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VRXSILICA

# New Opportunity for WA

## Arrowsmith and Muchea
## Silica Sand Projects

**VRX AGM Presentation**

November 2021

SUSTAINABLE DEVELOPMENT GOALS



# Important information

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The information in this report that relates to Arrowsmith North, Arrowsmith Central and Muchea Exploration Results and Muchea Aircore Drilling Area Mineral Resources are based on data collected and compiled under the supervision of Mr David Reid, who is a full-time employee of VRX Silica. Mr Reid, BSc (Geology), is a registered member of the Australian Institute of Geoscientists and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and the activity being undertaken to qualify as a Competent Person under the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Reid consents to the inclusion of the data in the form and context in which it appears.

The information in this report that relates to Arrowsmith North, Arrowsmith Central and Muchea Auger area Mineral Resources is based on information compiled by Mr Grant Louw who is a full-time employee of CSA Global, under the direction and supervision of Dr Andrew Scogings, who is an Associate of CSA Global. Dr Scogings is a Member of the Australasian Institute of Mining and Metallurgy and a Member of the Australian Institute of Geoscientists. He is a Registered Professional Geologist in Industrial Minerals. Dr Scogings has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). Dr Scogings consents to the disclosure of information in this report in the form and context in which it appears.

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# Project Highlights

**WA based, pure-play silica sand mining company with advanced silica sand projects**

**100+ year production life**

- 100% owner of three high value Silica Sand Projects in Western Australia - Tier 1 mining region
- Multi-decade-scale contiguous sand deposits with combined 1bn T Resource, 99.6% to 99.9% $SiO_2$ grade
- Initial offtake term sheet signed for supply to S. Korean foundry industry, with strong interest from other potential customers in SE Asia at a time of diminishing global supply and increasing demand
- Arrowsmith North to lead staggered/disciplined development – first production expected in 2022 – followed by Muchea and Arrowsmith Central
- Mining Leases granted over all three projects with permitting and infrastructure preparations well-advanced
- Most-advanced non-private silica sand projects in Australia with planning, heritage and environmental studies having commenced in 2017
- Scale of projects provides long-term opportunity for **silica sand export** and **glass manufacturing and downstream industries** in Western Australia



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# Silica Sand

## The foundation of modern cities

- Silica sand is the most-used commodity on the planet after air and water.
- It is the main ingredient in all types of **glassmaking**, including specialty solar panel and high-tech glass.
- Around 47% of the world's glass is made in Asia, and the glass manufacturing industry is increasing at a rate of 5-6% per year – or about 8-10 million tonnes.
- Silica sand is also the main ingredient in concrete.
- It is a finite resource that is running out.
- The Asia-Pacific region is currently experiencing a **supply shortfall and increasing demand**.



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# Silica Sand – World Class Portfolio



