

ASX:DRX

# Time to shine.

Advanced, high grade, low-cost silica project located adjacent to the world's largest silica sand mine.

Noosa Mining Virtual Conference  
17 July 2020



**DIATREME**  
Resources

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DEMAND.

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### Cautionary Statement

Whilst Diatreme Resources has concluded that it has a reasonable basis for providing the forward looking statements included in this presentation, Diatreme Resources advises that given the current price of zircon and the company’s current market capitalisation (compared to the capital expenditure required in connection with the Cyclone Zircon Project), the production targets and forecast financial information contained in this presentation do not provide an absolute assurance of economic development at this stage. The stated production targets and forecast financial information contained in this presentation are based on detailed PFS studies and Diatreme Resources’ current expectations of future results or events, including sourcing of project development finance within the targeted timeline and/or attracting suitable project major financial partners and should not be relied upon by investors when making investment decisions.

Diatreme confirms that it is not aware of any new information or data that materially affects the information included in this presentation and that all material assumptions and technical parameters underpinning Resource Estimates, Production Targets and Project Feasibility Studies, continue to apply and have not materially changed.

### Additional Information

This presentation should also be read in conjunction with the DRX Annual Report for 2019 and the March 2020 Quarterly Activities report, together with any announcement made by Diatreme in accordance with its continuous disclosure obligations under the Corporations Act including but not limited to the following ASX releases:

- 13 March 2018 – “Cape Bedford Exploration Update”
- 2 March 2018 – “Testwork Confirms Prospects For New Silica Sand Mine”
- 7 February 2019 – “Galalar Silica Project Exploration Results Update”
- 7 March 2019 – “Galalar Silica Resource expands 22% to 26.4 million tonnes”
- 25 March 2019 – “Large silica exploration target boosts Galalar’s prospects”
- 27 March 2019 – “\$1.5m placement to progress Galalar Silica Project”
- 11 April 2019 – “New silica targets & heavy minerals discovery at Galalar”
- 14 May 2019 – “Galalar Silica Project further expands with maiden Indicated Resource”
- 20 June 2019 – “Boost for Galalar with sampling of regional exploration targets confirming continuity of high silica grades”
- 21 June 2019 – “Re-release: Boost for Galalar with sampling of regional exploration targets confirming continuity of high silica grades”
- 16 July 2019 – “Offtake MOU on Galalar Silica Project Signed With Fengsha Group”
- 7 August 2019 – “Regional support builds for Galalar silica mine”
- 9 September 2019 – “Galalar scoping study emphasises high return potential” (ASX release of Scoping Study)
- 19 September 2019 – “Second MOU signed for Galalar silica offtake”
- 29 November 2019 – ‘Product upgrade potential for Galalar’
- 23 December 2019 – “Mining Lease Application lodged for Galalar Silica Project”.
- 6 February 2020 – “EIS application lodged for Galalar”
- 20 February 2020 - Galalar silica resource expanded 26%
- 8 April 2020 - Galalar regional economic study
- 12 May 2020 - Galalar silica resource expanded 25%

Our vision is to become a producer of high-quality silica and mineral sands for use in growing global solar PV and ceramics markets.

- Galalar is a high-grade silica sands project near production in close proximity to the world's largest silica sands project at Cape Flattery, with low capex and opex requirements.
- Soaring silica sands consumption parallels rising demand worldwide for solar PV panels, whose primary component (70%) is glass sheeting manufactured from “low iron” sand.
- Shovel-ready Cyclone Zircon Project progressing towards development, amid shortage of high-grade zircon supply.





## Corporate overview

Share price

**A\$0.010**

10 July 2020 close  
52 week high \$0.015, low \$0.008

Shares on issue

**1,855m**

Performance rights

**3.3m**

Market capitalisation

**A\$18.5m**

Cash

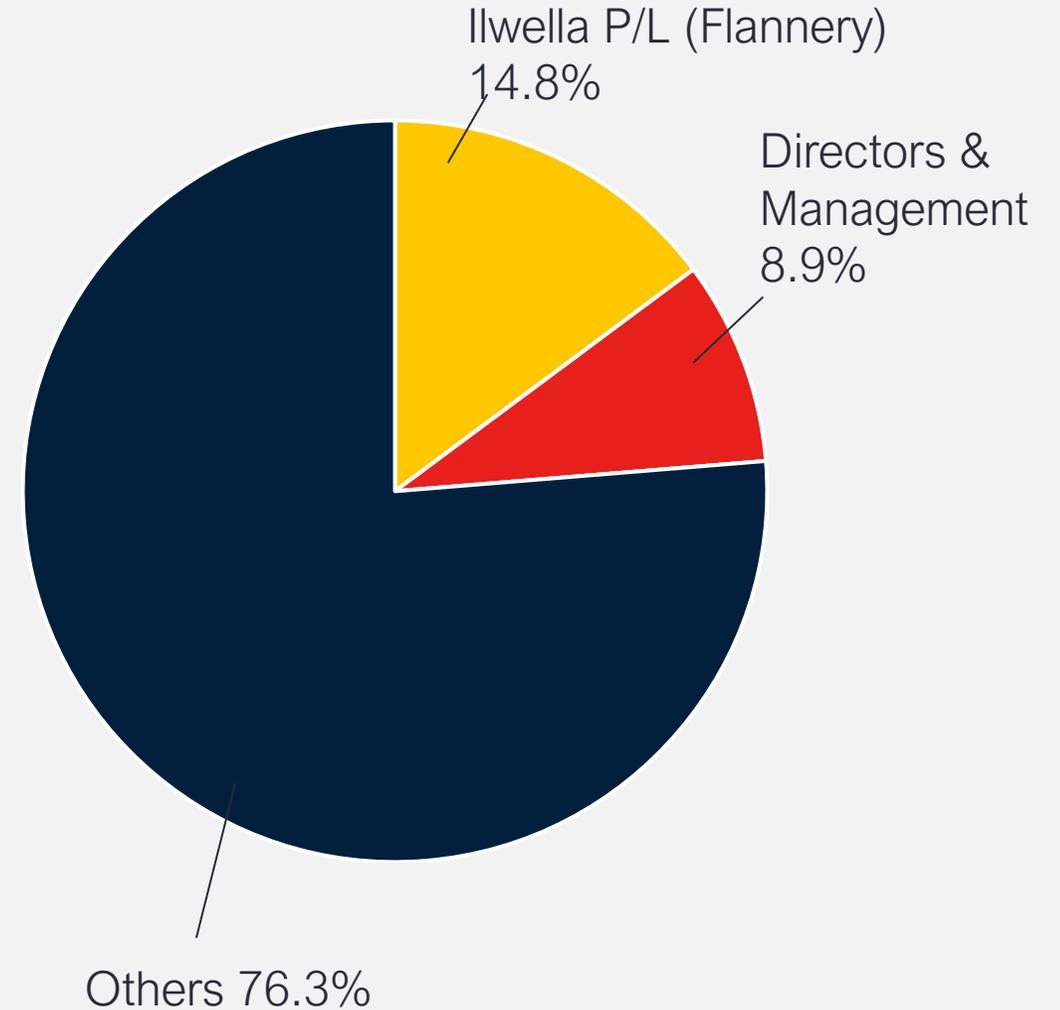
**A\$1.33m**

As at 10 July 2020

Options

**231.7m**

50m – Exp 30/06/21 @ \$0.024  
181.7m – Exp 4/2/22 @ \$0.020



## Galalar Silica Project



Total Mineral Resource\*

**47.5Mt**

@ 99% silica oxide

### One of the world's purest silica sands projects

- Production target 2022
- Sufficient reserves to support 15-year mine life at 750,000 tonnes per year of solar-grade silica
- Close to port and growing Asian markets
- MOU's signed with world leading offtakers
- Backed by traditional owners, Hopevale Congress

\* Refer competent person statement and detailed resource tables within this presentation.

