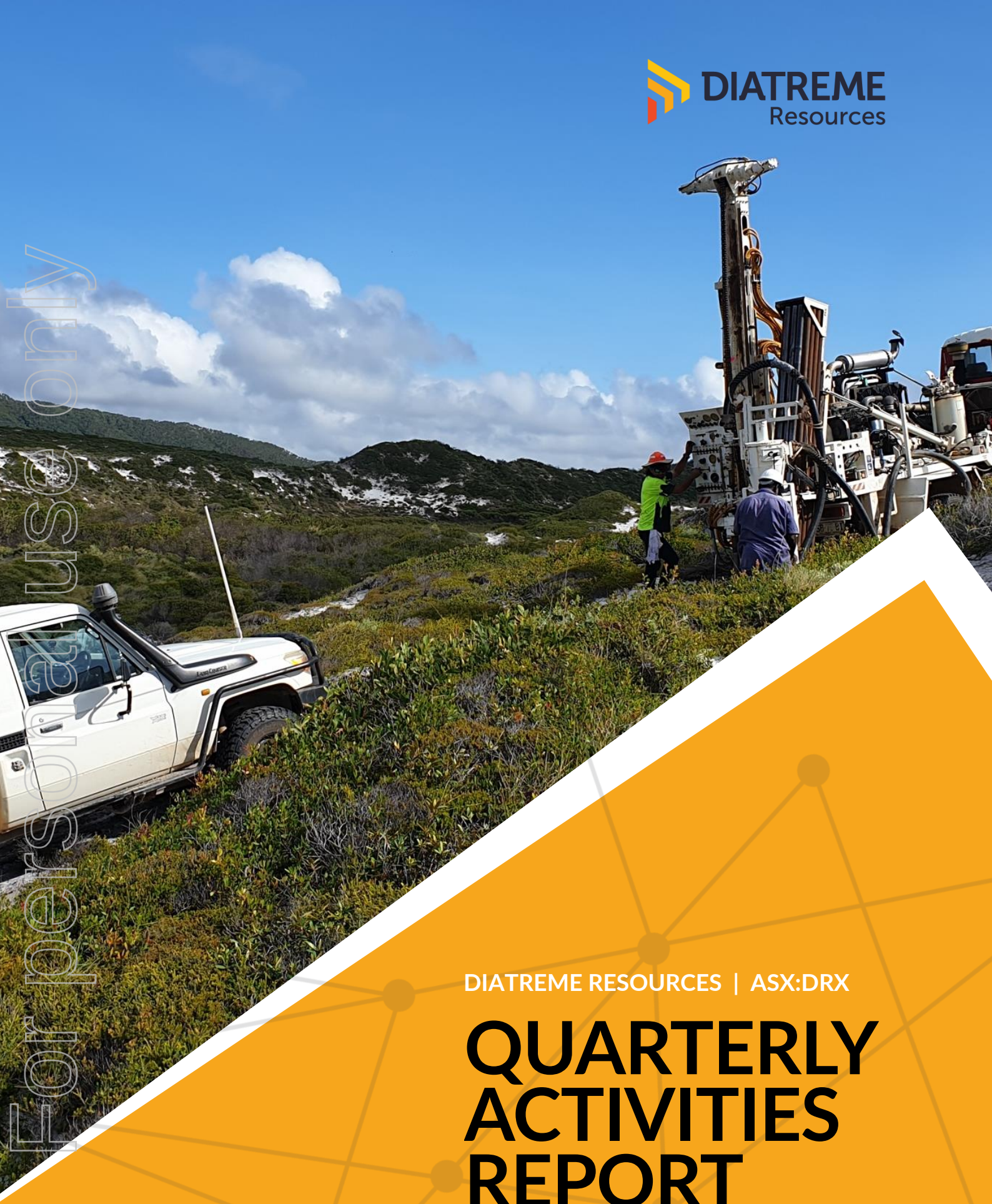

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DIATREME Resources

DIATREME RESOURCES | ASX:DRX

QUARTERLY ACTIVITIES REPORT

FOR THE PERIOD ENDED 31 March 2023

DIATREME Resources

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ASX RELEASE

28 April 2023

Quarterly Activities Report

For the period ended 31 March 2023

This announcement was authorised for release by the Board.

Neil McIntyre
Chief Executive Officer

Wayne Swan
Chairman

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CORPORATE

Diatreme released its Full Year Accounts on 24 March 2023, for the financial year ended 31 December 2022. Following significant operational successes including the expansion of its high-grade silica sand resources and strategic partnership with global material solutions leader Sibelco, the group posted a **net profit of almost $5 million**, compared to the previous year's loss of $2.1 million.

On 24 April 2023, Diatreme released its Annual Report to shareholders for the 2022 financial year. The Company also announced its Annual General Meeting will be held from 2pm AEST on 26 May 2023, at McCullough Robertson Lawyers, Level 11, Central Plaza Two, 66 Eagle St, Brisbane.

The Company made payments for Directors' remuneration totaling $61,051 during the quarter.

The Company's cash and liquids position as at 31 March 2023 totalled $13.3m (not including $8.8m silica projects J/V project funding cash balance).

