AusQuest. Limited

ABN 35 091 542 451

Wave Hill

EL 22812
Partial Relinquishment
Wave Hill SE 5208
Northern Territory

Author: **Martin Gole**

Date: **November, 2003**

Copies to: **Northern Territory Department Business, Industry & Resource Development**

AusQuest Limited

Central Land Council

TABLE OF CONTENTS

LIST OF FIGURES

SUMMARY

Interpretation of geological and geophysical data over the western part of the Kalkarinji Province has identified potential ENE trending structures such as the Neave Fault as potential fissure eruption sites for vast volumes of basaltic magma. Results from recent deep drilling through the Kalkarinji basalt pile 125 km to the west of the Wave Hill tenement coupled with new aeromagnetic data within the region has further highlighted the potential of the Neave Fault being a possible feeder structure to Kalkarinji basalts. Magnetic anomalies located close to these structures are thought to reflect feeder-related intrusions near the base of the basalt pile. Such intrusions are likely trap sites for Ni-Cu-PGE sulphides that the geochemistry a Kalkarinji basalts suggests has been removed from vast volumes of mafic magma (Gole and Ashley, 2003).

The Wave Hill tenement (EL 22812) covers a discrete magnetic anomaly along the Neave Fault that modelling suggests is due to the presence of a sill-like mafic body at the base of the basalt pile at a depth of ~500m. The tenement has been reduced in size to more efficiently cover this priority target

Detailed ground gravity and electromagnetic surveys are planned over the aeromagnetic anomaly in early 2004 in order to define the limits of the interpreted intrusive sill and to locate potential sulphide mineralisation. Any EM target will be drill tested.

1. INTRODUCTION

AusQuest has secured title in both the Northern Territory and Western Australia over potential feeder systems to the Kalkarinji Flood Basalts that have been interpreted from available geological and geophysical data. Physical trap sites such as irregularities within the system of feeder dykes represent prime target locations for the accumulation of massive Ni-Cu-PGE sulphides that may have been stripped and concentrated from through-going basaltic magma. The geochemistry of the Kalkarinji basalts indicates that they have been contaminated by crustal material and are strongly depleted in chalcophile elements (Glass, 2002; Gole and Ashley 2003). These characteristics and the related processes are similar to those that have affected parts of the Siberian flood basalts and which are thought to be directly related to the formation of the giant Ni-Cu-PGE sulphide deposits at Noril'sk.

The Wave Hill Exploration Licence (EL 22812) forms part of the Antrim Ni-Cu-PGE Project area (Figures 1, 2 and 3) straddling the Neave Fault where a buried intrusion is inferred from regional aeromagnetic data. Access to the area is via the Buntine Highway and then south from Kalkarindji township along the Lajamanu Road and station tracks.

