



<b>Titleholder</b>	Geotech International Pty Ltd
<b>Operator</b>	Minemakers Australia Pty Ltd
<b>Tenement</b>	EL26687 (Attack Creek)
<b>Report name</b>	Annual Report for EL26687 (Attack Creek) for the period ending 23 October, 2010
<b>Personal authors</b>	S.S. Morete
<b>Corporate author</b>	Minemakers Australia Pty Ltd
<b>Target commodity</b>	Phosphate
<b>Date of report</b>	9 November, 2010
<b>Datum/Zone</b>	GDA94, Zone 53
<b>250,000 mapsheet</b>	HELEN SPRINGS SE53-10
<b>100,000 mapsheet</b>	BRUNCHILLY 5760
<b>Contact details</b>	Fulton, R. Minemakers Australia Pty Ltd PO Box 1704 West Perth WA 6874 Fax: (08) 9264 7099 Ph: (08) 9264 7000
<b>Email for technical details</b>	<a href="mailto:sydm@minemakers.com.au">sydm@minemakers.com.au</a>
<b>Email for expenditure</b>	<a href="mailto:russellf@minemakers.com.au">russellf@minemakers.com.au</a>

## ABSTRACT

This report describes exploration activities during the second year of tenure for EL26687. The Attack Creek prospect is a joint venture between Minemakers Australia Pty Ltd and Geotech International Pty Ltd. Exploration is aimed at the discovery of economic phosphate deposits proximal to the Alice Springs-Darwin railway. Such deposits are known to occur in shallow marginal marine sediments at the western edge of the Georgina Basin, similar to MAP's Wonarah project located approximately 200km to the east-southeast. The prospect is 80km east-northeast of Tennant Creek and 30km east of Stuart Highway and lies on the 1:250,000 HELEN SPRINGS SE53-11 and the 1:100,000 BRUNCHILLY 5760 map sheets. Land use is dominated by cattle grazing over generally flat to undulating land with elevations between 240-280m.

The geology in the immediate area consists of Palaeoproterozoic Tomkinson Creek Group, a dominantly arenaceous sequence, particularly in the basal portions, with siltstone and shale more important in the upper portions. This stratigraphy is overlain by undeformed Middle Cambrian sedimentary rocks. Early Cambrian lithologies are represented by the Helen Springs Volcanics that consist of amygdaloidal tholeiitic basalt and a basal sandstone unit. The Middle Cambrian Gum Ridge Formation was deposited in shallow shelf epicontinental seas subject to episodic peritidal influence. Lithologies consist principally of limestone and associated phosphorite units.

Preliminary research involved a study of the airborne magnetic data and phosphorus assaying of water bore cuttings. Some water bores in the region have elevated phosphorus. The magnetics indicate the presence of basement highs and embayments, features considered to favour phosphorite accumulation. The target stratigraphy is known to be flat-lying to gently dipping and it was considered that any near-surface phosphorite would display a geochemical signature that could be identified by soil and/or maglag sampling.

Geochemical soil sampling has demonstrated the ability to identify anomalous trends in P-U-Th to identify phosphorite targets for RC drilling. The current sampling has identified three areas of interest and through strike extensions implied others. Area I has limitations due to tenement boundary restrictions. Areas II and III both have elevated P and U<sup>2</sup>/Th. Area III has the greatest potential containing possibly three phosphorite horizons. The phosphorite horizon in Area II strikes outside of EL26687 into EL27517 owned by Vale. It may extend further to the northwest and re-enter EL26687 southwest of No. 20 Bore. Infill soil sampling is recommended in Areas II and III followed by RC drilling to determine lithological types and phosphate content.

## CONTENTS

1.	INTRODUCTION.....	1
2.	LOCATION .....	1
3.	TENURE .....	1
4.	GEOLOGY .....	3
5.	WORK COMPLETED.....	4
	5.1 Office Research.....	4
	5.2 Geochemical survey .....	6
6.	DISCUSSION.....	7
7.	CONCLUSIONS.....	7
8.	RECOMMENDATIONS .....	7
9.	REFERENCES.....	8

## FIGURES

Figure 1:	Location of EL26687 .....	2
Figure 2:	Stratigraphy and phosphate occurrences of the Georgina Basin .....	3
Figure 3:	Location of EL26588 in the Barkly Sub-Basin of the Georgina Basin.....	4
Figure 4:	Exploration Index Plan .....	5

## **1. INTRODUCTION**

This report describes exploration activities during the second year of tenure for EL26687, Attack Creek prospect which is part of Minemakers Australia Pty Ltd (MAPL) Barkly Project (Figure 1). MAPL is a wholly owned subsidiary of Minemakers Limited which listed on the ASX on 10 October 2006. Exploration is aimed at the discovery of economic phosphate deposits proximal to favorable infrastructure, particularly the Alice Springs-Darwin railway. Such deposits are known to occur in shallow marginal marine sediments at the western edge of the Georgina Basin, similar to MAPL's Wonarah project located approximately 200km to the east-southeast.

