



Silica Sand... Emergence of a new mining sector

Arrowsmith and Muchea
Silica Sand Projects

July 2022



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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.

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Project Highlights

WA based, pure-play silica sand mining company with advanced silica sand projects

100+ year production life

- ❑ 100% owner of three high value Silica Sand Projects in Western Australia - Tier 1 mining region
- ❑ Multi-decade-scale contiguous sand deposits with significant high-grade Resources
- ❑ Most-advanced non-private silica sand projects in Australia with planning, heritage and environmental studies having commenced in 2017
- ❑ Initial offtake term sheet signed for supply to S. Korean foundry industry, with strong interest from other potential customers in SE Asia at a time of diminishing global supply and increasing demand
- ❑ Arrowsmith North to lead staggered/disciplined development – first production expected mid 2023 – followed by Muchea and Arrowsmith Central
- ❑ Mining Leases granted over all three projects with permitting and infrastructure preparations well-advanced
- ❑ Scale of projects provides long-term opportunity for **silica sand export** and **glass manufacturing** and **downstream industries** in Western Australia



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Silica Sand

The foundation of modern cities

- ❑ Silica sand is the most-used commodity on the planet after air and water.
- ❑ It is the main ingredient in all types of **glassmaking**, including specialty solar panel and high-tech glass.
- ❑ Around 47% of the world's glass is made in Asia, and the glass manufacturing industry is increasing at a rate of 5-6% per year – or about 8-10 million tonnes.
- ❑ Silica sand is also the main ingredient in concrete.
- ❑ It is a finite resource that is running out.
- ❑ The Asia-Pacific region is currently experiencing a **supply shortfall and increasing demand**.





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Silica Sand – World Class Portfolio

Project development pipeline to ensure disciplined, staged development of world-class assets



- ❑ WA based company and management team
- ❑ Most advanced non-private projects in Australia
- ❑ Three large scale, high grade and low impurity silica sand projects – Arrowsmith North, Arrowsmith Central and Muchea
- ❑ Each project can be run independently and supply raw material to diverse markets
- ❑ Simple and low impact mining and processing
- ❑ Access to established infrastructure (logistics, power, water, gas)
 - rail lines to port run adjacent to all project tenements
 - gas pipelines run adjacent to each of the project areas
- ❑ Infrastructure planning and permitting well-advanced



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Corporate Summary



Person	Role	Experience
Paul Boyatzis	Chairman	Governance: Over 30 years experience in investment, equity markets and managing public companies
Bruce Maluish	Managing Director	Technical and Finance: Over 35 years in mining industry including previous roles as ASX MD and General Manager
Peter Pawlowitsch	Non-Executive Director	Senior executive in Finance and Corporate roles
David Welch	Non-Executive Director	Senior executive responsible for strategy, business transformation and performance, commercial negotiations, stakeholder engagement for major projects
Steven Papadopoulos	Commercial Manager	Legal and Commercial: Over 20 years experience as corporate lawyer and commercial advisor in resources and other industries
Yoonil Kim	Marketing Manager	Marketing: 16 years' experience selling silica sand in the Asian market

Capital Structure	
Share Price	13cps *
Ordinary Shares on Issue	558 million
Options on Issue	35 million
Market Capitalisation	\$75 million*
Cash	\$9 million
Debt	Nil
Enterprise Value	\$66 million

Shareholders	
Board and Management	12%
Top 20 Total	33%

Broker Coverage	
Argonaut	
Euroz Hartleys	

* Share price on 28 June 2022



Arrowsmith North

Near-term development opportunity on a world-class silica sand project

- ❑ Production expected to commence mid 2023 (subject to final environmental approvals)
- ❑ 223Mt ore reserve @99.7% SiO₂ (**100** year production!)
- ❑ Tailored 2Mtpa processing plant with patented process circuit, revised capital estimate and DFS underway
- ❑ Access to established infrastructure –
 - ❑ Unused rail line (from Eneabba to Geraldton) runs adjacent to project tenements
 - ❑ Water from Yarragadee North deep aquifer
 - ❑ Access by adjacent Brand Highway
 - ❑ Hybrid gas and solar power supply

Compliance Statement

The information in this document that relates to the estimation and reporting of the Mineral Resource and Ore Reserves for the Arrowsmith North, Arrowsmith Central and Muchea Silica Sand Projects is extracted from releases to ASX on 28 August 2019, 17 September 2019 and 18 October 2019, respectively. The Company confirms that it is not aware of any new information or data that materially affects the information included in this document and all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.



