

## Exploration Activities Report Quarter ended 31 December 2013

### HIGHLIGHTS

#### Cyclone Zircon Project (WA)

- Negotiations with Perpetual Mining Holding Limited completed and Heads of Agreement signed – 8 January 2014.
- Flora and fauna Spring surveys completed over the project area and the proposed access road to Forrest as part of the West Australian government “PER” process.
- Investigation water bore drilled into Officer Basin sediments with the discovery of significant deep aquifer water flows. The bore has been completed as a permanent production bore.
- Updated resource (JORC 2012) determined for the Cyclone Deposit – 137 million tonnes (Mt) at 2.2% heavy minerals (HM) at a 1% HM cut-off grade, containing 3.0Mt.

#### Clermont Copper Project (QLD)

- Savannah RAB drilling completed with follow-up exploration required.

#### Glenthompson Copper Project (VIC)

- Gravity survey completed outlining drill ready targets.



Nullabor Plain section of proposed Cyclone Haul Road corridor

Diatreme Resources is an Australian based diversified mineral explorer with significant projects in heavy mineral sands, copper, base metals and gold.

The Company owns the world class **Cyclone Zircon Deposit** in Western Australia, situated within the Eucla Basin province, along with extensive areas of underexplored ground prospective for heavy mineral sands.

The Board and senior personnel exhibit wide experience, ranging through the exploration and development phases of resource management.

**Australian Securities Exchange**  
Codes: DRX

**Securities**  
Ordinary shares (DRX):  
609,582,431

**Board of Directors**  
**Executive:**  
Tony Fawdon - Chairman/CEO  
David Hall - Operations

**Non-executive:**

George White  
Andrew Tsang  
William Wang  
Neil McIntyre  
Daniel Zhuang

**Joint Company Secretaries:**  
Leni Stanley  
Tuan Do

**Key Projects:**

- Cyclone Zircon Project
- Clermont Copper Project
- Anabama Copper Iron Project
- Glenthompson Copper Project

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## EUCLA BASIN HEAVY MINERAL PROJECT (WA)

### Cyclone Zircon Project (WA)

#### Heads of Agreement

In early January 2014, Diatreme announced the signing of a Heads of Agreement (“HoA”) between its wholly owned subsidiary, Lost Sands Pty Ltd as direct owner of the Cyclone Zircon Project and Perpetual Mining Holding Limited (“PMHL”). This was the result of negotiations which commenced in July 2013.

PMHL is a Hong Kong based company with sound business connections within China including operational experience in the iron ore mining and steel products processing industries. PMHL is supported by some existing Diatreme shareholders who introduced PMHL to the Company. As a result, PMHL has now become a joint venture partner over the Project and has also indicated potential to partner with Diatreme on other resource projects.

Under the HoA and subject to any approval required through the Foreign Investment Review Board, PMHL have confirmed their commitment to invest \$2.0M directly into the Project to earn 6% equity. Three significant project milestone achievements are sought by PMHL (ASX release 09/01/14). The locating and securing of suitable water supplies for future mining operations milestone has effectively been achieved through the completion of the investigation production bore, Cyclone #1 (discussed below). The two remaining milestones (approvals for development of a road transport corridor, Cyclone to Forrest, and approvals relating to the grant of necessary mining and infrastructure licences) are time dependent due to their nature. Diatreme is seeking to achieve these milestones by end 2014.



Tony Fawdon addressing a meeting with the Pila Nguru Traditional Owners at Tjuntjuntjara – November 2013

#### Water Supply Assessment

An investigation production water bore, “Cyclone #1”, was drilled during the quarter to a depth exceeding 800m, resulting in the successful discovery of excellent deep water flows. Located within E69/1920, adjacent to the proposed Cyclone mine site and treatment plant area, the bore construction and development has now been successfully completed. Cyclone #1, cased to 812m, is designed to become a permanent production bore for infrastructure development and mine operation. On-site hydrological supervision was conducted by Graham Ride, Principal Consultant & Senior Hydrogeologist, Centreprise Resource Group Pty Ltd.

A series of high yielding sandstone aquifers were encountered within Cyclone #1 between 530 and 812 metres. Based on airlift testing, the minimum required bore yield of 20 litres per second has been easily achieved. Pump tests will be required to establish the long term maximum sustainable bore yield, pump settings, the hydraulic characteristics of the aquifers and siting of future mine water production bores.

Field water quality tests indicate the salinity of the groundwater from the main aquifers is around 22,000 milligrams per litre total dissolved salts i.e. approximately two thirds the salinity of sea water. Following completion of development of the bore, the field conductivity was 33,150 uS/cm at the end of 12 hour airlift testing at a rate estimated to be 40 litres per second.

The main aquifer commencing at 530 metres is sub artesian with its pressure surface at around 87 metres below ground level. Water level monitoring will be required to determine natural variations in water levels over the short and long term (variations in the potentiometric surface).

The bore was drilled through the Gunbarrel Basin into the underlying Officer Basin. It is the second deep bore drilled into the Waigen sub basin of the Officer Basin<sup>1</sup> in Western Australia. The Waigen Sub Basin, or as recently described by Western Australia Department of Industry and Resources the Waigen Area, is considered to be an extension of the adjacent Birksgate Sub Basin within the Officer Basin, in South Australia. The Waigen Basin area covers approximately 40,000 square kilometres and the Birksgate Sub Basin a further 25,000 square kilometres. The Officer Basin in this area is a broad, 250 kilometres northwest trending deep sedimentary trough up to 11 kilometres thick along its axis near the Musgrave Ranges to the north and thinning to zero metres to the south.

