

Mineral potential mapping for pre-competitive data delivery in NSW Zone 54

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TS6 - 3.1.2 Making better exploration decisions through an integrated geoscience approach, Hall E2, October 18, 2018, 9:30 AM - 11:00 AM

Biography:

Arianne is a Senior GIS Analyst at Kenex Ltd in New Zealand and her expertise is in GIS, and the application of spatial statistics and computational techniques for mineral exploration targeting and resource classification. She has more than 10 years previous experience as an academic working on research problems for the mineral exploration industry and government organisations. She holds an Honours degree in Computer Science and a PhD in Economic Geology, both from James Cook University in Australia, and has previously held research positions at the University of Western Australia and James Cook University.

A collaborative project between the Geological Survey of New South Wales (GSNSW) and Kenex Pty Ltd was undertaken to evaluate the mineral potential of MGA Zone 54 in NSW as a continuation of GSNSW's ongoing program of mineral potential mapping across the state, which commenced in the southern New England Orogen in 2017. The results of the Zone 54 project will deliver a pre-competitive geoscience data package that will be used to guide mineral exploration and land-use planning in the region.

Prior to modelling, the available datasets were reviewed and updated by GSNSW to ensure accuracy and that relevant attribute information was present. Using a mineral systems approach, models were developed for Broken Hill Type Pb-Zn-Ag and IOCG mineralisation in the Curnamona Province, and Orogenic Au and VHMS mineralisation in the Delamerian-Thomson Orogens. The component processes in the mineral system models were translated into mappable targeting criteria. The key predictive variables, mapped using geological, geochemical, and geophysical datasets, were determined using spatial statistics. Mineral potential maps were generated for each mineral system using a weights of evidence approach. Area-frequency analyses show model efficiencies between 88-99%, which indicate almost all training points used to represent evidence of the mineral system being targeted are predicted within a small area. A comprehensive spatial data table outlining the details of the mappable targeting criteria and the results of the spatial data analysis, and maps of the key predictive variables were delivered, along with the mineral potential maps as a pre-competitive dataset for public release.