



VRX's study was a conservative estimate, costing and valuing the project for just 25 years of an estimated mine life of more than 100 years.

Acknowledging most sales contracts would be in US dollars, the study authors based their estimates on a moderate US-Australian dollar exchange rate of 70 cents.

The feasibility study tipped earnings before interest and tax (EBIT) would be A\$1.144 billion.

This would be achieved with A\$2.773 billion of initial sales over the quarter-century with no escalation.

We are delighted with the results of ongoing work for Arrowsmith North and, following our BFS, the conversion of the mineral resource estimate into a maiden probable ore reserve.

These results support our continued assessment of Arrowsmith North as a compelling silica sand project with world-class potential.

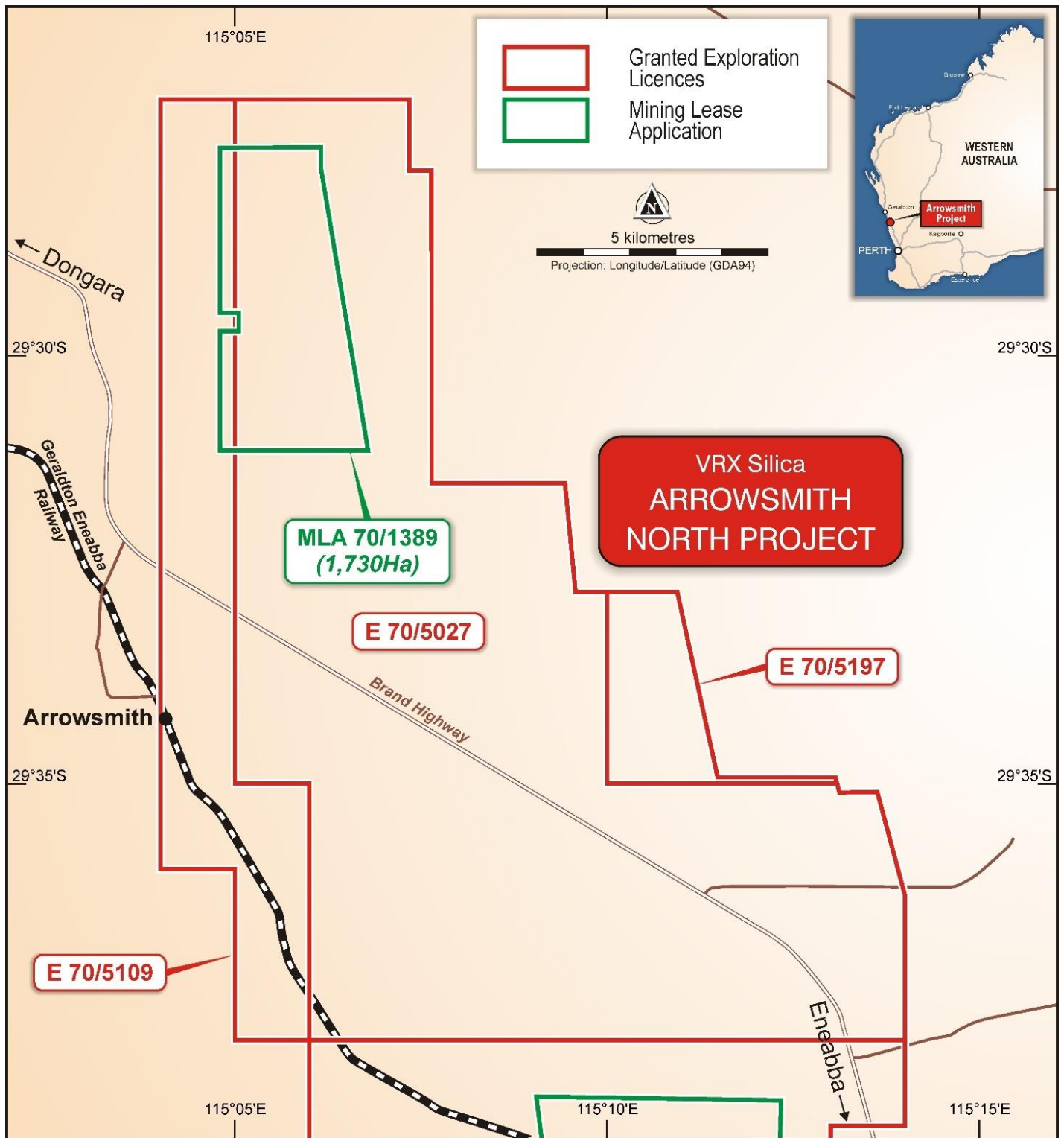
### **VRX Silica managing director Bruce Maluish**

Revenues leave scope for profit

Cashflow after finance and tax would be A\$835 million while capital expenditure (capex) to achieve 2 million tonnes a year would only be A\$28.26 million with a 20% contingency.

Life of mine C1 cash costs would be just A\$30.18 free-on-board at WA's Geraldton port, including royalties.

Revenues were estimated at US\$35-55 a dry metric tonne, leaving considerable scope for profit in the project expected to be funded with offtake agreements and an A\$26 million cap on debt with 12% borrowing rates.