## **2. LOCATION**

EL26687 is located 80km east-northeast of Tennant Creek in the Northern Territory and 30km east of Stuart Highway. The tenement lies on the 1:250,000 HELEN SPRINGS SE53-11 and the 1:100,000 BRUNCHILLY 5760 map sheets. The centroid of the tenement falls close to 134°15'E and 18°53'S and covers generally flat to undulating land within two pastoral properties, viz. Banka Banka and Brunchilly owned by S. Kidman & Co. Ltd, Adelaide, South Australia. Land use is dominated by cattle grazing. GPS sample site elevations vary from a low of 248m to a high of 275m.

## **3. TENURE**

EL26588 covers 96 blocks (311.9km<sup>2</sup>) and was granted on 24 October 2008 to Geotech International Pty Ltd (Geotech) for a period of six years. A joint venture agreement between Minemakers Australia Pty Ltd and Geotech was signed on 12 May 2009. The agreement provides participating interests for Minemakers (80%) and Geotech (20%), with Geotech being free-carried from expenditure contributions until a Decision to Mine. The licence expires on 23 October 2014 with a minimum of \$90,000 to be expended in the first year. Field exploration activities will be subject to consultations with the pastoral lessee and, through the Northern Land Council, with the Native Title claimants (Banka Banka Native Title Claim NTD 6005/01). Actual expenditure for Year One was \$18,725 and Year 2 approximately \$17,700. The second anniversary falls on the 24 October 2010 with an annual report due for submission by 24 November 2010.

