17 June 2019

ASX ANNOUNCEMENT

Muchea Mineral Resource Estimate Upgrade

Highlights:

- ***Muchea total Mineral Resource Estimate increases to 208 Mt @ 99.6% SiO_2***
- ***Muchea Indicated Resource Estimate increases to 29 Mt @ 99.6% SiO_2***
- ***Muchea Inferred Resource increases to 179 Mt @ 99.6% SiO_2***
- ***Significant potential for further Resource upgrades at Muchea***

VRX Silica Limited (**VRX Silica** or **Company**) (ASX: VRX) is pleased to announce the results of a drill program completed at the Muchea Silica Sand Project (**Muchea**), located 50km north of Perth, WA.

The drill program was undertaken during March 2019 enabling a new Mineral Resource Estimate to be determined following receipt of assay results.

The JORC 2012 Mineral Resource Estimate for the Muchea Silica Sand Project has been upgraded to 208 Mt @ 99.6% SiO_2 comprising a JORC 2012 Indicated Resource estimate of 29 Mt @ 99.6% SiO_2 and a JORC 2012 Inferred Resource estimate of 179 Mt @ 99.6% SiO_2 (see Table 1).

VRX Silica Managing Director Bruce Maluish said: *"This drill program is over an area of 217ha, which is still only a small portion of the 2,900ha Mining Lease Application area."*

"Testwork indicates that high-grade silica sand can be produced from Muchea for which there is strong demand for glassmaking in Asia.

With low variability of results over the Resource area our expectation is that the majority of the Indicated Resource will convert to Probable Reserves in our impending BFS," said Maluish.

Metallurgical testwork to-date has also demonstrated that a section of sand in the Resource, previously discounted due to logged discoloration, can be beneficiated to high-grade silica sand products via conventional washing and screening methods. Future drilling and estimations will include this zone of sand which is expected to significantly add to the Resource inventory.

A more extensive PoW has been lodged to enable an aircore drill program over areas that have been previously hand augered. Drilling is planned for the September quarter 2019.

ASX: VRX

Capital Structure

Shares on Issue: 404 million

Top 20: 47%

Unlisted Options: 72 million

Corporate Directory

Paul Boyatzis
Non-Executive Chairman

Bruce Maluish
Managing Director

Peter Pawlowitsch
Non-Executive Director

John Geary
Company Secretary

Company Projects

Arrowsmith Silica Sand Project, 270km north of Perth, WA.

Muchea Silica Sand Project, 50km north of Perth, WA.

Boyatup Silica Sand Project, 100km east of Esperance, WA.

Warrawanda HPQ Project south of Newman, WA.

Biranup base metals and gold Project adjacent to the Tropicana Gold Mine, WA.

The Company is actively assessing other silica sand projects in Australia.

Work is ongoing to complete the process for the Mining Lease Applications and Environmental Approvals at both the Arrowsmith and Muchea Silica Sand Projects.

Detailed Information

VRX Silica has previously reported a maiden Mineral Resource Estimate (**MRE**) for Muchea.[1]

In March 2019 VRX Silica commenced a close spaced aircore drill program over an area limited to the most likely starting area for mining.[2] The results of that program for Muchea are now available and have been used to update the MRE for the Muchea Silica Sand Project.

The MRE has increased the **Indicated Mineral Resource** by 49% to **29 Mt @ 99.6% SiO_2** and the **Inferred Mineral Resource** by 4% to **179 Mt @ 99.6% SiO_2** for a **Total MRE** of **208 Mt @ 99.6% SiO_2**, an overall increase of 9%, see Tables 1 and 2 below.

This MRE update is based on the results of the most recent drilling, combined with a reinterpretation of the previously modelled sand layer. The reinterpretation investigated layers of low iron sand which were previously discounted due to colour, and higher levels of clay and organic matter; represented as Al_2O_3 and LOI_{1000C} in the assay dataset. The prior MRE was estimated purely on the percentage of SiO_2 rather than defining all material that was amenable to beneficiation to produce glass and foundry grade silica sand.

The Resource estimate only includes sand three metres above the year 2000 mapped water table level and discounts the top half metre of topsoil which will be used for rehabilitation.

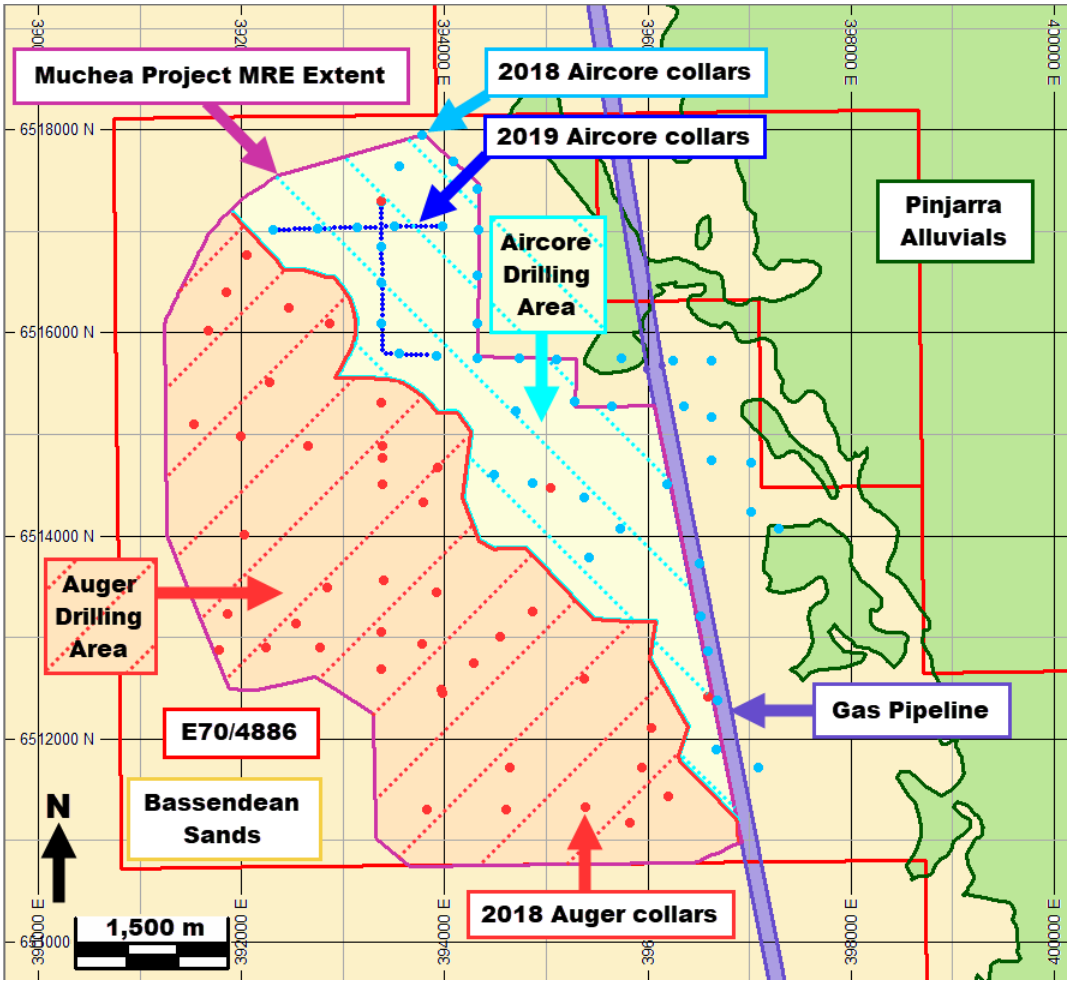
Metallurgical testwork completed to-date confirms this updated silica sand model is considered readily amenable to upgrading by conventional washing and screening methods to produce a high-purity silica sand product with high mass recoveries. The high-purity silica sand product specifications are expected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

It is anticipated that further testwork focusing on currently discounted sand layers may result in further reinterpretation and upgrades to the Muchea MRE.

Figure 1 below shows the MRE separated into two areas defined by the type of drill testing. The Auger drilling area has not changed since first reported[3] however the Aircore drilling area has been updated with the additional drilling and reinterpretation.

