

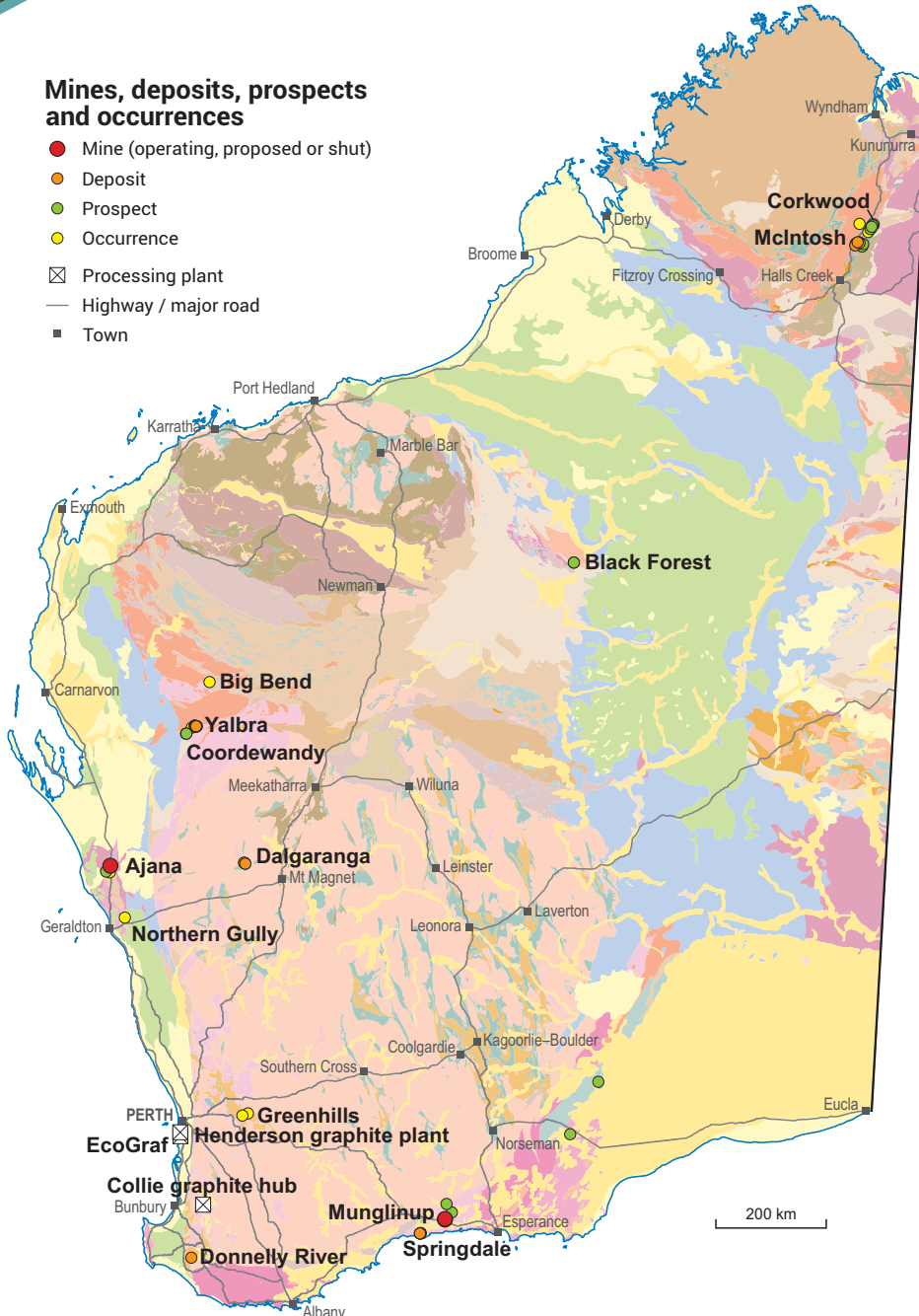
GRAPHITE

INVESTMENT OPPORTUNITIES

WORLD-CLASS RESOURCE PROVINCE | SECURE INVESTMENT LOCATION
WORLD-LEADING GEOSCIENTIFIC DATA | GLOBAL MINING SERVICES INDUSTRY

Mines, deposits, prospects and occurrences

- Mine (operating, proposed or shut)
- Deposit
- Prospect
- Occurrence
- ⊠ Processing plant
- Highway / major road
- Town



Western Australia has resources of over 3.6 Mt of contained total graphitic carbon

- Recorded historic production is 219 t of graphite, mainly from Munglinup
- The majority of occurrences are in Archean to Mesoproterozoic graphitic schists or gneisses (representing metamorphosed carbonaceous sedimentary rocks) in mostly flake and 'amorphous' varieties
- There are sporadic vein-hosted occurrences, associated with Proterozoic pegmatites and paragneisses (e.g. Ajana)

