Diatreme Resources Limited
ABN: 33 061 267 061

ASX ANNOUNCEMENT

ASX:DRX

QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 31 MARCH 2018

HIGHLIGHTS

- **Significant milestone for Diatreme's flagship Cyclone Zircon Project (WA), with Cooperation and Consulting Services agreements signed with leading mining services company China ENFI Engineering Corporation for the completion of Cyclone's definitive feasibility study (DFS) and its assistance in securing potential investors, offtakers and debt funders; final report expected early 3rd quarter 2018**

- **Diatreme encouraged by early discussions with potential project partners for Cyclone, amid upturn in mineral sands prices and constrained supply**

- **Testwork confirms prospects for new silica sand mine at Cape Bedford, Qld, with results from bulk samples from dunes in the southern EPM confirming high quality glass-grade silica sand potential, with an average grade of 99.7% SiO_2, 0.01% Fe_2O_3 and 0.02% TiO_2; Cape Bedford Silica/Heavy Minerals Project located near world's largest operating silica sand mine**

CYCLONE ZIRCON PROJECT (WA)

Currently the largest undeveloped zircon project in the zircon-rich Eucla Basin, Diatreme's flagship Cyclone Zircon Project achieved a major milestone this quarter with the signing of Cooperation and Consulting Services agreements with leading mining services company China ENFI Engineering Corporation (ENFI) for the completion of a definitive feasibility study (DFS). Under the agreements, China ENFI will also use its vast network within China's state-owned enterprise and banking sectors to assist in sourcing potential project investors, offtakers and project debt funding.

ENFI is backed by one of China's largest state-owned enterprises (SOEs) involved in the mining services sector, being a wholly owned subsidiary of Metallurgical Corporation of China, part of the China Minmetals Group.

The agreements come amid an improving outlook for mineral sands, with rising zircon and titanium prices forecast for 2018 amid solid demand from China's construction sector and from other emerging economies.

CYCLONE ZIRCON PROJECT (WA)

The Cyclone Zircon Project continued to advance towards development in the March quarter.

Diatreme has engaged China ENFI Engineering Corporation (ENFI) for the completion of the Cyclone Zircon Project's Feasibility Study. ENFI is backed by Metallurgical Corporation of China, one of China's largest state-owned enterprises (SOEs) involved in the mining services sector, being a wholly owned subsidiary of the China Minmetals Group (approximately A$331 billion in total assets).

Diatreme and ENFI signed an MoU in September 2017, successfully negotiated the terms of an agreement during the December quarter, and in early January signed two contracts comprising:

- A **Cooperation Agreement**, under which ENFI will use its network within China's state-owned enterprise (SOE) and banking sectors to assist in sourcing project investors, offtakers and project debt funding;
- A **Consulting Services Agreement**, detailing the remaining DFS aspects to be completed by ENFI, including project costings and economics, engineering studies and implementation planning. Timeframe for DFS completion is estimated to occur early in Q3 of 2018.

The support of ENFI's commercial and Chinese SOE networks is invaluable in securing the necessary project partners for Cyclone, including investors, offtakers and providers of project debt funding. ENFI has also been provided with the necessary Cyclone project information to undertake the outstanding items of the DFS, which when completed will provide lenders with the level of confidence required to finance the mine's development.

During a visit to China in March, strong interest was shown in the Cyclone Project from potential project partners over construction, finance and product offtake, with Diatreme now working to formalise agreements (refer ASX announcement 4 April 2018).

Mineral Resource and Ore Resource

Discovered in 2007, the Cyclone Deposit is located along the Barton shoreline within the northern Eucla Basin. Cyclone is interpreted as a Tertiary beach strandline HM system with analogies to Iluka's Jacinth/Ambrosia HM deposit in the eastern Eucla Basin.

The Cyclone Mineral Resource estimate was updated in January 2017 and is reported as 203 Mt at 2.3% HM (at 1.0% HM cut-off grade), containing 4.70Mt of HM.

