Mineral potential mapping and 3D modelling of porphyry targets at the Bundarra Cu-Au project, Queensland

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ABSTRACT

The Bundarra porphyry Cu-Au project is held by Duke Exploration Ltd., and is located in central Queensland, Australia, 110 km south-west of Mackay. The project was acquired in 2017. Kenex has completed, for Duke, detailed prospectivity modelling over the project area, and 3D modelling over the highest priority targets, in order to focus drilling funds on the most prospective areas.

The project area surrounds the Cretaceous Bundarra Granodiorite, which intrudes the Permian Back Creek Group carbonaceous shales, sandstones and marls. Numerous Cu-Au occurrences are present within or near the hornfelsed contact aureole of the granodiorite. The project has been subject to significant exploration work, including mining of high grade ore shoots in the late 1800s to early 1900s, however, modern exploration has been sporadic, and without comprehensive follow-up of encouraging results.

All available historic data has been compiled and incorporated into a mineral potential map based on the porphyry mineral system. Maps representing all components of the mineral system including source, transport, deposition and trap are compared to known mineral occurrences, and the maps with the best spatial correlations have been combined to produce the mineral potential map. The results show that the Bundarra project has areas which are highly prospective for porphyry deposits. The areas of highest prospectivity have been highlighted, allowing work to focus on the targets with the greatest chance of success.

Following this work, 3D models of the two highest potential targets have been produced, incorporating field observations, historical drilling, magnetic data, and new 3D plate modelling of EM data. The 3D models will be used to inform drill targeting.