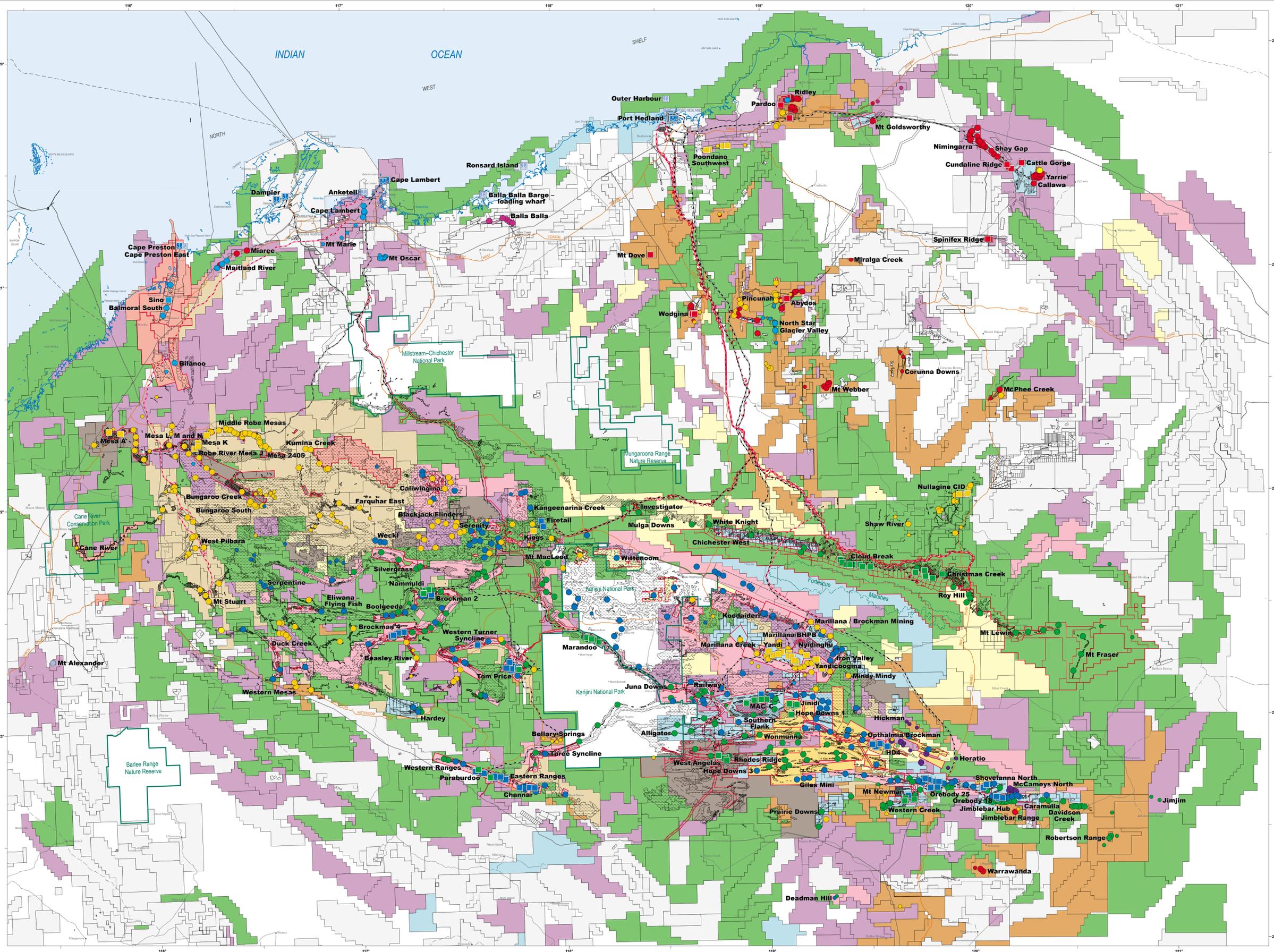


IRON ORE DEPOSITS OF THE PILBARA REGION — 2013



SITE TYPE AND STAGE OF DEVELOPMENT

(Symbol colored by iron ore mineralization style)

