

**ACACIA MINERALS Pty. Ltd.**

**DE MONCHAUX CREEK PROSPECT EXPLORATION  
MAPPING REPORT  
(EL27282)**

*July 2010*

**PRELIMINARY / DRAFT REPORT**  
**(Awaiting Rock Chip sample analysis results + Historical Digital Mapping data)**



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## EXECUTIVE SUMMARY

A regional exploration mapping program was undertaken over the De Monchaux Creek Prospect area situated in the bottom / east portion of Exploration Licence 27282.

The purpose of the program was to inspect the actual De Monchaux Creek mineralised outcrop and to expand the existing mapping of the outcrop to investigate the broader, regional prospectivity of the tenement holding for further potential mineralisation.

A series of 37 rock chip samples were collected during the mapping exercise and have been submitted to Northern Territory Environmental Laboratories (NTEL) for analysis.

Preliminary visual inspection of hand specimens indicate areas outside the main mineralised zone may be mineralised.

The main observations and recommendations emanating from the program are listed below:

- ❖ The northern and, to a lesser degree, the southern extent of the identified mineralised zone may be open. There is scope for future exploratory work to be undertaken in this region.
- ❖ A future soil geochemistry survey over the flat, soil and lateritic covered plains to the west of the mineralised zone may indicate future exploration targets.
- ❖ A continuation of field mapping and preliminary exploration activities should be carried out to cover the remainder of the tenement holding.
- ❖ Historical maps, plans and reports must be summarised, digitally captured and incorporated into a digital database where the completed package of data can be used for future exploration planning via a GIS interpretation system.

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## 1.0 INTRODUCTION

In 1974, Magnum Exploration NL. conducted a data review of the area now covered by EL 27282 as part of a regional search for base metals.

Since the early 1970's a series of soil geochemistry, stream sediment sampling, geological mapping, costean sampling and drilling programs were conducted by several companies and formed the basis of exploration activities in the area that resulted in the identification of a mineralised quartz ridge which became the De Monchaux Creek gold prospect.

Most of the historical work was concentrated on the main mineralised quartz ridge with a broader geochemistry survey covering a small portion of the surrounding area. An extensive grid was surveyed in and extends for most of the soil and lateritic cover of the central portion of the project area. Based on information from historical reports, results from the soil geochemistry survey were considered as discouraging by Uranerz Australia who was mainly concentrating on the search for uranium.

Recent field activities undertaken for Acacia Minerals Pty. Ltd. indicate the potential for mineralisation outside the main quartz ridge of the De Monchaux Creek prospect.

The mapping exercise, summarised in this report, covers the main south eastern portion of the tenement and has identified several gossanous quartz outcrops associated with quartzite with prominent unidentified remnant sulphide inclusions.

A comprehensive rock chip sampling program (*results pending*) was undertaken to establish the distribution and anomalism of regional geological features.

Structural lineaments were identified during the mapping program and are represented in Figure 2.

It is anticipated that a completion mapping program of the southern portion of the tenement combined with rock chip assay results and structural interpretation may lead to a greater understanding of the source and extent of anomalism and to the future location of drilling targets.

