

CRC LEME OPEN FILE REPORT 218

Gold distribution, regolith and groundwater characteristics at the Mt Joel Prospect, Western Australia

Preface

The principal objective of CRC LEME-AMIRA Project 504, *Supergene mobilization of gold and other elements in the Yilgarn Craton*, is to determine the mechanisms of supergene/secondary depletion, enrichment and dispersion of Au and other elements, so as to improve selection of drilling targets and further optimize interpretation of geochemical data. This report documents the investigations undertaken at Mt Joel.

The Mt Joel prospect is situated in the northern part of the Yilgarn Craton, NW of Bronzewing. It is an area where the occurrence of substantial supergene mobilization of Au is uncertain. Mt Joel consists of a number of mineralized targets in an area of relatively homogeneous geology, with highly variable regolith; in particular, the alluvial cover varies in thickness from less than one metre to greater than 80 m. For these reasons, this area provides a valuable study site for enhancing our knowledge of regional differences affecting the mobility of Au. Developing methods for the recognition and understanding of any such mobilization of Au, and potential pathfinder elements, is of major importance. This report details methods for estimating the degree of mobilization and understanding the processes by which it occurs. Detailed work is focussed on two areas of the deposit, which show contrasting regolith characteristics with respect to the thickness of alluvial cover.