

AUSTRALIA MINERALS

REALISE THE OPPORTUNITY

Government geoscience: driving strategic resources investment in Australia

Allison Britt

Director Minerals Resources Advice and Promotion
Geoscience Australia



Join at
Slido.com
#3563 140



Australian Government
Geoscience Australia

Australia Day Investment Seminar

2:00 pm

Government geoscience: driving strategic resources investment in Australia

2:06: Geoscience Australia

2:19: South Australia

2:27: New South Wales

2:35: Q&A

2:40: Networking

2:50 pm

Critical minerals: from discovery to downstream

3:02: Tasmania

3:10: Victoria

3:18: Queensland

3:26: Western Australia

3:32: Northern Territory

3:40: Q&A

3:50: Networking

4:00 pm

Minerals investment opportunities in Australia

4:07: Investigator Silver

4:16: Godolphin Resources

4:25: Southern Cross Gold

4:34: ABx Group

4:43: Arafura Rare Earths

4:52: Empire Metals

5:01: True North Copper

5:10: Close

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Australian Government
Geoscience Australia



Queensland
Government



Government
of South Australia



Tasmanian
Government



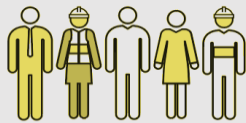
Department of Mines,
Petroleum and Exploration



A strong resources sector is important to Australia



>340 operating mines in 2025



~300k direct employment,
1.1m indirect



\$303b exports in 2024–25
(47% of total)