## Cyclone Zircon Project



Total Mineral Resource\*

**203Mt**

@ 2.3% HM

### Shovel ready-project

- One of the major zircon-rich discoveries of the past decade
- 2018 Definitive Feasibility Study returned favourable economics, including NPV of A\$113m, IRR 27% and payback in 2.7 years
- Strategic metal potential within zircon component
- All project approvals in place, ready for development

\* Refer competent person statement and detailed resource tables within this presentation.

# GALALAR

SILICA SANDS  
PROJECT



**DIATREME**  
Resources

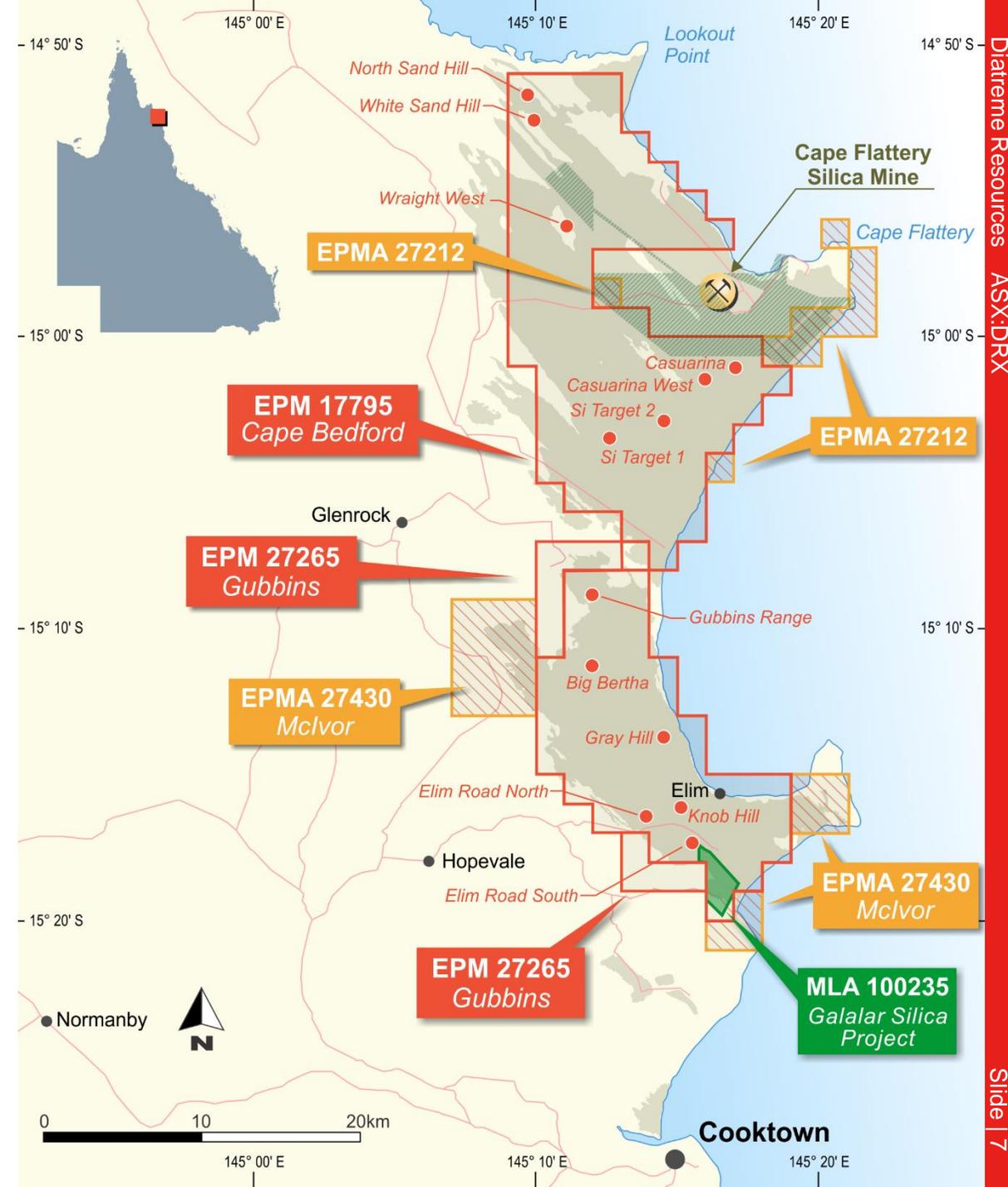


# Galalar Silica Project

## Premium quality silica

- Project located 20km north of Cooktown, FNQ adjacent to world’s largest silica sand mine at Cape Flattery (Mitsubishi-owned) operating 30 years plus
- Diatreme holds huge dominant position in known silica province at over 500 sq km
- High purity silica resource identified (47m tonnes)
- Short-term pathway identified to cashflow via low capex project, targeting production by 2022
- Offtake MOU’s with potential to supply up to 750,000 tonnes for solar PV market
- 2019 Scoping Study showed favourable economics, including pre-tax NPV \$231m, IRR 150% and capital payback in 8 mths
- Advancing permitting, approvals and preferred logistics solution with Qld and Commonwealth Govt’s

*Note: Refer to ASX announcement on 9 September 2019 –“Galalar scoping study emphasizes high return potential”. Diatreme confirms that all material assumptions underpinning the production targets and forecast financial information from those production targets, as reported on 9 September 2019, continue to apply and have not materially changed.*

