



The large tonnage of white quartz sand at Santa Maria Eterna is of superior quality with high grades of silica and exceptionally low levels of impurities. ([Source](#))

#### COMPARISON OF SILICA SAND PROJECTS GLOBALLY

## HOMERUN IN BAHIA: AT THE FOREFRONT OF ONE OF THE WORLD'S HIGHEST QUALITY SILICA SAND DISTRICTS

Since [initiating coverage](#) on Homerun Resources Inc. in June, the company's share price has more than doubled and last traded at \$0.90 with a current market capitalization of \$43 million. This impressive performance was backed by major announcements in [July](#) (receipt of signed Material Supply Agreement for high-purity silica sand from a district-scale, fully permitted mine in Bahia, Brazil) and [August](#) (execution of a confidentiality commitment document with Companhia Baiana de Pesquisa Mineral (CBPM) to complete due diligence and to negotiate the terms to explore and develop additional high-purity silica resources controlled by CBPM in Belmonte, Bahia, near the Port of Ilheus).

Shortly thereafter, Homerun launched a new [website](#) and published a [corporate presentation](#) disclosing highly interesting details about its silica sand supply from the Bahia Silica Sand District and that management is "working to finalize lease or ownership relationships with the two Brazilian companies".

In this respect, it might be worthwhile to compare the Bahia Silica Sand District (also known as the Santa Maria Eterna formation) with other producing silica sand regions and publicly listed

development companies in terms of tonnage, grade, and most importantly the reduction of impurities with simple (or complex) processing methods in order to fulfill the strict specifications for the manufacture of solar glass, a strongly growing industry paying high prices and targeted by most silica sand developers.

In view of all the challenges that many other silica sand projects are facing (e.g. complex metallurgy, tortuous permitting), the advantages and opportunities for Homerun come to light.

#### Company Details



Homerun Resources Inc.  
#2110 - 650 West Georgia Street  
Vancouver, BC, V6B 4N7 Canada  
Phone: +1 844 727 5631  
Email: [info@homerunresources.com](mailto:info@homerunresources.com)  
[www.homerunresources.com](http://www.homerunresources.com)

ISIN: CA43758P1080 / CUSIP: 43758P

Shares Issued & Outstanding: 47,504,525



▲ Chart Canada (TSX.V)

Canada Symbol (TSX.V): [HMR](#)  
Current Price: \$0.90 CAD (09/05/2023)  
Market Capitalization: \$43 Million CAD



▲ Chart Germany (Frankfurt)

German Ticker / WKN: [5ZE / A3CYRW](#)  
Current Price: €0.605 EUR (09/06/2023)  
Market Capitalization: €29 Million EUR

All \$-figures in CAD unless otherwise stated.



Homerun's latest corporate presentation not only shows pictures of the extremely white-coloured silica sand (i.e. very few impurities) at the fully permitted **Santa Maria Eterna mine** within the Bahia Silica District, but also states Measured & Indicated Resources totaling 96.7 million t from "Operator 1", with whom Homerun signed a supply agreement in July. When comparing the tonnage and grades with some of the world's largest and highest quality silica sand mines in Australia, along with select development projects, Homerun's supply agreement puts the company on top of the list, especially if management succeeds in finalizing a lease or ownership relationship.



In August, Homerun announced an agreement with Bahia's state-owned company **CBPM** ("Operator 2") who controls silica sand deposits in the same district with limited resources delineated to date (20 million t at similar grades as "Operator 1") yet with an exploration target of >200 million t.

## BAHIA SILICA DISTRICT HIGHLIGHTS



### Enormous Demand

A study by World Bank revealed that the silicon sand industry has been contracting for the past two years due to a lack of silica. This shortage is likely to continue as China's demand for silicon sand grows exponentially. In fact, the country consumes around 50% of the global silica sand. Manufacturers have also been forced to switch to other materials, such as glass and aluminum, which may have an adverse effect on their performance.



- **Operator 1: permitted indefinitely** for full-scale production up to **2.5M tonnes annually** over 5 concessions with opportunity to expand, to 9 concessions.
- Operator 1 has been in limited production via a third-party mining contractor since April 2021 selling raw material with no processing at an EBITDA of +60%.
- **Cost to extract approximately 1 tonne of material is below \$10 USD/tonne.**
- Operator 1 has a single customer that is based in Sao Paulo and purchasing raw material for \$20 USD/tonne and processing the raw silica in Sao Paulo, where it is reselling it for over \$150 USD/tonne.
- **Operator 2:** is a Bahia State government organization with a 20 million tonne resource of similar grade that is covering only 10% of their holdings. It is Homerun's view that this resource will eventually be +200 million tonnes.
- The District is located only ~50km from shoreline and in close **proximity to several active nearby ports** with direct road access and capability for additional product shipping.
- The Bahia Silica District has a +100 year LOM resource with low iron content and other impurities are extremely low which is why the District is considered World Class.
- A reputable **German engineering firm has conducted extensive testing and will be engaged when required to engineer the processing facility.**
- **Local landowners support the development.**

"Homerun has entered into an interim supply agreement with a Brazilian company for raw HPQ silica sand from its resources in the Bahia Silica Sand District in the Bahia State of Brazil. Homerun is working to finalize lease or ownership relationships with the two Brazilian companies that share ownership of the large HPQ silica resources in the District. The supply agreement is backed by a **fully permitted operation with an annual allowance of up to 2.5M tonnes and an Indicated Resource of 94,894,847 tonnes with an average grade of 99.88% SiO<sub>2</sub>, 48ppm Fe, 160ppm Ti, and 102ppm Ca and a Measured Resource of 1,836,631 tonnes with an average of 99.75% SiO<sub>2</sub>, 158ppm Fe, 521ppm Ti and 93ppm Ca.** This HPQ silica will be Homerun's initial supply from the District and will be processed and shipped from port facilities located in Ilheus and / or Salvador, Bahia." ([Source](#))



**Excerpts from the article [“Bahia will encourage strategic mineral projects for energy transition”](#) (August 21, 2023):**

“Henrique Carballal, president of CBPM, said that the state wants to encourage the discovery, production and processing of minerals that will boost the energy transition that promises to revolutionize the world economy in the coming decades. In addition, invest in the creation of infrastructure and logistics... “The presence of CBPM is important to establish the necessary dialogues to find partnerships and also so that we can influence the federal government in the construction of logistics, infrastructure, because we need, in addition to discoveries, promotion so that the private sector can develop the extraction, production and processing of most of these ores in the state,” said Carballal... The Companhia Baiana de Pesquisa Mineral (CBPM) is a case of success among state-owned companies in Brazil that operate in mining. The company researches mineral resources in the territory of Bahia, encourages their economic use through partnerships with the private sector. Some examples of how this partnership works are the nickel projects, by Atlantic Nikel, in Itagiba; vanadium and titanium from Largo Resources, in Maracás, and the Canadian company Equinox, which started producing gold in the municipality of Santa Luz.”

**Excerpts from the article [“From the top of CBPM, Carballal promises new investments for mining in Bahia”](#) (August 27, 2023; freely translated from Portuguese):**

“Two months into his new position as head of the Companhia Baiana de Pesquisa Mineral (CBPM), Henrique Carballal spoke about his goal to make Bahia, Brazil’s 3rd largest mining state, an increasingly important player in the sector and an attractive destination for the establishment of factories and operations that will turn the state’s economic machine around. “I think you’re in for some big surprises. I can’t divulge everything, because at CBPM we’re executing the policy and the guiding light of this process is Governor Jerônimo, so he’s the one who should announce it, but



**On August 1, 2023, the signing of a confidentiality commitment document between Homerun and CBPM was announced. From left to right:** Manoel Barretto (CBPM’s Technical Director), Henrique Carballal (CBPM’s President), Brian Leeners (Homerun’s CEO). **About CBPM:** Companhia Baiana de Pesquisa Mineral (CBPM) is the mineral research and development company of the State of Bahia, Brazil. Its activities are centered on expanding and improving geological knowledge of the Bahian territory, by identifying and researching its mineral resources and promoting their use by attracting private initiatives to this end. Founded on December 18, 1972, CBPM is recognized as one of the most dynamic companies in mineral research in Brazil. The collection of geological data and information, generated and disseminated by it has contributed to making the State of Bahia one of the best studied and geologically known Brazilian states, highlighting the great diversity of its geological environments and mineral deposits. CBPM’s stated mission is to promote the development of the mineral sector in the State of Bahia with technical, economic and social efficiency, in harmony with the preservation of the environment. ([Source](#))

later this year we should have 2 factories coming to Bahia, one for cement and one for silica,” he said and added: “[...] **We also have an area of silica that will be handed over to the private sector, with a commitment to set up another factory to process this silica here in Bahia.**” In 2022, Bahia’s commercialized mineral production grew by 7%, with a gross value of R\$10.2 billion, according to data from the Brazilian Mining Institute (IBRAM). The sector has more than 14,000 direct jobs and around 150,000 more indirect jobs. According to Car-

ballal, **“Bahia will be the next big thing in mining.** The mineral production that Bahia will grow even more is linked to minerals that are fundamental to the energy transition. We need to ensure that this mineral exploitation takes place while respecting the environment and fundamental social policies, but we also need to understand that Bahia cannot miss out on this opportunity. We are in a position to attract large industries here and supply the thirst that the world market will have for everything linked to the energy transition.”