9.3% GDP
Financial Year 2024–25

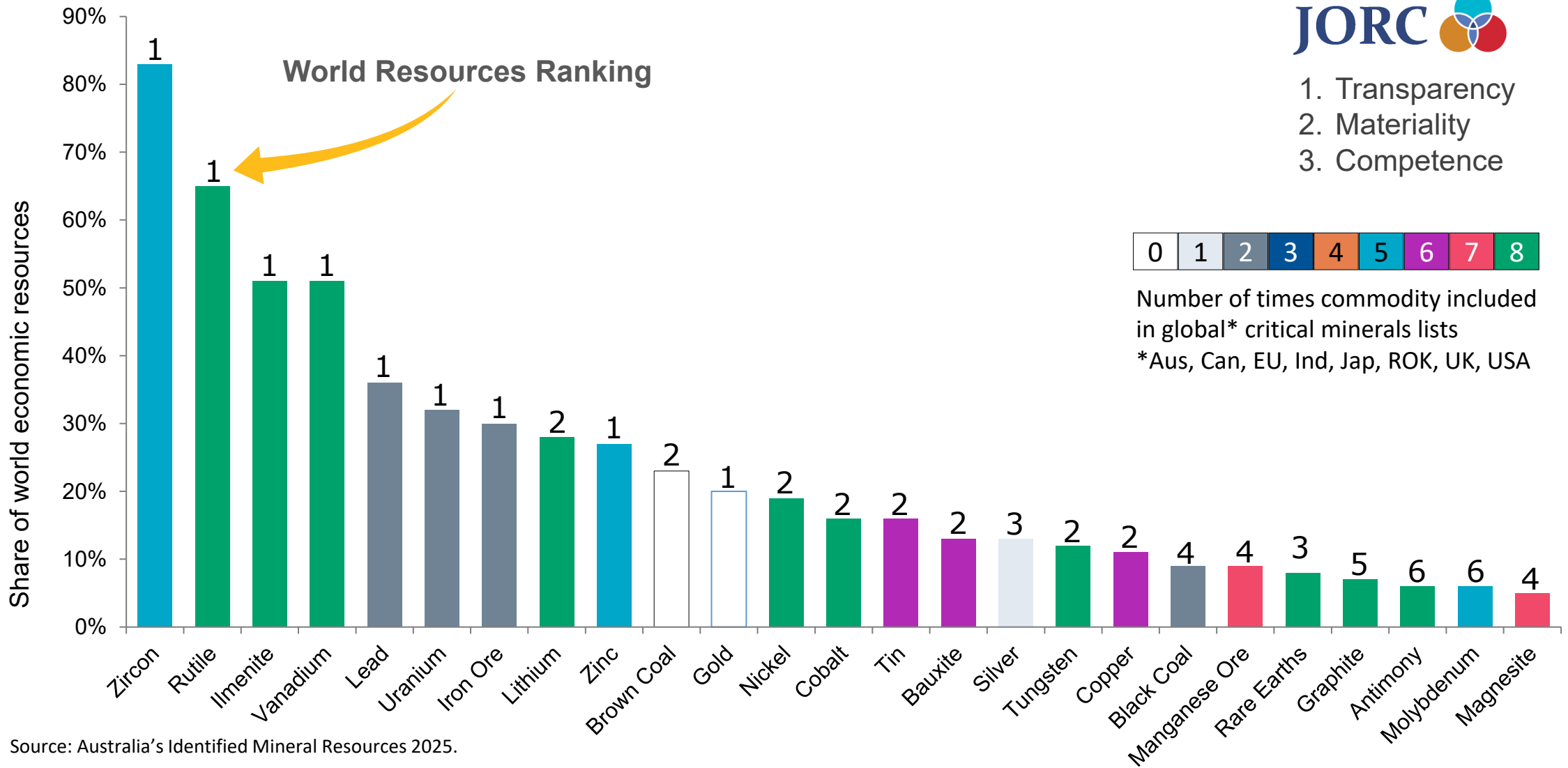
Top 5 world production

#1	Fe	Li	Ti rutile	
#2	Al	Pb	Zr	
#3	Au	Mn	REE	Zn
#4	Co	U	Ti ilmenite	
#5	C coal			

Australia's mineral resources wealth



1. Transparency
2. Materiality
3. Competence

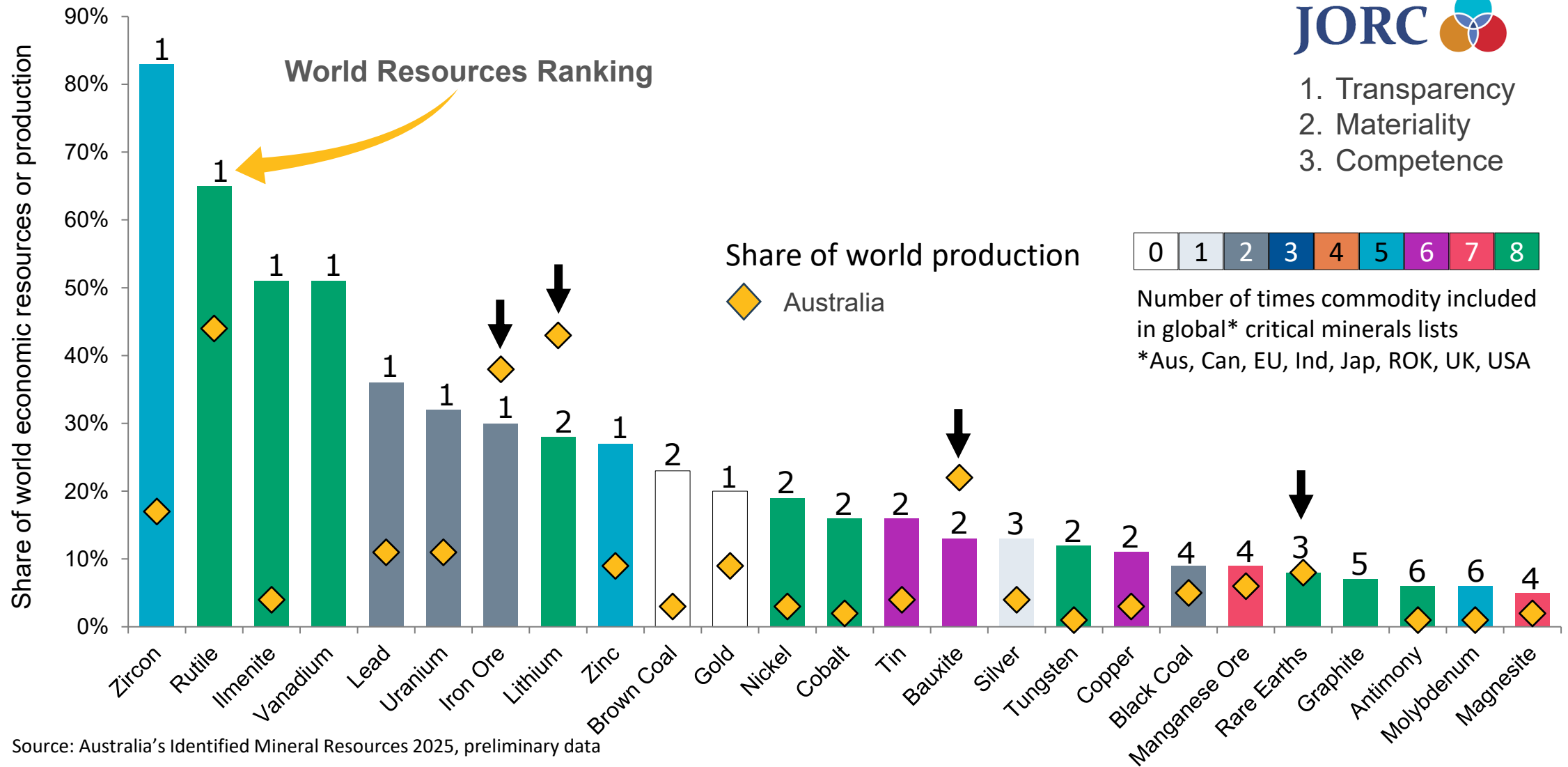


Source: Australia's Identified Mineral Resources 2025.

