

WESTERN AUSTRALIA



World's #1 diversified mining and energy province

- Low carbon relevance:
 - Natural gas enabler
 - gas to fertiliser project
 - hydrogen, CCS projects
 - nickel, battery metals
- LNG, iron ore, gold, bauxite, heavy mineral sands, etc.

Capital city Perth

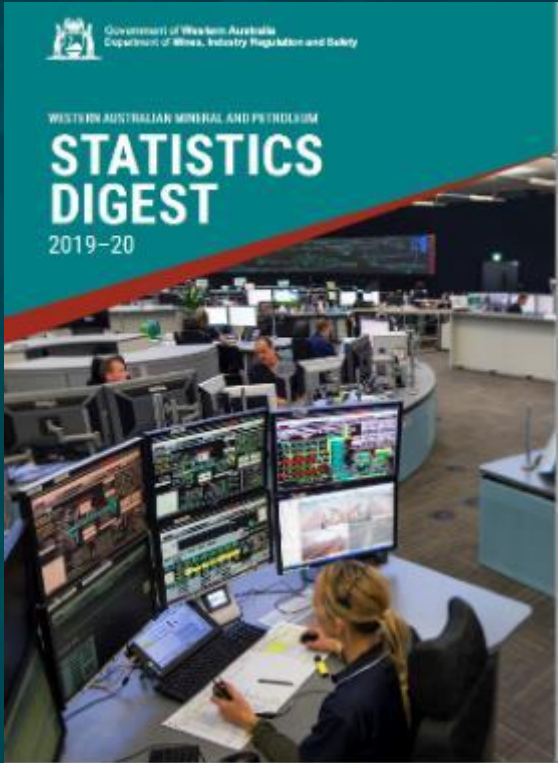
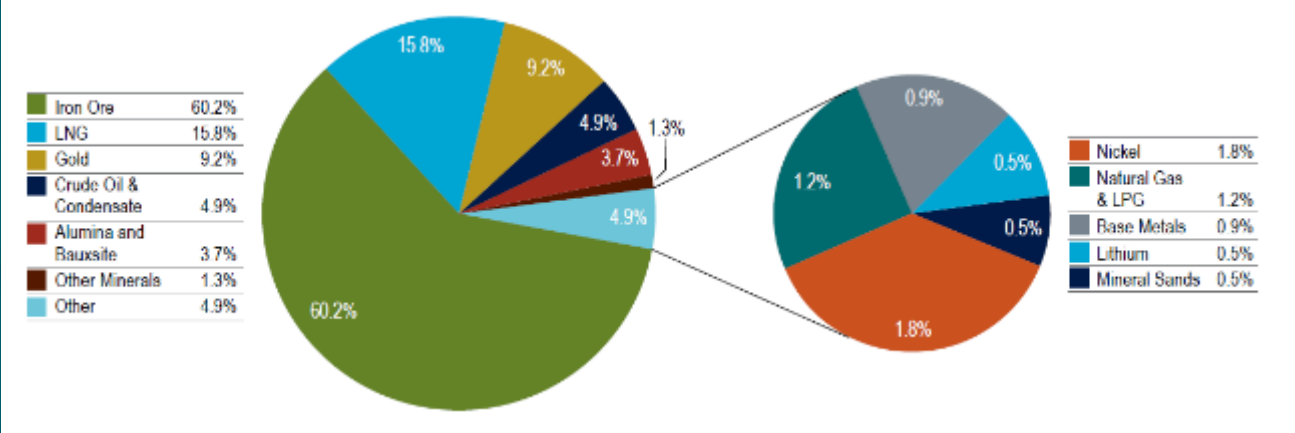
- Centre for scientific and technological innovation.
- Engineering expertise and services.



