

ASX ANNOUNCEMENT

QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 31 December 2019

31 January 2020

Quarterly Highlights

Galalar Silica Project, Qld

- Mining Lease Application (MLA) lodged for Galalar Silica Project, encompassing an area of 523 ha, including all of the identified Mineral Resource
- Testwork demonstrates Galalar silica sand product can be processed to high quality “low iron” (sub 100ppm Fe_2O_3) suitable for solar panel (photovoltaic) glass manufacturing, with potential to upgrade further to “ultra-low iron” (sub 50ppm Fe_2O_3) and attract premium pricing

Cyclone Zircon Project, WA

- Bench scale testing by China’s Hunan Rare Earth Industry Group (HRE) identifies strategic rare metal hafnium (HfO_2) within the zircon component of Cyclone project’s heavy mineral concentrate (HMC)
- Offtake discussions progressing further, with potential project participants’ interests being formalised amid strong demand and continued constrained supply for zircon.

New cornerstone investor

- Diatreme welcomes new cornerstone investor, Ilwella Pty Ltd, representing private interests of the Flannery Family Office, as part of successful \$3.6m placement to new and existing investors to advance key projects.



COMING MARCH QUARTER ACTIVITIES - 2020

Diatreme's operational focus for the March quarter 2020 comprises the following:

- **Galalar Silica Project**
 - Further detailed terrestrial and marine studies in preparation for the lodgement of environmental approvals (EIS);
 - Further bulk product testing and product development targeting high end premium silica products;
 - Further transshipment and logistics studies targeting most economical options for project with minimal environmental impact;
 - Further engagement with project partners, Hopevale Congress and relevant regulatory/government agencies to advance project approvals and preferred logistics solution;
 - Progression towards formalised offtake agreements .
 - Further bulk sampling and testing for resource upgrades and mine planning for definitive feasibility study (DFS).
- **Cyclone Zircon Project**
 - Further advance discussions with EPC, offtake and other potential partners towards binding agreements;
 - Determination of HMC concentrate's highest commercial potential, including potential extraction of hafnium from zircon component;
 - Assemble optimum mix of commercial parties to facilitate project's development, amid rising demand for zircon and constrained supply.

GALALAR SILICA PROJECT, QLD

Located around 200km north of Cairns and 20km north of the port of Cooktown, the Galalar Silica Project (EPM 17795) lies within the same sand dune system and in close proximity to the world's largest operating silica sand mine at Cape Flattery. The Cape Flattery silica sand product is recognised as a global benchmark for quality silica sand and is widely used for industrial purposes throughout Asia.

The global silica sand market is seen reaching nearly US\$10 billion in annual revenues by 2022, with a compound annual average growth rate of 7.2% (source: IMARC Group), while the global solar PV glass market is estimated to reach US\$48.2 billion by 2025, up from US\$3.3 billion in 2016 (source: Bizwit Research & Consulting).



In November 2019, Diatreme announced that bench-scale metallurgical testwork in China had shown the Galalar silica sand product's amenability for upgrade to "ultra-low iron" (sub 50ppm Fe_2O_3) in addition to "low iron" (sub 100ppm Fe_2O_3) silica product, with potential to attract ultra-premium prices.

The scoping study (refer ASX release dated 9 September 2019) confirmed the Galalar project's potential to produce a high purity, low iron (sub 100ppm Fe_2O_3) silica product suitable for use as direct feed material in the manufacture of photovoltaic panels (solar panels), generally referred to in China as "photovoltaic grade" silica.

Following market feedback, and the silica's natural inherent amenability to upgrading, testing was conducted to determine the potential for the production of a higher grade, higher value product through use of a proprietary environmentally friendly, organic hot acid leach (pickling) process.


The targeted silica product is high purity, "ultra-low iron" (sub 50ppm Fe_2O_3) suitable for further specialist uses including ultra-thin electronics, computer and mobile phone screens; a product generally referred to in China as "photothermal grade" silica. The value of this specialty "ultra-low" iron silica product is significantly higher than the "low iron" product, with market feedback indicating a significant pricing premium per tonne of product.