**Independent third-party testing of Homerun's silica sand supply (Santa Maria Eterna Formation, Bahia, Brazil) indicates very low impurities in its raw form and even lower impurities with physical and chemical processing**

	Al [ppm]	Fe [ppm]	Na [ppm]	K [ppm]	Li [ppm]	Ti [ppm]	Zr [ppm]	Ca [ppm]	Mg [ppm]	Cr [ppm]	Mn [ppm]	Cu [ppm]	Sum [ppm]
<b>Chemical analyses of raw quartz sand</b>													
Raw quartz sand	17.5	5.5	2.7	1.3	0.08	150	5.2	90	33	0.13	0.12	<0.05	306
<b>Physical processing</b>													
Fraction 0.1-0.5 mm	10.6	3.3	1.5	0.9	0.12	23.5	8.7	98	35.1	<0.05	<0.05	<0.05	182
After scrubbing	12.4	2.4	1.7	1.3	0.08	21.5	0.59	98	36.1	<0.05	<0.05	<0.05	174
Flotation F1	12.2	1.7	2.2	1.4	0.17	16.4	0.44	97	35.7	<0.05	<0.05	0.12	167
NonMag3	11.0	1.8	1.6	1.7	0.08	25.8	0.52	94	34.6	0.05	<0.05	<0.05	172
NonMag4	13.1	1.7	1.6	1.6	0.29	19.4	0.51	91	34.5	0.05	0.08	0.4	164
NonMag5	11.0	1.6	1.7	1.6	0.10	17.5	0.74	88	33.1	0.05	<0.05	<0.05	155
Flotation F2 of NonMag5	12.7	1.6	2.1	1.2	0.19	18.8	0.62	85	33.9	<0.05	<0.05	<0.05	156
<b>Chemical process after scrubbing</b>													
Acid washing AW1 (HF std.)	10.3	1.3	1.7	0.86	<0.1	13.5	0.30	86	34.8	<0.05	<0.05	<0.05	149
Acid washing AW2 (HCl)	10.4	1.6	1.6	1.1	<0.1	21.3	0.45	89	35.4	<0.05	<0.05	<0.05	161
<b>Typical products</b>													
Optical glass Type I		<1								<0.005	<0.005	<0.005	
Optical glass Type II		<5								<0.1	<0.1	<0.1	

**Excerpts from the article [“Municipal Government promotes mining opportunity and economic boost in Santa Maria Eterna – Belmonte”](#) (2021; freely translated from Portuguese):**

“The municipality [of Belmonte in Bahia] seeks partnerships with the State Government and the private sector to generate new business opportunities and offer jobs and income to the community of Santa Maria Eterna... Studies by the Secretary of Industry, Commerce and Mining of the State of Bahia, indicate that **Santa Maria Eterna is privileged with high purity silica sand**, as it has rigorous specifications to lend itself to the manufacture of transparent flat glass and special glass, which can generate, as a by-product, fine sand applicable in the ceramic industry (white and glazed ceramics). The silica sand from Santa Maria Eterna can also be used in the production of sodium silicate and in the production of silicon tetrachloride and its derivatives. With economic compensation, even purer sands can be obtained by magnetic separation and/or acid leaching.”



The picture shows initial, small-scale mining activity at the Santa Maria Eterna deposit within the Bahia Silica District. Studies indicate that the district is privileged with high-purity silica sand and one of the world’s lowest impurity levels, which can be reduced further with processing as the above table indicates. ([Source](#))



## Select High-Purity Silica Sand Deposits

Deposit	Location	Project Level	Tonnage	Silica Grade & Impurities	Grades & Impurities After Processing	End-Product (Potential for Non-Mines)	Projected Mine Life	Projected Annual Production	Projected OPEX	Projected CAPEX	Owner	Stock Symbol	Market Capitalization
<b>Santa Maria Eterna</b>	Bahia, Brazil	Active Mine (small-scale production since 2021)	Indicated: 94.9 million t Measured: 1.8 million t	Indicated: 99.88% Si 48 ppm Fe 160 ppm Ti Measured: 99.75% Si 158 ppm Fe 521 ppm Ti	After washing/scrubbing: 99.98% Si 2.4 ppm Fe 21.5 ppm Ti 12.4 ppm Al <0.05 ppm Cr <0.05 ppm Mn <0.05 ppm Cu (all impurities: 174 ppm)	Solar Glass (≤120 ppm Fe) and/or Optical Glass Type II (<5 ppm Fe <0.1 ppm Cr <0.1 ppm Mn <0.1 ppm Cu)	Entire Bahia Silica District: >100 years	Up to 2.5 million t (permitted)			Homerun Resources Inc. (not the owner but supply agreement in place)	TSXV: HMR	43 million CAD
<b>Wanipigow</b>	Manitoba, Canada	Resource Estimate (2021); Processing (2021 by CMP)	Inferred: 7.25 million t	Technical Report (2021) does not show resource grades but "LBI-Zone" samples from 2018-drilling: 96.3% Si 1300 ppm Fe 1000 ppm Ti 14400 Al Corporate Presentation (2023) states 99.6% SiO <sub>2</sub> and 92 ppm Fe (presumably after chemical processing, no details disclosed)	After intense attrition + desliming, classification, density separation, 2 steps of magnetics: 99.5% Si 100 ppm Fe <100 ppm Ti 900 ppm Al Further chemical treatment with acids recommended to ensure: ≤120 ppm Fe 99.7% Si 60 ppm Fe <100 ppm Ti 1000 ppm Al	Solar Glass (patterned)	35 years	300,000 t		\$400-\$500 million CAD ("Class 4") for sand extraction and solar glass manufacturing facilities	Canadian Premium Sand Inc.	TSXV: CPS	36 million CAD
<b>Cape Flattery</b>	Queensland, Australia	Active Mine (since >50 years)	>500 million t	Not disclosed	After "extensive washing and filtering process": 99.93% Si 100 ppm Fe 200 ppm Ti 300 ppm Al	90% of the world's flat-screen TVs (2014); End-users not disclosed, possibly Solar Glass		3 million t (permitted since many years)			Mitsubishi Corp. (since 1977)	TYO: 8058	74 billion USD (11 trillion JPY)
<b>Cape Flattery (adjacent to Cape Flattery Mine)</b>	Queensland, Australia	DFS (2023)	Probable: 47 million t Measured, Indicated & Inferred: 49.5 million t	Reserves: 99.11% Si 900 ppm Fe 1400 ppm Ti 1500 ppm Al	Bulk sample testwork (ongoing) from first 5 years of operation indicates a final non-magnetic product with 100 ppm Fe (from 600 ppm Fe head grade)	Solar Glass (2022-MOU with Mitsui & Co., one of largest trading & investment companies from Japan)	25 years	1.5 million t		34.06 AUD/t (FOB cash costs incl. royalties; "real mid-2025")	Metallica Minerals Ltd.	ASX: MLM	20 million AUD
<b>Galalar (adjacent to Cape Flattery Mine)</b>	Queensland, Australia	PFS (2021)	Probable: 32.5 million t Measured, Indicated & Inferred: 75.46 million t	Reserves: 99.20% Si 800 ppm Fe 1100 ppm Ti 1300 ppm Al Resources: 99.18% Si 900 ppm Fe 1200 ppm Ti 1200 ppm Al	After screening, gravity, attrition, classification + magnetic separation: 99.9% Si 105 ppm Fe 180 ppm Ti 420 ppm Al (from 870 kg sample: 99.6% Si 300 ppm Fe 610 ppm Ti 690 ppm Al)	Solar Glass and/or Speciality Glass (2022-JV with Sibelco from Europe with ties to Asian fibre and display glass market)	23.5 years (first 10 years exploiting sand with 490-930 ppm Fe, averaging 620 ppm, then <1200 ppm)	1.3 million t	33.9 AUD/t	67.9 million AUD	Diatreme Resources Ltd.	ASX: DRX	94 million AUD
<b>NSP (adjacent to Cape Flattery Mine)</b>		Scoping Study & Resources Estimate (2023)	Indicated & Inferred: 235 million t	99.29% Si 1100 ppm Fe 1500 ppm Ti 1100 ppm Al	From 5 samples with 99.5-99.7% Si (without magnetic separation to reduce CAPEX): 99.9% Si 110 ppm Fe 147 ppm Ti 297 ppm Al (commercial plant processing likely 5-10% higher Fe and Al)	Solar Glass (2023-MOU with Flat Glass Group Co Ltd. from China) and/or Speciality Glass (2022-JV with Sibelco from Europe with ties to Asian fibre and display glass market)	25 years	3-5 million t		27.40 AUD/t (FOB incl. royalties)			356 million AUD (initial for 3 million t annually) plus 179 million AUD to increase production to 5 million t annually

Green highlighted grades: ≥99.5% Si; Blue highlighted grades: Potentially suitable for solar glass with ≤120 ppm Fe; OPEX: Operating Expenditures (production/cash costs per unit); CAPEX: Capital Expenditures (for construction of mine and processing facilities); HLS: Heavy Liquid Separation; HAL: Hot Acid Leach; BFS: Bankable Feasibility Study; DFS: Definitive Feasibility Study; PFS: Pre-Feasibility Study; FOB: Free On Board (includes transportation to vessel); Silica grades in % and impurities in ppm (parts per million; e.g. 48 ppm = 0.0048%); Si = silicon dioxide SiO<sub>2</sub>; Fe = iron oxide Fe<sub>2</sub>O<sub>3</sub>; Ti = titanium dioxide TiO<sub>2</sub>; Al = aluminum oxide Al<sub>2</sub>O<sub>3</sub>; Reserves (Probable); Resources (Measured, Indicated and/or Inferred).

NOTES: Australian resource/reserve estimates according to JORC; Brazilian and Canadian resource/reserve estimates according to NI 43-101. Some companies' market capitalizations are not only based on the referenced projects. Sources: Rockstone Research, public company reports and financial company information as of September 5, 2023.

The table (continued on the next page) compares Homerun's supply agreement (Santa Maria Eterna mine in Bahia, Brazil) with other active mines and select publicly traded companies' high-purity silica sand projects. With 99.88% SiO<sub>2</sub>, Santa Maria Eterna has the second-highest silica grade of all referenced projects (after Australian Silica Quartz Group Ltd.'s Albany deposit in Western Australia with 99.93%), however hosting a much larger resource (96.7 million t) than Albany (11.6 million t). In regards to the most crucial impurity (iron oxide), Albany (46 ppm Fe<sub>2</sub>O<sub>3</sub>) has a bit lower level in its resour-

ces than Santa Maria Eterna (48 ppm). Most importantly, none of the referenced projects has demonstrated to reduce the iron impurity as low as Santa Maria Eterna (2.4 ppm), whereas this feat is accomplished with simple washing/scrubbing. Most other projects have great difficulty in reducing the iron impurity to meet the strict specifications of solar glass (≤70 ppm Fe<sub>2</sub>O<sub>3</sub>; some other sources state 120 ppm as maximum), that is to say even with extensive physical or even chemical processing methods resulting in high upfront capital costs (CAPEX) to built such complex processing plants.

