The following is a summary of the activities conducted by VRX Silica Ltd (**VRX Silica** or **Company**) (ASX: VRX) during the quarter ending 30 September 2019.

The highlights during the quarter were:

- Arrowsmith North Mineral Resource Estimate Upgrade followed by Arrowsmith North BFS and Maiden Ore Reserve
- Arrowsmith Central Mineral Resource Estimate Upgrade followed by Arrowsmith Central BFS and Maiden Ore Reserve
- Executed a Strategic Alliance with China Southern Glass

The announcements for mineral resource estimate upgrades at both the Arrowsmith North and Arrowsmith Central Silica Sand Projects were followed by a Bankable Feasibility Study (**BFS**) and Maiden Ore Reserve announcements for each of the projects.

Exploration and Project Development

ARROWSMITH NORTH PROJECT

Arrowsmith North Mineral Resource Estimate Upgrade

The Arrowsmith North Silica Sand Project (**Arrowsmith North**) is located 270km north of Perth, WA (see Figure 1). The maiden Mineral Resource Estimate (**MRE**)[1] previously reported for Arrowsmith North was based on a shallow hand auger drilling[2] program.

This was followed by an aircore drill program completed during March 2019 and the receipt of the analytical results from this program enabled the Company to upgrade the MRE on 9 July 2019 to 771 Mt @ 98.0% SiO_2[3]. This is comprised of an Indicated Resource estimate of 248 Mt @ 97.7% SiO_2 and an Inferred Resource estimate of 523 Mt @ 98.2% SiO_2 which was an overall increase of **398% on the maiden MRE** (see Tables 1 and 2 below). All Mineral Resources are reported in accordance with the JORC Code[4].

The MRE included an unpredicted 313 million tonnes of higher grade white sand at 98.7% silica. The resulting model defined two different sand types, "Yellow" and "White" sand (Tables 1 and 2) which differ with respect to their chemistry and particle size distribution.

The Indicated Resource is predominately within the Mining Lease application area which is within the 100% VRX Silica owned and granted tenements E70/5109 and E70/5027. The majority was subsequently converted to Probable Ore Reserves (see below) and supports the Company's continued assessment of Arrowsmith North being an extremely long-life mining project with world-class potential. No more drilling is required prior to the Company commencing mining operations.

The MRE allows for a Mining Reserve to be estimated following the completion of a positive feasibility study. The mining depth in the Arrowsmith North Project area is limited to mining above the water table, which is 10 metres below the drilled depths and below the Resource.

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[1] *ASX announcement of 2 October 2018,* "Arrowsmith North Maiden Mineral Resource."
[2] *ASX announcement of 13 March 2019,* "Drilling at Muchea and Arrowsmith Silica Sand Projects."
[3] *ASX announcement of 9 July 2019,* "Arrowsmith North Mineral Resource Estimate Upgrade."
[4] 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves

Additionally, the top half metre of topsoil has been discounted in the MRE as it will be used for rehabilitation.

VRX Silica will undertake a further testwork program on the white sand, however metallurgical testwork completed to-date confirms this updated silica sand resource is considered readily amenable to upgrading by conventional washing and screening methods to produce a high grade silica sand product with high mass recoveries. The high grade silica sand product specifications are expected to be suitable for industries such as the glass making, foundry and ceramics industries.

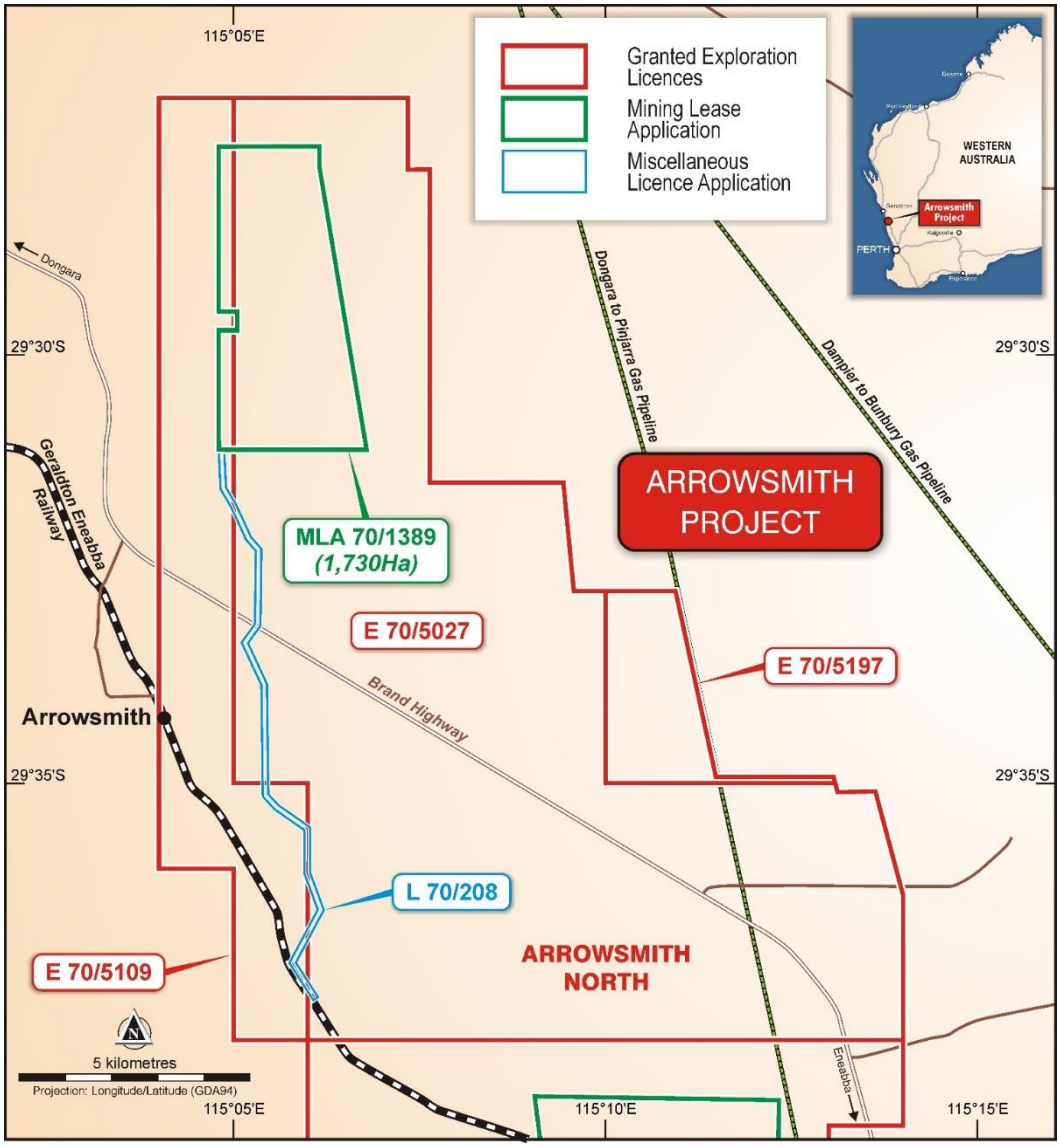

Figure 1:Arrowsmith North Project Location

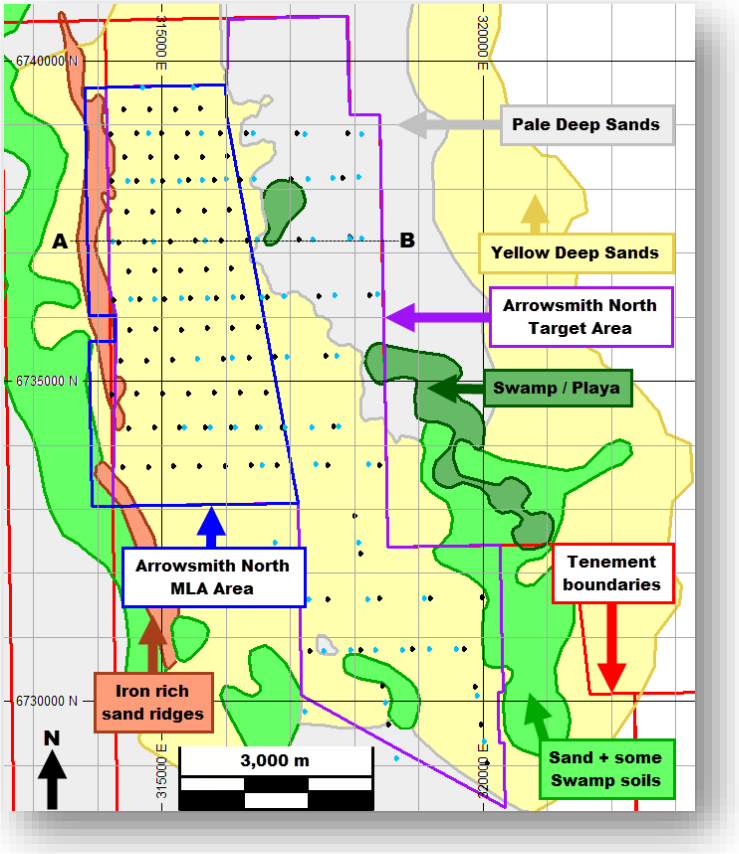

Figure 2: Arrowsmith North Project schematic geology map showing MRE with separate drill type, Black dots = aircore, Blue dots = auger

Figure 2 above shows the drill coverage over the tenements with the underlying sand types shown.

Classification	Domain	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	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

Classification	Domain	Maiden MRE (Mt)	Updated MRE (Mt)	Difference
Indicated	White Sand		33	
	Yellow Sand		215	
	All Sand		248	
Inferred	White Sand	44	280	633%
	Yellow Sand	149	243	163%
	All Sand	194	523	270%
Indicated + Inferred	White Sand	44	313	708%
	Yellow Sand	149	458	307%
	All Sand	194	771	398%

Table 2: Tonnage Comparison with Prior estimate

Arrowsmith North BFS and Maiden Ore Reserve

On 28 August 2019 VRX Silica announced details of its BFS and maiden Probable Ore Reserve at Arrowsmith North[5].

Financial model

Based on capital and operating cost estimates a financial model was developed to evaluate the economics of the Arrowsmith North project. Key outcomes from the BFS and summary financial model outputs are set out below.

Post Tax, ungeared NPV_{10}	$242,300,000
Post Tax, ungeared NPV_{20}	$99,800,000
Post Tax, ungeared IRR	79%
Payback period (yrs) (post tax) (ramp up rate)	2.4
Exchange Rate US$/A$	$0.70
Life of Mine (yrs) (Scope of BFS)	25
EBIT	$1,144,000,000
Total Sales (initial 25 years) (no escalation)	$2,773,000,000
Cashflow after finance and tax	$835,000,000
Capex (2 mtpa)	$28,260,000
Capex contingency (inc)	20%
Life of Mine C1 costs, FOB Geraldton (inc	$30.18
Tonnes Processed (initial 25 years) (Mt)	53
Production Target (initial 25 years) (Mt)	47.7
Probable Ore Reserves @ 99.7% SiO_2 (Mt)	204
Ore Reserve life (yrs)	102
JORC Resources (million tonnes)	771

[5] *ASX announcement of 28 August 2019,* "Arrowsmith North BFS and Maiden Ore Reserve."