Defined resources:

- Munglinup
- McIntosh
- Springdale
- Yalbra

The Munglinup Project has recently had a definitive feasibility study completed to produce 52 ktpa of graphite concentrate over a 14-year mine life. Probable Ore Reserves for the project are 4.24 Mt at 12.8% total graphitic carbon. The graphite concentrate product is to be exported from the port of Fremantle

- A new state-of-the-art facility to produce battery-grade graphite is to be built in Kwinana. The EcoGraf plant will process natural flake graphite for lithium-ion batteries. Currently, China is the only large-scale producer of battery-grade graphite
- International Graphite Pty Ltd has been awarded \$2 million from the State Government to establish the Collie graphite hub. A definitive feasibility study to build a new micronizing and graphite foil manufacturing facility was completed in 2020

219 t
Historical
production



\$388 m*
Investment
projects



5.0%
Royalty
rate



(2020–21 financial year)

* Includes projects planned, possible, committed or under construction as of October 2021



Graphite resources ranked by contained graphite (kt)

Resources estimated according to JORC 2012

Project	Status	Owner	Resources TGC (Mt)	Av. grade TGC (%)	Contained TGC (kt)	Resource date
McIntosh	Feasibility	Hexagon Energy Materials	23.8	4.5	1059	05/04/2019
Munglinup	Feasibility	Mineral Commodities, Gold Terrace	8.0	12.2	973	08/01/2020
Springdale	Exploration	Comet Resources	15.6	6.0	936	06/12/2018
Yalbra	Exploration	Buxton Resources	4.0	16.2	650	24/10/2014
TOTAL			51.4		3619	

Resource estimates have been rounded

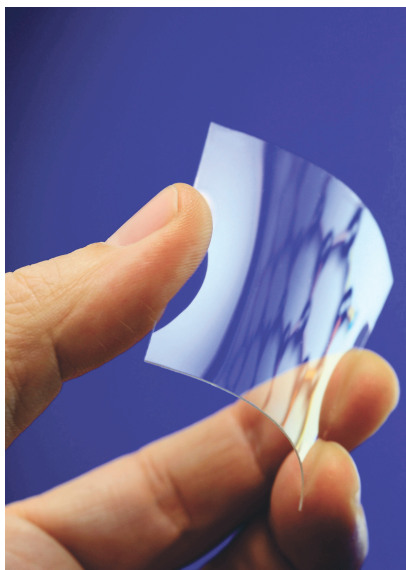
Abbreviation: TGC, total graphitic carbon

Graphite prospectivity of Western Australia

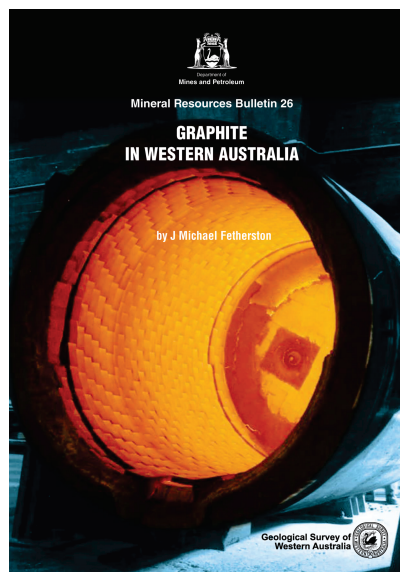
- Flake and amorphous graphite in regionally metamorphosed metasedimentary rocks of Archean and Proterozoic terranes (e.g. the majority of Western Australia's graphite deposits, including Yalbra, McIntosh and Munglinup)
- Flake graphite deposits hosted in veins associated with pegmatites and paragneisses in Proterozoic terranes (e.g. Ajana region, Northampton Inlier)
- Disseminated flake graphite hosted in weathered pegmatites (e.g. Katanning)

Properties and uses

- Graphite is a naturally occurring crystalline form of carbon
- It does not react with other materials and is an excellent conductor of electricity and heat
- Applications and uses include pencils, lubricants, brake lining and clutches, lithium-ion batteries, fuel cells, vanadium redox-flow batteries, and in the aerospace industry
- Medium- to coarse-grained graphite is particularly useful in batteries, when >150 microns long



Graphene, termed 'the world's next wonder material', comprises a series of one-atom thick sheets of graphite. © gettyimages



Graphite prospectivity in Western Australia is outlined in the DMIRS publication **Graphite in Western Australia**, available as a free downloadable PDF from the DMIRS bookshop (www.dmirs.wa.gov.au/ebookshop)

For more information



Geological Survey of
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www.dmirs.wa.gov.au/gswa

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