The table reveals that the Santa Maria Eterna deposit is exceptional in terms of hosting large resources with very low impurities. On top of that, the advantage of Santa Maria Eterna being a permitted mine (up to 2.5 million t annually) can not be understated as Australian projects have shown that permitting is a lengthy and cumbersome process with an uncertain outcome, resulting in relatively low market capitalizations despite supply agreements in place (or in sight) as off-takers scramble to lock in any potential future supply despite metallurgical and/or permitting challenges.



## Select High-Purity Silica Sand Deposits

Deposit	Location	Project Level	Tonnage	Silica Grade & Impurities	Grades & Impurities After Processing	End-Product (Potential for Non-Mines)	Projected Mine Life	Projected Annual Production	Projected OPEX	Projected CAPEX	Owner	Stock Symbol	Market Capitalization
Arrowsmith North		BFS (2019); Resource Estimate (2022)	Probable: 209 million t Measured, Indicated & Inferred: 768 million t	Reserves: 99.7% Si 500 ppm Fe 350 ppm Ti 2000 ppm Al Resources: 98% Si 3000 ppm Fe 2000 ppm Ti 9000 ppm Al	After "screening, attrition & magnetic separation": 99.67% Si 410 ppm Fe 200 ppm Ti 1800 ppm Al (from sample: 97.79% Si 3880 ppm Fe 1100 ppm Ti 11310 ppm Al)	Glass; Foundry; Ceramics	25 years (all reserves: 102 years)	1.8 million t	30.18 AUD/t	28.3 million AUD			
Arrowsmith Central <i>(in May 2023, both projects were somewhat combined into newly named Arrowsmith Brand)</i>	Western Australia	BFS (2019)	Probable: 16.8 million t Indicated & Inferred: 76.5 million t	Reserves: 99.6% Si 400 ppm Fe 300 ppm Ti 2500 ppm Al Resources: 96.8% Si 4000 ppm Fe 2000 ppm Ti 15000 ppm Al	After "screening, attrition & magnetic separation": 99.46% Si 300 ppm Fe 2600 ppm Ti 1300 ppm Al (from sample: 97.35% Si 2500 ppm Fe 5700 ppm Al)	Flat Glass; Container Glass; Foundry; and /or Ceramics	25 years	2 million t	27.67 AUD/t	25.9 million AUD	VRX Silica Ltd.	ASX: VRX	62 million AUD
Muchea		BFS (2019)	Probable: 18.7 million t Indicated & Inferred: 208 million t	Resources: 99.6% Si 200 ppm Fe 1000 ppm Ti 600 ppm Al	After "screening, attrition, classifier, spiral & magnetic separation": 99.84% Si 70 ppm Fe 18 ppm Ti 26 ppm Al (from sample: 99.64% Si 170 ppm Fe 410 ppm Ti 560 ppm Al)	Solar Glass	25 years (initially)	2 million t	32.74 AUD/t	32.8 million AUD			
Eneabba / Nova	Western Australia	Scoping Study (underway); Resource Estimate (2021)	Inferred: 132 million t	99.24% Si 500 ppm Fe 400 ppm Ti 3600 ppm Al							Suvo Strategic Minerals Ltd.	ASX: SUV	22 million AUD
Beharra	Western Australia	PFS (2021)	Probable: 64.1 million t Indicated: 125.8 million t	Reserves: 98.6% Si 1950 ppm Fe 3460 ppm Ti 4240 ppm Al Resources: 98.2% Si 2300 ppm Fe 3600 ppm Ti 4100 ppm Al	After screening, desliming, gravity, magnetic separation: 99.6% Si 276 ppm Fe 369 ppm Ti 1789 ppm Al	Glass; Foundry	32 years	1.5 million t	43 AUD/t FOB	39 million AUD	Perpetual Resources Ltd.	ASX: PEC	12 million AUD
Stockyard	Western Australia	Scoping Study (underway); Resource Estimate (2023)	Indicated & Inferred: 12.4 million t	98.8% Si 1278 ppm Fe 2377 ppm Ti 2578 ppm Al	No news with detailed metallurgical results since extraction of 20 t bulk sample (washed) in 2022 shipped to potential offtake partner Shandong Hongbote Solar Technology Co. Ltd. In 2023, 200 kg samples sent to China for processing testworks achieving 99.7% Si, 100 ppm Fe, 100 ppm Al, 1000 ppm Ti with attrition + permanent magnet + wet high intensity magnetic separation.						Industrial Minerals Ltd.	ASX: IND	26 million AUD
Sparkler	Western Australia	Resource Estimate (2022)	Inferred: 70 million t	96.84% Si 3400 ppm Fe 4300 ppm Ti 11700 ppm Al	After wet screening, attrition; HLS float & magnetic separation: 99.66% Si 200 ppm Fe 300 ppm Ti 600 ppm Al	Glass; Foundry					Allup Silica Ltd.	ASX: APS	2 million AUD
Albany / Mindijup	Western Australia	Active Mine (since 28 years); Reserves (2021); Grades (from samples according to Geological Survey of Western Australia, 2003)	Reserves: 5 million t	99.5% Si <100 ppm Fe 400-1700 ppm Ti 200 ppm Al (from samples)	Wet screening and gravity (60% of mined sand is exported, rest oversize and undersize): 99.9% Si 500 ppm Ti 100 ppm Al	Glass; Foundry; End-users not disclosed, possibly Solar Glass	11 years (2032)	170,000 t (2004-2021)			AustSand Mining Ltd. (71% Tochu Corp.; 20% Toyota Tsusho Corp.; 9% Tsuneshi Holdings Corp.)	Private	-
Albany (adjacent to Albany / Minjup Mine)	Western Australia	Scoping Study (underway) / Resource Estimate (2021)	Inferred: 8.2 million t (fine) and 3.4 million t (coarse)	Fine: 99.93% Si 46 ppm Fe 410 ppm Ti 145 ppm Al Coarse: 99.91% Si 43 ppm Fe 668 ppm Ti 137 ppm Al		Solar Glass		0.5-1 million t			Australian Silica Quartz Group Ltd.	ASX: ASQ	21 million AUD

**Green highlighted grades:** ≤99.5% Si; **Blue highlighted grades:** Potentially suitable for solar glass with ≤120 ppm Fe; **OPEX:** Operating Expenditures (production/cash costs per unit); **CAPEX:** Capital Expenditures (for construction of mine and processing facilities); **HLS:** Heavy Liquid Separation; **HAL:** Hot Acid Leach; **BFS:** Bankable Feasibility Study; **DFS:** Definitive Feasibility Study; **PFS:** Pre-Feasibility Study; **t:** metric tons; **FOB:** Free On Board (includes transportation to vessel); Silica grades in % and impurities in ppm (parts per million); e.g. 48 ppm = 0.0048%; **Si** = silicon dioxide SiO<sub>2</sub>; **Fe** = iron oxide Fe<sub>2</sub>O<sub>3</sub>; **Ti** = titanium dioxide TiO<sub>2</sub>; **Al** = aluminum oxide Al<sub>2</sub>O<sub>3</sub>; **Reserves** (Probable); **Resources** (Measured, Indicated and/or Inferred). **NOTES:** Australian resource/reserve estimates according to JORC; Brazilian and Canadian resource/reserve estimates according to NI 43-101. Some companies' market capitalizations are not only based on the referenced projects. **Sources:** Rockstone Research, public company reports and financial company information as of September 5, 2023.

Note that silica sand grades and mineralization described in similar deposits on other properties are not representative of the mineralization on Homerun's or its partner's properties, and historical work and activities on its properties have not been verified and should not be relied upon.



## BRAZIL

### SANTA MARIA ETERNA

Excerpts from [“Quartz sand resources in the Santa Maria Eterna formation, Bahia, Brazil: A geochemical and morphological study”](#) (2015):

High purity quartz has been an essential raw material for several industrial applications, such as the production of silica glass, a key material for high-end products, for example UV-lamps for purifying water, poly- and monocrystalline silicon solar cells, through its use as material crucibles and special devices with low thermal expansion. To be turned into a good quality silica glass, the quartz raw material must have unique characteristics. It must be pure, containing only traces of metallic impurities such as Al, Fe, and Ti, which can severely compromise the silica glass' quality, jeopardizing its applications.

Regarding the manufacturing of crucibles, all excess [impurities] can generate brown spots in the glass when it is in contact with the silicon melt and produce devitrification, reducing the device's lifetime. Additionally, Fe, Ti, and other metallic impurities can contaminate the silicon melt. In the case of lenses and tubes, chemical pollutants can significantly affect the transmittance, especially in the

