

Identifying and characterising
potential pathfinder elements to IOCG
style mineralisation on Central Yorke
Peninsula

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TITLE

Identifying and characterising potential pathfinder elements to IOCG style mineralisation on Central-Northern Yorke Peninsula

RUNNING TITLE

Identifying IOCG pathfinder elements: Yorke Peninsula

ABSTRACT

The central Yorke Peninsula in the southern Gawler Craton, South Australia forms the Southern extent of the Olympic Copper-Gold Province. The area is known for its iron oxide-copper-gold (IOCG) style mineralisation, yet the pathfinder elements associated with mineralisation and the processes and/or lithological controls effecting the distribution of potential pathfinder elements within mineral phases are poorly understood. Analyses of whole rock geochemical data from basement lithologies identified Au, As, Ag, Bi, Ce, Cu, La, Mo, S and W as pathfinder elements towards potential (IOCG) mineralisation in the area. Mineral phases that preserved these trace element signatures were investigated with SEM back scatter analysis and Laser-Ablation Inductively-Coupled Mass Spectroscopy (LA-ICP-MS) analysis. SEM analyses determined LREE's are host within bastnäsite, which has a documented occurrence across Yorke Peninsula. Sulphide phases were identified to host elements Ag, As, Au, Bi, Cu, Mo and S. Within pyrite, pathfinder elements are preferentially hosted within inclusion rich areas. Chalcopyrite was determined to host concentrations of Au. A prospectivity index was created for central Yorke Peninsula by combining identified pathfinder elements to create an IOCG index for representative samples. The index highlights an area proximal to the township of Alford as a potential hotspot for mineralisation/exploration within central Yorke Peninsula.

KEYWORDS

Iron oxide-copper-gold (IOCG), Whole rock geochemistry, Geochemical vectors, Mineral hosts, Pathfinder elements, Central Yorke Peninsula

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