

Ventnor Resources Limited

WA Silica Sand Projects

August 2018

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The world is facing a global sand crisis



Demand for sand leads to global ecological crisis
Alexandra Popescu on 8 February 2018

FEATURE / BUSINESS & ECONOMY

Running out of sand: in numbers

the depletion of one the world's most sought-after the 21st century: sand.

A shore thing

An improbable global shortage: sand

Thanks to booming construction activity in Asia, sand is in high demand



Global Shortage of Key Resource Could Doom Key Asian Infrastructure Projects

ENVIRONMENT

03:40 07.01.2018 (updated 07:18 07.01.2018)

Get short URL

In the city of Kampot in southern Cambodia, the extraction of sand from an estuary on the Praek Tuek Chhu river is increasing and sand extraction is so common in Asia currently that the continent may deplete all of its sand in the not-too-distant future.

The world is facing a global sand crisis

September 8, 2017 6:22am AEST

Sand for use in hydraulic fracturing operations at a processing plant in Chippewa Falls, Wisconsin in 2011. AP Photo/Steve Karnowski, Author provided

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When people picture sand spread across idyllic beaches and endless deserts, they understandably think of it as an infinite resource. But as we discuss in a [just-published perspective](#) in the journal Science, over-exploitation of global supplies of sand is damaging the environment, endangering communities, causing shortages and promoting violent conflict.

SPECIAL COVERAGE

Sand mining: Growing pains trade

3

Unchecked sand mining, with more sand removed each year than what can be replaced over the course of centuries, is unsustainable

Sand crisis hits construction workers hard in Madurai
What has made things worse is that M-sand (manufactured sand), the alternative prescribed for river sand, is available in quantity and its quality is also far from desirable.
THN | January 23, 2018, 12:00 IST

Silica Sand Use



Construction Sand

Concrete

Glassmaking

Float, Containers, Architectural, Thin Film

Metal Casting/Foundry

Automobile parts

Oil/Gas Well Stimulation

Frac sand/proppant

Metallurgical

Ferrous and Non-ferrous Alloys

Paint and Coatings

Brightness and durability

Chemical Production

Sodium silicate, Silicon gels

Ceramics and Refractories

High temp resistance

Filtration

Water production

Recreational

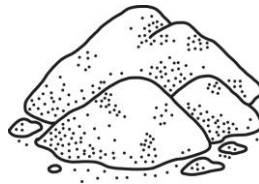
Inert growing media, Golf bunkers

Silica Sand Markets

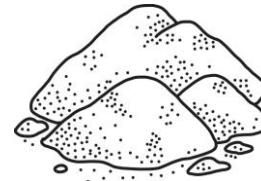
Priority for Marketing



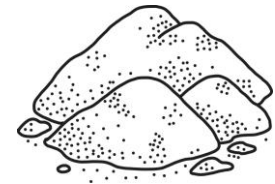
Construction
sand



Silica sand for
glassmaking



Foundry sand



Frac sand
proppant

Market Outlook



Estimated demand for silica sand for glassmaking by region:

Region	% of Global demand
Asia Pacific	47%
North America	20%
Western Europe	16%
Eastern Europe	8%
Africa/Middle East	5%
Central and South America	4%

Source: Freedonia



Market Outlook



Asian glass making production increasing 5-6% per year

Use	Spec	Market in Asia
Float (Plate) Glass	99.5% SiO ₂	60-65 Mt
Container Glass	99.5% SiO ₂	70-75 Mt
Cover Glass (Solar Panels)	99.95% SiO ₂ Low Fe	5-6 Mt
Smart Glass (Ultra Clear)	99.97% SiO ₂ Low Fe	1-2 Mt
Specialist Glass (Thin Screen)	99.97% SiO ₂	500-600 Kt