Jeff Haworth
Executive Director
Geological Survey and
Resource Strategy

WA Department of Mines, Industry Regulation and Safety at AACC 2021

WA Resources Sales 2019-20



Financial year 2019–20 mineral and petroleum summary:
\$172 Billion

Natural Gas Enabling Renewable Energy

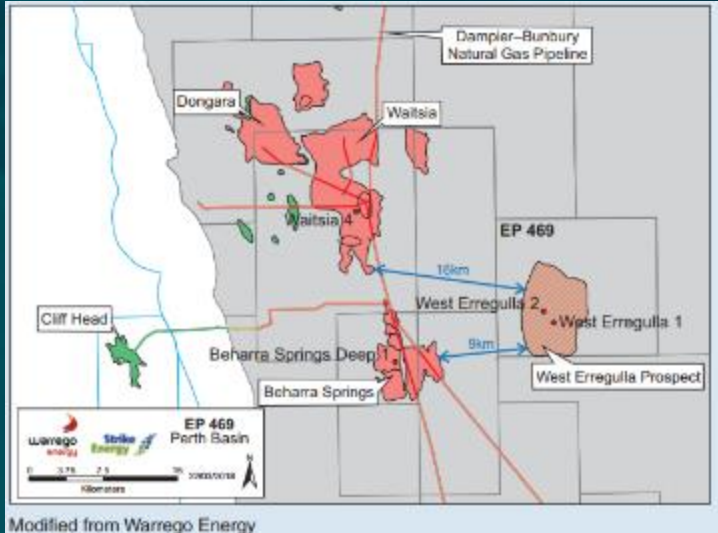


Perth Basin

- Waitsia –Biggest WA onshore gas field, record flow 90 MMSCFD (Mitsui).
- West Erregulla 2 –At 5100 m is Australia’s deepest well and with deepest hydrocarbons. UREA plant proposal for Geraldton
- Beharra Springs Deep 1 – December 2019 flow announced of up to 46 MMSCD (Beach Energy).

Canning Basin

- Tight gas sand play – Black Mountain Oil and Gas (Bennett Resources) Asgard-Valhalla ~74TCF



Gas to Fertiliser project



Strike Energy is advancing a development opportunity to produce low-cost urea.

- Feasibility studies (with TechnipFMC) completed on a national scale 1.4 mtpa urea facility with a blended input of some blue and green hydrogen.
- Urea production will consume the majority of carbon from the gas stream and will enable partial chemical sequestration of the project's carbon output.
- Total development is estimated to cost A\$2.3 billion.
- Benefits of the project include
 - value adding to a natural resource
 - stimulation of the Mid-West economy
 - lowering one of the main cost inputs into Australian farms
 - less dependence on fertiliser imports from overseas, and
 - is a carbon conscious development.

Carbon Capture and Storage



- A Western Australia CO₂ geological storage atlas has been developed. It covers the main onshore basins.
- South West Hub is a government and industry partnership researching an economically and environmentally sustainable low carbon future for the South West region of Western Australia. A number of stratigraphic wells were drilled in the vicinity of Harvey and full field simulation models for CO₂ containment were developed.
- Gorgon CO₂ injection project on Barrow Island is a JV operated by Chevron, and is one of the world's largest commercial-scale CO₂ injection projects.
- Mining companies are also looking at the possibility of carbon storage in tailings dams

Hydrogen in WA



- Hydrogen is a key part of global decarbonisation
- National Hydrogen Strategy
- Sources include brown coal, methane and water
- Brown coal and methane would need CCS to be green
- WA has plenty of sun and wind for power
- Announcements made on developing hydrogen at Denham and Kununarra
- Strategic Focus areas