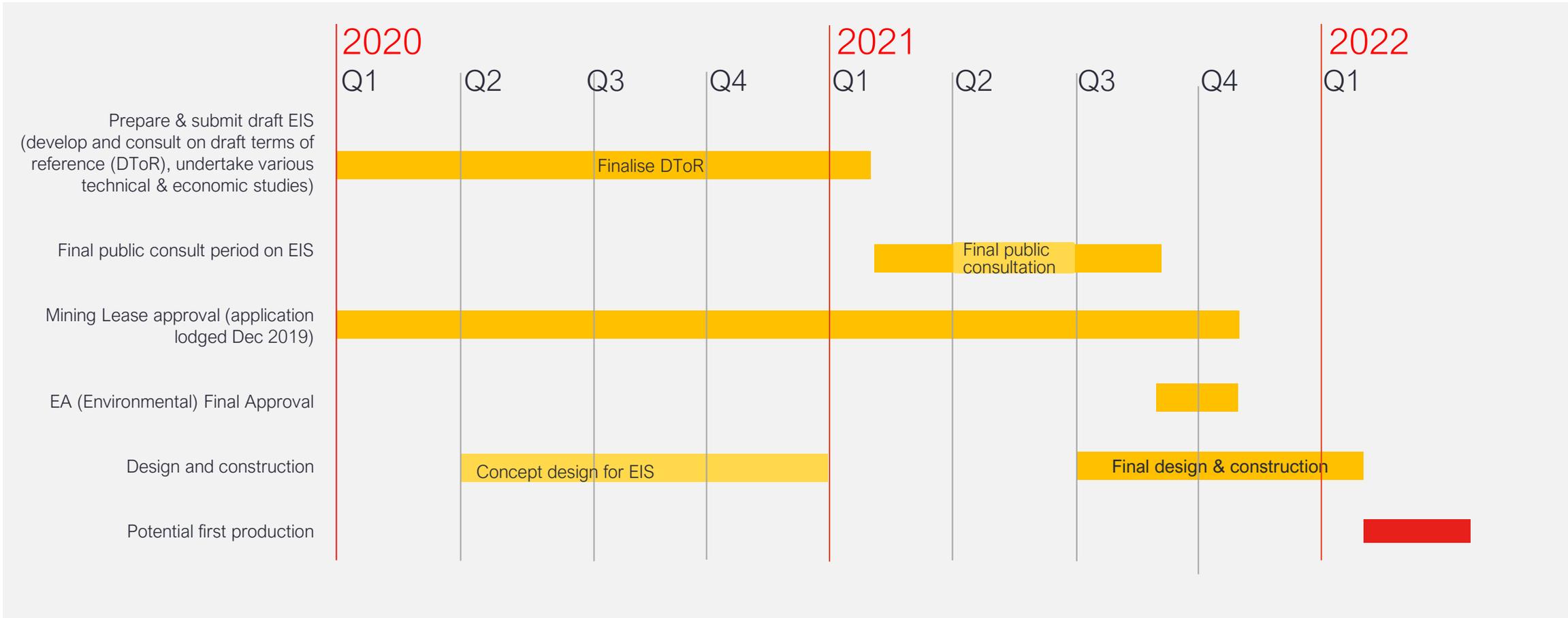


## Scoping study snapshot



**Note:** Refer to ASX announcement on 9 September 2019 – “Galalar scoping study emphasizes high return potential”. Diatreme confirms that all material assumptions underpinning the production targets and forecast financial information from those production targets, as reported on 9 September 2019, continue to apply and have not materially changed.

## Near-term production



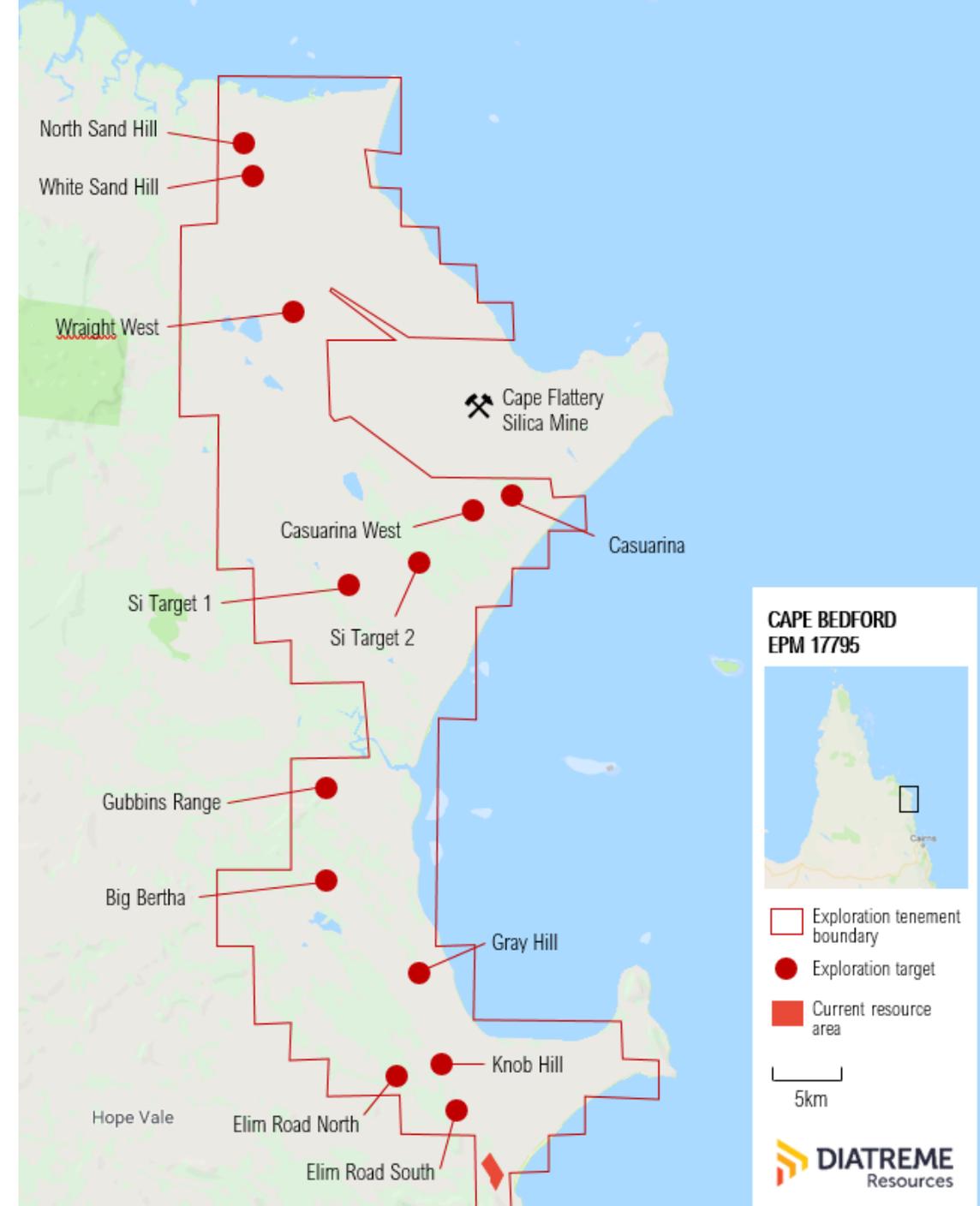


# Galalar Silica Project

## Multiple exploration targets

- Regional potential > 1 billion tonnes.
- Regional exploration program has identified potential resource extensions at Elim Road North and Elim Road South, with high SiO<sub>2</sub> results > 99%
- Potential heavy minerals discovery at Gubbins Range, with significant TiO<sub>2</sub> levels (up to 1.17%)
- Further exploration planned to test target areas, with focus on identifying silica deposits capable of supplying high-value product, together with sample metallurgical testing for Gubbins Range
- Qld Govt confirms silica a priority ‘new economy mineral’

**Note:** Resource targets are not yet fully defined and will be subject to further drilling and exploration activity. Refer ASX release dated 25 March 2019 “Galalar significant regional Exploration Targets” for further information.