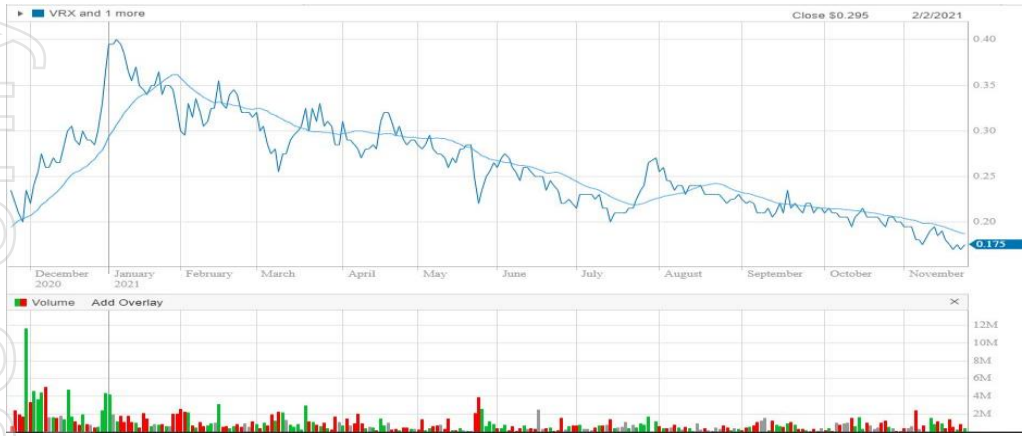

## Project development pipeline to ensure disciplined, staged development of world-class assets

- WA based company and management team
- Most advanced non-private projects in Australia
- Three large scale, high grade and low impurity silica sand projects – Arrowsmith North, Arrowsmith Central and Muchea
- Each project can be run independently and supply raw material to diverse markets
- Simple and low impact mining and processing
- Access to established infrastructure (logistics, power, water, gas)
  - rail lines to port run adjacent to all project tenements
  - gas pipelines run adjacent to each of the project areas
- Granted Mining Leases with secure tenure
- Infrastructure planning and permitting well-advanced

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# Corporate Summary

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| Person | Role | Experience |
|---|---|---|
| **Paul Boyatzis** | Chairman | Governance: Over 30 years experience in investment, equity markets and managing public companies |
| **Bruce Maluish** | Managing Director | Technical and Finance: Over 35 years in mining industry including previous roles as ASX MD and General Manager |
| **Peter Pawlowitsch** | Non-Executive Director | Senior executive in Finance and Corporate roles |
| **David Welch** | Non-Executive Director | Senior executive responsible for strategy, business transformation and performance, commercial negotiations, stakeholder engagement for major projects |
| **Steven Papadopoulos** | Commercial Manager | Legal and Commercial: Over 20 years experience as corporate lawyer and commercial advisor in resources and other industries |
| **Yoonil Kim** | Marketing Manager | Marketing: 16 years' experience selling silica sand in the Asian market |

| Capital Structure | |
|---|---|
| Share Price | **17cps *** |
| Ordinary Shares on Issue | **553 million** |
| Options on Issue | **34 million** |
| Market Capitalisation | **$94 million*** |
| Cash | **$12 million** |
| Debt | **Nil** |
| Enterprise Value | **$82 million** |

| Shareholders | |
|---|---|
| Board and Management | **12%** |
| Top 20 Total | **33%** |

| Broker Coverage | |
|---|---|
| Argonaut | ARGONAUT |
| Euroz Hartleys | EUROZ HARTLEYS |

** Share price on 26 November 2021*

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# Arrowsmith North

**Near-term development opportunity on a world-class silica sand project**

- Production expected to commence CY2022 (subject to final environmental approvals)
- 223Mt ore reserve @99.7% $SiO_2$(**100** year production!)
- Tailored 2Mtpa processing plant with patented process circuit, revised capital estimate underway
- Access to established infrastructure –
  - Unused rail line (from Eneabba to Geraldton) runs adjacent to project tenements
    - Joint co-operation agreement with MWPA and collaboration with Arc Infrastructure for train unloader
  - Water from Yarragadee North deep aquifer
    - Water bore successfully drilled, acquifer testing underway to supply data for abstraction licence
  - Access by adjacent Brand Highway
    - Road intersection submitted to Main Roads
  - Hybrid gas and solar power supply
    - Tender process for power supply contractors

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# Responsible Mining – The VRX Way