Notes:

1. The Ore Reserve underpinning the above production target has been prepared by a Competent Person in accordance with the requirements of the JORC Code.
2. The material assumptions for the BFS are set out below. All such material assumptions continue to apply and have not materially changed.
3. All figures are presented in Australian dollars, unadjusted for inflation

Key points and assumptions

The BFS is based on only 25 years production from a considerable potential +100 year mine life. The project will be a potentially new long-term industry for Western Australia with substantial economic benefits, including long-term employment and royalties with a significant economic contribution to the local and Mid West region. The Company has received great support for the project at meetings with the local Shires, Mid West Development Commission, Mid West Chamber of Commerce & Industry and various local Members of State and Federal Parliament.

The Company has engaged with the Department of Water and Environmental Regulation following preliminary environmental studies to identify key issues pertaining to the project environmental approvals for mining particularly the habitat for potential foraging by Red Tail and Carnaby's cockatoos.

VRX Silica has developed a mining and rehabilitation methodology specific to the environment at Arrowsmith North which will enable a successful restoration of mined areas.

Key economic assumptions for the Arrowsmith North BFS are as follows:

Currency	Australian dollars Sales contracts in Asia for silica sand are invariably based $US and a A$0.70 exchange rate has been applied
Project life	25 years Total probable Ore Reserve is well in-excess of this time period, however the model is conservatively restricted to 25 years
Depreciation	15% rate on capital
Corporate tax rate	27% on taxable profit
Production	Steady state of production from Probable Ore Reserves over life of mine, with the first 3 years at 1 million tonnes per year and thereafter at 2 million tonnes per year The Company has currently expressions of interest and letters of intent to purchase 1.5 million tonnes per year of Arrowsmith North products and expects further interest once these products are made available to the market
Shares on Issue	404,318,617
NPV estimation discount rates	Standard financial modelling conducted at both 10% and 20% discount rates. The 20% rate is generally above standard reporting rates but demonstrates that the Project is still financially robust at this higher rate
Capital cost	Based on estimates ±15% from engineering companies with extensive experience in sand separation

Operating costs	A$30.18 C1 costs, including royalties Based on first principles and current rates for equipment
Sales revenue	US$35-53 per dry metric tonne dependent on product type, product quality, contract terms and quantity Revenue is constant based on current prices and ignores any projected growth in prices
Maximum debt	A$26 million
Borrowing rates	12%
Accounts receivable	30 days
Accounts payable	30 days
Plant maintenance	5% of capital cost per year
Environmental bond	A$500,000 May be substituted by the WA Department of Mines, Industry Regulation and Safety's "Mining Rehabilitation Fund"
Capex contingency	20%
Recoveries	N40 (Foundry ASF 40) 40% N20 (Foundry ASF 20) 24% NF400 (Glass 400 ppm Fe_2O_3) 20% Recoveries are based on CDE testwork at ±5%

Probable Ore Reserve

Table 3 below details the Probable Ore Reserve that will be produced from the mining of the Indicated Mineral Resource and processing in a purpose built, wet sand processing plant.

The plant will produce four saleable products for different markets with a total Probable Ore Reserve of 223Mt, with 204Mt contained within the mining lease application MLA70/1389.

			Global	Within MLA70/ 1389					
Chemical Composition									
Classification	Product	Recovery	Million Tonnes	Million Tonnes	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	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					
		Total Reserve	**223**	**204**					

Particle Size	Sieve Opening (Mesh/µm Retained)									
Product	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 3: Arrowsmith North Silica Sand Probable Ore Reserve as at July 2019

Metallurgical Factors

As a part of the upgraded MRE, CSA Global reviewed the metallurgical testwork to comply with Clause 49 of the JORC Code. CSA Global has concluded that the available process testwork indicates likely product qualities for glass, ceramics and foundry sand are considered appropriate for eventual economic extraction from Arrowsmith North. Favourable logistics and the location of the project support the classification of Arrowsmith North (in accordance with Clause 49) as an industrial mineral with an Inferred/Indicated Mineral Resource

The extensive metallurgical testwork which has been completed by CDE Global at their facility in Cookstown, Northern Ireland, and Nagrom in Kelmscott, Perth, allowed for the creation of a catalogue of silica sand products that could be produced from Arrowsmith North[6] (see Table 3).

A key challenge for industrial minerals projects is meeting market specifications. The silica sand market has specifications for parameters such as purity (e.g. SiO_2 content) in addition to tight specifications for trace elements such as Fe, Ti, Al and Cr in the glass industry. The Company is confident that it can meet these specifications from Arrowsmith North.

Chemical Composition (%)

Product	Industry	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	K_2O
Arrowsmith-N20	Foundry	99.7	0.20	0.050	0.035	0.010	0.002	0.030
Arrowsmith-N40	Foundry	99.7	0.20	0.050	0.035	0.010	0.002	0.030
Arrowsmith-NF500	Glass	99.7	0.20	0.050	0.035	0.010	0.002	0.030

Particle Size — Sieve Opening (Mesh/µm Retained)

Product	10 / 2mm	20 / 850	30 / 600	40 / 425	50 / 300	70 / 212	100 / 150	140 / 106	200 / 75	AFS No
Arrowsmith-N20	0.1%	3%	87%	8%	1%	0.1%				21
Arrowsmith-N40		0%	21%	36%	24%	13%	5%	1%	0%	36
Arrowsmith-NF500			0.5%	40%	42%	17%	1%	0%		

Table 4: Arrowsmith North saleable products from catalogue

Table 5 shows the recovered products which make up the Probable Ore Reserve. The mass balance of the particle sizes was analysed allowing for the recoveries of these products in a wet processing plant to be estimated.[7] The recovery of each product is shown in Table 5.

Product	Industry	Recovery
Arrowsmith-N20	Foundry	24%
Arrowsmith-N40 / NF500	Foundry / Glass	60%
Local Market	Fine sand	6%
	Total Recovery	**90%**

Table 5: Arrowsmith North Product Recovery

[6]ASX announcement of 26 February 2019, "Testwork Update and product Catalogues".
[7]ASX announcement of 3 May 2019, "High Recovery from Silica Sand Process Plant Design".

Material Modifying Factors – Mining Factors

The mining method chosen for Arrowsmith North is a rubber wheeled front-end loader, feeding into a 3 mm trommel screen to remove oversize particles and organics. The undersize sand is slurried and pumped to a sand processing plant located proximal to the Eneabba to Geraldton railway line. After processing, the silica sand is loaded into railway trucks for bulk export from the Geraldton Port.

Mining of the dune sand will extract to the base of the Indicated Resource/Probable Ore Reserve. This level is roughly the same as the freehold land boundary on the western side of the mining area and will leave a slightly undulating surface. On the eastern side of the mining area the sand will slope upward as a 10% gradient to the top of the adjacent dunes.

100% of the material in the Mining Lease application area is considered to be sand that can be beneficiated to a saleable silica sand project. The top 500mm has been excluded from the MRE as it will be reserved for rehabilitation purposes. As there is no waste material, the recovery factor is considered to be 100% and ore loss therefore is considered to be 0%.

Material Modifying Factors – Environmental Studies

Development location:

- South of the Yardongo Nature Reserve
- Approximately 10 km inland of the coast
- North of the Arrowsmith River (Registered Aboriginal Heritage Site)
- Outside of World Heritage Areas, National Heritage Places, Ramsar Wetlands, Conservation Reserves or Commonwealth Marine Reserves

The Probable Ore Reserve is located within an area of deep sands, leached of nutrients. The vegetation is coastal low scrub heath (known as Kwongan heath). There are relict dune structures which are represented as low rolling hills.

Assessment Process:

- Referral submission to the Federal Department of the Environment and Energy (**DotEE**);
- Submission of Section 38 referral to State Environmental Protection Authority (**EPA**)
- Seek an Accredited *Environment Protection and Biodiversity Conservation* Act 1999 (Cth) Assessment under the State *Environmental Protection Act* 1986 (WA) via an Environmental Review Document with public comment
- Undertake any further studies required
- Submission of Environmental Review Document

Mitigation Strategies

- Proposed Action lies within a large Development Envelope, allowing for the flexibility to target areas of lower significance to matters of national environmental significance (**MNES**)
- Disturbance will be kept to a minimum, up to 35 ha per year and 14 ha at any one time
- Progressive rehabilitation using topsoil re-location to ensure topsoil and plants are translocated intact to previously mined areas
- Conduct further surveys to identify MNES
- Use findings to steer the project and avoid MNES where possible

There are no mine tailings storage requirements, there are no waste dumps and processing requires no chemicals.

Material Modifying Factors – Infrastructure

The project is located on unallocated crown land which is east of freehold land and bounded to the north by a Nature Reserve and South by a proposed Nature Reserve. The west boundary of the project area is the limit of tenure. The Brand Highway is proximal to the area and access is via the Mount Adams Road from the north or Brand Highway to the south. The Eneabba/Geraldton rail line lies to the south west of the project and will be used to transport the processed silica sand to the Geraldton Port for bulk export.

The project will require its own installed power and water infrastructure and labour will be sourced from the nearest towns Dongara and Eneabba (approximately 30km from the mine site) and there will be no accommodation installed at the mine site.

Costs

Operating costs

Operating costs have been determined from first principles and are estimated to include all costs to mine, process, transport and load product on to ships. They are estimated on 1 million tonnes per year throughput, with expected unit cost savings if throughput is increased as anticipated to potentially 2 million tonnes per year.

Royalties

The prevailing rate of royalty due to the State is used in the Company's economic assessments. The State Royalty rate is A$1.17 per dry metric tonne and reviewed every 5 years with the next review due in 2020. There are no other royalties payable (including private) though a royalty may be negotiated with Native Title claimants.

Revenue

Product Quality

Multiple products will be differentiated during processing subject to required particle size distribution by screening. Recovery of products has been independently assessed by CDE Global, a world leading silica sand testing laboratory.

Commodity Prices

Commodity prices for silica sand products have been determined by independent industry source Stratum Resources. The industry standard is that sales contracts are in US dollars. The exchange rate to convert to Australian dollars will be the prevailing rate at the time of payment.

Subject to final quality produced, the prices for the commodity will range from US$38 to US$58 per dry metric tonne Free on Board (**FOB**). There will be no other treatment, smelting or refining charges. There are no shipping cost estimates with all contracts to be based on FOB rates.

Revenue will be based on a negotiated per shipment basis per dry metric tonne FOB with payment by demand on an accredited bank letter of credit.

