TECTONICS SYSTEMS AND IOCG MINERALISATION IN THE GAWLER CRATON

MINEX CRC PROGRAM 3

National Drilling Initiative

PHD PROJECT

University of Adelaide

PRIMARY SUPERVISOR

Prof. Martin Hand
e: martin.hand@adelaide.edu.au

CO-SUPERVISORS

Assoc. Prof. Justin Payne, Dr. Laura Morrissey (UniSA), Rian Dutch (GSSA)

PARTICIPATING ORGANISATIONS

THE UNIVERSITY of ADELAIDE

University of South Australia

Government of South Australia
Department for Energy and Mining

RESEARCH PROJECT

The aims of this project are to explore the tectonic architecture of the northern and central/western Gawler Craton during the late Palaeoproterozoic and early Mesoproterozoic. This period encompasses the lead-in to the development of IOCG and Au-only mineral systems and the subsequent tectonic evolution.

This project ties in with the NDI aims of better constraining the tectonic architecture of the Gawler Craton, and adding value to existing drill core samples in regions of no outcrop.

Specifically, the project has four parts:

1) The Cairn Hill Fe deposit as a deeper crustal expression of the Early Mesoproterozoic IOCG system that may provide addition constraints on crustal and mantle reservoirs for IOCG mineralisation.
2) Testing tectonic models for Early Mesoproterozoic extension in the central Gawler Craton, using metamorphic and geochronological analysis.
3) Testing whether the northern Gawler Craton formed through extension and rifting of the North Australian Craton. If this hypothesis is correct it is likely to have exerted a significant influence on the tectonic architecture of later mineral systems.
4) Age(s), reactivation and tectonic significance of the giant shear systems in southern Australia and their potential role in concentration or preserving mineral deposits, particularly Au deposits.