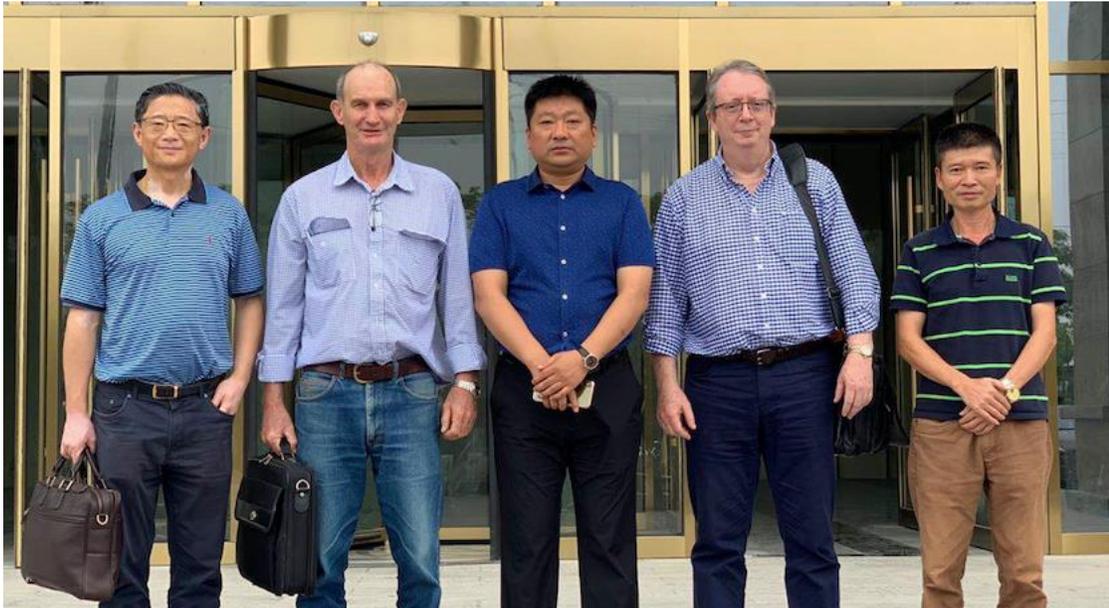
## High quality silica product

- The sand from the Galalar project is some of the world's purest
- Bulk sample testwork confirms ability to produce premium grade silica product for high-end glass & solar panel manufacturing (which demands minimum iron content)
- Solar panel manufacturers' feed stock requires >99% purity silica with "low iron" less than 100ppm iron oxide levels

Galalar expected quality – from bulk product testing

<p>Iron oxide</p> <p><b>=&lt; 85ppm</b></p>	<p>Silicon dioxide</p> <p><b>=&gt; 99.7%</b></p>	<p>Particle size distribution</p> <p><b>109-700</b> Microns 24-140 mesh</p>	<p>Titanium dioxide</p> <p><b>&lt; 140ppm</b></p>	<p>Aluminium oxide</p> <p><b>&lt; 500ppm</b></p>
<p>International required specifications &lt;100ppm</p> <p>100% in range</p>	<p>International required specifications &gt;99%</p> <p>100% in range</p>	<p>International required specifications 109-700microns</p> <p>98% in range</p>	<p>International required specifications &lt;400ppm</p> <p>100% in range</p>	<p>International required specifications &lt;1000ppm</p> <p>100% in range</p>

## Offtake MOU agreements in place



- Diatreme has secured an MOU off-take agreement with the Fengsha Group, China's largest processor and supplier to solar photovoltaic panels manufacturers and specialty high end silica sand related products
- Agreement to supply up to 500,000tpa with an option to increase this to 750,000tpa
- Fengsha deal also includes technical support, market access and potential for direct investment
- Second 500,000t low iron silica product MOU signed with Wan Zhong Investment Group



## Fengsha facilities, China



Chemical pickling vats



Mineral Separation Plant



Thin Film Transistor line

## Strong stakeholder support



**Note :** Refer ASX release dated 8 April 2020 – “Galalar regional economic study” for detail on full economic report.

- Project being developed with support of traditional owners, Hope Vale Congress Aboriginal Corporation (12.5% direct “free carry” stake), the RNTBC representative body
- Traditional owners hold freehold and native title over entire tenement area
- Strong support from all levels of government, including State and local level
- Independent economic study (Cummings Economics) shows project would inject \$23-24m in construction phase and up to \$42m in operation for benefit of Hopevale/Cooktown region, while generating 110 (FTE) jobs and \$1.475m p.a. in state royalties





## Expanding mineral resource

- Scoping Study production target derived from 2018 JORC Resource
- Planned drilling in 2020 to expand and upgrade the size of the existing resource and lower the overall waste-to-ore ratio for the project
- Significant JORC Exploration Target highlights potential to expand resource

JORC Resource Estimate<sup>1</sup>  
6 May 2020



<sup>1</sup> Refer ASX announcement 12 May 2020 and attachments including the resource and competent persons statements. Diatreme confirms these statements are still current as at time of presentation