Based on extrapolation of data from distant oil exploration bores in the Officer Basin approximately 80 kilometres to the east, interpretation of regional geology by the Western Australia Department Industry and Resources and Geoscience Australia, the aquifers encountered in Cyclone #1 are part of an extensive aquifer system. From a regional perspective groundwater is moving from north to south with aquifer recharge zones about 200 kilometres to the north.

Pump testing information will be used in the future to design and minimise the cost of the production bore field. Wireline geophysical logging techniques may provide comparative data to assist in identifying the formations intersected and to provide additional data on aquifers encountered.

## Environmental Assessment

To support the requirements of a Public Environmental Review document, as required by the *Western Australian Environmental Protection Act 1986*, baseline study activities have been undertaken during the quarter.

Between September and November 2013 experienced zoologists from Outback Ecology, a division of MWH Australia Pty Ltd, designed and conducted field surveys for terrestrial fauna in the Cyclone project area. The surveys were designed in close consultation with assessors and scientists from the WA Office of the Environmental Protection Authority and the WA Department of Parks and Wildlife. Traditional owner representatives from the Pila Nguru were also involved in the planning and conduct of the surveys. The surveys were completed safely and successfully, and in accordance with established timeframes for progression of the Cyclone Project. Several fauna habitat types were identified, over 140 species of vertebrate fauna were identified and several invertebrate specimens were collected for laboratory-based identification. Assessment of the field survey dataset is ongoing. Outback Ecology and the Company continue to liaise closely with relevant stakeholders to ensure that terrestrial fauna survey work for the project is robust and comprehensive.



Fauna survey interaction in the field between DRX consultants, MWH Global, and Pila Nguru's, Spinifex Land Management Group.

During October 2013 a vegetation survey over the proposed Cyclone mining area and haul route to Forrest on the transcontinental rail line was performed. The consultant team surveyed over 30 vegetation associations over two bioregions (and three sub regions).



The baseline soil assessment and waste (overburden) characterisation program for the Cyclone Project was also undertaken during this period and involved a site based soil survey and sampling program, identification of drill samples for assessment of mine waste characteristics and laboratory analysis of the physical and chemical properties of collected samples. The objectives of the work program have been to assess the characteristics and suitability of topsoil, subsoil and waste material resources within the project area for use as a rehabilitation resource, to identify any potentially problematic soil and mine waste materials, and to facilitate recommendations for soil stripping, handling and stockpiling, soil profile reconstruction and associated rehabilitation / mine closure parameters.

### Cyclone Mineral Resource Update - JORC 2012

A review and upgrade of the Cyclone heavy mineral resource estimate as part of the ongoing project feasibility work was completed (see ASX release dated 9 January 2014 for full details). The revised resource reconfirms the economic potential of the zircon rich Cyclone Deposit and demonstrates the robustness of previous resource estimates.

The Cyclone resource now 137 million tonnes (Mt) at 2.2% heavy minerals (HM) at a 1% HM cut-off grade, containing 3.0Mt HM (within DRX tenure) and more than 90% of the resource is now classified as "Measured".

A subsequent review of the Ore Reserve estimate for Cyclone will be released during 2014 once optimisation of the PFS mine plan has been finalised as part of ongoing feasibility studies for the project.

Cyclone represents potential for new, long-term, HM supply source for both Australian and overseas industries. The estimate again highlights the low levels of slimes (<53um) at 4.0% and oversize (>2mm) at 5.4% within the Cyclone mineralisation. These characteristics are conducive to simple, low cost, mining, processing and tailing operations.

Cyclone is interpreted as a Tertiary beach strandline HM system with analogies to Iluka's Jacinth/Ambrosia HM deposit in the eastern Eucla Basin. Mining of beach strandline deposits is well understood and has formed the basis of global mineral sands production to date.

### CLERMONT COPPER GOLD PROJECT (QLD)

As reported in the last quarterly activities report, Antofagasta plc, through a wholly owned subsidiary, withdrew from their farm-in over the Clermont Project (Figure 1) without earning an interest. Diatreme benefited from Antofagasta's involvement in the search for large scale porphyry copper-style mineralisation at Clermont through expenditure in the order of \$1.5M. The Company's knowledge and understanding of the Rosevale Porphyry Corridor (RPC) has been significantly advanced through combined efforts with Antofagasta, and the Company plans to continue exploration for the sources of the widespread copper mineralisation within this corridor and in the district.

### Savannah / Consols Prospects

Following encouraging mapping and rock chip results from the Savannah Prospect earlier in 2013, RAB drilling of significant geochemistry results was undertaken during the quarter to define depth extensions of this significant alteration and mineralised system (Figure 2). Previously reported rock chip results from Savannah (ASX release 22/05/13) have returned up to 25ppm gold, 80ppm silver, 1.8% copper, 1.4% lead, and 1.4% zinc over a strike length of 1.4km.