Noosa Mining Investor Conference July 2023

Diatreme will present at the Noosa Mining Investor Conference, to be held from 19-21 July 2023 in Noosa, Queensland. The Company welcomes enquiries from investors at the event.

The Company's presentation will be available both to conference attendees and online.

DIATREME Resources

QUARTERLY HIGHLIGHTS

FNQ silica sand projects

- Major silica sand resource expansion at Northern Silica Project, from 124 million tonnes (Mt) to 235Mt (Si2 resource)
- Total silica sand resources now exceed 310Mt across 2 high-grade projects.
- Scoping Study on Northern Silica Project advancing, amid strong demand from solar PV industry for high-grade silica.

Clermont Copper/Gold Project

- Farm-out partner Metallica Minerals (ASX: MLM) commenced new drilling program in mid-April
- Drilling results expected in 3rd quarter 2023

Cyclone Zircon Project

- Talks continuing with both international and domestic potential project partners, amid rising prices for zircon and rutile and constrained supply.

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COMING JUNE QUARTER 2023 ACTIVITIES

Diatreme's operational focus for the June quarter 2023 comprises the following:

FNQ silica sand projects

Northern Silica Project (NSP)

- Continued exploration and project development, focussed on the Si2 dune complex located within and around the NSP, adjacent to the Cape Flattery Silica Mines (CFSM) operations.
- Finalising and releasing a Scoping Study to determine the economics and potential development options. This will be focused on the Si2 resource and include additional investigation of solutions on infrastructure and export leveraged to the existing Cape Flattery Port
- Undertake Bulk sample metallurgical test work to continue on the Si2 project, to determine its amenability to processing utilising Diatreme's Galalar optimised silica product processing criteria. This targets assessment and delivery of a high value low iron, high purity silica product.
- Finalisation of EPBC (environmental approval) referral process with regulator
- Finalise tenders to specialist firms and commence environmental monitoring and studies (Flora , Fauna , etc) within the framework of the EIAS studies for the ML100308 Northern Silica Application process.
- Plan EIAS public notice timelines and broader regulatory engagement process.
- Further discussions and negotiations regarding establishment of a mining project agreement for the NSP with Hopevale Congress Aboriginal Corporation (RNTBC), Walmbaar Aboriginal Corporation (RNTBC) affected native title holders and the broader Hopevale community.
- Progression towards offtake or marketing agreements.
- Continued work on potential for further specialised high value silica products.

Galalar Silica Project (GSSP)

- Further engagement with Hopevale Congress Aboriginal Corporation, affected native title holders and relevant regulatory/government agencies to advance preferred logistics solution.
- Further market engagement on silica product diversification including "value add" market development and downstream product development.

Cyclone Zircon Project

- Advance further discussions with potential partners, both domestic and international, for the project's development or divestment, amid continued strong demand and constrained supply of zircon and titanium products.

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NORTHERN SILICA PROJECT

Major silica resource expansion at Si2 deposit

Diatreme's high-grade silica sand resource has expanded significantly following an upgraded resource estimate for the Si2 deposit.

On 13 March, Diatreme announced an 89% increase in the resource estimate for the Si2 deposit to 235 million tonnes (Mt), up from 124.1Mt previously. **Diatreme's total silica sand resource base now exceeds 310Mt across its high-grade Far North Queensland silica sand projects.**

Located within the Northern Silica Project (NSP area) of Diatreme's Cape Bedford (EPM17795) exploration tenement, Si2 now represents the major project within the Company's existing silica sand resources, exceeding the estimated 75.5Mt resource of the Company's Galalar Silica Sand Project (GSSP) (refer ASX release 20 September 2021).

Diatreme's expanding resource base is highly strategic given its location in a stable and ESG compliant jurisdiction and amid increasing demand growth from Asia's booming solar PV industry.

The additional resources confirm the target Si2 dune system has the potential to host significant silica sand resources, as incremental exploration has increased the resource size significantly.

Diatreme's intention is to progress to scoping studies to determine the potential economics of establishing a silica sand operation at Si2. This will potentially facilitate the "fast tracking" of a second independent major high purity silica operation, with the Northern Silica Project benefitting from its proximity to the existing State-owned Cape Flattery Port, owned by Ports North.

Diatreme is currently conducting a detailed scoping study, including economics and logistics of the Si2 dune System, which is expected during Q2 2023.

Engagement with Traditional Owners and other members of the local community has continued to be at the forefront of Diatreme's exploration campaigns, with the Diatreme working closely with Native Title representatives to ensure maximum community benefits while minimising environmental impacts.