TABLE 1: CYCLONE MINERAL RESOURCE AND ORE RESERVE ESTIMATE

Category	HM cut-off %	Material Mt	HM %	HM Mt	Slime %	OS %	Head Grade						Zircon Kt
							Zircon %	Rutile %	Leuco %	HiTi %	Alt Ilm %	Si TiOx %	
CYCLONE MINERAL RESOURCE ESTIMATE													
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	1.0	48	1.9	0.89	4.4	5.1	0.38	0.04	0.09	0.62	0.30	0.34	183
TOTAL	**1.0**	**203**	**2.3**	**4.70**	**4.2**	**5.0**	**0.62**	**0.06**	**0.14**	**0.59**	**0.30**	**0.49**	**1,262**
Mineral Assemblage							**27%**	**3%**	**6%**	**26%**	**13%**	**21%**	
CYCLONE ORE RESERVE ESTIMATE													
PROBABLE		138	2.6	3.52	4.6	5.3	0.72	0.07	0.17	0.59	0.32	0.57	990
TOTAL		**138**	**2.6**	**3.52**	**4.6**	**5.3**	**0.72**	**0.07**	**0.17**	**0.59**	**0.32**	**0.57**	**990**
Mineral Assemblage							**28%**	**3%**	**7%**	**23%**	**13%**	**22%**	

Table 1 Notes

- 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
- Leucoxene (Leuc) – Ti-oxides containing 85 – 95% TiO2, HiTi - Ti-oxides containing 70 - 85% TiO2, Altered Ilmenite (Alt Ilm) - Ti-oxides containing <70% TiO2, Si-bearing Ti-Oxide (Si TiOx) – Ti-oxides containing >10% silica rich Ti minerals.
- "Strand", "Beach" and "Nearshore" represent differing geological domains based upon varying sediment grain size and sorting (i.e. depositional environment), mineralogy and HM grade.

An update to the Probable Ore Reserve was completed as part of the Project Enhancement and Update Study, with a Probable Ore Reserve estimate for the Cyclone project reported as 138 Mt at 2.6% HM, including 0.72% Zircon, containing 3.52 Mt of HM, including 0.99 Mt of Zircon (refer ASX announcement 15 June 2016).

Project Enhancement and Update Study

During 2016, DRX engaged Sedgman Limited, a leading provider of mineral processing and associated infrastructure solutions to the mineral sands industry, to undertake a Project Enhancement and Update Study. Sedgman reviewed work undertaken for the PFS and subsequent studies and provided an updated assessment of the process plant, some infrastructure and shipping costs and assumptions at a technical and commercial level.

The study confirmed the viability of the Cyclone Project and provided DRX with an independent consultant's financial analysis which shows improvements to the project economics.

Environmental Approval

Final ministerial consent (approval) was received on 9 January 2017 as Ministerial Statement No:1052, which allows the Cyclone Project to *"Develop and operate the Cyclone Mineral Sands Mine, including open cut pits, mining and processing infrastructure, airstrip, accommodation camp, bore fields and haul road construction from the mine site to the Forrest rail siding."*

The ministerial approval is an important step in a project de-risking process undertaken by Diatreme, which has included securing an agreement with the traditional owners, the identification of suitable water supplies and the expansion of the project's forecast mining life following the acquisition of the adjacent Cyclone Extended tenement area.

Market Upturn Underway for Mineral Sands

Recent market commentary and analysis has pointed to increasing demand for heavy mineral sands such as zircon, along with constrained supply, adding to the necessity for new projects such as Cyclone.

In February 2018, major producer Iluka Resources increased its zircon reference price by nearly 15% to US$1,410 per tonne, having reported a 40% increase in the zircon price since the start of 2017. Rutile prices also rose by 13% from the start of last year, amid limited scope for a short-term supply response and solid mineral sands demand. Iluka's 19 April 2018 quarterly review reaffirmed the continuation of strong market conditions for both zircon and high-grade titanium dioxide markets, with prices rising and zircon supply remaining tight.

A July 2017 report by analysts Beer & Co (available via Diatreme's website) has also noted that the firming zircon market will support Cyclone's development prospects.