## A made-for-purpose mining method designed around continuous rehabilitation

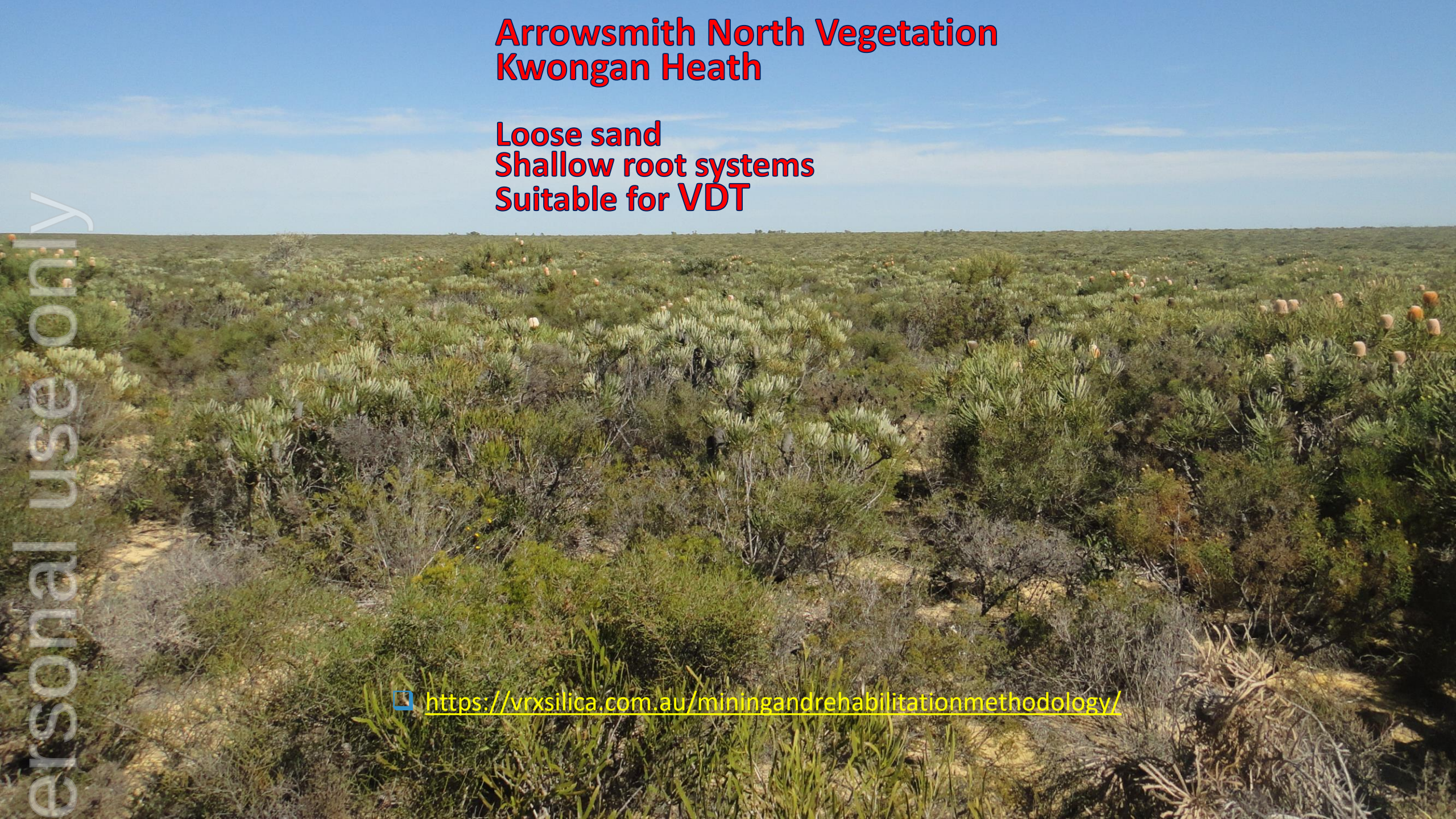
- VRX has developed a unique and progressive mining method for its silica sand projects
- The Vegetation Direct Transfer (VDT) method provides a rapid and comprehensive regeneration of mined areas based on continuous rehabilitation as mining progresses
- The VDT method removes a 400mm-deep sod with topsoil containing the vast majority of native flora and invertebrate fauna remining intact
- Root structures in the loose sand are relatively shallow at 200-300mm in depth.



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# Arrowsmith North Vegetation
# Kwongan Heath

Loose sand
Shallow root systems
Suitable for VDT



https://vrxsilica.com.au/miningandrehabilitationmethodology/

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# Arrowsmith North – Environmental and Mining Approvals

- Confirmation by Cwlth Department of Agriculture, Water and the Environment of accredited approval under the EPBC Act
- State Department of Water and Environmental Regulation and Environmental Protection Authority (EPA) require PER assessment
- Draft Environmental Scoping Document (ESD) lodged October 2021 - still awaiting comments
- Significant number of studies **already completed**:
  - ✓ Desktop, recce and targeted flora and vegetation
  - ✓ Desktop, recce and targeted fauna
  - ✓ Short Range Endemic species desktop and field assessment
  - ✓ Terrestrial Environmental Quality
  - ✓ Dieback field and follow up assessment
  - ✓ Inland Waters and Surface Water Drainage
  - ✓ Groundwater Hydrology
  - ✓ Acid Mine Drainage
  - ✓ Social Surrounds and Archaeological and Ethnographic Heritage survey
  - ✓ Cultural Values and Heritage assessment
  - ✓ Greenhouse Gas Emissions estimation
  - ✓ Air Quality assessment
  - ✓ Permit for Construction of Water Bore
- **No further direction on any future requirements or timing until comments on ESD received from EPA**
- Mining proposal for DMIRS drafted and lodgement subject to receipt of comments on ESD