Market Assessment

Industry leader Stratum Resources was commissioned by the Company to prepare an independent assessment of the current market prices for proposed products. The assessment

includes projections for future demand and supply of silica sand and concludes there is a future tightening of supply of suitable glassmaking silica sand with a commensurate future increase in price.

Sales volumes have been estimated as a result of received letters of intent and expressions of interest to purchase products.

Economic Factors

The Company's economic analysis has calculated a 10% and 20% discounted ungeared post tax net present value (**NPV**). A 20% discounted NPV has also been calculated to demonstrate the strength of the economic analysis.

The analysis is based on a 25-year production profile despite the Probable Ore Reserve far exceeding that project life and has not considered any escalated future product prices nor any inflation to operating costs. The analysis has used a US$/A$ exchange rate of US$0.70/A$1.00.

The analysis is most sensitive to the exchange rate and sales prices. The analysis indicates the financials of the project are very robust and there is a high confidence that a viable long-term mining operation can be justified. Capital requirements are based on independent estimates.

Social Factors

The Company made an application for a mining lease (M70/1389) on 21 December 2018. The application lies within the Southern Yamatji Native Title claim boundaries (WC2017/002), which replaced a pre-combination claim (WC2004/002) by the Amangu People. The Company is currently in negotiations with the claimant group regarding the mining lease application and the Company expects an agreement will be reached between the parties allowing for the grant of the mining lease. The project is wholly on unallocated crown land and there is little negative impact on local communities.

Project Funding

The financial model summarised in the BFS sets out the project metrics and provides a basis for the potential capital structure of the Company for the development of the project. Total capital expenditure at Arrowsmith North (for a 2 million tonnes per annum processing plant) is estimated at approximately A$28 million (the BFS details capital cost estimates).

The Company anticipates that the source of funding the capital investment at Arrowsmith North will be any one, or a combination of, equity, debt and pre-paid offtake from the project. Whilst no final decision has been made in that regard, the financial model assumes a maximum A$26 million in debt.

The Company has received a number of enquiries and expressions of interest from debt financiers for the project. The financial model provides for debt capacity and is designed to meet the expectations of any providers of potential debt funding for their due diligence and other internal requirements.

In addition, VRX Silica has also received enquiries and expressions of interest from organisations across Asia for silica sand products from the project and holds signed letters of intent for substantial tonnages. A number of these organisations have expressed interest in becoming a funding partner of the Company for development of a mine by way of pre-paid offtake arrangements. The balance of the Company's capital requirements will be funded from equity capital.

Whilst the envisaged project development requires a low capital intensity relative to a greenfields hard rock mining project, and any one of, or a combination of equity, debt and pre-paid offtake is planned, VRX Silica has not as yet secured the required capital. The positive financial metrics of the BFS and feedback from potential funding partners provides encouragement as to the likelihood of meeting optimum project and corporate capital requirements.

ARROWSMITH CENTRAL PROJECT

Arrowsmith Central Mineral Resource Estimate Upgrade

The Arrowsmith Central Silica Sand Project (**Arrowsmith Central**) is located 270km north of Perth, WA (see Figure 3).

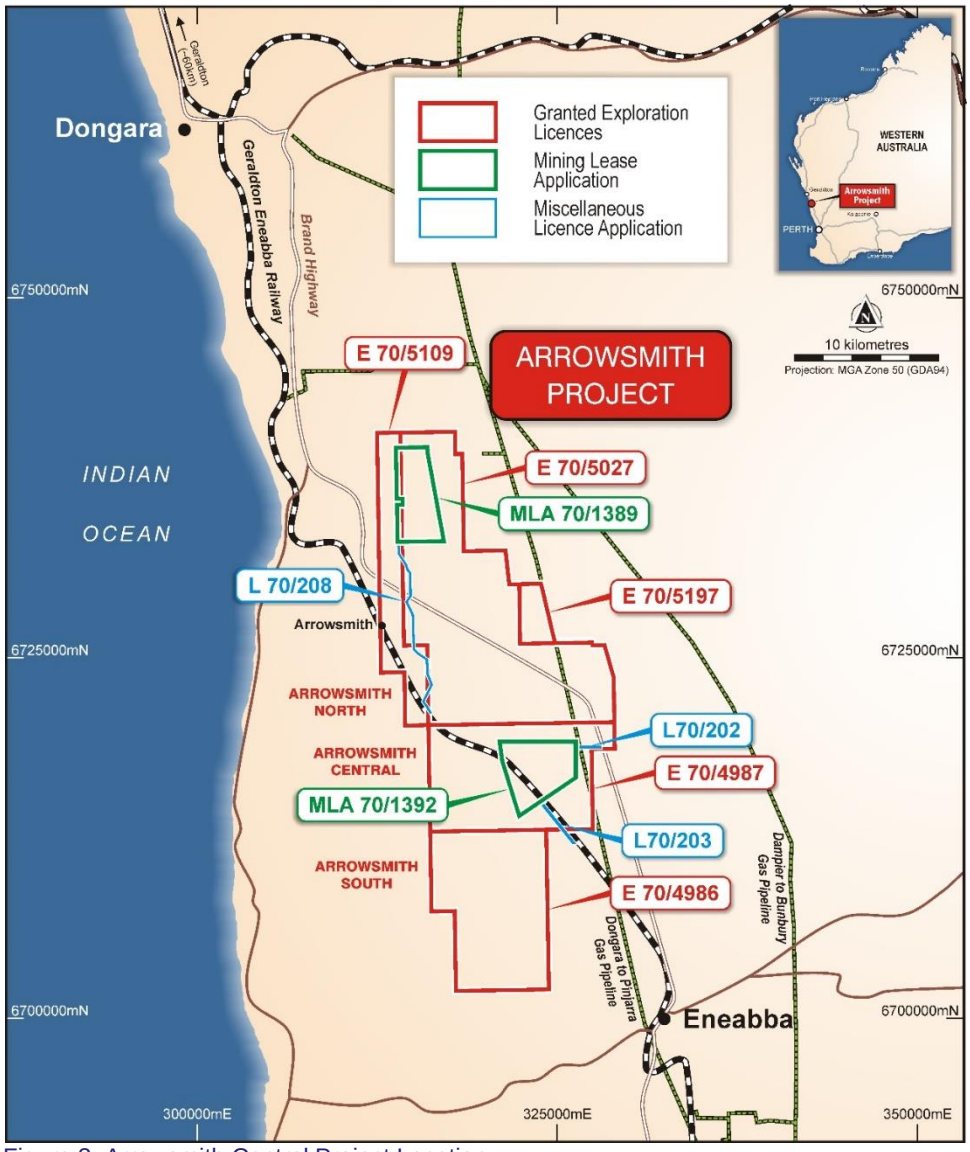

Figure 3: Arrowsmith Central Project Location

The air core drill program conducted at Arrowsmith North during March 2019 (see above) also included Arrowsmith Central.

The previously reported maiden MRE for Arrowsmith Central[8] was based on shallow hand auger drilling[9] and the receipt of the air core analytical results enabled the MRE to be upgraded to an Indicated Mineral Resource of **28.2 Mt @ 96.6% SiO_2** in addition to an Inferred Mineral Resource of **48.3 Mt @ 96.9% SiO_2** for a total MRE of **76.5 Mt @ 96.8% SiO_2**. This was announced to ASX in August 2019. [10] All Mineral Resources are reported in accordance with the JORC Code (see Tables 5 and 6).

The Indicated MRE is predominately within the Mining Lease application area for Arrowsmith Central and the Company expects that the majority of the Indicated Mineral Resource will convert to Probable Reserves and a long-life mining project. The estimation of an Indicated Mineral Resource will allow for an Ore Reserve to be estimated once a feasibility study is completed.

This Arrowsmith Central MRE complements Arrowsmith North and adds not only to VRX Silica's total inventory but will also produce alternative products for the glassmaking and foundry industries in Asia.

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated	28.2	96.6	1.7	0.4	0.2	0.7
Inferred	48.3	96.9	1.5	0.4	0.2	0.7
Indicated + Inferred	76.5	96.8	1.5	0.4	0.2	0.7
** Note: Interpreted silica sand layer is domained above a basal surface wireframe defined based on the drill sampling depths. A depletion zone, consisting of the upper 0.5 m, is reserved for rehabilitation purposes and is not estimated or reported. Differences may occur due to rounding*						

Table 5: Arrowsmith Central Silica Sand Mineral Resource Estimate as at July 2019

Classification	Maiden MRE (Mt)	Updated MRE (Mt)	Difference
Indicated		28.2	
Inferred	28.0	48.3	173%
Indicated + Inferred	28.0	76.5	273%

Table 6: Tonnage Comparison with Prior estimate

The MRE is wholly within granted tenement E70/4987 which is 100% owned by the Company. This MRE update is based on the results of the most recent drilling, with the initial hand auger drilling being used to assist in the model estimation. The modelled extents are further limited to within the VRX Silica nominated Arrowsmith Central target area and based on the geologically logged drill data and with reference to the publicly available soil mapping data (see Figure 5).

Based on the soil mapping data the entire Arrowsmith Central target area is underlain by a single mixed silica sand material unit, which consists of dominant pale deep sands with

[8] *ASX announcement of 13 December 2019,* "Arrowsmith Central Maiden Mineral Resource."
[9] *ASX announcement of 13 March 2019,* "Drilling at Muchea and Arrowsmith Silica Sand Projects."
[10] *ASX announcement of 15 August 2019,* "Arrowsmith Central Mineral Resource Estimate Upgrade."

interspersed yellow sands. The MRE has been estimated to the bottom of the potentially mineable sand layer with the top half metre of topsoil having been discounted in the MRE as it will be used for rehabilitation. Figure 4 below is a representative section through the MRE showing the modelled layer and Figure 5 shows the drill coverage over the tenements with the underlying sand types shown.

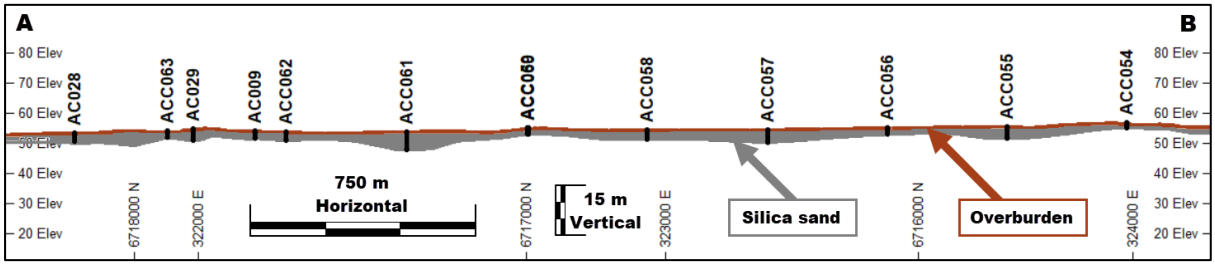

Figure 4:Representative schematic section A – B (See Figure 5), Looking north; 10 times Vertical exaggeration.

