

**GEOCHEMICAL ORIENTATION SOIL-LAG  
TRAVERSE AT THE EDWARDS CREEK  
BASE-METAL PROSPECT,  
STRANGWAYS RANGE,  
NORTHERN TERRITORY**

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This report presents outcomes of research by CRC LEME for Gutnick Resources NL as support for their search for Witwatersrand style Au deposits in the Ngalia and Amadeus basins, Northern Territory. The Project was commenced in April 1999, concluded in 2000 and was led by Dr I.D.M. Robertson. Agreement was reached between Gutnick Resources NL and CRC LEME on 19th December 2001 to release CRC LEME Reports 144R, 148R and 149R into the public domain through the CRC LEME Open File Report series. It is intended that publication of the reports will be an additional factor in transferring technology to aid the Australian mineral industry.

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## **PREFACE AND EXECUTIVE SUMMARY**

This study is part of a collaborative research initiative between Gutnick Resources N.L. and CRC LEME. The CRC provided a geochemical and regolith research background to a major exploration program being undertaken by Gutnick Resources N.L. for Witwatersrand-style gold mineralization in the sediments of the Ngalia and Amadeus Basins. The objectives were to map and characterise the regolith within the Amadeus and Ngalia basins at reconnaissance and local scales and to understand its development. Then, to translate this into sampling and exploration strategies. This report covers an orientation study around a small base metal deposit to investigate dispersion of a large range of pathfinder elements into the lag and soil, contributing to more informed decisions on exploration techniques.

At the Edwards Creek Prospect, Au-poor base-metal mineralisation consists of disseminated sphalerite, galena, chalcopyrite and pyrite in marble, enveloped in gneisses of the Strangways Metamorphic Complex. Soil-lag samples were collected along a traverse across the gossan. Seven size fractions for each sample were analysed for a broad range of elements by ICP. Silver, As, Bi, Cu, Mn, Mo, Pb, S, Sb, Se, Sn, W and Zn indicate the mineralised zone. The best responses for Ag, Bi, Cu, Mn, Mo, Pb, S, Sb and Se are in the 6-2 mm fraction, Sn and W are best displayed 1-0.25 mm fractions and Au by the <75  $\mu\text{m}$  fraction. The responses for As and Zn are similar in all fractions. The preferred sampling medium is the 6-2mm fraction of the soil, although the <6 mm fraction is a satisfactory compromise which would simplify sample preparation.

Weathering is slight and dispersion is largely mechanical. Dispersion from the mineralisation is limited, many elements displaying single-point anomalies. A few, notably Cu, Pb and Zn show a slight rise in concentrations in samples adjacent to the single maximum. Dispersions are 40-50 m wide at best and in some cases substantially less. This emphasises the need for closely-spaced samples to detect small targets in such an erosional terrain.

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Project Leader