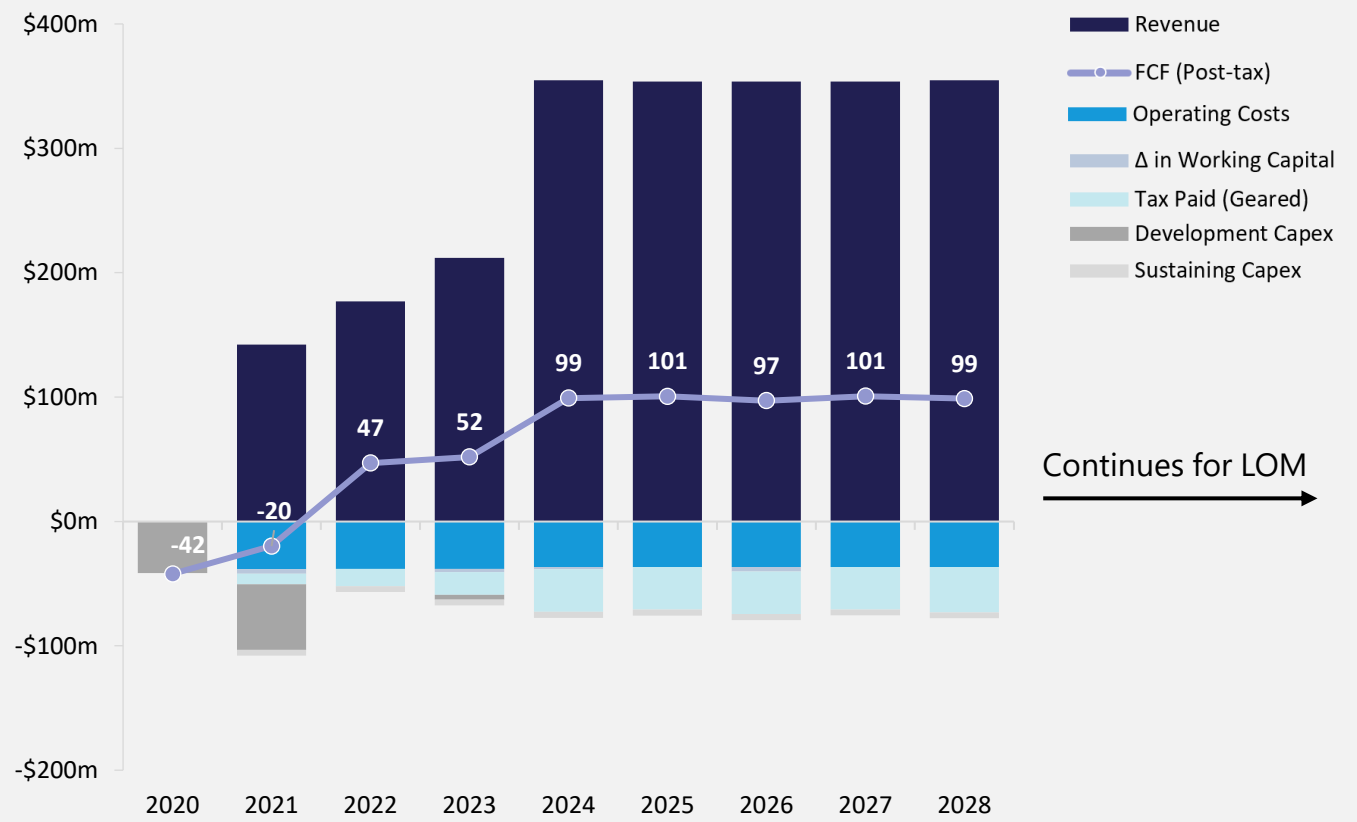


# ROBUST PROJECT ECONOMICS

Post-tax NPV<sub>10</sub> of \$727.8 million driven by low cost, long-life, high-margin operations

Post Tax, ungeared NPV <sub>10</sub>	\$727.8m
Post Tax, ungeared IRR	83%
Payback Period	2.4 yrs
Exchange Rate	\$0.70
Life of Mine (BFS Scope)	25 yrs <sup>1</sup>
EBIT	\$3,421m
Total Sales (25yrs)	\$8,285m
Cashflow after finance & tax	\$2,497m
Capex	\$87m
Capex contingency (inc)	20%
LOM C1 Costs, FOB <sup>2</sup>	\$30.24
Tonnes Processed (BFS)	158m

