

**MINERALS AUSTRALIA PTY LTD
&
JACARANDA MINERALS LTD**

**EPM 18062 ELDESLIE
NORTH QUEENSLAND**

**ANNUAL & FINAL REPORT
YEAR ENDING 14TH DECEMBER 2013**

JANUARY 2013

**Prepared for
Minerals Australia Pty Ltd & Jacaranda Minerals Ltd**

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MAP SHEETS

1: 250,000 scale

COOKTOWN SD 55-13

1: 100,000 scale

COOKTOWN 7967
BATTLECAMP 7867

1: 50,000 scale

COOKTOWN 7967-111
NORMANBY 7867-11
MT WEBB 7967-IV

KEY WORDS

Airborne, basalt, chromite, eclogite, garnet, geochemistry, geophysics, kimberlite, lherzolite, olivine, magnetics, picotite, picrite, pleonase, radiometrics, spinel, structure, xenolith

SUMMARY

EPM 18062, with size approximately 60sq km, was granted to Jacaranda Minerals Ltd ("JML") and Minerals Australia Pty Ltd ("MAPL") on the 14th December 2012. The two companies are equal partners in the Jacaranda Alliance Joint Venture ("JAJV"). Hancock Exploration Management Services ("HEMS") is the operator of the joint venture and is a wholly owned subsidiary of Hancock Prospecting Pty Ltd ("HPPL").

The JAJV exploration objective was the discovery of diamondiferous kimberlite and lamproite pipes within Devonian metasediments and/or Tertiary mafic volcanics within the northern part of the Hodgkinson Basin.

Airborne magnetic and radiometric data over the Elderslie Project and surrounding areas were extracted from the 1999 Hodgkinson-Georgetown (Block A) survey, which was flown for the Geological Survey of Queensland by Kevron Geophysics.

Diamond exploration data released by the Queensland Government Department of Mines and Energy has shown that a range of diamond indicator minerals occur in the broad region around and within the Lakeland Downs Tertiary McLean Basalt area and present the possibility that diamonds may also occur in the Tertiary Piebald Basalts further to the north.

EPM 18062 is located over aeromagnetic highs and lows, most corresponding to two volcanic vents immediately outside the margins of the tenement. Radiometric data delineated moderate potassic signatures corresponding to roughly circular morphological features with magnetic lows, defining volcanic vents that may have multiple eruption chemistries that possibly correspond to mantle alkali ultramafics.

Geophysical modeling and interpretation of these features indicate that they are caused by vents associated with volcanic eruptions which the JAJV consider may be interpreted as possibly diamondiferous mantle-tapping pipes.

Geochemical sampling was done from October to November 2013 and included two stream sediment and one loam sample. Numerous rock chip samples of volcanic outcrop, colluvial scree and stream bed-load cobbles were interpreted by the onsite geologist as being primary alkaline olivine basalt.

Panned concentrates from the three samples obtained were analysed in the field using a binocular microscope and found to contain numerous spinels high in aluminium as well as crustal almandine garnets. Hardness, colour and mineral streak of these mineral grains have defined them as mid to lower crustal in origin, reflecting the depth of differentiation of the Tertiary Piebald Basalt. Accidental xenoliths of olivine lherzolites found in the basalt were most likely scavenged by the Piebald basalt from earlier more primitive picritic mantle basalts.

1. INTRODUCTION

The Elderslie EPM18062 is located 70 kilometers northwest of Cooktown. Access is 37 km along the sealed Endeavour Valley Road then 8 km along the gravel Battlecamp Road then 37km along the gravel Cooktown Mclvor River Road in Cape York Peninsula. The tenement consists of a total of 18 sub-blocks (Figure 1) and covers approximately 60 square kilometers, comprising fertile Tertiary basaltic soils and Quaternary and Tertiary alluvium. Land use is predominantly for beef production and tree plantations, the remainder being dense tropical rain forest.