## Simple processing system

- Amenable to low capex & opex

- No caustic chemicals or dust



Front end loader



Hopper conveyor



Trommel



Spiral separator



Hydrocyclone product stacker



Wet high-intensity magnetic separators



Classifiers



Attrition scrubber

## Export option Scoping Study: Cooktown

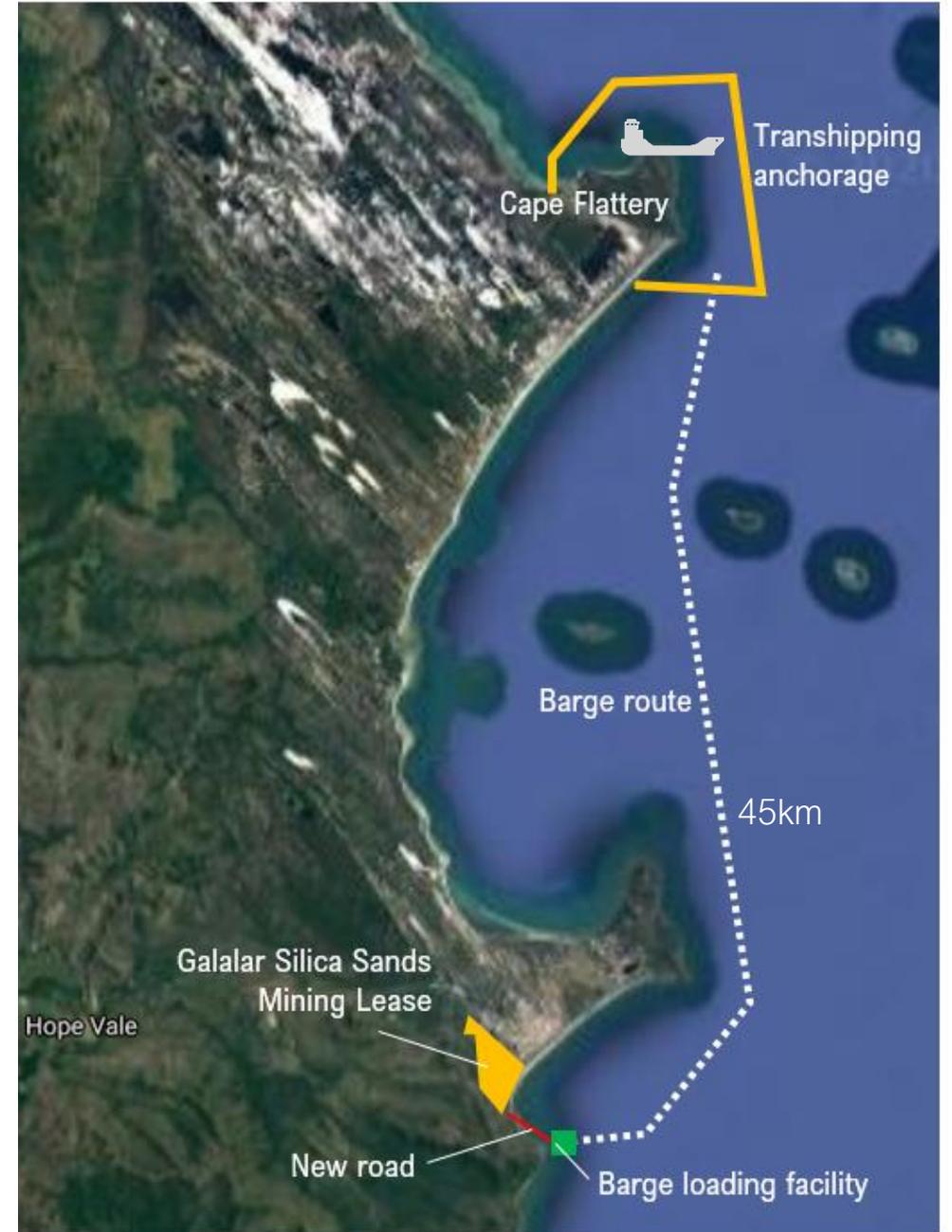
- Nine trucks operating 12 hours per day via existing road network from mine site to Cooktown (60km). 50 tonnes per truck, 42 loads daily, 360 days per year
- Stockpile up to 25,000 tonnes at barge loading facility. Refurbishment of existing barge ramp facility on Marton River in Cooktown. Barges transport product 10km on river to ship at anchor for transhipping
- Transhipment from Cooktown port. Normal shipment 35,000t
- 10 days to load a ship
- Shipment every 2-3 weeks





## Export option 2: Nob Point Optimised transport solution

- Construction of new 3.6km road from mine site to purpose-built barge ramp at Nob Point (subject to Qld Govt approvals), saving significant trucking opex costs
- Reduces truck and barge impacts on community
- Barging 750,000t of silica product per year over open water to ship transfer site (5,000t barges)
- Transhipping activity undertaken within the Cape Flattery designated port defined area
- Currently working with Qld Govt seeking potential development consents
- Strongly supported by Hopevale Congress and other regional stakeholders



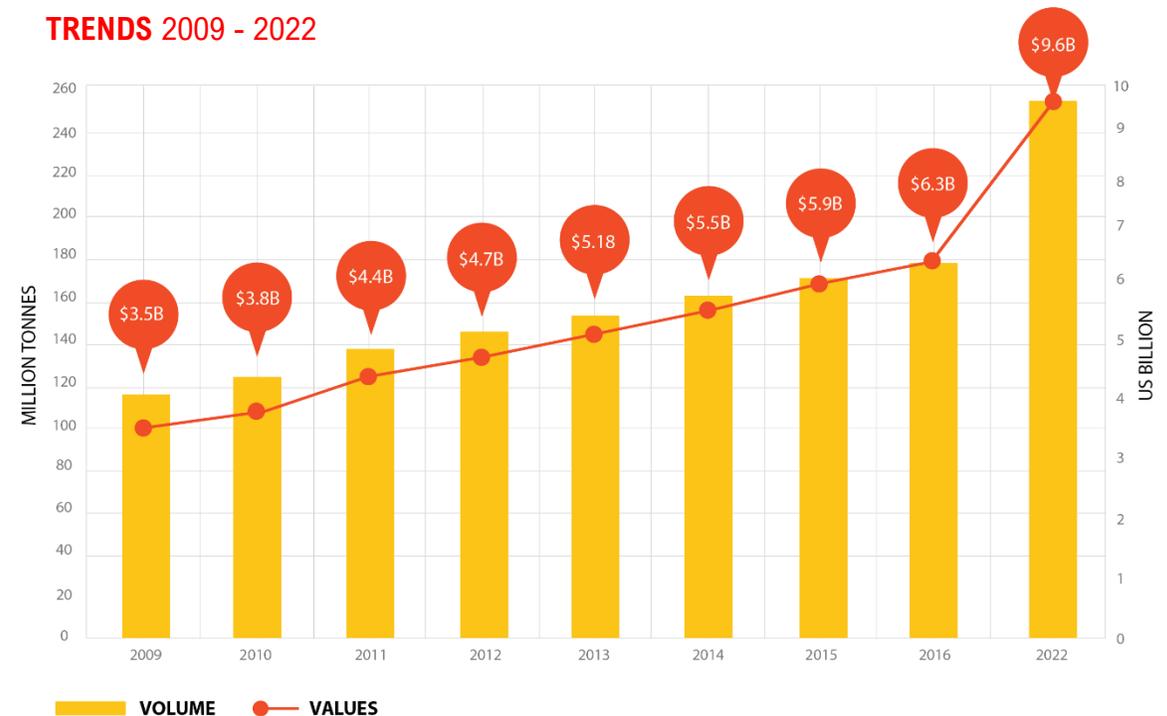


## Growing global demand

- Silica sand has many uses, the market is experiencing increasing demand from emerging consumers such as China and India from foundry, automotive and construction industries including the solar PV market
- IMARC forecasts compound annual growth rate (CAGR) of 7.2% per year through to 2022, reaching US\$9.6B revenues\*
- Accelerating growth in solar panel market, where silica is the main component (70%)
- Supply is diminishing as a lot of the sand used in Asia comes from rivers where environmental concerns are increasingly restricting extraction
- No direct substitutes in majority of applications