Significantly, the Galalar scoping study that showed the potential for high returns (estimated pre-tax nominal NPV of \$231 million, IRR of 150% and estimated capital payback within eight months) was based on sales of photovoltaic silica sand product only.

Diatreme is also reviewing the project's currently identified Mineral Resource to determine the possible extent of sand suitable for upgrading to photothermal quality, which has the potential to significantly improve the project's value.

The results followed Diatreme's signing of MOU's with private Chinese companies Wan Zhong Investment Group (refer ASX announcement 19 September 2019) and Fengsha Group (refer ASX announcement 16 July 2019) for the potential supply of photovoltaic grade silica sand (sub 100ppm Fe_2O_3) from the project.

Investor interest in the project has also strengthened, as seen with the successful capital raising conducted in late 2019 which also saw the introduction of new cornerstone investor, the family office of noted resources investor Brian Flannery (refer "Corporate").



In December 2019, Diatreme lodged a Mining Lease Application (MLA) for Galalar with the Queensland Department of Natural Resources, Mines and Energy (DNRME), encompassing an area of 523 ha, including all of the identified Mineral Resource (refer Table 1).

The Galalar project has a current total Mineral Resource Estimate of 30.2 Mt (at a cut-off of 99% SiO₂) including an Indicated Resource of 21.50Mt (71% Indicated, 29% Inferred) (refer ASX announcement 14 May 2019).

Table 1: Galalar Silica Project Indicated/Inferred Mineral Resource (total = 30.2 Mt > 99% SiO₂)

Classification	Area	Silica Sand (Mt)	SiO ₂ Grade	Cut-off SiO ₂ %	Al ₂ O ₃ %	Fe ₂ O ₃ %	LOI%	TiO ₂ %
Inferred	East Nob Point	6.6	99.26	99.00	0.12	0.09	0.11	0.10
	West Nob Point	2.1	99.16	99.00	0.11	0.16	0.04	0.15
	Total	8.7	99.25		0.11	0.09	0.11	0.10
Indicated	East Nob Point	20.2	99.26	99.00	0.12	0.09	0.11	0.10
	West Nob Point	1.3	99.16	99.00	0.11	0.16	0.04	0.15
	Total	21.5	99.25		0.11	0.09	0.11	0.10

Note: The Resource Estimate is current as of 14 May 2019 (refer ASX release) and has not materially changed since.

The Mining Lease has been marked out with a surface area of 523ha, comprising 501.7ha of freehold land owned by Hopevale Congress Aboriginal Corporation RNTBC and 21.3ha of road reserve. The proposed disturbance for the life of the mine however is limited to approximately 57% of the lease surface area (299ha). The remainder of the area includes the following:

- Approximately 163ha for environmental buffers to high and medium ecological values, watercourses and other environmental zones;
- Approximately 21ha of road reserve;
- Approximately 40ha for allocation of water bores and security management.



