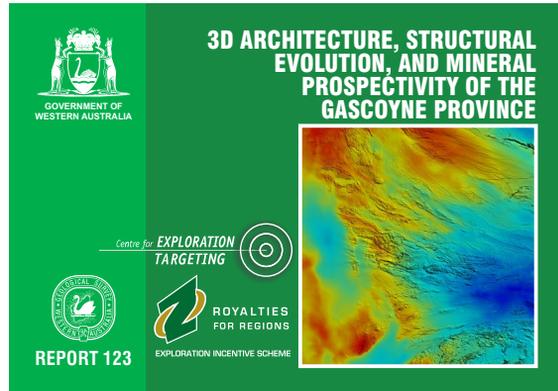


Report 123: 3D architecture, structural evolution, and mineral prospectivity of the Gascoyne Province

This report focuses on better understanding the 3D crustal structure and geological evolution of the Gascoyne Province, as well as the prospectivity of the province through a mineral-systems based prospectivity analysis. Inverse gravity and magnetic modelling of five sections across the province produced an architecture similar to that defined by the Capricorn Orogen deep crustal seismic survey. Structural interpretation of aeromagnetic data shows that, during intracontinental reactivation, there is a general tendency for the tectonic events to become geographically narrower over time, which may represent the influence of a cooling (cratonizing) lithosphere. Based on the review of the geology of the Gascoyne Province, and on our understanding of mineral systems, a prospectivity analysis was conducted. This approach considered the potential sources of metals, fluid pathways to transport those metals, and the physical and chemical traps to precipitate them. Although the results are influenced by imperfect data distributions, as well as inferences made about the local geology and the way these mineral deposits form, a relative prospectivity map was generated for each of the chosen deposit types. In general, these maps showed a strong control by crustal structure on deposit location, and that the central part of the Gascoyne Province is generally more prospective than the east, north, and south, perhaps reflecting a greater degree of intraplate reworking.

The USB contains:

- GSWA Report 123 (PDF)
- Appendix 2 tables with input parameters for predictor maps (PDF)
- Appendix 2 predictor maps used for mineral prospectivity analysis — provided as spatially located raster (GeoTIFF) files
- ESRI ArcGIS files including:
 - crustal-scale faults
 - geochemistry points
 - basic topographic data
- Prospectivity maps — provided as spatially located raster (GeoTIFF) files



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