Australia's mineral resources wealth and production

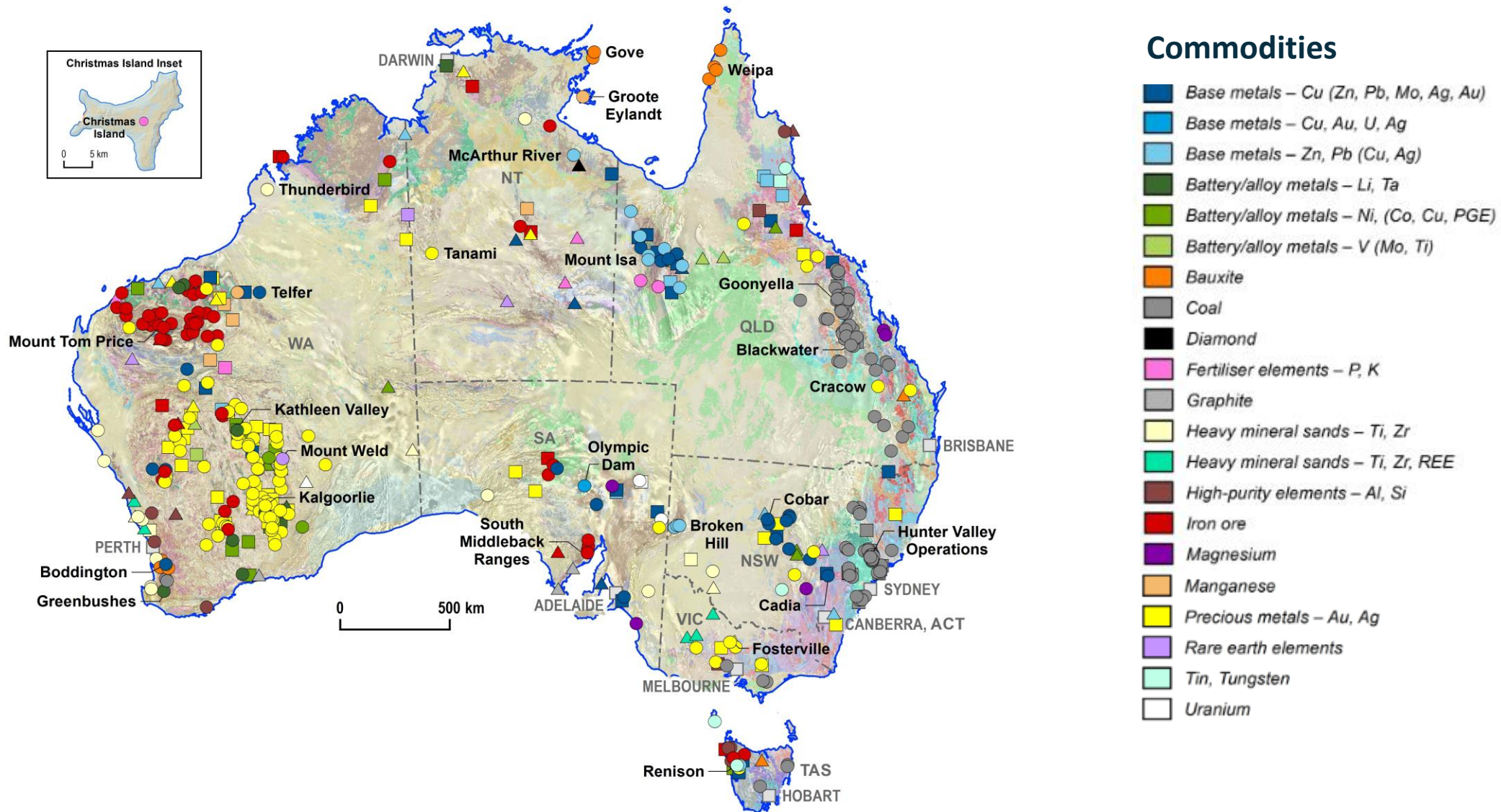


1. Transparency
2. Materiality
3. Competence



Source: Australia's Identified Mineral Resources 2025, preliminary data

Australia's resources sector supports a Future Made in Australia



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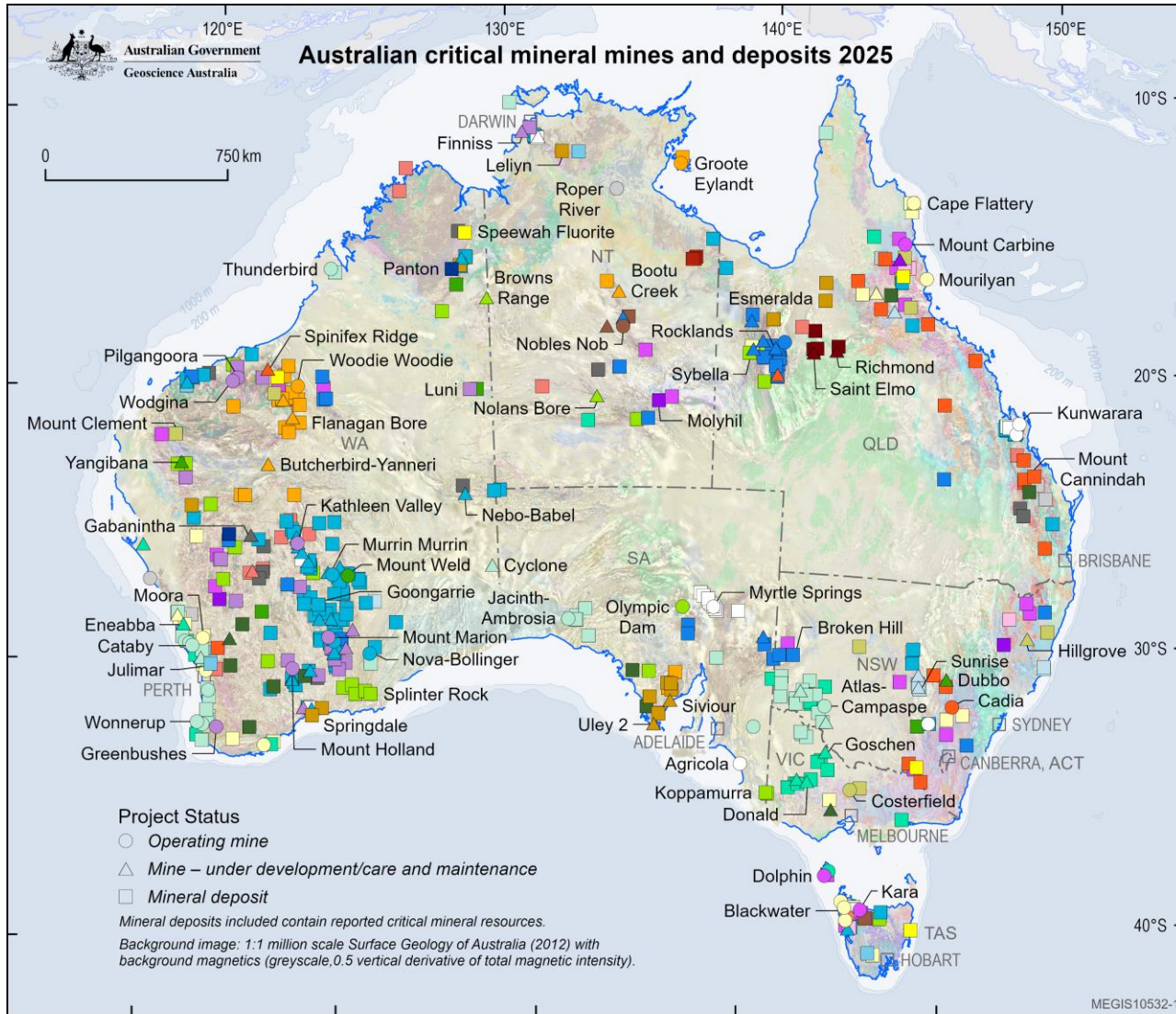
Securing Australia's critical minerals supply with world-leading government geoscience

Dr Andrew Heap
Chief of Minerals, Energy and Groundwater Division
Geoscience Australia



Australian Government
Geoscience Australia

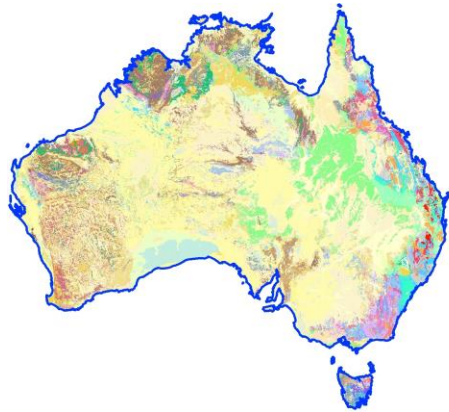
Australia's critical minerals



538 deposits with a critical mineral resource

- 78% undeveloped
- Demonstrated resources in 25 of Australia's 31 listed critical minerals

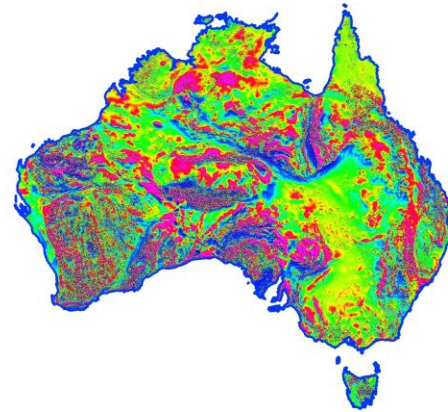
World-class geoscience datasets: the foundation for new discovery