The drilling was relatively unsuccessful due to operational difficulties in achieving the target depth of the drill holes. The main issue was excessive ground water at approximately 20m depth which hindered drilling and sample return. Therefore most holes did not reach target depth and much of the prospect remains untested. However, two holes on the northern and southern known limits of the main Savannah mineralised corridor returned anomalous results. Drill hole Sav 09 returned 3m @ 2.3g/t gold from 18m and drill hole Sav 11 returned 4.5m @ 0.25 g/t gold and 1.96% zinc. True widths are unknown at this time. These results will be followed up with further surface mapping and sampling followed by drilling. Drill hole collar details are included in Table 1 below. Technical details under the JORC Code, 2012 are included as [Appendix 1](#).

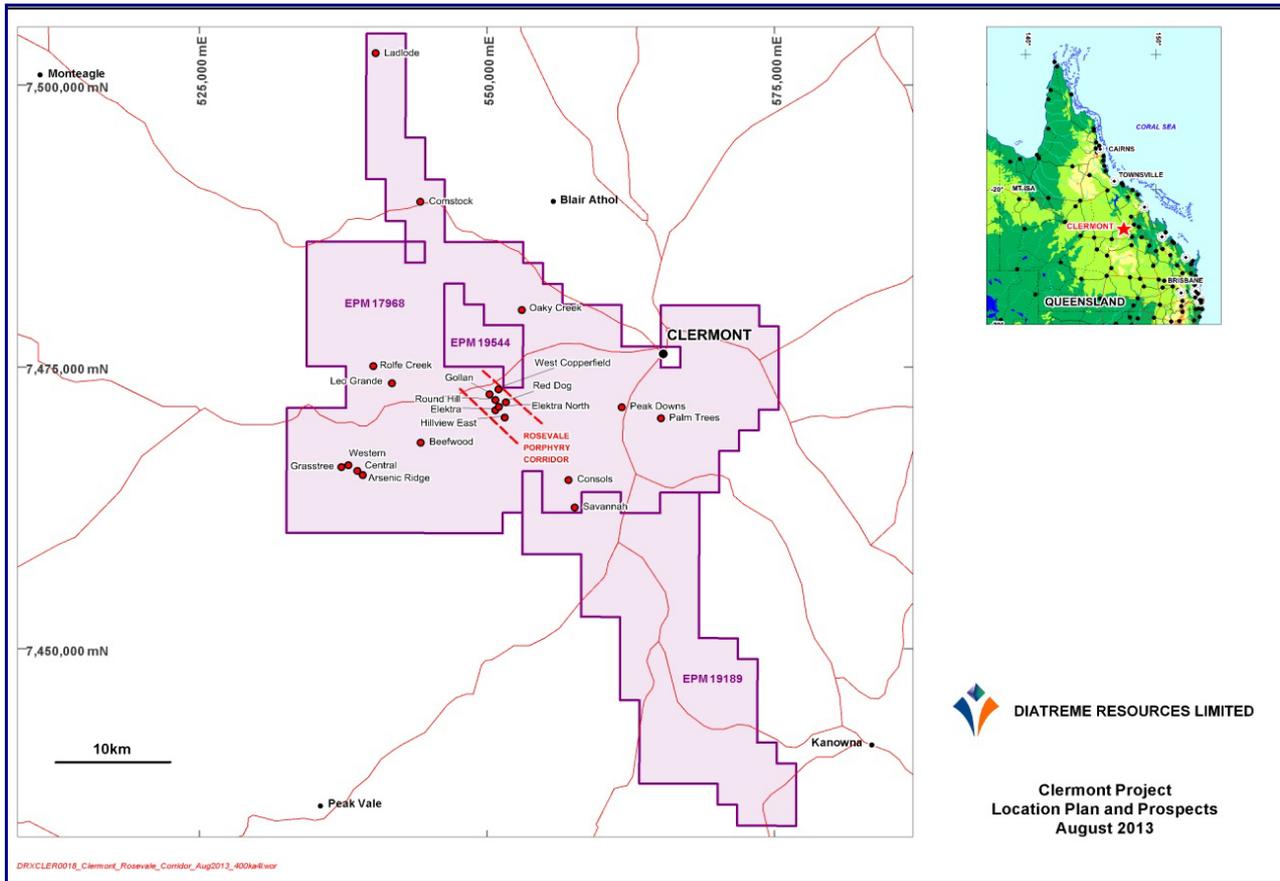


Figure 1: Location of Clermont tenements and prospects

Hole ID	Easting	Northing	RL (m)	Azimuth (mag)	Dip (deg)	Total Depth (m)
Sav 01	556949	7463116	302	037	66	22.5
Sav 02	557129	7462910	290	257	61	21
Sav 03	557247	7462774	300	042	60	21
Sav 04	557361	7462755	316	091	60	30
Sav 05	557373	7462651	314	215	60	79.5
Sav 06	557479	7462492	311	246	60	30
Sav 07	557566	7462486	310	055	60	75
Sav 08	557732	7462307	308	258	60	24
Sav 09	557809	7462096	296	272	60	69
Sav 10	557244	7461966	285	252	60	30
Sav 11	556963	7463131	307	124	60	51
Sav 12	557109	7462912	290	228	60	21
Sav 13	557164	7462859	303	050	60	21
Sav 14	557290	7461830	290	075	60	24
Sav 15	557163	7461968	293	070	60	18
Sav 16	557115	7462106	295	075	60	24
Sav 17	557592	7462512	309	210	60	21
Sav 18	557066	7462241	295	220	60	15
Sav 19	556900	7462474	282	218	60	21