## 1.1 Scope of Work

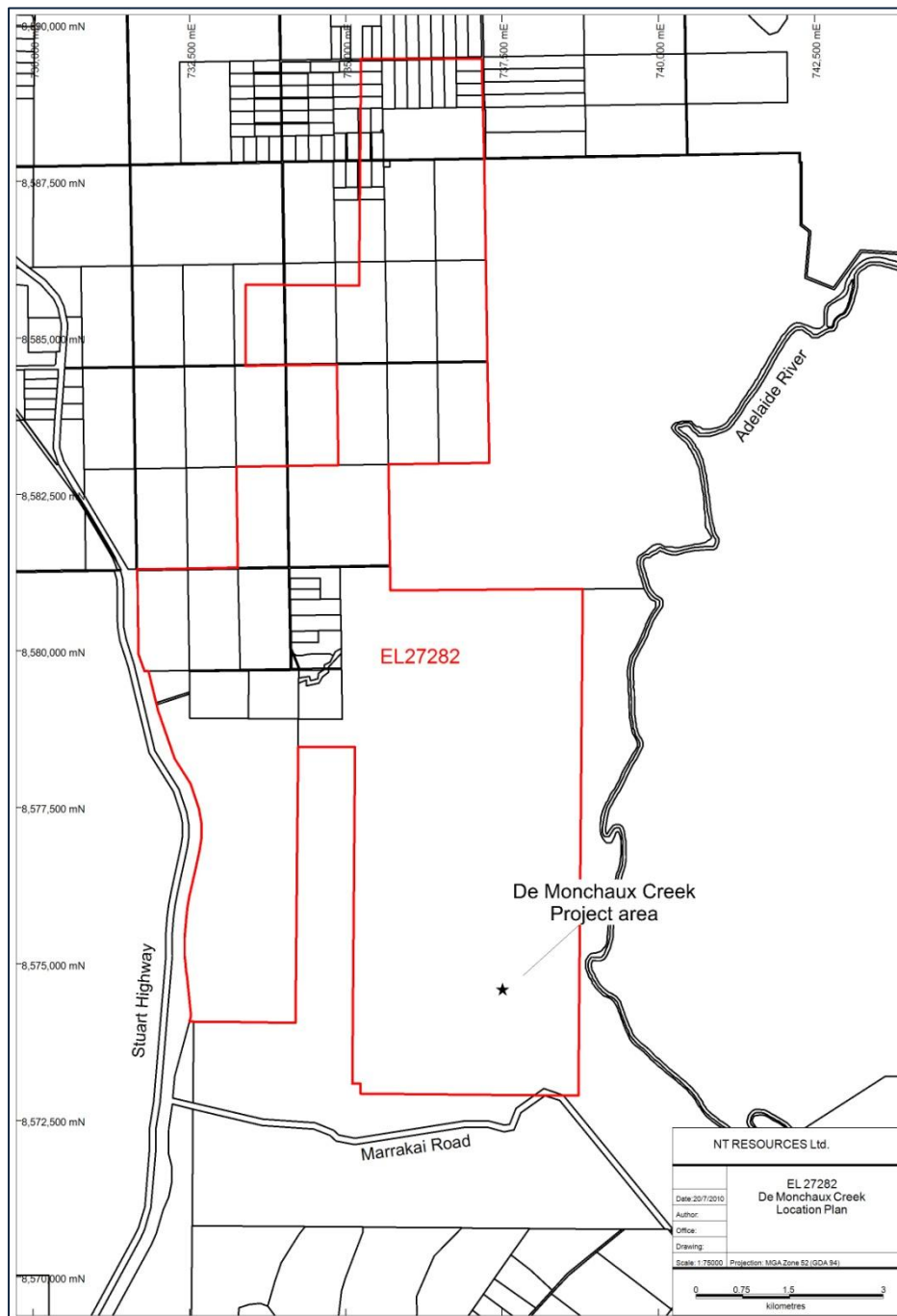
The mandate of the author was to review, investigate and comment on the De Monchaux Creek Prospect that falls within the broader Exploration Licence 27282 and to prepare an assessment report which contains the observations, preliminary conclusions and recommendations made by the author.

Prior to commencement of the review for Acacia Minerals Pty. Ltd., on the project area, there was minimal pre-examination of previous exploratory activities undertaken on the tenement. It was considered an advantage to enter an area “cold” as there were no pre-conceived geological models, mineralisation theories or rock mineralogy nomenclature established.

Two days were spent at the Northern Territory Geological Survey (NTGS) reviewing and sourcing all available open file reports pertinent to the investigation area. These reports remain to be systematically reviewed and historical mapping, sampling, drilling etc. is to be compiled into an appropriate digital database. Historical information is an invaluable tool and can be utilised as a preliminary base for further investigation.

Note: All relevant data in the historical reports is to be converted into the current geographic coordinates system and historical mapping is to be digitised, also into the current coordinate system.

## 2.0 LOCATION



**Figure 1. De Monchaux Creek Project Area Location.**

The De Monchaux Creek Project Area and the southern portion of EL 27282 is relatively easily accessible during the dry season. Travel about 6.3km from the Stuart Highway / Marrakai Road intersection, on a dirt track, to a small bush track turn off on the left side of the road. About 900m along the bush track is a left turn onto a “bush-bashed” track that passes through a gap in the ranges, crosses two small creeks (the second being De Monchaux Creek) and comes out at the prominent quartz outcrop of the De Monchaux Creek prospect. Figure 1. represents a general location of the tenement and project area.

### 3.0 REGIONAL GEOLOGY

Exploration licence 27282 lies within the Rum Jungle area of the Lower Proterozoic, Pine Creek Geosyncline (PCG). This major depositional basin covers approximately 40,000 square kilometres and extends from Katherine in the south to north of Darwin in the northwest and beyond Jabiru in the northeast.

The Project area is located in the northern part of the PCG and contains early Proterozoic meta-sedimentary rocks resting on a gneissic and granitic Archaean basement.

Detailed geology of the PCG is discussed by Nicholson, Ormsby, and Farrar (1994) who simplified the stratigraphy into the Batchelor, Frances Creek and Finniss Groups. (*Independent Geological Report – NT Resources Ltd*).