\* Refer DRX announcement, 30 November 2017

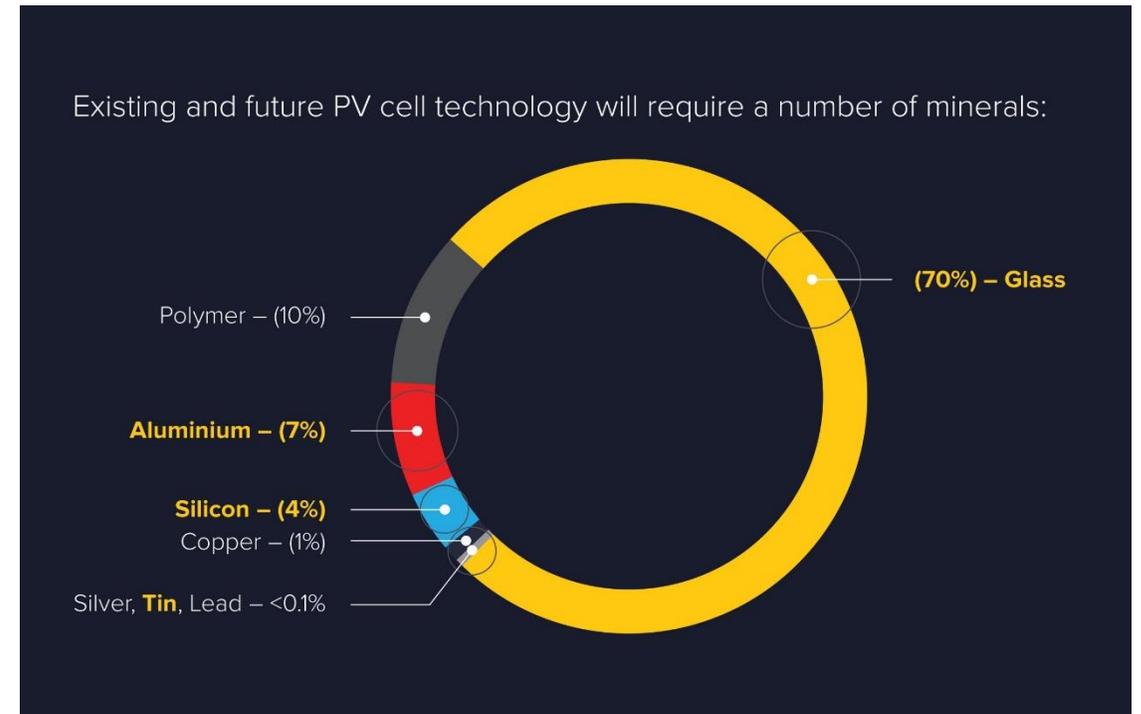
**GLOBAL SILICA SAND MARKET VOLUME AND VALUE**  
**TRENDS 2009 - 2022**



## Solar market consuming more sand for panel manufacturing

- Solar panel PV market forecast to reach US\$48.2 billion by 2025, with a CAGR of 34.7%\*
- World Bank estimates global renewable capacity will grow by over 1TW from 2018 to 2023, up 46%, with solar PV accounting for more than half of this growth
- Galalar project confirmed capable of supplying solar PV market with premium product
- Solar panel manufacturers' feed stock requires >99% purity silica with less than 100ppm iron oxide levels
- Est. 70% of each 'typical' commercial solar panel comprises glass sheeting made from 'low iron' high purity silica

\* Source: Bizwit Research & Consulting



Source: "Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition," World Bank, 2020

A compelling opportunity

Annual DRX silica production  
**0.75Mt**



Annual silica consumption  
**250Mt**

Annual gross revenue  
**A\$80m**

Annual operating costs  
**A\$42m**

Annual operating margin  
**A\$37m**

x 15 years  
Project life

Total net revenue  
**A\$555m**



## Resource statement Galalar Silica Project

### Galalar Indicated/Inferred/Measured Mineral Resource 47.5Mt >99% SiO<sub>2</sub>

<u>JORC Category</u>	<u>Al<sub>2</sub>O<sub>3</sub> Grade</u>	<u>Fe<sub>2</sub>O<sub>3</sub> Grade</u>	<u>TiO<sub>2</sub> Grade</u>	<u>Cut-off SiO<sub>2</sub>%</u>	<u>SiO<sub>2</sub>% Grade</u>	<u>Silica Sand (Mm<sup>3</sup>)</u>	<u>Density (t/m<sup>3</sup>)</u>	<u>Silica Sand (Mt)</u>
Inferred	N/A	N/A	N/A	99.0%	>99.0%	6.54	1.62	10.59
Indicated	0.08	0.06	0.10	98.50	99.10	3.71	1.62	6.02
Measured	0.11	0.09	0.10	98.50	99.28	19.07	1.62	30.89
<b><u>Total Inferred + Indicated + Measured</u></b>						<b><u>29.32</u></b>	<b><u>1.62</u></b>	<b><u>47.50</u></b>

\* Resource estimate current as of 6 May 2020

Note: Refer ASX release dated 11 May 2020 - "Galalar Silica resource expands 25% to 47.5Mt". Diatreme confirms this resource statement as current, with no material change as at the time of this presentation.