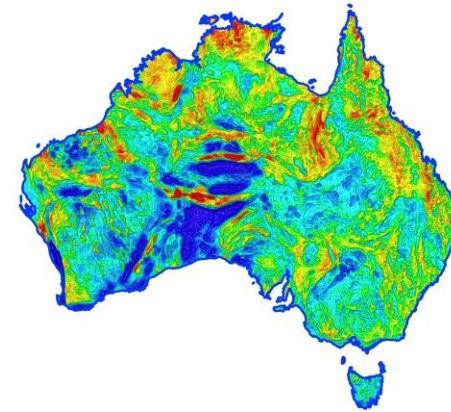
1:1M Surface Geology



Radiometrics

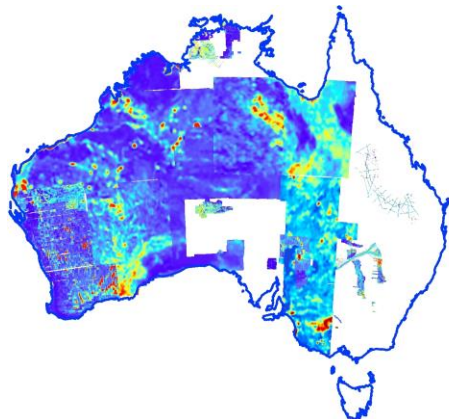


Magnetics

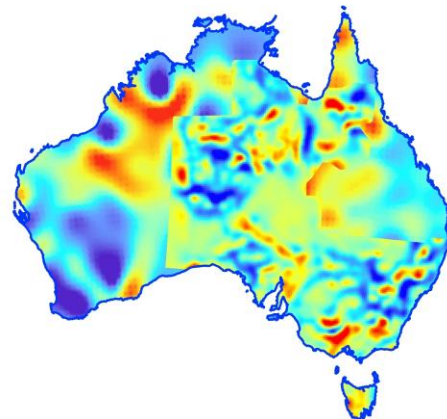


Gravity

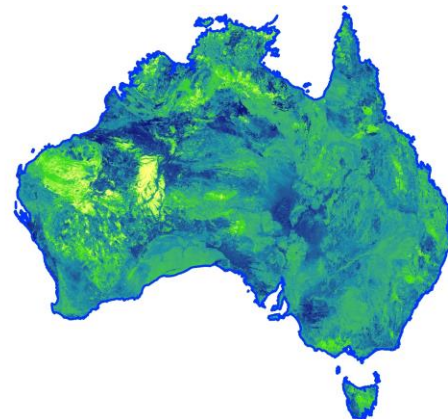
SRF188477-1a



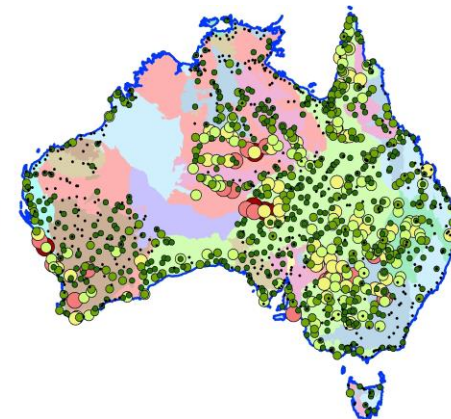
Electromagnetics



Magnetotellurics



Surface geochemistry



Heavy minerals

SRF188477-1b

The Future Made in Australia

\$22.7b over 10 years for net zero, economic resilience and security, **including critical minerals**

- **\$7b Critical Minerals Production Tax Incentive**
- **\$7b Northern Australian Infrastructure Facility**
- **\$15b National Reconstruction Fund**
 - \$5b Net Zero Fund
 - \$1b Advanced manufacturing
 - \$1b Value-adding in resources
- **\$5b Critical Minerals Facility**, including
 - \$1.2b Critical Minerals Strategic Reserve
- **\$50m Critical Minerals Development Program**
- **\$40m International Partnerships in Critical Minerals**
- **\$50m Critical Minerals R&D Hub**
- **\$3.4b Resourcing Australia's Prosperity initiative over 35 years**
 - \$566.1m over first 10 years



Australian Government



Investor
Front Door



Resourcing Australia's Prosperity initiative



Mapping Australia's resources for a sustainable future

Delivery through 4 interrelated components:

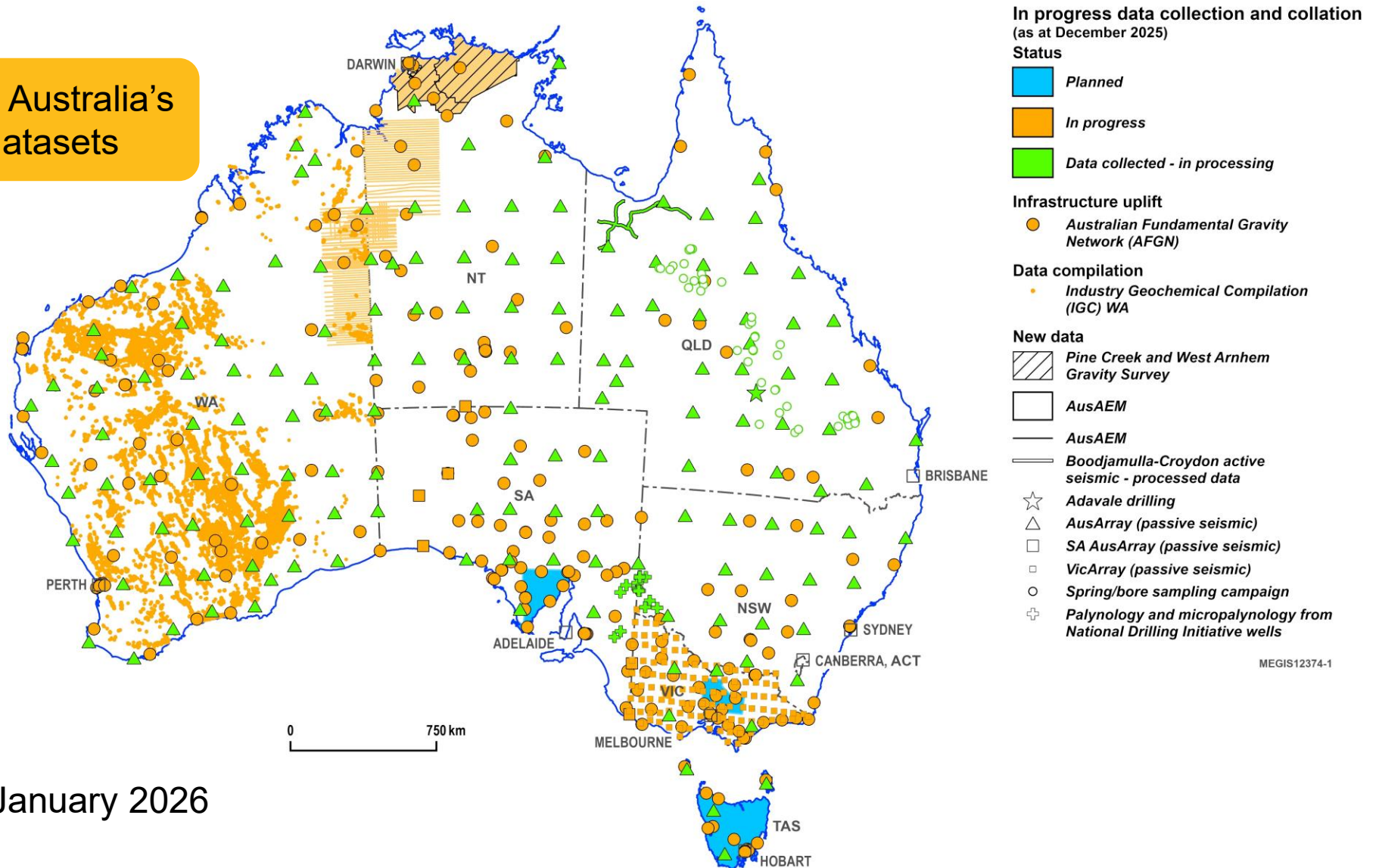
1. Australia-wide geoscience
2. National Resource Assessments
3. Deep Dives
4. Data and Engagement

Our 10 Year Roadmap provides key deliverables under each component.

Delivered in collaboration with State and Northern Territory geological surveys.