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# Arrowsmith North Plant Site

## Geotech Surveys for Plant Foundations



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# Arrowsmith North – Environmental and Mining Approvals

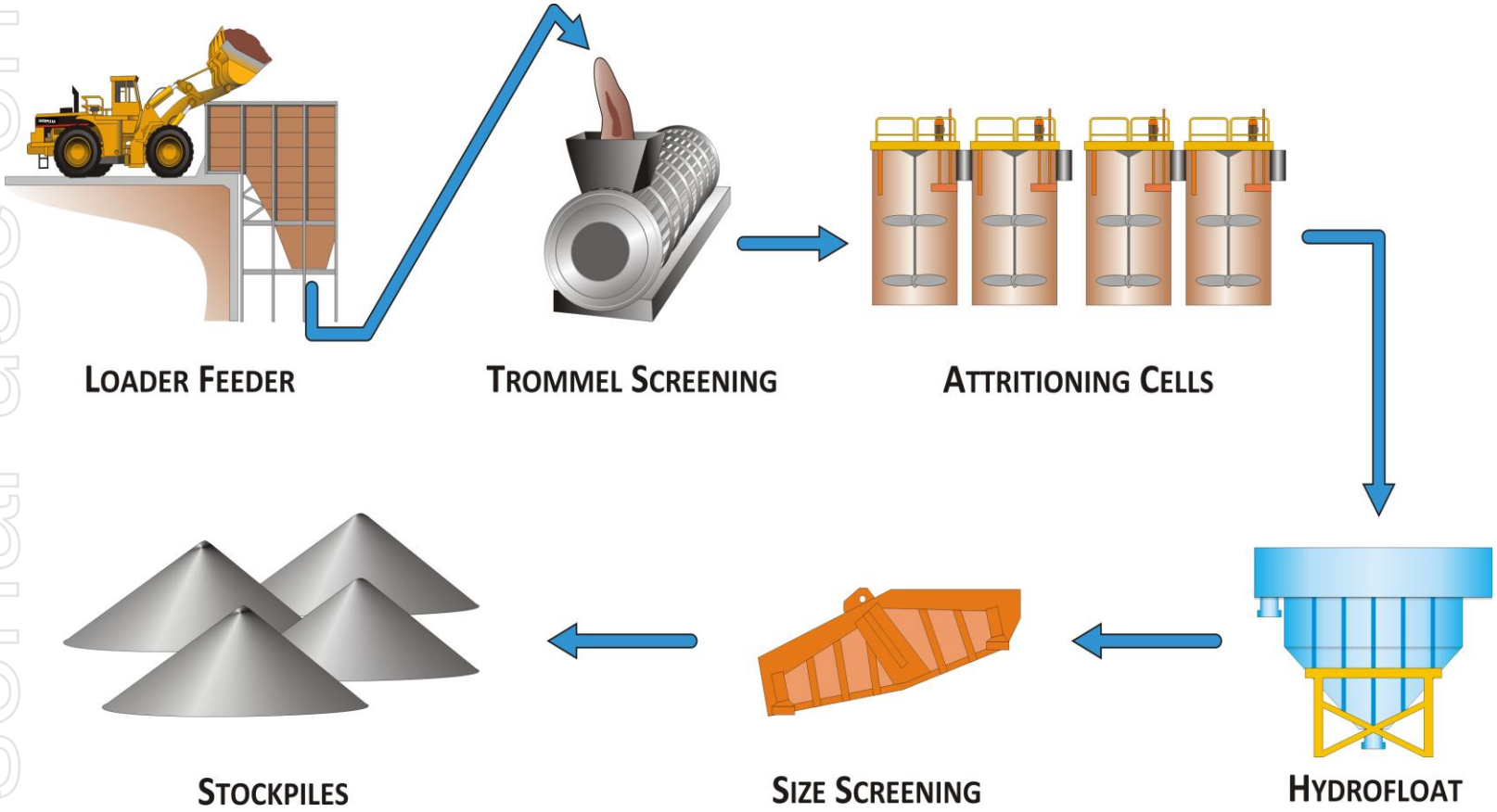
**Key assessment milestones to be completed**