# APPENDIX



**DIATREME**  
Resources

# CYCLONE

ZIRCON PROJECT



**DIATREME**  
Resources

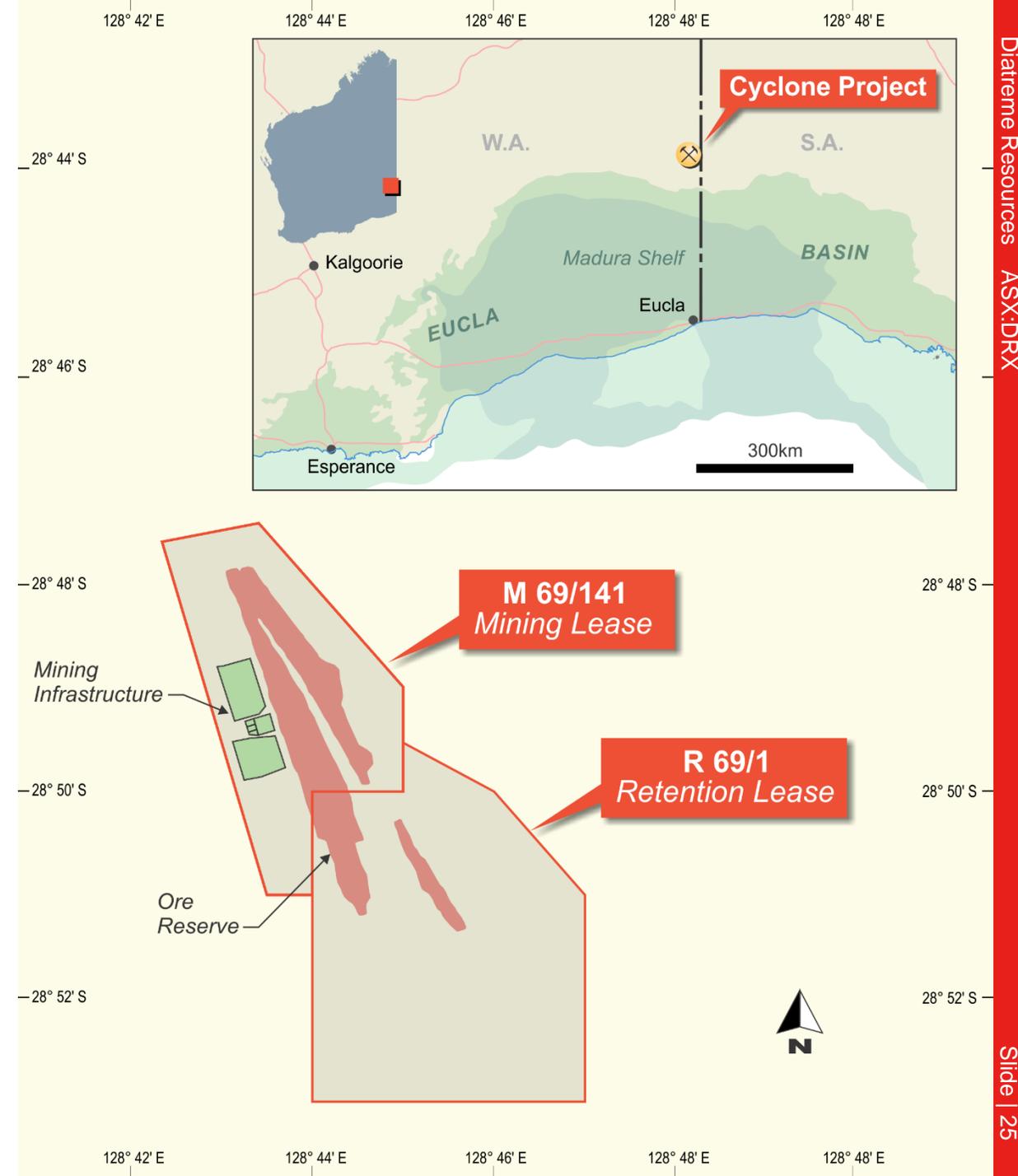


# Cyclone Zircon Project

## Ready for development

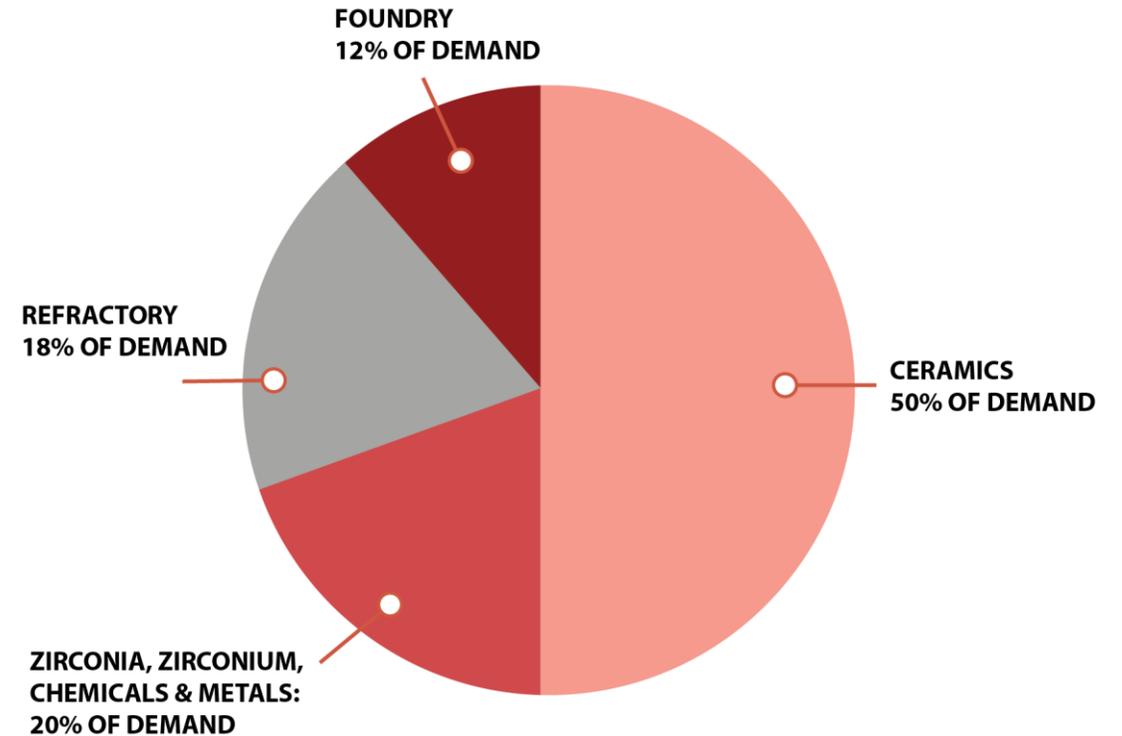
- Corporate advisers appointed to support progression of the project and ensure maximum shareholder benefit received
- JORC Resource: 203Mt @ 2.3% HM (1% HM cut-off grade), containing 4.7Mt HM & 1,262 Kt zircon
- Strategic metal hafnium identified within zircon component
- 2018 Definitive Feasibility Study returned favourable economics:
  - Pre-tax NPV \$113m, IRR 27% and estimated capital payback within 3 years
  - Capital costs - \$135m
  - Life of Mine (LOM) production of 1.94Mt of heavy mineral concentrate, containing 936kt zircon, producing 772kt of zircon final product
  - ENFI, part of major SOE Chinese mining group China Minmetals, formally endorses the project and recommends immediate development

**Note:** Refer to ASX announcement on 15 November 2018 – “Positive DFS confirms Cyclone’s potential as new zircon mine”. Diatreme confirms that all material assumptions underpinning the production targets and forecast financial information from those production targets, as reported on 15 November 2018, continue to apply and have not materially changed.



## Valuable heavy mineral

- Most valuable heavy mineral, with current prices US\$1,487/t (2018: US\$1,351/t)\*
- Global zircon production in 2018 approx. 1.2Mt
- Zircon primarily used to produce ceramic tiles, as well as other applications including refractories, foundry casting
- Speciality applications in nuclear fuel rods, jet turbine blades

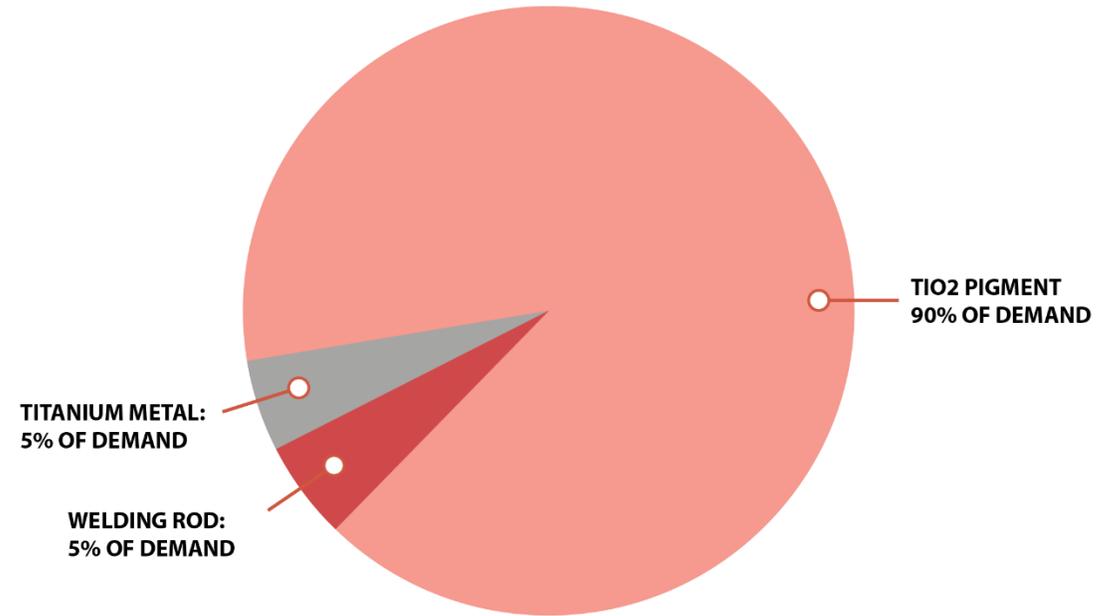


\*Source: Iluka Resources, 20 February 2020



## Growing global demand

- Around 7.4m tpa global market (2018)\*
- Rutile price averaged US\$1,142/t in 2019 (2018: US\$952/t)\*
- Used primarily in pigments
- Demand increasing due to higher environmental standards in China and technological advancements