Figure 1: ML Boundary

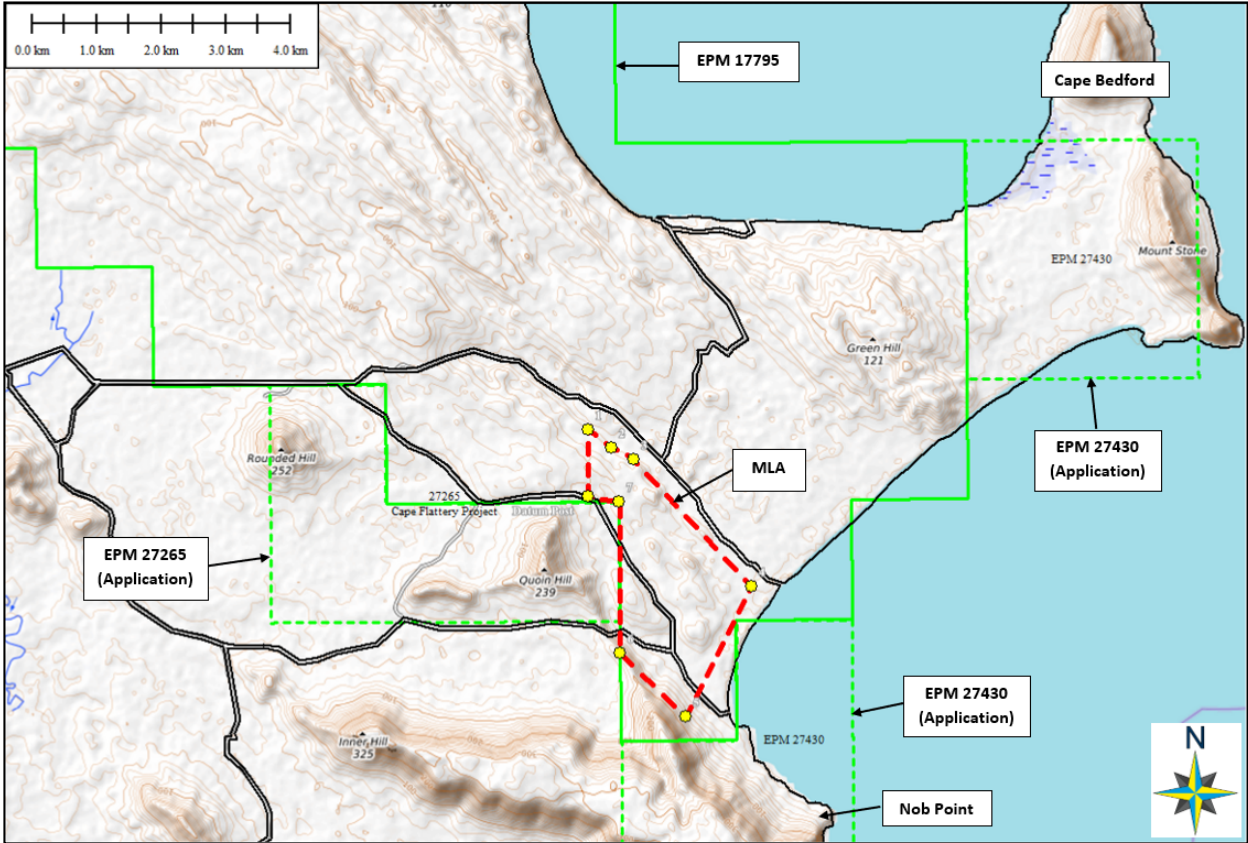
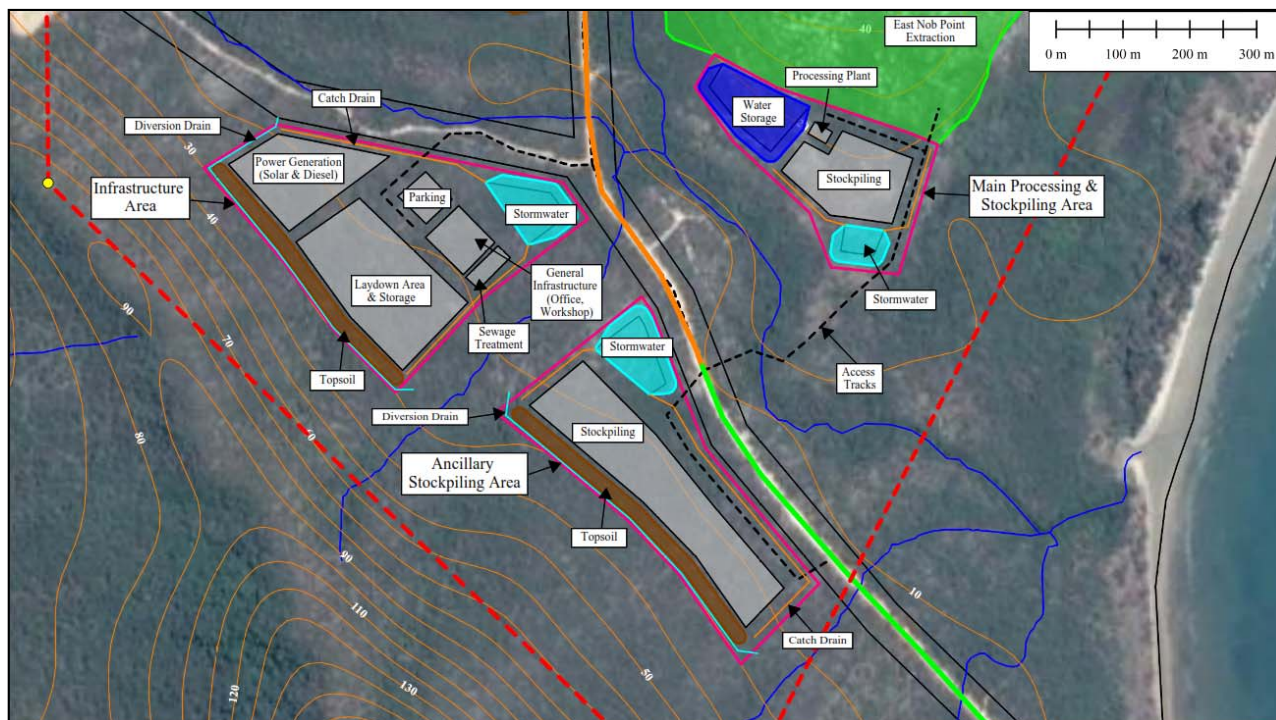