Source: Stratum Resources



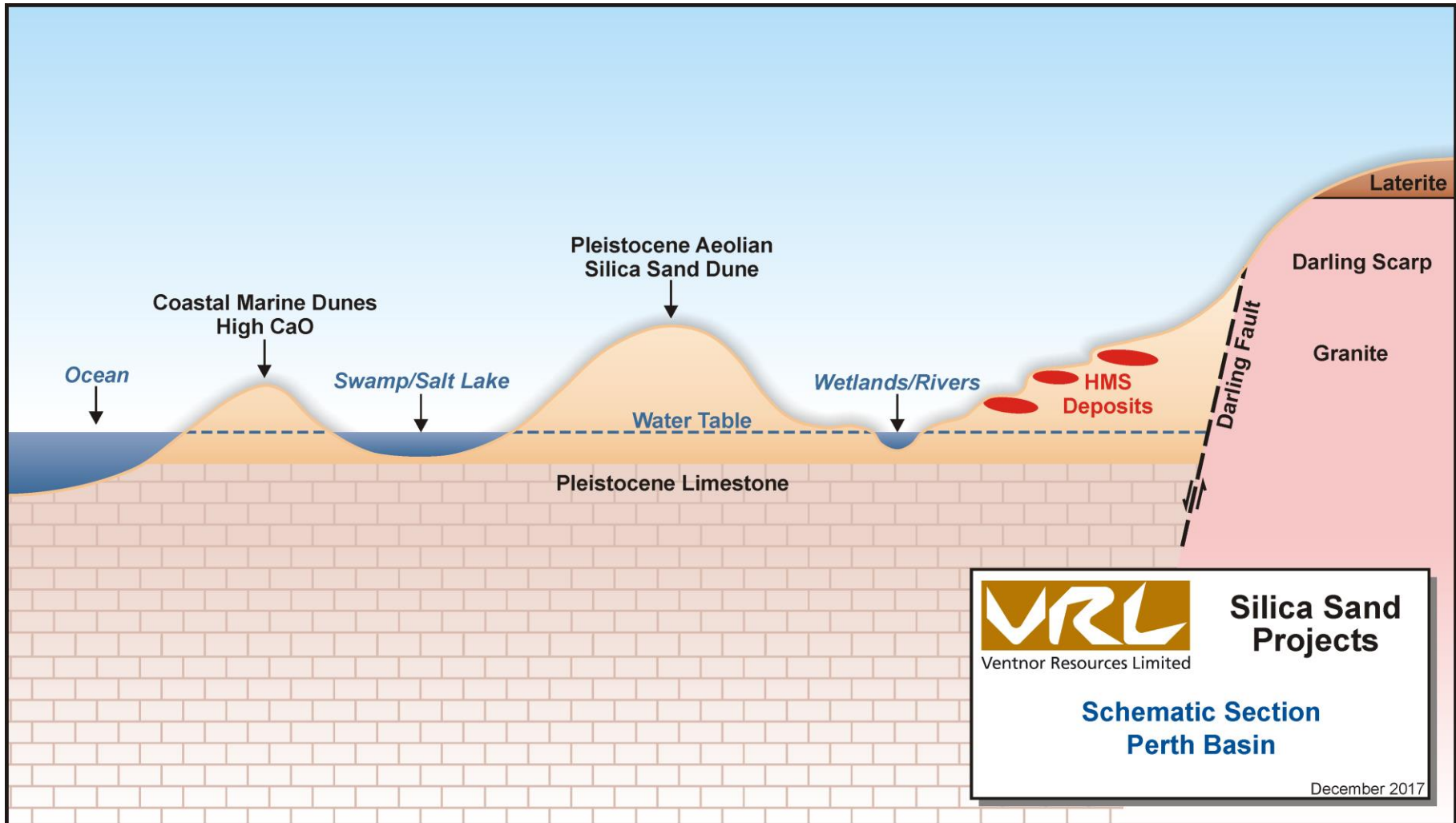
Ventnor's silica sand strategy

Identify and delineate large scale silica sand resources close to infrastructure

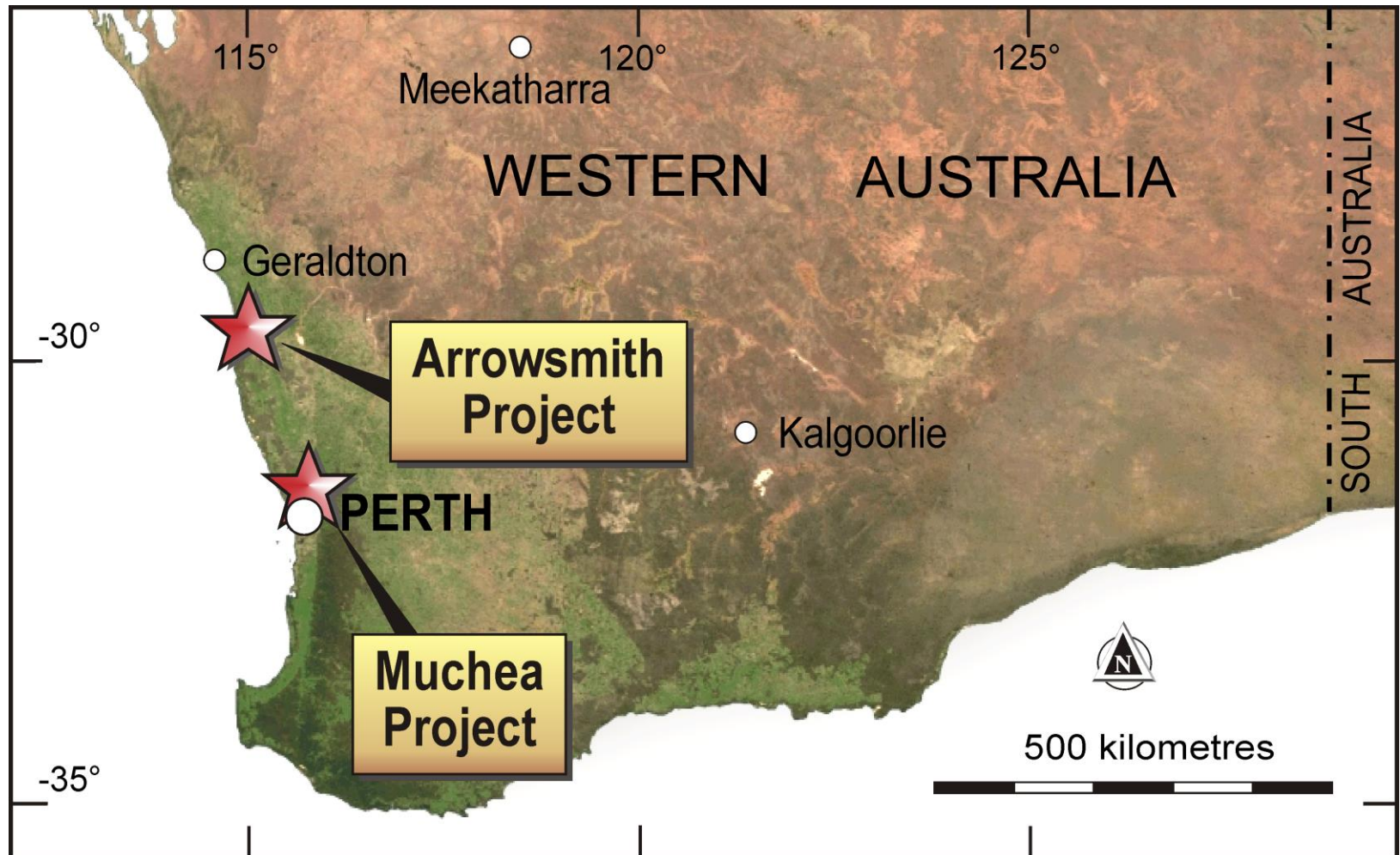
Develop plans for the mining and export of high quality silica sand