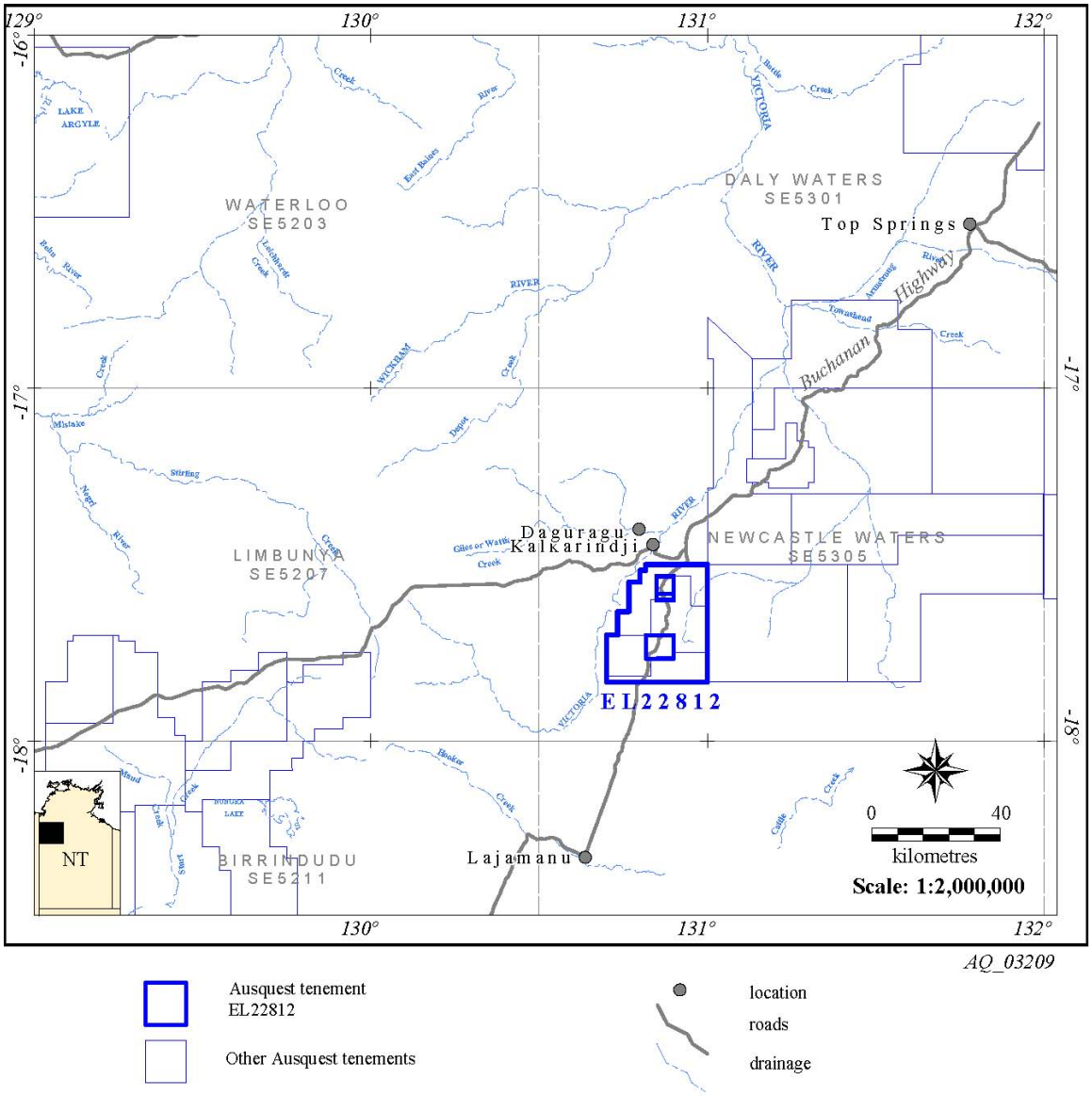

Figure 1. Regional geology showing location of Antrim Project tenements in the Northern Territory including Wave Hill tenement (EL 22812).

2. WAVE HILL GEOLOGY

Available geological mapping from the Wave Hill 1:250 000 sheet of Bultitude (1972) and the adjacent Limbunya sheet of Cutinivos et al. (2002) shows the Wave Hill tenement (EL 22812) largely straddling a margin between sub-horizontal Cambrian flood basalt in the northwest and Cainozoic cover rocks and unconsolidated sediments to the southeast (Figure 2).