Figure 2: ML Layout Plan



Figure 3: Plant & Infrastructure Layout





To be developed in partnership with the traditional owners, Hopevale Congress (12.5% project interest), the Galalar project has the potential to generate high-value jobs for the local community, with a focus on maximising local employment and supplier opportunities. Estimated employment is around 30 to 40 jobs in the construction phase and around 60 (employees and contractors) in production, for an operation with a projected mine life of 15 years.

Diatreme has also been advised by its potential offtake partner, Fengsha Group that all of Galalar's supplied project would likely be used domestically in China as part of the Chinese Government's active program to reduce dependence on coal-fired power. This is particularly focused in regions where air quality has become a serious health issue.

Subject to appropriate independent certification, the positive environmental credits accrued from the silica product's end use in China will further validate the project's small carbon footprint. Diatreme plans to undertake further studies to determine the project's life cycle emissions and its potential to be net 'carbon neutral'.

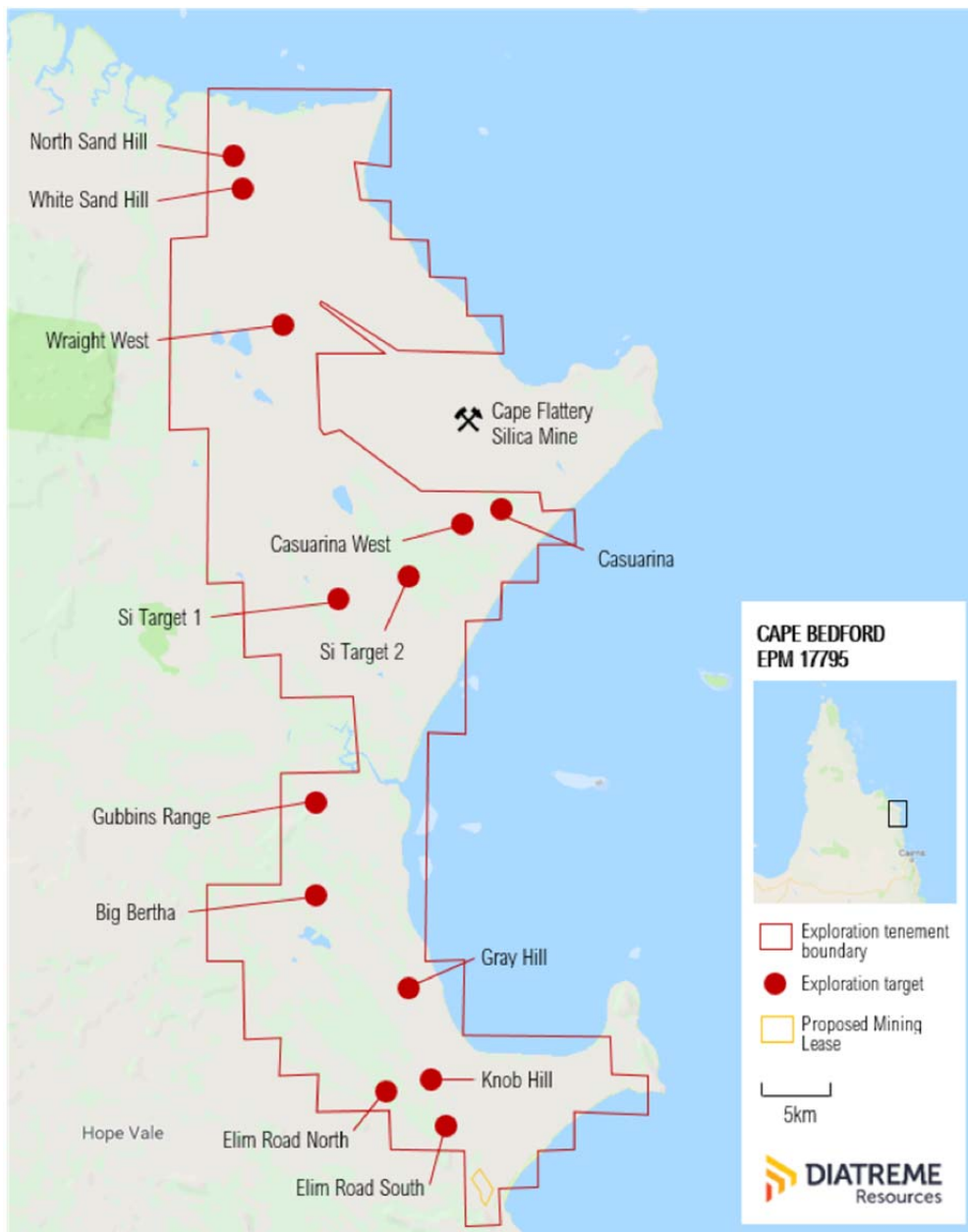


Figure 4: Galalar exploration tenement and resource area



CYCLONE ZIRCON PROJECT, WA

Discovered in 2007, the Cyclone Zircon deposit is located along the Barton shoreline within the Wanna Lakes area of the northern Eucla Basin, 25 kilometres from Western Australia's state border with South Australia and 220 kilometres north of the transcontinental railway.

In November 2014, Western Australia's Department of Mines and Petroleum granted a Mining Lease (M69/141) for the project, which followed the signing of a Project Agreement with the traditional owners, the Spinifex People. In January 2017, the project received final ministerial consent allowing for the development of a mineral sands mine and associated infrastructure.

