

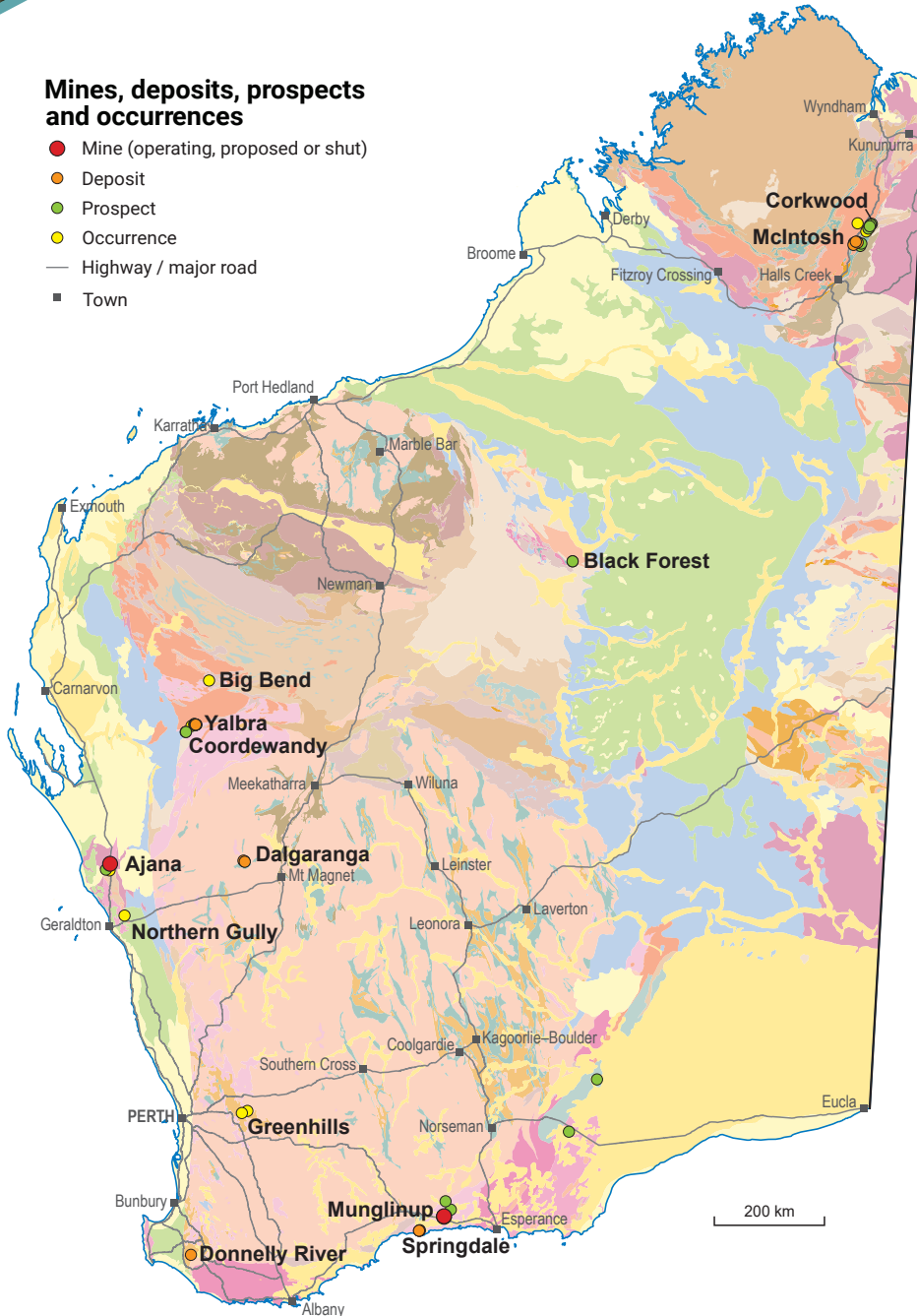
# GRAPHITE

## 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
- 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)
- 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

#### 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.

219 t  
Historical  
Production



\$388 m\*  
Investment  
projects



5.0%  
Royalty  
rate



(2019–20 financial year)

\* Includes projects planned, possible, committed or under construction as of September 2020



## 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
<b>TOTAL</b>			<b>51.4</b>		<b>3619</b>	

Abbreviation: TGC, total graphitic carbon  
Resource estimates have been rounded

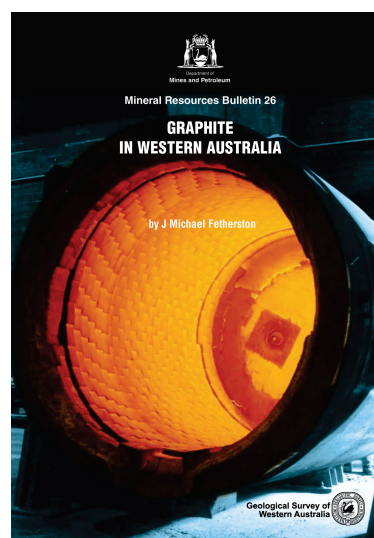
### Graphite prospectivity of Western Australia

- 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
- Graphite from the Yalbra deposit generally ranges from 100 to 500 microns long

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](http://www.dmirs.wa.gov.au/ebookshop)).



#### For more information



Geological Survey of  
Western Australia

[www.dmirs.wa.gov.au/gswa](http://www.dmirs.wa.gov.au/gswa)

**MINEDEX**

[www.dmirs.wa.gov.au/minedex](http://www.dmirs.wa.gov.au/minedex)

**GeoVIEW.WA**

[www.dmirs.wa.gov.au/geoview](http://www.dmirs.wa.gov.au/geoview)

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Geological Survey of  
Western Australia

