



## Exploration Activities Report Quarter ended 30 June 2010

### Highlights

#### HEAVY MINERAL SANDS PROJECTS

##### Wanna Lakes / Cyclone Deposit - Western Australia

- **Pre-feasibility studies well underway with the appointment of a Prefeasibility Manager.**
- **Data swap with Image Resources NL (ASX:IMA) assists IMA to release a maiden resource estimate for the neighbouring "Cyclone Extended" HM Prospect.**

#### COPPER, GOLD & BASE METALS PROJECTS

##### Clermont - Queensland

- **2010 diamond drilling campaign commenced within the Rosevale Porphyry Corridor (RPC) with the first phase of drilling ceasing in late May.**
- **Early drill results indicate quite good potential locally around the Red Dog Prospect for economic copper-molybdenum mineralisation.**
- **Geological assessment carried out at the Palm Trees Gold Prospect confirms the similarities of the Clermont region with the Ballarat-Bendigo district of Central Victoria – one of Australia's greatest gold mineralized provinces.**

#### CORPORATE AND FINANCE

- **Advancement of discussions and negotiations with international industry groups toward development of the Cyclone HM Deposit and related heavy mineral areas.**
- **Share placement to directors, under AGM approval, completed. Placement was part of the placement announced in late March 2010 and managed by Intersuisse Ltd together with PhillipCapital Australia.**

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 zircon rich **Cyclone HM Deposit** in Western Australia, which is situated within the emerging world class **Eucla Basin heavy mineral sands 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  
Code: DRX**

##### Securities

Ordinary shares:

226,041,209

Unlisted 47c options (30 June 2011):

16,800,000

Unlisted 47c options (31 July 2011):

3,000,000

##### Board of Directors

##### Executive:

Tony Fawdon - Chairman/CEO

David Hall - Operations

##### Non-executive:

Lawrence Litzow

George White

Andrew Tsang

##### Joint Company Secretaries:

Lawrence Litzow

Leni Stanley

##### Key Projects:

- Eucla Basin Heavy Minerals Project
- Clermont Copper Project
- Anabama Copper Project
- Bellfield Base Metals Project

##### Diatreme Resources Contact:

Tony Fawdon

Executive Chairman

Phone: +61 7 3832 5666

Fax: +61 7 3832 5300

##### Share Registry:

Link Market Services

Level 15, ANZ Building

324 Queen Street, Brisbane, Q4000

## EXPLORATION

### Eucla Basin Mineral Sands (Zircon) Project - WA and SA (DRX 100%)

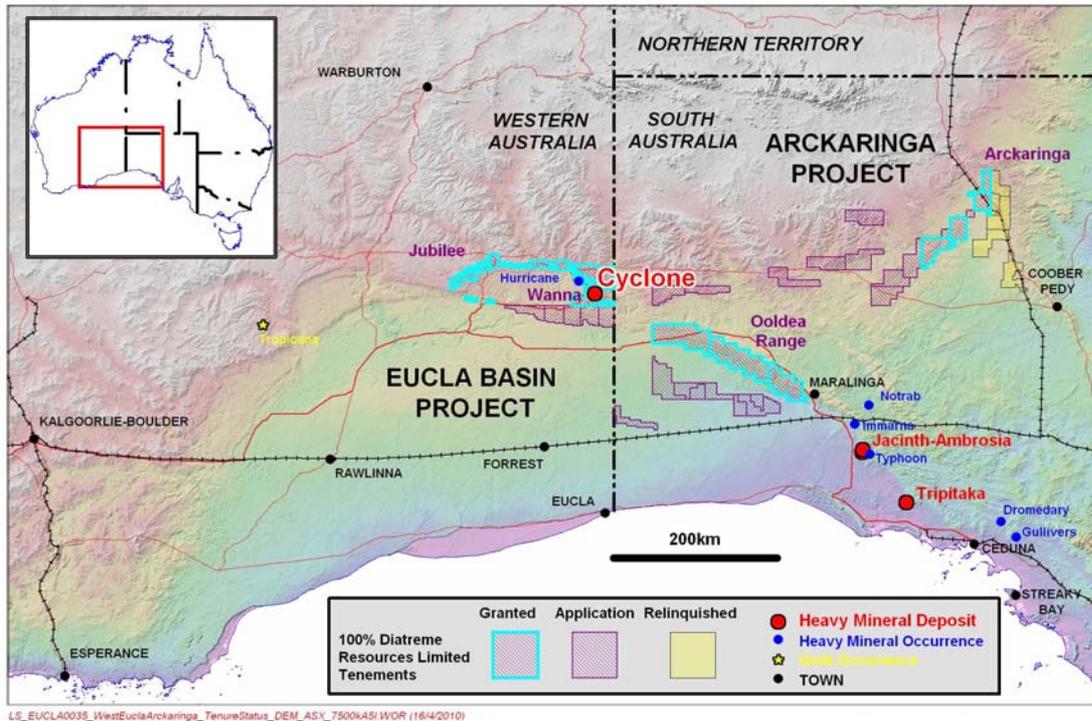


Figure 1: Eucla Basin and Arckaringa Heavy Mineral Projects

#### **Wanna Lakes / Cyclone Deposit, WA**

In late April, the Company announced the appointment of a project manager to lead the study team for the prefeasibility study (“PFS”) which has commenced over the Cyclone Zircon Project in Western Australia. This is seen as a natural progression arising from the first quarter scoping study results which indicated the potential for a profitable mining operation producing about 280,000 tonnes of concentrate annually at a mining rate of 9 million tonnes ore per annum.