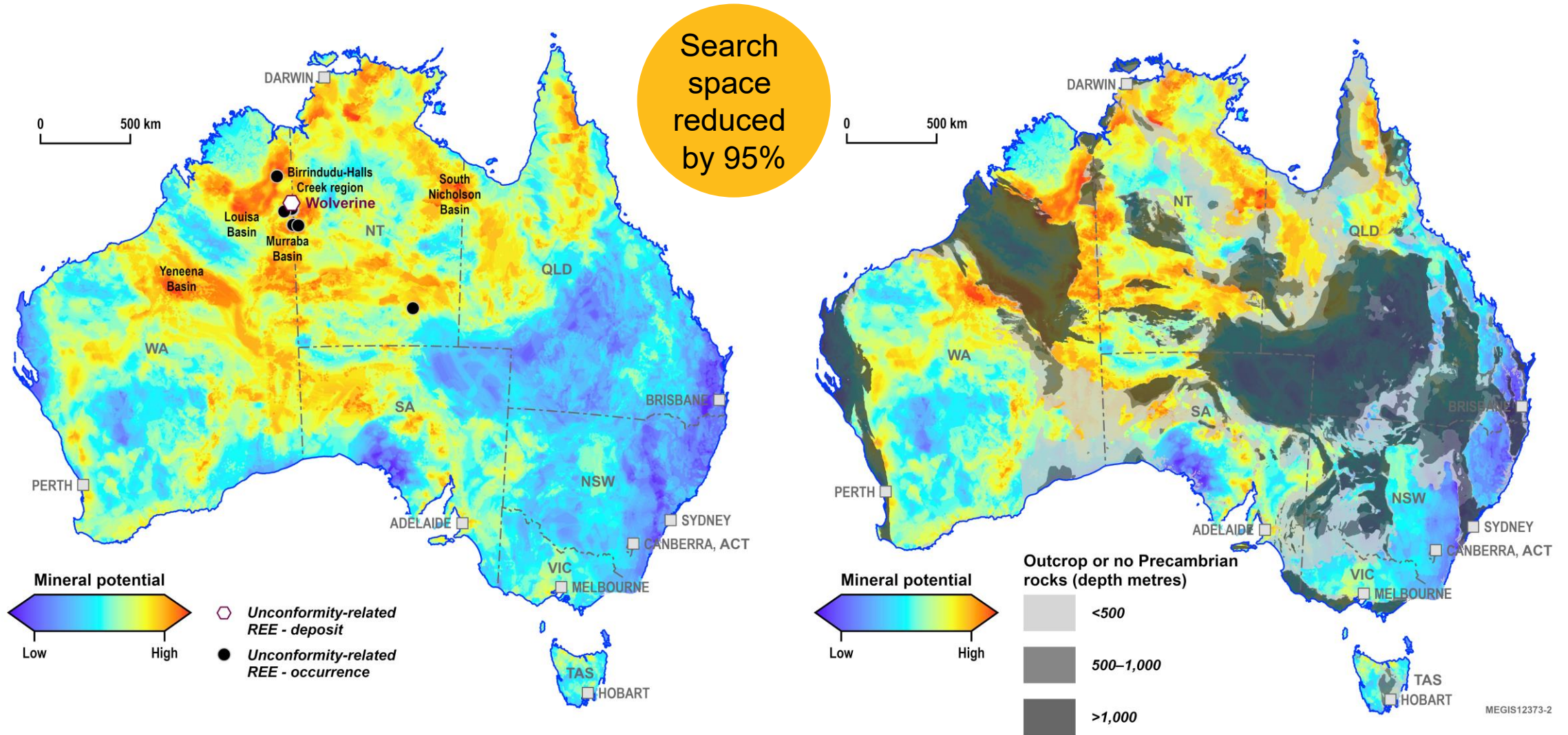
Geoscience data collection since July 2024

