Since the commencement of mining in the 1880s, Broken Hill has been a world-class silver–lead–zinc producing region and one of Australia’s economic keystones. Due to the region’s rich and diverse range of rock types, recent focus has shifted to exploring for high tech metals such as lithium, cobalt, rare earth elements and platinum group elements, with several new projects being developed in the area.

The Murray Basin – mineral wealth from ancient beaches

Covering over 300,000 km², the Murray Basin represents a world-class heavy mineral sands region. The heavy mineral sands deposits, containing zircon, rutile, ilmenite, and monazite grains, formed along ancient beaches around two million years ago, when a gulf of the Southern Ocean covered much of the region. These sands were eroded from granites on land and the heavy mineral-rich black sands were concentrated along the seashore by waves and currents.

The Fifield/Nyngan belt – metals from Earth’s mantle

About 400 million years ago, molten material from the mantle rose and formed a belt of ultramafic rocks approximately 600 km long in central NSW. These rocks contained nickel, scandium, cobalt, copper and platinum group elements. Weathering processes further concentrated these metals in the soil, forming rich deposits of scandium, cobalt and platinum, such as the Sunrise, Nyngan and Thuddungra deposits.

The Lachlan Orogen – more than copper and gold

The mainly Ordovician to Carboniferous Lachlan Orogen is one of the richest mineral regions in Australia, despite being relatively poorly explored. It hosts world-class gold and copper mines such as Cadia, Northparkes, Lake Cowal and CSA. It also hosts high tech metal deposits, such as the Dubbo Zirconia zirconium and rare earth element deposit and world-class cobalt-scandium deposits in the Fifield/Nyngan belt.

The New England Orogen – granites with metals

The Devonian to Triassic New England Orogen is under-explored by Australian standards. New England is best known for its gold, antimony and tin deposits. However, the orogen also has cobalt and scandium deposits around the Port Macquarie and Emmaville areas. The granites around the Emmaville area also contain elevated concentrations of rare earth elements and lithium.