Metallurgical testwork completed to-date confirms this updated silica sand model is considered readily amenable to upgrading by conventional washing and screening methods to produce a high-grade silica sand product with high mass recoveries. The high-grade silica sand product specifications are expected to be suitable for the glass making, foundry and ceramics industries.

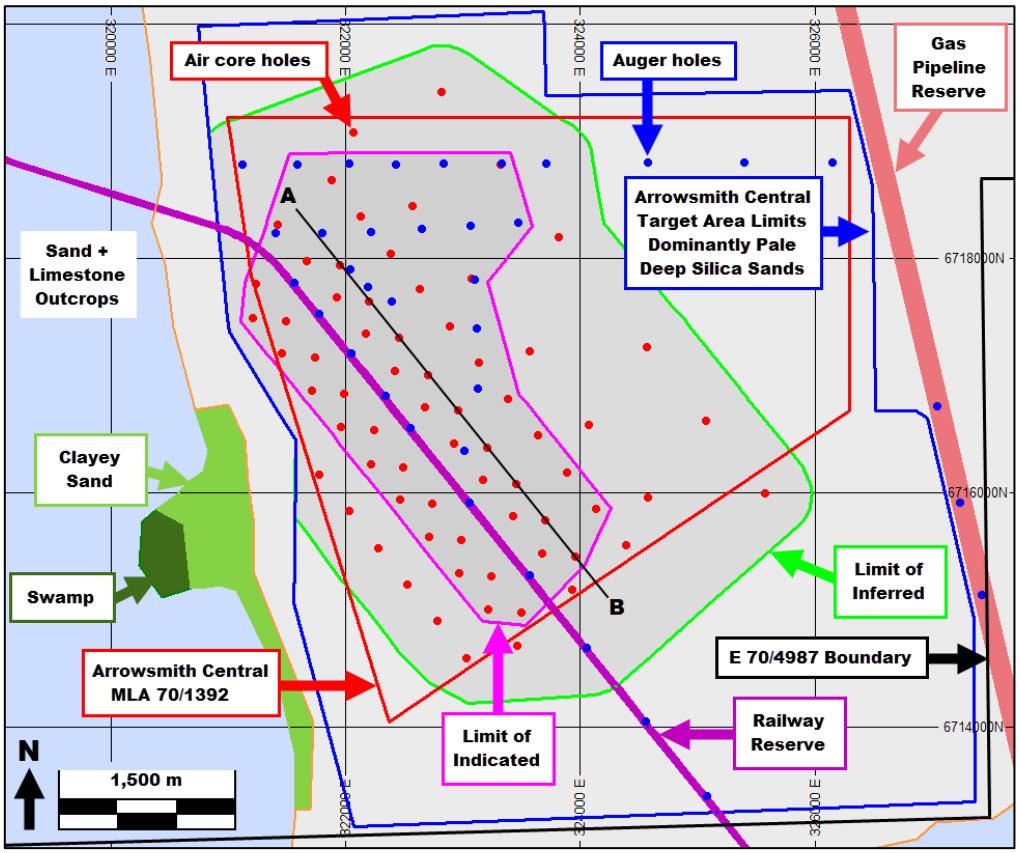

Figure 5: Simplified geology of the Arrowsmith Central Area. Figure 15 section line A – B shown. Tenements as in Figure 1. Auger and AC drill collar locations shown as blue and red points respectively.

Arrowsmith Central BFS and Maiden Ore Reserve

VRX Silica announced details of the BFS and maiden Probable Ore Reserve for Arrowsmith Central on 17 September 2019[11].

The Probable Ore Reserve for Arrowsmith Central totals **18.9Mt @ 99.6% SiO_2** as reported in accordance with the JORC Code, with **18.7Mt @ 99.6% SiO_2** contained within the area of the Company's Mining Lease application (M70/1392) for Arrowsmith Central. Arrowsmith Central is a smaller Resource than Arrowsmith North but still has the potential to be a very long-life project with additional drilling of the Inferred Resource expected to be sufficient to realise the production target.

It will produce alternative products to Arrowsmith North and will add to VRX Silica's available catalogue of products to be produced.

Financial model

Based on capital and operating cost estimates a financial model was developed to evaluate the economics of the Arrowsmith Central project. Key outcomes from the BFS and summary financial model outputs are set out below.

	Maiden Probable Ore Reserve Only	Maiden Probable Ore Reserve and Inferred Mineral Resource
Post Tax, ungeared NPV_{10}	$103,800,000	$147,600,000
Post Tax, ungeared NPV_{20}	$47,800,000	$56,100,000
Post Tax, ungeared IRR	60%	60%
Payback period (yrs) (post tax) (ramp up rate)	2.8	2.8
Exchange Rate US$/A$	$0.70	$0.70
Life of Mine (yrs) (BFS Study)	13-14	25
EBIT	$335,000,000	$737,000,000
Total Sales (no escalation)	$1,022,000,000	$2,167,000,000
Cashflow after finance and tax	$243,000,000	$539,000,000
Capex (2 Mtpa)	$25,880,000	$25,880,000
Capex contingency (inc)	20%	20%
Life of Mine C1 costs, FOB Geraldton (inc Royalties)	$28.21	$27.67
Tonnes Processed (Mt) (BFS Study)	24	51
Production Target (Mt)	19	39.6
Probable Ore Reserves (Mt)	*99.6% SiO_2* 19	*99.6% SiO_2* 19
Ore Reserve life (yrs)	9	9
JORC Resources (Mt)	77	77

[11] *ASX announcement of 17 September 2019,* "Arrowsmith Central BFS and Maiden Ore Reserve."

Notes:

1. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.
2. The Probable Ore Reserve and the Inferred Mineral Resource underpinning the above production targets have been prepared by a Competent Person in accordance with the requirements of the JORC Code.
3. The material assumptions for the BFS are set out below. All such material assumptions continue to apply and have not materially changed from the date of release of the BFS.
4. All figures are presented in Australian dollars, unadjusted for inflation.
5. The first column shows outputs from the Probable Ore Reserve only and the second column showing outputs from the aggregated Probable Ore Reserve and the Inferred Mineral Resource.

Key points and assumptions

The key points and assumptions for Arrowsmith Central are the same as for Arrowsmith North (see above) except where noted below.

The BFS is based on only 25 years production from a long-term +35 year mine life.

The maiden Probable Ore Reserve of **18.7 Mt @ 99.6% SiO_2** contained within the area of the Company's Mining Lease application area supports a 13-14 year project. This is estimated from the Indicated Mineral Resource only and constitutes approximately 48% of the estimated total production target (in terms of processed tonnes of silica sand) over the 25 year mine life for the project BFS. The Company intends to mine solely from Probable Ore Reserves in the initial 13-14 years of the project. The balance is from the Inferred Mineral Resource in the proposed mining area which is **29.4 Mt @ 96.2% SiO_2**, which the Company intends to mine from year 14 onwards.

Key economic assumptions for the Arrowsmith Central BFS are as follows:

Currency	Australian dollars Sales contracts in Asia for silica sand are invariably based $US and a A$0.70 exchange rate has been applied
Project life	25 years Total Probable Ore Reserve alone supports a 13-14 year project. Mining will occur solely from the Probable Ore Reserve during the first 13-14 years. There is a reasonable expectation that with further close spaced drilling the existing Inferred Mineral Resource would convert to Indicated Mineral Resource and subsequently Probable Ore Reserve. This will increase the mine life to well in excess of this time period, however the model is conservatively restricted to 25 years.
Depreciation	15% rate on capital
Corporate tax rate	27% on taxable profit
Production	Steady state of production from Probable Ore Reserves over life of mine, with the first 5 years at 1 million tonnes per year and thereafter at 2 million tonnes per year Currently the Company has expressions of interest and letters of intent to purchase 1 million tonnes per year of Arrowsmith Central products and expects further interest once these products are available to the market
Shares on Issue	404,318,617
NPV estimation discount rates	Standard financial modelling conducted at both 10% and 20% discount rates. The 20% rate is generally above standard reporting rates but demonstrates that the Project is still financially robust at this higher rate

Capital cost	Based on estimates ±15% from engineering companies with extensive experience in sand separation
Operating costs	A$27.67 C1 costs, including royalties Based on first principles and current rates for equipment
Sales revenue	US$35-46 per dry metric tonne dependent on product type, product quality, contract terms and quantity Revenue is constant based on current prices and ignores any projected growth in prices
Maximum debt	A$20 million
Borrowing rates	12%
Accounts receivable	30 days
Accounts payable	30 days
Plant maintenance	5% of capital cost per year
Environmental bond	A$500,000 May be substituted by the WA Department of Mines, Industry Regulation and Safety's "Mining Rehabilitation Fund"
Capex contingency	20%
Recoveries	CF400 (Glass 400 ppm Fe_2O_3) 17% C20 (Foundry ASF 20) 34% C50 (Foundry ASF 50) 17% TiO_2 Concentrate 9% Recoveries are based on CDE testwork at ±5%

The Company has undertaken sufficient drilling to assume geological and metallurgical continuity of the sand deposit. There is negligible difference between the modelled sand in each category. In order to upgrade the Inferred Mineral Resource, the Company anticipates that an additional 500 m of aircore drilling will be required. The cost for drilling, assaying and associated studies is estimated (at current rates) to be in the region of $100,000 and will need to be undertaken within the first 13 years of mining operations.

Given the simple nature of the silica sand deposit at the project and the associated geological and metallurgical confidence, the Company expects that this additional drilling will be sufficient to realise the production target.

Notwithstanding the above, there is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

Probable Ore Reserve

VRX Silica has completed the necessary work to convert the Indicated Mineral Resource to Probable Ore Reserve.

The Probable Ore Reserve for Arrowsmith Central totals **18.9 Mt @ 99.6% SiO_2** as reported in accordance with the JORC Code with **18.7 Mt @ 99.6% SiO_2** contained within the area of the Company's Mining Lease application (MLA70/1392).

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated	28.2	96.6	1.7	0.4	0.2	0.7
Inferred	48.3	96.9	1.5	0.4	0.2	0.7
Indicated + Inferred	76.5	96.8	1.5	0.4	0.2	0.7
** Note: Interpreted silica sand mineralisation is domained above a basal surface wireframe defined based on drill sampling depths. A depletion zone, consisting of the upper 0.5 m, is reserved for rehabilitation purposes and is not estimated or reported. Differences may occur due to rounding.*						

Table 7: Arrowsmith Central Silica Sand Mineral Resource Estimate as at September 2019

Table 8 below details the Probable Ore Reserve that will be produced from the mining of the Indicated Mineral Resource and processing in a purpose built, wet sand processing plant.