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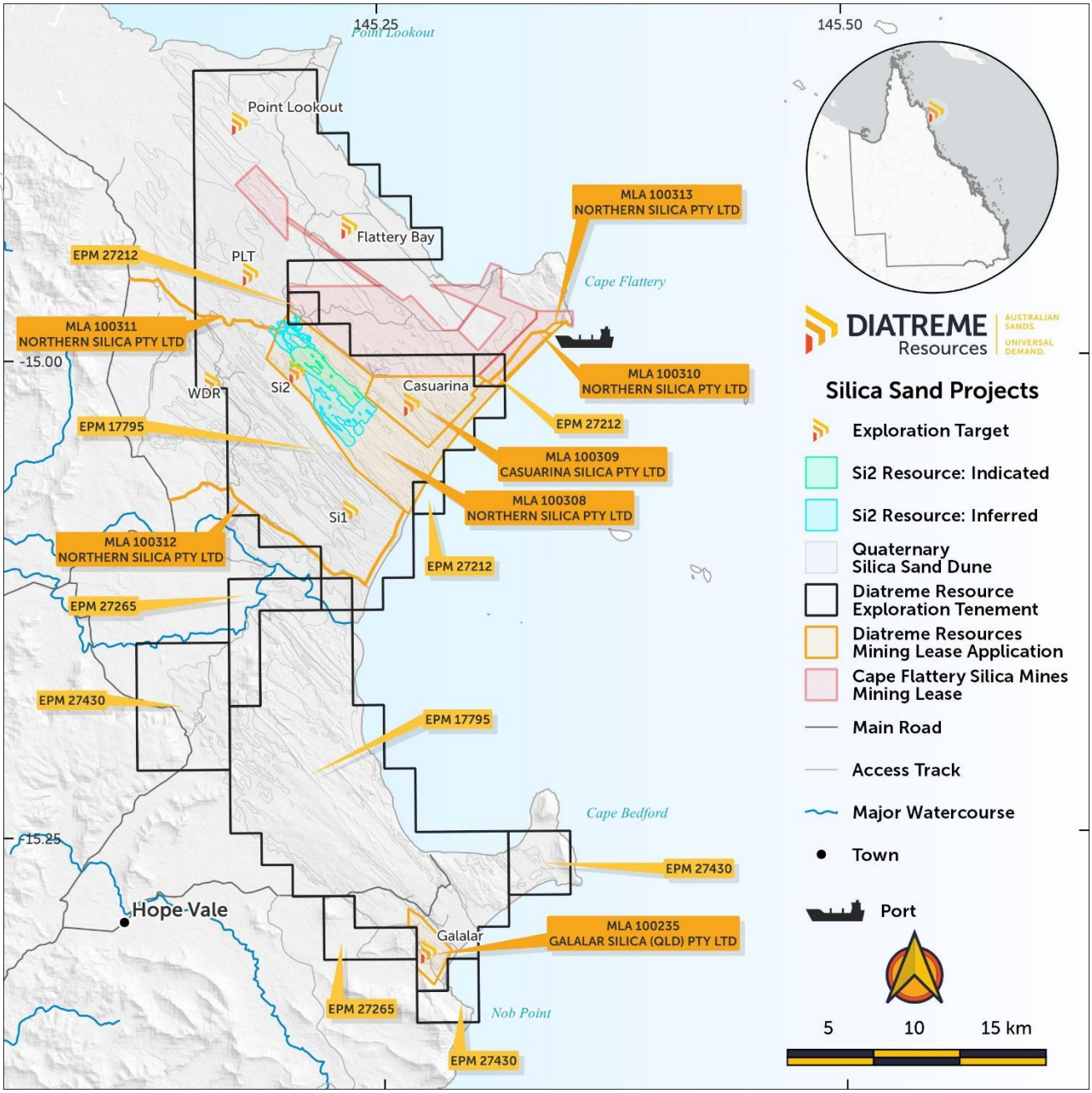

Figure 1: Diatreme's FNQ silica sand projects

Inferred & Indicated Resources

A third drilling program was undertaken in late 2022, with a total of 1,848.7m comprising 76 aircore drill holes, 12 hand auger holes, and 19 vacuum holes (from 2021 exploration). These were utilised to upgrade the existing Si2 resource, in accordance with the JORC Code (2012). The mineral resource estimate is built upon 3,783.3m of various drilling methods across 188 drill holes.

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Table 1: Indicated and Inferred Resource Estimate – Si2 Resource, March 2023

JORC Resource Category	Silica Sand (Mt)	SiO_2 (%)	Fe_2O_3 (%)	TiO_2 (%)	Al_2O_3 (%)	LOI (%)	Total (%)	Silica Sand (Mm^3)	Density (t/m^3)	Cut-off Grade SiO_2 (%)
Indicated	103	99.31	0.10	0.14	0.09	0.13	99.83	65.0	1.6	98.5
Inferred	132	99.27	0.11	0.15	0.12	0.17	99.90	82.0	1.6	98.5
Total	235	99.29	0.11	0.15	0.11	0.15	99.87	147.0	1.6	98.5

***Note**: Under the JORC Code, 2012 Edition an Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to support mine planning and evaluation of the deposit's economic viability. An Inferred Mineral Resource has a lower level of confidence than an Indicated or Measured Mineral Resource.*