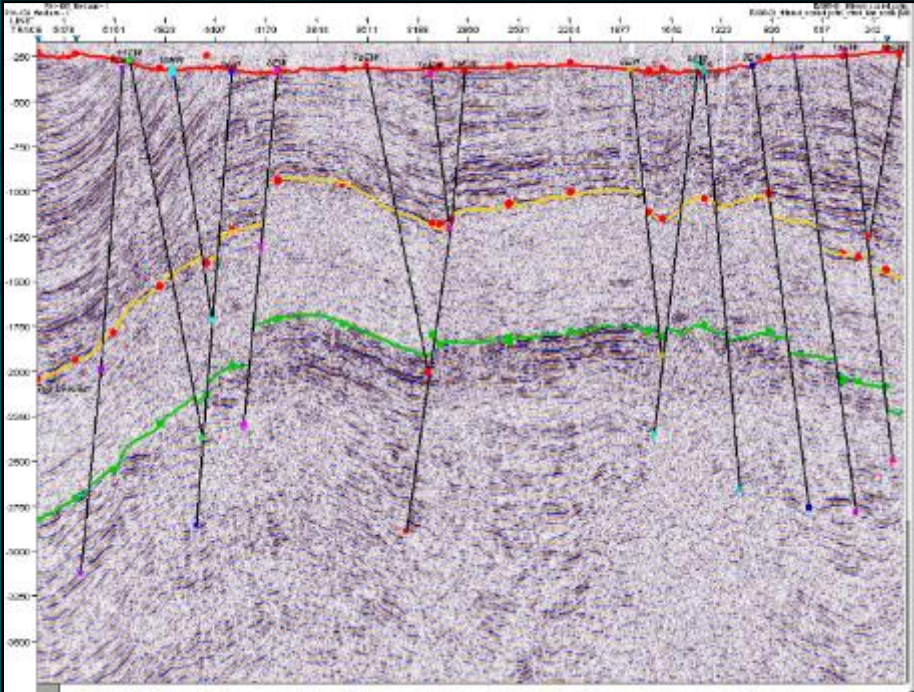
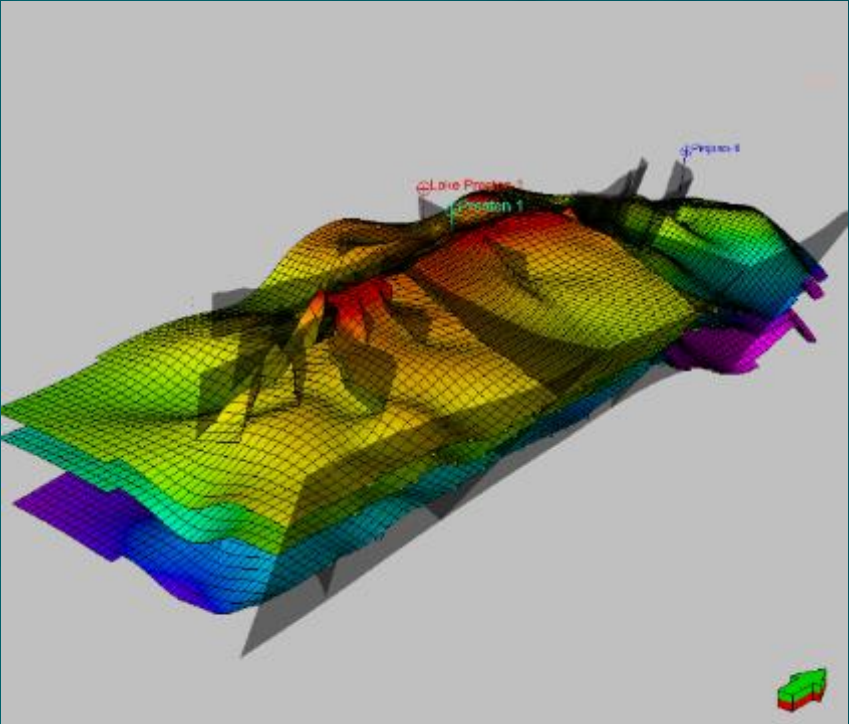
1. 
Export

