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## **KAJEENA MINING COMPANY PTY LTD**

## Review of Mineral Potential within ELs 10096, 10097 and 10098 Mistake Creek NT and Summary of Field Visit

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## **EXECUTIVE SUMMARY**

ELs 10096, 10097 and 10098, held by Kajeena Mining, make up the Mistake Creek Project. ELs 10096 & 10097 are considered prospective for diamonds.

The Argyle diamond mine is located some 150km to the NW of the area. Major faults associated with the Argyle mine also trend through the Mistake Creek area.

A recent field visit to the area provided valuable information for the future planning of the exploration program within the area and an understanding of the geology and geography.

Anomalous gold in drainages in the SW and NW of EL10097 was field checked but no source to either the gold or underlying magnetic rocks was evident. The magnetic signature of the area compares with that of the gold endowed Halls creek, Pine Creek or Tanami region. A thin veneer of flat-lying non-prospective Proterozoic sedimentary rocks appears to cover the prospective zones.

Anomalous nickel and copper occurring in drainages in the south of EL10096 maybe attributed to outcropping basic dykes. Several non-magnetic features to the south of this area maybe prospective for massive Nickel-Copper-PGE mineralisation.

While the NTGS believe rocks of the Victoria and Birrindudu Basins in the Mistake Creek area to have potential for base metal Century-style epigenetic mineralisation and syngenetic, stratiform, sediment-hosted base metals similar to the McArthur River ore body, a complete lack of significant base metal occurrences, of any type, suggests that potential for base metals is low.

EL10098 is not considered prospective due to widespread cover of basalt inhibiting exploration effectiveness.

The following recommendations are made;

- Carry out the proposed sampling program for diamonds in early 2006 (currently being cleared with the CLC)
- Conduct soil and lag sampling within gold anomalous areas in EL10097
- Conduct reconnaissance lag sampling in vicinity of nickel/copper anomalous areas south of EL10096
- Relinquish EL10098 in its entirety, immediately.
- Relinquish 50% of EL10096 by 12 December 2005
- Apply for extension in time to relinquish 50% of EL10097 until proposed diamond and gold sampling program can be concluded in early 2006.

## 1 INTRODUCTION

Kajeena Mining is the holder of ELs 10096, 10097 and 10098. The areas are located 150km southeast of the Argyle diamond mine and 550km southwest of Katherine in the NT. A field visit was made in November 2005. This was the first to have been carried out within the areas. Protracted negotiations with potential joint venture partners in the past have stalled previous planned visits.

A proposed program of drainage sampling for diamonds has been with the Central Land Council for some months but due to unforeseen delays, this program has not yet been cleared with the traditional owners. Subsequently, a brief field visit was considered necessary to support future efforts to retain the EL's under tenure due to the difficulties of the past.



Figure 1. Location of Mistake Creek Project

## 2 CURRENT ACTIVITY

#### 2.1 Competitor Review

No significant current exploration activity appears evident in the vicinity of the Mistake Creek Project tenements Figure 2.

Ashton Mining formerly had significant ground coverage around EL10097, presumably exploring for diamonds within Proterozoic basement windows in the widespread Cambrian Antrim Plateau Basalt. Ashton has now pulled back to an area 70km to the north of the Mistake Creek tenements. Northwest Diamonds Ltd abuts the Ashton ground to the west.

Ausquest retain their ground holding to the south of the Mistake Creek areas searching for Noril'sk nickel deposits. They have recently relinquished ground due south of EL 10096. A recent deal with RTZ on iron ore projects in WA will probably capture their focus rather than persist with their nickel search.

Dingo Resources have applied for ground surrounding EL10097.

Other players in the area include Otter Gold Pty Ltd, Australian Mineral Mines Pty Ltd and Neil Scriven.



**Figure 2. Competitor Tenement Position** (granted Kajeena ELs: 10096, 10097 & 10098)

## 3 REGIONAL GEOLOGY AND MINERALISATION

## 3.1 Regional Geology

The Mistake Creek area includes portions of the Proterozoic Victoria and Birrindudu Basins, the Phanerozoic Ord Basin and an extensive thin veneer of Cambrian basalt and Cenozoic sediments, laterite and silcretes (Plate 2 and Plate 3). The basment rise of Inverway Metamorphics in EL10097 is represented by two small inliers of schist that probably correlate with rocks of the Halls Creek, Pine Creek or possibly Tanami Orogens.



Figure 3. Regional geology with EL outlines

(orange: Inverway Metamorphics, blue: Birrindudu Basin, green: Antrim Basalt, pale blue: Victoria Basin, cream: Ord Basin)

## 3.2 Mineralisation

No significant mineralised occurrences are within this area. Previous exploration has however, focussed on diamonds and base metals.

The NTGS believe the Victoria and Birrindudu Basins to have potential for base metal Century-style epigenetic mineralisation and syngenetic, stratiform, sediment-hosted base metals similar to the McArthur River ore body (Cutovinos et al, 2002).

A complete lack of significant base metal occurrences, of any type, suggests that potential for base metals is low, in the author's opinion.