The plant will produce four saleable products for different markets with a **total Probable Ore Reserve of 18.9 Million tonnes**, with 18.7 Million tonnes contained within the mining lease application M70/1392.

Chemical Composition			Global	Within M70/1392					
Classification	Product	Recovery	Million Tonnes	Million Tonnes	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	LOI %
Probable	Arrowsmith-CF400	17%	4.2	4.1	99.6	0.25	0.04	0.03	0.1
	Arrowsmith-C20	34%	8.4	8.2					
	Arrowsmith-C50	17%	4.2	4.1					
	TiO_2 Concentrate	9%	2.2	2.2			<1%	+2%	
	Total Reserve		**18.9**	**18.7**					

Particle Size	Sieve Opening (Mesh / µm Retained)									
Product	10 / 2mm	20 / 850	30 / 600	40 / 425	50 / 300	70 / 212	100 / 150	140 / 106	200 / 75	AFS No
Arrowsmith-CF400	-	0%	0.5%	44%	38.9%	16.1%	0.5%	-	-	37
Arrowsmith-C20	6.2%	22.2%	30.4%	37.9%	2.9%	0.3%	0.1%	-	-	22
Arrowsmith-C50	-	-	0.3%	31.9%	27.5%	17.3%	13.7%	8.2%	1.1%	49

Table 8: Arrowsmith Central Silica Sand Probable Ore Reserve as at September 2019

Metallurgical Factors

As a part of the upgraded MRE, CSA Global reviewed the metallurgical testwork to comply with Clause 49 of the JORC Code. CSA Global has concluded that the available process testwork indicates likely product qualities for glass, ceramics and foundry sand are considered appropriate for eventual economic extraction from Arrowsmith Central. Favourable logistics and the location of the project support the classification of Arrowsmith Central (in accordance with Clause 49) as an industrial mineral with an Inferred/Indicated Mineral Resource

The extensive metallurgical testwork which has been completed by CDE Global at their facility in Cookstown, Northern Ireland, and Nagrom in Kelmscott, Perth, allowed for the creation of

a catalogue of silica sand products that could be produced from Arrowsmith Central[12] (see Table 9).

Chemical Composition (%)

Product	Industry	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	K_2O
Arrowsmith-CF400	Glass	99.6	0.25	0.040	0.030	0.005	0.001	0.050
Arrowsmith-C20	Foundry	99.6	0.25	0.040	0.030	0.005	0.001	0.050
Arrowsmith-C50	Foundry	99.6	0.25	0.040	0.030	0.005	0.001	0.050

Particle Size — Sieve Opening (Mesh / µm Retained)

Product	10 / 2mm	20 / 850	30 / 600	40 / 425	50 / 300	70 / 212	100 / 150	140 / 106	200 / 75	AFS No
Arrowsmith-CF400			0.5%	44%	39%	16%	0.5%			
Arrowsmith-C20	6%	22%	30%	38%	3%	0.3%	0.1%	0%		22
Arrowsmith-C50		0%	0.3%	32%	28%	17%	14%	8%	1%	49

Table 9: Arrowsmith Central saleable Products from Catalogue

In addition to these products the processing plant will produce a by-product from the spirals plant which contains a concentration of titanium minerals such as rutile and ilmenite which can be sold at a nominal value to a company with specialist equipment for separating mineral concentrate.

These products become the recovered products which make up the Probable Ore Reserve, Table 8. The mass balance of the particle sizes was analysed allowing for the recoveries of these products in a wet processing plant to be estimated.[13] The recovery of each product is shown in Table 10.

Product	Industry	Recovery
Arrowsmith - C20	Foundry	34%
Arrowsmith - C50/CF400	Foundry / Glass	34%
TiO_2 Concentrate	Mineral sands	9%
	Total Recovery	77%

Table 10: Arrowsmith Central Product Recovery

Material Modifying Factors – Environmental Studies

Development location:

- East of the Beekeepers Nature Reserve
- Approximately 20 km inland of the coast
- South of the Arrowsmith River (Registered Aboriginal Heritage Site)
- Outside of World Heritage Areas, National Heritage Places, Ramsar Wetlands, Conservation Reserves or Commonwealth Marine Reserves

[12]ASX announcement of 26 February 2019, "Testwork Update and product Catalogues".
[13]ASX announcement of 3 May 2019, "High Recovery from Silica Sand Process Plant Design".

Revenue

Commodity Prices

Subject to final quality produced, the prices for the commodity will range from US$35 to US$46 per dry metric tonne FOB. There are no shipping cost estimates with all contracts to be based on FOB rates.

Economic Factors

The analysis is based on a 25 year production profile with the Probable Ore Reserve supporting a 13-14 year project. Mining will occur solely from the Probable Ore Reserve during that period. There is a reasonable expectation that with further close spaced drilling the existing Inferred Resources would convert to Indicated Resources and Probable Reserves well in excess of this time period, however the model is conservatively restricted to 25 years. See above for further information.

Project Funding

Mining from the area of the Probable Ore Reserve only supports a 13-14 year mine life. The Company intends to mine solely from the Probable Ore Reserve during that period. The financial model shows that Arrowsmith Central is a viable project with the Probable Ore Reserve only, and the Inferred Mineral Resource is not the determining factor for its viability.

China Southern Glass Strategic Alliance

On 11 July 2019, VRX Silica announced it had entered into a memorandum of understanding (**MOU**) with CSG Holding Co Ltd[14] (**China Southern Glass**) to form a strategic alliance in connection with the Company's Muchea Silica Sand Project.

China Southern Glass is the largest architectural glass manufacturer in the Peoples' Republic of China (**PRC**), involved in the manufacture and sale of glass products including float glass, display glass, automotive glass, coated glass, mirrors, colour filter glass, solar glass and conservation glass.

The objectives of the strategic alliance include exploring the potential for marketing, promotion and sale in the PRC of silica sand products from the Muchea project and potential sources of capital finance for the construction of production facilities at the Muchea project. In addition, the parties will consider potential for the development of a high-quality glass manufacturing facility in Western Australia for silica sand products generated from the Muchea project.

Warrawanda Project

During the quarter a contract diamond drill rig tested three quartz outcrops at the Company's Warrawanda project, 40km south of Newman WA, completing 3 holes for 80.1 metres of HQ diamond core.

The core has been returned to Perth and assays are pending.

[14] ASX announcement of 11 July 2019, "China Southern Glass Strategic Alliance".

Events Subsequent to the Quarter

Muchea BFS and Maiden Ore Reserve

The Muchea Silica Sand Project (**Muchea**) is located 50km north of Perth (see Figure 6).

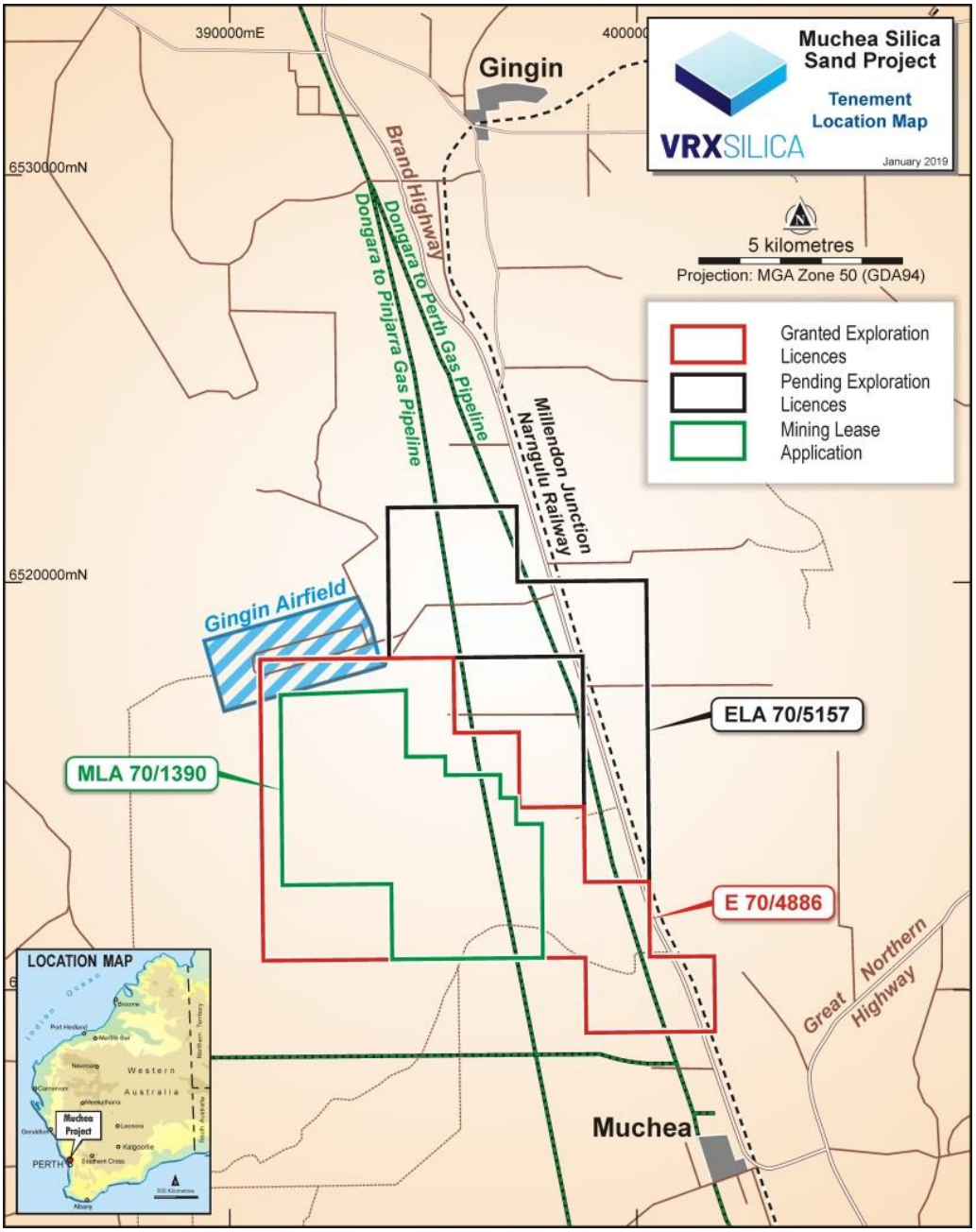

Figure 6: Muchea Project Location

Subsequent to the end of the quarter, on 18 October 2019 VRX Silica announced details of its BFS and maiden Probable Ore Reserve at Muchea.

The Probable Ore Reserve for Muchea totals **18.7 Mt @ 99.9% SiO_2** as reported in accordance with the JORC Code, with **14.6Mt @ 99.9% SiO_2** contained within the area of the Company's Mining Lease application (M70/1390) for Muchea.

This Reserve estimate is only a small portion of the silica sand Inferred Resource Estimate for the project but produces a very high-grade product which is in high demand in specialist Asian markets.