CAPE BEDFORD SILICA/HMS PROJECT (QLD)

The Cape Bedford EPM17795 is located approximately 200km north of Cairns in North Queensland, and covers the extent of a large Quaternary sand dune field, part of which is currently being mined by Cape Flattery Silica Mines Pty Ltd (CFSM), a wholly owned subsidiary of Mitsubishi Corporation. Cape Flattery has operated since 1967 and is the world's largest silica sand mining operation.

The Cape Bedford / Cape Flattery region of north Queensland is dominated by an extensive Quaternary sand mass and dune field that stretches inland from the present coast for approximately 10km and extends 50km from north to south.

Previous exploration has focused on the Cape Flattery area, within the Mining Leases of CFSM, but reconnaissance exploration has been carried out over the entire dunefield in the late 1960's and again in the early 1980's. This exploration confirmed the presence of both silica sand and heavy mineral sands, and Diatreme intends to build on the existing data and initially target those areas (e.g. Nob Point) where prospective silica sand dunes have been identified and access is readily available.

The company executed a Conduct and Compensation Agreement (CCA) in January 2017, and a Cultural Heritage Agreement (CHA) in June 2017 with the traditional owners, the Hopevale Congress. The CCA allows access for ground disturbing exploration activity and ensures the traditional owners share in the potential economic benefits of this new project, while the CHA sets out the protocol for cultural heritage issues. Cultural heritage surveys for the first proposed exploration program were undertaken in August and subsequent exploration access granted in September 2017.

Diatreme's reconnaissance samples confirm the potential of the widespread silica sand dune material to generate high-quality silica sand. Reconnaissance samples, together with the observation of HM slicks on some of the exposed beaches, suggests that HM mineralisation may be present at several locations within the EPM. Preliminary metallurgical testwork on a mineralised bulk sample from near Elim Beach indicates the sands to be amenable to the use of standard mineral sands process methodologies and equipment.

Reconnaissance Exploration

Following the process defined by the CHA, Diatreme assisted with a Cultural Heritage survey in August 2017 over the proposed reconnaissance exploration area in the Nob Point to Elim Beach area in the southern part of EPM17795. A reconnaissance exploration program was subsequently approved, and Diatreme commenced exploration in September 2017 utilising a Company-owned and operated air-core drilling rig. Reconnaissance drilling was planned alongside established roads and tracks, with line clearing and reconnaissance drilling also planned over a dune system in the southern part of the EPM.

During September, 29 holes were drilled along Elim Road and a related beach access track, for a total of 606m with an average hole depth of 21m. The logged geology was reasonably consistent in defining large areas of fine grained quartz sand, but sand colour was variable, with a variety of coloured sands particularly apparent towards Elim Beach. Results from the drilling were presented in the ASX announcement dated 30 November 2017, with an average 99% SiO_2 reported for the samples submitted for analysis.

During October, 26 holes were drilled along cleared access tracks over a dune complex near Nob Point, for a total of 670m with an average hole depth of 26m. The logged geology was reasonably consistent in defining large areas of fine grained quartz sand, but sand colour was variable throughout the drilled area of the dune system, suggesting a complex depositional (and erosional) history for the dune complex.

Several large zones of white, fine grained quartz sand extending over 400m in length along the dune ridges were evident from surface down to 30m depth, with extensive cream coloured sands also logged. This suggests that most of the area drilled represents a body of sand with sufficient size that may allow large scale silica sand extraction for commercial purposes. Results from the drilling were presented in the December 2017 Quarterly Activities Report released to the ASX on 31 January 2018.

Drilling on dune feature in Nob point area, October 2017

Drill hole collars overlain on Google Earth – blue line EPM

Bulk Sample Metallurgical Testwork

Subsequently, bulk samples of approximately 100kg each from six separate drill holes (CB037, CB038, CB047, CB048, CB053, CB054) were submitted for preliminary metallurgical testwork to assess the potential to generate a high-quality silica sand product from the white quartz sands intersected from the October drilling program.