[1] ASX announcement of 20 November 2018, "*Muchea Silica Sand Project Maiden Resource*".
[2] ASX announcement of 13 March 2019, "*Drilling at Muchea and Arrowsmith Silica Sand Projects*".
[3] ASX announcement of 20 November 2018, "*Muchea Silica Sand Project Maiden Resource*".

Figure 1: Muchea Project schematic geology map showing MRE with separate drill type areas



The MRE results are shown in Table 1, and a plan showing the resource areas and classification is shown in Figure 2. Summary information is included in this report and JORC 2012 Table 1 is included as Appendix 1.

Table 1: Muchea Silica Sand Mineral Resource Estimate as at June 2019

Classification	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	LOI%	TiO_2%
Indicated	29	99.6	0.09	0.03	0.22	0.07
Inferred	179	99.6	0.05	0.02	0.23	0.1
Indicated + Inferred	**208**	**99.6**	**0.06**	**0.02**	**0.23**	**0.1**

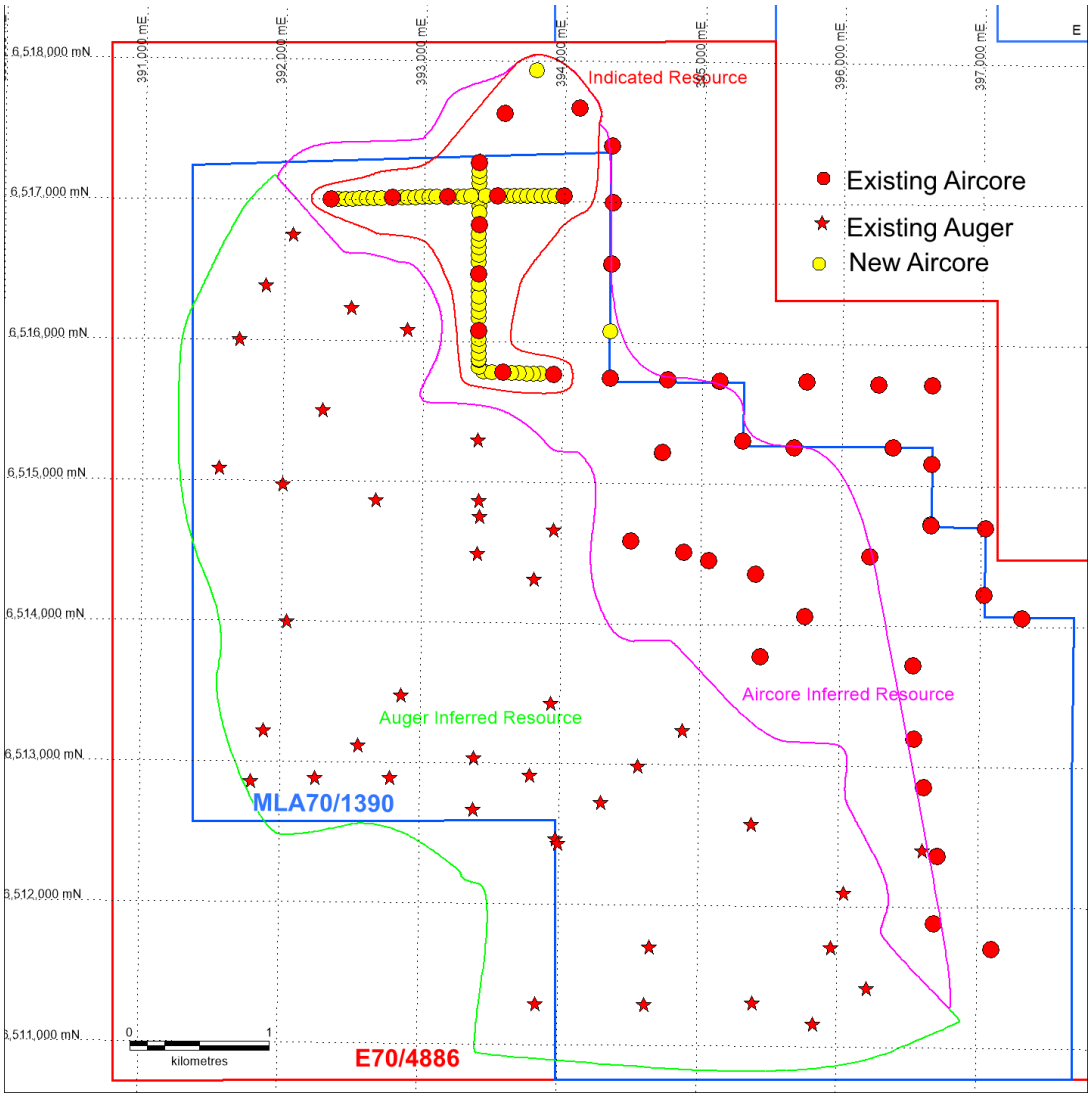
**Note: Interpreted silica sand mineralisation is domained above a basal surface wireframe. The upper (overburden) layer within 0.5 m of surface is depleted from the modelled silica sand unit, being reserved for rehabilitation purposes. All classified silica sand blocks in the model are reported. Differences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

Table 2: Tonnage Comparison with Prior estimate

Drill Area	Classification	Maiden MRE (Mt)	June 2019 Update (Mt)	Difference
Aircore	Indicated	19	29	+49%
	Inferred	60	67	+12%
	Indicated + Inferred	**79**	**96**	**+21%**
Hand Auger	Inferred	112	112	
Total	Indicated	19	29	+49%
	Inferred	172	179	+4%
	Indicated + Inferred	**191**	**208**	**+9%**

**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.*

Figure 2: Muchea Updated MRE areas and classification



COMPETENT PERSONS' STATEMENTS

The information in this Report that relates to Muchea and Arrowsmith Exploration Results and Muchea Aircore Drilling Area Mineral Resources are based on data collected and compiled under the supervision of Mr David Reid, in his capacity as Exploration Manager. 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". 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 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.

ASX LISTING RULE 5.8.1 SUMMARY

The following summary presents a fair and balanced representation of the information contained within the Mineral Resource Estimate (MRE) technical report:

- Silica sand mineralisation at Muchea occurs within the Bassendean Sand, which extends along the Swan coastal plains of the Perth Basin, parallel to the coast. (ASX LR 5.8.1 geology & geological interpretation)

- Samples were obtained from auger and aircore drilling. Quality of drilling/sampling and analysis, as assessed by the Competent Person, is of an acceptable standard for use in a Mineral Resource estimate publicly reported in accordance with the JORC Code. (ASX LR 5.8.1 Sampling & 5.8.1 Drilling)

- Major and trace elements apart from SiO_2 were analysed using a four-acid digest followed by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry (ICP-OES) analysis at the Intertek Genalysis, Perth laboratory. Loss on Ignition at 1000°C (LOI) was analysed by Thermal Gravimetric Analyser. SiO_2 was back-calculated by subtracting all ICP major and trace elements plus LOI from 100%, as this is the most accurate way of determining SiO_2 content for samples with very high SiO_2. Certain of the ICP results were verified by X-Ray Fluorescence (XRF) analyses. (ASX LR 5.8.1 Analysis)

- The Auger drilling area Mineral Resources were estimated above a 3-d wireframe basal surface for the uppermost white silica sand layer. The basal surface is interpreted based on the geological logging, chemical analysis results and chip photography and the extents are limited to within the VRX nominated Muchea target area. The surfaces are based on the geological boundaries defined by logged sand types from the drill data and with reference to the publicly available soil mapping data. The surface humus layer is typically about 300 mm thick. In consultation with VRX, CSA Global considered that the upper 500

mm (overburden) is likely to be reserved for rehabilitation purposes. This overburden surface forms the upper boundary of the estimated Mineral Resource and is depleted from the reported Mineral Resources. The Aircore drilling area Mineral Resources were estimated using a polygonal area weighted analysis using equidistant polygons generated from the location of the Aircore drill holes. The down hole widths and grades were determined by visual and statistical analysis to determine the average grades in the volume defined by the polygons, where this extended below 3m above the year 2000 water table, this higher level was used to determine the average grades in the volume defined by the polygons. A 500mm upper layer has been removed from the estimation as it is likely to be reserved for rehabilitation purposes. (ASX LR 5.8.1 Estimation methodology)

- Auger drilling area Grade estimation was completed using Ordinary Kriging with an inverse distance weighting to the power of two validation check estimate also completed. Aircore drilling area grades were estimate by the average grade down hole of sand weighted by the polygonal volume. (ASX LR 5.8.1 Estimation methodology)

- The Mineral Resource is quoted from all classified blocks above the defined basal surface wireframe for the upper white silica sand layer and below the overburden surface layer. (ASX LR 5.8.1 cut-off grades)

- The Mineral Resources are classified as Indicated and Inferred based on drill hole logging, drill hole sample analytical results, drill spacing, geostatistical analysis, confidence in geological continuity, and metallurgical / process test results. (ASX LR 5.8.1 classification)

- Roughly 10% of the interpreted mineralisation is considered extrapolated.