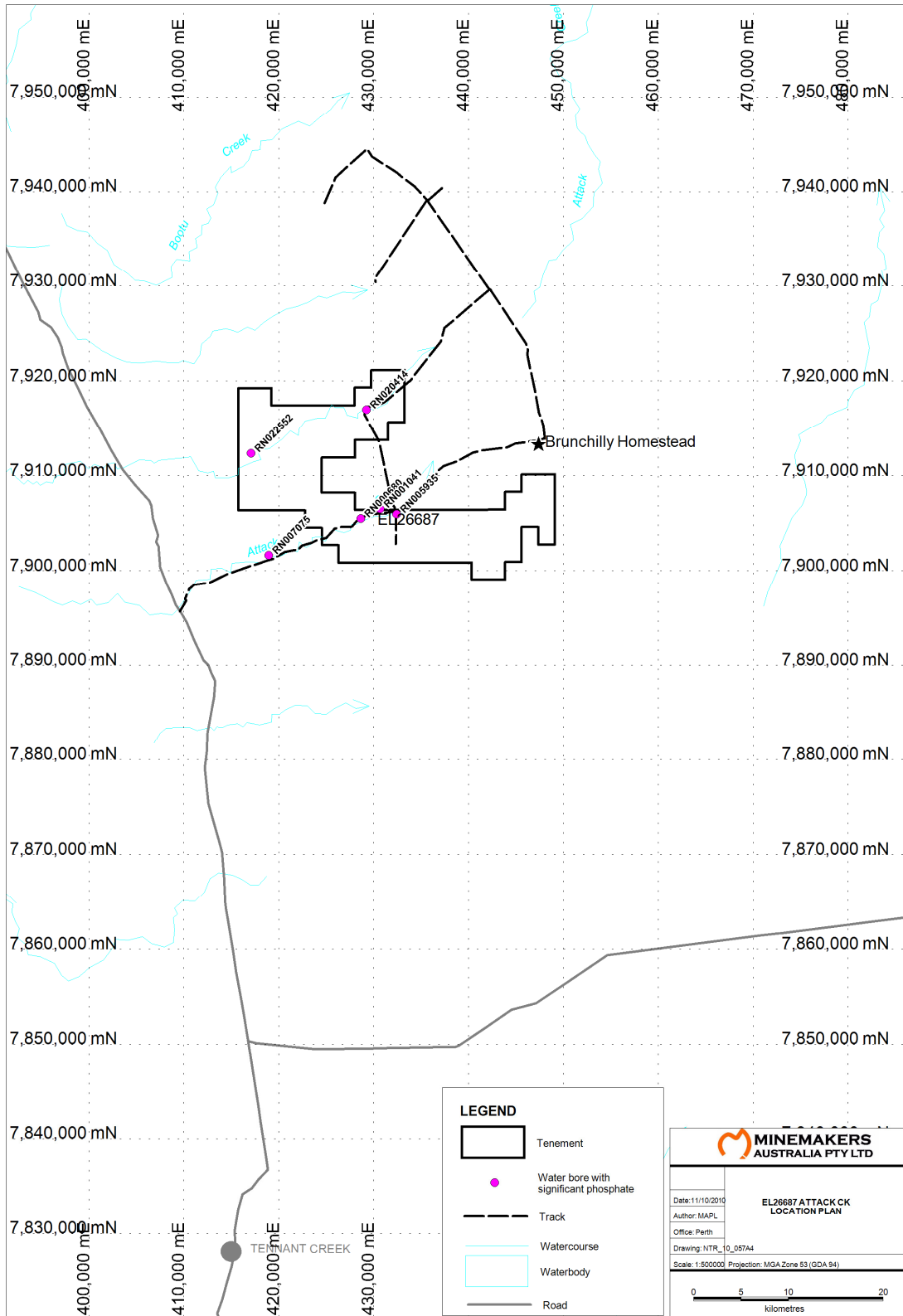


Figure 1: Location of EL26687.

#### 4. GEOLOGY

The Attack Creek prospect is located on the eastern edge of the Palaeoproterozoic Tomkinson Creek Group, a dominantly arenaceous sequence particularly in the basal portions with siltstone and shale more important in the upper portions (Donnellan, 2004). This stratigraphy is overlain by undeformed Middle Cambrian marine sedimentary rocks that comprise the western edge of the Georgina Basin which has been divided into two sub-basins called Barkly and Undilla (Figures 2 and 3). Early Cambrian deposition is represented by the Helen Springs Volcanics that consist of amygdaloidal tholeiitic basalt and a basal sandstone unit. These rocks unconformably overlie the Tomkinson Creek Group.

The Middle Cambrian Gum Ridge Formation was deposited in shallow shelf epicontinental seas subject to episodic peritidal influence. Lithologies consist principally of limestone that includes fine-grained sandstone, siliciclastic mudstone, bioclast, oncolite, stromatolitic and cryptomicrobial limestone, marly limestone, fossiliferous nodular chert; carbonate and evaporitic pseudomorphs (Hussey et al., 2001). Occasional trilobites, brachiopods and sponge spicules occur in this formation. There are a number of mapped exposures of Gum Ridge Formation in and adjacent to the tenement and geological mapping has identified a number of exposures of slightly younger and related Anthony Lagoon beds (op. cit.). Both of these units are capable of hosting phosphorite deposits.

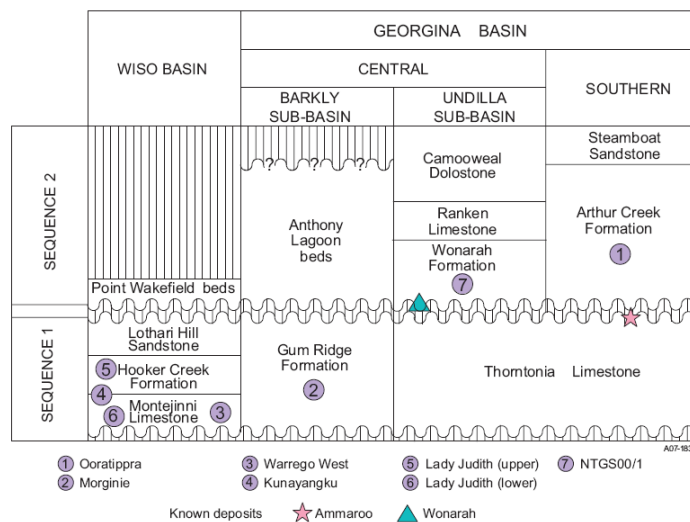


Figure 2. Stratigraphy and phosphate occurrences of the Georgina Basin (after Khan et al, 2007).