\*Source: Iluka Resources, 20 February 2020

## Low-cost transportation



- HMC loaded into containers at Cyclone. 33 tonnes per container
- 240 kilometre truck transport by road from Cyclone to Forrest rail siding in 100 tonne loads
- 1,100 kilometre rail transport from Forrest siding to Port Adelaide in 3,000 tonne loads
- Containers stacked at Port Adelaide until 15,000 tonnes accumulated. Crane uses container rotator to bulk load a Handysize ship for transport to China.



## Easy mining process

### Project Development Options:

- Mineral Separation Plant in Australia – final products from Australia
- Mineral Separation Plant in China or other country
- Direct sale of HMC within Australia
- Direct sale of HMC offshore

Mining & Logistics	
Strip Ratio	1 : 1
Mining Rate (Dry)	1,300 tonnes per hour – 2 x Dozer traps
Wet Concentrator Plant Product	20 Tonnes / Hour HMC production 144,000 tpa @ 96% HM Concentrate
Transport - Road	240km - 100 tonne loads to Forrest
Transport - Rail	1,100km – 3,000 tonne loads to Port Pirie

## Project fundamentals

- **All primary project approvals in place:** Mining Lease, traditional owner agreements, environmental approvals
- **Sufficient reserves to support a long mine life:**
  - Currently 14 years at 10Mt pa
  - Strand mineralisation gives options for high grading
  - Substantial resource base to support potential long-term expansion
- **Support from traditional owners to develop project:**
  - Strong relationship, mining agreement signed
- **No competing land use**
  - Quaternary dune field, Great Victoria Desert





# Resource statement

## Cyclone Zircon Project

Category	HM cut-off %	Material Mt	HM %	HM Mt	Slime %	OS %	Head Grade						Zircon Kt
							Zircon %	Rutile %	Leuco %	HiTi %	Alt Ilm %	Si TiOx %	
MEASURED	2.0	69	3.7	2.58	3.6	3.8	1.06	0.11	0.24	0.88	0.45	0.82	735
MEASURED	1.5	102	3.1	3.14	3.9	4.4	0.88	0.09	0.20	0.73	0.38	0.67	896
MEASURED	1.0	156	2.4	3.81	4.2	5.0	0.69	0.07	0.16	0.58	0.30	0.53	1,079
INDICATED	2.0	13	3.2	0.41	3.8	4.4	0.66	0.07	0.18	1.06	0.55	0.60	83
INDICATED	1.5	24	2.5	0.60	4.1	5.0	0.52	0.05	0.12	0.84	0.41	0.46	123
INDICATED	1.0	48	1.9	0.89	4.4	5.1	0.38	0.04	0.09	0.62	0.30	0.34	183
<b>TOTAL</b>	<b>2.0</b>	<b>82</b>	<b>3.6</b>	<b>2.99</b>	<b>3.6</b>	<b>3.9</b>	<b>1.00</b>	<b>0.10</b>	<b>0.23</b>	<b>0.91</b>	<b>0.47</b>	<b>0.79</b>	<b>818</b>
<b>TOTAL</b>	<b>1.5</b>	<b>126</b>	<b>3.0</b>	<b>3.75</b>	<b>3.9</b>	<b>4.5</b>	<b>0.81</b>	<b>0.08</b>	<b>0.18</b>	<b>0.75</b>	<b>0.38</b>	<b>0.63</b>	<b>1,019</b>
<b>TOTAL</b>	<b>1.0</b>	<b>203</b>	<b>2.3</b>	<b>4.70</b>	<b>4.2</b>	<b>5.0</b>	<b>0.62</b>	<b>0.06</b>	<b>0.14</b>	<b>0.59</b>	<b>0.30</b>	<b>0.49</b>	<b>1,262</b>
<b>Mineral Assemblage</b>							<b>27%</b>	<b>3%</b>	<b>6%</b>	<b>26%</b>	<b>13%</b>	<b>21%</b>	

### Notes:

- Refer to ASX release 15 June 2016 “Cyclone Study Reaffirms Project Profitability” for more detail
- Rounding may generate differences in last decimal place
- A constant SG of 1.7 has been used to derive material tonnes
- Slime refers to material typically <53um; OS refers to material typically >2mm
- Mineral Assemblage derived from QEMSCAN® analysis
- High Titanium Oxides (HiTi) – Ti-oxides containing 70 - 95% TiO<sub>2</sub>, Altered Ilmenite (Alt Ilm) – Ti-oxides containing <70% TiO<sub>2</sub>, Siliceous Ti-Oxide (Si TiOx) – Ti-oxides containing >10% silica rich Ti minerals.
- Resources are inclusive of Reserves (refer ASX announcement 27 April 2017)
- Diatreme confirms this resource estimate as current, with no material change at time of this presentation July 2020; also refer competent persons report.



## Competent person's statement

### Statement in accordance with the Australasian code for reporting of exploration results, mineral resources and ore reserves (the JORC code)

*The information in this report that relates to Mineral Resources at the Cape Bedford Project is based on information compiled by Bryce Mutton from Ausrocks Pty Ltd who has significant experience in Industrial Minerals and Quarry Resource assessments. Bryce Mutton has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code). Bryce Mutton consents to the inclusion in the report on the matters based on their information in the form and context in which it appears.*

*The information in this report that relates to Exploration Results and Exploration targets from the Cape Bedford Project is based on information reviewed and compiled by Mr. Neil Mackenzie-Forbes, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr. Mackenzie-Forbes is a director of Sebroy Projects Pty Ltd (a consultant geologist to Diatreme Resources Limited). Mr. Mackenzie-Forbes has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Mackenzie-Forbes consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The information in this report, insofar as it relates to Mineral Resources at the Cyclone Project is based on information compiled by Mr Ian Reudavey, who was a full-time employee of Diatreme Resources Limited and a Member of the Australian Institute of Geoscientists. Mr Reudavey has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Reudavey consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.*

*The information in this report, insofar as it relates to Ore Reserves at the Cyclone Project is based on information compiled by Mr Phil McMurtrie, who is a director of Tisana Pty Ltd (a consultant to Diatreme Resources Limited), and a Member of the Australasian Institute of Mining and Metallurgy. Mr McMurtrie has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr McMurtrie consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.*

## DIATREME CONTACT DETAILS

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