A project and tenement map for Financial metrics for Arrowsmith North from the BFS

Offtake on the cards

VRX expects to process 53 million tonnes of silica over the first 25 years of the project, to produce a targeted 47.7 million tonnes.

The company has expressions of interest and letters of intent for 1.5 million tonnes a year of its Arrowsmith North

products.

VRX managing director Bruce Maluish said: "Demand for identified saleable products remains strong and we have generated significant interest from potential customers across the Asia-Pacific region and continue to engage with potential customers."

Company taxes were put at 27% for the project while WA state royalties were A\$1.17 a dry metric tonne and up for five-year state review next year.

No other royalties are expected, although a royalty to native title claimants might be agreed to in a negotiated agreement.

Geraldton port is run by the Mid West Ports Authority and is 415.5 kilometres from Perth CBD, while Arrowsmith North is 270 kilometres from Perth.

Classification	Domain	Million Tonnes	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%
Indicated	White Sand	33	98.7	0.50	0.20	0.20	0.20
	Yellow Sand	215	97.5	1.10	0.40	0.20	0.50
	All Sand	248	97.7	1.00	0.40	0.20	0.50
Inferred	White Sand	280	98.7	0.50	0.10	0.20	0.20
	Yellow Sand	243	97.7	1.00	0.40	0.20	0.50
	All Sand	523	98.2	0.80	0.30	0.20	0.40
Indicated + Inferred	White Sand	313	98.7	0.54	0.15	0.18	0.24
	Yellow Sand	458	97.6	1.08	0.40	0.17	0.52
	All Sand	771	98.0	0.86	0.30	0.17	0.41

*\*Note: Interpreted silica sand mineralisation is domained above a basal surface wireframe defined based on drill logging data. The upper (Topsoil) layer within 0.5 m of surface is depleted from the modelled silica sand unit, being reserved for rehabilitation purposes. All classified silica sand blocks in the model are reported. Differences may occur due to rounding.*

Table 1: Arrowsmith North Silica Sand Mineral Resource Estimate as at July 2019

The last updated JORC resource statement for Arrowsmith North, from July 2019

Resources to become reserves

The company previously updated the JORC resource for the project to 771 million tonnes of estimated white and yellow sand silicon dioxide at 98%.

Today it reported probable ore reserves from those resources were 223 million tonnes grading 99.7% silica.

A large 204 million tonnes grading 99.7% silica were contained in the company's mining lease application area for the project, MLA70/1389.

Maluish told the market: "We expect Arrowsmith North to be a long-life mining project with a significant proportion of the ore reserve sitting within our mining lease application area."

Chemical Composition			Global	Within MLA70/ 1398					
Classification	Product	Recovery	Million Tonnes	Million Tonnes	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 %
Probable	Arrowsmith-N20	24%	60	54	99.7	0.2	0.05	0.035	0.1
	Arrowsmith-N40/ NF500	60%	149	136	99.7	0.2	0.05	0.035	0.1
	Local Market	6%	15	14					
<b>Total Reserve</b>			<b>223</b>	<b>204</b>					

Product	Sieve Opening (Mesh/ $\mu$ m Retained)									
	10 / 2mm	20 / 850	30 / 600	40 / 425	50 / 300	70 / 212	100 / 150	140 / 106	200 / 75	AFS No
Arrowsmith-N20	0.10%	3%	87%	8%	1%	0.10%	-	-	-	21
Arrowsmith-N40	-	0%	21%	36%	24%	13%	5%	1%	0%	36
Arrowsmith-NF500	-	-	0.50%	40%	42%	17%	1%	0%	-	38
Local Market	-	-	-	-	-	-	64%	22%	14%	-

Table 2: Arrowsmith North Silica Sand Probable Ore Reserve as at July 2019

Probable ore reserves for Arrowsmith North used in the August 2019 BFS are based on a July 2019 JORC resource estimate

#### Next steps

Offtake and regulatory discussions are continuing for the company which is seeking environmental and mining approvals for the project from the WA State Government.

The company is also expecting to undertake negotiations with native title claimants for the area.

VRX plans to finish detailed mining and processing scheduling before it starts constructing a processing plant for the project.

The company wrote: "Fortunately, the scheduling detail is made significantly simpler due to the consistency of the ore source which will also reflect in the consistent quality of the final products.

VRX said its implementation plan for the project would depend on:

- Final approvals for mining
- A final offtake contract for at least 1 million tonnes a year
- A definitive feasibility study
- Construction financing and working capital finance
- Construction
- A start to mining and processing

#### Other projects in the pipeline

VRX's monster-sized Arrowsmith North BFS is one of advanced silica sands project studies eagerly awaited by the market from the company.

The company's jewel Muchea BFS is also on the cards, with Arrowsmith Central a third priority project.

VRX grew the Muchea Silica Sand Project resource to 28 million tonnes grading at 99.6% silica in June 2019.

Two weeks ago the company released a resource for Arrowsmith Central, estimating a resource of 76.5 million tonnes at 96.8% silica.

Total estimated resources for the three key silica projects is more than 1 billion tonnes.

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