Free Cash Flow Profile LOM<sup>3</sup>



Source: VRX Bankable Feasibility Studies  
 1. Resource has potential to extend 100+ years  
 2. Includes Royalties, expressed per tonne of processed ore as in BFS  
 3. VRX Financial Model

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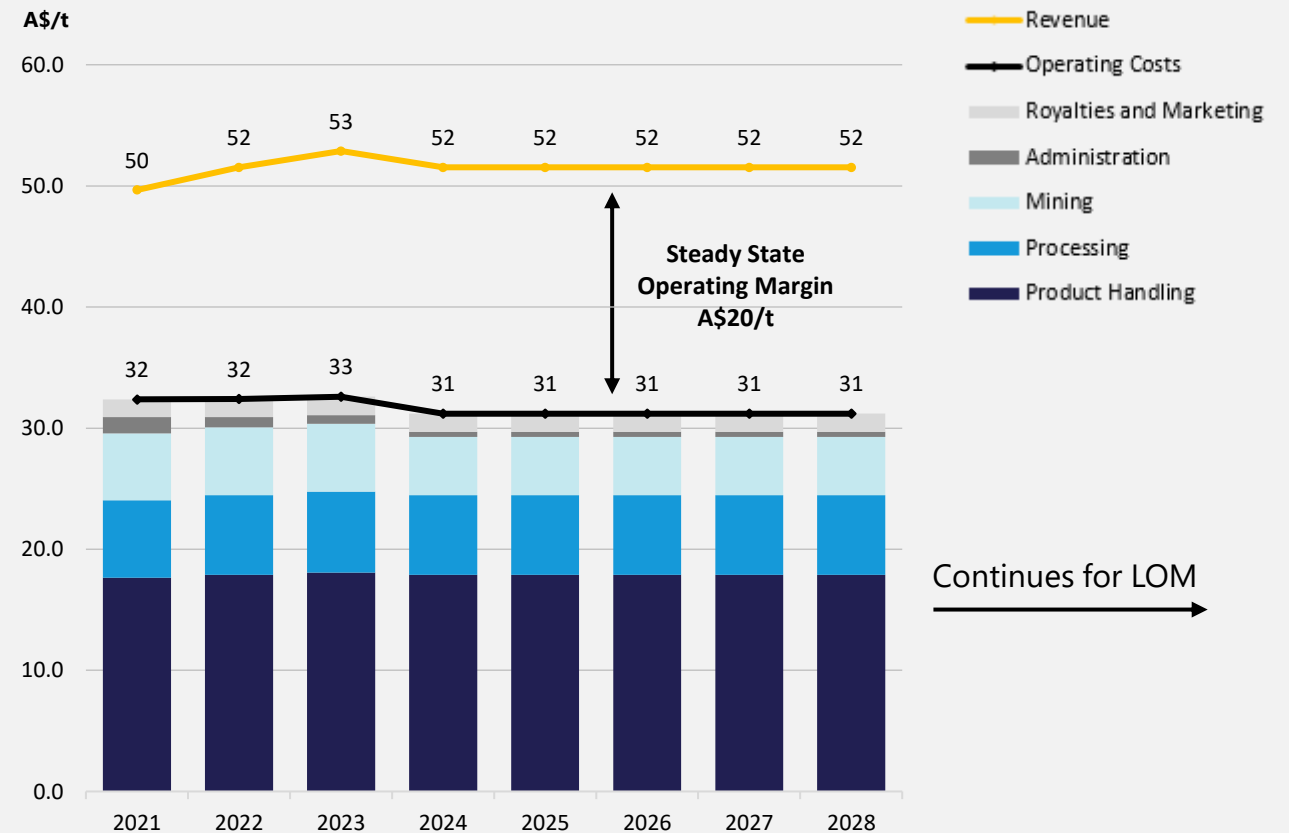


# HIGH MARGIN OPERATION

LOM operating margin of A\$20/t underpins robust project economics

Operating Cost	\$A/t
Mining	4.86
Processing	6.57
Product Handling	17.89
Administration	0.46
Royalties & Marketing	1.50
<b>Total</b>	<b>31.28</b>
<b>Revenue</b>	<b>51.52</b>
<b>Average Operating Margin</b>	<b>20.24</b>