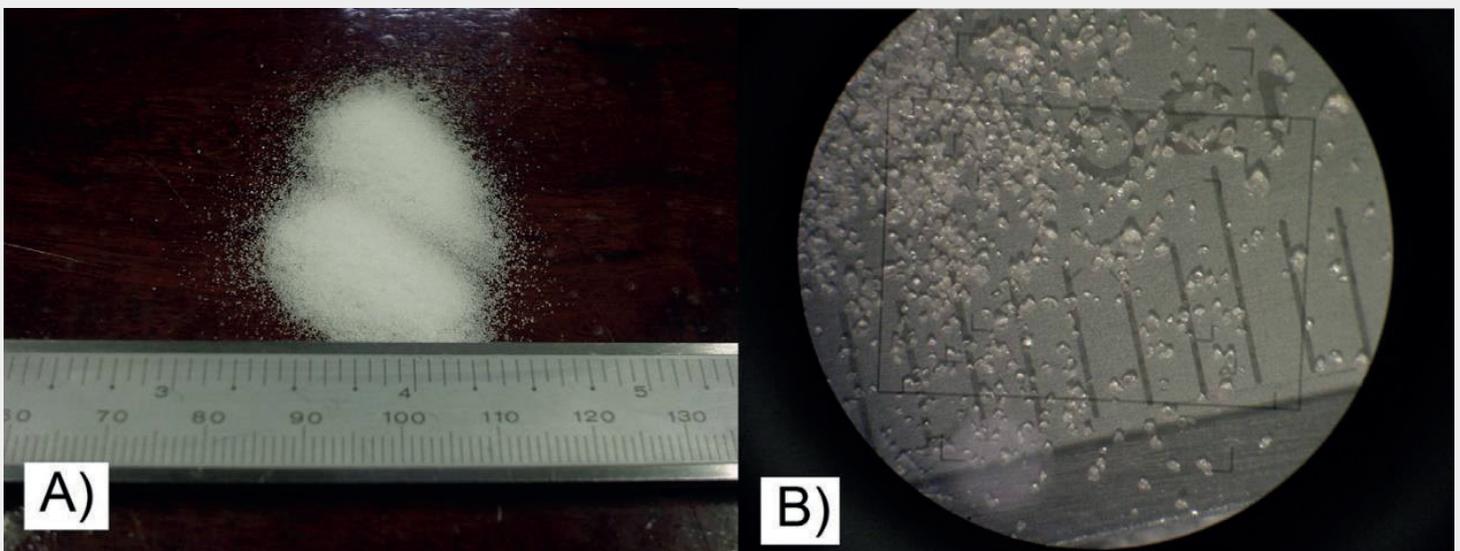


Image of the sand outcropping (upper part of the photo) at the Santa Maria Eterna silica deposit.

ultraviolet range. Quartz for silica glass production must also contain low amounts of fluid inclusions. Such inclusions can produce bubbles during the fusion of the raw material into silica glass. Usually, the amount of fluid inclusions in quartz is related to its opacity, which can be used to grade the samples to obtain better material quality.

**Quartz resources with such characteristics are rare and their exploitation and processing are very**

**costly. Often, companies start from less pure raw materials and use industrial processing to achieve the desired chemical purity.** Such processing commonly involve acid leaching using HF and other hazardous materials. The higher the amount of impurities in the raw material, the more expensive and environmentally damaging is the purifying process. Some chemical impurities, as Al, Ti and Ge, substitute Si atoms in the quartz lattice and are much harder to be removed than Na, Ca and K that are often located in fluid inclusions.



**Overall aspect of the sand.** (A) shows the material as it is in nature, as gravel, and (B) shows the gravel in a low magnification photograph. (Santos et al., 2015)

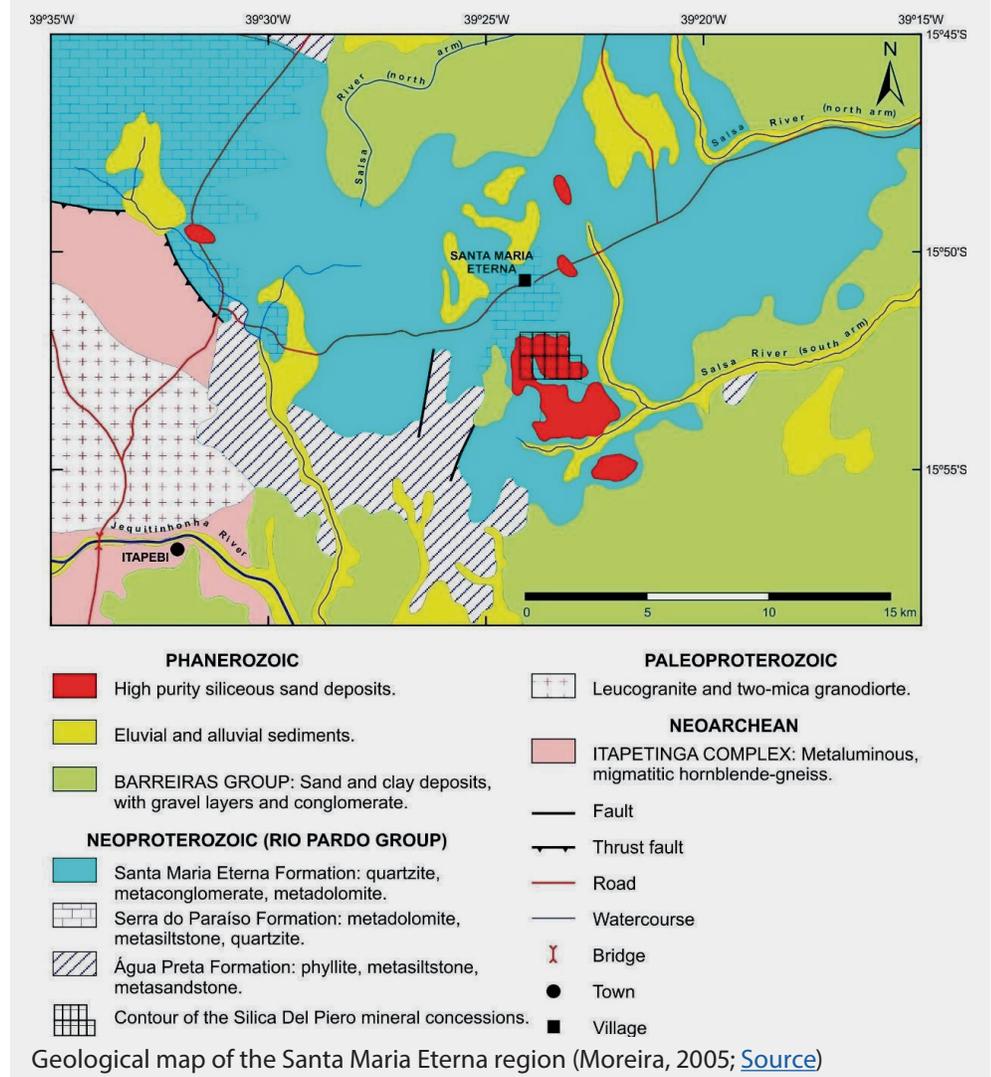


As a result, the chemical composition of the raw material, that is, the abundance and characteristics of its impurities, is a key factor in determining the economic potential of the quartz resource.

Brazil hosts many different kinds of quartz resources, many of them with a high degree of purity and favorable technological characteristics for silica glass production. However, most of the mines ascribed with high chemical purity, are rocky quartz deposits, but there are a number of quartz sand deposits as well. Most quartz sand deposits explored in the country are located in south and southeastern Brazil and are widely used by float glass manufacturers.

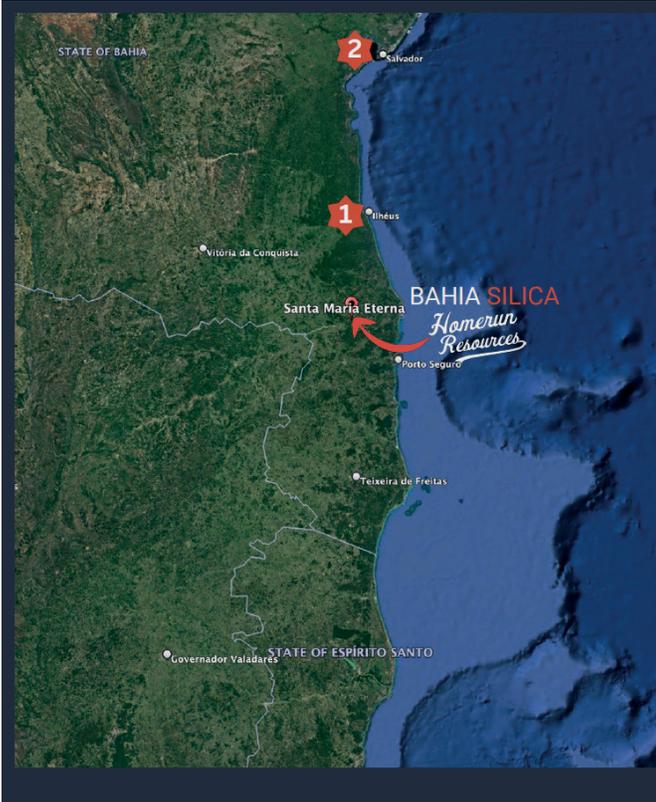
**In this study, a newly discovered quartz sand deposit of economic potential, located in the state of Bahia, northeast Brazil, is described. Samples from the deposit were characterized by Inductively Coupled Plasma Mass Spectrometry (ICP-MS), fluid inclusion analysis, Scanning Electron Microscopy (SEM), cathodoluminescence and fusion over silica plate to document the chemical and physical properties of the raw material. This information were analyzed in order to evaluate whether or not the sand is fit for producing silica glass and to better understand its geological history.**

The deposit is located in a geological formation called Formação Santa Maria Eterna, in the south of the Bahia State, Brazil... The Santa Maria Eterna formation is situated southwest to the city of Belmonte. **The formation crops out in an area of approximately 30 times 20 km...** The mine is located in the central part of the area. The formation consists almost exclusively of quartz sand and minor quantities of quartz pebbles up to 20 cm... It is generally accepted that both the Serra do Paraiso and the Santa Maria Eterna formations were deposited over the Panelinha conglomerate in a marine environment... The deposit itself is not being commercially exploited [as of 2015]. There are, however, projects for using the sand in the manufacture of special glasses and mining activities may start within the next few years.



The economic viability of the quartz sand deposit of Santa Maria Eterna formation as raw material to produce silica glass depends on its chemical composition and propensity to form bubbles... The comparison of quartz from Santa Maria Eterna to other sources of high purity quartz described in literature, shows that the studied sand has a very low Al content as it is found in nature... Al is stated as the most difficult element to remove, because it substitutes Si in the crystalline structure... **Overall, the chemical composition of the sand in the Santa Maria Eterna formation makes it a valuable resource.** Probably it could be purified to become a commercial high purity quartz source to produce a good and clean transparent glass. Nevertheless, the studied material can be used as a raw material in the silica glass industry to obtain opaque crucibles without the proposed treatments.

