Development of an Empirical Nickel Targeting Model for Exploration in a Structurally Complex, Poly-Deformed Terrane

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The Agnew-Wiluna Belt (AWB) is one of the premier regions in the world for potential komatiitic Ni sulphide mineralisation. With extensive Ni-sulphide exploration initiated in 1975, most traditional exploration techniques have been exhausted in the AWB and more surficial targets have already been identified within this jurisdiction. An empirical qualitative and quantitative targeting approach has been developed, whereby numerous datasets are combined and weighted according to their inferred mineral systems control influence, referred to as the Targeting Index (TI). These datasets include the regional-to-local structural analysis, 3D geomodels, an extensive drillhole database, geophysical data suites and geochemical analysis. TI development ensures effective use of all available resources, at various modelling scales, to act as inputs for the generation of new target volumes and allows for future stochastic/simulation and system sensitivity modelling analysis. The TI has been developed and applied to the Leinster Camp scale area, and has been used to identify potential nickel mineralisation and subtle regional trends.