Muchea is a world class high-grade silica sand project which can support a substantial export industry for WA providing benefits to the State and the Muchea-Gingin district.

Muchea will produce alternative high-grade products to Arrowsmith and will add to our available catalogue of products from our silica sand projects. The Company has already had significant interest in the Muchea product which will command higher prices than products from the Company's Arrowsmith North and Central silica sand projects.

Financial model

Based on the capital and operating cost estimates a financial model was developed for the purpose of evaluating the economics of the Project.

Key economic assumptions for the model are set out below and in detail in the BFS. The BFS contains further details, including a life of mine production profile and sensitivity analysis for the model.

Key outcomes from the BFS and summary financial model outputs are set out below, with the first column showing outputs from the aggregated Probable Ore Reserve and the Inferred Mineral Resource, and the second column showing outputs from the Probable Ore Reserve only.

Mining from the area of the Probable Ore Reserve only supports a 9-10 year mine life. The Company intends to mine solely from the Probable Ore Reserve during that period. The financial model shows that Muchea is a viable project with the Probable Ore Reserve only, and the Inferred Mineral Resource is not the determining factor for its viability. Key outcomes from the BFS and summary financial model outputs are set out below.

	Muchea (Inc. Inferred)	Muchea (Reserve Only)
Post Tax, ungeared NPV_{10}	$337,900,000	$180,500,000
Post Tax, ungeared NPV_{20}	$146,400,000	$104,600,000
Post Tax, ungeared IRR	96%	96%
Payback period (yrs) (post tax) (ramp up rate)	2.3	2.3
Exchange Rate US$/A$	$0.70	$0.70
Life of Mine (yrs) (Scope of BFS Study)	25	15
Total Sales (initial 25 years) no escalation	$3,345,000,000	$1,011,000,000
EBIT	$1,540,000,000	$447,000,000
Cashflow after finance and tax	$1,123,000,000	$321,000,000
Shares on Issue	404,318,617	404,318,617
EPS after tax (per year)	$0.11	$0.09
Capex (2 mtpa)	$32,820,000	$32,820,000
Capex contingency (inc)	20%	20%
Life of Mine C1 costs, FOB Kwinana (inc royalties)	$32.74	$33.84
Tonnes Processed (initial 25 years) (Mt)	54	16
Production Target (Mt) (BFS Study)	(25 years) 48.3	(9-10 years) 14.6
Probable Ore Reserves @ 99.9% SiO_2 (Mt)	18.7	18.7
Ore Reserve life (yrs)	9-10	9-10
JORC Resources (million tonnes)	208	208

Notes:

1. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.
2. The Probable Ore Reserve and the Inferred Mineral Resource underpinning the above production targets have been prepared by a Competent Person in accordance with the requirements of the JORC Code.
3. The material assumptions for the BFS are set out below. All such material assumptions continue to apply and have not materially changed from the date of release of the BFS.
4. All figures are presented in Australian dollars, unadjusted for inflation.

Key points and assumptions

The BFS is based on only 25 years production from a potentially long-term +100 year mine life.

The maiden Probable Ore Reserve of **14.6 Mt @ 99.9% SiO_2** contained within the area of the Company's Mining Lease application and will support a 9-10 year project. This is estimated from the Indicated Mineral Resource only and constitutes approximately 39% of the estimated total production target (in terms of processed tonnes of silica sand) over the 25 year mine life. The Company intends to mine solely from Probable Ore Reserves during the initial 9-10 years of the project.

The balance is from the Inferred Mineral Resource of **61.4 Mt @ 99.6% SiO_2** in the proposed mining area which the Company intends to mine from year 10 onwards. The Company has undertaken sufficient drilling to assume geological and metallurgical continuity of the sand

deposit. There is negligible difference between the modelled sand in each category. In order to upgrade the Inferred Mineral Resource, the Company anticipates that an additional 2,000m of aircore drilling will be required. The cost for drilling, assaying and associated studies is estimated (at current rates) to be in the region of $200,000 and will need to be undertaken within the first 9-10 years of mining operations. Given the simple nature of the silica sand deposit at the project and the associated geological and metallurgical confidence, the Company expects that this additional drilling will be sufficient to realise the production target. Notwithstanding this, there is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

The Company has been in discussions with both the Department of Premier and Cabinet and the Department of Jobs, Tourism, Science and Industry to identify options for the Company to gain access to ground within File Notation Area 12671 (**FNA**), which is for the proposed "Perth and Peel Green Growth Plan for 3.5 million". Whilst that ground sits outside the proposed development area for the project and the FNA does not affect the modelled 25 years of production at Muchea detailed in the BFS, the Company is seeking access to this ground to extend the project's mine life to well beyond 25 years, and potentially over 100 years. Further details of the FNA are set out in the BFS.

The Company has met with various local Members of State and Federal Parliament with great support for the project. The project will be a potentially new long-term industry for Western Australia with substantial economic benefits, including long-term employment and royalties with a significant economic contribution to the Muchea-Gingin district.

The Company has engaged with the Department of Water and Environmental Regulation following preliminary environmental studies to identify key issues pertaining to the project environmental approvals for mining particularly the vegetation for potential foraging by Red Tail and Carnaby's cockatoos.

VRX Silica has developed a mining and rehabilitation methodology specific to the environment at Muchea which will enable a successful restoration of mined areas.

A key challenge for industrial minerals projects is meeting market specifications. The silica sand market has specifications for parameters such as purity (e.g. SiO_2 content) in addition to tight specifications for trace elements such as Fe, Ti, Al and Cr in the glass industry.

The Company is confident that it can meet specifications for the ultra-clear glass market from Muchea.

Key economic assumptions for the Muchea BFS are as follows:

Currency	Australian dollars Sales contracts in Asia for silica sand are invariably based $US and a A$0.70 exchange rate has been applied
Project life	25 years Total Probable Ore Reserve alone supports a 9-10 year project. Mining will occur solely from the Probable Ore Reserve during the first 9-10 years. There is a reasonable expectation that with further close spaced drilling the existing Inferred Mineral Resource would convert to Indicated Mineral Resource and subsequently Probable Ore Reserve. This will increase the mine life to well in excess of this time period, however the model is conservatively restricted to 25 years
Depreciation	15% rate on capital
Corporate tax rate	27% on taxable profit

Production	Steady state of production from Probable Ore Reserves over life of mine, with the first 2 years at 1 million tonnes per year and thereafter at 2 million tonnes per year The Company has currently expressions of interest and letters of intent to purchase 3.5 million tonnes per year of Muchea products and expects further interest once these products are made available to the market
Shares on Issue	404,318,617
NPV estimation discount rates	Standard financial modelling conducted at both 10% and 20% discount rates. The 20% rate is generally above standard reporting rates but demonstrates that the Project is still financially robust at this higher rate
Capital cost	Based on estimates ±15% from engineering companies with extensive experience in sand separation
Operating costs	A$32.74 C1 costs, including royalties Based on first principles and current rates for equipment
Sales revenue	US$38-55 (A$54-79) per dry metric tonne dependent on product type, product quality, contract terms and sales quantity Revenue is constant based on current prices and ignores any projected growth in prices
Maximum debt	A$30 million
Borrowing rates	12%
Accounts receivable	30 days
Accounts payable	30 days
Plant maintenance	5% of capital cost per year
Environmental bond	A$500,000 May be substituted by the WA Department of Mines, Industry Regulation and Safety's "Mining Rehabilitation Fund"
Capex contingency	20%
Recoveries	Muchea F80C (80ppm Fe_2O_3) 20% Muchea F80 (80ppm Fe_2O_3) 48% Muchea F150 (150ppm Fe_2O_3) 20% Recoveries are based on CDE testwork at ±5%

Probable Ore Reserve

The Probable Ore Reserve for Muchea totals **18.7 Mt @ 99.9% SiO_2** as reported in accordance with the JORC Code with **14.6Mt @ 99.6% SiO_2** contained within the area of the Company's Mining Lease application (MLA70/1390).

VRX Silica has previously announced[15] an upgraded MRE for Muchea of an **Indicated Mineral Resource** of **29 Mt @ 99.6% SiO_2** in addition to an **Inferred Mineral Resource** of **179 Mt @ 99.6% SiO_2** for a **Total MRE** of **208 Mt @ 99.6% SiO_2,** see Table 11.

[15]ASX announcement of 17 June 2019, "Muchea Mineral Resource Estimate Upgrade".

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated	29	99.6	0.09	0.03	0.07	0.22
Inferred	179	99.6	0.05	0.02	0.1	0.23
Indicated + Inferred	208	99.6	0.06	0.02	0.1	0.23
*Note: Interpreted silica sand mineralisation is domained above a basal surface wireframe. The upper (overburden) 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 11: Muchea Silica Sand Mineral Resource Estimate as at September 2019

VRX Silica has now completed necessary work to convert the Indicated Mineral Resource to Probable Ore Reserves.

Table 12 details the Probable Ore Reserve that will be produced from the mining of the Indicated Mineral Resource and processing in a purpose built, wet sand processing plant. The plant will produce three saleable products for different markets with a **total Probable Ore Reserve of 18.7 Million tonnes**, with **14.6Mt @ 99.6% SiO_2** contained within the Mining Lease application (M70/1390) area.

Ore Reserve			Global	Within M70/1390					
Classification	Product	Recovery	Million Tonnes	Million Tonnes	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	LOI %
Probable	Muchea-F80	48%	10.2	8.0	+99.	0.02	0.008	0.03	0.1
	Muchea-	20%	4.25	3.3	+99.	0.02	0.008	0.03	0.1
	Muchea-	20%	4.25	3.3	99.8	0.07	0.015	0.03	0.1
		Total Reserve	**18.7**	**14.6**					

Particle Size	Sieve Opening (µm Retained)							
Product	850	600	425	300	212	150	106	75
Muchea-F80		0.5%	49%	50%	0.5%			
Muchea-F80C	9.0%	90.0%	1.0%					
Muchea-F150				0.5%	88%	11%	0.5%	

Table 12: Muchea Silica Sand Probable Ore Reserve as at October 2019

Metallurgical Factors

CSA Global reviewed the metallurgical testwork to comply with Clause 49 of the JORC Code[16]. CSA Global has concluded that the available process testwork indicates likely product qualities for glass and ceramics is considered appropriate for eventual economic extraction from Muchea. In addition, potentially favourable logistics and project location support the classification of the Muchea deposit (in accordance with Clause 49) as an industrial mineral with an Inferred/Indicated Mineral Resource.

[16] Reviewed as part of the metallurgical testwork for the Muchea maiden MRE, see ASX announcement of 20 November 2018, “Muchea Silica Sand Project Maiden Resource”.

The extensive metallurgical testwork which has been completed by CDE Global at their facility in Cookstown, Northern Ireland, and Nagrom in Kelmscott, Perth, allowed for the creation of a catalogue of silica sand products that could be produced from Muchea[17] (see Table 13).