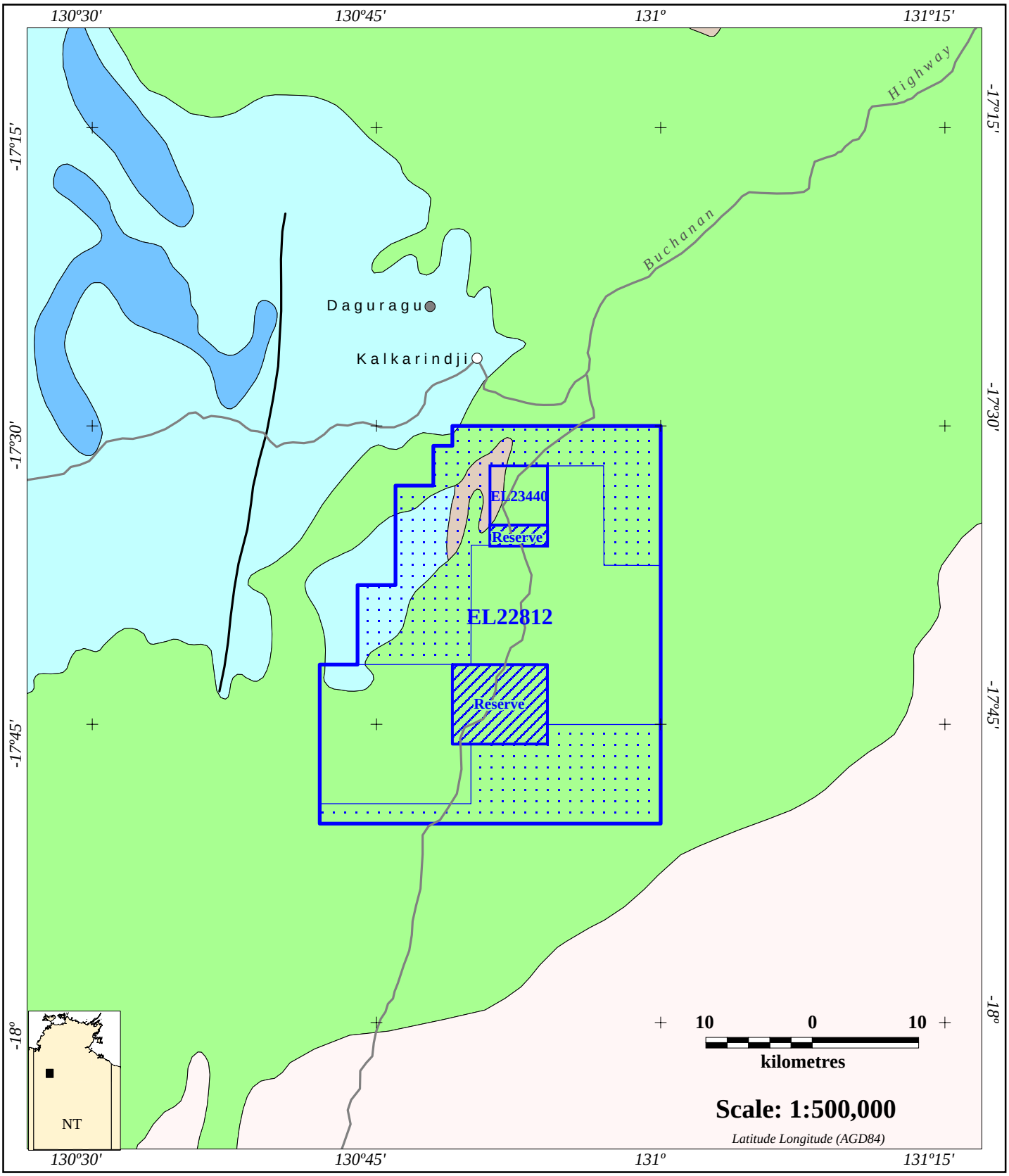

Figure 2 General geology of the area of EL 22812 and the portion of the tenement relinquished.