Rapidly expanding Australia's world-leading datasets



Map current January 2026

World-class opportunities for discovery



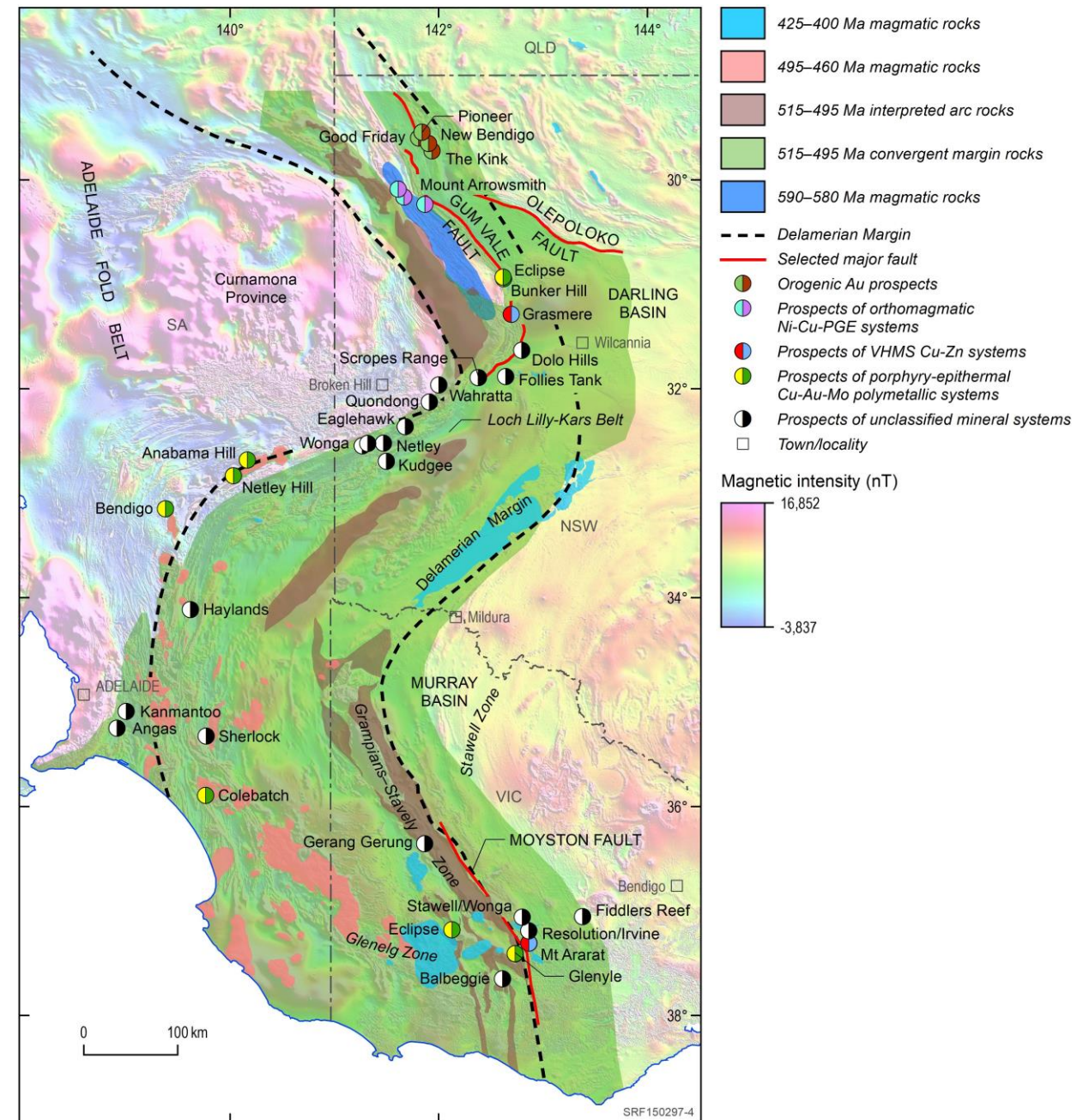
Regional deep dive projects

Delamerian margin mineral potential

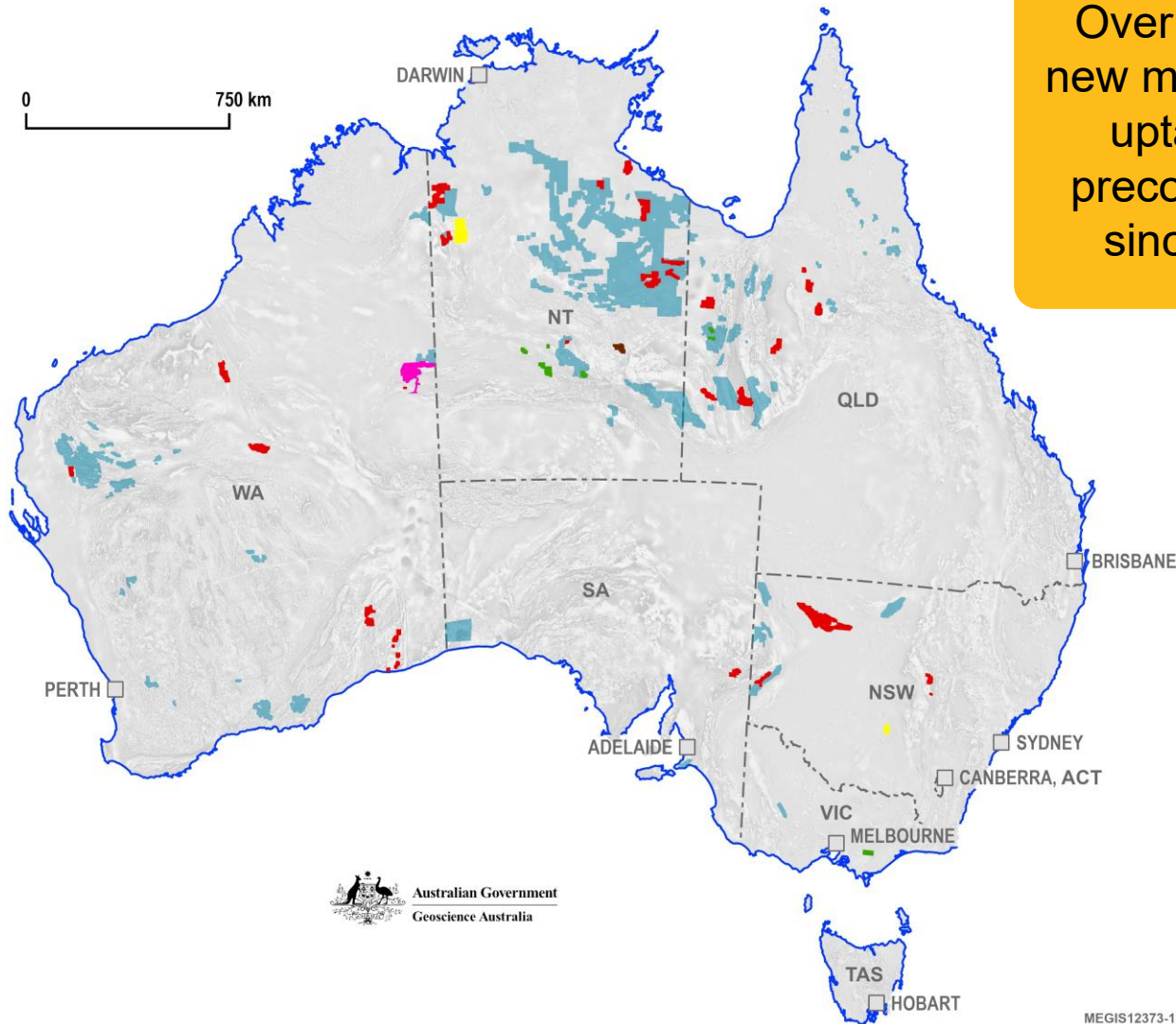
	600-580 Ma	515-495 Ma	480-460 Ma	450-430 Ma	420-400 Ma
Porphyry-epithermal		✓	✓		✓
VHMS		✓			
Magmatic Ni-Cu-PGE	✓				
Orogenic Au				✓	
Unspecified magmatic-hydrothermal		✓			✓

Commodities: **Cu, Au, Zn, Ni, Mo, Ag, Pb**

Critical minerals: **PGEs, Co, In, As, Re, Sb, Bi**



Precompetitive geoscience: a proven performer



Over 36,000 km² in new mineral tenement uptake linked to precompetitive data since June 2025

World leader in mineral exploration

1 in 4 world-class discoveries made in Australia (2017–2023)



Tenements taken up or reinvigorated by precompetitive geoscience (as of January 2026)

- Australian Critical Minerals List (ACML)
- Strategic Materials List (SML)
- Rare Earth Elements (REE)
- Gold
- Uranium

- Tenements stimulated by the Exploring for the Future program (as of June 2024)
- Capital city