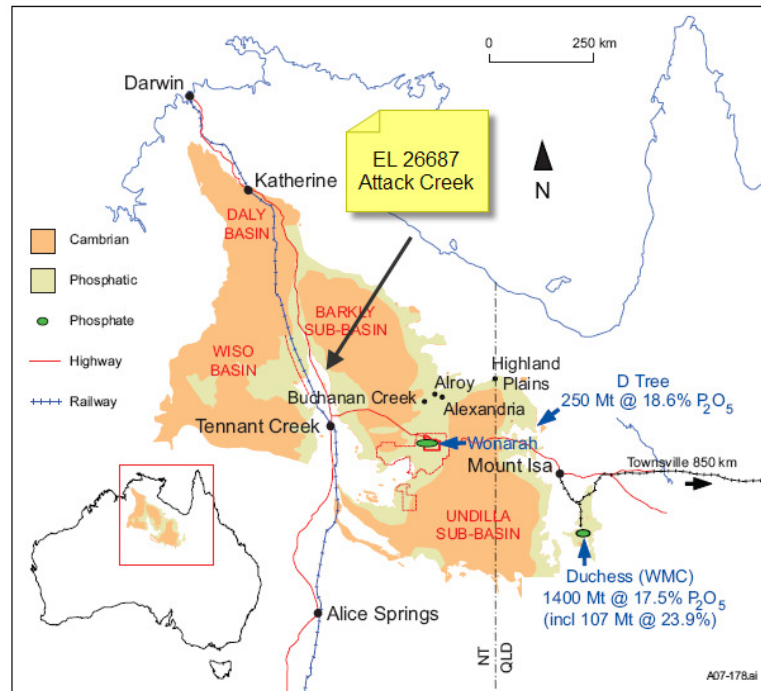


Figure 3. Location of EL26687 in the Barkly Sub-Basin of the Georgina Basin (after Khan et al, 2007).

## 5. WORK COMPLETED

### 5.1 Office Research

Airborne magnetic data indicate the presence of basement highs and embayments, features that are considered to favour phosphorite accumulation. Some near-surface magnetic highs are considered to represent sub-surface basalt of the Helen Springs Volcanics. Preliminary research involved identifying water bores in the immediate area and ascertaining whether these had been tested for phosphate (Khan et al., 2007). No. 20 Bore (RN20414) showed strong indications of phosphorus as did RN007075 which is located on the Brunchilly road immediately west of the tenement (Figure 1). The target stratigraphy is known to be flat-lying to gently dipping and it was considered that any near-surface phosphorite would have a geochemical signature that could be identified by soil and/or maglag sampling. Basement highs and embayments were targeted in the geochemical survey where local station tracks allowed access.