- The JORC Code Clause 49 requires that industrial minerals must be reported “in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals” and that “It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability.” (ASX LR 5.8.1 Mining, metallurgy & economic modifying factors)

- Therefore, the likelihood of eventual economic extraction was considered in terms of possible open pit mining, likely product specifications, possible product marketability and potentially favourable logistics and it is concluded that the Muchea silica sand deposit is an industrial Mineral Resource in terms of Clause 49. (ASX LR 5.8.1 Mining, metallurgy & economic modifying factors)

Reinterpretation

The industry standard analytical technique used to determine the SiO_2 grade is to calculate by difference. Samples are digested in a specialised four-acid digest and then analysed by means of Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry (ICP-OES) analysis which reads the quantities of element other than silica, Loss on Ignition at 1000°C (LOI) is determined by Thermal Gravimetric Analyser (TGA). These quantities are then deducted from 100% to determine the SiO_2 grade. The original MRE interpretation of high-grade sand was done preferentially using the SiO_2 grade.

As an example, Table 3 below, shows the changes to the high-grade sand composite that was used for MAC015 and MAC040 from the original aircore drilling program. In both cases the

original modelled sand layer was only 3m due to the SiO_2 grade being the determinant. The reinterpretation is significantly deeper as it includes a deeper layer of low Fe_2O_3 sand which has higher amounts of clay and organic material, which reduces the difference calculated SiO_2 grade. Metallurgical testwork to date has proven that this material is easily upgraded to the same high-quality final product as the shallower white sand. As a result of this reinterpretation, 18 holes out of the original 46 holes that were drilled in the Phase 1 program have been upgraded with respect to the depth of sand modelled.

Table 3: High grade sand composite reinterpretation for MAC015 and MAC040

Hole ID	Depth From	Depth To	Colour	Al_2O_3	Fe_2O_3	TiO_2	LOI	SiO_2	Original Comp.	Reinterp. Comp.
MAC015	0	1	Lt Brown	591	286	1323	0.91	98.82	3m @ 99.28% SiO_2 **381ppm** **Fe_2O_3**	7m @ 99.24% SiO_2 **388ppm** **Fe_2O_3**
	1	2	White	365	429	922	0.3	99.50		
	2	3	White	393	429	1493	0.22	99.52		
	3	4	Lt Brown	1317	286	1690	0.38	99.22		
	4	5	Lt Brown	1230	429	1897	0.4	99.16		
	5	6	Lt Brown	1436	286	1805	0.3	99.26		
	6	7	Lt Brown	2099	572	2135	0.19	99.18		
	7	8	Lt Brown	6228	1859	3071	0.26	98.15		
	8	9	Lt Brown	9022	1573	1918	0.25	97.93		
	9	10	Lt Brown	3342	572	1850	0.22	99.05		
MAC040	0	1	White	378	143	874	0.89	98.92	3m @ 99.37% SiO_2 **268ppm** **Fe_2O_3**	11m @ 99.42% SiO_2 **494ppm** **Fe_2O_3**
	1	2	White	208	143	792	0.29	99.57		
	2	3	White	217	71	779	0.26	99.61		
	3	4	Lt Brown	370	143	1313	0.57	99.22		
	4	5	Lt Brown	317	143	1046	0.39	99.44		
	5	6	White	357	286	962	0.27	99.54		
	6	7	White	644	572	1905	0.43	99.22		
	7	8	Lt Brown	709	286	1268	0.37	99.36		
	8	9	Lt Brown	654	286	1088	0.21	99.55		
	9	10	White	998	429	1001	0.22	99.51		
	10	11	White	584	286	701	0.13	99.69		
	11	12	White	399	429	1349	0.11	99.65		

Future Work

A programme of works (PoW) has been submitted to Aircore drill the area previously covered by hand auger drilling. Once approved it will allow for testing the full depth of high-grade sand over the remainder of the tenement. In conjunction with this, further testwork will be undertaken on additional discoloured brown and coffee colour sand samples to determine what compositions can be included in future MRE updates. This work is expected to significantly increase the mineral resources.

Arrowsmith Drill Programmes

A total of 108 holes for 1,177 metres have been completed at Arrowsmith North, Figure 3, and 76 holes for 247 metres at Arrowsmith Central, Figure 4.

Figure 3: Arrowsmith North holes drilled

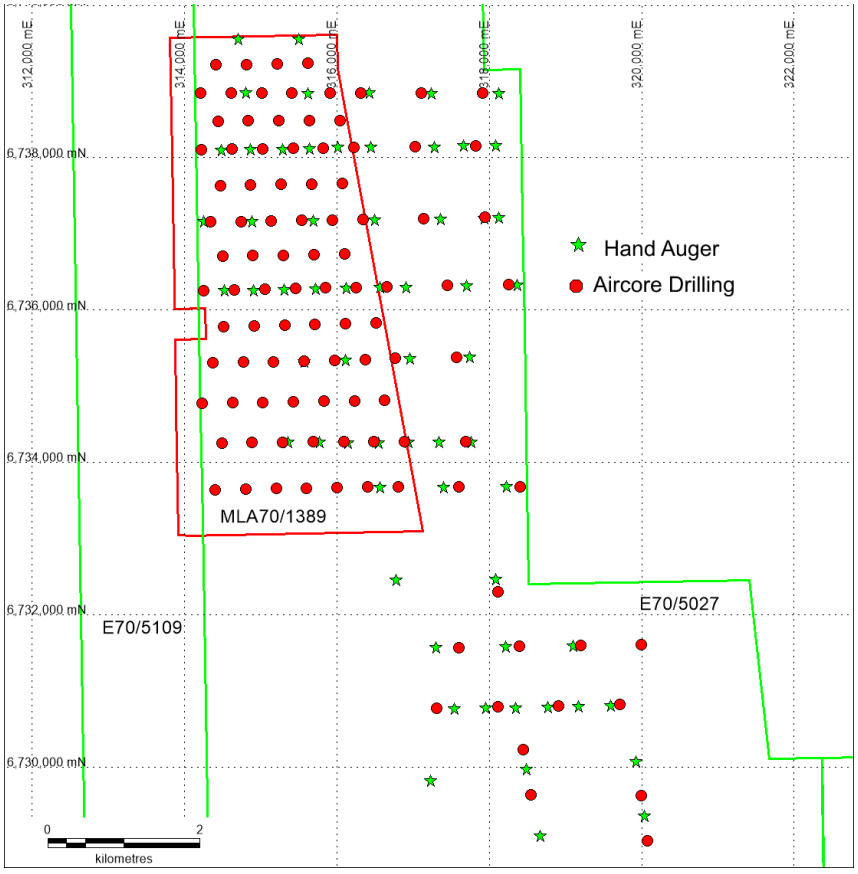
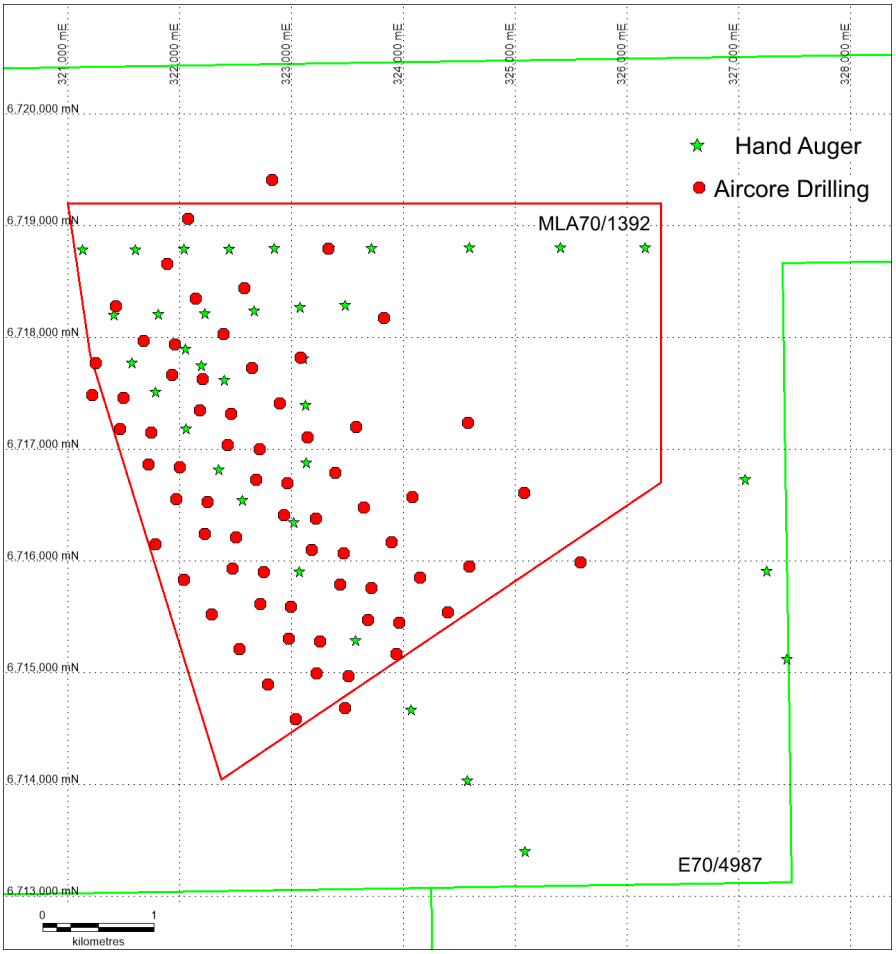