Explore opportunities for further processing to value-add

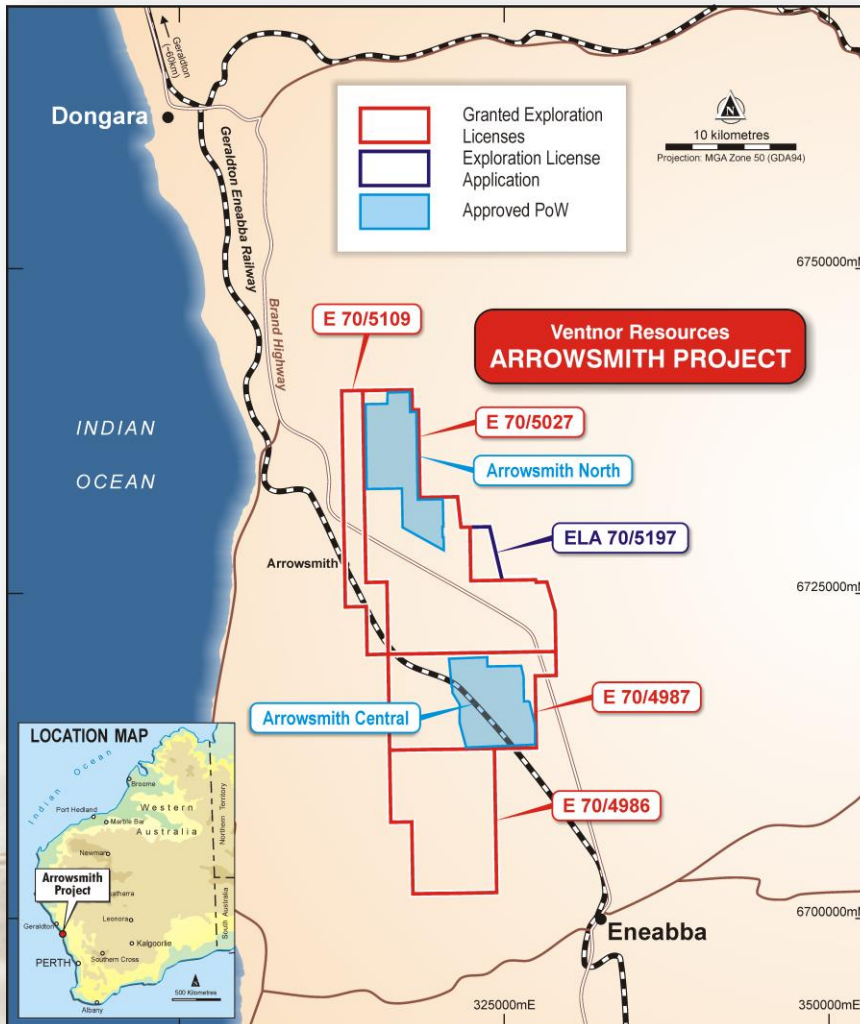
Setting



WA Silica Sand Projects



Arrowsmith



- South of Dongara with rail connections to Geraldton Port
- 270km nth of Perth
- Very large-scale potential
- Preliminary testwork confirms glass-making quality
(+99.5% SiO₂)
- Low capital intensity and low environmental impact mining propositions

Arrowsmith Exploration Targets



Exploration Target 140-210Mt @ 95-98% SiO₂*

Area	Tonnes (Mt)		Grade SiO ₂	
	Low	High	Low	High
Arrowsmith North	100	140	95%	98%
Arrowsmith Central	40	70	95%	98%
Total	140	210	95%	98%