These products become the recovered products which make up the Ore Reserve (see Table 12).

Chemical Composition

Product	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	CaO %	MgO %	K_2O %
Muchea-F80	+99.9	0.02	0.008	0.030	0.005	0.001	0.004
Muchea-F80C	+99.9	0.02	0.005	0.030	0.005	0.001	0.004
Muchea-F150	99.8	0.07	0.015	0.035	0.020	0.001	0.004

Particle Size — Sieve micron and % retained on sieve

Product	850	600	425	300	212	150	106	75	53
Muchea-F80		0.5%	49%	50%	0.5%				
Muchea-F80C	9.0%	90.0%	1.0%						
Muchea-F150				0.5%	88%	11%	0.5%		

Table 13: Muchea saleable products from catalogue

The mass balance of the particle sizes was analysed allowing for the recoveries of these products in a wet processing plant to be estimated.[18] The recovery of each product is shown in Table 14.

Product	Industry	Recovery
Muchea-F80	Glassmaking	48%
Muchea-F80C	LCD	20%
Muchea-F150	Glassmaking	20%
	Total Recovery	**88%**

Table 14: Muchea Product Recovery

Material Modifying Factors – Mining Factors

The mining method chosen for Muchea is a rubber wheeled front-end loader, feeding into a 3mm trommel screen to remove oversize particles and organics. Undersize sand is slurried and pumped to a sand processing plant located proximal to the Moora-Kwinana railway line. After processing, the silica sand is then loaded into railway trucks for bulk export from the Kwinana Bulk Terminal.

Mining of the in-situ sand will extract to the extent and base of the Indicated Resource/Probable Ore Reserve leaving a slightly undulating surface. Appropriate buffer zones are left from the adjacent stakeholders such as freehold land and the Dongara-Pinjarra gas pipeline. 100% of the material in the mining area is considered to be sand that can be

[17]ASX announcement of 26 February 2019, "Testwork Update and Product Catalogues".
[18]ASX announcement of 3 May 2019, "High Recovery from Silica Sand Process Plant Design".

beneficiated to a saleable silica sand project. The top 500mm has been excluded from the MRE as it will be reserved for rehabilitation purposes. As there is no waste material, the recovery factor is considered to be 100% and ore loss therefore is considered to be 0%.

Material Modifying Factors – Environmental Studies

Development location:

- Mining is 100% on Unallocated Crown Land
- East of the Yeal Nature Reserve and State Forest
- West of Freehold land
- South of Gingin Airfield
- Approximately 25 km inland of the coast
- West of Chandala Brook (Registered Aboriginal Heritage Site)
- Outside of World Heritage Areas, National Heritage Places, Ramsar Wetlands, Conservation Reserves or Commonwealth Marine Reserves

The Probable Ore Reserve is located within an area of deep Bassendean sands, leached of nutrients. The vegetation type is Banksia Woodlands. The topography is low to medium dunes.

Mine Plan

The production target for Muchea incorporates the maiden Probable Ore Reserve of 14.6 Mt @ 99.9% SiO_2 that sits within the Mining Lease application area (see above under "Probable Ore Reserve") as well as a portion of the Inferred Mineral Resource.

The Inferred Mineral Resource available to mine within the Mine Plan Pit is 61.4 Mt @ 99.6% SiO_2.

In designing the Mine Plan Pit, the Company has examined the restrictions and constraints on mining activities in the context of surrounding areas and the interests of stakeholders, and planned accordingly. To that end, the Mine Plan Pit ensures:

- mining will not occur any closer than 100m to the Dongara to Pinjarra gas pipeline;
- mining will not occur any closer than 200m to the boundary of any freehold land and will be at least 600m from the nearest house; and
- the Mining Lease area does not intersect with the Gingin Airfield ground and mining will not occur any no closer than 250m to the boundary of the Gingin Airfield. In addition, mining will not occur under the flight lines to and from the airfield.

These buffer zones are at least equal to, or are in excess of, industry practice and legislative requirements (if any). In addition, the western boundary of the Mine Plan Pit is contiguous with the FNA and does not intersect with any proposed conservation area under the Green Growth Plan.

The Mine Plan Pit therefore is not impacted by any known exclusion areas.

The maiden Probable Ore Reserve is estimated from the Indicated Mineral Resource only. This constitutes approximately 30% of the estimated total production target (in terms of processed tonnes of silica sand) over the 25 year mine life for the project BFS estimates. It provides sufficient tonnage for the first 9-10 years of mining operations. The Company intends

to mine solely from the Probable Ore Reserve during that period. Key assumptions underpinning the financial model for the Project are set out below, including timing for project start-up and ramp-up to full capacity. The financial model (see below and in the BFS) shows that Muchea is a viable project with the Probable Ore Reserve only, and the Inferred Mineral Resource is not the determining factor for its viability.

The ore which forms the Inferred Mineral Resource is contiguous with the Indicated Mineral Resource and has been categorised as lower confidence due to wider spaced drilling. (Drilling of the Indicated Mineral Resource is typically 50m spaced along existing tracks, whereas the Inferred Mineral Resource is drilled on a 400m spacing along existing tracks.)

The Company has undertaken sufficient drilling to assume geological and metallurgical continuity of the sand deposit. There is negligible difference between the modelled sand in each category and it is believed an additional 1,500m of drilling would be required to upgrade the inferred resource category. The cost for drilling, assaying and associated studies is estimated (at current rates) to be in the region of $250,000 and will need to be undertaken within the first 9 years of mining operations.

Given the simple nature of the silica sand deposit at the Project and the associated geological and metallurgical confidence, the Company expects that this additional drilling will be sufficient to realise the production target.

Notwithstanding the above, there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

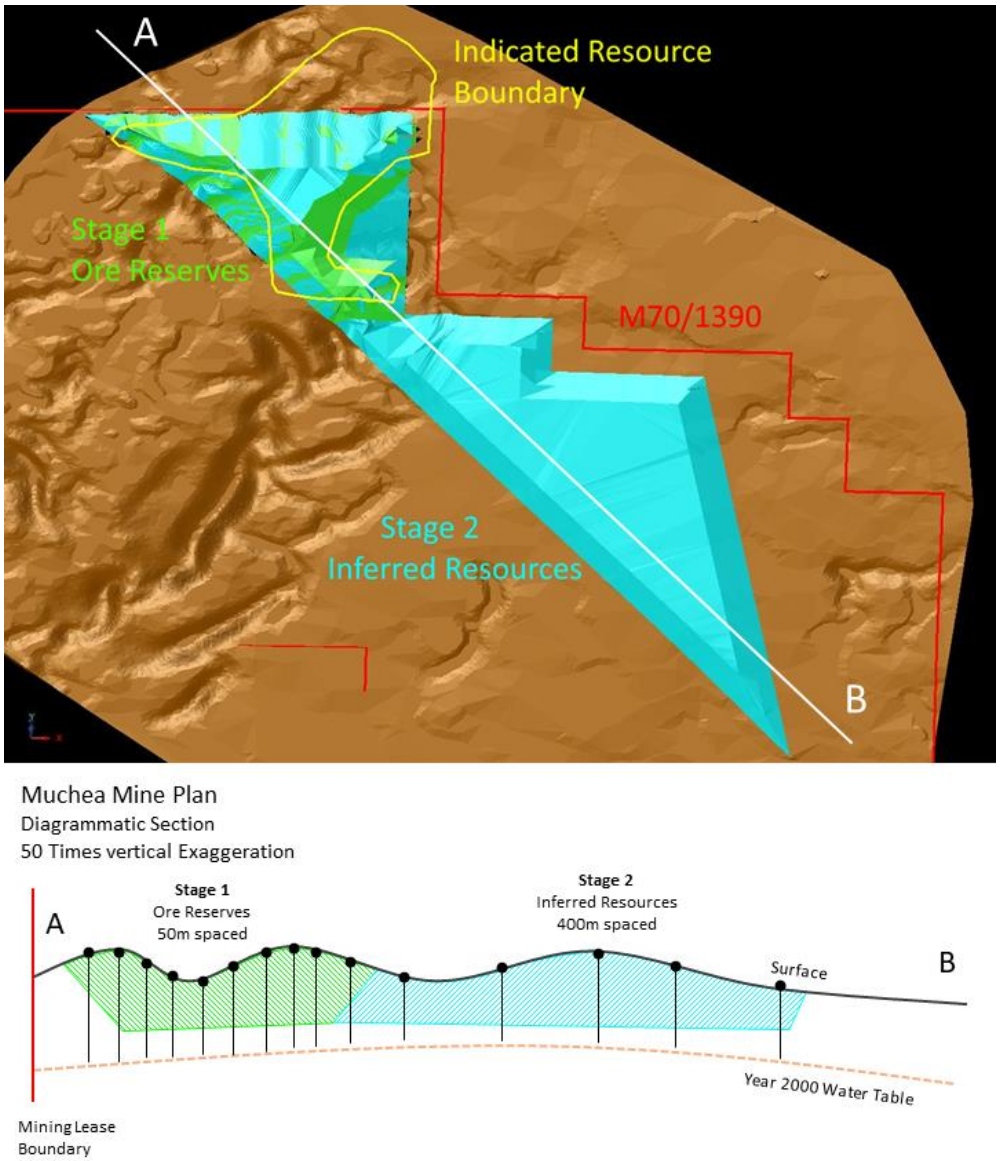

Figure 7: Muchea Post-Mining of Ore Reserves and Inferred Resources

Topography (5:1 vertical exaggeration)
Probable Ore Reserve within green boundaries and Inferred Mineral Resource within blue boundaries.

Assessment Process:

- Pre-referral submission to DotEE
- Final referral submission to DotEE
- Submission of Section 38 referral to the State EPA
- Seek an Accredited *Environment Protection and Biodiversity Conservation* Act 1999 (Cth) Assessment under the State *Environmental Protection Act* 1986 (WA) via an Environmental Review Document with public comment
- Undertake any further studies required
- Submission of Environmental Review Document

Mitigation Strategies

- Proposed action lies within a large development envelope, allowing for the flexibility to target areas of lower significance to MNES
- Disturbance will be kept to a minimum, up to 35 ha per year and 14 ha at any one time
- Progressive rehabilitation using topsoil re-location to ensure topsoil and plants are translocated intact to previously mined areas
- Conduct further surveys to identify MNES
- Use findings to steer the project and avoid MNES where possible

There are no mine tailings storage requirements, there are no waste dumps and processing requires no chemicals.

Material Modifying Factors – Infrastructure

The project is located on vacant, unallocated crown land which is east of the Yeal Nature Reserve and Sate Forrest, west of Freehold land and south of the Gingin Airfield. The southern boundary is the limit of tenure. The Brand Highway is proximal to the area and access is via the sealed Timaru Road from Brand Highway. The rail line to the Kwinana Bulk Terminal runs east of the Brand Highway and will be used to transport the processed silica sand to the Kwinana Bulk Terminal for bulk export.