AQ_03213

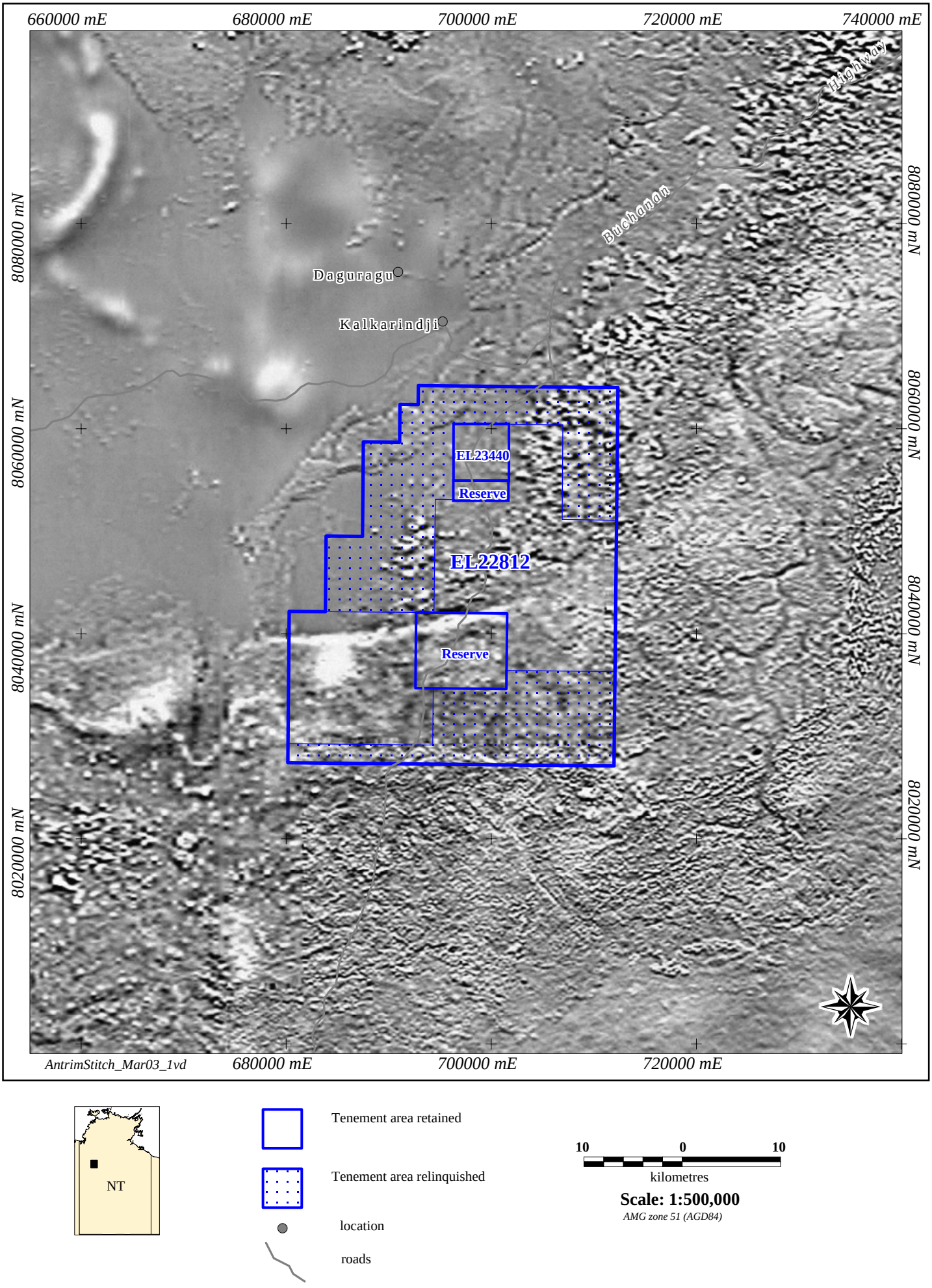

Figure 3 Aeromagnetic image of the environs of EL 22812 showing a marked magnetic anomaly on the south side of the Neave Fault

AQ_03214

To the northwest of the tenement is an area of Proterozoic sedimentary rocks of the Birrindudu and Victoria Basins, which underlie the Antrim basalt. Recent mapping of the Limbunya 1:250 000 sheet, immediately west of EL 22812 (Cutinivos et al., 2002) and new aeromagnetic data, show that the above Proterozoic rocks form part of a basement inlier exposed by uplift on the northern side of the east-west trending Neave Fault. This fault is interpreted by AusQuest as a possible conduit for the transfer of Kalkarinji basaltic magma. A marked magnetic anomaly associated with this fault is interpreted as a likely intrusive target. This buried geophysical target and the associated fault are the focus of EL 22812.

3. DISCUSSION

Recent data from deep drilling by AusQuest (Gole and Ashley, 2003) together with recently released aeromagnetic data highlights the magnetic anomaly along the Neave Fault within EL 22812 and strongly suggests that it may be a sill that is part of the feeder complex to the Kalkarinji basalts. As such it is a potential trap site for magmatic sulphides that the geochemistry indicates have separated from the basaltic magma.

Because the Neave Fault and immediately associated magnetic anomalies are the main targets for AusQuest's exploration those parts of the tenement away from the fault have been relinquished (see Figures 2 and 3).

4. WORK PLAN

Detailed ground gravity and electromagnetic surveys are planned for early 2004 over the main aeromagnetic anomaly in order to define the limits of the interpreted intrusive sill and to locate potential sulphide mineralisation. Any EM anomaly associated with the interpreted buried sill will require drill testing.

5. REFERENCES

Bultitude, R. J.,1972. Wave Hill, Northern Territory. 1:250 000 geological map series explanatory notes, SE 52-08. Bureau of Mineral Resources, Canberra..

Cutovinos, A., Beier P.R., Kruse, P.D., Abbott, S.T., Dunster, J.N., and Brescianini, R.F., 2002. Limbunya, Northern Territory (2nd edition). 1:250 000 geological map series explanatory notes, SE 52-07. Northern Territory Geological Survey, Darwin.

Glass, L. M., 2002. Petrogenesis and geochronology of the northern Australian Kalkarinji low-Ti Continental Flood Basalt Province. Unpublished PhD Thesis, Australian National University, Canberra.

Gole, M. J. and Ashley, J. 2003. Antrim Project combined annual report for ELs 22642-22644 and 22749-22751 for the period up to 31/12/2002. Northern Territory Geological Survey, Open File Company Report.