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Responsible Mining – The VRX Way

A made-for-purpose mining method designed around continuous rehabilitation

- ❑ VRX has developed a unique and progressive mining method for its silica sand projects
- ❑ The Vegetation Direct Transfer (VDT) method provides a rapid and comprehensive regeneration of mined areas based on continuous rehabilitation as mining progresses
- ❑ The VDT method removes a 400mm-deep sod with topsoil containing the vast majority of native flora and invertebrate fauna remaining intact
- ❑ Root structures in the loose sand are relatively shallow at 200-300mm in depth.



Arrowsmith North/Central Vegetation Kwongan Heath

Loose sand/Shallow root systems suitable for VDT

<https://vrxsilica.com.au/miningandrehabilitationmethodology/>



Arrowsmith North Environmental and Mining Approvals

- Confirmation by Cwlth Department of Agriculture, Water and the Environment of accredited State approval under the EPBC Act
- State Department of Water and Environmental Regulation and Environmental Protection Authority (EPA) require PER assessment
- Environmental Scoping Document (ESD) Approved 15 March 2022
- Environmental Review Document (ERD) lodged 14 April 2022
- No further direction on any future requirements or timing until comments from PER on published ERD received from EPA (imminent)**
- Mining proposal for DMIRS drafted and lodgement subject to receipt of comments on ESD