A Definitive Feasibility Study was completed in November 2018 by China ENFI Engineering Corp., part of the leading China Minmetals group, reaffirming Cyclone's potential as the largest undeveloped zircon dominant heavy minerals project in the world-class Eucla Basin (refer map below).

During 2019, Diatreme announced new proposed agreements for Cyclone, with demand heating up for its high grade zircon-dominant HMC product amid constrained supply (refer ASX announcement 5 August 2019).

The agreements followed the appointment of independent corporate advisers Blackbird Partners (refer ASX announcement 23 January 2019) with the aim of extracting maximum value for shareholders from Cyclone, one of only a handful of major zircon-rich discoveries over the past decade.

In October 2019 (refer ASX announcement 10 October 2019), Diatreme announced that China's Hunan Rare Earth Industry Group (HRE) had identified a potential additional product, the strategic rare metal hafnium (HfO_2), within the zircon component of Cyclone's HMC.

Global demand for hafnium is on the rise due to its specialty usage in aerospace and industrial alloys, including for nuclear control rods, semiconductors and submarines. Yet with supply constrained following Japan's post-Fukushima nuclear plant shutdowns, prices have risen from around US\$500 in 2014 to more than US\$1,500 per kilogram, with further demand growth expected.

The identification of this potential opportunity occurred during detailed project offtake discussions by both HRE and Diatreme of the independent metallurgy reports and bulk sampling undertaken during the original prefeasibility study (PFS) and subsequent definitive feasibility study (DFS). These followed the signing of an MOU with HRE for the potential life of mine offtake of HMC from Cyclone and its potential investment into the project (refer ASX announcement 5 August 2019).

Diatreme is working closely with HRE to examine the establishment of specialist processing facilities to be operated by HRE in China, enabling the full exploitation of all valuable components of Cyclone's HMC.

