

CRC LEME OPEN FILE REPORT 213

KM Scott and KG McQueen

February 2008

SUMMARY

Study of oxidised and supergene Cu-Au mineralisation at New Cobar, provided by integrating results from 164 drill hole samples with data previously obtained from the open pit study (Scott and McQueen, 2000), has revealed the nature of the dispersion of Au and its pathfinder elements. Weathering occurred at two different stages:- initially under acidic sulfate conditions to form secondary sulfides, sulfates, alunite-jarosite minerals and Fe- and Mn- oxides in a mature gossan profile and then under more arid conditions. This latter period, when Cl-rich fluids overprinted pre-existing minerals, is also believed to be largely responsible for the loss of Ag relative to Au up to about 40 m depth and then loss of Au in the top 15 m of the gossanous profile. Some elements, like Zn and Cd, are strongly depleted as soon as the sulfides commenced weathering and others, like Mo and W, appear to be concentrated at about 100-110 m depth in the supergene sulfide zone and Se at 30-40 m depth within the gossanous Fe oxides. Copper contents vary more systematically up the profile but even in this case abundance drop by almost an order of magnitude above 65 m.

Examination of the Pb contents in near-surface samples suggests that elevated Pb (>300 ppm) may occur up to 70 m south from the mineralisation. The presence of an extensive Pb anomaly about the economic mineralisation may be useful during surficial regional exploration.