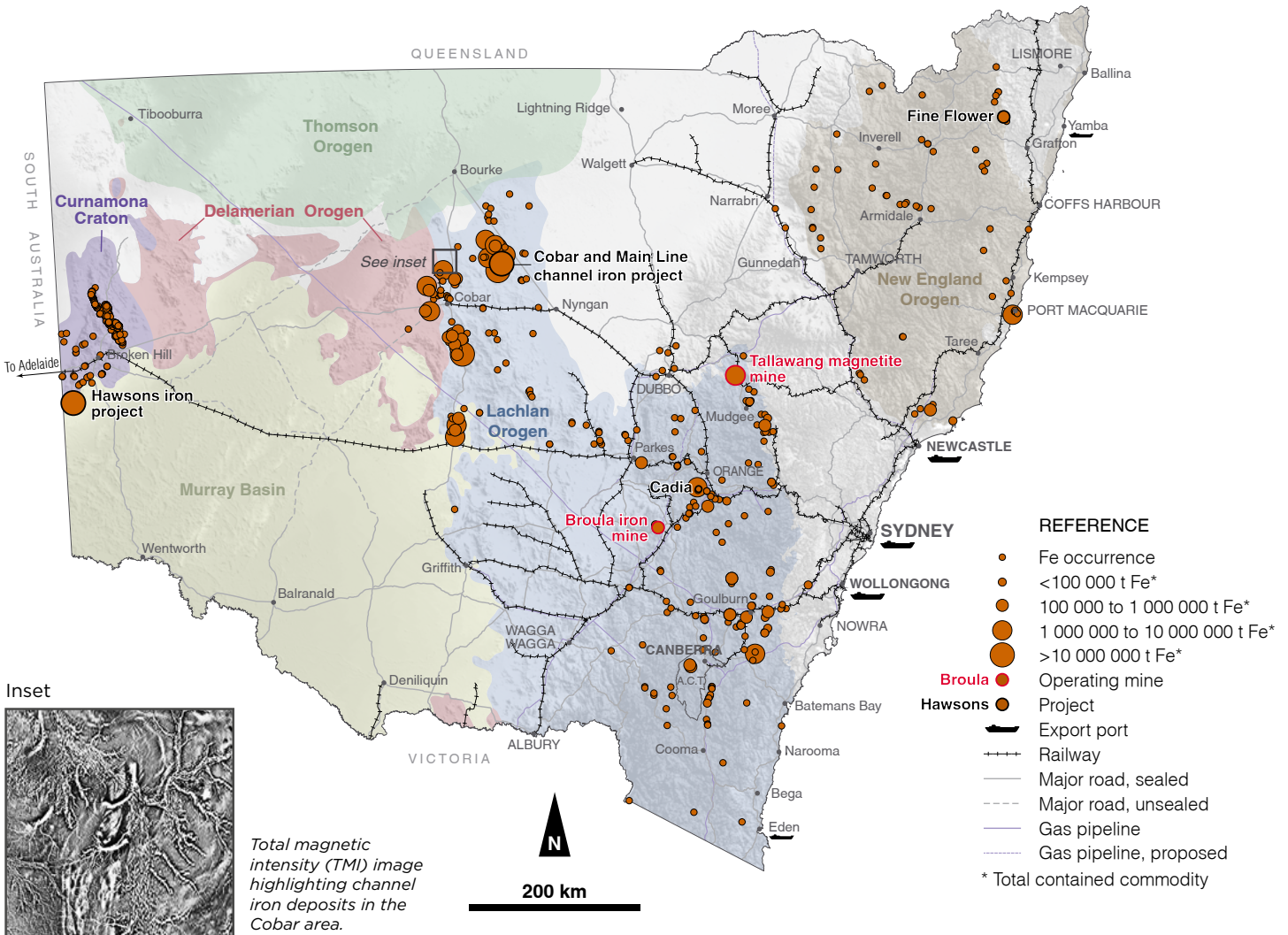


FEBRUARY 2015



Overview

- New South Wales (NSW) has a total endowment in excess of 118 Mt of Fe (past production and current resources). This includes current resources of over 115 Mt total iron oxides comprised of 1) residual: 89.1 Mt, 2) sedimentary: 19.1 Mt, 3) skarn: 9.5 Mt and 4) volcanogenic: 0.8 Mt.
- NSW has a long history of iron ore production — primarily for steelmaking, coal washing and cement manufacturing.
- There are excellent opportunities for new discoveries and further development of existing resources.

Geological setting

Economically important iron oxide minerals include magnetite Fe₃O₄, hematite, maghemite Fe₂O₃, goethite FeO(OH) and other mixtures of oxides ('ochre') for pigments.

Deposit types

Iron deposits in NSW occur across a variety of geological settings and vary considerably in age and ore formation process.

Magmatic-hydrothermal association (iron skarn)

Skarn-type iron ore with hematite and magnetite can produce high purity iron oxides. Iron skarns may be associated with parent intrusions of a wide range of compositions that have intruded carbonate host rocks. However, intermediate parental intrusions and/or iron-rich hosts are more favourable.