- ❑ EPA approves ESD
- ❑ Mining Scope to DMIRS
- ❑ EPA publishes ESD
- ❑ Submission of draft ERD
- ❑ EPA accepts ERD and authorises release of ERD for 4 week public review (assumes no further revisions required)
- ❑ EPA provides summary of submissions to proponent
- ❑ Submit response to submissions to EPA
- ❑ EPA reviews response to submissions
- ❑ EPA accepts and publishes proponent's response to submissions
- ❑ EPA finalises assessment report (including consultation on draft conditions) and sends recommendation to Minister
- ❑ Mining Proposal to DMIRS

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# Processing Flowsheet

**Simplified wet processing, multiple products, no dust, 2mtpa processing plant at each site**




### Processing Plant Design



- Arrowsmith North, Arrowsmith Central and Muchea to each have 2 Mtpa processing capacity
- No toxic chemicals required

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# Arrowsmith North – Circuit design

## QA/QC Metallurgical Testwork

- Extensive metallurgical testwork undertaken by sand processing specialists BHM Process Consultants to ensure throughput and quality can be maintained
- A new and unique process circuit incorporating flotation has been developed and tested at lab scale
- An Australian patent to be held by BHM is pending to protect unique intellectual property which VRX can share in future licensing
- Flotation will replace spirals and upstream classifying which will reduce capex and operating costs
- Flotation reagents are organic and rapidly oxidise presenting no environmental issues
- Bulk pilot plant scale testing is underway
- Bulk testwork will supply further large samples to potential buyers to enable furnace testing
- Outcome is to enable consistent QA/QC production and extend the depth of sand to be processed and an increase in Reserves

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# Arrowsmith North – Offtake

- Offtake term sheet signed with prominent Korean foundry sand suppliers and users
- Customers supply casting and silica sand to Kia, Hyundai, Daewoo and Samsung Renault
- First and only supply contract for foundry sand from Australia
- Term sheet sets out conditions for a FOB silica sand supply contract from Geraldton Port
- Product specifications, quality control and variation limits
- Term and quantity determination
- Sampling and analysis procedures
- Dispute resolution
- FOB (INCO 2020) terms and required Documentation
- Letter of Credit payment terms
- Final purchase price to be determined once the delivery date can be committed
- Strong interest from other potential customers in SE Asia at a time of diminishing global supply and increasing demand

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# Muchea

## Large scale, world class high-grade and low impurity silica sand project

- Production expected to follow Arrowsmith North
- Unique mining method and duplicate plant
- Access to established infrastructure
  - Underutilised railway connects to Kwinana (100km)
  - Grid power
  - Water from Yaragadee deep aquifer
  - Adjacent to Brand Highway
- Granted Mining Lease and Miscellaneous Licences for access
- **99.9% $SiO_2$ - $Fe_2O_3$ <100ppm after processing (high-grade)**
- **Raw material for premium ultra-clear cover glass production for solar panels**
- **Potential for manufacturing cover glass from adjacent gas/hydrogen pipeline**

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# Sustainability
# Environmental, Social and Governance (ESG)