Table 1: Savannah Prospect RAB Drilling Summary

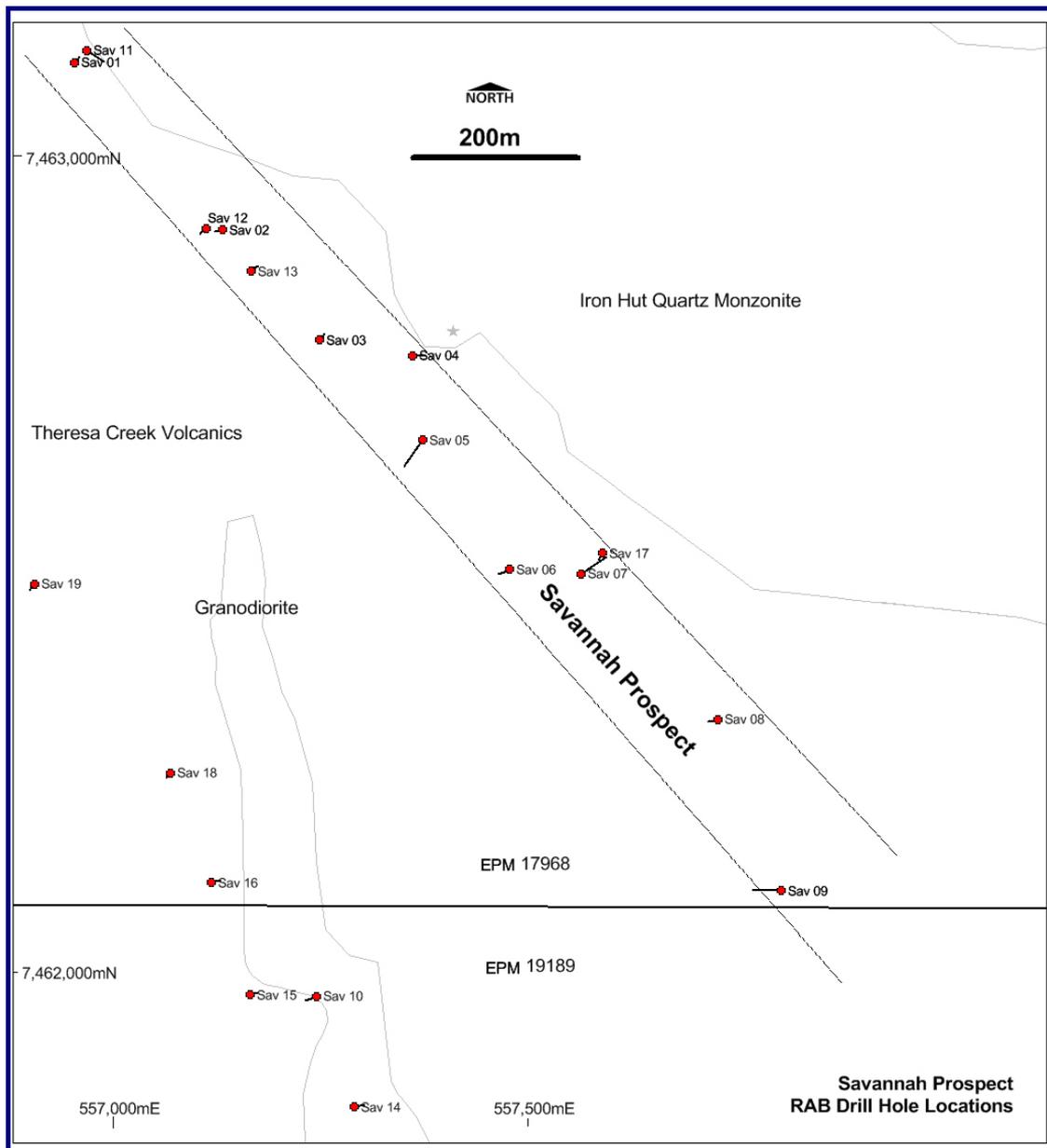


Figure 2: Location of Savannah Prospect RAB drill holes

## GLENTHOMPSON COPPER PROJECT (VIC)

Following recent technical studies conducted by the Victorian Geological Survey into the Mount Stavelly Belt, Diatreme secured an exploration licence in an area that is now highly regarded as a “fertile” Andean-style magmatic arc system, prospective for porphyry copper deposits.

Located in western Victoria (Figure 3), Exploration Licence 5478 has been granted to the Company for a term of five years within this newly recognised porphyry belt. The licence has good geophysical drill targets under shallow overburden cover along with 30km of non-explored strike length with easy access.

A number of explorers have already discovered porphyry copper deposits within this belt and the Company's tenement sits within the centre of the belt. The Eclipse, Lexington and Pollockdale prospects held by Navarre Minerals Limited and Thursdays Gossan Prospect held by Stavelly Minerals Pty Ltd, Figure 3, are examples of what have been discovered to date in the immediate area.