The testwork confirmed the potential of the area drilled at Nob Point to generate a high-quality silica sand product suitable for glass making, with a range of 99.61 - 99.87% SiO_2 sand with <0.02% Fe2O3 and 0.04 - 0.06% Al2O3 produced as a primary silica sand product from the testwork, with an average 80% recovery to product.

Sample	% weight recovery*	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %
CB037	86	99.67	0.04	0.01	0.02
CB038	69	99.78	0.06	0.02	0.03
CB047	79	99.66	0.04	0.01	0.02
CB048	83	99.87	0.04	0.01	0.02
CB053	84	99.61	0.05	0.01	0.02
CB054	84	99.64	0.05	0.01	0.02

Primary Silica Sand testwork

*relative to primary wet table feed

Sample	% weight recovery*	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %
CB037	12	99.5	0.11	0.03	0.07
CB038	28	99.5	0.11	0.04	0.07
CB047	18	99.5	0.06	0.01	0.03
CB048	14	99.5	0.06	0.02	0.05
CB053	15	99.3	0.12	0.03	0.07
CB054	15	99.3	0.15	0.04	0.08

Secondary Silica Sand testwork

*relative to primary wet table feed

The secondary silica sand product also displayed high grade silica sand characteristics, with a range of 99.3 - 99.5% SiO_2 with <0.04% Fe2O3 and 0.06 - 0.15% Al2O3 produced. Blending of these two streams could generate a glass-grade silica sand product with 97-98% recovery of feed to product.

Sizing of the primary silica sand product shows it to dominantly comprise 150 – 250um material (~50%), although samples CB047 and CB048 were slightly coarser grained.

Detailed results from the metallurgical testwork were presented in an announcement released to the ASX on **2 March 2018**.

Exploration Target

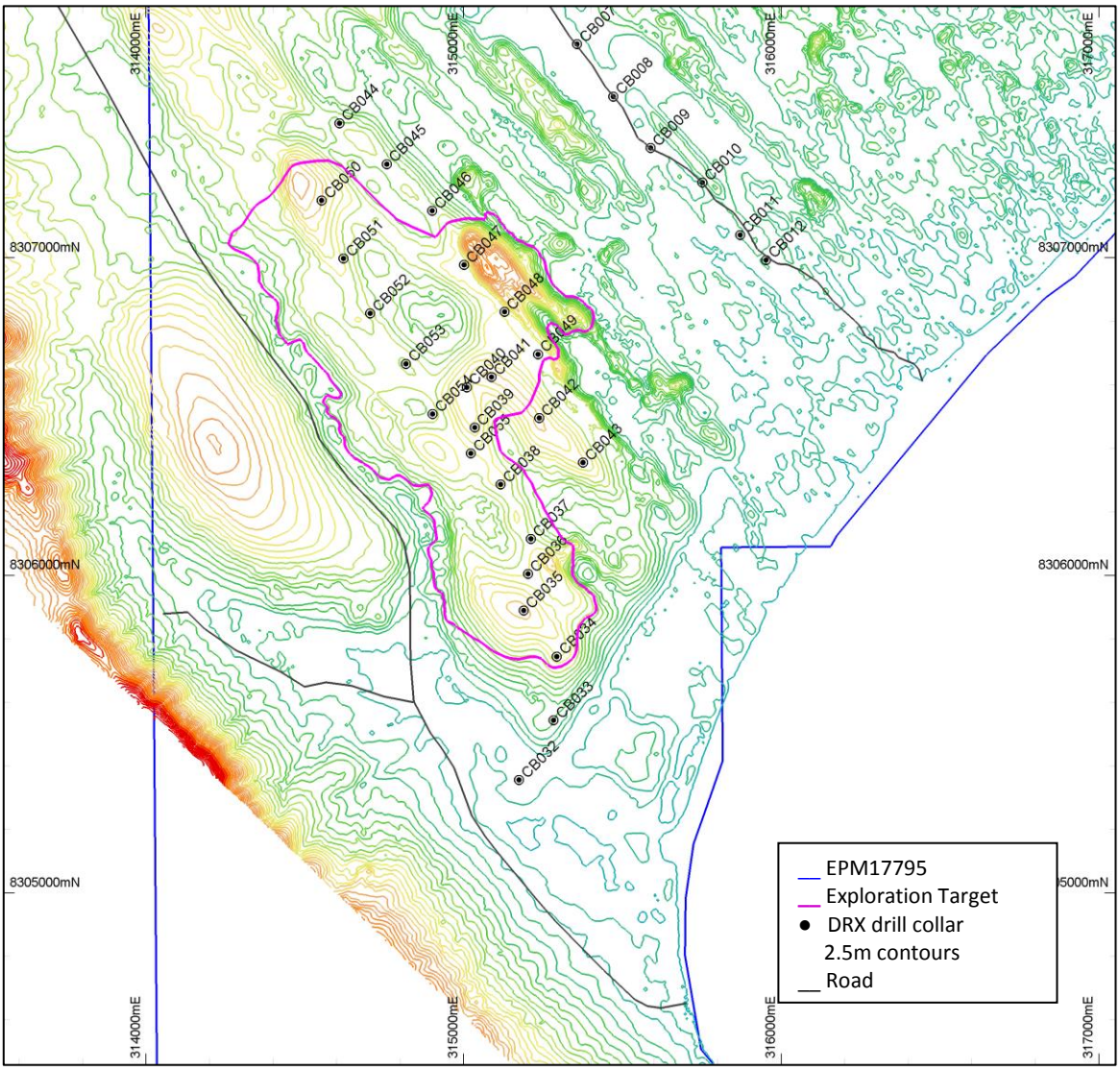
Based upon the results from reconnaissance drilling and the initial metallurgical testwork, an Exploration Target for potential high-grade silica sand has been generated for the Nob Point dune area of 15 million to 20 million tonnes of high quality silica sand.