### 4.0 PROSPECT GEOLOGY

The De Monchaux Creek mineralisation is bounded by Quartzite ridges of the Proterozoic Acacia Gap Quartzite Member and Whites Formation striking in a north-south direction in the central portion of EL 27282. The Acacia Gap Quartzite Member is mainly quartzite, commonly pyritic, with interbedded shales and phyllites. The Whites Formation consists of calcareous and carbonaceous pyritic argillite, dololite and calcareous para-amphibolite.

The distinctive carbonaceous, pyritic shales of the Whites Formation were not observed as outcrop in the mapping area although remnant drill chips were observed close to historic drill hole collars and it is assumed that the Whites Formation would be intersected relatively close (within 50m – interpreted from drill hole logs) to the surface. The Acacia Gap Quartzite (Figure 2.) formed distinctive high relief ranges on the margins of the project area. The presence of scree and rubble on the hill slopes became an impediment when defining *situ rocks* for chip sampling and every effort was made to collect untransported rock samples for analysis.

Although results are pending for rock samples, the presence of gossanous quartz throughout the project area indicated that mineralisation is not restricted to the primary De Monchaux Creek quartz ridge.

Several linear trends were observed in the region. Of note were distinct quartz ridges that formed the basis of extrapolating major deformation lineations that are represented in Figure 2. These lineations are most likely parasitic faulting associated with the primary fault that offsets the north and south Acacia Gap Quartzite ridges; with the cross-cutting De Monchaux Creek following the fault line.

Distinct lines of “unburnt” vegetation were observed, mappable, features. Starts and finishes of the lineaments were recorded and plotted on plan. It was observed that there was a broad correlation between the vegetation lineaments and the interpreted quartz filled, fault line lineaments. The conclusion could be made that the structural setting of the region is more complex than previously discussed in any historical reporting. All indications are that there may be various stages of displacement in mineralised zones that continue on a northerly trend.

At sites where bedding, cleavage or other structural formations were observed a Dip/Dip Direction reading was recorded. At the scale of the preliminary map represented in Figure 2, the structural symbols and text are unable to be read.

Note: At a later stage, a smaller scale map will be produced, on large format hardcopy, to enable a visual presentation of all structural orientations.

The Acacia Gap Quartzite was observed to comprise of a series of inter-fingered sedimentary units of varying characteristic.

At least three units were observed. The first unit can be categorised as being massive, homogeneous quartzite. The second unit is characterised by quartzite with fine pervasive remnant cubic and rounded sulphide inclusion. Historical reports suggest that the inclusions are remnant pyrite and arsenopyrite oxidised to limonite. The coloration and remnant crystal form of the inclusions have a distinctive grey/red/maroon colouration and very unlike the yellow/brown of limonite. Mineralogical identification will form a part of the next phase of work on the project area.

The third quartzite unit is closely associated to the second but differs due to larger, more dispersed remnant sulphide inclusions.



It was anticipated that an association between quartz veining and gossanous quartz outcrops, within the quartzite outcrop and mineralisation, may be established however the nature of the terrain and infrequent *in situ* exposure of outcrop restricted the detailed mapping required for this technique.

A greater understanding of mineralisation distribution styles will be gained when assay results are received and related back to the sampled rock specimen.

Note: A completed report (as sample results are received) will include a supplementary map with sample locations.