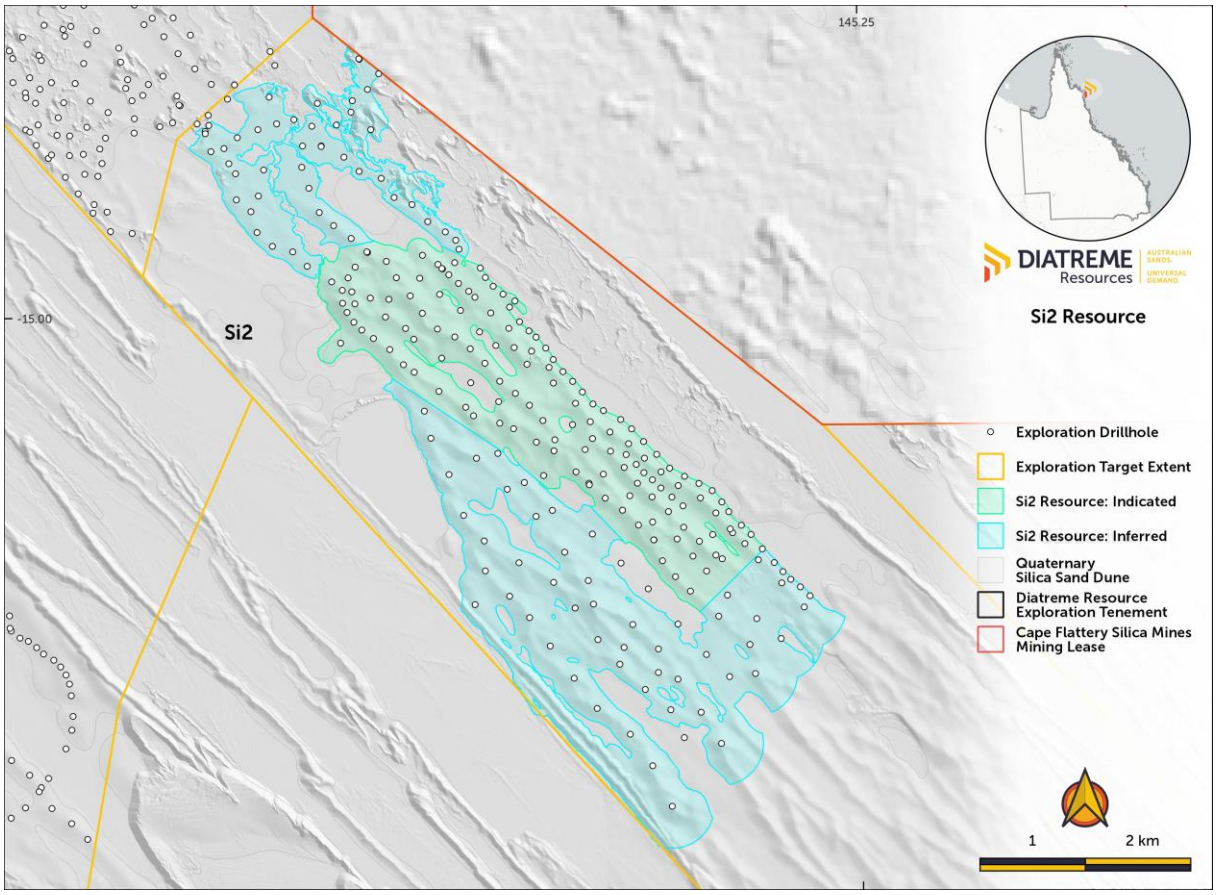

Figure 2: Si2 resource

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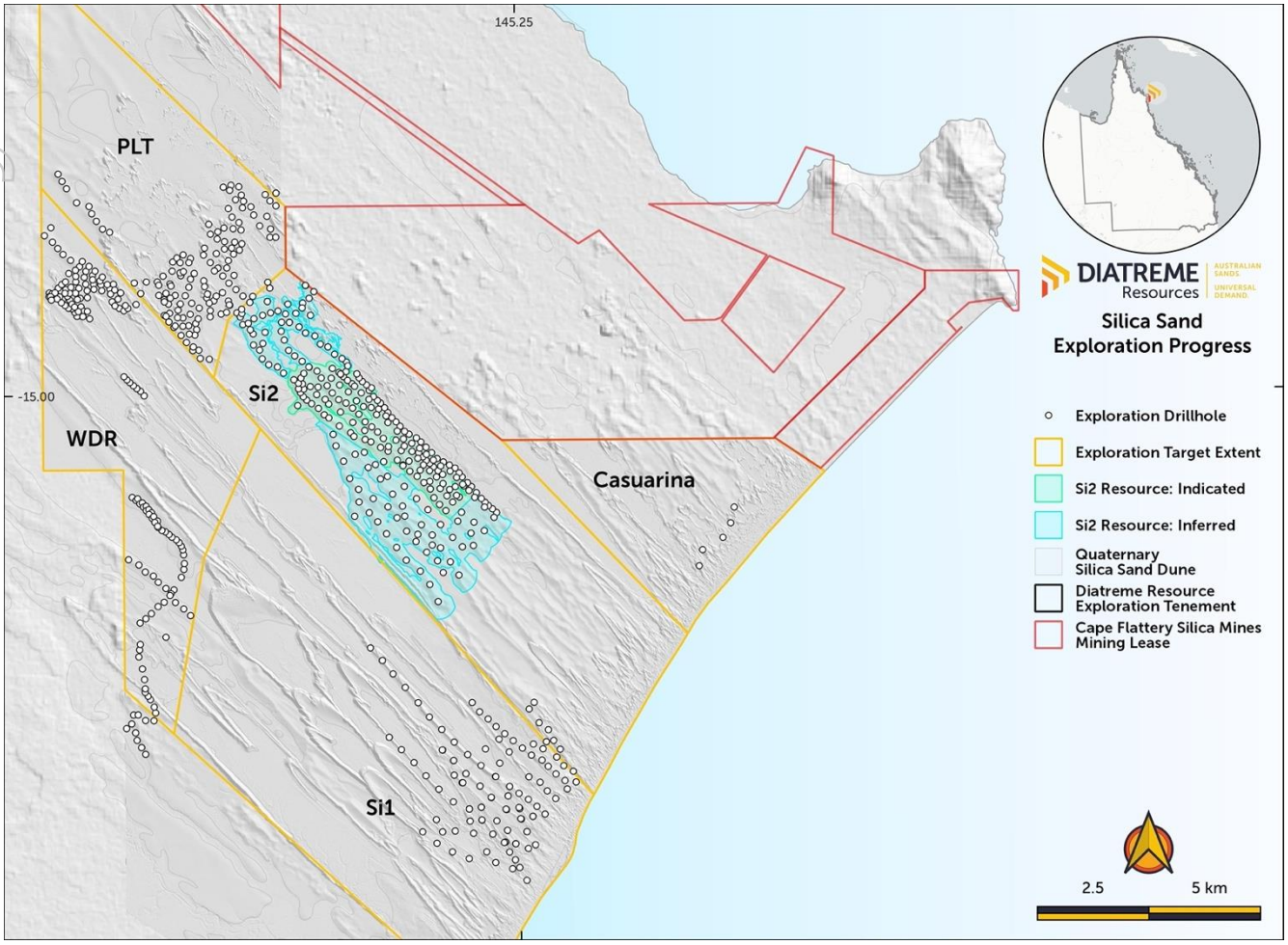

Figure 3: Silica sand exploration progress

Si2 drilling results

In January, Diatreme announced positive drilling results from Si2 resource infill and step out drilling conducted in 2022, confirming the continuity and extensions of high purity silica sand dunes.

The Company used low-impact access methods, including a small footprint track-mounted, air core drilling rig and hand augers, to drill along parallel dune ridge lines spaced 200-400m apart. The depth of the holes was generally determined by the water table, which forms the base for resource models and aligns with proposed mine extraction criteria. The program also included auger sampling for infill sampling.

Results included the following:

- **SI20019: 40m @ 99.13% SiO_2**
- **SI20037: 47m @ 99.26% SiO_2**
- **SI20042: 50m @ 99.18% SiO_2**

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Exploration has extended the known high purity silica sand dune system to a length of 6.8km and width of up to 2.4km, covering an area of over 1,200 ha.

Casuarina drilling

The northern end of the Casuarina dune system is currently mined by Cape Flattery Silica Mines (CFSM), with Diatreme Resources holding the balance of the dune system. The current mining lease boundary was established over 50 years ago when ML 2806 was applied for in 1970.

Preliminary hand auger drilling at the southern end of the dune system has produced average SiO2 results similar to those of the high purity silica sand within the Si2 dune system.

In line with Diatreme's environmental protocols, hand auguring is initially utilised to establish sand quality and continuity whilst minimising site disturbance , with access gained by walking to sites. Initial environmental surveys for air core drilling in the area are planned for 2023 post wet season when site access is available.