- Operating mine
- Proposed mine, closed mine, or mineral deposit — with a mineral resource estimate
- Prospect — without a mineral resource estimate

MINERALIZATION STYLES

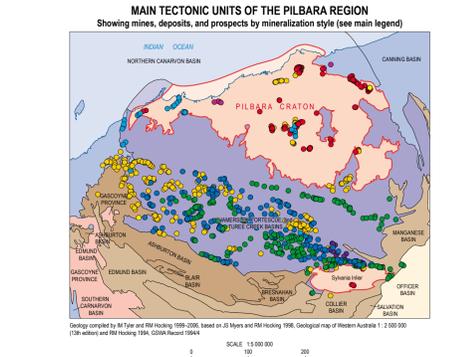
- Pacific and Intra-Pacific paleochannel mineralization or channel iron deposits (CID) of the Gneissic-Robe Pileolite and Poondano Formation. Mineralization style is Regolith-alluvial to beach placer mineralization
- Hematised conglomerate of the Neoproterozoic El Creek Formation (Turanjyah Group, Officer Basin), which formed in a near-shore environment (inset at Yarra 10) and hematitic conglomerate of the Paleoproterozoic Mount McGrath Formation (Upper Wyloo Group, Ashburton Basin). Mineralization style is 'Stratabound sedimentary - clastic-hosted'
- Magnetite-rich banded iron-formation or taconite, hosted by younger iron formations of the upper Wyloo Group of the Ashburton Basin. Mineralization style is 'Stratabound sedimentary - clastic-hosted'
- Supergene-enriched hematite and hematite-goethite mineralization hosted by banded iron-formation of the Bookpala Iron Formation or the Wongera Rhyolite (Hamersley Basin). Includes nearby scoria and detrital deposits derived from the Bookpala Iron Formation or the Wongera Rhyolite. Mineralization style is 'Sedimentary - banded iron-formation (supergene enriched)'
- Supergene-enriched hematite and hematite-goethite mineralization hosted by banded iron-formation of the Brockman Iron Formation (Hamersley Basin). Includes nearby scoria and detrital deposits derived from the Brockman Iron Formation. Mineralization style is 'Sedimentary - banded iron-formation (supergene enriched)'
- Supergene-enriched hematite and hematite-goethite mineralization hosted by banded iron-formation of the Marra Mamba Iron Formation (Hamersley Basin). Includes nearby scoria and detrital deposits derived from the Marra Mamba Iron Formation. Mineralization style is 'Sedimentary - banded iron-formation (supergene enriched)'
- Supergene-enriched hematite and hematite-goethite mineralization hosted by banded iron-formation of the Clavelville Formation and Precambrian Banded Member of the Archaean Pilbara Craton. Includes nearby scoria and detrital deposits. Mineralization style is 'Sedimentary - banded iron-formation (supergene enriched)'
- Magnetite-rich banded iron-formation or taconite. May be hosted by iron formations of the Archaean granitic-greenstone terranes, and the Brockman Iron Formation of the Neoproterozoic-Paleoproterozoic Hamersley Basin. Mineralization style is 'Sedimentary - banded iron-formation (taconite)'
- Orthomagnetic layered mafic intrusives targeted for both iron (magnetite) and V-Ti (ilmenite)