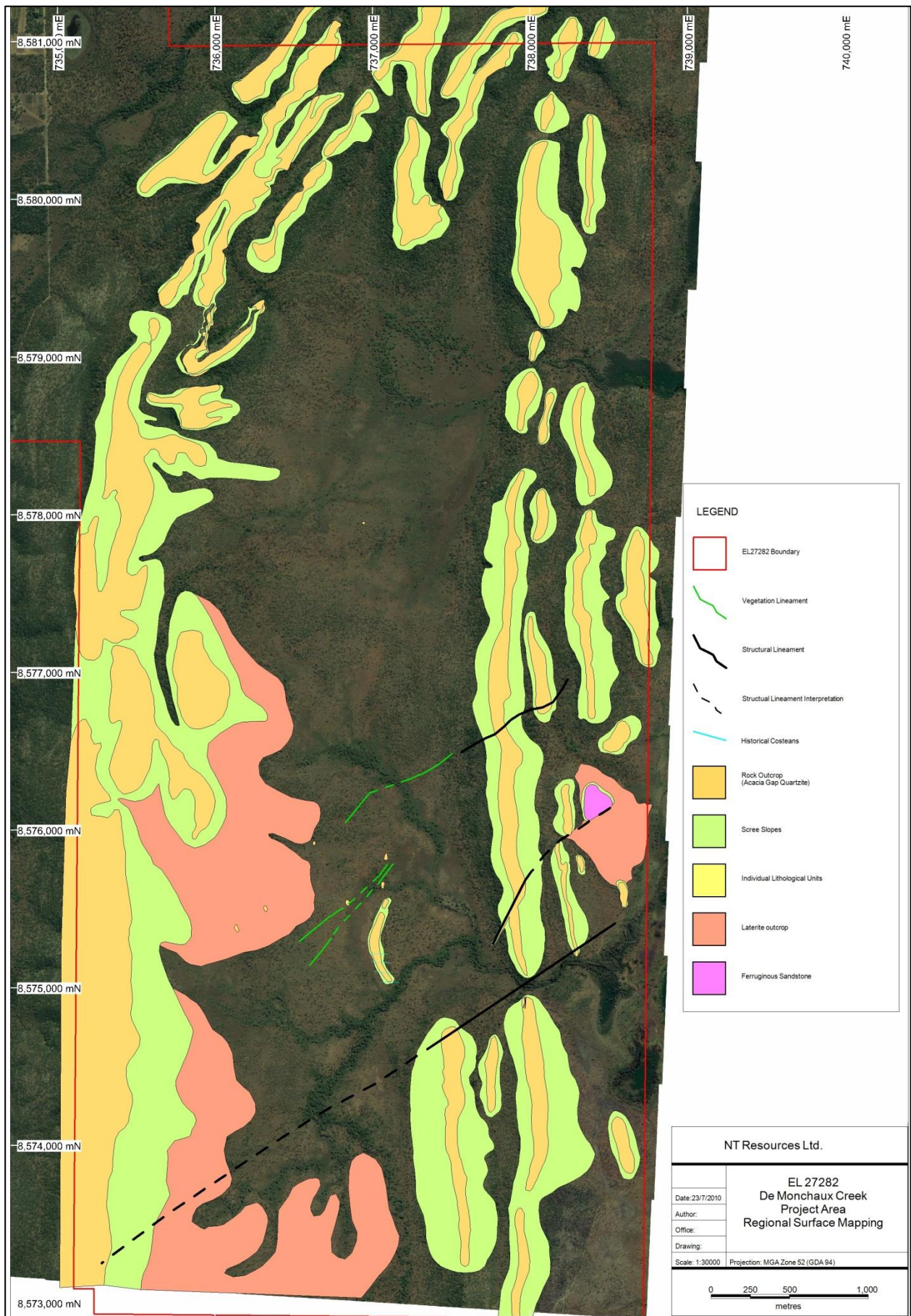


Figure 2. De Monchaux Creek Geological Mapping

## 5.0 ROCK CHIP SAMPLE DESCRIPTION

A total of 37 rock chip samples were collected from sites of specific interest and submitted to Northern Territory Environmental Laboratories (NTEL) for analysis. Elements to be assayed for include Au, Ag, As, Co, Cu, Fe, Mn, Ni, P, Pb, U & Zn.

Samples can be re-submitted for further assaying of other elements as required. Duplicate samples were retained for selected samples that require petrological descriptions and identification.

The following table details the sample numbers, description and collection coordinates.

Sample No.	Easting	Northing	Description
15001	737960	8574897	Haematitic, limonitic, quartzite. Remnant pyr xls. Tr primary pyr
15002	737536	8574785	Haematitic, limonitic, quartzite. Brecciated, gossanous
15003	737473	8574726	Intensely brecciated. Haematitic. Mn? Rich in veining in parts.
15004	737385	8574508	Brecciated, haematitic, quartzite, Mn staining.
15005	737641	8574423	Very ferruginous, haematitic, gossanous. Thin Mn banding parallel to bedding.
15006	737995	8574519	Haematitic sst. Gossanous in part. Brecciated quartz throughout. Limonitic staining. Mn rich. Minor remnant sulphide inclusions.
15007	737956	8574907	Fe rich quartz, gossanous, Mn nodules on joint surfaces.
15008	737972	8574930	Brecciated quartz, haematitic alteration throughout mtx.
15009	737968	8574906	Quartzite with remnant sulphide inclusions. Part of outcrop.
15010	738600	8573898	Nodular Mn. Limonitic, very ferruginous throughout quartzite mtx.
15011	738605	8573970	Brecciated, very ferruginous. Mn rich on joint surfaces. Limonitic in part.
15012	738568	8574116	Intense Mn nodules in vughy fractures and joint surfaces. Very ferruginous quartz breccia.
15013	736843	8575537	Sst with a calcareous?, magnesite?, carbonate? white powdery surface coating.
15014	736631	8575918	Lateritic soil sample.
15015	735850	8576288	Ferruginous sst. Minor silicification, brecciated in part
15016	735898	8576089	Massive quartz. Slickensided on joint surface. Ferruginous and Mn in part.
15017	736323	8575505	Fractured quartz with intense Fe and Mn veining throughout. Tr green chloritic? altn.
15018	738147	8575216	Quartz float. Ferruginous, crystalline, Mn, limonitic, quartz veining.
15019	738206	8575254	Same as 15018 but with less Fe staining.
15020	738293	8575297	Quartzite, tr remnant sulphide inclusions, qtz. veining, limonitic staining. Dk grey pervasive Mn staining.
15021	738300	8575299	Quartzite, homogeneous, pervasive Mn and Fe. Minor quartz veining
15022	738332	8575308	Very oxidised sst. Anatomising quartz, sericite? Carbonate veining. Very Fe and Mn rich.