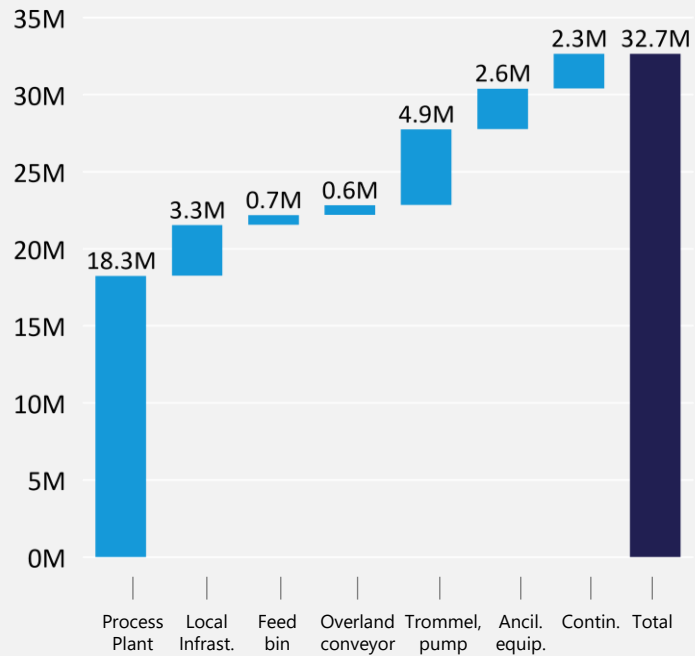
Price and Cost Profile LOM<sup>1</sup>



# ATTRACTIVE CAPEX SIZING

The three projects require low capex relative to their earnings potential

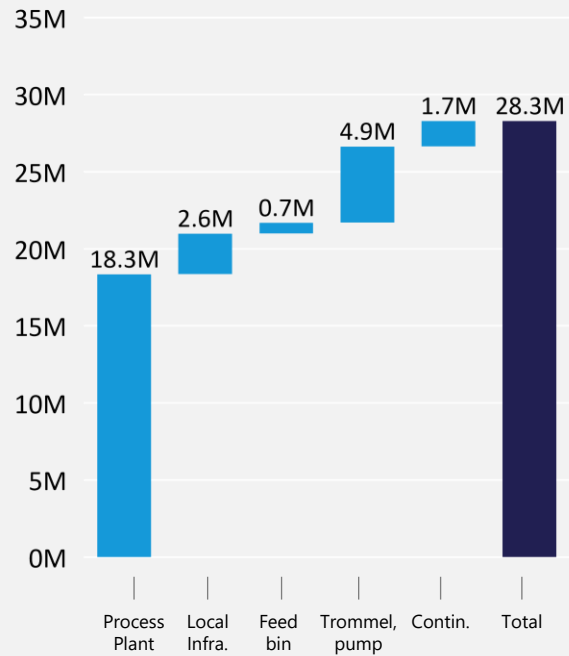
Muchea Capex



Capex **\$32.7m**

25 Year EBIT **\$1,540m (av. \$62m/yr)**

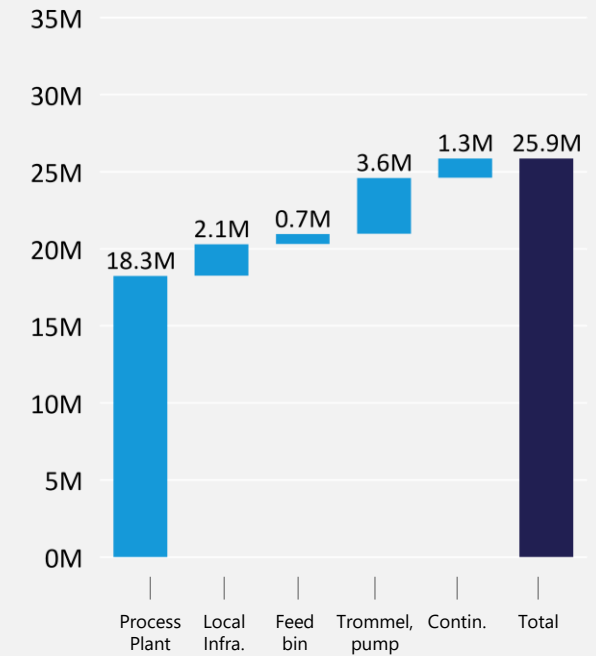
Arrowsmith North Capex



Capex **\$28.3m**