Historic drilling at the northern end of the target along the current CFSM lease boundary found sand dune thicknesses ranging from 15m to 48m, with an average of 28m. Drilling in 2023 will aim to confirm sand quality, dune thickness, and continuity across the Casuarina dune.

Point Lookout Track and Western Dune Ridges exploration

The Point Lookout Track (PLT) dune system consists of a series of smaller, older dunes to the northwest of the Si2 dune system that have been remobilised into erratic dunes by more recent wind activity. Assay results from the final round of step- out drilling showed an average depth of 3.5m in 16 hand auger holes.

Further drilling is planned for PLT in the coming months to link the Western Dune Ridges and expand northwest along the dominant dunes.

EPM 17795 renewal

The Hopevale Project comprises four exploration tenures covering 60km from Nob Point to Point Lookout, including Cape Bedford and Cape Flattery. Cooktown and Hope Vale provide a base for regional support for exploration efforts throughout the project area.

EPM 17795, Cape Bedford has been renewed by Queensland's Department of Resources for a five-year term. Diatreme has been conducting extensive exploration programs and is required to relinquish 50% of the EPM by June 2026 under the renewal conditions (standard terms). The Company is using this ongoing exploration to assess the various dune systems and identify priority targets for resource evaluation.

In July 2022, Diatreme submitted two Mining Lease Applications and four Infrastructure MLAs covering the Si2 and Casuarina dune systems (refer ASX release 5 July 2022). The Company is committed to following its ESG principles and aligning with Australia's 2022 Critical Minerals Strategy, which recognises the importance of silica in reducing global carbon emissions.