Sample No.	Easting	Northing	Description
15023	738604	8575615	Very gossanous brecciated sst. Could be laterite?
15024	738612	8576583	Crystalline sst. Ferruginous, light purple/red colouration. Gossanous in part.
15025	738530	8576527	Crystalline sst. Ferruginous banding. Qtz. crystals as thin veins in sst mtx.
15026	738322	8575804	Ferruginous sst. Brecciated, almost pisolitic. Minor Mn veining and staining on joint surfaces.
15027	737991	8575437	Ferruginous quartzite. Minor Mn staining. Qtz. veining throughout mtx. In an area of quartzite with lots of remnant sulphide inclusions.
15028	737985	8575508	Fresh quartzite. Haematitic in part. Spheroidal remnant sulphide inclusions.
15029	737987	8575609	Massive qtz. veining with minor v. thin anatomosing Mn and Fe veining.
15030	738006	8575644	Massive quartzite with minor qtz. veining throughout mtx. Dk grey with tr Fe staining. Rare remnant sulphide inclusions.
15031	738015	8575753	Massive quartzite with tr. qtz. veining throughout mtx. Some re-crystallisation of qtz. in thin veins.
15032	737965	8575972	Massive quartzite with qtz. veining throughout mtx. Minor remnant sulphide xl forms.
15033	738011	8576999	Massive quartzite with wide (2cm) qtz veining throughout mtx. Minor remnant xl forms.
15034	737958	8576659	Massive quartzite. Very grey qtz veins throughout mtx. With wide qtz veining throughout. Pervasive very small (1mm) remnant sulphide forms.
15035	738134	8576360	Very hard quartzite with multiple qtz veining (stockwork) within mtx. Minor limonitic staining.
15036	736944	8577945	Qtz. Gossanous, dark grey/black remnant sulphide (Mn?). Limonitic on fracture planes.
15037	738089	8578530	Quartzitic sst. Mass of stockwork qtz. veining. Tr Fe staining.

Table 1. Rock Chip samples and descriptions

## 6.0 CONCLUSION / RECOMMENDATIONS

Previous exploration activities on the De Monchaux Creek gold prospect intersected mineralisation at depth but anomalous intersection were never followed up with further drilling. The primary mineralised quartz, gossanous outcrop underwent extensive, historical surface testing and some sub-surface testing that intersected mineralisation.

Historical recommendations included deeper and extended drilling to test open ended mineralisation however, this was never completed.

There remains a large area of untested ground on the south-east portion of EL27282 with the potential to host, at the very least, anomalous mineralisation.

There are very favourable geological indicators that would suggest an extension to the recent mapping and sampling program is warranted. It is recommended that the following points be implemented as part of the on-going exploration of the region.

- 1) Compile all previous relevant exploration results into a database from which historical drill hole, soil sampling, rock chip sampling and geological mapping results can be extracted and plotted as required. This will facilitate further work planning and drill hole design.
- 2) Completed regional mapping and sampling program to establish a sound geological base on which further all future work will be based.
- 3) After review and discussions related to the results from the recent airborne geophysical survey it would be pertinent to undertake an orientation MMI survey to see if it would be an appropriate exploration method for the area.  
Undertake a complete regional MMI survey if the initial orientation program indicates further work is warranted.
- 4) Design a drilling program to test anomalous areas defined by base geological mapping, airborne geophysical survey results and associated MMI survey results.

## **BIBLIOGRAPHY**

Maynard, AL. and Associates Pty. Ltd. – Independent Geological Report on Northern Territory Projects for NT Resources Ltd., 2009.

## **APPENDIX 1. ASSAY RESULTS (PENDING)**