The project will require its own installed power and water infrastructure and as there will be no accommodation at the mine site labour will be sourced from the nearest towns, Gingin and Muchea (approximately 12km and 14 km, respectively, from the mine site).

Costs

Operating costs

Operating costs were determined from first principles and are estimated to include all costs to mine, process, transport and load product on to ships.

Royalties

The prevailing rate of royalty due to the State is used in VRX's economic assessments. The State Royalty rate is A$1.17 per dry metric tonne and reviewed every 5 years with the next review due in 2020.

A 1% net production royalty from the project will be payable to Australia Silica Pty Ltd.

There are no other royalties payable, though a royalty is in the process of being negotiated with Native Title claimants and has been included in the project metrics.

Revenue

Product Quality

Multiple products will be differentiated during processing subject to required particle size distribution by screening. Recovery of products has been independently assessed by CDE Global, a world leading silica sand testing laboratory.

Commodity Prices

Commodity prices for silica sand products have been determined by independent industry source Stratum Resources. The industry standard is that sales contracts are in US dollars. The exchange rate to convert to Australian dollars will be the prevailing rate at the time of payment.

Subject to final quality produced, the prices for the commodity will range from US$38 to US$55 per dry metric tonne FOB. There will be no other treatment, smelting or refining charges and no shipping cost estimates with all contracts to be based on FOB rates.

Revenue will be based on a negotiated per shipment basis per dry metric tonne FOB with payment by demand on an accredited bank letter of credit.

Market Assessment

The Company has commissioned an independent assessment of the current market prices for proposed products by industry leader Stratum Resources. The assessment includes projections for future demand and supply of silica sand and concludes that there is a future tightening of supply of suitable glassmaking silica sand with a commensurate increase in price.

Sales volumes have been estimated as a result of received letters of intent and expressions of interest to purchase products.

Economic Factors

The Company's economic analysis has calculated at a 10% discounted ungeared post tax NPV. A 20% discounted NPV has also been calculated to demonstrate the strength of the economic analysis.

The assessment has not considered any escalated future product prices nor any inflation to operating costs. The analysis has used a US$/A$ exchange rate of US$0.70/A$1.00.

The analysis is based on a 25 year production profile with the Probable Ore Reserve supporting a 9-10 year project. Mining will occur solely from the Probable Ore Reserve during that period. There is a reasonable expectation that with further close spaced drilling the existing Inferred Resources would convert to Indicated Resources and Probable Reserves well in excess of this time period, however the model is conservatively restricted to 25 years. See above for further information.

Capital requirements are based on independent estimates.

The analysis is most sensitive to the exchange rate and sales prices. The analysis indicates the financials of the project are very robust and there is a high confidence that a viable long-term mining operation can be justified.

Due to the higher-grade products the average sales price of Muchea silica sand products is higher than those from the Arrowsmith silica sand projects.

Social Factors

The Company lodged an application for a Mining Lease (M70/1390) on 17 January 2019. The application lies within the Whadjuk native title claim boundaries (WAD242/11), which is part of the South West Native Title Settlement. The Whadjuk people are represented by the South West Aboriginal Land and Sea Council Aboriginal Corporation. The Company is currently in negotiations with the claimant group with respect to this mining lease application including the Miscellaneous Licences applications required to access the project area, and the Company expects that an agreement will be reached between the parties allowing for the Mining Lease to be granted.

The project is wholly on unallocated crown land with little negative impact on local communities.

Project Funding

The financial model summarised in the BFS sets out the project metrics and provides a basis for the potential capital structure of the Company for the development of the project. Total capital expenditure at Muchea (for a 2 million tonnes per annum processing plant) is estimated at approximately A$33 million (the BFS details capital cost estimates).

The Company anticipates that the source of funding for the capital investment at Muchea will be any one, or a combination of, equity, debt and pre-paid offtake from the project. Whilst no final decision has been made in that regard, the financial model assumes a maximum A$30 million in debt.

The Company has received a number of enquiries and expressions of interest from debt financiers for the project. As noted above, the financial model provides for debt capacity and is designed to meet the expectations of any providers of potential debt funding for their due diligence and other internal requirements.

In addition, VRX Silica has also received enquiries and expressions of interest from organisations across Asia for silica sand products from the project and holds signed letters of intent for substantial tonnages. A number of these organisations have expressed interest in becoming a funding partner of the Company for development of a mine by way of pre-paid offtake arrangements or commercial debt funding.

The balance of the Company's capital requirements will be funded from equity capital.

Whilst the envisaged project development requires a low capital intensity relative to a greenfields hard rock mining project, and any one of, or a combination of equity, debt and pre-paid offtake is planned, VRX Silica has not as yet secured the required capital. The positive financial metrics of the BFS and feedback from potential funding partners provides encouragement as to the likelihood of meeting optimum project and corporate capital requirements.

Muchea and Arrowsmith Total Indicated and Inferred Resources

Total Indicated and Inferred Resources at the Company's three silica sand projects is now in excess of 1 billion tonnes (see Table 15).

Arrowsmith North Silica Sand (CSA Global - July 2019)

Classification	Domain	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated and Inferred	White Sand	313	98.7	0.54	0.15	0.18	0.24
Indicated and Inferred	Yellow Sand	458	97.6	1.08	0.40	0.17	0.52
Indicated and Inferred	**All Sand**	**771**	**98.0**	**0.86**	**0.30**	**0.17**	**0.41**

Muchea Silica Sand (VRX - June 2019)

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated	29	99.6	0.09	0.03	0.07	0.22
Inferred	172	99.6	0.05	0.02	0.1	0.23
Indicated + Inferred	**208**	**99.6**	**0.06**	**0.02**	**0.1**	**0.23**

Arrowsmith Central Silica Sand (CSA Global - August 2019)

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated	28.2	96.6	1.7	0.4	0.2	0.7
Inferred	48.3	96.9	1.5	0.4	0.2	0.7
Total	**76.5**	**96.8**	**1.5**	**0.4**	**0.2**	**0.7**

All project areas Silica Sand

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%
Indicated + Inferred	**1,056**	**98.2**	**0.75**	**0.25**	**0.16**	**0.40**

Table 15: Total Silica Sand Resource Inventory

Muchea, Arrowsmith North and Arrowsmith Central Project Metrics

Key BFS outcomes for Muchea, Arrowsmith North and Arrowsmith Central, and in aggregate, are set out below.

	Arrowsmith North	Arrowsmith Central	Muchea	**Total**
Post Tax, ungeared NPV_{10}	$242.3m	$147.6m	$337.9m	**$727.8m**
Post Tax, ungeared NPV_{20}	$99.8m	$56.1m	$146.4m	**$302.3m**
Post Tax, ungeared IRR	79%	60%	96%	**83%**
Payback period (yrs) (post tax) (ramp up rate)	2.4	2.8	2.3	**2.4**
Exchange Rate US$/A$	$0.70	$0.70	$0.70	**$0.70**
Life of Mine (yrs) (Scope of BFS Study)	25	25	25	**25**
Total Sales (initial 25 years) no escalation	$2,773m	$2,167m	$3,345m	**$8,285m**
EBIT	$1,144m	$737m	$1,540m	**$3,421m**
Cashflow after finance and tax	$835m	$539m	$1,123m	**$2,497m**
Shares on Issue	404,318,617			
EPS after tax (per year)	$0.08	$0.05	$0.11	**$0.25**
Capex (2 mtpa)	$28.3m	$25.9m	$32.8m	**$87m**
Capex contingency (inc)	20%	20%	20%	**20%**
Life of Mine C1 costs, FOB Kwinana (inc royalties)	$30.18	$27.67	$32.74	**$30.24**
Tonnes Processed (initial 25 years) (Mt)	53	51	54	**158**
Production Target (Mt) (BFS Study) (initial 25 Years)	47.7	39.6	48.3	**136**
Probable Ore Reserves (Mt)	204	18.9	18.7	**242**
Ore Reserve life (yrs)	102	10	9-10	
JORC Resources (million tonnes)	771	77	208	**1,056**

Notes:

1. A proportion of the production target for each of Arrowsmith Central and Muchea is based on Inferred Mineral Resource. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.
2. The Ore Reserves and, in the case of Arrowsmith Central and Muchea, the Inferred Mineral Resource underpinning the above production targets have been prepared by a Competent Person in accordance with the requirements of the JORC Code.
3. The material assumptions are set out in the BFS for each project. All such material assumptions continue to apply and have not materially changed from the date of release of the BFS's.
4. All figures are presented in Australian dollars, unadjusted for inflation

Competent Persons' Statements

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 complied 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.

Interests in Mining Tenements

Western Australia

Arrowsmith Project – Silica

Tenement	Status	Interest at beginning of quarter	Interests relinquished, reduced or lapsed	Interests acquired or increased	Interest at end of quarter
E70/4986	Granted	100%	-	-	100%
E70/4987	Granted	100%	-	-	100%
E70/5027	Granted	100%	-	-	100%
E70/5109	Granted	100%	-	-	100%
E70/5197	Granted	-	-	100%	100%
MLA/1389	Application	-	-	-	-
MLA/1392	Application	-	-	-	-
L70/198	Application	-	-	-	-
L70/199	Granted	-	-	100%	100%
L70/202	Application	-	-	-	-
L70/203	Application	-	-	-	-
L70/208	Application	-	-	-	-

Muchea Project – Silica

Tenement	Status	Interest at beginning of quarter	Interests relinquished, reduced or lapsed	Interests acquired or increased	Interest at end of quarter
E70/4886	Granted	100%	-	-	100%
ELA70/5157	Application	-	-	-	-
MLA/1390	Application	-	-	-	-
L70/200	Application	-	-	-	-
L70/204	Application	-	-	-	-
L70/205	Application	-	-	-	-
L70/206	Application	-	-	-	-

Boyatup Project – Silica

Tenement	Status	Interest at beginning of quarter	Interests relinquished, reduced or lapsed	Interests acquired or increased	Interest at end of quarter
E69/3560	Granted	100%	-	-	100%
E69/3668	Granted	-	-	100%	100%

Warrawanda Project - Nickel

Tenement	Status	Interest at beginning of quarter	Interests relinquished, reduced or lapsed	Interests acquired or increased	Interest at end of quarter
E52/2372	Granted	100%	-	-	100%
E52/3447	Granted	100%	-	-	100%

Biranup Project – Base Metals/Gold

Tenement	Status	Interest at beginning of quarter	Interests relinquished, reduced or lapsed	Interests acquired or increased	Interest at end of quarter
E39/1828	Granted	100%	-	-	100%
E38/3191	Granted	100%	-	-	100%
E39/2000	Granted	100%	-	-	100%
E39/2001	Granted	100%	-	-	100%
E39/2003	Granted	100%	-	-	100%
E38/3294	Granted	100%	-	-	100%