The potential quality and grade of this Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource; it is uncertain if further exploration will result in the estimation of a Mineral Resource.

The Exploration Target includes two interconnected dune ridges within the broad dune structure between the Nob Point access road to the SW and the Deep Creek lowlands and swamp to the NE.

The estimate assumes that between 60% and 90% of the dune sand is mineable and an in-situ bulk density of 1.6t/m^3 is used to calculate tonnage. A target grade of 99% SiO_2 is considered appropriate as drill samples assayed to date exceed this value, and metallurgical testwork has demonstrated an

increase in grade using conventional processes. The area is readily accessible from existing roads, and in close proximity to a potential barge / ship loading site. Detailed information for the Exploration Target was presented in an announcement released to the ASX on **9 March 2018.**



Silica Sand Exploration Target over Nob Point dune system

Proposed Exploration

Planning for the next stage of exploration drilling in the southern EPM area is underway, with a vegetation survey completed in January and March 2018 to assess the presence of a threatened vegetation species within the NW extension of the Nob Point dunes drilled in October. Compilation of the reconnaissance data together with a high-resolution satellite image (and related topographic data processing) that was acquired in September 2017 helped facilitate detailed planning for the next stages of exploration.

A combination of infill drilling and further reconnaissance drilling is proposed for the Nob Point dune area drilled in October 2017, to provide further data for geological interpretation and confirmation of the continuity of the white sand mass. This drilling is planned to allow a mineral resource estimate to be compiled for part of the Nob Point dune system.

The silica sand market is seen reaching nearly US$10 billion in annual revenues by 2022, amid growth from both developed and emerging markets. Importantly, the Cape Bedford project is also favourably positioned as the closest high-grade undeveloped project to the world's largest silica markets in China, Japan, South Korea and Taiwan.

Diatreme will continue to work closely with the Hopevale Congress and Government to gain the necessary approvals for the further expansion of the proposed exploration program.

CLERMONT COPPER PROJECT (QLD)

A review of the Clermont project, primarily the Rosevale Porphyry Corridor (RPC), is continuing, with the development of a proposed exploration strategy underway.