The work with HRE followed the signing of an EOI with MCC International Corporation, part of the leading China Minmetals Group, for the provision of engineering, procurement and construction services to Cyclone (refer ASX announcement 5 August 2019), in addition to assisting in sourcing suitable project finance to facilitate the project's development.

Diatreme continues to engage in detailed discussions with a range of potential project participants, supported by specialist corporate advisers Blackbird Partners. Based on a recent visit to market participants in China, further progress on these talks is expected during the first quarter 2020.

Ultimately, Diatreme aims to assemble an optimum mix of commercial parties into binding agreements that will facilitate the project's development. Cyclone has the potential to become a profitable new mine for Western Australia, providing new jobs and investment for the benefit of the community, including the traditional owners.

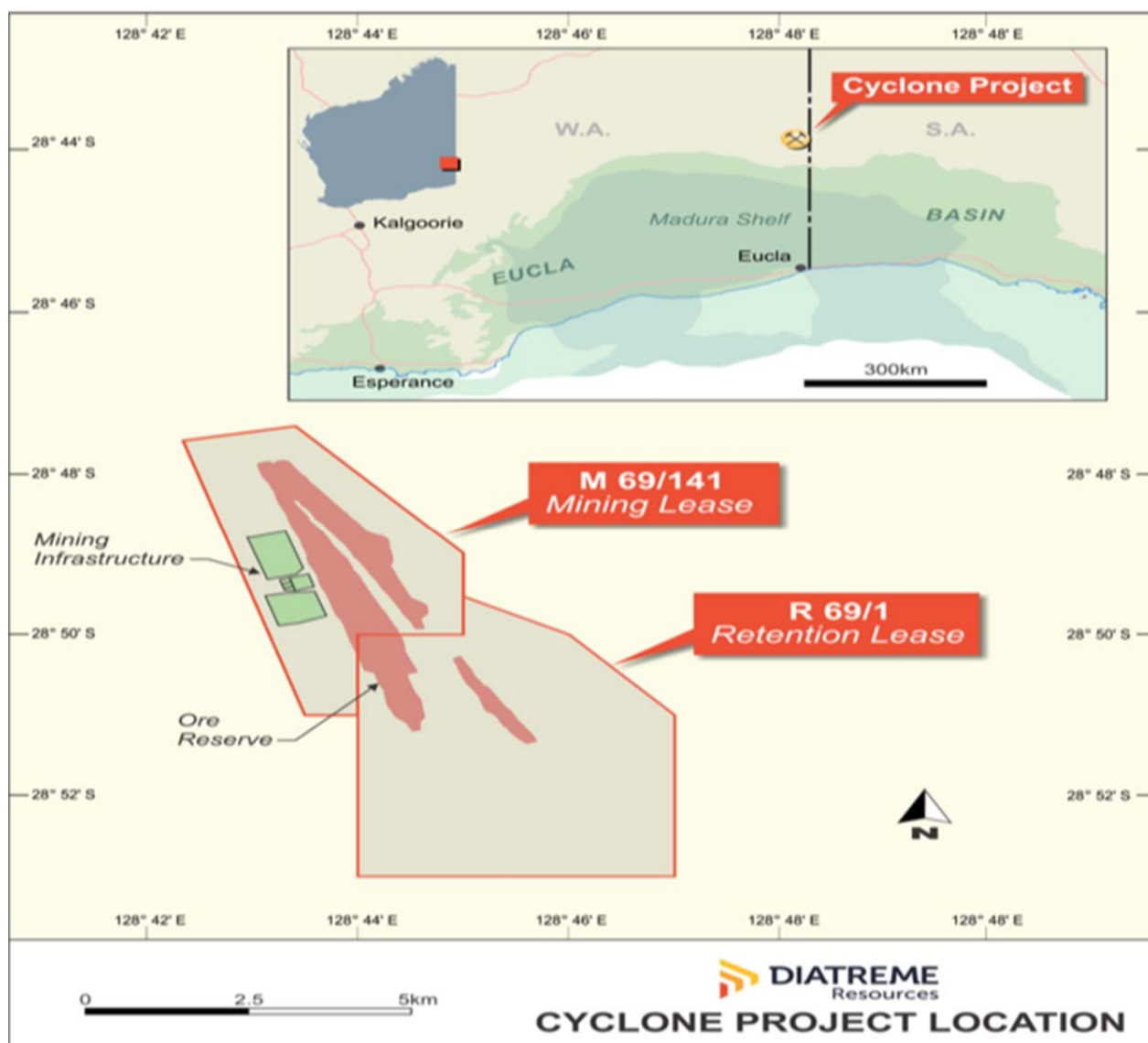


Figure 5: Cyclone project location



CLERMONT COPPER PROJECT, QLD

Diatreme management and external consultants continue to review the Clermont Copper Project, particularly the Rosevale Porphyry Corridor, to determine its potential for further exploration , disposal or joint venture.

CORPORATE

In November 2019, Diatreme welcomed a new cornerstone investor, Ilwella Pty Ltd, representing the interests of the family office of noted resources investor Brian Flannery, as part of a successful placement to new and existing investors (refer ASX announcement 6 November 2019).

Approximately \$3.63m (before costs) was secured via a private placement of approximately 363 million new fully paid ordinary shares in the Company at an issue price of \$0.01. The issue price equated to the last closing price of \$0.01 per share (as at Friday, 1st November 2019), and a 10% discount to the 14 day VWAP of \$0.011.

The placement was supported by leading Australian financial services company Hartleys Limited (AFSL No 230052), which acted as Lead Manager.

Funds raised from the placement will be used to advance the Galalar project's development, including further resource drilling and exploration, bulk testing, advancement of project approvals and other studies, together with essential working capital.