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Figure 4: View of the Northern Silica Project

CLERMONT COPPER/GOLD PROJECT, QLD

The Clermont Copper/Gold Project continues to progress under a binding Memorandum of Understanding (MOU) with Metallica Minerals Limited (ASX: MLM).

On 29 April 2022, Metallica announced it had met the MOU's expenditure commitments to earn 25% of the project and had made the decision to move to the second stage, increasing its interest to 51% through spending an additional $700,000 on exploration prior to 27 April 2023.

Metallica has drilled two diamond holes at Clermont, RDD019 and RDD020, totalling 1,030.4m. The two holes were drilled to test a possible copper gold exploration target withing the Rosevale Porphyry Corridor.

Porphyry style alteration was intersected in both drill holes, with potassic and phyllic alteration observed in both and with the intensity of alteration increasing with depth. Sulphide mineralisation in the form of iron pyrite, chalcopyrite and molybdenum was also observed in the core removed from both holes.

On 13 July 2022, Metallica reported assay results for the two diamond drill holes. Anomalous copper was recorded in both drill holes, with grades ranging from 5ppm Cu to 1,840ppm Cu in hole RDD019 and 2ppm to 3,460ppm Cu in RDD020.

Molybdenum grades ranged from <1ppm Mo to 312 ppm Mo in RDD019 and from <1ppm Mo to 87ppm Mo in RDD020. Gold grades ranged from <0.01 to 0.11 Au in RDD019 and from <0.01 ppm Au to 1.75 g/t Au in RDD020.

The assay data showed a distinct increase in copper mineralisation with hole depth, with the highest copper assays recorded at the base of each hole. The same trend was also evident with silver assays in RDD020. The highest recorded gold assays occurred in the bottom 30m of RDD020, with the highest gold intercept of 2m @ 1.69 g/t Au recorded in hole RDD020 from 475m.

Geochemical modelling, especially of the tin and tungsten assays, indicated that both drill holes possibly intersected the porphyry immediately above or adjacent to the expected location of the more mineralised core.

This work indicated that a potential porphyry target may be located beneath the depth of the current drilling and extending one of the holes to test this was warranted. Hole RDD020 will be extended by an additional 500m to 1,000m to determine if the copper, gold and silver grades continue to increase with depth and if the intensity of the alteration also increases.

In its March 2023 quarterly report, Metallica announced a new drilling program commenced in mid-April, with the program expected to continue for three weeks. Results from the drilling are expected in June 2023. At the completion of the drilling program, Metallica is expected to increase its share of the Clermont project to 51%.