**VRX is delivering on its ESG responsibilities aligned to the UN's Sustainable Development Goals**

SUSTAINABLE DEVELOPMENT GOALS




**CLEAN ENERGY**

Utilising reliable, renewable modern energy

**ECONOMIC GROWTH**

Enhancing economic and productive employment

**INDUSTRY INNOVATION**

Building resilient infrastructure and fostering innovation

**SUSTAINABLE COMMUNITIES**

Respecting heritage values

**RESPONSIBLE PRODUCTION**

Employing sustainable mining methods

**CLIMATE ACTION**

Reducing emissions from production

**REHABILITATION PLAN**

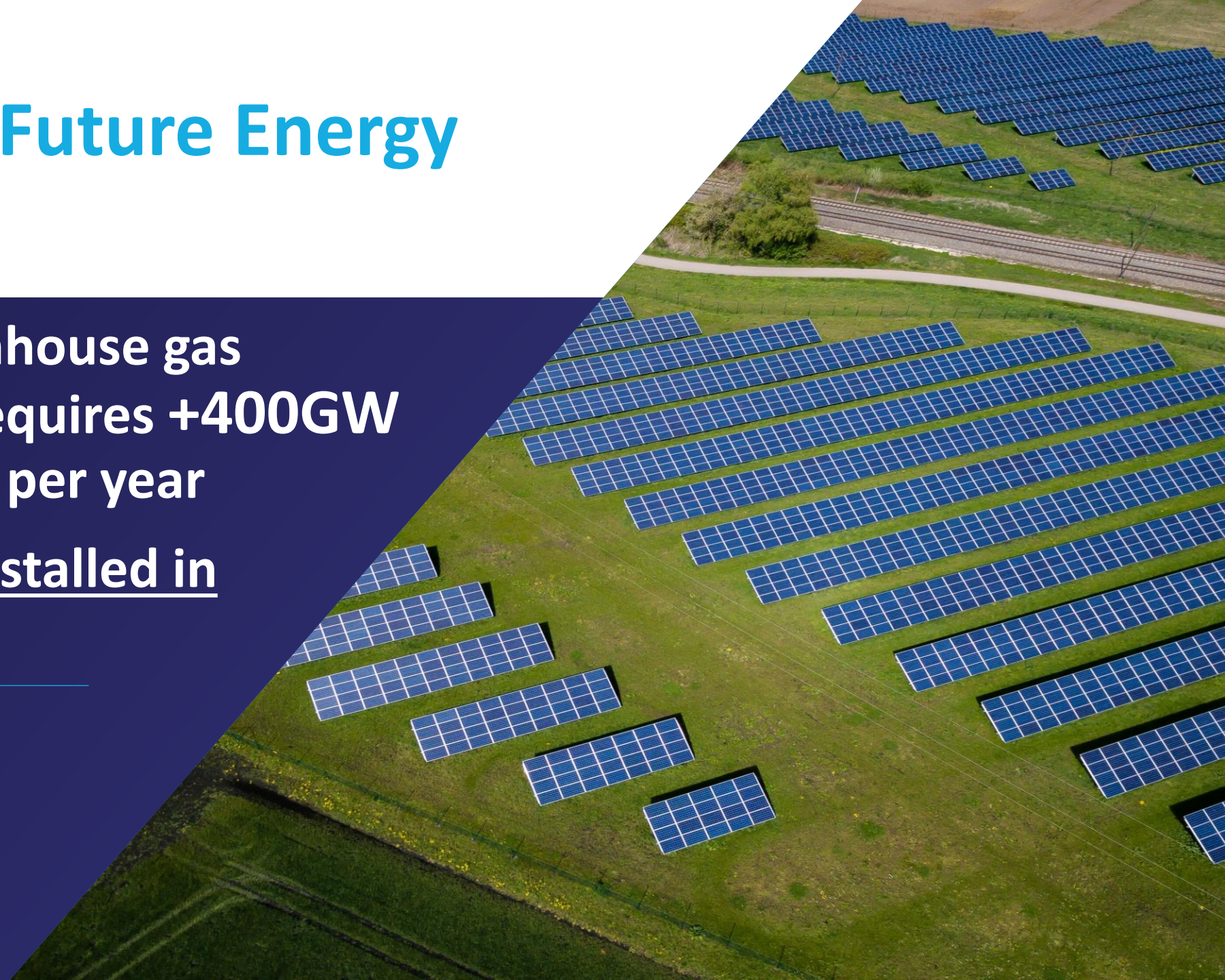
Employing direct vegetation transfer as a unique rehabilitation method