2. 
Remote applications

3. 
Hydrogen blending in natural gas networks

4. 
Transport

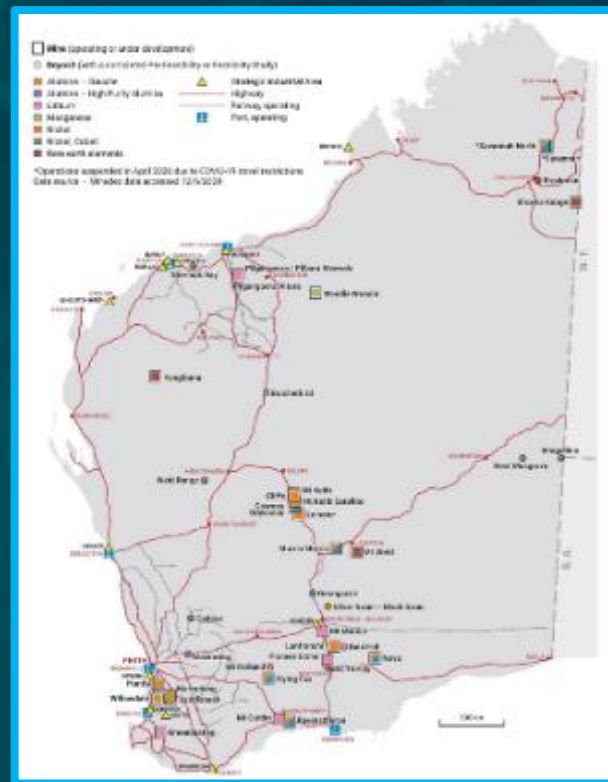
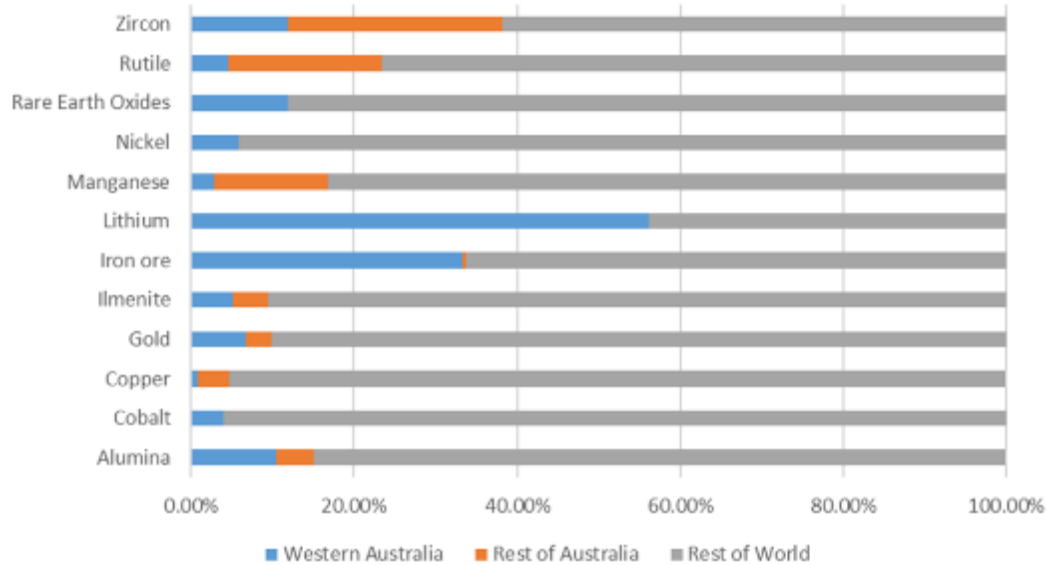
New hydrogen storage project



What does Western Australia offer?



Western Australia's Global Production Share 2019



Rare Earth Elements



- World's 3rd largest producer of Rare Earth Elements
- Two operating mines: Mt Weld and Browns Range
- Three projects in advanced exploration, development or construction:
 - Yangibana 21Mt @ 1.12% TREO
 - Brockman 41Mt @ 0.21% TREO
 - Cummins Range 13Mt @ 1.13% TREO



Downstream Processing



Credit: Greenbushes Lithium Operation

Company	Product	Status
Tianqi Lithium Australia	Lithium	Commissioning
Abermarle Corporation	Lithium	Construction
Covalent Lithium	Lithium	Feasibility
Northern Minerals	Rare Earth Carbonates	Pilot
Lynas Corporation *	REE	Feasibility
FYI Resources*	High Purita Alumina	Feasibility
King River Resources	HPA, V, Ti, Fe	Feasibility
NeoMetals Ltd	V, Ti, and Fe	Feasibility
Australian Vanadium*	V, Ti, and Fe	Feasibility
Technology Metals Australia	V, Ti, and Fe	Feasibility
Ecograf*	Spherical Graphite	Feasibility
Lepidico Ltd	Li-Carbonate	Pilot
Lithium Australia	Li-Hydroxide	Proposal
NeoMetals Ltd	Li-Titanite	Feasibility
Ardea Resources	Co, Ni	Feasibility
BHP Nickel West	Ni	Construction

* Government Lead Agency Support or Major Project Status

Further Information



- Generic information may be obtained from the Department's website at any time.
- Information regarding critical minerals is available on our website as well as Geoscience Australia and DISER
- Hydrogen information is available from the Department of Jobs, Tourism, Science and Innovation.



Website: www.dmirs.wa.gov.au