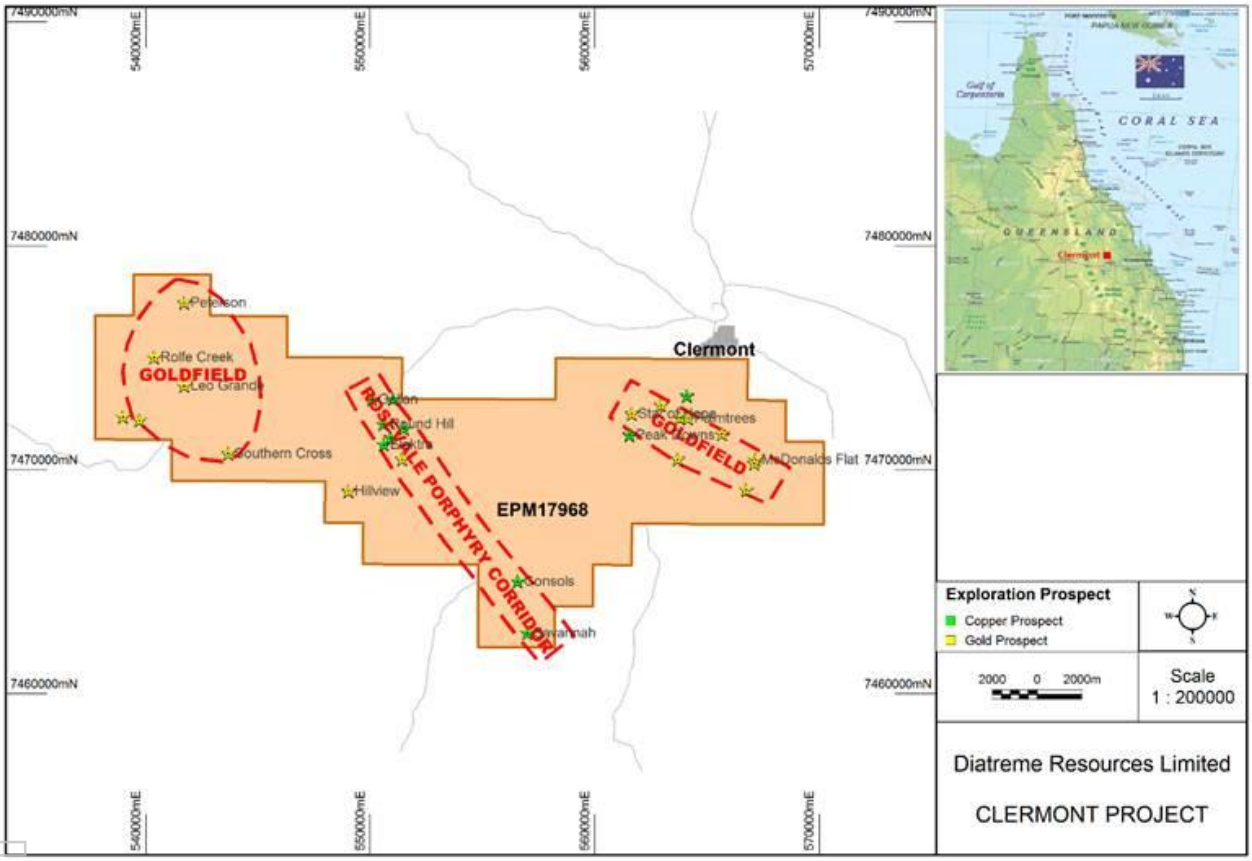

Fig 5: Clermont tenements

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CYCLONE ZIRCON PROJECT, WA

Diatreme further advanced discussions during the March quarter with potential project partners for the Cyclone Zircon Project.

Located in Western Australia's Eucla Basin, the project remains well positioned for development, given declining global supply and continued strong demand for high-grade zircon.

In an investor presentation on 1 March 2023, major producer Iluka Resources reported a weighted average zircon price of US$2,054 per tonne in Q4 2022 for premium and standard sand, up 29% from Q4 2021.

Iluka also reported a FY 2022 rutile price of US$1,550/t, up 23% compared to fiscal 2021.

In its quarterly review released on 20 April 2023, Iluka announced a US$50/t increase in its zircon sand prices for Q2 2023, with supply remaining tight.

Market analysts TZMI have projected a growing supply deficit for zircon through to 2035, with demand increasing by 2.5-3% year-on-year but production declining by an average of 5% per annum.

Similarly, global supply for rutile remains tight, with demand exceeding supply and potential supply from likely new projects.

These positive market dynamics support Diatreme's aim to maximise value from Cyclone by attracting a suitable investment partner to develop this shovel-ready project.

The Company will keep the market fully informed when talks potentially transition to a more formally documented process.