Arrowsmith Central Environmental and Mining Approvals

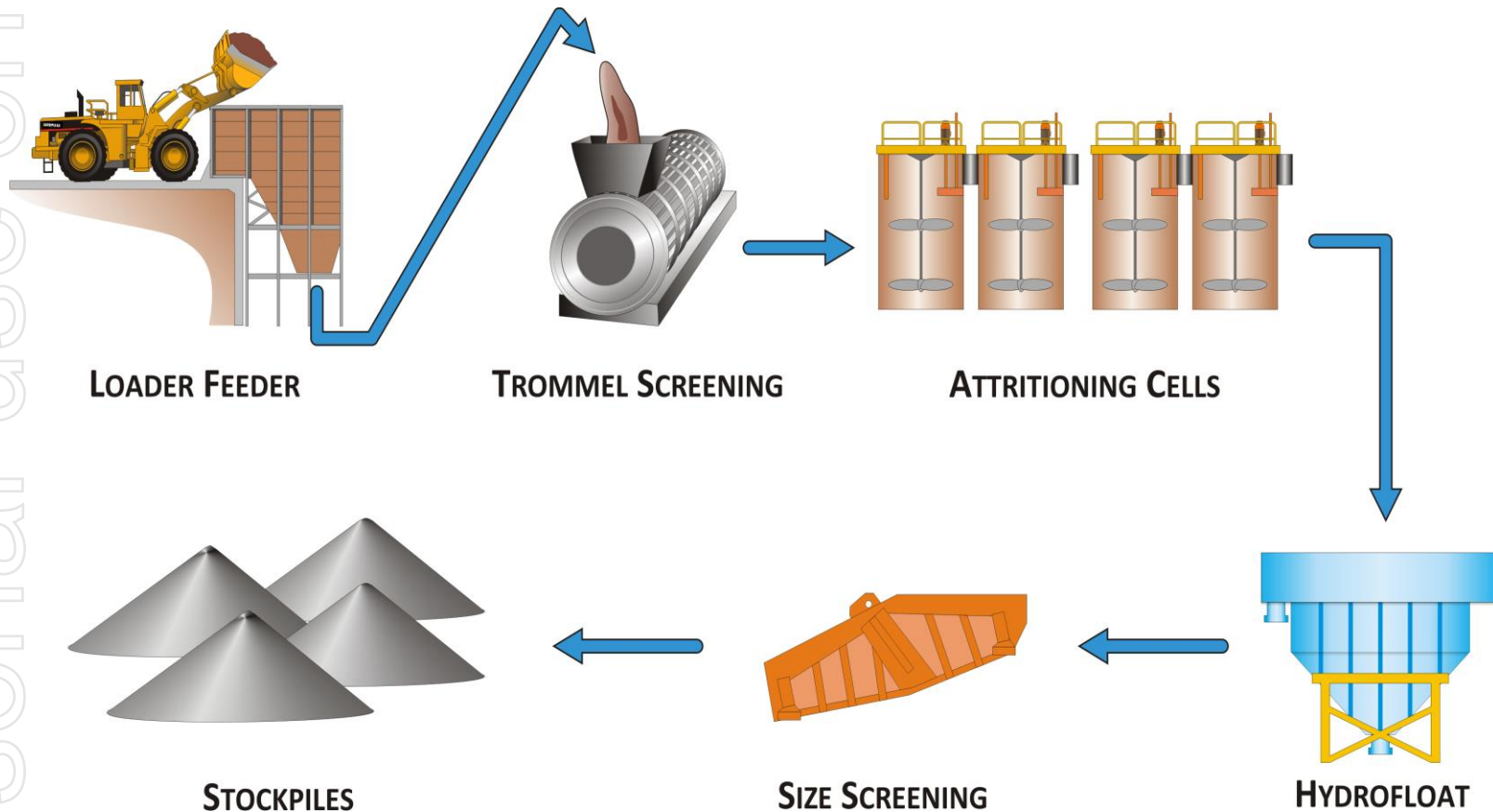
- Confirmation by Cwlth Department of Agriculture, Water and the Environment of accredited approval under the EPBC Act
- State Department of Water and Environmental Regulation and Environmental Protection Authority (EPA) require PER assessment
- Environmental Scoping Document (ESD) lodged 29 June 2022
- Environmental Review Document (ERD) prepared and will lodge on ESD approval



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Processing Flowsheet

Simplified wet processing, multiple products, no dust, 2mtpa processing plant at each site



Processing Plant Design

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

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Muchea

Large scale, world class **high-grade and low impurity** silica sand project

- ❑ Production to follow Arrowsmith North subject to EPA approval
- ❑ Unique mining/rehabilitation method and duplicate plant
- ❑ Access to established infrastructure
 - ❑ Underutilised railway connects to Kwinana (100km)
 - ❑ Grid power
 - ❑ Water from Yaragadee deep aquifer
 - ❑ Adjacent to Brand Highway
- ❑ Granted Mining Lease and Miscellaneous Licences for access
- ❑ **+99.9% SiO₂ - <100ppm Fe₂O₃ after processing (high-grade)**
- ❑ **Raw material for premium ultra-clear cover glass production for solar panels**
- ❑ **Potential for manufacturing cover glass from adjacent gas/hydrogen pipeline**

Muchea Vegetation Banksia Woodland

Low grasses and sedges suitable for VDT

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Sustainability 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



Right time – Right place for WA and its economic advantages of silica sand and gas reserves

- ❑ Very long life, high-grade silica sand supply with combined 1bn tonne Resource, 99.6% to 99.9% SiO₂ grade
- ❑ WA domestic gas reserves and burgeoning hydrogen projects in mid-west
- ❑ Long term supply of essential raw materials and green energy for glass manufacturing (gas/solar/hydrogen)
- ❑ High-tech ultra-clear glass production capability from Muchea
- ❑ Manufacturing of solar panels in WA for a huge and growing market in Australia

Opportunity to build world-class glass manufacturing and downstream processing industries in Western Australia



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Thank you

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