Lachlan Orogen

The Tallawang magnetite mine near Gulgong produces over 100 000 tpa of magnetite, mainly for coal washing. Broula iron mine has resources (measured indicated and inferred) of 1.44 Mt @ 70-80% magnetite. Fe-Cu-Au skarns at the world-class Cadia Au-Cu deposits were historically mined for iron, including during WWII.

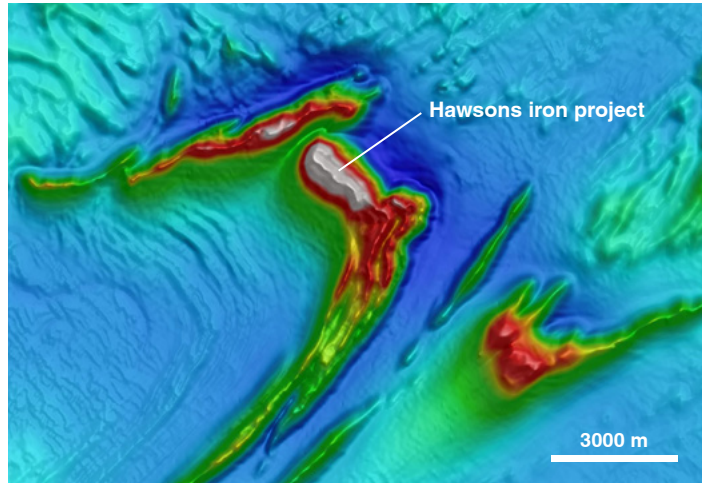
New England Orogen

Scattered skarn-related magnetite occurrences (e.g. Fine Flower) are associated with granites of the Clarence River Supersuite and Moonbi Supersuite, but few have been systematically investigated.

Sedimentary

Rapitan sedimentary iron-formations such as the Braemar Iron Formation near Broken Hill are associated with glaciogenic sediments that were deposited during major Neoproterozoic ice ages. Such deposits can be very large, with soft ore, and amenable to low-energy magnetic separation.

Hawsons iron project, south of Broken Hill, has a global resource of 1770 Mt @ 14.9% recovered DTR (Davis Tube Recovery) concentrate @ 69.7% Fe.



Magnetic image showing the Hawsons iron project (courtesy of Carpentaria Exploration Limited).

Residual or surficial

These deposits are formed from the weathering of iron-rich rocks or surficial accumulation of iron during extensive weathering. Many NSW examples are channel iron ore deposits which formed during the Tertiary (Paleogene–Neogene) from weathering of iron-rich alluvial accumulations and lateritic material. Channel iron deposits tend to be lower grade than skarns, however the presence of maghemite can allow grade beneficiation by magnetic separation.

Significant deposits include Cobar and Main Line channel iron project, with a global resource of 1068 Mt @ 11.3% Fe (magnetic recovery @ 10.9%).

Development opportunities

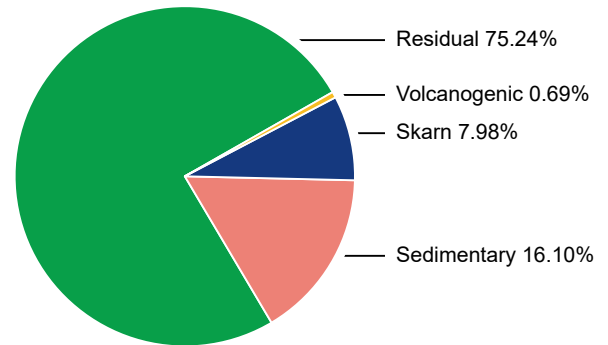
Exploration opportunities include large, sedimentary deposits similar to Hawsons iron project, hosted by Proterozoic rocks to the northeast and south of Broken Hill.

Widespread potential exists for sedimentary/residual deposits in the Cobar–Nymagee district. These deposits may be amenable to low-cost mining methods.

Skarn deposits associated with iron-rich parent intrusions and/or host rocks are potential sources of washery magnetite.

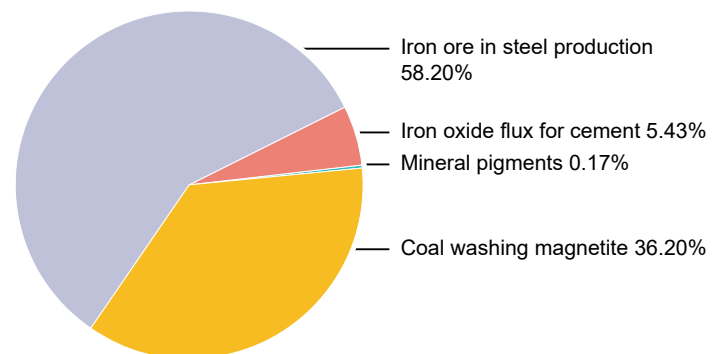
Iron endowment (past production + resources) for NSW, classified by deposit type

Total endowment >118.4 Mt



Past production and usage of iron oxide in NSW

Past production >6.5 Mt iron oxide



Tallawang magnetite mine (courtesy of Vibe Exploration P.L.).

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