There is no outcrop over the tenement. Therefore, drilling will be directed by geophysics in the search for porphyry styles of mineralisation (Figure 4). A gravity geophysics survey has recently been completed by the Company which outlined a number of targets when coupled with the magnetics. These will be drill tested in the coming months using the Company's drill rig.

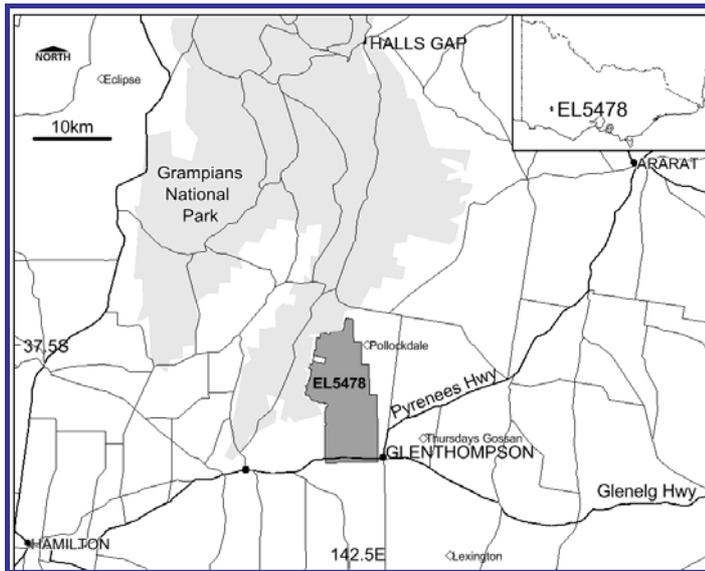


Figure 3: Location of EL5478 (Glenthompson), western Victoria

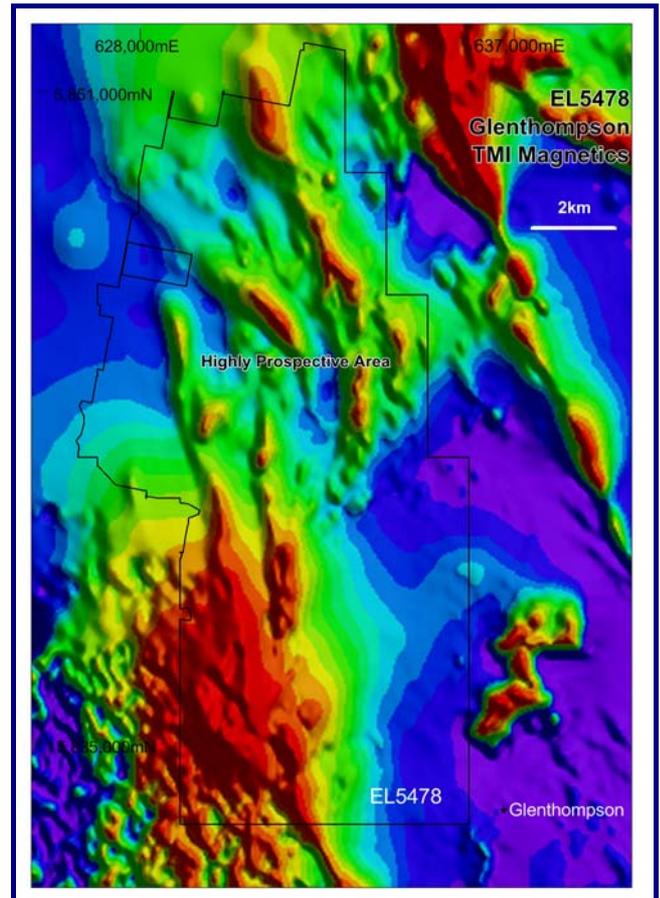


Figure 4: EL5478 (Glenthompson) showing Total Magnetic Intensity Magnetics

## CORPORATE

The Company's cash position at 31 December 2013 (Appendix 5B) was \$0.98M.

**Appendix 2** provides information required under ASX listing rule 5.3.3 for mineral exploration entities.

Dated 16 January 2014

**Anthony J Fawdon**  
Executive Chairman/CEO

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## Competent Person Statements

The information in this report, insofar as it relates to Exploration Results from the Clermont and Glenthompson projects is based on information compiled by company personnel under the supervision of Mr David Jelley, who is a full time employee of Diatreme Resources Limited and a Member of the Australasian Institute of Mining and Metallurgy. Mr Jelley 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 Jelley 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 that relates to Exploration Results and Mineral Resources from the Cyclone Zircon Project is based on information compiled by Mr Ian Reudavey, a Competent Person who is a Member of the Australian Institute of Geoscientists. Ian Reudavey is a full time employee of Diatreme Resources Limited. Ian 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'. Ian Reudavey consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