Figure 4: Arrowsmith Central holes drilled



The drilling at Arrowsmith North has unexpectedly discovered that the yellow sand that was the predominant sand type that was drill tested, Figure 5, and subsequently modelled in the Maiden MRE declared on 2 October 2018 as follows, Table 4;

Figure 5: Arrowsmith North geology by sand type

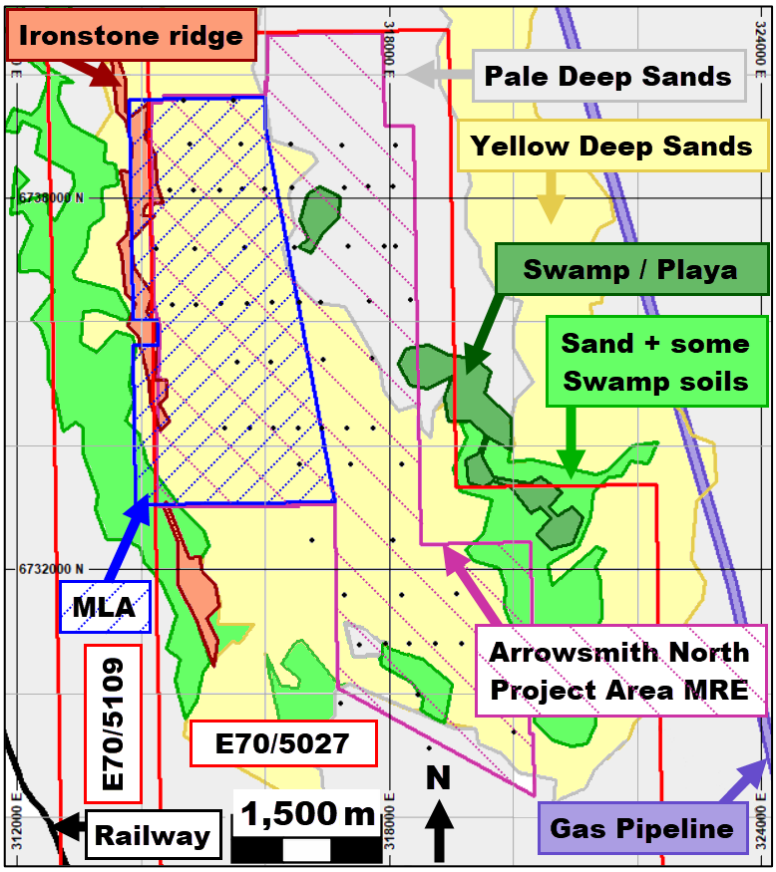


Table 4: Arrowsmith North Mineral Resource

Classification	Domain	Million Tonnes	SiO_2%	Al_2O_3%	Fe_2O_3%	LOI%	TiO_2%
Inferred	Yellow Sand	149.4	97.7	1.1	0.4	0.5	0.2
	White Sand	44.2	99.1	0.3	0.1	0.2	0.2
	All Sand	193.6	98.0	0.9	0.3	0.4	0.2

**Note: Interpreted mineralisation is domained into different sand types based on drill logging data and publicly available soil mapping information, above a basal surface wireframe defined based on the current drill sampling depths. Depletion zones include the upper 0.5 m for rehabilitation purposes, and minor swamp zones in the east and south of the modelled area. Differences may occur due to rounding.*

The deeper Aircore drilling that has been completed has demonstrated that the surface yellow sand which has been predominately shallow hand augered occurs as a blanket over the top of a dominant white sand base. Table 5 below shows the drilling results from an auger hole AN023 and an aircore hole ANC078, <50m apart, showing the change to white sand at depth below the surface yellow sand. Testwork to date has shown that the white sand at Arrowsmith North has the potential to produce a superior product to the yellow sand. The expectation is that having white sand available as a feedstock to a processing plant will have a positive economic outcome in proposed future mining.

CSA Global is currently working on updates to the existing Arrowsmith MRE's and these will be announced as they are completed over the coming weeks.

Table 5: Arrowsmith North Auger to Aircore Drillhole Comparison

From	To	Hole ID	Al_2O_3	Fe_2O_3	TiO_2	LOI	SiO_2	Colour	Hole ID	Al_2O_3	Fe_2O_3	TiO_2	LOI	SiO_2
0	1	**AN023** (Auger) MGA Zone50 316487mE, 6734268mN	7,962	3,100	1,210	0.48	98.2	Yellow	**ANC078** (Aircore) MGA Zone50 316487mE, 6734268mN	5,202	1,861	689	0.39	98.8
1	2		12,479	4,900	1,555	0.63	97.4			9,719	3,595	1,125	0.50	98.0
2	3		12,305	4,800	1,650	0.57	97.5			10,127	4,137	1,370	0.51	97.9
3	4		14,123	6,000	1,714	0.75	96.9			12,167	4,576	1,611	0.55	97.5
4	5		13,074	5,000	1,685	0.60	97.3			12,075	4,919	2,359	0.55	97.4
5	6									11,601	4,311	1,721	0.60	97.6
6	7									12,125	5,177	3,263	0.59	97.3
7	8							White		9,507	4,340	3,148	0.47	97.8
8	9									5,583	2,970	2,722	0.26	98.5
9	10							Yellow		6,745	2,778	1,745	0.38	98.4
10	11									12,320	3,901	1,393	0.60	97.6
11	12									10,803	4,222	2,451	0.51	97.7
12	13							White		9,370	3,830	2,406	0.47	97.9
13	14									5,470	2,246	1,807	0.27	98.7
14	15									5,250	2,363	2,616	0.28	98.6
15	16									5,522	1,570	1,180	0.42	98.7
16	17									6,253	2,834	1,496	0.35	98.5
17	18									14,780	7,337	2,094	0.72	96.7

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About VRX Silica

VRX Silica Ltd (**VRX Silica**) (**ASX: VRX**) has significant silica sand projects in Western Australia.