A general meeting will be held at the Company's head office in Brisbane at 2pm (Queensland time) on 3 February 2020 to ratify the issue of placement shares and options, among other resolutions (refer ASX announcement and proxy form 24 December 2019).

The Company's cash and liquids positions as at 31 December 2019 totaled \$3.01 million

ASX Listing Rule 5.3.3

Appendix1. Sets out information that is required under ASX listing rule 5.3.3 (for exploration entities).

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MINERAL SANDS AND SILICA - COMPETENT PERSON STATEMENTS

The information in this report that relates to Silica Mineral Resources is based on information compiled by Brice Mutton from Ausrocks Pty Ltd who has significant experience in Industrial Minerals and Quarry Resource assessments. Brice 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). Brice 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 Sebrof 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.

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APPENDIX 1

Appendix 1 provides information required under ASX listing rule 5.3.3 for mineral exploration entities.

Interest in mining tenements at end of quarter

State	Tenement Name	Tenement ID	Status	Location	Interest	Holder
WA	Cyclone	M69/141	Granted	Eucla Basin	100%	LSPL
WA	Cyclone Extended	R69/1	Granted	Eucla Basin	100%	DRX
QLD	Clermont	EPM17968	Granted	Clermont	100%	CHAL
QLD	Cape Bedford	EPM17795	Granted	Hopevale	100%	DRX
QLD	Cape Bedford	EPM27212 EPM27265 EPM27430	Applications	Hopevale	-	-

Beneficial percentage interests held in farm-in or farm-out agreements at end of quarter

State	Project Name	Agreement Type	Parties	Interest held at end of quarter	Comments
WA	Cyclone Zircon Project	Farm-out Heads of Agreement	LSPL and Perpetual Mining Holding Limited	94%	HoA announced Jan 2014, initial 6% farm-out completed 18 Sept 2014
QLD	Tick Hill Gold Project	Sale of tenements (ML 7094, 7096, 7097)	DRX and Carnaby Resources Limited (CNB)	0%	Sale to CNB completed 23 April 2019. Final regulatory transfer of ML's completed 15 October 2019 .
		Farm-out and Joint Venture Agreement	DRX and Superior Resources Limited (SPQ)	0%	Agreement between DRX and SPQ terminated 11 Mar 2019

Abbreviations:

M	Western Australia	Mining Lease	DRX - Diatreme Resources Limited
R	Western Australia	Retention Licence	CHAL – Chalcophile Resources Pty Ltd
EPM	Queensland	Exploration Permit for Minerals	LSPL – Lost Sands Pty Ltd
ML	Queensland	Mining Lease	