Analysis of local geology, aeromagnetism, radiometrics and gravity as well as morphological surface features using recent government geophysics and Google Earth satellite imagery helped define areas of interest. Drainage intersecting areas of interest, such as circular craters and circular geomorphological features, volcanic plugs and swampy depressions were targeted for loam and stream sediment sampling. No significant geophysical anomalies were identified within EPM18062

The two rivers defining the northern and southern boundaries of the tenement are recognized saltwater crocodile breeding areas. All local creeks feeding the Morgan and Mclvor Rivers are also crocodile habitats. Crocodile mating season is from September to December and nest building is from December to March. Local authorities and property owners strongly discourage access to any drainage system in the river catchments during these periods and stream sampling was therefore kept to a safe minimum.

Figure 1: Location Map of EPM 18062

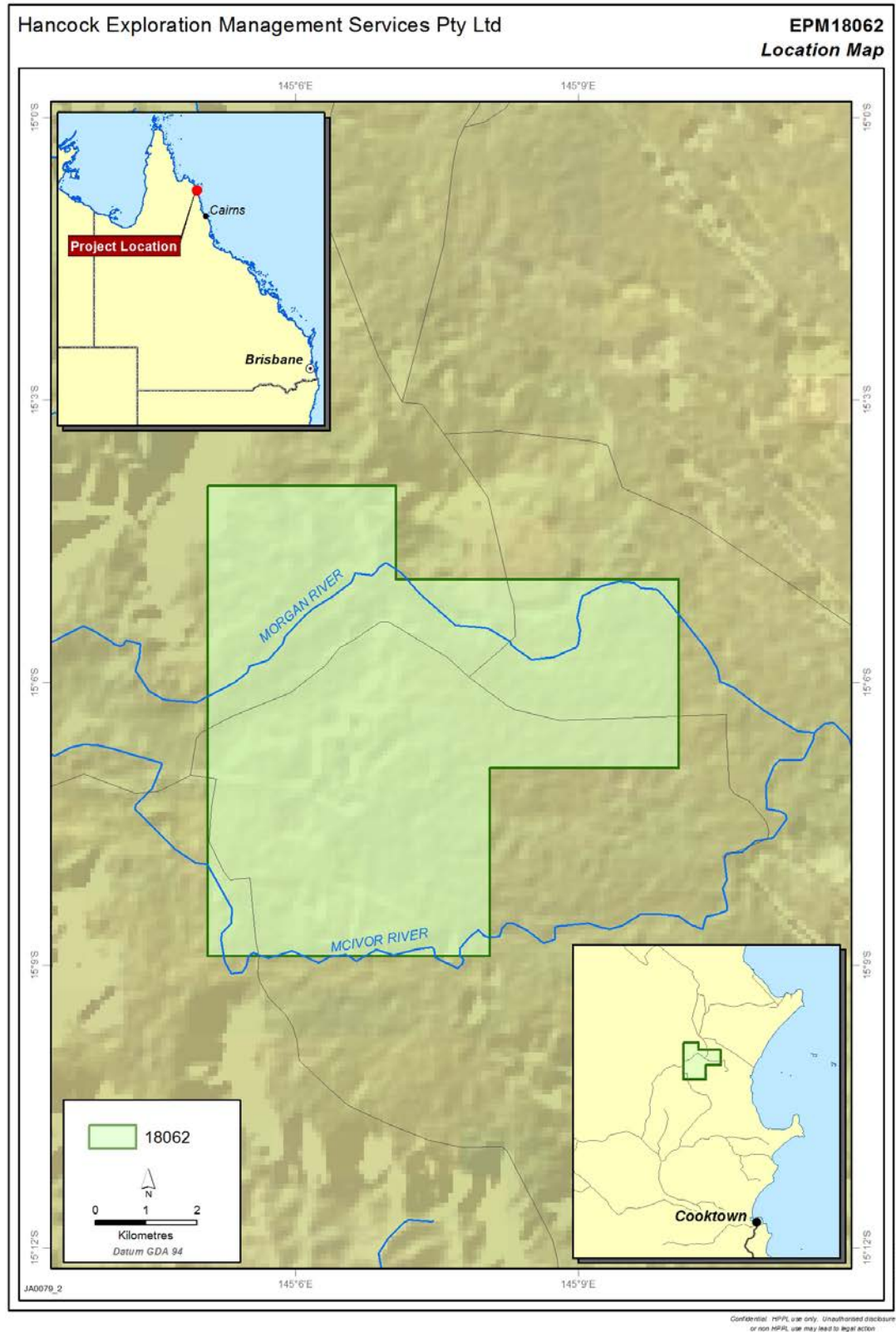
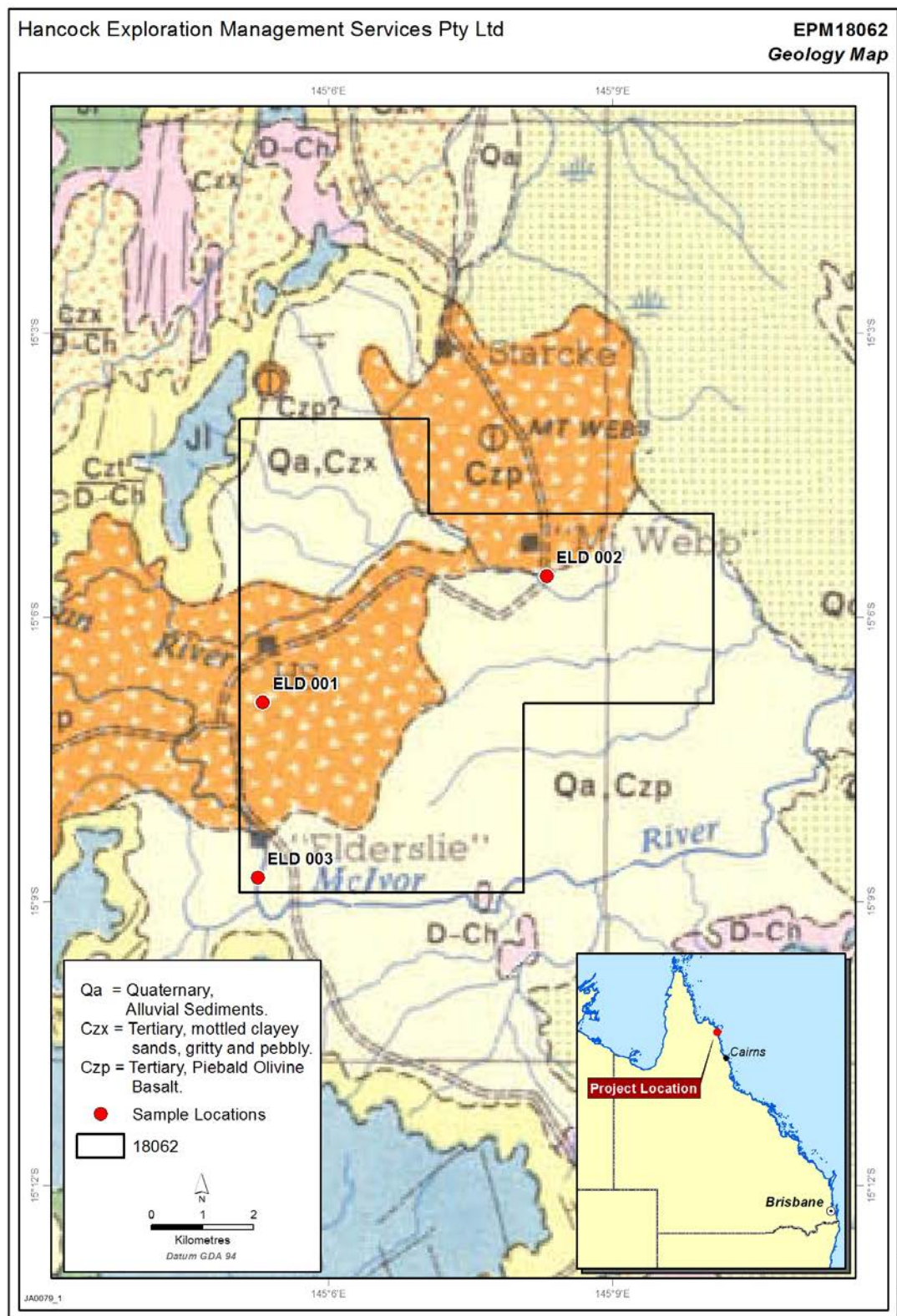


Figure 2: Geology and Sample Locations



2. GEOLOGY

2.1 Geology of 1: 250,000 Cooktown Sheet SD55-13

Lower Cretaceous shelf sediments of the Battle Camp Formation and Wolena Claystone conformably overlie the Jurassic Dalrymple Sandstone which unconformably overlies the deep water turbidite Devonian Hodgkinson Formation, which in turn overlay the Proterozoic basement rocks of the Dargalong Metamorphics.