The Arrowsmith Silica Sand Project, located 270km north of Perth, comprises four granted exploration licences with one exploration licence and two mining lease applications pending. Details on the BFS are included in the announcement. The Muchea Silica Sand Project, located 50km north of Perth, comprises one granted exploration license with one exploration licence and one mining lease application pending. Testwork has confirmed a range of silica sand products which are capable of production at both projects. Details on the feasibility study at Muchea are being compiled.

The Boyatup Silica Sand Project, located 100kms east of Esperance, comprises two adjacent granted exploration licences. Initial indications are that this project will complement both Arrowsmith and Muchea while adding to the silica products VRX Silica will potentially produce.

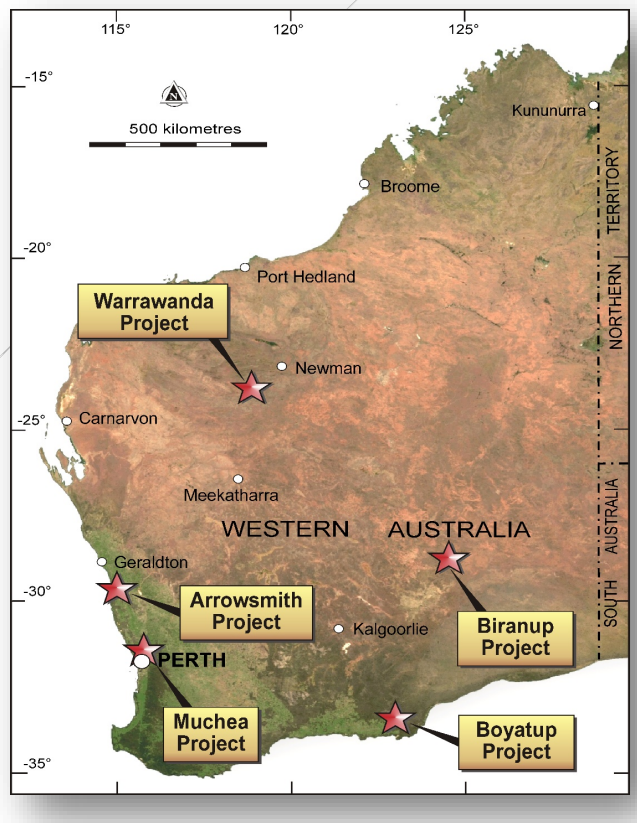
Also, in Western Australia, 40km south of Newman, is VRX Silica's Warrawanda HPQ Project, which is prospective for high purity quartz and nickel sulphides.

VRX Silica also has granted tenements at its Biranup Project, adjacent to the Tropicana Gold Mine in Western Australia's Goldfields that are prospective for gold and base metals.

Proven Management

The VRX Silica Board and management team have extensive experience in mineral exploration and mine development into production and in the management of publicly listed mining and exploration companies.

Project Locations



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Appendix 1 - JORC 2012 Table 1 Report

Hole ID	MGA East	MGA North	RL	Depth	Al_2O_3	Fe_2O_3	TiO_2	LOI	SiO_2
MAC004	395119	6515729	68	5	553	458	944	0.17	99.60
MAC005	394747	6515736	72	6	303	310	855	0.15	99.69
MAC006	394339	6515743	71	11	247	325	945	0.1	99.72
MAC007	393931	6515766	73	9	204	286	796	0.1	99.74
MAC008	393564	6515781	71	3	408	334	741	0.27	99.55
MAC009	393391	6516075	74	8	1508	375	949	0.37	99.32
MAC010	393387	6516483	73	10	578	372	1164	0.26	99.51
MAC011	393387	6516838	85	11	1147	858	846	0.2	99.47
MAC012	393157	6517030	77	11	400	364	770	0.16	99.66
MAC013	392763	6517019	74	9	434	477	1226	0.27	99.49
MAC014	392328	6517005	80	7	296	592	1305	0.12	99.63
MAC017	396207	6514493	68	7	1098	255	1169	0.16	99.52
MAC018	395741	6514062	68	4	1588	197	1341	0.36	99.28
MAC019	395429	6513775	72	5	689	315	1249	0.18	99.56
MAC025	396683	6511885	72	5	207	143	895	0.22	99.63
MAC026	394335	6516558	71	7	268	153	1006	0.13	99.71
MAC028	394333	6517402	72	7	277	122	716	0.21	99.66
MAC029	394102	6517672	72	9	329	278	765	0.13	99.72
MAC030	393791	6517937	71	11	570	169	873	0.12	99.67
MAC031	393565	6517632	74	11	1076	195	1064	0.33	99.42
MAC032	393384	6517279	76	11	456	214	782	0.18	99.65
MAC033	393518	6517039	81	10	467	608	907	0.15	99.63
MAC034	393995	6517042	69	2	255	107	1095	0.51	99.33
MAC035	395285	6515310	68	7	968	163	1029	0.25	99.51
MAC036	395656	6515266	68	6	983	155	987	0.33	99.43
MAC041	394711	6515220	70	6	229	238	1007	0.29	99.54
MAC042	394494	6514588	71	7	821	174	851	0.26	99.53
MAC043	394874	6514513	71	3	529	143	961	0.27	99.54
MAC044	395050	6514457	70	5	434	515	975	0.3	99.48
MAC045	395387	6514362	71	4	460	161	765	0.17	99.66
MAC046	394335	6516084	71	7	509	133	999	0.21	99.61
MAC101	393833	6515773	73	6	2732	1036	494	0.19	99.33
MAC102	393782	6515774	73	5	349	183	511	0.17	99.72
MAC103	393734	6515775	72	5	920	204	685	0.13	99.68
MAC104	393683	6515778	72	8	1003	214	733	0.36	99.43
MAC105	393629	6515780	71	3	1565	224	662	0.22	99.55
MAC106	393485	6515784	71	3	2272	192	607	0.59	99.10
MAC107	393430	6515786	72	3	7344	348	709	0.45	98.63
MAC108	393393	6515817	72	3	945	169	560	0.27	99.50
MAC109	393392	6515869	73	4	2905	230	658	0.2	99.38
MAC110	393391	6515871	73	4	927	275	681	0.21	99.58
MAC111	393391	6515917	73	4	3537	221	557	0.26	99.27
MAC112	393391	6515969	74	11	2391	264	777	0.35	99.26
MAC113	393391	6516017	74	10	1763	341	795	0.34	99.34
MAC114	393390	6516168	74	11	1345	233	773	0.28	99.47
MAC115	393390	6516214	74	11	2429	377	813	0.4	99.20
MAC116	393390	6516266	75	3	2283	166	527	0.3	99.37
MAC117	393390	6516320	77	11	1461	256	747	0.29	99.44
MAC118	393388	6516364	78	11	2280	651	755	0.31	99.30
MAC119	393388	6516414	77	6	953	459	681	0.17	99.60