25 Year EBIT **\$1,144m (av. \$46m/yr)**

Arrowsmith Central Capex

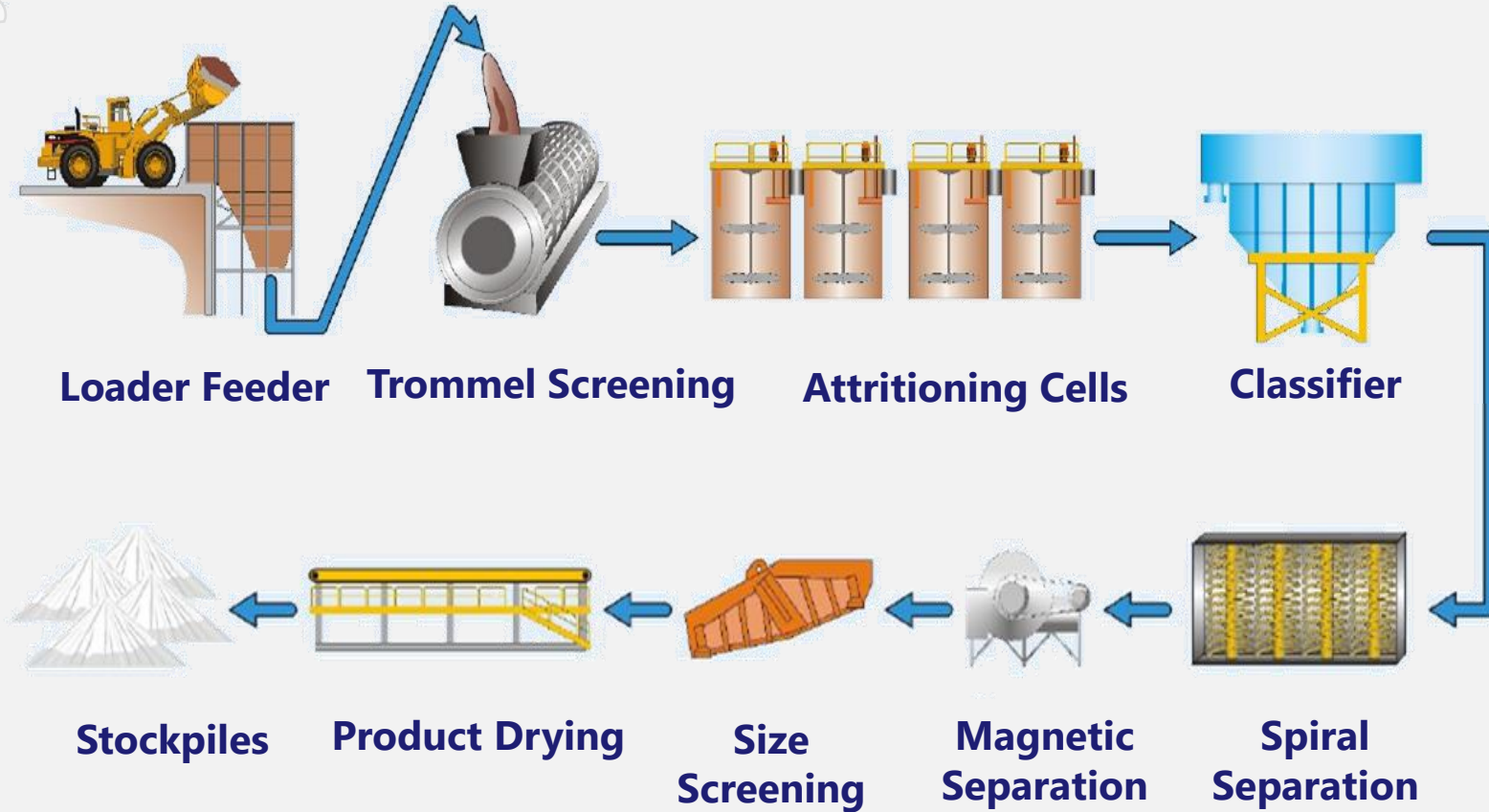


Capex **\$25.9m**

25 Year EBIT **\$737m (av. \$30m/yr)**

# PROCESSING FLOWSHEET

Simple processing, no chemicals and no dust, 2mtpa processing plant at each site



## Processing Plant Design



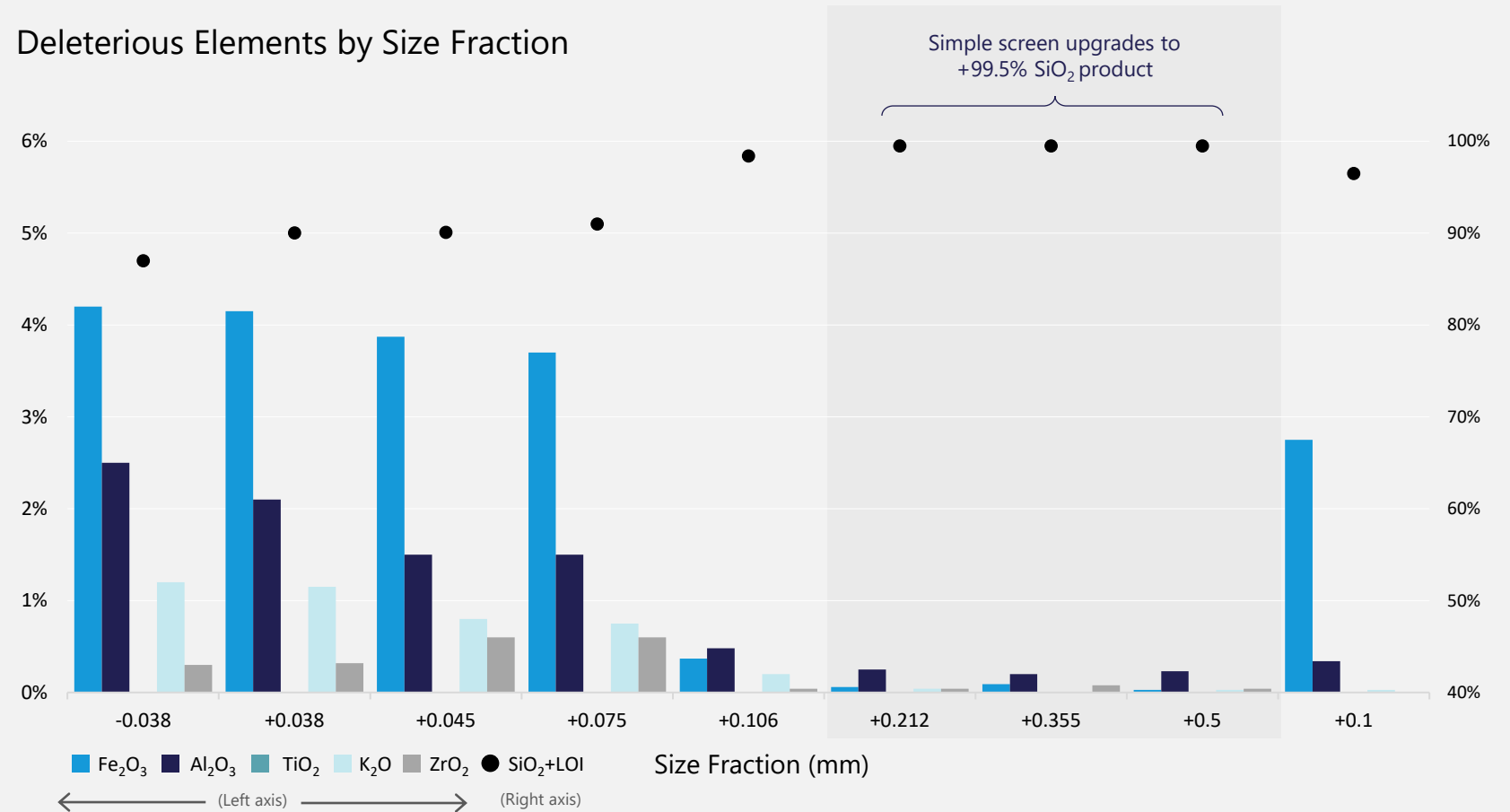
- Muchea, Arrowsmith North and Arrowsmith Central to each have 2 Mtpa processing capacity
- **No chemicals required**

# +99.5% SiO<sub>2</sub> WITH SIMPLE SCREEN

Arrowsmith North Silica Sand Project "Cream Sand" Size by Analysis Data

- Applying a simple 0.212mm – 1.0mm screen removes the majority of the impurities in the Silica sand
- This delivers a spec suitable for flat and container glass and foundry sand

