# Unconformity Uranium ± Au ± PGEs

**Province**

**Potential:** **Certainty:**

| **Critical Elements (Assessment Criteria)** | **Identified** | **Not Identified, but likely** | **Unlikely** | **Weighting** |
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| **Setting** | | | | |
| • Intracratonic basin<br>• A basement of Archaean domes/inliers flanked by Palaeoproterozoic metasediments<br>▪ Flat lying oxidised late Palaeoproterozoic to Mesoproterozoic sandstones in the intracratonic basin unconformably overlying the crystalline Archaean/Palaeoproterozoic basement | | | | |
| **Source (fluid, metal, energy)** | | | | |
| Fluids<br>• Oxidised sediments in the basin (source for oxidised fluids) | | | | |

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| • Archaean/Palaeoproterozoic reduced basement (for reduced fluids)<br>*Metals*<br>• Archaean/Palaeoproterozoic igneous and metamorphic rocks (the Archaean metasediments may have contained detrital uranium in non oxidising atmosphere)<br>▪ Volcanics in the cover sandstone (For Uranium)<br>*Energy*<br>• Considerable depth of burial in intracratonic basin<br>• High radioactive decay in granitoids<br>▪ several phases of igneous intrusives | | | | |
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| **Fluid pathway** | | | | |
| • Unconformity surface<br>• Oxidised permeable sedimentary cover<br>▪ Extensional Faults and breccia zones leading up to and/or cutting the unconformity | | | | |
| **Trap (any of the following)** | | | | |
| *Structural*<br>• Unconformity surface<br>• Breccia zones and faults<br>*Chemical*<br>• Reduced pelitic rocks below the unconformity | | | | |

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| • Presence of calcareous rocks (pH) | | | | |
| **Signs of mineralising process (any of the following, but if occurrences have been identified the level of certainty increases)** | | | | |
| • Alteration extends over 1km from mineralisation and is characterised by<br>• sericite/chlorite±kaolinite±hematite<br>• sericite/chlorite±kaolinite±hematite<br>• Mg metasomatism and formation of late stage Mg-rich chlorite common<br>▪ Strong desilicification and loss of Na, Ca, $Fe^{2+}$, Th<br>▪ geochemical anomalies and radiometric anomalies<br>▪ Known occurrences of uranium ± gold | | | | |
| **Age** | | | | |
| ▪ Proterozoic age of mineralisation but presence of Archaean rocks appears to be important | | | | |
| **Preservation** | | | | |
| • Presence of unconformity indicates high probability of preservation of unconformity type uranium deposits | | | | |
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