Global research partnerships



Australian Government
Geoscience Australia



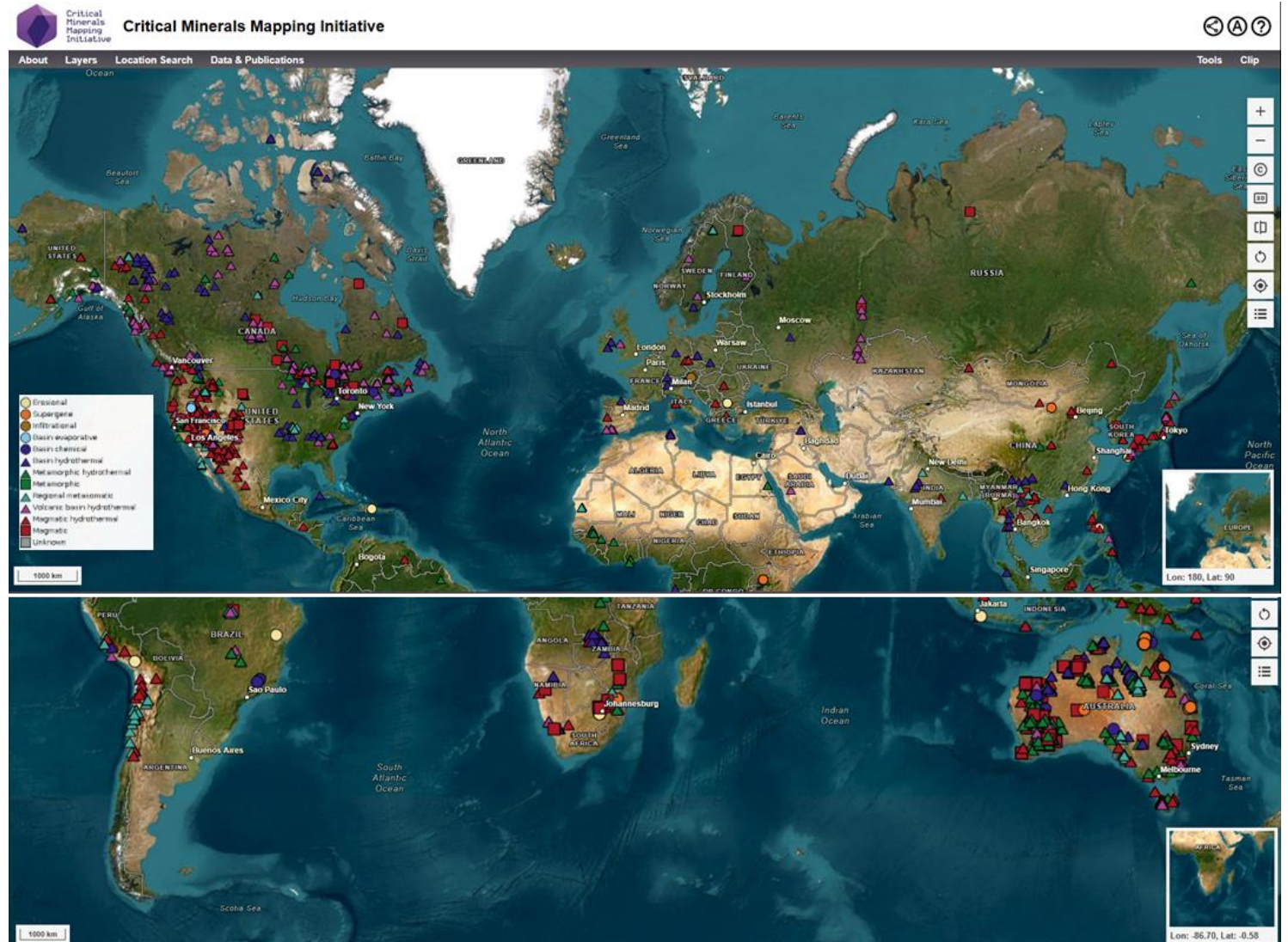
Global Critical Minerals in Ores databases

- 26,837 samples (29k analyses)
- 1,636 deposits
- 61 countries

Critical minerals
in ores database



CMMI
portal



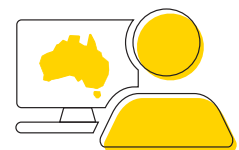
The key to unlocking Australia's critical mineral potential

- Australia is well positioned to meet global critical mineral demand
 - Investment-ready discovered deposits
 - High potential for new discoveries to support long-term secure supply chains
- Government-funded precompetitive geoscience is freely available and is proven to stimulate new discovery.





Visit us at booth #311
Trade Show South



Data Discovery Portal
portal.ga.gov.au

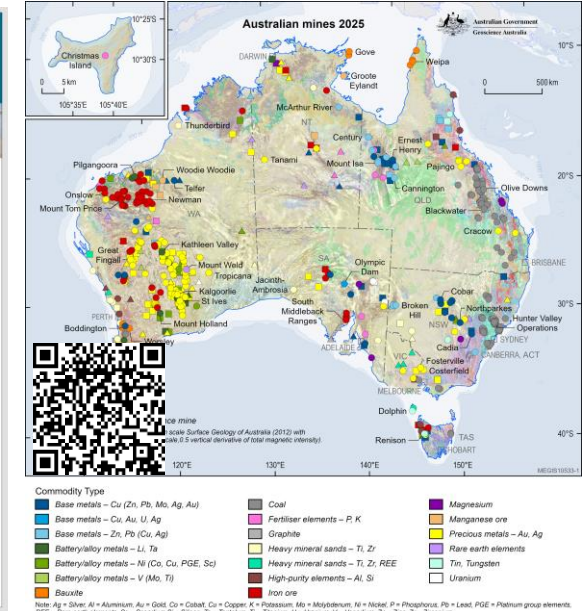
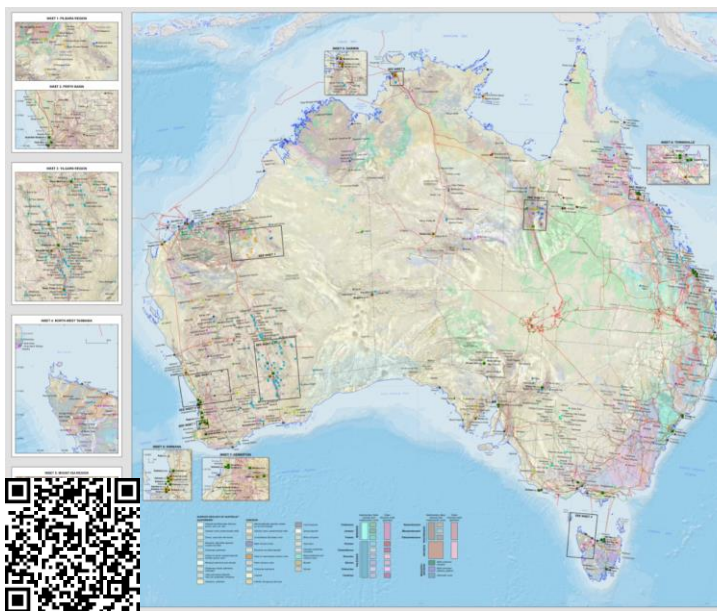
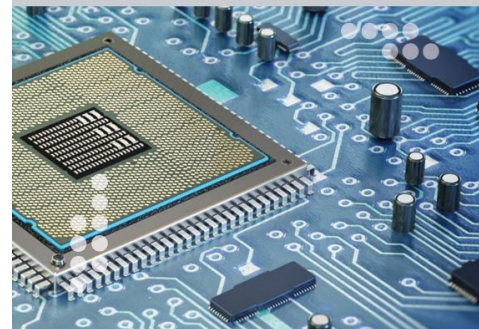


Websites
australiaminerals.gov.au
ga.gov.au/prosperity



Contacts

mineral.promotions@ga.gov.au
RAP@ga.gov.au



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Thank you

Dr Andrew Heap
Chief of Minerals, Energy and Groundwater Division
Geoscience Australia



Australian Government
Geoscience Australia

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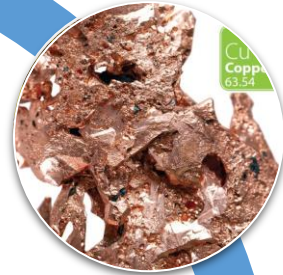
Next generation geology: uncovering South Australia's critical minerals and energy resources

Dr Carmen KRAPP

Geoscience Lead | Manager Mineral Systems & Resources
Geological Survey of South Australia | Department for Energy and Mining



South Australia – Your partner of choice



World Class Resources:

- Copper, Gold
- Critical Minerals – Graphite, HMS, REE
- Iron Ore – Magnetite
- Uranium



Government backed:

- World's best-practise regulation
- Low sovereign risk
- Ports/Transport
- Northern Water Project



First Class ESG:

