



## ASX Announcement

4 December 2009

### EXPLORATION UPDATE

- Bulk testwork underway on 31 samples from Cyclone HM Deposit.
- Ooldea Range drilling 120km NW of Jacinth Ambrosia HM Deposit.
- Scout drilling at Arckaringa confirms new HM province.
- High grade gold rock chips from Macdonalds Flats area, Clermont.
- Good base and precious metal assays from new targets at Bellfield.

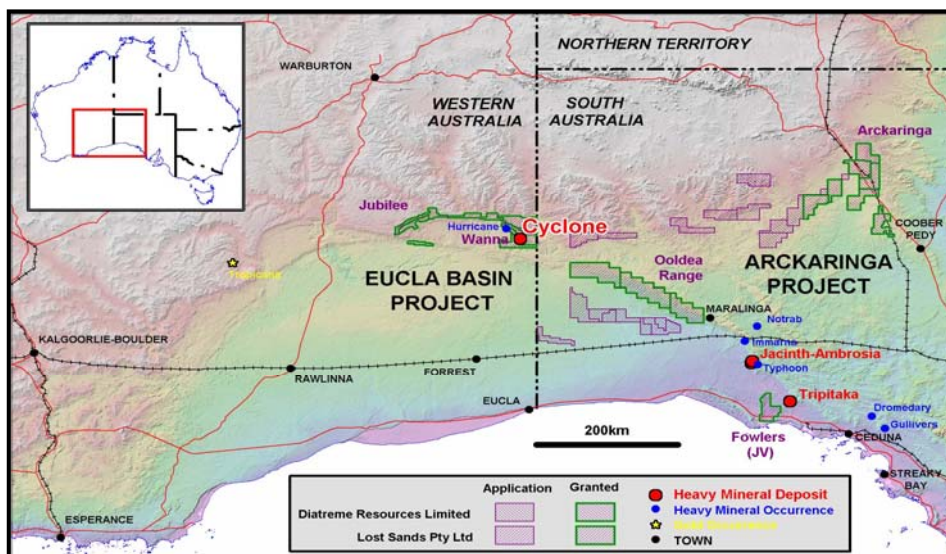


Figure 1: Eucla Basin and Arckaringa Projects

### CYCLONE HEAVY MINERAL DEPOSIT - WA

Bulk sample testwork is underway on 31 samples from throughout the Cyclone Deposit (**Figure 1**). These samples are being tested for mineral characterisation and commerciality at the West Australian facilities of Doral Mineral Sands. Testwork is expected to be completed in early 2010 and will aid in the Cyclone Deposit scoping studies currently being undertaken.

Assay results not available at the time of release of the upgraded Cyclone resource (September 2009) are now being incorporated into the Company's database and are expected to only incrementally change the existing resource.

### EUCLA BASIN HEAVY MINERAL PROJECT – OOLDEA RANGE, SA

Exploration has commenced over the Ooldea Range in South Australia (**Figure 1**), where drilling is targeting heavy mineral sands in between previously intersected low grade zircon occurrences. The current round of drilling is tightening the existing drilling which currently has drill lines spaced approximately 15km apart and drill holes at 1km centres along the lines. Drill line spacing along with drill hole centres will be reduced during the current round of drilling in this prospective region of the Eucla Basin. The program is occurring 120km northwest of Iluka's "Jacinth Ambrosia Deposit" which recently commenced production for high grade zircon and titanium minerals. The Ooldea Range is believed to lie over the same strand system as the Jacinth Ambrosia Deposit and is therefore highly prospective.



## ARCKARINGA HEAVY MINERAL PROJECT – SA

An initial program of scout air core drilling, including 66 holes for 3,983m, over the Arckaringa Project area (**Figure 1**) has highlighted the western tenements as being prospective for heavy mineral sand deposits within marine sediments. This potentially represents a new heavy mineral sands province within a region that has not previously been explored for mineral sands. Diatreme was the first company to recognise this area as being a potential trap site for heavy minerals which are believed to be sourced from the nearby Musgrave Province rich in high value zircon. The Company holds an extensive exploration tenement portfolio in this area and will continue to explore the region for heavy minerals.

Company geologists interpret the digital elevation model (“DEM”) highs within EL4136 and EL4137 to correlate with barrier systems that show beach development. Further work will be carried out in these areas, particularly where there is a distinct variation in elevation, which may indicate stronger development of a beach system. This area of the Arckaringa Basin is believed by the geologists to be older than the Eucla Basin and could be the most distal land extent of the proto Eucla Basin.

The western sections of EL4110 and 4112 are also areas of interest that require further exploration since heavy minerals were located in these areas.

Drill samples from the area are currently being processed and assayed and a thorough assessment of the results will be undertaken prior to the next round of exploration in 2010.

## CLERMONT COPPER PROJECT - QLD

The Clermont Project continues to generate new data and concepts in the Company's quest to discover significant precious and base metals in the district. Diatreme is currently pursuing a number of programs within the Clermont tenement group focusing on the:

- (i) Rosevale Porphyry Corridor (Gold, Copper-Molybdenum);
- (ii) Mesothermal Gold Reefs; and
- (iii) Regional VTEM and Banded Iron Formation (BIF) targets.

### (i) Rosevale Porphyry Corridor (RPC)

Progress has been made in the analysis of data from the recently completed deep diamond drilling program in the RPC, with a structural synthesis study highlighting the possibility of two previously unrecognized East-West oriented faults (inferred) dipping towards the south, from the mineralised Round Hill Breccia Prospect, into the deep aeromagnetic low immediately to the south, which is spatially related to the Elektra Cu-Mo mineralization. These faults intersecting the centre of the aeromagnetic low at depth may hold the key in determining the possible location of a gold rich core to the system. One of these faults hosts the Red Dog Cu-Mo mineralization at its eastern extension where it intersects a north-west trending fault.