Deleterious Elements by Size Fraction



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# ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG)

VRX is delivering on its ESG responsibilities aligned to the UN's Sustainable Development Goals

## SUSTAINABLE DEVELOPMENT GOALS



### CLEAN ENERGY

Utilising reliable, renewable modern energy



### ECONOMIC GROWTH

Enhancing economic and productive employment



### INDUSTRY INNOVATION

Building resilient infrastructure and fostering innovation



### SUSTAINABLE COMMUNITIES

Respecting heritage values



### RESPONSIBLE PRODUCTION

Employing sustainable mining methods



### CLIMATE ACTION

Reducing emissions from production



### REHABILITATION PLAN

Employing direct vegetation transfer as a unique rehabilitation method

# INVESTMENT HIGHLIGHTS



**Emerging Australian  
strategic silica sand  
producer**

**Outstanding  
project economics**



**Tenure secured  
with rapid pathway  
to financing and  
production**

**Well placed to capitalise  
on robust market  
outlook and demand**



# RESOURCES AND RESERVES

## Mineral Resources

Project	Classification	Mt	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	TiO <sub>2</sub> %	LOI %
Mucea	Indicated	29	99.6	0.09	0.03	0.07	0.22
	Inferred	172	99.6	0.05	0.02	0.10	0.23
	<b>Total</b>	<b>208</b>	<b>99.6</b>	<b>0.06</b>	<b>0.02</b>	<b>0.10</b>	<b>0.23</b>
Arrowsmith North	Indicated	248	97.7	1.00	0.40	0.20	0.50
	Inferred	523	98.2	0.80	0.30	0.20	0.40
	<b>Total</b>	<b>771</b>	<b>98.0</b>	<b>0.86</b>	<b>0.30</b>	<b>0.17</b>	<b>0.41</b>
Arrowsmith Central	Indicated	28.2	96.6	1.70	0.40	0.20	0.70
	Inferred	48.3	96.9	1.50	0.40	0.20	0.70
	<b>Total</b>	<b>76.5</b>	<b>96.8</b>	<b>1.50</b>	<b>0.40</b>	<b>0.20</b>	<b>0.70</b>
<b>Total Mineral Resource</b>			<b>1,056 Million Tonnes</b>				

## Ore Reserves

Project	Classification	Product	Recovery	Mt	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	TiO <sub>2</sub> %	LOI %
Mucea	Probable	F80	48%	10.2	99.9	0.02	0.008	0.03	0.1
		F80C	20%	4.25					
		F150	20%	4.25	99.8	0.07	0.015	0.035	0.1
	<b>Mucea Ore Reserve</b>				<b>18.7</b>	<b>Million Tonnes</b>			
Arrowsmith North	Probable	N20	24%	60	99.7	0.2	0.05	0.035	0.1
		N40 / NF500	60%	149					
		Local Market	6%	15					
	<b>Arrowsmith North Ore Reserve</b>				<b>223</b>	<b>Million Tonnes</b>			
Arrowsmith Central	Probable	CF400	17%	4.2	99.6	0.25	0.04	0.03	0.1
		C20	34%	8.4					
		C40	17%	4.2					
		High TiO <sub>2</sub>	9%	2.2			<1%	2%	
	<b>Arrowsmith Central Ore Reserve</b>				<b>18.9</b>	<b>Million Tonnes</b>			
<b>Total Ore Reserve</b>				<b>261</b>	<b>Million Tonnes</b>				

*\*Note: Interpreted mineralisation is domained into different sand types based on drill logging data and publicly available soil mapping information, above a basal surface wireframe defined on the current drill sampling depths. Depletion zones include the upper 0.5 m for rehabilitation purposes, and minor swamp zones in the east and south of the modelled area. Differences may occur due to rounding. Details of the Arrowsmith North, Arrowsmith Central and Mucea Resources can be found in the announcements dated 9 July 2019, 15 August 2019 and 17 June 2019 respectively.*



# Thank you

**Bruce Maluish**

Managing Director  
Level 1, 6 Thelma Street  
West Perth WA 6005

Phone: 08 9226 3780  
Email: [brucem@vrxsilica.com.au](mailto:brucem@vrxsilica.com.au)