TICK HILL GOLD PROJECT (QLD)

The Tick Hill Gold Project comprises three granted Mining Lease No's 7094, 7096 and 7097 (totalling 390ha). The Tick Hill Gold Deposit was mined between 1991 and 1995 by Carpentaria Gold Pty Ltd (a subsidiary of MIM Holdings Limited) for the production of 513,333 ounces of gold from 705,000 tonnes of ore at a recovered grade of 22.6 g/t gold (source: MIM – Annual Reports). This makes it one of the highest grade gold deposits in Australia's recent gold producing history.

The transfer of the three ML's to Diatreme Resources was confirmed by the Department in March 2015, triggering the commencement of the DRX Farm-In and Joint Venture Agreement with Superior Resources Limited (ASX:SPQ) over the Tick Hill Gold Project. Under the Joint Venture Agreement, Superior Resources has the right to earn a 50% interest in the project by:

- Completing $750,000 of exploration expenditure;
- Making a payment to DRX of $100,000; and
- Lodging 50% of the Queensland Government security bond on the tenements.

Exploration and assessment of the surface material within the leases (including alluvials, tailings and waste dumps) is to be conducted as a joint operation, with each party contributing 50% of the costs.

The Tick Hill Gold Mine operated from August 1991 through to March 1995, with commissioning of the site processing plant in December 1991. The plant comprised crushing and milling circuits delivering a product with a p80 of 70µm to a CIL circuit. Tailings were discharged into a tailings dam comprising two paddocks of a "turkeys nest" construction in which a perimeter embankment with a clay core retains tailings. Wall heights range from 6m to 10.5m. Since decommissioning the surface has been capped and both the surface and batters seeded, with good vegetation cover now present.

The total reported production for the Tick Hill Gold Mine was 705,000t at 22.6 g/t Au for 15,900kg Au at 97% gold recovery. Some high grade open pit ore was mined and transported to the Carpentaria Gold operations at Ravenswood to provide early cash flow to the project, this has been estimated at 20,000t based on the reported 19,000oz produced at Ravenswood in the 1991/1992 financial year (with head grades for that year of 30.2 g/t Au). This suggests that approximately 685,000t of tailings remain on site, with an estimated grade of around 0.7 g/t Au.

In January 2016 Diatreme announced a maiden Mineral Resource estimate for tailings material located within the rehabilitated tailings dam at Tick Hill (refer *ASX announcement 19 Jan 2016*). The Indicated Resource is estimated at 630kt at 1.08 g/t Au (at 0.5 g/t Au cut-off) containing 680kg (22,000 troy ounces) of gold.

In March 2016, Diatreme announced that a scoping study completed by an independent external consultant (Metcor) had confirmed the viability of a standalone operation processing the identified tailings resource. Tick Hill has the potential for a 20-month operation processing the tailings via re-grinding and a standard CIP/CIL circuit.

Metallurgical studies were undertaken to help determine the optimal grain size required to balance leach extraction rates with energy requirements for regrinding of the tailings. The cyanide leach testwork showed that gold extraction increases with increasingly finer grind size, but gold extraction of ~90% or higher can be achieved at grind sizes of around P_{80} 35 µm and finer.

Ultra-fine grinding testwork utilising an Isamill™ was conducted to determine the likely energy requirements, with results reported slightly higher than parameters used in the Scoping Study, but further work is required to generate data suitable for use in feasibility studies.

Additional metallurgical testwork is required to allow detailed design of a process flowsheet, determination of capital and operating costs, and development of a financial model to further assess the economic potential for mining and processing of the tailings material.

Diatreme continues to explore opportunities to unlock value from this project for the benefit of shareholders, amid high Australian dollar gold prices.

CASH POSITION

The Company's cash position at 31 March 2018 (Appendix 5B) was $65k***.**

*****In early April 2018, the company received further funds totalling $240,000 from the exercise of unlisted options (refer ASX release 12/4/18).
Additionally, the company anticipates receiving further funding through placements targeted for completion during May 2018 to provide additional working capital to fund exploration and corporate activities.