Further structural interpretation will continue with the addition of geochronological (age dating of rocks) and geochemical (Laser Ablation Mass Spectrometry (LA-ICPMS) of sulphide grains) results, in order to develop a future drilling program for gold and copper-molybdenum mineralization.

### (ii) Mesothermal Gold Reefs

Recent compilation and assessment of historic data, combined with previous Diatreme collected VTEM and ground magnetic survey data, have outlined an area immediately south and south-east of Clermont with the potential to host multi-million ounce mesothermal reefs - "mother lode" style narrow vein gold mineralization (similar to the Charters Towers Goldfield, >7Moz Au and the Central Victorian Gold Field, >25Moz Au).



These reefs were worked between 1862 (where they were a part of one of Queensland's major early gold rushes), and the early 20<sup>th</sup> century. Only minimal exploration strike work has been carried out on this local mineralization style since, despite records of reefs obtaining strike lengths of over 4km, widths up to 2m and grades in excess of 2.5oz/t gold (>70g/t Au).

Higher grade mineralization has been documented by previous workers to be related to narrow leader veins on the margins of the wider reefs that were thought to be relatively barren. However, recent work by Diatreme has shown that some of the major wider reefs, particularly those that carry sphalerite (zinc sulphide) and galena (lead sulphide), also carry high grade gold (**Figure 2**). Given the lack of drilling or modern day exploration on these reefs, and the identification of a number of similar structural and chemical reef/vein characteristics as those of the central Charters Towers Goldfield, these reefs have become an important focus of the Company's exploration program.

Recent rock chip sampling and geological reconnaissance over the area known as Macdonalds Flat, 5km south-east of Clermont, has helped to characterize the type of quartz lodes related to higher grade mineralization – generally those with appreciable width and an association of lead- and zinc-sulphide minerals. **Table 1** details the location and assay results from three high grade rock chip results obtained in the Macdonalds Flat area.

Sample	Easting	Northing	Location	Reef/Lode	Au (g/t)	Ag (g/t)	Zn (ppm)	Pb (ppm)
322904	567093	7470355	Clermont Reefs	Bismark/Saint Patrick	51.4	2.9	1540	293
322905	567093	7470355	Clermont Reefs	Bismark/Saint Patrick	35.7	1.2	1120	148
322909	567093	7470355	Clermont Reefs	Bismark/Saint Patrick	12.7	3.6	3550	1140

**Table 1: Higher grade gold in Rock Chip samples - Macdonalds Flat area, 5km southeast of Clermont.**



**Figure 2: Visible gold grain in quartz vein (Sample QV32904) from workings associated with the Saint Patrick workings in the Mesothermal Reefs area 5km south of Clermont. Rock Chip assays for the sample yielded a result of 51.4 g/t Au.**

**(iii) Regional VTEM targets and Banded Iron Formation (BIF) targets:**

Other prospects are under review. A re-interpretation of the existing data has shown a distinct zone of high resistivity/low conductivity associated with the abovementioned mesothermal reef area situated to the south of the Clermont township. Further interpretation of the Company's VTEM database is on-going, particularly with respect to mapping out zones of potential major quartz stockworking and mesothermal reef development.

**BELLFIELD BASE METALS PROJECT – QLD**

Field reconnaissance and mapping in the eastern section of the Bellfield and Gilbert River tenements in north Queensland has recently been concluded. Two prospect areas of primary interest have been identified – both areas host hematite-rich breccias that share some geological affinities to Iron Oxide-Copper Gold Deposits (Ernest Henry, Osborne, Olympic Dam and Prominent Hill). The Gilbert River Breccia and the Twelve Mile Breccia prospects, although having been mapped and sampled in detail historically, have never been drill tested or surveyed with high resolution ground geophysics.

The Gilbert River Breccia Prospect consists of a strongly hematized hydrothermal breccia that is associated with highly anomalous copper, as demonstrated by a recent rock chip sampling project conducted by Diatreme. Similarly, the Twelve Mile Breccia Prospect is associated locally with quartz hosted gold-copper-silver-lead-zinc-bismuth-antimony mineralization. **Table 2** details the location and assay results of a number of anomalous rock chip samples from the project area.

Sample	Easting	Northing	Location	Ag (g/t)	Cu (%)	Pb (ppm)	Sb (ppm)	Zn (ppm)	Au (g/t)
332602	776832	7859285	12 Mile Ck	363	20.3	266	218	816	0.165
332603	766832	7869285	12 Mile Ck	81.6	4.19	84	130	688	0.162
332606	759588	7876667	Gilbert River Camp	12.6	0.72	82	14	138	0.01
332608	758257	7876386	Gilbert River Breccia	1.3	0.06	16	5	53	<0.005
332627	775072	7871962	Teutonic area	<0.2	0.02	134	<2	1680	<0.005
332662	757651	7878319	Gilbert River West	1.7	0.04	1200	15	769	1.545

**Table 2: Bellfield Project Rock Chip samples – October/November 2009**

Further ground to the north of the eastern end of the existing tenements has been secured under EPM application; this ground hosts the historically significant Ortona Reefs (Cu-Au-Ag) and Iona Reefs (Au-Cu).

Diatreme plans to develop the Cyclone deposit toward becoming a profitable mining operation and will continue to conduct well managed exploration programs over its extensive tenement package during future years. The Company is well positioned to discover a number of mineral sand deposits within the Eucla Basin and the exciting, recently targeted, Arckaringa Project. The copper/gold and base metal prospects at Clermont and Bellfield are steadily producing promising results which the Company hopes will lead to the identification of significant new mineral resources.

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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.