## APPENDIX 1 – TECHNICAL DETAILS

## Savannah Prospect – Clermont Project

## Savannah Drilling – 2013

## 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
<i>Sampling techniques</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li><i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>RAB drilling was used to obtain 1.5m samples. Samples were collected in a 30L bin after passing through a cyclone. A random spear sample was taken from the bin and bagged in a Calico bag to obtain a sample between 1-2kg. Samples were taken at natural moisture content. Bagged samples were placed together in polyweave bags and dispatched for assay at the end of the program. Samples were stored in a weather proof shed prior to dispatch.</li> <li>All samples undergo industry standard sample preparation for ICP-AES and Fire Assay techniques. Samples are analysed by ALS Chemex in Townsville.</li> <li>A small representative sub sample was selected by hand and sieved and washed to be geologically logged. This sample was then placed in a chip tray as a record.</li> </ul>
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li><i>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).</i></li> </ul>	<ul style="list-style-type: none"> <li>RAB down hole hammer with a 4 ¾ inch hammer. Sample was returned as chips via a cyclone.</li> </ul>
<i>Drill sample</i>	<ul style="list-style-type: none"> <li><i>Method of recording and assessing core and chip sample recoveries</i></li> </ul>	<ul style="list-style-type: none"> <li>Due to exploratory nature of the program recovery was not routinely</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>recovery</i>	<p><i>and results assessed.</i></p> <ul style="list-style-type: none"><li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li><li>• <i>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.</i></li></ul>	<p>measured.</p> <ul style="list-style-type: none"><li>• To maximise sample recovery the hole was cleaned after every 1.5m run by pulling back 10cm and leaving the air running.</li><li>• It is not known if there is a relationship between recovery and grade.</li><li>• Fines were lost at the cyclone as dust, sample bias is unknown.</li></ul>
<i>Logging</i>	<ul style="list-style-type: none"><li>• <i>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.</i></li><li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li><li>• <i>The total length and percentage of the relevant intersections logged.</i></li></ul>	<ul style="list-style-type: none"><li>• Random chips were taken from each 1.5m sample and geologically logged for colour, lithology, alteration and mineralisation.</li><li>• Logging is qualitative in nature.</li><li>• All samples were logged and recorded in to the geological database.</li><li>• The first 1.5m sample of every hole was lost due to collaring procedure. The remainder of the samples from drilling were collected, logged and sub-samples sent for analysis.</li></ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"><li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li><li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li><li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li><li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li><li>• <i>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.</i></li><li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li></ul>	<ul style="list-style-type: none"><li>• Sample was taken at natural moisture content. Sub samples were obtained by spear sampling.</li><li>• At the laboratory, all samples undergo industry standard sample preparation for ICP-AES and Fire Assay techniques. Samples are analysed by ALS Chemex in Townsville.</li><li>• No field duplication of samples was conducted due to the reconnaissance nature of the program.</li><li>• Sample sizes are appropriate being between 1-2kg. Grain size of the host rock was consistently fine to very fine, observed mineralisation was consistently &lt;2mm in size and the sample size is appropriate for this size of mineralisation.</li></ul>
<i>Quality of assay data and laboratory</i>	<ul style="list-style-type: none"><li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li><li>• <i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument</i></li></ul>	<ul style="list-style-type: none"><li>• All samples were submitted for fire assay techniques and ICP-AES analysis. This is considered appropriate for the style and concentration of mineralisation.</li><li>• The laboratory conducts internal standards, blanks and duplicates.</li></ul>



Criteria	JORC Code explanation	Commentary
<i>tests</i>	<p><i>make and model, reading times, calibrations factors applied and their derivation, etc.</i></p> <ul style="list-style-type: none"><li><i>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.</i></li></ul>	<ul style="list-style-type: none"><li>This is considered acceptable levels of accuracy and precision for the exploratory nature of the program.</li></ul>
<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"><li><i>The verification of significant intersections by either independent or alternative company personnel.</i></li><li><i>The use of twinned holes.</i></li><li><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li><li><i>Discuss any adjustment to assay data.</i></li></ul>	<ul style="list-style-type: none"><li>Data generated by this program was not intended for resource estimation purposes.</li><li>Significant intersections have been checked and verified by senior members of staff.</li><li>No twinned holes were completed due to the exploratory nature of the program.</li><li>Documentation of the primary data has been reported detailing the reconnaissance program with data developed and tabulated in spreadsheets and document files held by the Competent Person and the host company.</li><li>No adjustment to assay data has been undertaken.</li></ul>
<i>Location of data points</i>	<ul style="list-style-type: none"><li><i>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.</i></li><li><i>Specification of the grid system used.</i></li><li><i>Quality and adequacy of topographic control.</i></li></ul>	<ul style="list-style-type: none"><li>Drill collars were located by handheld GPS considered to have an accuracy of <math>\pm 3\text{m}</math>.</li><li>The grid system used was GDA94 Zone 55.</li><li>The base topographic control is the local 1:50,000 topographic map (Clermont) which is adequate to identify overall and specific locations.</li></ul>
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"><li><i>Data spacing for reporting of Exploration Results.</i></li><li><i>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.</i></li><li><i>Whether sample compositing has been applied.</i></li></ul>	<ul style="list-style-type: none"><li>The aim of the program was to test anomalous surface geochemistry from previously acquired surface rock chip samples and structure previously mapped. As such no set hole spacing was used.</li><li>Data spacing and distribution is not sufficient to establish geological or grade continuity appropriate for a Mineral Resource Estimation.</li><li>No sample compositing has been undertaken.</li></ul>
<i>Orientation</i>	<ul style="list-style-type: none"><li><i>Whether the orientation of sampling achieves unbiased sampling of</i></li></ul>	<ul style="list-style-type: none"><li>The detailed orientation of the mineralising structures is unknown.</li></ul>