**Conclusion: The high purity quartz sand of Santa Maria Eterna formation is a promising ore resource.** It was probably formed by silica precipitation from a marine environment, generating an ore with very low Al and high Mg and Ca contents, contained mostly in mineral inclusion. **Very few accessory minerals** (other than mineral inclusions) are found in the deposit and it is also **remarkably homogeneous**. Its viability as raw material for silica glass production showed adequacy for several applications. The quartz sand is **sufficiently pure** and the product of fusion has **little number of bubbles**. Moreover, as the main impurities are in fluid and mineral inclusions, they could be removed by purification. The resulting powder could become a **competitive product** in the high purity quartz market.



## BAHIA SILICA SAND DISTRICT

Nearby ports allow for economic storage and shipping to customers in Brazil and around the world.

- Expected cost to extract 1 tonne of material and process for customers will range from \$40.00 USD to \$50.00 USD pending on port use.
- Ports have immediate capabilities for product storage and shipping in mass tonnage. Ilhéus stands to be the primary bulk port while Aratu is both a bulk and container port facility.

- 1 • Ilhéus – Ilheus, Bahia, Brazil Port for storage and primary processing
- 2 • Aratu – Camacari, Bahia Brazil Port and planned Materials Facilities

The **Santa Maria Eterna silica sand deposit** is immediate to the south of the town **Santa Maria Eterna**, located 59 km southwest of **Canavieiras**, in the southern region of Bahia. Road access from **Salvador**, the capital of Bahia, can be done on a route of approximately 586 km on paved roads.

The **Port of Ilhéus** (pictured below) is located 115 km north of Canavieiras. It's also a medium-sized port, whereas the maximum length of the vessels recorded to having entered this port is 334 m (same as Port of Salvador). From Santa Maria Eterna, it takes about 3 hours by car (197 km) to reach Ilhéus. **Recently in July, the construction of a major railroad project was started, connecting the mines in Bahia to the Port of Ilhéus.** The first 126 km of railway should be ready in 36 months. The **Port of Ilhéus**, today the main grain exporter in Bahia, has a handling capacity of 1 million tons of cargo per year, and has emerged in the tourism segment, receiving a considerable volume of cruise ships each year in season periods. The Port of Ilhéus has its history linked to the rich cocoa history of Bahia ([see here](#)). Today, in addition to cocoa, its cargo handling list includes soy, corn, almonds, magnesium oxide, nickel concentrate, industrialized parts and general cargo.

The **Port of Salvador** is a medium-sized port handling over 3

million tons of cargo in 2007. In recent years, the Port of Salvador has received [substantial investments](#) in its infrastructure. The maximum length of the vessels recorded to having entered this port is [334 m](#). A road distance of about 59 km is between Santa Maria Eterna and the **Port of Canavieiras**, a medium-sized port. The maximum length of the vessels recorded to having entered this port is 12 m. The **Port of Belmonte** is also a medium-sized port, whereas the maximum length of the vessels recorded to having entered this port is 34 meters. The road distance from Santa Maria Eterna to Belmonte is about 157 km.

“According to data from the National Mining Agency (ANM), Bahia was the state that invested the most in mineral research from 2019 to 2021. In total, over R\$ 1.16 billion [currently \$233 million USD] were invested in public and private investments, covering the stages of research authorization and mining operations. Over the period from 2010 to 2021, investments exceeded the mark of R\$ 2.3 billion, which has contributed significantly to the success of the mining industry in Bahia.” ([“CBPM Announces Discovery of the Metallogenic Province in Northern Bahia”, 2023](#))

“Between 2022 and 2025, Bahia will receive a total of 70bn reais [currently \$14 billion USD] in investments in the mining sector.” ([“How Brazil’s Bahia state is becoming a mining hub”, 2022](#))





# COMPANY ROADMAP

## Phase 1 – HPQ Silica Supply

Homerun recently announced that the Company has successfully secured a substantial supply of HPQ Silica in Brazil. This exceptional resource can be efficiently processed to serve the premium end-markets for HPQ Silica. The strategic imperative under Phase One, was to secure a steady and reliable source of HPQ Silica against a backdrop of increasing global demand in sustainable industrial and green energy applications. The Company is now positioned in a massive critical minerals market and will benefit from the increasing demand for both HPQ Silica and the products and solutions produced from HPQ Silica.

## Phase 3 – Revenue and Vertical Integration

Homerun is driving toward revenue. Initial revenues will be tied to the delivery of sand in its natural form while we develop the infrastructure and logistics required to service the balance of those organizations requiring processed HPQ Silica. At the same time, we are executing research and development plans to secure competitive advantage either directly or via partnership in HPQ Silica verticals serving the Energy Transition. Announcements in this area will be forthcoming over the balance of 2023 and beyond.

Q1 2023

Q3-4 2023

## Phase 2 – Infrastructure and Logistics

HPQ Silica can be sold in its natural form, but to access many end-uses the raw sand is processed (washed, sized and upgraded) prior to its use in most industries. Under Phase Two of the Company's Strategic Plan, Homerun, has been focused on integrating infrastructure and logistics for the mining, transportation, storage and processing of its HPQ Silica. Announcements in this area will be forthcoming over the balance of the 3rd and 4th quarters of 2023.

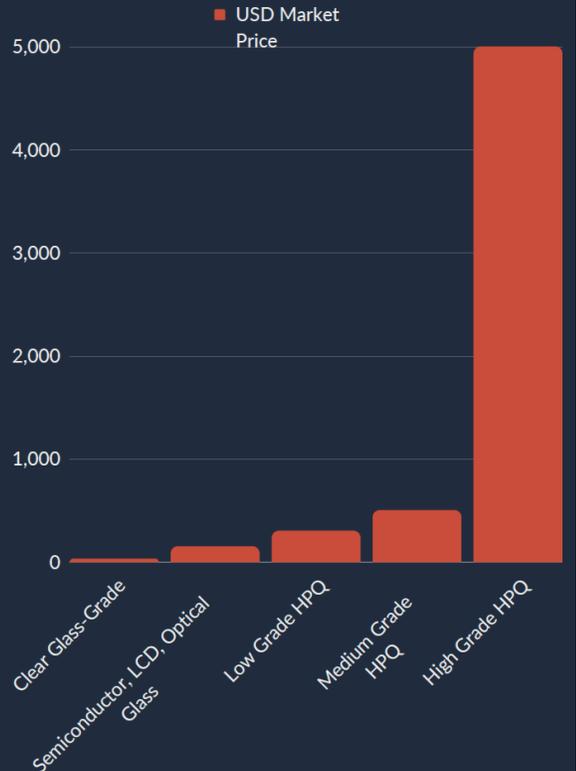
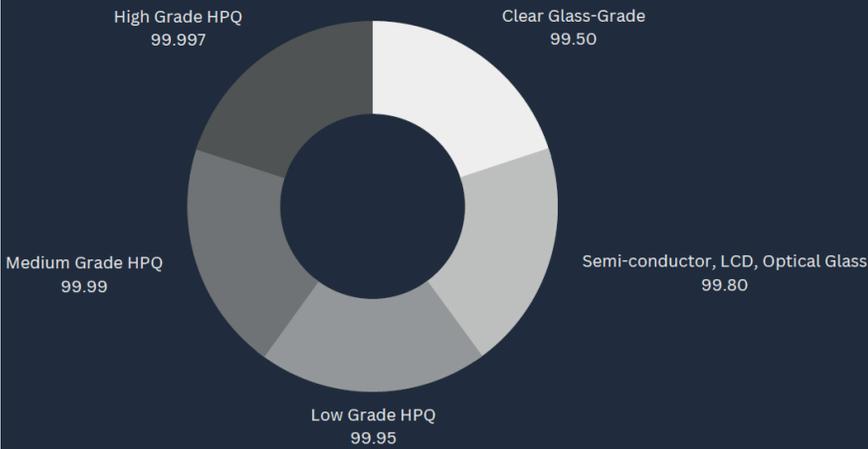
Q4 2023

**OUR GOAL**

- We will be a top supplier of silica and manufactured silica products in the Energy Transition Verticals.
- We will create jobs and support the local people of Brazil, The Brazilian Government, and solidify their mark as a world leader in the Energy Transition.



## AVERAGE USD PRICES FOR HPQ GRADES



- Low Grade HPQ SiO2 Min of **99.95% ~\$300 USD/tonne**
- Medium Grade HPQ SiO2 Min of **99.99% ~\$500 USD/tonne**
- High Grade HPQ SiO2 Min of **99.997% ~\$5,000 USD/tonne**
- Semi-conductor, LCD, Optical Glass Min of **99.80% ~\$225 USD/tonne**
- Clear Glass-Grade SiO2 Min of **99.50% ~\$30 USD/tonne**

\*BAHIA RAW SILICA RESOURCE INDICATES AVERAGE OF 99.88% SiO2

As per Homerun's [news-release](#) on July 22, 2023: "[...] the Company completed a significant milestone in its business development plan with the receipt of the signed Material Supply Agreement between Homerun Resources Inc. ("HMR") and the vendor ("Vendor") detailing the operational terms regarding the supply of high purity silica sand sourced from the Vendor's district-scale, fully permitted project in Bahia, Brazil. **Under the Agreement, the purchase price has been set at US\$20.00 per tonne**, net of Homerun's obligation to cover recoverable costs and applicable taxes. The applicable taxes in Brazil are dependent on customer jurisdiction both domestically and for international shipments. Recoverable costs are dependent on whether the mode of operation is service contractor or internal capital equipment or equipment lease. This is yet to be determined."



## AUSTRALIA

Australia has the highest number of publicly traded companies focused on high-purity silica sand projects, either located in **Queensland** or **Western Australia**. The Australian Government has recognized the importance of silica sand in its [Austrade Critical Minerals Prospects 2022](#), however virtually all projects are looking at offtakes for Asian markets.

