**Sedimentary manganese deposits in central Australian basins**

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Sedimentary manganese oxide deposits are an important commercial source of manganese ore. This style of deposit dominates global Mn production and identified resources. Terrigenous sediment-hosted Mn deposits are present in Palaeoproterozoic rocks of the Ashburton Province (Tennant Region), Cambrian rocks of the Amadeus Basin and Cambrian–Ordovician rocks of the Georgina Basin. The construction of the Alice Springs to Darwin railway line and new port facilities in Darwin has significantly improved the development potential of manganese and other bulk commodity deposits in central Australia.

The *Bootu Creek* Mn deposits are situated in the Ashburton Province (Tennant Region) and lie within the Palaeoproterozoic lower Bootu Formation (~1730 Ma). A series of manganiferous ridges and knolls can be discontinuously traced for 24 km around an open syncline structure. These deposits were thought to be surficial in origin until drillholes targeting base metal mineralisation intersected massive manganese oxides 60 m below the surface in 1997. A conductive EM (GEOTEM) zone on the eastern limb of the syncline was subsequently drilled by Bootu Creek Resources Ltd between 2001 and 2003. Two mineable, sub-parallel manganese seams (Shekuma and Go Go), averaging 5 to 8 m in thickness and 2000 m in length, have been delineated to a depth of 60 m. Geothermal brines and surficial processes have effectively obliterated the primary mineralogy and sedimentary textures.

The *Renner Springs* Mn deposits are also situated in the Ashburton Province, but lie within the Palaeoproterozoic (~1640 Ma) Shillinglaw Formation. Four isolated manganiferous knolls lie in the same stratigraphic horizon along the western limb of a faulted syncline. These occurrences were also thought to be surficial in origin until a drillhole, targeting base metal mineralisation, intersected massive manganese oxides 60 m below the surface in 1987. Recent drilling over the area has outlined individual massive manganese seams up to 7 m in thickness and 1500 m in length.

The *Lucy Creek* and *Halfway Dam* Mn deposits are hosted by Cambrian and Ordovician sedimentary rocks of the southern Georgina Basin. At Lucy Creek, conformable massive manganese oxide outcrops and rubble, within the Tomahawk Formation, can be traced continuously over a strike length of 700 m. Shallow drilling intersected low grade (3–11% Mn) mineralisation in places to a depth of 18 m. A few other massive manganese outcrops have been identified along strike to the northeast. Similar stratabound manganese mineralisation is present within the Kelly Creek Formation at Halfway Dam.

*Wangatinya* is a remote manganese occurrence located in the Amadeus Basin within the Late Cambrian Pacoota Sandstone. Manganese oxides form a series of massive, bedding-concordant lenses, up to 7 m in thickness and 50 m in length. This prospect is essentially untested along strike and at depth. Extensive surficial alteration processes and a lack of subsurface information prevents confident interpretation of primary mineralisation genesis.