Permian Granites intrude the Hodgkinson Formation with later Tertiary Basalts unconformably overlying the Hodgkinson Formation to the south and the Jurassic Dalrymple Sandstone to the north.

To the extreme west of the 1: 250,000 geology sheet the Devonian Hodgkinson Formation is faulted against the steeply dipping north south trending Palmerville Fault and to the east, the formation continues to become part of the continental shelf.

2.2 Geology of EPM 18062

Within EPM18062, 4 major rock types exist; the metasedimentary assemblage of the Late Silurian to Late Devonian Hodgkinson Formation (D-Ch) is a NNW trending belt of Mid Devonian to Lower Carboniferous deep water turbidites, with a range of major rock types of mudstone, siltstone, slate, phyllite, schist; and minor rock types of arenite, quartzite, limestone, marble, conglomerate, chert, mafic schist, amphibolite and calc-silicate gneiss .

The Tertiary Piebald Olivine Basalt (Czp) shows multiple morphologies and chemistries, ranging from massive to highly vesiculated and showing a range in percentage of olivine lherzolite nodule. Possible under-saturated basanites have been observed, with minor Cainozoic alluvials (Czx) in patchy deposits along major drainage.

Tertiary Piedmont fan (Czt) comprising earthy fossil breccia that is slightly ferruginous. Jurassic Dalrymple Sandstone (JI) is comprised of quartz sandstones, conglomerates and shales (Figure 2).

Uplift and erosion has stripped the majority of Battle Camp Formation from all but the far western areas outside of the tenement boundary.

2.3 Geological Structure of EPM 18062

Only one major regional foliation has been recognized in the Hodgkinson Formation, a pervasive north-westerly trending slaty cleavage. The Palmerville fault in the extreme west of the Cooktown 1:250,000 geology sheet is the major north-south fault that separates the Proterozoic Dargalong metamorphic from the Silurian- Devonian Hodgkinson Formation and is interpreted as the dominant deep crustal listric fault developing interrelated sets of steeply dipping north, northwest and northeast faults that are common to the tenement.

The major drainage of the Morgan River dissects the highlands to the west and northwest, comprising Jurassic Dalrymple Sandstone (JI) unconformably overlying Tertiary piedmont

fan deposits (Czt) of sandstones, metasediments and conglomerates that un-conformably overly Devonian Hodgkinson Formation metasediments (D-Ch). The Piebald Alkali Olivine Basalts (Czp) appear to post-date the Tertiary Piedmont fan deposits and the Tertiary mottled clays and sands (Czx), and predate the Morgan and McIvor River systems. Partially overlying these formations are the Quaternary Alluvial sediments (Qa).

The major drainage on the southern boundary of the tenement is the McIvor River that has the same geological history as the Morgan River to the north.

Total magnetic intensity grey scale first derivative clearly shows two major structural controls, one is NW-SE and the other is N-S, with a minor NE-SW component. Dislocations at the junction of these structures appear to act as deep seated zones of weakness that are targeted as priority mapping and sampling areas.

3. GEOPHYSICS OF EPM 18062

A suite of standard image products were created including total intensity, first vertical derivative and analytical signal of the magnetic data and a ternary composite of the three channels of radiometric data.

Analysis of available data enabled boundary delineation of magnetic mafic volcanics and non-magnetic metasediments. Analysis of the gridded airborne magnetic data showed that significant northwest trending structures and less significant north and northeasterly structures are present in the area.

4. EXPLORATION BY THE JAJV

During 2012-2013 HEMS conducted the following work on EPM18062:

- Research of historical records.
- Research of previous open file company exploration.
- Interpretation of regional geology and geophysics that enabled targeting of geochemical survey.
- Geophysical total magnetic first vertical derivative across the region defined probable fault dislocations as additional possible kimberlite targets.
- Geophysical radiometric analyses of lithologies and loams, targeting potassic anomalies.
- Sampling of loam, outcrop and stream sediment from the extensive drainage networks within the tenement not previously tested.
- Laboratory processing of geochemical samples and petrographic analysis of grains.
- Electron microprobe analyses of possible diamond indicator grains.
- Detailed analysis of all geological, geophysical, mapping, laboratory and electron microprobe data.