**The potential quality and grade of the Arrowsmith Exploration Targets are conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource. It is uncertain if further exploration will result in the estimation of a Mineral Resource.*

Arrowsmith Exploration Targets



Arrowsmith North Exploration Target Area

- Exploration Target area 3,600 ha
- 1.6t/m³ in situ bulk density
- Between 40% and 50% of area contains high grade silica sand
- Depth of high grade sand 4 to 5 metres

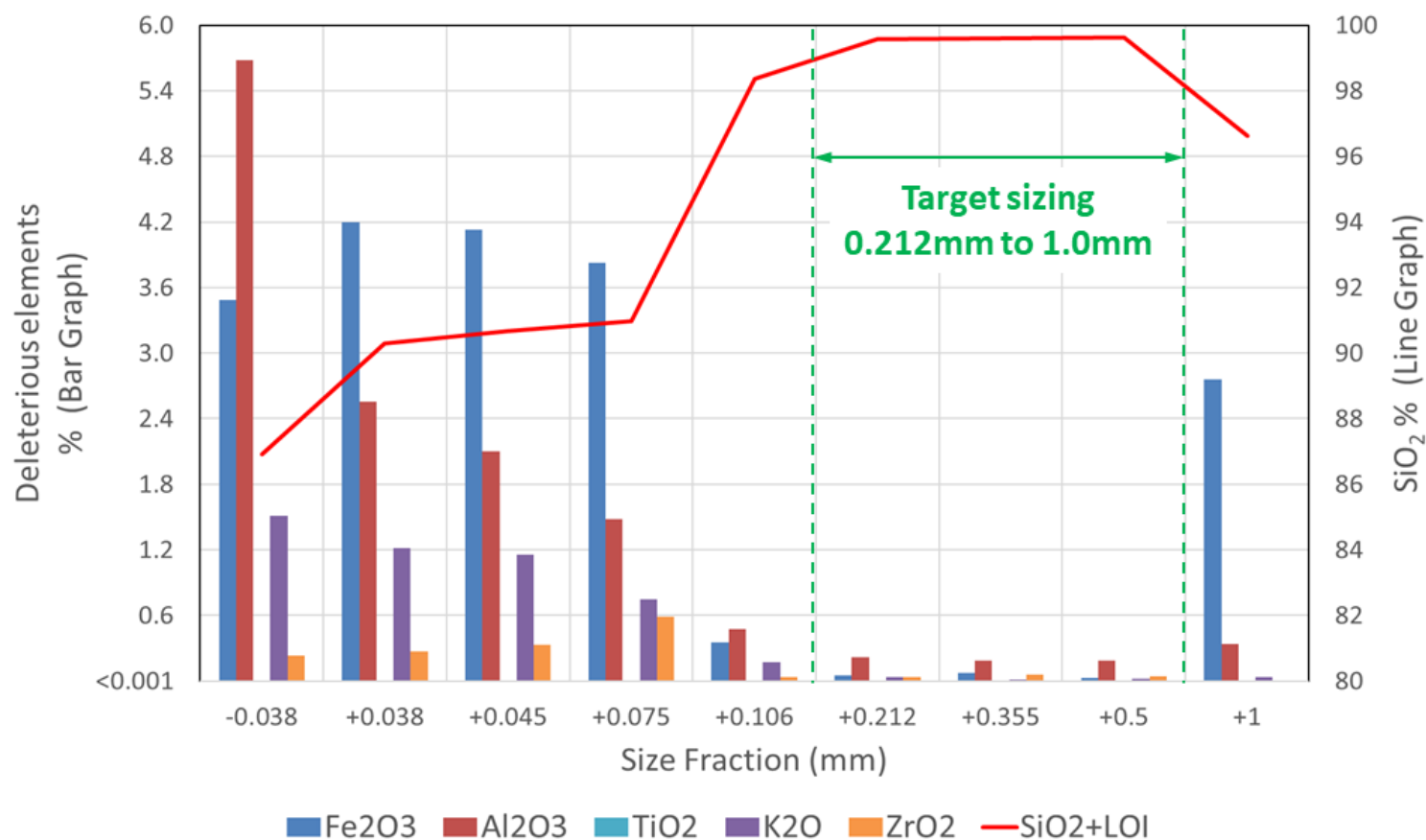
Arrowsmith Central Exploration Target Area

- Exploration Target area 3,000 ha
- 1.6t/m³ in situ bulk density
- Between 40% and 50% of area contains high grade silica sand
- Depth of high grade sand 2 to 3 metres