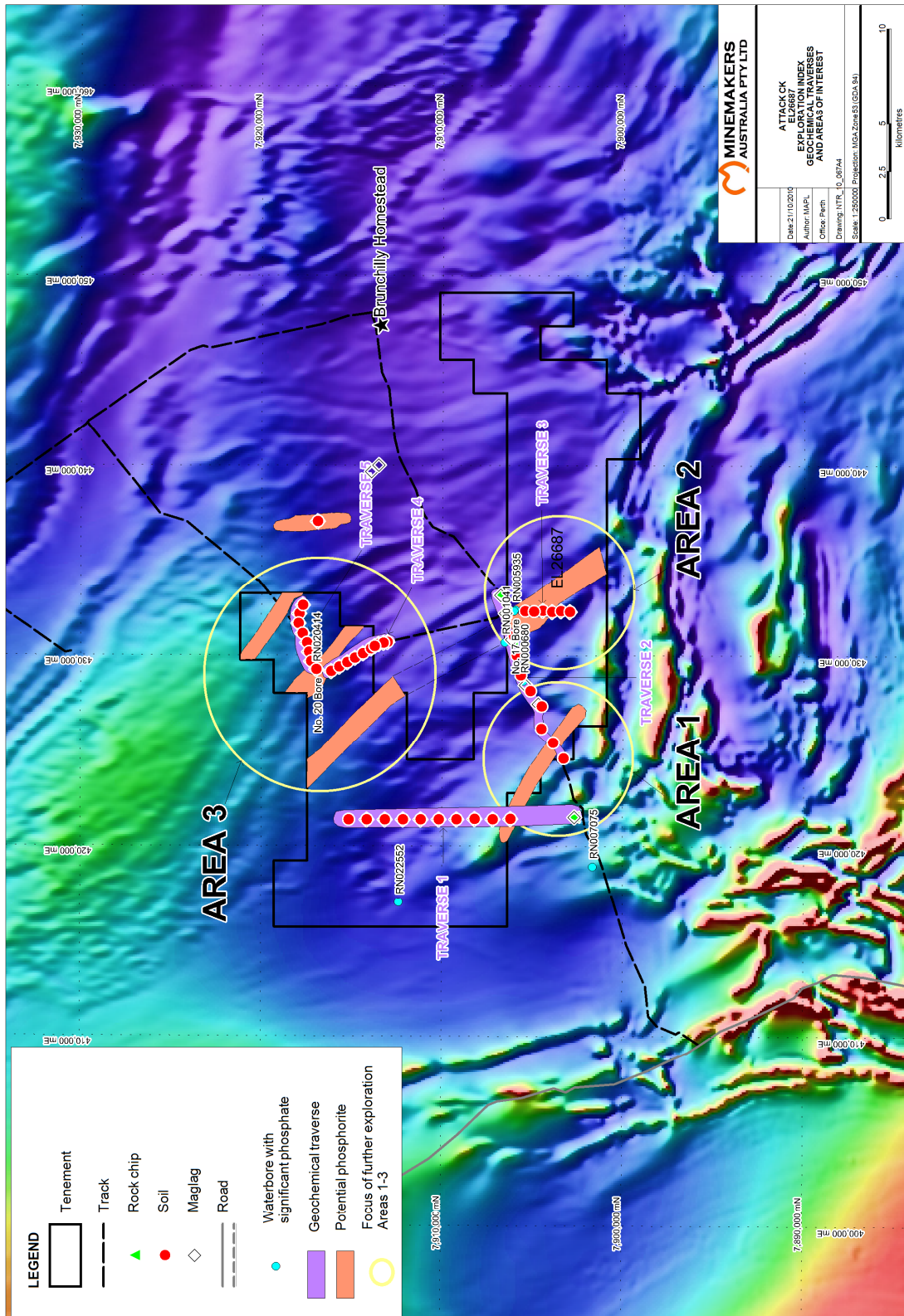


Figure 4: Exploration Index Plan.



## 5.2 Geochemical survey

A geochemical survey was conducted over station tracks within the tenement during early February 2010 by the writer and two field assistants. Five traverses were planned to test the phosphate potential of the tenement. These are described below and shown on Figure 4.

Traverse 1 (13km-long, 11 sample sites, 1000m spacing) followed the north-south boundary fence between Banka Banka and Brunchilly pastoral stations. This started from the Brunchilly road and stopped 13km to the north at Morphett Creek (Figure 4). Sample numbers 219908, 219604-219605.

Traverse 2 (7km-long, 8 sample sites, 1000m spacing) generated eight sample sites along Brunchilly road. Sample media was collected 25m off the road to avoid introduced road gravel. Sample numbers 219614-219621.

Traverse 3 (3km-long, 6 sample sites, 500m spacing) is located immediately south of No. 17 Bore. Sample numbers 219622-219627.

Traverse 4 (3.7km-long, 10 sample sites, 500m & part infill to 250m) located immediately south of No. 20 Bore. Sample numbers 219636-219645.

Traverse 5 (3.5km-long, 7 sample sites, 500m spacing) located immediately east of No. 20 Bore. Sample numbers 219628-219635.

From these traverses and some sites within the Attack Creek drainage, a total of 139 geochemical samples were collected, however the maglag and these are summarized below with site locations shown in Figure 4:

46 maglag samples (94019-94051, 94090-94100, 219970-219971), including 10 stream sediment

6 rock samples (219908, 219922-219926)

87 soil samples (219604-219605, 219614-219698)

Soil samples were collected from a depth of about 15cm with an average sample weight in the range 1200-1300g. Maglag samples were not always available at each site. Average sample weight was 20-30g.

In addition, magnetic susceptibility and scintillometer readings were recorded at each soil sampling site using an SM-30 magnetic susceptibility meter and a RadEye PRD scintillometer.

