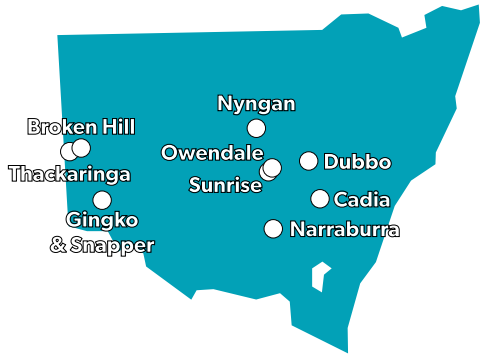
High-tech metal projects in NSW



Broken Hill

PGE
PLATINUM GROUP ELEMENTS

Close to Broken Hill, this advanced exploration project includes very high-grade platinum, palladium, other very rare PGEs including osmium, iridium and ruthenium, along with gold, nickel and copper. Mineralisation is associated with ultramafic rocks which extend for many kilometres.

Cadia

79 Au GOLD
29 Cu COPPER

Modern mining commenced in the Cadia valley in 1997, first using open cut and now, underground methods. The deposits in the Cadia valley are among the largest gold- and copper-rich, porphyry-style deposits on Earth, containing over 1100 tonnes (t) of gold and 7.8 million tonnes (Mt) of copper.

Cadia and other porphyry deposits in New South Wales, including Northparkes, also contain significant quantities of PGEs, which await a viable extraction method.

Cadia Valley control room. Image courtesy of Newcrest Mining Ltd.

Dubbo

40 Zr ZIRCONIUM
REE RARE EARTH ELEMENTS

Located at Toongi, 25 kilometres (km) south of Dubbo in central west NSW, the Dubbo project is based on one of the world's largest in-ground resources of zirconium, hafnium, niobium, yttrium and rare earth oxides. This makes it a potential strategic and alternative global supply for a range of metals required for high-tech and sustainable technologies.

Once constructed, the mine is expected to process 1 Mt of ore per year with a potential life of at least 70 years. The project will create 300–400 jobs during the construction phase and 250 permanent jobs once operating.

Ginkgo and Snapper

HMS HEAVY MINERAL SANDS

The Ginkgo and Snapper mines collectively produce about 450 000 t of ilmenite, rutile and zircon per year, making NSW a world-class producer. Several new mines are in development, including the large Atlas and Campaspe deposits, and the smaller but extremely rich West Balranald deposit.

The basin contains over 115 Mt of high-quality zircon, rutile, ilmenite, and monazite mineral grains. From these grains titanium and zirconium are routinely extracted. There is also great potential for rare earth elements and thorium.

Narraburra

40 Zr ZIRCONIUM
REE RARE EARTH ELEMENTS
3 Li LITHIUM

First discovered in 2007, Narraburra REE deposit is one of Australia's largest zirconium- and rare earth element-rich resources. It also contains significant amounts of lithium.

Nyngan

21 Sc SCANDIUM

Nyngan is set to have the world's first scandium-only mine, after receiving approval in 2017 from the NSW Government. Production of scandium oxide is expected to be approximately 38 t per year for more than 20 years.

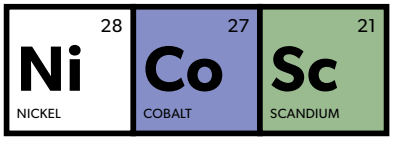
Snapper mine. Image courtesy of Cristal Mining Australia.

Exploration has also identified resources seven times greater than those for the current proposal, which could support higher production and a longer mine life.

Owendale

The Owendale project is another high-grade scandium project, which is hosted by the same deeply weathered laterite as found at the Sunrise project. If developed, the resources at Owendale could support scandium mining for up to 80 years.

Sunrise

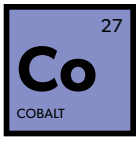


The Sunrise cobalt, nickel and scandium deposit near Condobolin is one of the highest grade scandium deposits in the world and one of the largest and highest grade undeveloped nickel and cobalt resources outside Africa.

In May 2017, the Sunrise project received NSW Government approval to produce scandium oxide as a by-product of nickel and cobalt production. It is expected that 180 t of scandium oxide and 40 000 t of nickel and cobalt will be produced per annum for 21 years.

The project is collaborating with Airbus Group Innovations to develop and produce Scalmalloy®, a patented 3D printing aluminium–scandium powder and direct manufacturing concept used in the production of high strength components for Airbus' fleet of aircraft.

Thackaringa



Recent exploration west of Broken Hill at Thackaringa has identified three pyrite deposits: Pyrite Hill, Big Hill and Railway. Together these deposits contain over 60 000 t of cobalt and there are still several km of cobalt-bearing rocks that are largely untested.

Battery ready cobalt sulphate from Thackaringa. Image courtesy of Cobalt Blue Holdings Limited.

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