IRON ORE TENEMENTS AND MINISTERIAL RESERVES BY COMPANY GROUP

- BHP Billiton plus joint ventures (JV) with O Minerals (Ibico), Mitsui, POSCO, JFE Steel, and other Wheelabrator JV companies
- Rio Tinto plus JV with CMCC (SinoSteel) and Baosteel
- Rio Tinto plus JV with Hancock Prospecting and Wright Prospecting
- Hancock Prospecting
- Robe River Iron Associates (Rio Tinto, Mitsui, Nippon Steel, Sumitomo)
- Minerals group of companies
- Fortescue Metals Group plus JV with Consolidated Minerals, BC Iron Ltd, Cullen Resources Ltd, and Valmin Mining Ltd. Includes iron ore tenements of Fortescue Metals Group, FMC Pilbara, and FMC Chichester
- Alcoa Iron Ltd plus JV with companies such as Talison Minerals Pty Ltd, De Grey Mining Ltd, Chalco Gold Mines Ltd. Includes subsidiary companies such as Gralra Resources, Ferrarua Ltd, and Warwick Resources
- API Management Pty Ltd (50% Aquila Resources Ltd and 50% AMCI Holdings Australia Pty Ltd) with JV partners such as De Beers Australia Exploration Ltd, Red Hill Iron Ltd, Cullen Resources Pty Ltd, Gralra Resources Pty Ltd, and Hela Resources Ltd
- Other — iron ore and Mineral Iron Ore Temporary Reserves. Some of these tenements may be joint ventured with the company groups above
- Other — not known as being explored for iron ore

IRON ORE GEOLOGY

- Zones of supergene enrichment
- Channel iron deposits (CID) and pisolite (Robe Pileolite and Poondano Formation)
- Brockman Iron Formation (note: also includes some West Wall Formation)
- Marra Mamba Iron Formation
- Banded iron-formation (BIF) in granite-greenstone terrane



Major road

- Formed road
- Track
- Railway, operating
- Railway, proposed
- Gas pipeline, operating
- Gas pipeline, proposed
- Oil pipeline, operating
- Iron ore port, operating or under development
- Iron ore port, proposed

Townsite

- population 10 000 - 15 000
- 1000 - 10 000
- less than 1000
- Homestead
- Locality
- Conservation estate boundary
- Australian Nature Conservation Agency Wetland (full extent not shown), part of the proposed Fortescue Marsh management area
- State Agreement Act Boundary
- External
- Internal (Fortescue Metals Group plus JV only)

DATA DIRECTORY

Theme	Date	Organization
Topography	2006	Geological Survey of Western Australia, Department of Mines and Petroleum
Iron ore geology	1993	Geological Survey of Western Australia, Department of Mines and Petroleum
Supergene enrichment	1991	Geological Survey of Western Australia, Department of Mines and Petroleum
Mining tenements	July 2013	Mineral Titles Division, Department of Mines and Petroleum
Coastal	1/13 2013	Landgate, Department of Mines and Petroleum
Topography	2010	Landgate
Cadastral	1993	Geoscience Australia
Rail	2004-13	BHP Billiton, Hamersley Iron, Hancock Prospecting, FMC, API

Compiled by RW Cooper 2013
 Information on mines, deposits, prospects, and processing plants was extracted from the DMP Mines and Mineral Deposits (MINEX) database, viewed July 2013. www.dmp.wa.gov.au/minex/
 Cartography by M.J. Jones
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 This map is published in digital format (PDF) and is available online at www.dmp.wa.gov.au/CSRS/publications/. Copies of this map, and a related digital package, are available from:
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 Website: www.dmp.wa.gov.au/info
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 The information released for this map is Copyright 2013. For more details of the Pilbara region - 2013 (1:750 000 scale), Geological Survey of Western Australia.

Tenements are color coded by company association or general group (designated 'Other'). Sources used to determine that a tenement is targeting iron ore (and/or other minerals) include iron ore State Agreement Acts, authorisation to explore for iron ore as granted for exploration under Section 111 of the Mining Act 1978, tenement record files (including Form V), and company public environments. This includes tenements at the application stage. Inclusion of such tenements here does not imply that the tenement application will be granted. Other tenements shown in grey may also be prospective for iron ore. Color-coded iron ore tenements may also be prospective for other minerals.
 Miscellaneous locations have been added but not given their specific tenement color coding; the color coding of the underlying tenements are shown instead.
 The tenement age consists of many tenements both granted and pending applications that overlap in time and space with complex relationships. However, the tenements are depicted as they exist at 2013. Care should be taken when interpreting the color-coded tenements and, where necessary, further details should be obtained from the company's digital product or from DMP's online mining tenement database (TENEXPH).