The soil and rock samples were forwarded to Amdel Laboratory, Mt Isa. Due to a misunderstanding the maglag samples were not submitted with the rock and soil samples. However, they were submitted to Genalysis Laboratories Pty Ltd, Perth in early November 2010. For samples  $\leq$  25g (no preparation); samples  $>$ 25g were pulverised. An aqua regia digest was used and the following elements were assayed: ICP-OES for P (10ppm), Fe (100ppm), Mn (1ppm); ICP-MS for As (0.5ppm), Cd (0.01ppm), Ce (0.01ppm), La (0.01ppm), Pb (0.5ppm), U (0.01ppm) and Th (0.01ppm). These maglag samples will be reported in next years Annual Report.

The soil samples were sieved to -80#, pulverised and digested in a multi-acid digest and assayed using ME-MS41, ICP-MS, ICP-AES techniques for the following 51 elements: Ag, Al, As, Au, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn and Zr. The rock samples were pulverised and digested in a multi-acid digest and assayed using ME-MS41, ICP-MS, ICP-AES techniques for the same 51 elements listed above. The results are reported in Laboratory Reports MI10020779 (rocks) and MI1024320 (soils).

## 6. DISCUSSION

The results define three areas of interest as described below (Figure 4):

Area I (Brunchilly Road) is not well-defined and consists of low-level soil P up to 60ppm but coincident with a NW-trending magnetic high but potential is limited by tenement boundary.

Area II (No. 17 Bore) contains four adjacent elevated soil P values =>70ppm. In addition, the last sample on Traverse 2 and the first two samples on Traverse 3 have U<sup>2</sup>/Th ratios >0.1 that highlights and supports the existence of an underlying phosphorite zone. This phosphorite zone is potentially up to 6000m long and 750m wide. From trends in the airborne magnetics, this zone strikes into Area III.

Area III (No. 20 Bore) where Traverses 4 and 5 are located at the southern end of a basement high. A single high soil value of 100ppm P occurs in close proximity to No. 20 Bore which supports the strong P value derived from Khan et al. (2007) study. Surrounding assays are of the order of 50-70ppm P where background is 50ppm. Sample number 219628, the first sample on Traverse 5 recorded 70ppm P and a U<sup>2</sup>/Th ratio of 0.15 which suggests an underlying phosphorite zone. Area III has the potential to host at least three phosphorite zones. Two of these are geochemical indications while the third is a strike extension from Area II.

A soil sample (219698) was collected about 3km east of Area III within ground held by Vale (EL27547). This area had elevated radiometry and returned strongly anomalous soil P at 190ppm and a U<sup>2</sup>/Th ratio of 0.29. Magnetic trends indicate a strike slightly west of north. This trend extends to the south into EL29687 where there is poor access. Furthermore, the trend north heads into Minemakers EL26710 to occupy a strong magnetically extensive NW-SE trending feature which has yet to be sampled.

## 7. CONCLUSIONS

Geochemical soil sampling has demonstrated the ability to identify anomalous trends in P-U-Th and possibly other elements, such as Pb to identify phosphorite targets for RC drilling. The current sampling has identified three areas of interest. Area I contains little data and has limitations due to the proximity of the boundary of EL26687. Area III has the greatest potential containing possibly three phosphorite horizons (Fig. 4). Areas II and III both have elevated P and U<sup>2</sup>/Th. The phosphorite horizon in Area II strikes outside of EL26687 into the neighbouring EL27517 owned by Vale. It may extend further to the northwest and re-enter EL26687 southwest of No. 20 Bore.

## 8. RECOMMENDATIONS

Given anomalous P and U values can be recognised in soil samples, further infill soil sampling on a 1000m by 200m GDA grid should be conducted in Areas II and III with the aim of identifying anomalies for RC drilling. Some limited RC drilling should be conducted over geochemical anomalies where station track access permits to determine lithological and phosphate content.

## 9. REFERENCES

**Donnellan N (2004)** Geology of the Tennant Region 1:500,000 scale. Northern Territory Geological Survey, Darwin and Alice Springs.

**Hussey KJ, Beier PR, Crispe AJ, Donnellan N & Kruse PD (2001)** HELEN SPRINGS SE53-10 1:250,000 Geological Series. Edition 2. Northern Territory Geological Survey.

**Khan M, Ferenczi PA, Ahmad M & Kruse PD (2007)** Phosphate testing of waterbores and diamond drillcore in the Georgina, Wiso and Daly basins, Northern Territory. Northern Territory Geological Survey, Record 2007-003.