### Queensland

**Cape Flattery Silica Mines (CFSM)** has been producing silica sand since 1967 and was purchased by [Mitsubishi Corp.](#) in 1977, bringing a deep water jetty into operation in 1987. Today, the mine employs over 80 people, according to its [website](#), which also touts CFSM having “the highest production of silica sand for any mine in the world” along with “the best silica in an unbeatable location”. With an annual production of [>3 million t](#), CFSM is “the largest global exporter of silica sand and has the highest production of silica sand for any mine in the world”, according to [AREEA](#). The mine site lies directly on the east coast of the Cape York Peninsula and abutts the World Heritage listed Great Barrier Reef Marine Park. The mining leases cover land owned by the traditional owners of the Yuuru Peoples (consisting of the Dingaal, Nguurruumungu and Thanil clan groups), which means that “mining cannot commence until approval from the traditional owners, environmental license obtained from the Queensland Government, flora and fauna survey and a drilling survey of dunes completed”. The large leased-property (63 km<sup>2</sup>) has “significant untapped resources of silica sand”, estimated at [>500 million t](#) with grades as good as 99.93% SiO<sub>2</sub>, 100 ppm Fe, 200 ppm Ti and 300 ppm Al (after an extensive washing and filtering process on site). The company’s CFO, Samat Narula, [said in 2014](#), when the mine site and jetty was damaged by a cyclone: “We are sort of the quiet achievers and we are the biggest silica mine in the world. And 90 per cent of the world’s flat screen TVs have Cape Flattery silica sand in them.” CFSM also provides the silica sand used in many of the world’s iPhone and Android phone screens.



**Cape Flattery Silica Mines:** Mitsubishi not only owns one of the world’s largest silica sand deposits but also one of the highest quality sands with impurities reduced on-site with an extensive washing and filtering process, whereafter the graded sand is sent to the near-by wharf for loading and export to Japan and other parts of Asia. [\(Source\)](#)

Adjacent to CFSM, **Diatreme Resources Ltd.** is developing its **Galalar** and **NSP** projects. While metallurgical testing of sand from Galalar has demonstrated a reduction of iron impurities to 105 ppm without acid, some few initial samples from NSP showed that iron can be reduced to 110 ppm without acid but that commercial processing would likely result in 5-10% higher levels of iron and aluminum. CEO Neil McIntyre [said in 2022](#): “Traditionally, a lot of the silica market in Australia has been dominated by trading houses – Japanese trading houses, in particular. Mitsubishi is one of them and there are two or three others out of Western Australia that dominate that market. This creates a market that’s incredibly opaque and you can’t easily see the substance behind it in terms of pricing and in terms of the products they’re producing. So what we’re seeing is a level of maturity coming into the silica market now, with a number of listed companies like us. There’s about three or four in Western Australia. We’re a public company, we publish and talk about everything to do with our business, and that’s new.” Diatreme inked a joint venture agreement with global industrial minerals company **Sibelco** in 2022 and recently signed a non-definitive MOU with **Flat Glass Group Co. Ltd.** from China. Diatreme’s deposits are in a remote region, close to the surface with only a limited vegetation and topsoil covering. The average thickness of the sand within Galalar’s reserve pit shell is 12 m, however several interburden layers with high iron impurities are designated as waste. The projects re located within

the Cape Flattery Port area – owned and operated by Ports North, a Queensland Government-controlled corporation. Ports North is the owner of the jetty leased by Mitsubishi, whereas the ship-loading equipment on the jetty is primarily owned by Mitsubishi.

CFSM’s and Diatreme’s neighbor is **Metallica Minerals Ltd.** In it’s November-2022 presentation, the company states that “Environmental management at the Cape Flattery Silica project will be comprehensive” and proudly states that “no chemicals will be used in production” (the company has been waiting on environmental and land ownership agreements for years). Metallica reassures that HAL (hot acid-leaching) will not be undertaken on-site – but has to be done off-site by some prospective purchasers of its sand as preliminary results of metallurgical testwork demonstrate that acid is needed to reduce iron impurities below 120 ppm (in order to meet requirements for solar glass). The company admits that more metallurgical testwork is needed to confirm process pathways to reduce iron content to <120 ppm, which is planned to be incorporated into the DFS metallurgical program. To reach the silica sand layer, removal of 50 cm topsoil is needed, using a dozer or grader. Thereafter, silica sand extraction can commence with direct loading from the working face by a wheel loader, loading silica sand into a mobile feeder unit. Quality control processes must be employed at the working face to maintain quality of the feed into the processing plant (due to areas of



poorer quality silica sand expected to be encountered). Water is added to the silica sand passing through the mobile feeders and the slurry is pumped to the processing plant. The Wet Concentration Plant (WCP) is designed to refine the sand to reduce heavy minerals. Metallica names the risks of its proposed mining and processing project, such as “Environmental and social licences to operate, including delays to project approvals. Additionally, increased output from existing and new producers and projects currently progressing through project development and approvals programs may present a market risk. The Company will continue formal negotiations with the Traditional Landowners (Hopevale Congress Aboriginal Corporation as agent for the Nguurruumungu Clan, and Walmbaar Aboriginal Corporation as agent for the Dingaal Clan).”

### Western Australia

Western Australia hosts significantly more silica sand projects than Queensland. Moreover, most silica sand deposits in Western Australia have less iron impurities than the raw sand in Queensland. However, when looking at metallurgical testworks completed, some major projects in Western Australia have more difficulties in reducing iron impurities below 120 ppm. Only sand from **Muchea (VRX Silica Ltd.)** achieves the feat of reducing iron contaminants to 70 ppm, making its processed sand suitable for solar glass without having to use acid during on-site processing. Note that the **Albany mine (AustSand Mining Ltd.)** and the adjacent **Albany deposit (Australian Silica Quartz Group Ltd.)** host raw silica sand with <100 ppm and 46 ppm iron, respectively, albeit both deposits are rather small with 5 million t reserves and 11.6 million t resources, respectively.

**Interestingly, projected CAPEX for on-site processing facilities are much lower for projects in Western Australia (averaging 31.5 million AUD among 4 projects for an annual production averaging 1.8 million t) than in Queensland (averaging \$196 million AUD among 3 projects for an annual production averaging 1.9 million t).**



**Left: Abandoned silica sand mine at Black Island, Manitoba**, where historic mining is still causing environmental damage due to acid drainage from the Winnipeg Formation and the overlying Black Island Member; the latter may include a pyrite (iron) rich shale, a major contributor of heavy minerals released into the water. ([Source](#))

**Below: Click image or [here](#) to watch drone footage of an abandoned silica sand mine at Black Island, showing severe acid drainage into Lake Winnipeg.**



Black Island, Manitoba Drone Video of abandoned silica sand mine

### CANADA

Silica sand deposits occur throughout Canada, with active mines mostly in **Ontario** (by far Canada’s largest sand and gravel producer), **Alberta** and **Quebec**. In western **Labrador**, large tonnage quartzite (hard-rock) deposits can be found (e.g. [17 samples averaged](#) 571 ppm Fe, 12 ppm Ti, 311 ppm Al, 690 ppm CaO). **Manitoba** used to be a significant silica sand producer as the [Winnipeg Formation](#) contains the largest known deposits of silica sand in the province. Historical quarrying of outcropping silica sand deposits at Black Island on Lake Winnipeg started in the 1920s and stopped in the 1980s, causing environmental damage until today. The high impurities in the “high-purity” silica sands (i.e. iron, aluminium and titanium in the 1000s ppm) contributed to severe [acid-mine drainage](#) with toxic heavy minerals being released into the groundwater and into Lake Winnipeg. It was mainly the oxidation of pyrite in the shale layer above the sand contributing to the environmental damage (aquifer contamination) caused by historic quarrying. After almost 100 years of leaching, acidic hematite (reddish-brown) coloured water is still running out of abandoned Black Island quarry pits today. At the height of its operation (1960-1980s), [roughly 10,000 t](#) of silica sand was mined annually at Black Island. Just a few kilometres from

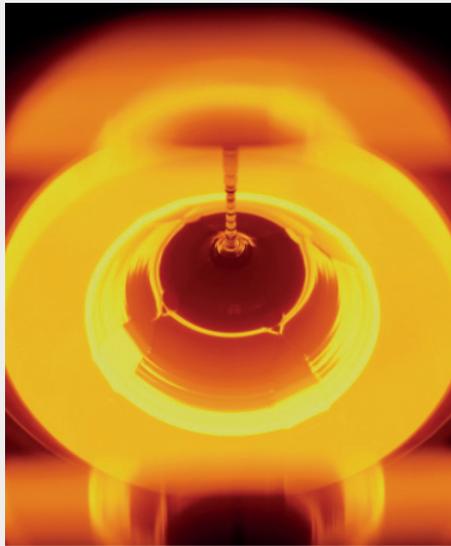
the historic Black Island pits, **Canadian Premium Sand Inc.** hopes to mine 1.3 million t of silica sand annually for possibly 50 years from its Wanipigow deposit. It was previously defined as a [frac sand](#) resource as part of a PFS (2020). Presently, CPS proposes to assess and develop “a high-grade (high silica, low iron) portion” of the open-pitatable deposit for use in the glass manufacturing industry. Specifically, CPS is in search of investors willing to finance an on-site sand processing facility and an off-site solar glass manufacturing plant for \$400-500 million. The deposit is located along the east shore of Lake Winnipeg and adjacent to the Hollow Water First Nation’s reserve lands. The proposed mining project received public opposition in [2022](#) in regards to “putting drinking water at risk” while “creating environmental and cultural damage”. **Sio Silica Inc.**, a private company based in Calgary, is proposing to extract silica sand near Vivian, Manitoba, by injecting air into the Winnipeg Sandstone aquifer to bring up a mixture of water and sand from the water table, which extends under a large swath of southeastern Manitoba and serves 8 municipalities. The Vivian Silica Project received public opposition not only in [2020](#) and [2021](#), when the extracted and on-site-processed sand was proposed for the fracking industry. Public opposition for the project remained high in [2023](#), despite the company having changed its



name a year earlier (formerly **CanWhite Sands Corp.**) and switching the sand's destination to "green energy and technology markets", with its [website](#) touting "solar panels, computer chips and batteries, fibre optics and speciality medical glass" without mentioning impurity levels of its raw or processed sand.