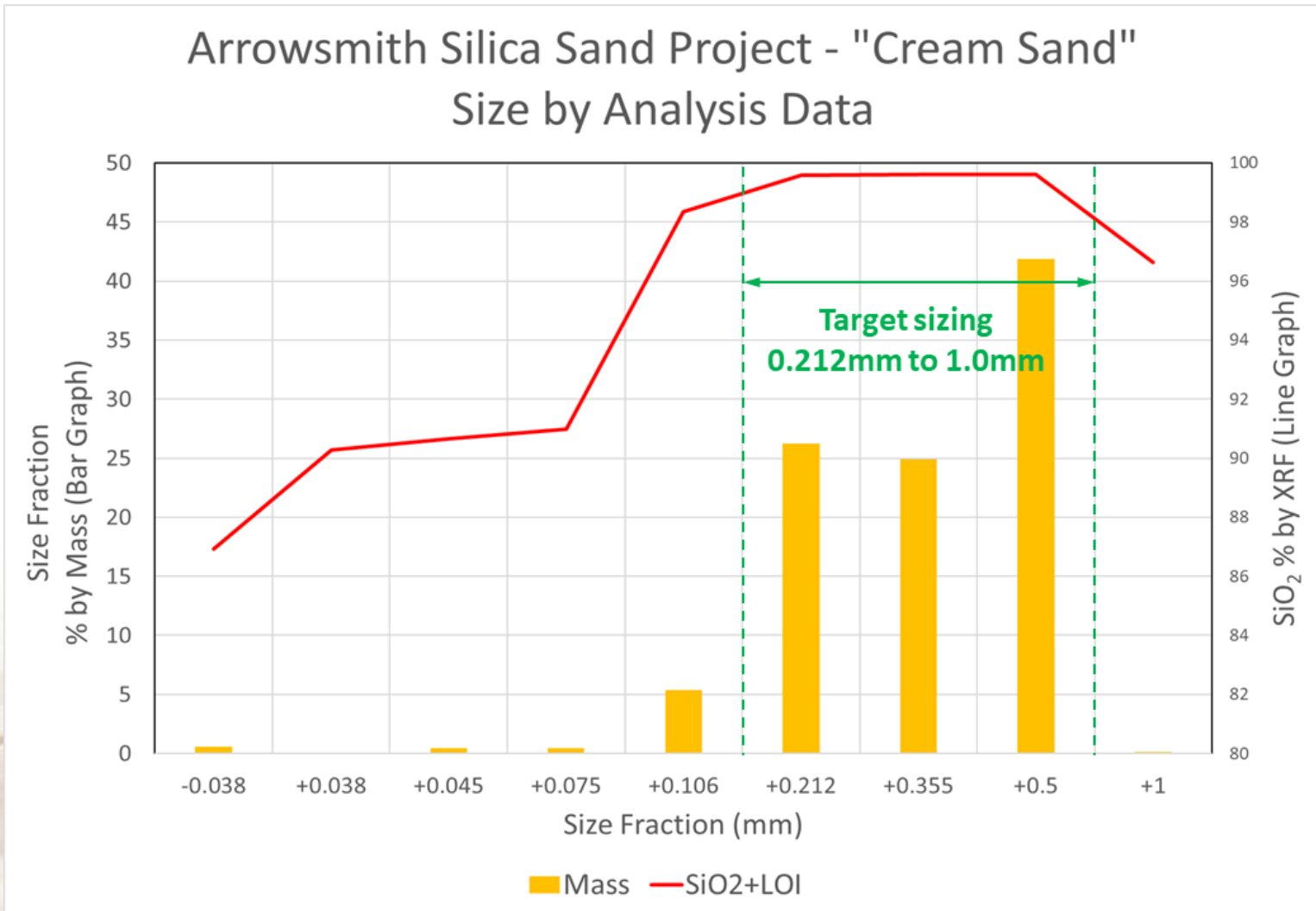
Auger drilling in the Exploration Target Areas has been completed and is adequate for a JORC-2012 compliant Maiden Mineral Resource estimate but further Aircore drilling is planned for mid to late September 2018 to upgrade the level of confidence and increase the Resource by drilling deeper than the hand-held auger.