Hole ID	MGA East	MGA North	RL	Depth	Al_2O_3	Fe_2O_3	TiO_2	LOI	SiO_2
MAC120	393388	6516568	73	8	1885	318	633	0.22	99.48
MAC121	393387	6516614	73	9	213	356	608	0.1	99.77
MAC122	393387	6516670	76	11	243	191	551	0.06	99.84
MAC123	393387	6516718	80	8	715	509	519	0.12	99.69
MAC124	393387	6516768	83	9	1834	314	652	0.25	99.44
MAC125	393386	6516917	82	10	994	677	542	0.16	99.60
MAC126	393386	6516967	79	6	2648	245	601	0.37	99.27
MAC127	393386	6517017	77	11	532	409	478	0.22	99.62
MAC128	393385	6517065	75	10	1550	754	613	0.34	99.36
MAC129	393385	6517127	75	11	1452	391	645	0.27	99.48
MAC130	393384	6517170	76	11	1719	607	598	0.36	99.32
MAC131	393384	6517216	76	11	1600	523	604	0.31	99.39
MAC132	392377	6517006	77	11	314	504	533	0.09	99.75
MAC133	392432	6517008	74	8	757	149	474	0.21	99.62
MAC134	392432	6517008	74	11	218	203	510	0.07	99.82
MAC135	392478	6517009	74	11	238	561	452	0.1	99.76
MAC136	392528	6517011	74	11	252	240	502	0.1	99.80
MAC137	392580	6517012	74	11	437	271	530	0.14	99.73
MAC138	392629	6517013	73	7	464	243	534	0.17	99.69
MAC139	392682	6517014	74	11	222	270	532	0.09	99.78
MAC140	392833	6517022	73	8	246	213	431	0.13	99.78
MAC141	392874	6517022	73	9	802	147	447	0.21	99.63
MAC142	392925	6517024	73	6	361	144	483	0.15	99.73
MAC143	392976	6517026	73	5	627	178	463	0.22	99.62
MAC144	393030	6517027	75	11	335	210	497	0.19	99.69
MAC145	393077	6517029	76	11	408	180	490	0.21	99.66
MAC146	393230	6517028	79	11	1240	755	569	0.21	99.50
MAC147	393276	6517032	79	11	991	335	468	0.22	99.60
MAC148	393330	6517034	77	11	904	258	546	0.17	99.66
MAC149	393433	6517037	78	11	1134	1040	437	0.17	99.57
MAC150	393582	6517040	78	11	678	288	647	0.17	99.67
MAC151	393635	6517040	74	9	841	223	596	0.2	99.63
MAC152	393680	6517041	73	4	567	161	446	0.14	99.75
MAC153	393727	6517040	73	4	737	126	464	0.21	99.65
MAC154	393777	6517041	74	4	739	296	477	0.21	99.64
MAC155	393832	6517042	76	5	1496	352	560	0.46	99.30
MAC156	393884	6517041	76	5	767	172	485	0.15	99.71
MAC157	393931	6517042	73	11	1079	189	634	0.13	99.68

Appendix 2 - JORC 2012 Table 1 Report

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	Commentary
Sampling techniques	AC drilling samples are 1m down hole intervals with sand collected from a cyclone mounted rotary cone splitter, ~2-3kg (representing 50% of the drilled sand) was collected. Two sub-samples, A and B, of ~200g were taken from the drill samples. The remainder was retained for metallurgical testwork. Auger drilling samples are 1m down hole intervals with sand collected from a plastic tub which received the full sample, ~8kg, from the hole. The sand was homogenised prior to sub sampling, two sub-samples, A and B, of ~200g were taken from the drill samples. A bulk sample of ~5kg was retained for each 1m interval for metallurgical testwork. The "A" sample was submitted to the Intertek Laboratory in Maddington, Perth for drying, splitting (if required), pulverisation in a zircon bowl and a specialised silica sand 4 Acid digest and ICP analysis. All auger samples were weighed to determine if down hole collapse was occurring, if the samples weights increased significantly the hole was terminated to avoid up hole contamination. Due to the visual nature of the material, geological logging of the drill material is the primary method of identifying mineralisation.
Drilling techniques	Vertical NQ sized aircore drilling was completed by a Contract Drilling Company using a Landcruiser mounted Mantis 82 drill rig. A 100mm diameter hand screw auger was used to drill until hole collapse.
Drill sample recovery	Aircore Visual assessment and logging of sample recovery and sample quality Reaming of hole and clearance of drill string after every 3m drill rod Sample splitter and cyclone cleaned regularly to prevent sample contamination No relationship is evident between sample recovery and grade Hand Auger All material recovered from the hole is collected in a plastic drum and weighed, the weights are used to determine when the hole is collapsing, and drilling is terminated. No relationship is evident between sample recovery and grade
Logging	Geological logging of drill samples is done by the field geologist with samples retained in chip trays for later interpretation. Logging is captured in an excel spreadsheet, validated and uploaded into an Access database
Sub-sampling techniques and sample preparation	AC drill samples are rotary split 50:50 into a calico bag resulting in 2-3kg of dry sample, 2 x 200g sub-samples, A and B, are taken from the drill sample. The A sample is submitted to the laboratory and the B sample is retained for repeat analysis and QA/QC purposes. The bulk sample is retained for later metallurgical testwork. Auger drill material, ~8kg, is collected in a plastic tub and homogenised, 2 x 200g sub-samples, A and B, are taken from the drill material. The A sample is submitted to the

Criteria	Commentary
	laboratory and the B sample is retained for repeat analysis and QAQC purposes. A 5kg bulk sample is retained for later metallurgical testwork. The sample size is considered appropriate for the material sampled. The 200g samples are submitted to the Intertek Laboratory in Maddington, Intertek use a zircon bowl pulveriser to reduce the particle size to -75um.
Quality of assay data and laboratory tests	Samples were submitted for analysis to the Intertek Laboratory in Maddington in Perth WA. The assay methods used by Intertek are as follows: multi-elements are determined by a specialised four-acid digest including Hydrofluoric, Nitric, Perchloric and Hydrochloric acids in Teflon tubes. Analysed by Inductively Coupled Plasma Mass Spectrometry, silica is reported by difference. The assay results have also undergone internal laboratory QAQC, which includes the analysis of standards, blanks and repeat measurements. The Company has been validating a high-purity silica standard that was created for the Company by OREAS Pty Ltd. This was required as there is no commercial standard available for high purity silica sand. The standard was "round robin" assayed at several laboratory's in Perth prior to the commencement of drilling. The standard was then included in the drill sample submissions to Intertek, in sequence, on a ratio of 1:20. Field duplicate samples were submitted in a ratio of 1:20 and in addition to this Intertek routinely duplicated analysis from the pulverised samples in a ratio of 1:25. The number of QAQC samples therefore represents ~14% of the total assays. A full analysis of all the quality control data has been undertaken. This analysis validates the drill assay dataset and conforms with the guidelines for reporting under the JORC 2012 code.
Verification of sampling and assaying	Significant intersections validated against geological logging At Muchea, twinned holes AC Vs Auger were completed validate the robustness of hand auger as an appropriate method of testing the in-situ sand. Assay comparisons shown an acceptable correlation between the 2 drilling methods.
Location of data points	Auger drill hole locations were measured by hand-held GPS with the expected relative accuracy; GDA94 MGA Zone 50 grid coordinate system is used. Aircore drill holes have been surveyed by an RTK GPS system. The reduced level (RL) of the drilling collars is generated from LIDAR contour data obtained from the Department of Water, unless quality RTK GPS is available.
Data spacing and distribution	Initial drilling at Muchea holes were spaced 400-800m apart along existing tracks, auger holes were spaces ~800m apart along tracks with some off tracks. The recent drilling spaced holes 50m apart along the existing track. It is believed that due to the relatively low variability of assays between drill holes that the current spacing may be sufficient for the estimation of a Mineral Resource. No sample compositing (down hole) has been done.
Orientation of data in relation to geological structure	Sampling is being undertaken on aeolian sand dunes; the drill orientation is therefore considered appropriate.
Sample security	All samples are selected onsite under the supervision of VRX Geological staff.