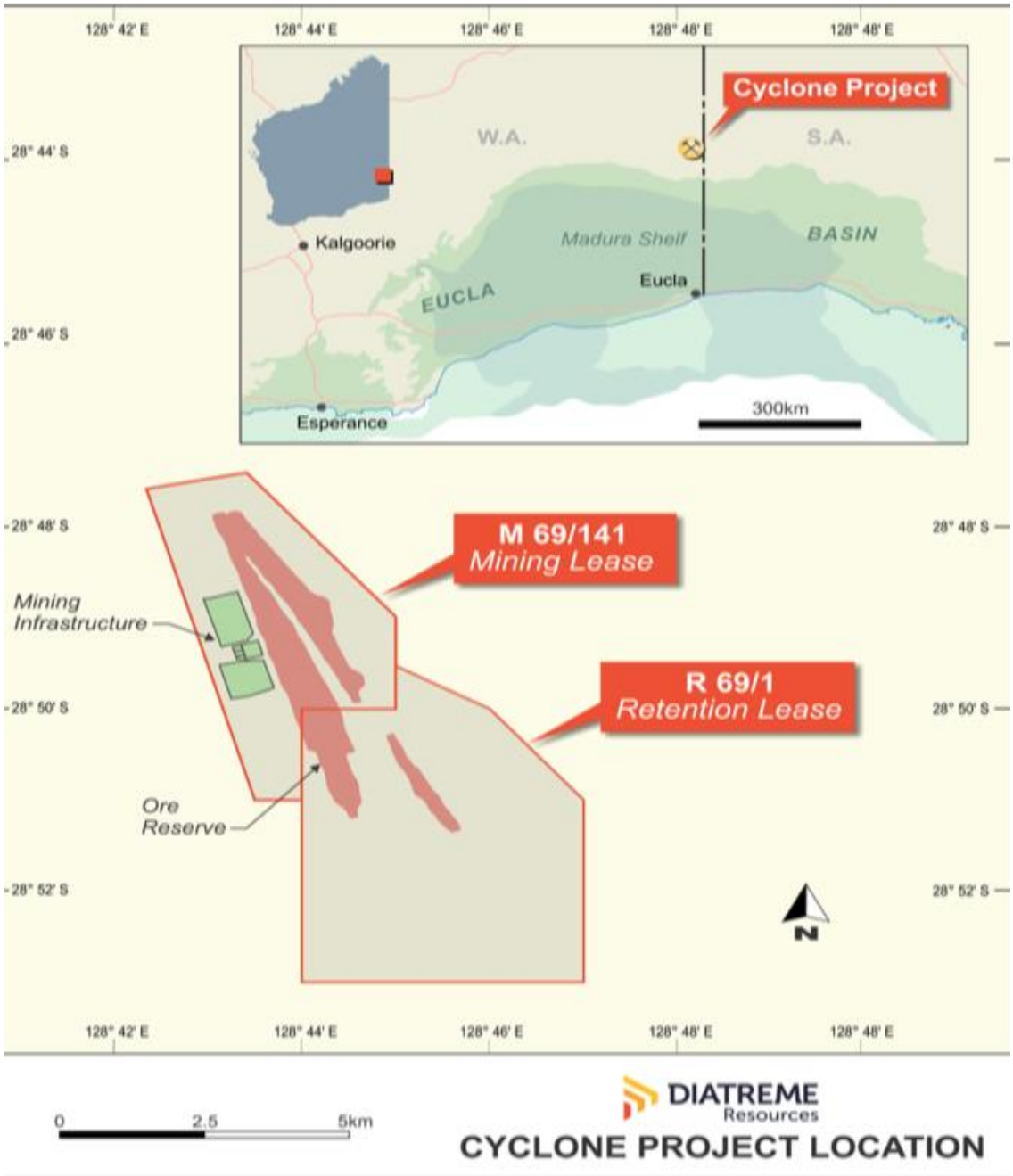

Figure 6: Cyclone project location

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MINERAL SANDS AND SILICA - COMPETENT PERSON STATEMENTS

The information in this report that relates to Exploration Targets & Exploration Results at the Si 2 Resource is based on information compiled by Mr Frazer Watson, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy, and the Australian Institute of Geoscientists. Mr Watson is a full-time employee of Diatreme Resources Limited. Mr Watson has sufficient experience that 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 Resource and Ore Reserves'. Mr Watson 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 that relates to Mineral Resources at the Si2 Resource is based on information, geostatistical analysis and modelling carried out by Mr Chris Ainslie, Project Engineer – Mining & Quarrying. Mr Ainslie is an employee of Ausrocks Pty Ltd and a Member of the Australasian Institute of Mining & Metallurgy and a Member of the Australian Institute of Geoscientists. Mr Ainslie worked under the supervision of Mr Carl Morandy, Mining Engineer who is Managing Director of Ausrocks Pty Ltd and a Member of the Australasian Institute of Mining & Metallurgy and Mr Brice Mutton, Senior Geologist who is an Associate of Ausrocks Pty Ltd and is a Fellow of the Australasian Institute of Mining & Metallurgy and a Fellow of the Australian Institute of Geoscientists. Ausrocks Pty Ltd have been engaged by Cape Silica Holdings Pty Ltd (CSHPL) to prepare this independent report and there is no conflict of interest between the parties. Mr 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). Mr Mutton consents to the inclusion in the report on the matters based on their 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	M 69/141	Granted	Eucla Basin	100%	LSPL
WA	Cyclone Extended	R 69/1	Granted	Eucla Basin	100%	DRX
QLD	Clermont	EPM 17968	Granted	Clermont	75%*	CHAL
QLD	Cape Bedford	EPM 17795	Granted	Hopevale	100%**	Cape Silica Holdings Pty Ltd*
QLD	Cape Bedford	EPM 27265	Granted	Hopevale	100%**	Cape Silica Holdings Pty Ltd*
QLD	Cape Bedford	EPMA 27212	Granted	Hopevale	100%**	Northern Silica Pty Ltd*
QLD	Cape Bedford	EPM 27430	Granted	Hopevale	100%**	Cape Silica Holdings Pty Ltd*
QLD	Cape Bedford	MLA 100235	Application	Hopevale	100%**	Galalar Silica (QLD) Pty Ltd*
QLD	Cape Bedford	MLA 100308	Application	Cape Flattery	100%**	Northern Silica Pty Ltd*
QLD	Cape Bedford	MLA 100309	Application	Cape Flattery	100%**	Casuarina Silica Pty Ltd
QLD	Cape Bedford	MLA 100310	Application	Cape Flattery	100%**	Northern Silica Pty Ltd*
QLD	Cape Bedford	MLA 100311	Application	Cape Flattery	100%**	Northern Silica Pty Ltd*

QLD	Cape Bedford	MLA 100312	Application	Cape Flattery	100%**	Northern Silica Pty Ltd*
QLD	Cape Bedford	MLA 100313	Application	Cape Flattery	100%**	Northern Silica Pty Ltd*
QLD	Cape Bedford	MLA 100285	Application withdrawn 21/10/2022	Hopevale	-	DRX

** PGE Minerals Pty Ltd has earned a 25% interest in the tenement through a progressive earn-in.*

*** Cape Silica Holdings Pty Ltd is owned by DRX (90.01%) and Sibelco Silica Pty Ltd (9.99%). Northern Silica Pty Ltd and Galalar Silica (QLD) Pty Ltd are wholly owned subsidiaries of Cape Silica Holdings Pty Ltd. Accordingly, DRX's beneficial ownership of the mining tenements held by these entities is 90.01%. In the quarter ending 31 December 2022, transfers of the following tenement interests from DRX to Cape Silica Holdings Pty Ltd, Northern Silica Pty Ltd and Galalar Silica (QLD) Pty Ltd were completed (held as set out in the table above): EPM 17795, EPM 27265, EPM 27212, EPM 27430 and MLA 100235.*

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 by exploration entity or child entity	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 – Subject to dilutionary non-contribution clauses.

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
EPMA	Queensland	Exploration Permit for Minerals Application	
MLA	Queensland	Mining Lease Application	

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