Arrowsmith North Upgrade

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



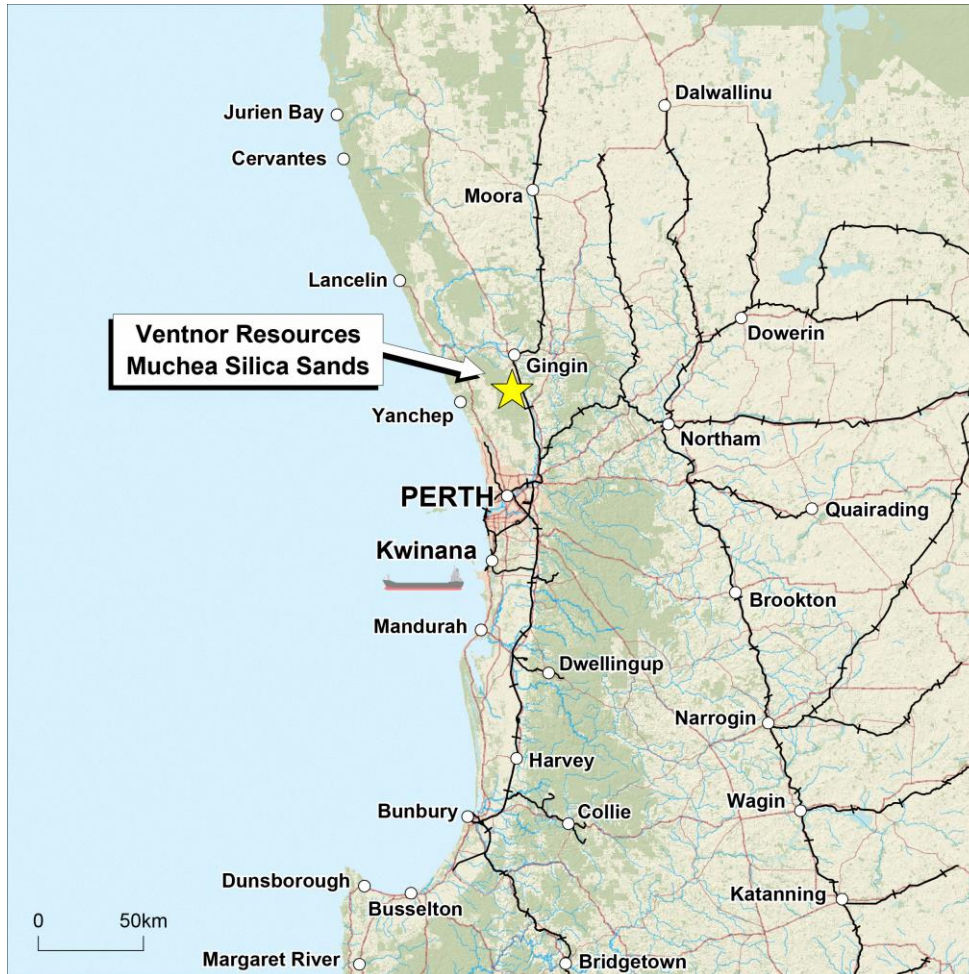
Arrowsmith North Upgrade



Geraldton Port



Muchea



- Significant high grade Silica Sand deposit
 - 50 km nth of Perth
 - 14 km nth of Muchea
- Transport logistics - rail products to Kwinana Port for export
- Adjacent to Brand Highway
- Granted tenure 100% VRX

Muchea Exploration Target



Exploration Target 170-275Mt @ 98-99.5% SiO₂ *

Area	Tonnes (Mt)		Grade SiO ₂	
	Low	High	Low	High
Aircore Drilling Area	70	125	98%	99.5%
Auger Drilling Area	100	150	98%	99.5%
Total	170	275	98%	99.5%

**The potential quality and grade of the Muchea Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource. It is uncertain if further exploration will result in the estimation of a Mineral Resource.*

Muchea Exploration Target



Aircore Drill Area Exploration Target

- 37 aircore drill holes
- Exploration Target area 835 ha
- 1.6t/m³ in situ bulk density (meas)
- Between 80% and 100% of area contains high grade silica sand
- Depth of high grade sand 6 to 9 metres

Auger Area Exploration Target

- 50 auger holes
- Exploration Target area 1,800 ha
- 1.6t/m³ in situ bulk density
- Between 80% and 100% of area contains high grade silica sand
- Depth of high grade sand 4 to 5 metres

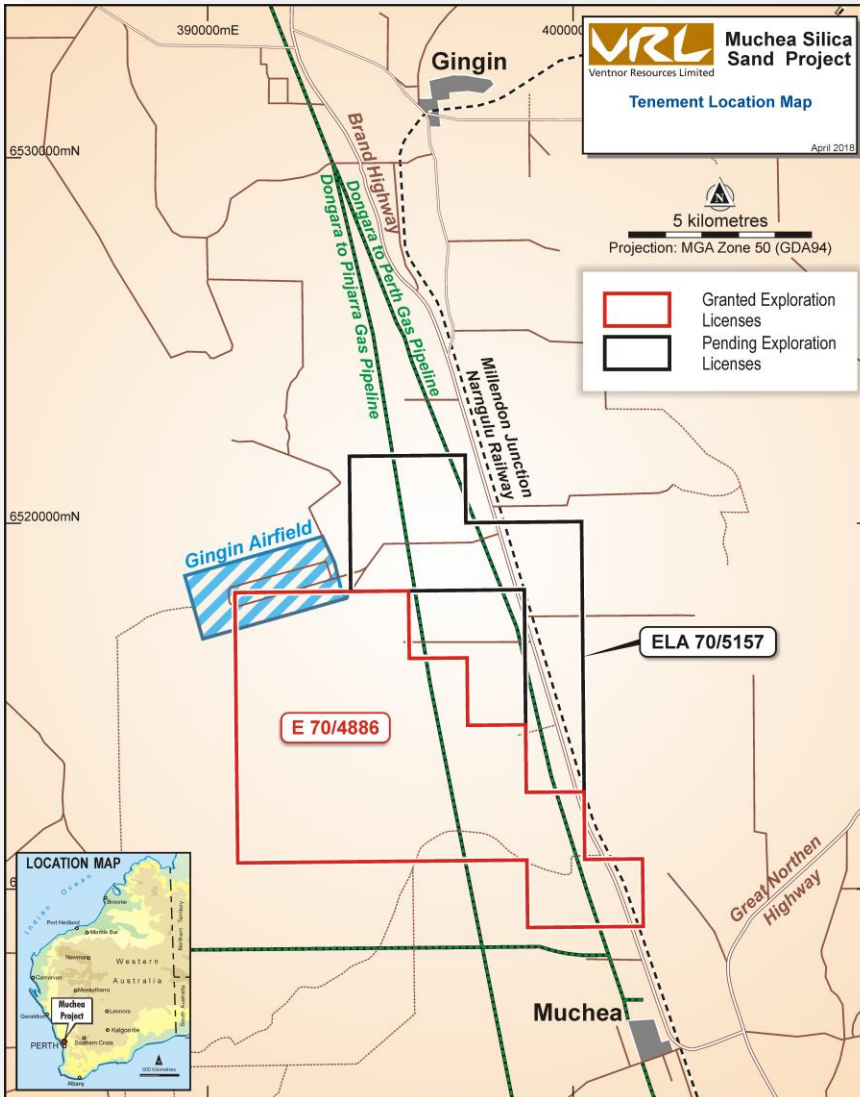
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Muchea