## 4 SUMMARY OF RESULTS OF PREVIOUS WORK

Details of previous exploration have been presented in the 2002 annual report and are included in the reports by Duncan (2002) and Hall (2002). In summary, the areas have disparate coverage by stream sediment sample data from previous explorers. Significant results within the Kajeena ELs include:

- Anomalous values of gold in stream sediment/BCL samples in EL10097
- High priority values for Cu in the east of EL10097
- High priority Pb and Zn in the northwest of EL10097. High Zn occurs with anomalous Au in central W of EL10097
- Low level Cu & Zn anomalism in the NE corner of EL10096
- Anomalous values for Ni occur in the south central part and south of EL10096 and also in central EL10097
- Diamonds and indicators found in the vicinity of the EL's



Figure 4. Detailed Geology showing areas of interest

(Red: proposed diamond samples, Green: anomalous Ni/Cu, Yellow: anomalous gold, Orange: anomalous copper, Blue: anomalous Pb/Zn, Lime: Barite occurrences)

Figure 5, Figure 6, Figure 7, Figure 8 and Figure 9show the drainage sample results compiled for the area. Pinks and reds are the highest values for each element. Red circles are mineral occurrences.



Figure 5. Drainage Results – Cu



Figure 6. Drainage Results – Ni



Figure 7. Drainage Results – Pb



Figure 8. Drainage Results – Zn



Figure 9. Drainage Results - Au on magnetics

## 5 WORK COMPLETED

## 5.1 Field Visit

A field visit was made to the Mistake Creek area between November 21 and 28, 2005. The purpose of the visit was to become familiar with the geology and geography of the area, together with ground checking most of the anomalous areas described in section 4.

#### Anomalous Gold Areas

Anomalous gold occurring in drainages in the SW and NW of EL10097 was field checked. Traversing along the Swan Creek and NW of the Swan Yard failed to reveal anything of interest. Magnetics interpretation suggests basement maybe tightly folded iron formations perhaps equivalent to the Halls Creek, Pine Creek or Tanami Orogens and therefore prospective for gold. No evidence of mineralisation or alteration was found and the conclusion is that the magnetic units are covered by thin, non-prospective, younger flat lying Margery Formation. Plate 1.

#### Anomalous Nickel/Copper Area

Anomalous Ni (and Cu) occurs in Moonbool Creek and tributaries, west of Mount Maiyu, in the south central part of EL10096. Field checking revealed a number of basic intrusive dykes outcropping within the Cambrian Antrim Plateau Basalt. The area appears to be on the edge of a basement high as defined by the basalt outcrop. The dykes occur along the major Negri

Fault, which is interpreted to continue to the Argyle diamond deposit. Magnetics interpretation does not reveal any magnetic mafic/ultramafic intrusive bodies, which would normally be the target of such a Ni/Cu search but some magnetic low areas (to the south but out of the EL area) maybe remanently magnetised bodies worthy of follow-up. Plate 6.

#### Anomalous Lead/Zinc Area

Lead and zinc has been the target of exploration by Geopeko within EL10097. Anomalous Pb & Zn in drainages reflects the distribution of the Mallabah Dolostone, which has known epigenetic galena and sphalerite. Geopeko drilled several holes in this sequence in the central north part of EL10097. No obviously gossanous material was evident in the drainages around Swan Yard or in the Swan Creek but the Pb/Zn potential of the area is not considered a priority.

#### Barite Occurrences

Significant occurrences of barite occur in the SE corner of EL10096. A previous operation by SA Barytes produced some material for transport via Wyndham. It appears that only the more easily won, perhaps rippable material has been mined. The vein is obvious within the shallow pit floor and is likely to extend to depth. Plate 4 and Plate 5.

#### Copper Occurrences

A brief investigation was made of the copper occurrences within ELA22698. They are most unremarkable being minor scrapings <1m deep. John Dunster (pers comm.) describes these as being copper lined vesicles in flow top basalt and not worthy of any further work.

## 5.2 Magnetics

The magnetic image in Figure 10 shows the complex interplay between interpreted basement, Proterozoic sediments and widespread Cambrian basalt. The tightly folded units in the west of EL10097 and domal features SW from this area along the Buchanan Highway are interpreted to be basement rocks of the Halls Creek, Pine Creek or Tanami Orogens. In particular, the domal features are characteristic of the magnetic response of Tanami rocks (J.Dunster pers.comm.).

These units and the highly magnetic linear unit in the north of EL 10097 do not outcrop and are covered by relatively flat-lying sediments of the Proterozoic Limbunya Group.

Widespread basalt cover is shown by the 'stippled' magnetic response occupying the west, north and SE of the area in Figure 10. Major NW-trending structure is apparent, controlling the emplacement of the basic dykes in the south of EL10096 and the barite and copper occurrences. Major WNW-trending structure is evident in EL10097. Both these structural trends are potential controls on the emplacement of possible diamond-bearing kimberlites, with the Negri Fault continuing to the Argyle diamond deposit. Feeder zones to major nickel deposits have been interpreted by Ausquest in Figure 11.