Criteria	Commentary
	Samples are delivered to the Intertek laboratory in Maddington. Intertek receipt received samples against the sample dispatch documents and issued a reconciliation report for every sample batch.
Audits or reviews	There has been no audit or review of sampling techniques and data at this time.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary
Mineral tenement and land tenure status	All drilling has been within Tenement E70/4886, which is owned by Wisecat Pty Ltd a 100% owned subsidiary of VRX Silica Limited. The tenement was granted 27 March 2017 and all drilling was conducted on VCL.
Exploration done by other parties	Minor exploration for mineral sands has been completed by Tronox in the South Eastern corner of E70/4886 and has been excluded in any assessment by VRX.
Geology	Most economically significant silica sand deposits in Western Australia are found in the coastal regions of the Perth Basin, and the targeted silica sand deposits at Muchea are hosted by the Bassendean Sand, which extends over large areas of the Swan coastal plains of the Perth Basin. The term Bassendean Sand was introduced in 1972 (Playford, P. E., and Low, G. H. 1972. Definitions of some new and revised rock units in the Perth Basin: Western Australia. Geological Survey, Annual Report for 1971, p. 44–46) for the widespread unit of quartz sand extending over large areas of the coastal plain, from about 23 km north of Jurien, to about 15 km southwest of Busselton. Quartz grains of the Bassendean Sand are interpreted as being derived from granitic rocks in the Darling Range and have accumulated as shoreline and dune sands during two or more periods of relatively stable sea level, ranging from about 8 to 25 m above present sea level. According to published reports (e.g. GSWA Bulletin 21) the Bassendean Sand is typically clean, well rounded and well sorted; however, its physical, chemical, and mineralogical characteristics can vary. The sand is generally white near surface but at depth it is usually high in iron and yellow to brown in colour. The Bassendean Sand generally has little or no overburden and it is noted from a report by the Geological Survey of Western Australia (Bulletin 21) that a discontinuous layer (generally less than a metre thick) of relatively hard ferruginous material, known as 'coffee rock', may occur at depths ranging from less than a metre to about 15 m below the surface. The coffee rock was interpreted as having formed due to precipitation of Fe oxides and hydroxides from circulating iron-rich groundwater. Below this layer, the white sand can be quite thick, extending to a maximum of about 15 m (Abeysinghe, P. B., 2003. Silica Resources of Western Australia. Geological Survey of Western Australia, Mineral Resources Bulletin 21).
Drill hole Information	A tabulation of the Aircore drill holes used in this MRE update included as an attachment to this announcement.
Data aggregation methods	The assay data presented for the silica sand is an arithmetic average of the 1m individual sample results.

Criteria	Commentary
	The grade distribution shows a very low variability with no anomalous high-grade results, therefore the most appropriate method of aggregating intercepts is the use a simple arithmetic average. No metal equivalents are used.
Relationship between mineralisation widths and intercept lengths	As the mineralisation is associated with aeolian dune sands the majority will be essentially horizontal, some variability will be apparent on dune edges and faces. All drilling is vertical; hence the drill intersection is essentially equivalent to the true width of mineralisation
Diagrams	A map of the drill collar locations is incorporated with the main body of the announcement.
Balanced reporting	The accompanying document is considered to represent a balanced report.
Other substantive exploration data	Geological observations are consistent with aeolian dune mineralisation Four, certified, dry in-situ bulk density measurements were completed at Muchea by Construction Sciences Pty Ltd using a nuclear densometer. The arithmetic average of these was used in the determination of the exploration targets. Groundwater was intersected in only a few holes that were drilled deeper deliberately to ascertain the position of the water table. The water table is typically below 15m depth. The mineralisation is unconsolidated sand. There are no known deleterious substances at this time.
Further work	A programme of works (PoW) has been submitted to Aircore drill the area previously covered by hand auger drilling. Once approved it will allow for testing the full depth of high-grade sand over the remainder of the tenement. In conjunction with this, further testwork will be undertaken on additional discoloured brown and coffee colour sand samples to determine what compositions can be included in future MRE updates. This work is expected to significantly increase the mineral resources.

Section 3: Estimation and Reporting of Mineral Resources

(Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary
Database integrity	Data used in the MRE is sourced from a Microsoft Access database. Relevant tables from the Microsoft Access database are exported to Microsoft Excel format and converted to csv format for import into Datamine Studio 3 software and Surpac software. Validation of the data imported comprises checks for overlapping intervals, missing survey data, missing analytical data, missing lithological data, and missing collars.
Site visits	The Competent Person for the VRX estimate is a full-time employee of the Company and has made multiple visits to all Project areas. The Competent Person (CP) for CSA Global estimate, Dr AJ Scogings, a representative of CSA Global visited the VRX warehouse in Perth and the Muchea site on 17 October 2018, addressing the following: Sample storage – originals, field duplicates, pulps, standards and chip trays are housed appropriately. Some chip trays were photographed by the CP as a check against Company photographs and geology logs.

Criteria	Commentary
	Geology – the CP noted that the Muchea tenements are underlain by unconsolidated white / off-white fine-grained silica sand. Drill collars – the CP recorded and verified several unmarked drill sites using hand-held GPS. Project location – several points such as road intersections were located and plotted in Google Earth™ to verify the tenement location. Auger drilling method – Mr David Reid of VRX demonstrated the Company's hand auger drilling and sampling method at location MA001. The CP was satisfied that, providing the sand is sufficiently damp and stable at the time of drilling, samples collected by this method are representative, relatively uncontaminated and hence suitable for use in a Mineral Resource estimate. Aircore drilling method – although this was not observed during the site visit, the CP is of the opinion that aircore drilling is an appropriate method for drilling and sampling sand deposits such as Muchea.
Geological interpretation	Silica sand mineralisation at Muchea are hosted by the Bassendean Sand, and the targeted silica sand deposits are the aeolian sand dunes that overlie the Pleistocene limestones and paleo-coastline. Within the project area, data obtained from the Department of Agriculture soil mapping shows the Bassendean Sand covering the full extent of the modelled area. The geological modelling was completed based on this soil mapping data in conjunction with the auger and air core drill (AC) logging data. The Mineral Resource is estimated above a 3-d wireframe basal surface for the upper white silica sand layer. Based on analysis of the results from the drilling data this basal surface appears to nominally follow the topographic surface. Only the uppermost white silica sand layer has been modelled at this stage despite the evidence in the deeper AC holes for additional white silica sand and yellow sand layers occurring below. This is due to the limitations on the depth sampled from auger drilling, the variable depths of AC drilling, and the drill hole spacing making interpretation of the geological extents of the lower sand layers difficult. The modelled basal surface therefore does not necessarily represent the full sand layer thickness over parts of the auger drilled area. The modelled extents of the upper white silica sand layer are further limited to within the VRX nominated Muchea target area. The surface humus layer is typically about 300 mm thick. In consultation with VRX, CSA Global decided that the upper 500 mm (overburden) is likely to be reserved for rehabilitation purposes. This overburden surface forms the upper boundary of the estimated Mineral Resource and is depleted from the reported Mineral Resources. Over a small area in the central west of the modelled are the surface white silica sand layer is overlain by a minor clay in white sand zone, defined by the Al2O3 content being nominally above 1%. The basal surface of this material has been modelled and it forms the upper boundary surface of the modelled white silica sand layer in this part of the model. This material has not been grade estimated and is not reported as part of the MRE. Assumptions have been made on the horizontal extents of the mineralisation based on the soil mapping data and the spacing and extents of the drilling information. A nominal maximum horizontal extrapolation limit of 400 m past known drill data points has been applied with the interpretation additionally constrained within the VRX nominated target. Although it is understood that the thickness of the upper white silica sand layers is likely to be more than current auger drilling depths over the areas of the modelled area covered only by auger drilling, the vertical extents have been nominally limited to the current auger drilling depths. Approximately 10% of the modelled mineralisation can be considered to be extrapolated. Alternative interpretations based on the currently available data are considered unlikely to have a significant influence on the global MRE.

