

CAMBRO-ORDOVICIAN MAGMATISM AND DEFORMATION AT THE EASTERN MARGIN OF GONDWANA, SOUTH AUSTRALIA: INSIGHTS INTO TECTONIC PROCESSES AND MINERAL POTENTIAL

MINEX CRC PROGRAM 3

National Drilling Initiative

PHD PROJECT

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RESEARCH PROJECT

The Cambrian-Ordovician Delamerian Orogen in South Australia comprises the Adelaide Fold Belt and its extension beneath the Murray Basin. The Delamerian Orogen marks the transition along the eastern margin of Proterozoic Australia from a passive to an active continental margin. The region is part of a major GSSA work program allied within MinEx CRC. The region has potential for a range of mineral systems including porphyry, epithermal, orogenic Au, massive sulphide amongst others.

This project will investigate the timing and chemical affinities of selected magmatic intrusion and related hydrothermal alteration systems within the Delamerian Orogen. Through the 40AR/39AR method, attempts will be made to date regional deformation fabrics at key localities. Processes related to tectonic mode switches and broader structural controls on magmatism will also be investigated in relation to the selected intrusions.

The broader aim is to develop a precise chrono-stratigraphic framework for intrusion and deformation in the Delamerian Orogen to enable regional comparison with other Gondwanan tectonic systems including the Koonenberry Belt and Ross Orogen (Antarctica) and within which future MinEx CRC drilling campaign results can be understood.