## UNITED STATES

In 2022, industrial sand and gravel production in the US was estimated at 97 million t, valued at \$5.7 billion USD (averaging \$58 USD/t), according to the [USGS](#). The leading production states were, in descending order: **Texas, Wisconsin, Illinois, Louisiana, Missouri, Oklahoma, Arkansas, Alabama, California, and Tennessee**. Approximately 75% of the tonnage was used as frac sand and well-packing and cementing sand; and 10% as glassmaking sand. Other common uses were, in decreasing quantity of use, foundry sand, whole grain fillers for building products, filtration sand, and recreational sand, which accounted for 9%, combined. Other minor uses were, in decreasing quantity of use, chemicals, abrasives, roofing granules, silicon and ferrosilicon, ceramics, fillers, filtration gravel, traction, and metallurgic flux, which accounted for 3%, combined. The US also imports sand and gravel (estimated at 350,000 t), mainly from Canada (87%), but also from Vietnam (3%), Brazil (2%) and others (8%). An estimated 6.4 million t were exported in 2022, shipping to almost every region of the world. With 97 million t mined in 2022, the US was the world's largest producer and consumer of industrial sand and gravel, followed by China (88 million t) and the Netherlands (54 million t), whereas estimated world production stood at 380 million t. Of the 122 companies that produced industrial sand and gravel in the US in 2022 (from 201 operations in 32 states), one of the largest is **U.S. Silica Company**. The privately held company owns and operates processing plants along with silica hard-rock and sand mines in **Missouri, Illinois, Michigan, Wisconsin, Pennsylvania, Oklahoma, Louisiana and Texas**, most of which supply raw and processed silica sand for the oil and gas industry as well as for the construction, chemical, ceramics, foundry, glass and recreational industries.



Polysilicon is placed in quartz crucibles, melted down, and set spinning. KAY CHERNUSH/GETTY IMAGES



Dark, shiny crystals of silicon called ingots are sliced into thin wafers. Ingots of the highest purity are polished to mirror smoothness and sold to a chipmaker like Intel. GETTY IMAGES

As an exception, the Spruce Pine Mining District in North Carolina's Appalachian Mountains is "[the source of the purest natural quartz ever found on Earth](#)". The Spruce Pine quartz is needed to make the fused-quartz crucibles in which computer-chip-grade polysilicon is melted. In fact, there's an excellent chance the chip that makes your laptop or cell phone work was made using quartz from this obscure Appalachian backwater. "A fire in 2008 at one of the main quartz facilities in Spruce Pine for a time all but shut off the supply of high-purity quartz to the world market, sending shivers through the industry. Today one company dominates production of Spruce Pine quartz. **Unimin**, an outfit founded in 1970, has gradually bought up Spruce Pine area mines and bought out competitors, until today the company's North Carolina quartz operations supply most of the world's high- and ultra-high-purity quartz. (Unimin itself is now a division of a Belgian mining conglomerate, **Sibelco**.) In recent years, another company, the imaginatively titled **Quartz Corp.** has managed to grab a small share of the Spruce Pine market. There are a very few other places around the world producing high-purity quartz, and many other places where companies are looking hard for more. But Unimin controls the bulk of the trade... Only Unimin knows exactly how much Spruce Pine quartz is produced, because it doesn't publish any production figures. It is an organization famously big on secrecy... Unimin sells this ultra-high-purity quartz sand to companies like General Electric, which melts it, spins it, and fuses it into what looks like a salad bowl made of milky glass: the crucible. It's safe to say the vast majority of those crucibles are made from Spruce Pine quartz... The quartz for the crucibles, like the silicon they will produce, needs to be almost absolutely pure, purged as thoroughly as possible of other elements. Spruce Pine quartz is highly pure to begin with, and purer still after being put through several rounds of froth flotation. But some of the grains may still have [...] interstitial crystalline contamination – molecules of other minerals attached to the quartz molecules. That's frustratingly common. Some Spruce Pine quartz is flawed in this way... The very best Spruce Pine quartz, however, has an open crystalline structure, which means that hydrofluoric acid can be injected right into the crystal molecules to dissolve any lingering traces of feldspar or iron, taking the purity up another notch... The polysilicon is placed in those quartz crucibles, melted down, and set spinning. Then a silicon seed crystal about the size of a pencil is lowered into it, spinning in the opposite direction. The seed crystal is slowly withdrawn, pulling behind it what is now a single giant silicon crystal. These dark, shiny crystals, weighing about 220 pounds, are called ingots. The ingots are sliced into thin wafers. Some are sold to solar cell manufacturers. Ingots of the highest purity are polished to mirror smoothness and sold to a chipmaker like Intel... The wafers are then cut into tiny, unbelievably thin quadrangular chips – computer chips, the brains inside your mobile phone or laptop. The whole process requires hundreds of precise, carefully controlled steps. The chip that results is easily one of the most complicated man-made objects on Earth, yet made with the most common stuff on Earth: humble sand." (Source: "[The Ultra-Pure, Super-Secret Sand That Makes Your Phone Possible](#)", 2018)



# HPQ SILICA MARKETS



“Brazil’s solar energy industry is set to get a boost from a government plan to have local industry manufacture inputs for the sector... “Most of our inputs today come from China, having local production can help the entire sector, including to reduce costs,” Túlio Fonseca, CEO of solar power franchisor Energy Brasil, told BNamericas. As part of the government’s efforts to stimulate the local industry, funding will be made available for projects through the country’s climate fund, which is managed by development bank [BNDES](#). Solar makes up 15% Brazil’s energy matrix and is the second largest energy source after hydroelectric plants, with the expectation to reach 50% by 2050, according to local PV solar association Absolar.” ([Source](#))

## High-Purity Silica is **Critical** for the World’s ENERGY Transition



### ENORMOUS GROWTH

The global silica sand market size alone stood at a value of USD 21.6 billion in 2022. The market is further expected to grow at a CAGR of 5.8% in the forecast period of 2023-2028, reaching a value of USD 30.29 billion by 2028.

Global supplies of silica sand are being exhausted much faster than they are being discovered, and if shoring up the supply of the world’s second-most used commodity after water is not already front of mind for investors, governments, and regulators around the world, it will be.



### GLASS MANUFACTURING

Silica sand is a primary component of glass, providing the structural integrity and transparency that make it ideal for use in windows, mirrors, and other glass products. The global solar power market size was valued at USD 167.83 billion in 2021. The market is projected to grow from USD 234.86 billion in 2022 to USD 373.84 billion by 2029, exhibiting a CAGR of 6.9% during the forecast period.





### High-Purity Silica for Solar Glass and Silicon in Solar Cells & Batteries

Silica sand is a key component in the production of solar panels. Specifically, HPQ silica sand is used to make the solar glass and is the raw material for silicon wafers that are the primary component of solar cells. The silica sand is purified and then melted at high temperatures to form ingots, which are then sliced into thin wafers. These wafers are then processed and assembled into solar cells, which are combined into modules with solar glass to create a solar panel.

Because solar panels require high purity silicon, ***the demand for HPQ silica sand has increased significantly in recent years as the global demand for solar energy has grown.***

HPQ silica sand is used in multiple capacities in the production of lithium-ion batteries, which are commonly used in portable electronic devices, electric vehicles, and energy storage systems. Specifically, silica is used as a coating material for the electrodes in the battery. The silica coating helps improve the stability and performance of the battery, leading to increased efficiency and longer lifespan. In addition to the electrode coating, silica is also used as a separator material in lithium-ion batteries. Silica to silicon is now being utilized in hybrid and pure silicon anodes.

As the demand for electric vehicles and renewable energy storage systems continues to grow, so does the demand for high quality silica sand for use in lithium-ion batteries. Therefore, ***silica sand is becoming an increasingly important resource in the transition to a more sustainable energy future.***

## Silica Sand & Energy Storage

High purity silica sands play a crucial role in advancing the field of energy storage, offering significant importance and benefits. Homerun will work to be part of the solution to support renewable integration for future carbon-free energy supply. "Sand and concrete silos with refractory insulation are very inexpensive materials that can lead to low-cost energy storage. Traditional four-hour storage technologies don't scale well to the grid or city scale. Now that we are in need of large-scale energy storage, this technology makes a lot of sense." - Patrick Davenport, NREL Researcher

### "We Are In a Global Energy Crisis"



#### CARBON FREE ENERGY SUPPLY

Silica, with its exceptional chemical and physical properties, serves as a key component in various energy storage systems. Its high surface area and porous structure enable efficient electrolyte penetration and enhanced ion conductivity, leading to improved battery performance and increased energy storage capacity.



"In a recent article titled ["Could sand be the next lithium?"](#) the Washington Post dug into the issue and found that natural batteries have significant advantages over traditional batteries... In batteries where sand is heated to upwards of 1,000 degrees Fahrenheit, the sand can hold on to that energy for a long time, with temperatures remaining over 200 degrees even when the battery's energy is running low. The sand can hold onto the power for weeks or months at a time – a clear advantage over the lithium-ion battery, the giant of today's battery market, which usually can hold energy for only a number of hours. Plus, the technology doesn't hinge on supply chains and materials dominated by China – another problem faced by lithium-ion batteries." ([Source](#))