Criteria	Commentary
	Continuity of geology and grade can be identified and traced between drillholes by visual and geochemical characteristics. Confidence in the grade and geological continuity is reflected in the Mineral Resource classification.
Dimensions	The modelled and classified extents of the upper silica sand layer material within the target area are roughly 7 km north to south, and on average roughly 3.5 km west to east. The modelled sand layer is roughly horizontal, with fairly low relief. The currently modelled thickness of the sands is on average about 4.5 m. The current modelling (limited by the drilling methodology in parts) shows the thickness ranging between about 14 m in the north east, thinning to a nominal 3 to 5 m through the centre where it appears to pinch out in the west in part, thickening to between 5 and 8 m in the south east, and is a nominal 3 to 5 m in the south west.
Estimation and modelling techniques	In the Auger area Ordinary Kriging (OK) was the selected interpolation method, with Inverse distance squared (IDS) used as a check estimate. Grade estimation was carried out at the parent cell scale, with sub-blocks assigned parent block grades. Grade estimation was carried out using a hard boundary. Statistical analysis on the 1 m downhole composited drillhole data to check grade population distributions using histograms, probability plots and summary statistics and the co-efficient of variation, was completed for the estimated grade variables. The checks showed there were no significant outlier grades in the interpreted sand layer that required top-cutting. In addition to SiO2, the grade variables Al2O3, Fe2O3, LOI, and TiO2 are estimated into the model. A volume block model was constructed in Datamine constrained by the topography, overburden layer, sand type zone, material depletion zone and target area limiting wireframes. Drilling has been completed at a nominal 400 m spacing along existing tracks, which are nominally between 400 m and 1,200 m apart, thus forming a somewhat irregular drilling pattern. Two pairs of close spaced (~<10 m) auger / aircore drill hole twin holes have been drilled, along with a further two pairs at roughly 100 m apart and a pair of auger holes ~35 m apart. Spatial (variogram) analysis was completed on SiO2 from the 1 m drill composite samples, yielding a low relative nugget of 10%. No clearly preferred mineralisation trend direction was recognised from the variogram modelling with primary and secondary variogram directions modelled at 090° and 000° respectively. For both these directions the modelled two structure spherical models yielded the same ranges of 500 m to the first structure and 800 m to the second. Based on the sample spacing and validated by means of a kriging neighbourhood analysis (KNA), a parent block size of 200 m(E) x 200 m(N) x 4 m(RL) or nominally half the average drill section spacing, was selected for the model. Sub-cells down to 12.5 m(E) x 25 m(N) x 0.25 m(RL) were used to honour the geometric shapes of the modelled mineralisation. The search ellipse orientations were defined as being horizontal based on the overall geometry of the mineralisation and with reference to the variogram modelling study. The search ellipse was doubled for the second search volume and then increased ten-fold for the third search volume to ensure all blocks found sufficient samples to be estimated. The search ellipse dimensions of 650 m x 650 m x 10 m, have been optimised by means of the KNA. A minimum of 12 and a maximum of 24 samples, based on the KNA results, were used to estimate each parent block for both zones. These numbers were reduced for the second search volume to 12 and 20 samples and in the third search volume to 8 and 16 samples. A maximum number of five samples per drillhole were allowed. Based on the results from the KNA, cell discretisation was 3 (E) x 3 (N) x 4 (RL) and no octant-based searching was utilised.

Criteria	Commentary
	Model validation was carried out visually, graphically, and statistically to ensure that the block model grade reasonably represents the drillhole data. Cross sections, long sections and plan views were initially examined visually to ensure that the model grades honour the local composite drillhole grade trends. These visual checks confirm the model reflects the trends of grades in the drillholes. Statistical comparison of the mean drillhole grades with the block model grade shows reasonably similar mean grades. The IDS check estimate shows similar grades to the OK model, adding confidence that the grade estimate has performed well. The model grades and drill grades were then plotted on histograms and probability plots to compare the grade population distributions. This showed reasonably similar distributions with the expected smoothing effect from the estimation taken into account. Swath or trend plots were generated to compare drillhole and block model with SiO_2% grades compared at 400 m E, 400 m N and 4 m RL intervals. The trend plots generally demonstrate reasonable spatial correlation between the model estimate and drillhole grades after consideration of drill coverage, volume variance effects and expected smoothing. The Aircore drilling area Mineral Resources were estimated using a polygonal area weighted analysis using equidistant polygons generated from the location of the Aircore drill holes. The down hole widths and grades were determined by visual and statistical analysis to determine the average grades in the volume defined by the polygons, where this extended below 3m above the year 2000 water table, this higher level was used. No reconciliation data is available as no mining has taken place.
Moisture	Tonnages have been estimated on a dry, in situ, basis. The sampled sand material was generally reasonably dry, with data collected from the density testing of seven intervals showing an average moisture content of 1.8%.
Cut-off parameters	No cut-off parameters have been applied, as the sand appears to be readily amenable to beneficiation to a suitable product specification through relatively simple metallurgical processes as demonstrated by initial reported metallurgical testing results.
Mining factors or assumptions	It has been assumed that this deposit will be amenable to open cut mining methods and are economic to exploit to the depths currently modelled. No assumptions regarding minimum mining widths and dilution have been made. No mining has yet taken place.
Metallurgical factors or assumptions	A composite aircore sample of 104 white, 45 brown and 4 coffee rock (sand) intervals from Muchea was tested in Ireland during 2018. The sample was screened at 4mm to remove oversize particles. The remaining material was then subjected to an attrition process followed by spiral and magnetic separation methods. Attrition testing was carried out a retention period of 5 minutes, with the sample washed after attritioning to remove any liberated fine particles. Spiral testing was then carried out with approximately 80kg of attritioned material, after which the samples then underwent wet magnetic separation to explore the possibility of reducing the magnetic mineral content. Chemical analysis showed a general decrease in the Al_2O_3. Processing, attritioning and washing the material removed the largest fraction of Al_2O_3. The spiral separation process produced samples where the largest fraction of Al_2O_3 was found in the heavy mineral fraction. Magnetic separation resulted in the largest fraction of Al_2O_3 being in the magnetic fraction. The results for Fe_2O_3 follow the same general trend as for Al_2O_3. The percentage fraction of SiO_2 in the samples increased during the test process. Attritioning and washing the material removed fines and silt, which increased the SiO_2 content. The spirals test produced samples where the largest fraction of SiO_2

Criteria	Commentary
	was found in the light fraction. Magnetic separation indicated that the largest fraction of SiO_2 was in the middling fraction. Two composite samples of brown sand and two composites of coffee sand were submitted to a laboratory in Perth for preliminary process tests to assess amenability for upgrading the silica content and removing impurities. It was concluded that one of the samples, known as 'Brown #1', which had the highest initial SiO_2 content, also showed the best potential to be upgraded to glass grade. CSA Global is of the opinion that further process testwork is required to verify whether the brown or coffee sands are amenable to purification and if so, which markets may be supplied. In the production of glass, there is both the need and requirement for silica to be chemically pure (composed of over 98% SiO2), of the appropriate diameter (a grain size of between approximately 0.1 mm and 0.4 mm and with low iron content (less than approximately 0.04% Fe2O3). CSA Global is of the opinion that available process testwork indicates that product quality is considered favourable for eventual economic extraction and production of silica sand for glass markets. In addition, project location and logistics support the classification of the Muchea deposit as an industrial mineral Mineral Resource in terms of Clause 49 of the JORC Code.
Environmental factors or assumptions	No assumptions regarding waste and process residue disposal options have been made. It is assumed that such disposal will not present a significant hurdle to exploitation of the deposit and that any disposal and potential environmental impacts would be correctly managed as required under the regulatory permitting conditions. VRX has indicated that initial botanical studies are underway, and in the modelling the top 500 mm is reserved for rehabilitation purposes and is depleted from the model and is not reported.
Bulk density	Four, certified, dry in situ bulk density measurements were completed by Construction Sciences Pty Ltd using a nuclear densometer. The results from the four measurements are corrected based on the measured moisture factor. The mean dry in situ density result of 1.66 t/m^3 is used for all modelled material reported in the MRE.
Classification	Classification of the MRE was carried out accounting for the level of geological understanding of the deposit, quality of samples, density data, drillhole spacing and geostatistical parameters. The MRE has been classified in accordance with the JORC Code (2012 Edition) using a qualitative approach. All factors that have been considered have been adequately communicated in Section 1 and Section 3 of this Table. Overall the mineralisation trends are reasonably consistent over the drill sections. The MRE appropriately reflects the view of the Competent Person.
Audits or reviews	Internal audits were completed by CSA Global, which verified the technical inputs, methodology, parameters, and results of the estimate. No external audits have been undertaken.
Discussion of relative accuracy/ confidence	The relative accuracy of the MRE is reflected in the reporting of the Mineral Resource as per the guidelines of the JORC Code (2012). The Mineral Resource statement relates to global estimates of in situ tonnes and grade.