APPENDIX 1

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

Dated 30 April 2018
Neil J McIntyre
Chief Executive

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Competent Person Statements

The information in this report that relates to Exploration Results from the Cape Bedford Project is based on information compiled by Mr. Ian Reudavey, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr. Reudavey is a full-time employee of Diatreme Resources Limited. Mr. Reudavey 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. Reudavey 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 Exploration Results and Mineral Resource from the Tick Hill Gold Project is based on information compiled by Mr. Ian Reudavey, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr. Reudavey is a full-time employee of Diatreme Resources Limited. Mr. Reudavey 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. Reudavey 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 from the Cyclone Zircon Project is based on information compiled by Mr Ian Reudavey, who is 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 from the Cyclone Zircon 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.

APPENDIX 1

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

Mining tenements held at the end of the quarter and their location

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
WA	Cyclone	M69/141	Eucla Basin	100%	LSPL	Granted
WA	Cyclone Extended	R69/1	Eucla Basin	100%	DRX	Granted
QLD	Clermont	EPM17968	Clermont	100%	CHAL	Granted
QLD	Cape Bedford	EPM17795	Hopevale	100%	DRX	Granted
QLD	Tick Hill	ML7094	Duchess	100%	DRX	Granted
QLD	Tick Hill	ML7096	Duchess	100%	DRX	Granted
QLD	Tick Hill	ML7097	Duchess	100%	DRX	Granted

Mining tenements acquired and disposed of during the quarter and their location

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
-	-	-	-	-	-	-

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

State	Project Name	Agreement Type	Parties	Interest held at end of quarter by exploration 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
QLD	Tick Hill Gold Project	Farm-out and Joint Venture Agreement	DRX and Superior Resources Limited	100%	Proposed JV announced Aug 2011, formal Agreement announced Jun 2013, Joint Venture commenced Jan 2015

Beneficial percentage interests in farm-in or farm-out agreements acquired or disposed of during the quarter

State	Project Name	Agreement Type	Parties	Interest held at end of quarter by exploration entity	Comments
-	-	-	-	-	-

Abbreviations:

M	Western Australia	Mining Lease
R	Western Australia	Retention Licence
EPM	Queensland	Exploration Permit for Minerals
ML	Queensland	Mining Lease

DRX - Diatreme Resources Limited
CHAL – Chalcophile Resources Pty Ltd
LSPL – Lost Sands Pty Ltd

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Drilling samples are 3m down hole intervals of air-core drill cuttings collected from cyclone mounted rotary splitter, approximately 3-4kg (representing ~20%) of drill material returned via the cyclone is sampled. • Sample was submitted to commercial laboratory for drying, splitting (if required), pulverisation in a tungsten carbide bowl, and XRF analysis • Sampling techniques are mineral sands "industry standard' for dry beach sands with low levels of induration and slime. • As the targeted mineralisation is silica sand, geological logging of the drill material is a primary method for identifying mineralisation • Metallurgical samples are composited intervals of white and cream sands logged in drilling with collection of the entire volume of air-core drill cuttings from the cyclone in to large plastic sample bags. • A twinned hole was drilled to collect the bulk sample from the logged interval of interest.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Vertical NQ air-core drilling utilizing blade bit, 3m drill runs
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Visual assessment and logging of sample recovery and sample quality • Reaming of hole and clearance of drill string after every 3m drill rod • Sample chute cleaned between samples and regular cleaning of cyclone to prevent sample contamination • No relationship is evident between sample recovery and grade
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Geological logging of the total hole by field geologist, with retention of sample in chip trays to allow subsequent re-interpretation of data if required. • The total hole is logged; logging includes colour, grain size, sorting, induration and estimates of HM, slimes and oversize utilizing panning. • Logging is captured in Micromine data tables, with daily update of field database and regular update of master database.
Sub-sampling	• *If core, whether cut or sawn and whether quarter, half or all core*	• Drilling samples rotary split on site (approx. 80:20), resulting in approximately 3