Criteria	JORC Code explanation	Commentary
<i>of data in relation to geological structure</i>	<p><i>possible structures and the extent to which this is known, considering the deposit type.</i></p> <ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	Therefore the orientation of the drilling was designed to further understand the nature of any mineralising structures. Due to exploratory nature of the program and the limited knowledge of the area, the bias is not quantifiable.
<i>Sample security</i>	<ul style="list-style-type: none"> <li><i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>Samples were initially collected in to a plastic bucket. Subsamples were taken by spear and placed into Calico sample bags on site.</li> <li>Samples were then grouped together in white polyweave sacks and stored in a secure weather proof shed at the company accommodation. For transport the samples were palletted and shrink wrapped.</li> <li>External interference is considered to be extremely remote.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>No reviews of sampling protocols has been carried out due to the exploratory nature of the program.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>EPM17968 and EPM19189 are located near the township of Clermont in Central Queensland. The tenements are held by Chalcophile Resources Pty Ltd, a wholly-owned subsidiary of Diatreme Resources Pty Ltd. There are no joint venture agreements or no historical sites.</li> <li>The tenure is secure with no impediments to operating.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>The target area, the Savannah Prospect, has not been previously drilled and was discovered by the Company in 2012.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>The propylitic alteration and the metal assemblage, which consists of Cu+Ag+Pb+Zn+/-Mo+/-Au, suggests a Cu+Ag porphyry source with epithermal affinities. The Savannah prospect is hosted within the 389Ma Theresa Creek Volcanics which hosts a large area of the</li> </ul>



Criteria	JORC Code explanation	Commentary
		<p>epidote alteration, indicative of hydrothermal activity possibly related to subjacent mineralised intrusives. The Savannah epidote alteration zone strikes SSE from the vicinity of the Savannah prospect and is 800m across and is about 1.4km long. The mineralised corridor is 1.4km long adjacent to the Iron Hut Quartz Monzonite.</p>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>• 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: <ul style="list-style-type: none"> <li>○ easting and northing of the drill hole collar</li> <li>○ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>○ dip and azimuth of the hole</li> <li>○ down hole length and interception depth</li> <li>○ hole length.</li> </ul> </li> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• 19 RAB down hole hammer holes drilled to a maximum depth of 79.5m. The first 12 holes were designed to test geochemical anomalies from the previous rock chips. The final 7 holes were wildcat holes completed into alteration signatures at surface.</li> <li>• A summary table of all collar information including easting, northing, RL, dip, azimuth and total depth is included below in table A1.</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>• No cut-off grades have been used.</li> <li>• Intercepts reported can be considered weighted averages, weighted by interval length. All intervals are the same length.</li> <li>• No metal equivalents have been reported.</li> </ul>
<i>Relationship between mineralisation widths and</i>	<ul style="list-style-type: none"> <li>• These relationships are particularly important in the reporting of Exploration Results.</li> <li>• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>• If it is not known and only the down hole lengths are reported, there</li> </ul>	<ul style="list-style-type: none"> <li>• True widths are not known, and any stated mineralisation widths will be under the assumption that the mineralised body is dipping vertically.</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>intercept lengths</i>	<i>should be a clear statement to this effect (eg 'down hole length, true width not known').</i>	
<i>Diagrams</i>	<ul style="list-style-type: none"><li>• <i>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.</i></li></ul>	<ul style="list-style-type: none"><li>• See maps and figures attached to drilling report.</li></ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"><li>• <i>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.</i></li></ul>	<ul style="list-style-type: none"><li>• Due to the relatively small number of samples, all results have been tabulated in spreadsheets and document files held by the Competent Person and the host company.</li></ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"><li>• <i>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.</i></li></ul>	<ul style="list-style-type: none"><li>• Geological logs are held by the Competent Person and the host company.</li></ul>
<i>Further work</i>	<ul style="list-style-type: none"><li>• <i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li><li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li></ul>	<ul style="list-style-type: none"><li>• Further understanding of the mineralised structure is required before further drilling is undertaken. As such prospect scale mapping of the area is recommended.</li></ul>