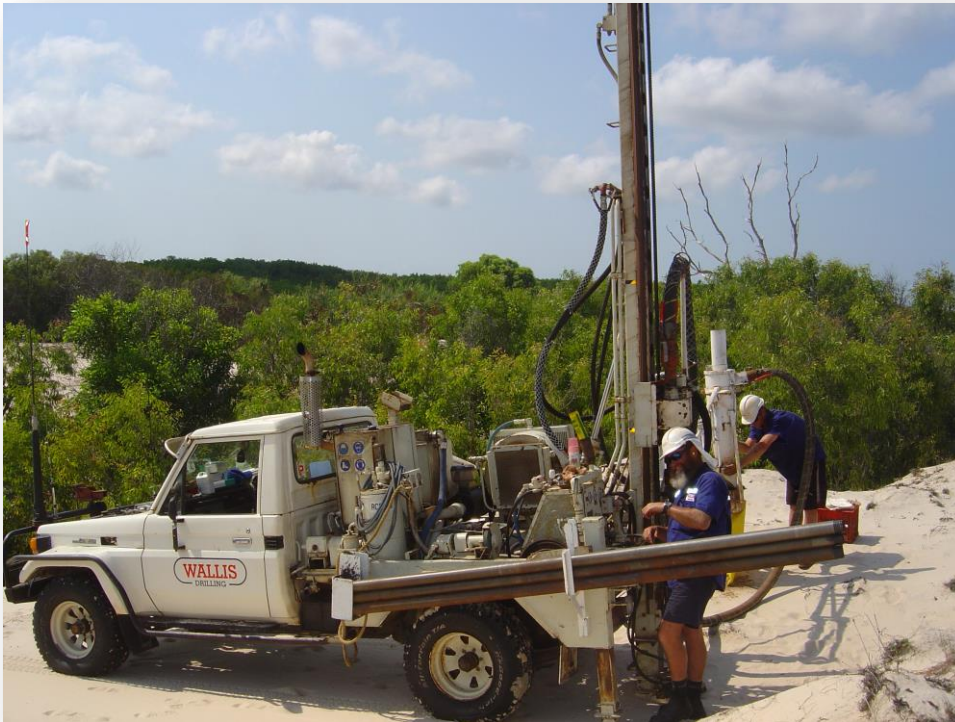
- Muchea is potentially a world class high-grade silica sand deposit
- With an unusually high grade feed stock simple processing can provide almost any required grade product

Muchea



- Due diligence drilling indicated high-grade SiO_2 **(+99.7% Avg)**
- Preliminary testwork indicates processing can upgrade sand to specialised glass quality
- Current logistics under-utilised with significant interest from operators

Proposed Exploration Program



Drilling using 4WD-mounted AC rig and hand held auger



Proposed Exploration Program

- Exploration to date is adequate for Inferred Resources following QA/QC review
- All exploration above the water table
- Closer spaced drilling required for an Indicated Resource planned for September
- Very low cost shallow drilling (10-15m) in free running sand
- Sand 2-3% moisture (no dust...)
- ISBD determination completed
- Significant testwork programs either completed or underway
- *Mining will require no dewatering*