The PFS activities will provide more detailed information for financial evaluation of the project. The study will focus on developing capital and operating cost information and revenue forecasts to a prefeasibility standard. This will involve additional work on mineralogy, metallurgy, and resources to more clearly define quantities of mineral product, particularly the key product zircon.

Preliminary designs and arrangements for the mine plan, wet process facility, and infrastructure will be completed. Options for the location of the mineral separation plant will be investigated. High priority work includes identifying a suitable water source for the operation and evaluating alternative mineral concentrate transport options including the road transport link between the mine and the rail line.

A preliminary environmental study will also be undertaken to obtain initial field data on flora and fauna, and develop an understanding of potential water impacts.

DRX expects to complete the PFS by early 2011 and aims to conduct a definitive feasibility study during the remainder of that year with the granting of all permits by middle 2012. Project



construction is anticipated to begin in late 2012, and commissioning and commencement of mining operations in 2014.

A recent data swap conducted with Image Resources NL (ASX:IMA), holding the "Cyclone Extended" HM Prospect abutting the southern end of the Cyclone Deposit, has assisted that company to release a maiden resource estimate for their section of Cyclone on 23 July 2010. The combined area covered by the Cyclone and Cyclone Extended "deposit" is in the order of 7-8 sq km. The current DRX resource estimate is detailed in Table 1.

**Table 1: Cyclone Deposit Resource Estimate (excluding overburden mineralisation)**

Resource Category	TONNES (Mt)	%HM	% Slimes	% Oversize
Inferred	2.51	2.38	3.53	4.08
Indicated	84.36	2.82	4.40	5.91
Measured	11.52	3.44	4.51	4.72
<b>TOTAL</b>	<b>98.40</b>	<b>2.88</b>	<b>4.39</b>	<b>5.72</b>

### ***Ooldea Range Tenements, SA***

Air core drilling has been conducted within the Ooldea Range section of the Eucla Basin (Figure 1) within ELs 3614, 3615 and 3616 where thick sequences of Palaeo beach sands have been intersected but only minor mineralisation encountered to date. A number of potential heavy mineral trap sites have been located and will be followed up in future drilling programs.

181 air core drill holes were completed during the quarter for a total of 8,940m.

### **Clermont Project - QLD (DRX 100%)**

#### ***Rosevale Porphyry Corridor (RPC)***

The planned 2010 deep diamond drilling at the RPC Prospect, with a focus on the discovery of both Chilean-style Porphyry Copper-Molybdenum systems and Intrusion Related Gold Systems ("IRGS") commenced during the quarter, with four drill holes having been completed for a total of 902.5m.

Drill hole	MGA Zone55 Easting	MGA Zone55 Northing	Total Depth (m)	Azmuth MGA (deg)	Drill hole Dip (deg)
Reddog 001	551675	7471976	274.9	310	-60
Reddog 002	551675	7471976	140.4	310	-85
Afrika 001	553688	7471154	199.5	86.6	-60
Icarus 001	552081	7471422	287.7	70	-65

At the Red Dog Prospect (Figure 2), diamond drill hole Reddog 001 yielded a broad zone of mineralisation over 81m from 46m depth assaying 0.25% Cu, 70ppm Mo and 1.8g/t Ag. Higher grade intersections were also identified in the same drill hole; 3m @ 1.33% Cu, 7g/t Ag and 0.16g/t Au from 45m and 5m @ 1.33% Cu, 745ppm Mo, 6g/t Ag and 0.07g/t Au from 92m.

These results indicate quite good local potential for economic Cu-Mo (Ag, Au) mineralisation and further work will be undertaken in this area.

The drilling program has been suspended until results obtained from the recent round of drilling, along with all previous drilling data, have been geologically assessed and the mineralisation model(s) updated within the RPC.