## APPENDIX 2

## DISCLOSURES REQUIRED UNDER ASX LISTING RULE 5.3.3

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

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
SA	Anabama North	EL4783	Anabama	100%	CHAL	Granted
SA	Anabama	EL5138	Anabama	100%	CHAL	Granted
SA	Noorina 1	EL 5045	Eucla Basin	100%	LSPL	Granted
SA	Noorina 2	EL 5046	Eucla Basin	100%	LSPL	Granted
SA	Eucla 5	EL(A) 05/934	Eucla Basin	100%	LSPL	Application
SA	Eucla 6	EL(A) 05/935	Eucla Basin	100%	LSPL	Application
SA	Eucla 9	EL(A) 08/235	Eucla Basin	100%	LSPL	Application
SA	Elliston	EL(A) 12/327	Eucla Basin	100%	DRX	Application
WA	Wanna Lakes	E69/1920	Eucla Basin	100%	LSPL	Granted
WA	Wanna Lakes East	E69/2408	Eucla Basin	100%	LSPL	Granted
WA	Wanna-South	E69/2425	Eucla Basin	100%	LSPL	Granted
WA	Ilma	E(A) 69/2740	Eucla Basin	100%	LSPL	Application
WA	Boorabie West	E(A) 69/2741	Eucla Basin	100%	LSPL	Application
WA	Boorabie East	E(A) 69/2742	Eucla Basin	100%	LSPL	Application
WA	Forrest Lakes West	E(A) 69/2743	Eucla Basin	100%	LSPL	Application
WA	Forrest Lakes East	E(A) 69/2744	Eucla Basin	100%	LSPL	Application
WA	Cyclone	M(A) 69/141	Eucla Basin	100%	LSPL	Application
WA	Mandora	E(A) 45/4022	Canning Basin	100%	DRX	Application
QLD	Gilbert River	EPM12888	Gilbert River	100%	CHAL	Granted
QLD	Bellfield Extended	EPM18213	Gilbert River	100%	CHAL	Granted
QLD	Bellfield East	EPM18262	Gilbert River	100%	CHAL	Granted
QLD	Bellfield North	EPM18353	Gilbert River	100%	CHAL	Granted
QLD	Conical Hill	EPM18547	Gilbert River	100%	CHAL	Granted
QLD	Clermont	EPM17968	Clermont	100%	CHAL	Granted
QLD	Parapet	EPM19189	Clermont	100%	CHAL	Granted
QLD	Expedition Ck	EPM19544	Clermont	100%	CHAL	Granted
QLD	Cape Bedford	EPM(A) 17795	Cape Bedford	100%	DRX	Application
QLD	Grays Hill	EPM(A) 25117	Yeppoon	100%	DRX	Application
QLD	Tick Hill	ML7094	Duchess	100%	MIM*	Granted
QLD	Tick Hill	ML7096	Duchess	100%	MIM*	Granted
QLD	Tick Hill	ML7097	Duchess	100%	MIM*	Granted
VIC	Glenthompson	EL5478	Glenthompson	100%	CHAL	Granted

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

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
SA	Tarlina South	EL5146	Arckaringa Basin	100%	DRX	Relinquished
SA	Tarlina	EL5147	Arckaringa Basin	100%	DRX	Relinquished
SA	Wilari	EL5148	Arckaringa Basin	100%	DRX	Relinquished
SA	Meramangye	EL5149	Arckaringa Basin	100%	DRX	Relinquished
SA	Ungoolya	EL5150	Arckaringa Basin	100%	DRX	Relinquished
SA	Narana	EL(A) 07/428	Arckaringa Basin	100%	DRX	Abandoned
SA	Leemurra	EL(A) 07/431	Arckaringa Basin	100%	DRX	Abandoned
SA	Ammaroodinna 2	EL(A) 08/123	Arckaringa Basin	100%	DRX	Abandoned
SA	Eucla 3	EL3615	Eucla Basin	100%	LSPL	Relinquished
SA	Eucla 4	EL3616	Eucla Basin	100%	LSPL	Relinquished
SA	Eucla 7	EL(A) 05/936	Eucla Basin	100%	LSPL	Abandoned
SA	Eucla 8	EL(A) 05/937	Eucla Basin	100%	LSPL	Abandoned



State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
SA	Eucla 10	EL(A) 08/236	Eucla Basin	100%	LSPL	Abandoned
WA	Marble Gum	E69/2427	Eucla Basin	100%	LSPL	Relinquished
WA	Jungooner	E69/2428	Eucla Basin	100%	LSPL	Relinquished
QLD	Hanns Table	EPM(A) 19124	Gilbert River	100%	CHAL	Abandoned
QLD	Mt Hogan	EPM(A) 18609	Gilbert River	100%	CHAL	Abandoned
QLD	Gilbert River Station	EPM(A) 18612	Gilbert River	100%	CHAL	Abandoned
QLD	Ironhurst	EPM12976	Georgetown	100%	CHAL	Relinquished

• 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 or child entity	Comments
WA	Cyclone Zircon Project	Farm-out Heads of Agreement (HoA)	LSPL and Perpetual Mining Holding Limited	100%	Agreement in principle announced July 2013 and HoA announced Jan 2014
SA	Anabama Iron Project	Farm-out Heads of Agreement (HoA)	CHAL and Braemar Iron Pty Ltd	100%	HoA announced Jan 2013
QLD	Tick Hill Gold Project	Option & Sale Agreement	DRX and MIM	100%	Option exercised by DRX, subject to government assignment requirements being completed
QLD	Tick Hill Gold Project	Farm-out Agreement	DRX and Superior Resources Limited	100%	Announced Aug 2011, subject to pre-conditions relating to pre-existing option and sale agreement between DRX and MIM

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

**X** Not Applicable this quarter

Applicable this quarter – see table below:

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

Notes:

MIM\* - DRX has rights under the Tick Hill Option and Sale Agreement. A 100% Assignment of the leases to DRX is being processed by the Queensland Government. DRX has entered into a joint venture arrangement with Superior Resources Limited.

Abbreviations:

EPM(A)	Queensland	Exploration Permit for Minerals (Application)
EL(A)	South Australia	Exploration Licence (Application)
E(A)	Western Australia	Exploration Licence (Application)
ML	Queensland	Mining Lease
M(A)	Western Australia	Mining Lease (Application)
L(A)	Western Australia	Miscellaneous Licence (Application)

DRX	Diatreme Resources Limited
CHAL	Chalcophile Resources Pty Ltd
LSPL	Lost Sands Pty Ltd
MIM	Mount Isa Mines