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A Comparison of Regional Plant Biogeochemical and Soil Geochemical
Expressions of Buried Mineralization in the Olympic Dam Region,
South Australia

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Abstract

Biogeochemical methods can be employed to assist in detecting buried ore deposits. Plant roots can penetrate the bedrock and therefore, as a result of testing their leaves can give a good indication of the buried mineralization in an area. The aim of this study was to support or challenge the findings from the study that was conducted by Wang et al. (1999). It also aimed to compare the biogeochemistry results with traditional soil analysis. Mulga (*Acacia aneura*) and Pearl Bluebush (*Maireana sedifolia*) leaves as well as soil samples were collected and analysed from eighteen different locations at the Olympic Dam (Roxby Downs) region.. The analysis of these plants and soils detected a range of elements including the ones that were relevant to this study (mercury, copper and gold). The vegetation, bulk analysis and partial leach results of this study did not show a similar pattern of mercury, copper and gold concentrations to the results from the Wang et al. (1999) study. Giving this information, this study cannot support the findings from the Wang et al. (1999) study. An important finding of this study was that sample VEG 007 recorded the highest concentrations in the majority of the elements and as a result the area may require further investigation. In addition, vegetation and soil samples that were taken from approximately 5 km south, approximately 10 km south and approximately 15 km north east of Olympic Dam region showed some promising results and as a result these areas may require further investigation. This study showed that biogeochemistry may be useful in locating potential mineral deposits.

Keywords: Biogeochemistry, Mulga (*Acacia aneura*), Pearl Bluebush (*Maireana sedifolia*), Olympic Dam