Figure 10. Magnetic image for Mistake Creek



Figure 11. Magentics Interpretation from Ausquest website

#### 6 DISCUSSION

The recent field visit to the Mistake Creek area has been worthwhile in gaining information on the geology and geography of the area. Ground checking of anomalous areas, defined in previous drainage sample results by earlier workers provided mixed results. The primary focus of exploration within the Mistake Creek area is diamonds but it is very difficult to ascertain the prospectivity by a short reconnaissance visit. Kajeena are still waiting for the Central Land Council to carry out clearances before the proposed diamond-sampling program can commence, most likely now in April 2006. The recent pullback by Ashton Mining and relinquishment of their tenements around Kajeenas ELs is not regarded as encouraging.

The most prospective areas for diamonds within the Mistake Creek area is where Proterozoic rocks of the Birrindudu Basin crop out or are under shallow cover and not covered by the widespread Cambrian basalt. This is predetermined by the fact that the Argyle deposit has an age older than Cambrian. An exploration program for diamonds attempting to search through the Cambrian basalt would be costly and perhaps not effective, especially as the basalt has a 'masking' effect in the magnetics signature. Therefore, ground comprising the Antrim Basalt may be dropped off and only the exposed and more prospective Proterozoic 'windows' should be kept.

As a result of the field visit, the prospectivity for Noril'sk Ni-Cu-PGE massive sulphides has been highlighted. Anomalous Ni and Cu in drainages in the south central part of EL 10096, along the major Negri Fault, define an area worthy of closer inspection. Outcropping basic dykes on the outcrop edge of Antrim Basalt may indicate a level beneath the flood basalt and perhaps the presence of a basement high, more prospective for these deposits. The negative for the prospectivity of a Noril'sk deposit is that no obvious highly magnetic anomalies that would be interpreted to be mafic/ultramafic intrusive bodies are evident in the magnetics data. Several non-magnetic or perhaps, remanently magnetic features occur to the south of the defined area and these could best be tested by some regional surface lag samples.

No obvious source was found during the field trip for the anomalous BCL gold response or magnetic rocks in drainages in the SW and NW of EL10097. The magnetics underlying the areas is interpreted to be similar to rocks of the gold prospective Halls Creek, Pine Creek or Tanami Orogens. Only flat-lying sediments of the Proterozoic Limbunya Group were noted.

While NTGS geologists may consider the sediments of the Birrindudu Basin in the area to be prospective for Century-style epigenetic base metal mineralisation and syngenetic, stratiform, sediment-hosted base metals similar to the McArthur River ore body, a complete lack of significant base metal occurrences, of any type, suggests that potential for base metals is low.

An area in the east of EL10097, anomalous in Cu in drainages was not checked.

## 7 CONCLUSIONS

The Mistake Creek area remains prospective for diamonds, especially where windows of Proterozoic Limbunya Group rocks are not covered with Cambrian Antrim Plateau Basalt. The recent pullback of Ashton Mining from the area possibly downgrades the area somewhat. The planned sampling program, currently being cleared with the CLC should go ahead in early 2006 over those areas, which Geodiscovery has picked, from the magnetics data.

No obvious explanantion was found for the anomalous gold in drainages in the SW and NW of EL10097. Flat-lying sediments of the Proterozoic Limbuya Group are prevalent which probably form a thin skin over the magnetic units. The high magnetic response and fold signature of these units is similar to the gold endowed zones of rocks of the Halls Creek, Pine Creek or Tanami Orogens.

Anomalous Ni and Cu in drainages in the south central part of EL10096 maybe attributed to basic dykes outcropping within the Cambrian Antrim Plateau Basalt. While no discrete high magnetic features are present which may indicate ultramafic bodies prospective for Ni-Cu-PGEs, several non-magnetic (?remanent) features occur to the south of EL10096 and are worthy of follow-up, perhaps by regional lag sampling.

EL10098 is not regarded as being prospective for any of the minerals discussed above. Widespread distribution of Cambrian basalt prevents a cost-effective exploration program to be implemented here. The same also applies to most of EL10096, except for the several small windows of Proterozoic rocks through the basalt.

## 8 RECOMMENDATIONS

Drainage sampling for diamonds within EL10096 and EL10097, as proposed, should be carried out early in 2006. Hopefully, the CLC will have cleared this program by then.

In addition, several lines of soil samples and lag samples should be taken over the area defined by the anomalous gold in drainages in the SW and NW of EL10097.

Reconnaissance lag samples should also be taken over the magnetic lows to the south of EL10096 to check the validity of the anomalous Ni (Cu) within drainages in this area.

EL10098 is not regarded as prospective and should be relinquished in its entirety.

EL10096 should have a 50% reduction in subblocks, retaining only those areas not covered by extensive basalt. The area to be reduced has been communicated to McColl Exploration by email.

# **APPENDIX 1**

- 1 -

**Photos** 



Plate 1. View near Swan Creek with anomalous Au in drainages. EL10097



Plate 2. View across dissected laterite cap. EL 10096



Plate 3. Laterite cap



Plate 4. Barite quarry. EL10096



Plate 5. Barite vein. EL10096



Plate 6. Area with anomalous Ni/Cu in drainage. EL10096.