Criteria	JORC Code explanation	Commentary
techniques and sample preparation	*taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	– 4kg of dry sample • Sample was coned and quartered to generate a 1-2kg sample for submission to the laboratory, with surplus retained as a reference sample. • Sample size is considered appropriate for the material sampled
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• Drilling samples were submitted to ALS Townsville, where they were dried, weighed and split. • Analysis was undertaken by ALS Brisbane utilizing a Tungsten Carbide pulverization, ME-XRF26 (whole rock by Fusion/XRF) and ME-GRA05 (H_2O/LOI by TGA furnace) • Metallurgical samples were submitted to IHC Robbins for characterisation testwork (screening, de-sliming, sizing, HLS and XRF analysis) and wet-tabling (two stage) to generate products for sizing and XRF analysis.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Significant intersections validated against geological logging and local geology / geological model. • Twinned holes were completed to generate material for bulk sampling and metallurgical testwork. Geological logging is comparable, no direct assay comparison has been made at this time. • All data captured and stored in both hard copy and electronic format.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• All holes initially located using handheld GPS with an accuracy of 5m for X,Y. • UTM coordinates, Zone 55L, GDA94 datum. • Topographic surface generated from processing Stereo WorldView-3 satellite imagery and DGPS control points, collar RL's levelled against this surface to ensure consistency in the database.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Drill lines were completed at ~200m spacing along the prepared access tracks. • Drill spacing and distribution is not sufficient to allow valid interpretation of geological and grade continuity for Mineral Resource estimation • No sample compositing (down hole) has been undertaken for XRF analysis of drill samples. Down hole sample compositing was undertaken to generate a single bulk sample for holes CB037, CB038, CB047, CB048, CB053 and CB054.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The dune field has ridges dominantly trending 320° - 330°. • The drill access tracks typically run along or sub-parallel to dune ridges which suggests unbiased sampling, some cross dune tracks linking the ridges were also drilled.
Sample security	• *The measures taken to ensure sample security.*	• Sample collection and transport from the field was undertaken by company personnel following company procedures. • Samples were delivered direct to ALS in Townsville.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• There has been no audit or review of sampling techniques and data at this time.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Cape Bedford Project occurs within EPM17795 in Queensland and is held by Diatreme Resources. • The tenement is in good standing • A Compensation and Conduct Agreement, and a Cultural Heritage Agreement is in place with the landholder and native title party (Hopevale Congress)
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Previous exploration has been carried out in the area during the 1970's by Ocean Mining and 1980's by Breen Organisation. • The historical exploration data is of limited use since it comprises shallow hand auger drilling and is typically not accurately located.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The geology comprises variably re-worked aeolian sand dune deposits associated with a Quaternary age sand dune complex. • Mineralisation occurs within aeolian dune sands.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• A tabulation of the material drill holes is presented in the main body of this report.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• The assay data presented for the silica sand is an arithmetic average of the 3m individual sample results. • No minimum of maximum grade truncations have been used. • The grade is relatively consistent and the aggregate intercepts use a simple arithmetic average.
Relationship	• *These relationships are particularly important in the reporting of Exploration Results.*	• As the mineralisation is associated with aeolian dune sands the majority will be essentially horizontal, some variability will be apparent on dune edges and

Criteria	JORC Code explanation	Commentary
between mineralisation widths and intercept lengths	• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	faces. • All drilling is vertical; hence the drill intersection is essentially equivalent to the true width of mineralisation.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• A map of the drill collar locations is incorporated with the main body of the announcement. Representative cross-sections are not attached as there is insufficient drilling at this time to generate meaningful sections.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All exploration assay results have been reported at this time.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Geological observations are consistent with aeolian dune mineralisation • No bulk density measurements have been undertaken • Abundant groundwater was intersected during drilling, as expected given the dune complex is an aquifer and drilling was undertaken to considerable depth. • The mineralisation is unconsolidated sand • There are no known deleterious substances at this time. • Metallurgical test results from 6 bulk samples from 6 individual drill holes demonstrate that a high-quality glass grade silica sand product could be produced from the material using conventional wet separation techniques (i.e. washing and gravity separation)
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Additional drilling to test for lateral extensions of mineralisation are planned. • The areas of possible extensions are considered to be potentially politically and culturally sensitive, and not appropriate for publishing at this time.