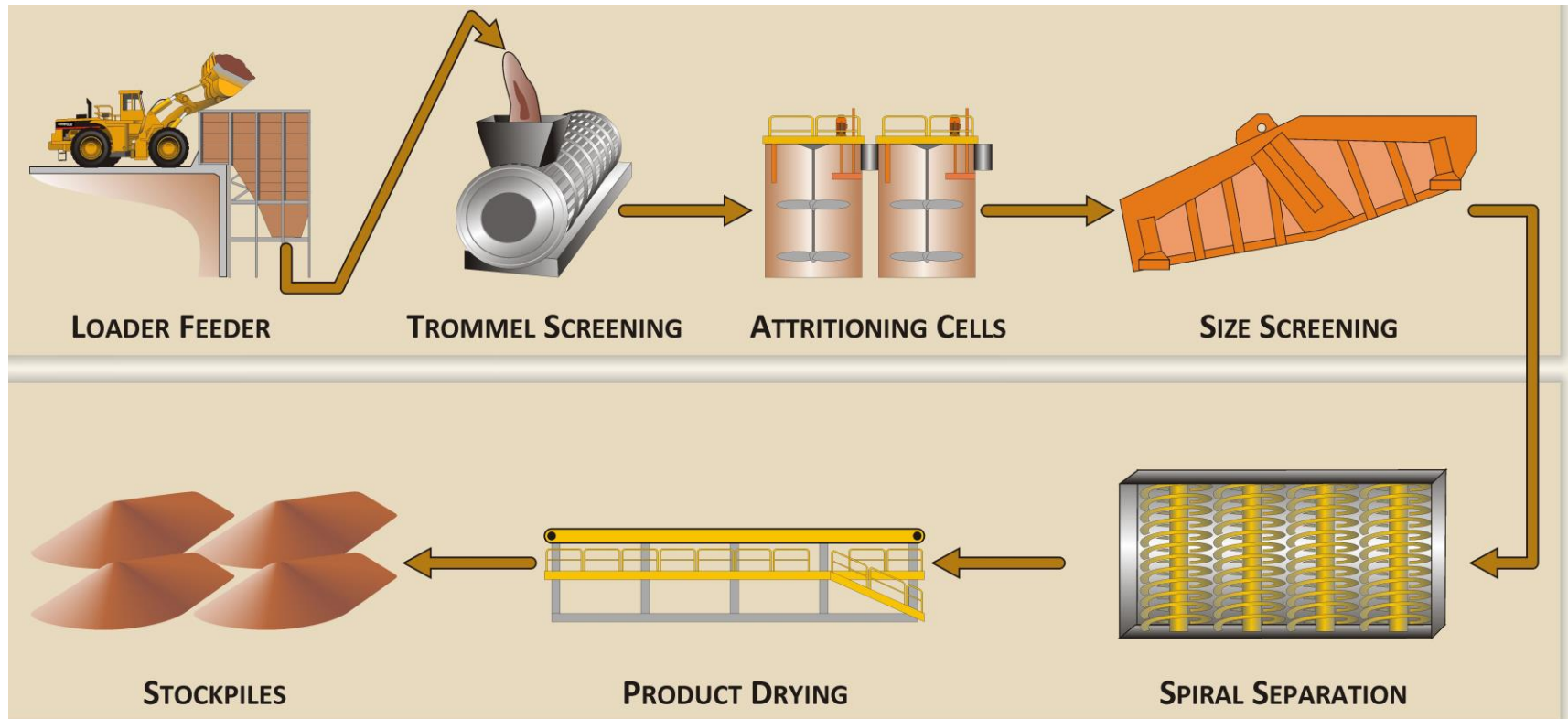
Development Program

- First Pass drilling by AC and hand auger completed on both projects
- Bulk testwork will determine potential products and required processing equipment
- *Testwork will also produce final quality samples to send to potential importers in India, Vietnam, Thailand, Taiwan, China and Korea*
- Processing by conventional plant (no chemicals)
- Finalise logistics chain for access to rail and port facilities to export sand from Arrowsmith through Geraldton and from Muchea through Kwinana
- Potential for very low cost DSO capital requirements for construction sand from Arrowsmith
- Environmental studies planned for spring 2018
- **Feasibility study** to be completed by end of 2018



Processing

Established processing techniques



Corporate & Capital Summary

Share Code (ASX)	VRX Shares
Shares on Issue (Post Acquisition)*	364.7 m
Options issued*	46.25 m
ASX 52 week high/low	\$0.078/\$0.009
Cash	\$2.3 m
Debt	Nil
Market Capitalisation	\$22.0 m

* Assumes shareholder approval at EGM 14 Sept

Directors

Paul Boyatzis

Non-Executive Chairma

Bruce Maluish

Managing Director

Peter Pawlowitsch

Non-Executive Director



Investment Considerations



**EMERGING
AUSTRALIAN
STRATEGIC
SILICA SAND
PRODUCER**

**OUTSTANDING
PROJECT
ECONOMICS
AND LOGISTICS**

**IDEALLY PLACED
TO CAPITALISE
ON ROBUST
MARKET
OUTLOOK AND
DEMAND**

**POTENTIAL
LARGE SAND
RESOURCES AND
PRODUCTION**

**RAPID PATHWAY
TO FINANCING
AND
PRODUCTION**

**OTHER
PROSPECTS
UNDER
INVESTIGATION**

Competent Person's Statement

The information in this release that relates to exploration results and exploration targets is based on, and fairly represents, information compiled by Mr David Reid who is a Member of the Australian Institute of Geoscientists (MAIG). Mr Reid is a contractor to Ventnor Resources Limited. Mr Reid has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the "2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves."

Mr Reid consents to the inclusion in this release of the matters based on information provided by him and in the form and context in which they appear.