### ***Palm Trees Gold Prospect***

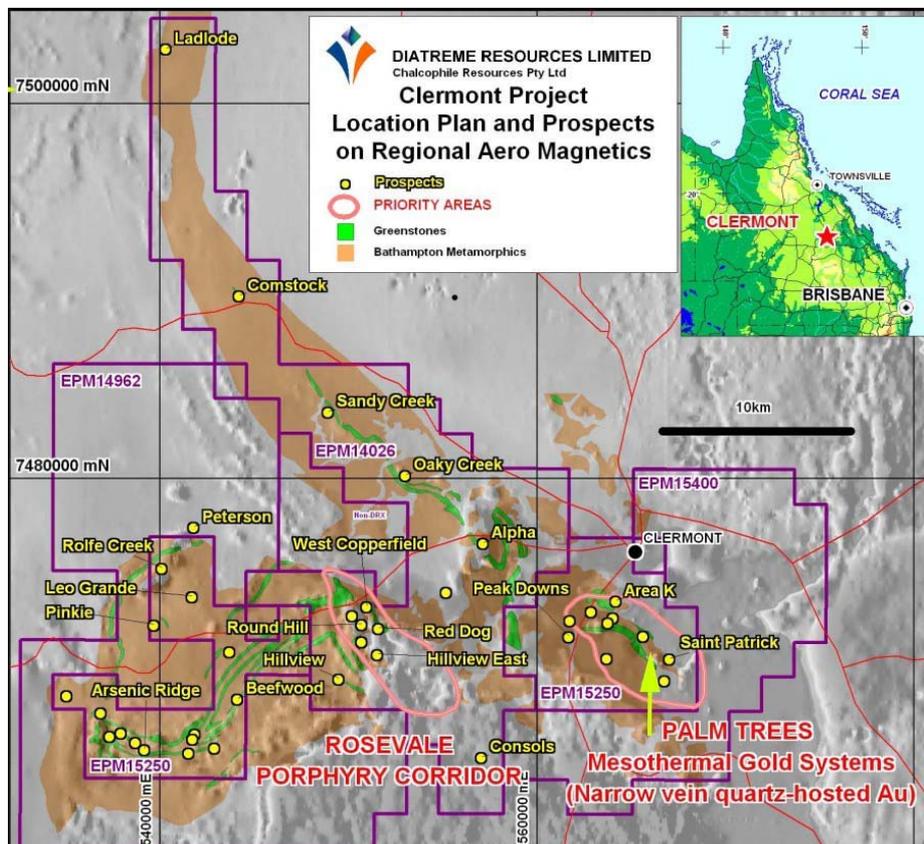
Follow-up exploration conducted during the quarter has confirmed the geological similarities between the Clermont region and the Ballarat-Bendigo district of Central Victoria – one of Australia’s greatest gold mineralized provinces.

Key features that the Palm Trees Prospect (Figure 2) shares with Ballarat-Bendigo are:

- similar mesothermal, orogenic lode gold style
- similar sedimentary host rocks,
- similar brittle-ductile transition structural deformation style,
- similar association with greenstones (mafic and ultramafic greenstone belts).
- similar development of saddle reefs.
- Like Bendigo, it is likely that most gold will be associated with saddle reefs in anticlinal axes.

Highlights of progressive exploration completed to date include:

- SAM survey conducted by Gap Geophysics in February 2010;
- Stage 1 of a 2-stage reconnaissance mapping program completed, incorporating general geophysical ground-truthing, reconnaissance rock chipping, magnetic susceptibility measurements, and structural analysis;
- Field assessment and structural observations delineating the likely shoot control of high grade gold mineralization as fold hinge hosted dilational quartz veins associated with a possible WNW-ESE shear zones;
- Mapping which shows that these highly prospective WNW-ESE shear zones may extend to the NW and SE;
- Fuchsite (chromium sericite) has been identified which is characteristic of mesothermal orogenic lode gold deposits. The high chromium signature is associated with anomalous Ni-Cr-Zn mafic and calc silicate units. Further investigation of these anomalous units will be warranted in order to establish whether there is potential for economic concentrations of Ni-Cr-Zn to be present.



**Figure 2: Clermont Project Plan showing location of RPC and Palm Trees areas.**



## CORPORATE AND FINANCE

The company has been advancing discussions and negotiations with international industry groups with a view to co-funding development of the Wanna Heavy Mineral Sands Project, which encompasses the Cyclone Deposit. Any development is expected to include the already identified Cyclone heavy mineral resources along with further satellite resources feeding into a central mining operation.

At the Annual General Meeting in May 2010 approval was given to issue placement shares to four directors of the Company (or their nominees) at an issue price of 9 cents per share. As a result, 200,000 DRX shares were allotted to the directors involved on 25 June 2010.

On 30 July 2010, the Company announced the private placement to sophisticated and professional investors of 8,823,525 ordinary shares at an issue price of 8.5 cents per share, raising \$750,000.

**Dated 30 July 2010**

**Anthony J Fawdon**  
Executive Chairman/CEO

Company contact details:

Tel : +61 7 3832 5666

Fax : +61 7 3832 5300

Email : [manager@diatreme.com.au](mailto:manager@diatreme.com.au)

For media queries:

**Anthony Fensom**

Bayly Willey Holt

Tel: +61 7 3368 2355

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### Competent Person Statement

The information in this report, insofar as it relates to Exploration Results and Mineral Resources is based on information compiled by company personnel under the supervision Mr David Jelley, of David Jelley Pty Ltd, who is 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 2004 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.