4.1 GEOCHEMICAL SAMPLING

From October to November 2013, two stream sediment and one loam sample were collected within drainage networks and on the weathered basaltic flows. The samples were numbered from ELD 001 to ELD 003 (Figure 2 and Table 1). No other samples were taken in the lowland creeks due to high crocodile numbers in all drainages.

Table 1 : Coordinates of samples in EPM18062

ID	Longitude	Latitude
ELD 001	145.088503	-15.114966
ELD 002	145.138405	-15.09278
ELD 003	145.087619	-15.145814

Bed load analyses of the Morgan River includes all lithologies in the drainage catchment such as Tertiary Piebald olivine basalt and sediments; Quaternary alluvium and Devonian Hodgkinson metasediments. No breccias or ultramafics were noted.

The Mclvor River on the southern boundary of the tenement has a similar bed load with the inclusion of the Jurassic Dalrymple sandstones. Again no breccias or ultramafics were noted.

Rock chip sampling covered a variety of locations ranging from Mt Webb vent, basaltic colluvium across the tenement vehicle tracks and cobbles from the bed load of the Morgan and Mclvor Rivers.

Each rock was analysed under a binocular microscope and all phenocrysts noted. Textures and crystallinity were also described and concluded that the rock was an alkali olivine basalt. Textures ranged from scoria, massive and vesicular. Small olivine lherzolites were occasionally noted and deemed typical of this rock type.

4.2 ANALYTICAL RESULTS

Stream sediment samples taken from small drainages on the slopes of the Mt Webb basaltic volcano and small loam grab samples from various localities across the basaltic plain were washed, pan concentrated and analysed in the field by a trained diamond mineralogist using a binocular microscope. Olivine, spinel, iron oxides and garnet were recovered. Olivines were fayalitic iron rich, spinels were aluminous and the garnet was grossular to almandine. No diamond indicator minerals were recovered in these small grab samples.

The sampling strategy was to take one stream sediment sample from both rivers and one loam sample in the center of the basalt flow. Rock chip samples were to be field identified from as many locations as possible.

The stream sediment samples were ELD 001 and ELD002 and the loam sample is ELD003. These were sieved to 1.6mm with a weight of 30kg per sample. These samples have not been analysed by a diamond laboratory.

The results were inconclusive but indicated that the basalts are mostly mid crustal in origin and too shallow to recover diamonds. The tenement was deemed to have an extremely low potential for diamondiferous kimberlite/lamproite pipes.

5.CONCLUSIONS AND RECOMMENDATIONS

- First pass field panning for higher specific gravity diamond indicator minerals recovered a selection of olivines, pleonase, picotite, clinopyroxenes , orthopyroxenes almandine and grossular garnets. No of these are diamond indicator minerals.
- The morphology of the panned grains are good indicators of the mid to lower crustal nature of some of the volcanic vents, as many of the grains do not show evidence of resorption morphology, rounding and alteration rims consistent with mantle derived pipes.
- Visual analysis of stream sediment load around volcanic vents was predominantly Tertiary volcanic basalts and scoria's, with minor sandstones and meta-sediment component. No mantle breccia material or ultra-mafic outcrops were noted.
- The widespread occurrence of small ultra-mafic lherzolite xenoliths, contain upper mantle chemistry. Olivines are pale yellow to weak green and suggest low magnesium values. Diopsides are mostly a weak green colour and low in chromium and magnesium on a visual basis only. Enstatite, an orthopyroxene is also a dull yellow- green typical of a low magnesium content. The lack of rounding, resorption and weak colouration of mineral grains indicate low chrome and magnesium counts of the xenolith minerals, and confirm a moderate to deep crustal parentage.
- The lack of Diamond Indicator Minerals such as chrome diopside, chromite, picroilmenite and pyrope garnets suggest that recovered mineral grains originate solely from the Piebald Alkali Olivine Basalts and their lherzolite xenoliths.
- HEMS considers the area within EPM 18062 offers little, if any prospectivity for the discovery of diamondiferous kimberlite and or lamproite pipes and recommends that the tenement be surrendered.

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