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# Future Energy

**To meet 2050 greenhouse gas targets the world requires +400GW of solar installation per year**

**A record 140GW installed in 2020!!**



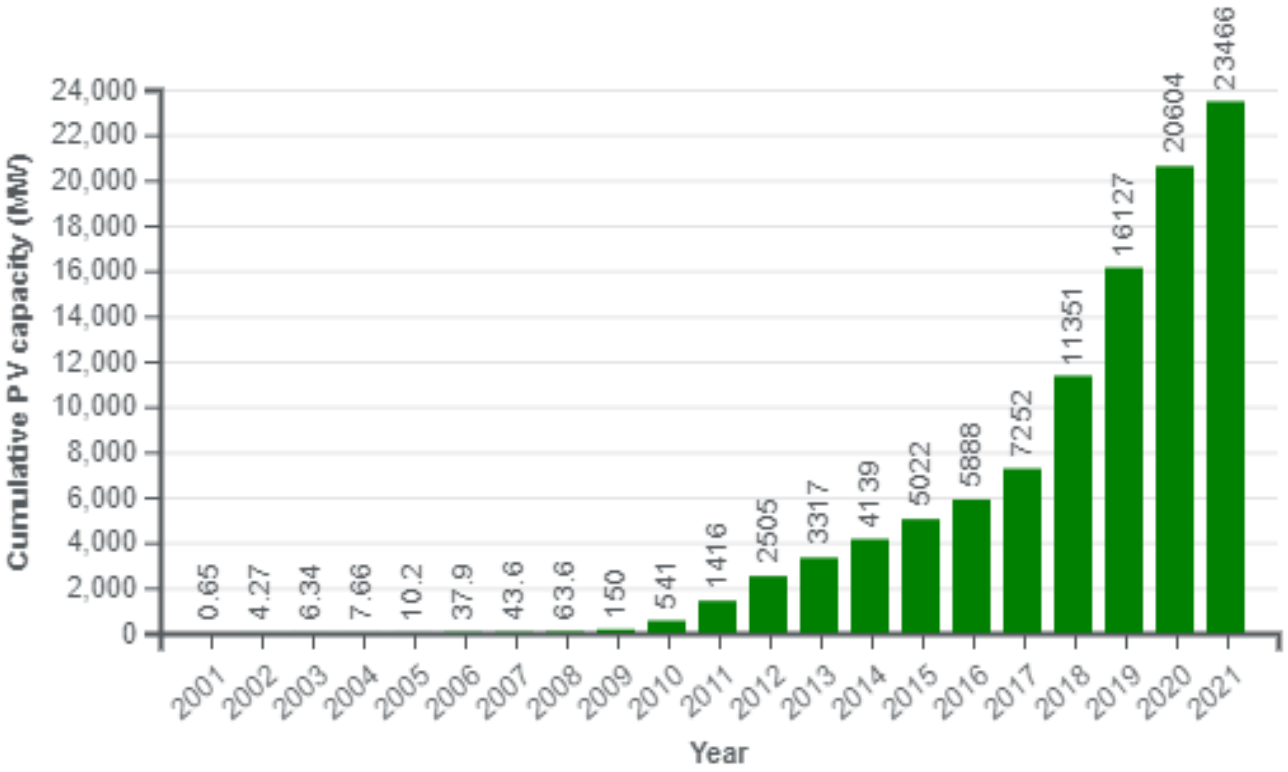
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# Australian Solar Panel Installation

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## A fast growing industry

- As of September 2021 Australia's 2.96 million solar PV installations had a combined capacity of 23.46GW
- 4.12GW installed in the preceding 12 months
- Solar accounts for 9.9% of Australia's total energy production in 2020
- Australia has the highest per capita solar capacity at 600W per capita
- The installed solar capacity quadrupled between 2011 and 2016
- The price of photovoltaic power is steadily decreasing
- The top 10 producers of "cover glass" for solar panels are <u>all</u> Chinese companies




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# Right time – Right place for WA and its economic advantages of silica sand and gas reserves

- Very long life, high-grade silica sand supply
- WA domestic gas reserves and burgeoning hydrogen projects in mid-west
- Long term supply of essential raw materials and green energy for glass manufacturing (gas/solar/hydrogen)
- High-tech ultra-clear glass production capability from Muchea
- Manufacturing of solar panels in WA for a huge and growing market in Australia

***Opportunity to build world-class glass manufacturing and downstream processing industries in Western Australia***

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# Thank you

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