## DISCLAIMER AND INFORMATION ON FORWARD LOOKING STATEMENTS

Rockstone Research, Zimtu Capital Corp. (“Zimtu”) and Homerun Resources Ltd. (“Homerun”) caution investors that any forward-looking information provided herein is not a guarantee of future results or performance, and that actual results may differ materially from those in forward-looking information as a result of various factors. The reader is referred to the Homerun’s public filings for a more complete discussion of such risk factors and their potential effects which may be accessed through their documents filed on SEDAR at [www.sedar.com](http://www.sedar.com). All statements in this report, other than statements of historical fact should be considered forward-looking statements. Much of this report is comprised of statements of projection. **Statements in this report that are forward looking include** that Homerun, or any other company or market will perform as expected; that physical/mechanical and/or chemical processing may improve Homerun’s grades even further; that Homerun is at the forefront of one of the world’s highest quality silica sand districts; that in view of all the challenges that many other silica sand projects are facing (e.g. complex metallurgy, tortuous permitting), the advantages and opportunities for Homerun come to light; that when comparing the tonnage and grades with some of the world’s largest and highest quality silica sand mines in Australia, along with select development projects, Homerun’s supply agreement puts the company on top of the list, especially if management succeeds in finalizing a lease or ownership relationship; that CBPM controls silica sand deposits with an exploration target of >200 million t; that Homerun is working to finalize lease or ownership relationships with the two Brazilian companies that share ownership of the large HPQ silica resources in the District; that this HPQ silica will be Homerun’s initial supply from the District and will be processed and shipped from port facilities located in Ilheus and / or Salvador, Bahia; that the state of Bahia wants to encourage the discovery, production and processing of minerals that will boost the energy transition that promises to revolutionize the world economy in the coming decades; that later this year we should have 2 factories coming to Bahia, one for cement and one for silica; that we also have an area of silica that will be handed over to the private sector, with a commitment to set up another factory to process this silica here in Bahia; that Bahia will be the next big thing in mining; that we are in a

position to attract large industries here and supply the thirst that the world market will have for everything linked to the energy transition; that the high purity quartz sand of Santa Maria Eterna formation is a promising ore resource; that its viability as raw material for silica glass production showed adequacy for several applications; that the resulting powder could become a competitive product in the high purity quartz market; that the first 126 km of railway should be ready in 36 months; that between 2022 and 2025, Bahia will receive a total of 70bn reais [currently \$14 billion USD] in investments in the mining sector; that Brazil’s solar energy industry is set to get a boost from a government plan to have local industry manufacture inputs for the sector; that as part of the government’s efforts to stimulate the local industry, funding will be made available for projects through the country’s climate fund; that solar makes up 15% Brazil’s energy matrix and is the second largest energy source after hydroelectric plants, with the expectation to reach 50% by 2050; that the silica sand shortage is likely to continue as China’s demand for silicon sand grows exponentially; that it is Homerun’s view that this resource (20 million tonne from operator 2, a Bahia state government, will eventually be +200 million tonnes; that a reputable German engineering firm will be engaged when required to engineer the processing facility; that nearby ports allow for economic storage and shipping to customers in Brazil and around the world; that expected cost to extract 1 tonne of material and process for customers will range from \$40.00 USD to \$50.00 USD pending on port use; that ports have immediate capabilities for product storage and shipping in mass tonnage; that this exceptional resource can be efficiently processed to serve the premium end-markets for HPQ Silica; that Homerun will benefit from the increasing demand for both HPQ Silica and the products and solutions produced from HPQ Silica; that announcements in this area will be forthcoming over the balance of the 3rd and 4th quarters of 2023; that initial revenues will be tied to the delivery of sand in its natural form while Homerun develops the infrastructure and logistics required to service the balance of those organizations requiring processed HPQ Silica; that Homerun is executing research and development plans to secure competitive advantage either directly or via partnership in HPQ Silica verticals serving the Energy Transition, and that announcements in this area will be forthcoming over the balance of 2023 and beyond; that global supplies of silica sand are being exhausted

much faster than they are being discovered, and if shoring up the supply of the world’s second-most used commodity after water is not already front of mind for investors, governments, and regulators around the world, it will be; that the global glass market is projected to grow from USD 234.86 billion in 2022 to USD 373.84 billion by 2029, exhibiting a CAGR of 6.9% during the forecast period; that the global silica sand market is further expected to grow at a CAGR of 5.8% in the forecast period of 2023-2028, reaching a value of USD 30.29 billion by 2028; that Homerun will work to be part of the solution to support renewable integration for future carbonfree energy supply. **Such statements involve known and unknown risks, uncertainties and other factors that may cause actual results or events to differ materially from those anticipated in these forward-looking statements. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Risks and uncertainties include:** The successful conclusion of the signed agreements with the Brazilian vendor of silica sand as well as with CBPM; the supply of silica sand from the Brazilian vendor is subject to negotiation and execution of the Material Supply Agreement between the parties; that both parties will continue to agree to exercise their best efforts to conclude and execute the final form of the Material Supply Agreement; that each party will obtain all necessary and appropriate governmental, regulatory, contractual, board of director, shareholder, member and other third-party licenses, permits, approvals and/or consents which are required to execute the Material Supply Agreement; that other necessary and appropriate conditions shall mutually agree during their final negotiations of the Material Supply Agreement; that Homerun will not find adequate buyers for this silica sand supply; that the silica sand grade varies and that buyers will not be interested in the product despite its high grade; that the impurities are too high; that impurities can not be reduced much further and that buyers are not interested in this silica sand; that the operator of the mine will cease operations for whatever reasons; that the negotiated sales price will change or is too high for Homerun to successfully find buyers; that Homerun will not be allowed to export and sell this material; the receipt of all necessary approvals for exploration, mining, trading and exporting; the ability to find sufficient silica sand to mine, sell and/or export; uncertainty of future production, uncertain capital expenditures and other



costs; financing and additional capital requirements for exploration, development, expansion of the mine may not be available at reasonable cost or at all; mineral grades and quantities on the project may not be as high as expected; samples found to date and historical drilling may not be indicative of any further potential on the properties; that mineralization encountered with sampling and drilling will be uneconomic; that the targeted prospects can not be reached; the receipt in a timely fashion of further permitting; legislative, political, social or economic developments in the jurisdictions in which Homerun or its partners carry on business may hinder progress; there may be no agreement with neighbors, partners or government on developing infrastructure; operating or technical difficulties or cost increases in connection with exploration and mining or development activities; the ability to keep key employees and operations financed; what appear at first to be similarities with operating mines and projects may not be substantially similar; share prices of these companies may fall as a result of many factors, including those listed here and others listed in the companies' and other mining exploration company disclosure; and the resource prices available when the resource is mined may not be sufficient to mine economically. **Accordingly, readers should not place undue reliance on forward-looking information.** Rockstone and the author of this report do not undertake any obligation to update any statements made in this report except as required by law. **Note that silica sand grades and mineralization described in similar deposits on other properties are not representative of the mineralization on Homerun's or its partner's properties, and historical work and activities on its properties have not been verified and should not be relied upon.**

## DISCLOSURE OF INTEREST AND ADVISORY CAUTIONS

Nothing in this report should be construed as a solicitation to buy or sell any securities mentioned. Rockstone, its owners and the author of this report are not registered broker-dealers or financial advisors. Before investing in any securities, you should consult with your financial advisor and a registered broker-dealer. Never make an investment based solely on what you read in an online or printed report, including Rockstone's report, especially if the investment involves a small, thinly-traded company that isn't well known. **The author of this report, Stephan Bogner, is paid by**

**Zimtu Capital, a TSX Venture Exchange listed investment company.** Part of the author's responsibilities at Zimtu Capital is to research and report on companies in which Zimtu Capital has an investment. So while the author of this report is not paid directly by Homerun Resources Inc., the author's employer Zimtu Capital will benefit from appreciation of Homerun's stock prices. The author also owns equity of Homerun, as well as an equity position in Zimtu Capital Corp., and thus will also profit from volume and price appreciation of those stocks. Homerun pays Zimtu to provide this report and other investor awareness services. As per Homerun's and Zimtu's [news \(06/22/2022\)](#): "Zimtu Capital Corp. (TSX: ZC; FSE: ZCT1) (the "Company" or "Zimtu") announces it has signed an agreement with Homerun Resources Inc. to provide its ZimtuADVANTAGE program (<https://www.zimtu.com/zimtu-advantage/>). Zimtu shall receive \$12,500 per month for a period of 12 months for the duration of the contract." [The duration of the contract may have been mutually extended.] **Thus, multiple conflicts of interests exist.** Therefore, the information provided in this report should not be construed as a financial analysis or recommendation but as an advertisement. In some cases, the companies the author features have one or more common directors with Zimtu Capital. Rockstone's and the author's views and opinions regarding the companies that are featured in the reports are the author's own views and are based on information that was received or found in the public domain, which is assumed to be reliable. Rockstone and the author have not undertaken independent due diligence of the information received or found in the public domain. Rockstone and the author of this report do not guarantee the accuracy, completeness, or usefulness of any content of this report, nor its fitness for any particular purpose. Lastly, Rockstone and the author do not guarantee that any of the companies mentioned in the reports will perform as expected, and any comparisons that were made to other companies may not be valid or come into effect. Please read the [entire Disclaimer](#) carefully. If you do not agree to all of the Disclaimer, do not access this website or any of its pages including this report in form of a PDF. By using this website and/or report, and whether or not you actually read the Disclaimer, you are deemed to have accepted it. Information provided is educational and general in nature. Data, tables, figures and pictures, if not labeled or hyperlinked otherwise, have been obtained from Stockwatch.com, Homerun Resources Inc. and the public domain.

## Author Profile & Contact

**Stephan Bogner** (Dipl. Kfm., FH)  
Rockstone Research  
8260 Stein am Rhein, Switzerland  
Phone: +41 44 5862323  
Email: [sb@rockstone-research.com](mailto:sb@rockstone-research.com)



Stephan Bogner studied Economics, with specialization in Finance & Asset Management, Production & Operations, and Entrepreneurship & International Law, at the International School of Management (Dortmund, Germany), the European Business School (London, UK) and the University of Queensland (Brisbane, Australia). Under Prof. Dr. Hans J. Bocker, Stephan completed his diploma thesis ("Gold In A Macroeconomic Context With Special Consideration Of The Price Formation Process") in 2002. A year later, he marketed and translated into German Ferdinand Lips' bestseller "Gold Wars". After working in Dubai's commodity markets for 5 years, he now lives in Switzerland and is the CEO of [Elementum International AG](#) specialized in the storage of gold and silver bullion in a high-security vaulting facility within the St. Gotthard Mountain in central Switzerland.

**Rockstone Research** is specialized in capital markets and publicly listed companies. The focus is set on exploration, development, and production of resource deposits, as well as technology ventures. Through the publication of basic geological, technological, and stock market knowledge, the individual company and sector reports receive a background in order for the reader to be inspired to conduct further due diligence and to consult with a financial advisor.

All Rockstone reports are being made accessible free of charge, whereas it is always to be construed as non-binding research addressed solely to a readership that is knowledgeable about the risks, experienced with stock markets, and acting on one's own responsibility.

**For more information and sign-up for free email newsletter, please visit:**  
[www.rockstone-research.com](http://www.rockstone-research.com)