- 100% Renewable Energy by 2027
- Carbon Capture and Storage CCS
- Indigenous Engagement
- Circular Economy

South Australia – Your partner of choice



HOT off the press

Fraser Institute Annual Survey of Mining Companies, 2025

South Australia is ranked

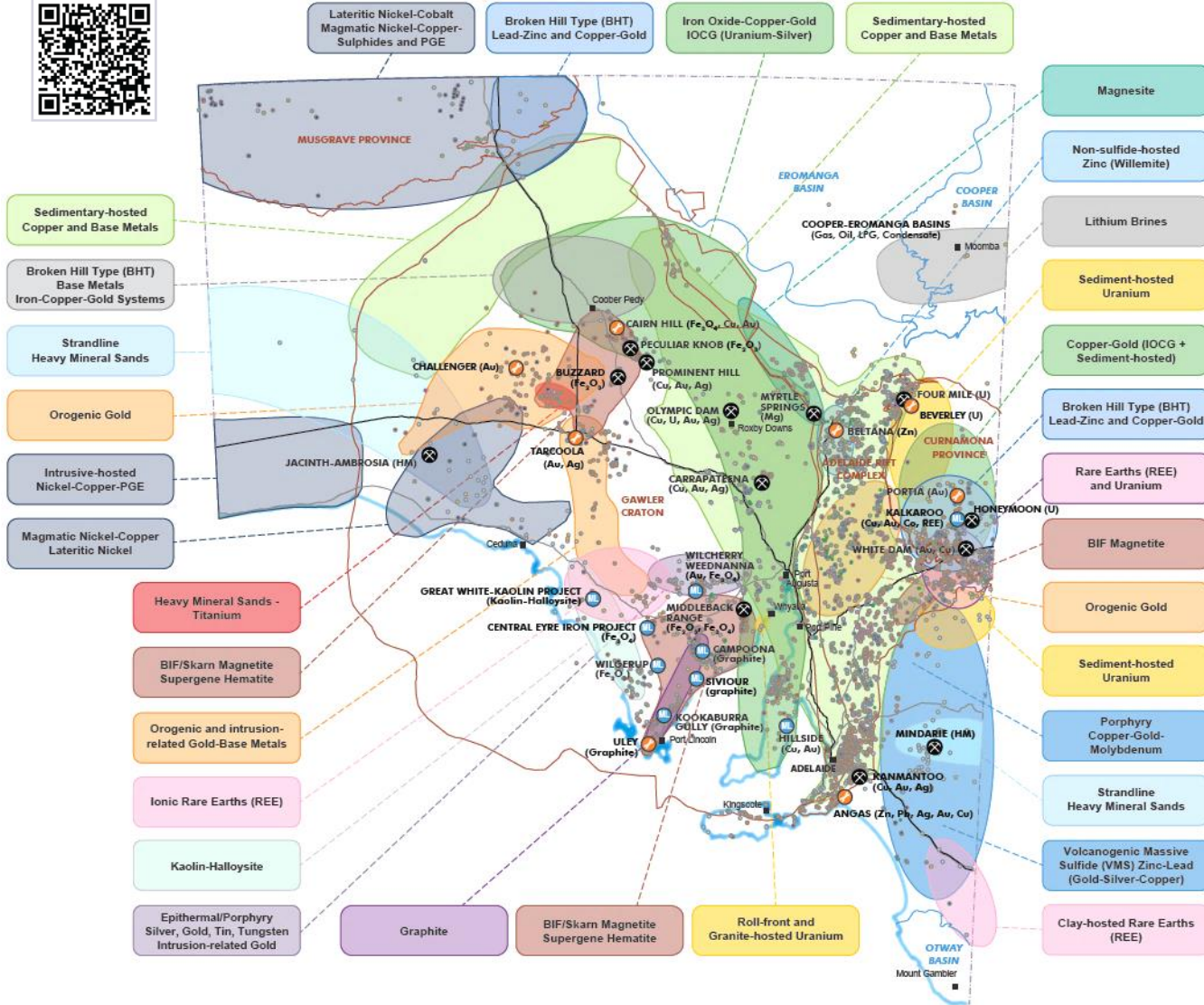
- **1st Best Practices Mineral Potential Index**
→ *this comes off the back of positive copper developments, top geoscience with benchmarked new geological discovery mapping and public drilling campaigns*
- **3rd Geological data base**
- **4th Investment Attractiveness Index**
- **5th in regime that encourages investment by a system that doesn't bring uncertainty concerning administration, interpretation and enforcement of existing regulations**
- **6th Trade Barriers**
- **10th for socio-economic and community development conditions**

South Australia's Mineral and Energy strengths

DOWNLOAD THE MAP



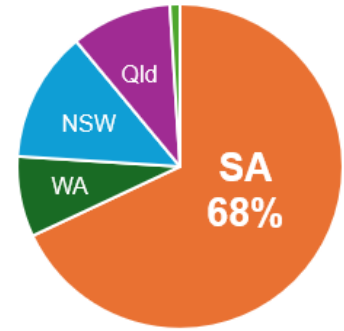
South Australia's Major Exploration Models



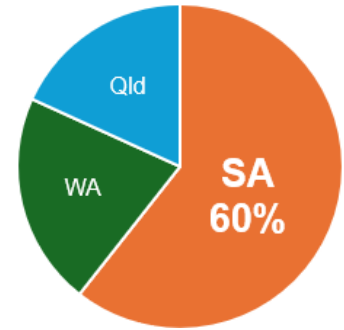
- Multi-commodity mineral systems
- South Australia hosts: 68% of Australia's copper and 60% Australia's graphite resources*
- High-quality magnetite, feedstock for DRI and Green Iron manufacture
- Largest Uranium deposit in the world and 4th largest Uranium producer globally
- Proven Critical Minerals resources:
 - Graphite
 - Rare-earths
 - Cobalt
 - Heavy Mineral Sands
 - Titanium
 - High-purity Alumina
 - Magnesium

* [Australia's Identified Mineral Resources Geoscience Australia](#)

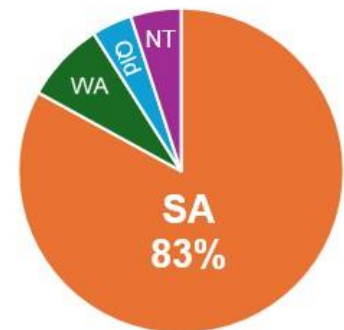
COPPER in AUSTRALIA



GRAPHITE in AUSTRALIA



URANIUM in AUSTRALIA



South Australia's pre-competitive work programs



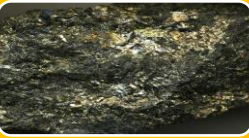
Copper & Gold

- Iron-Oxide Copper Gold (IOCG)
- Sedimentary Cu



Uranium & Rare Earths

- Palaeochannel-hosted
- IOCG-contained



Battery Minerals

- Variety of deposit styles
- Graphite, lithium, nickel, cobalt, manganese, alumina, tin, tantalum, magnesium, vanadium



Magnetite

- Green Steel strategy



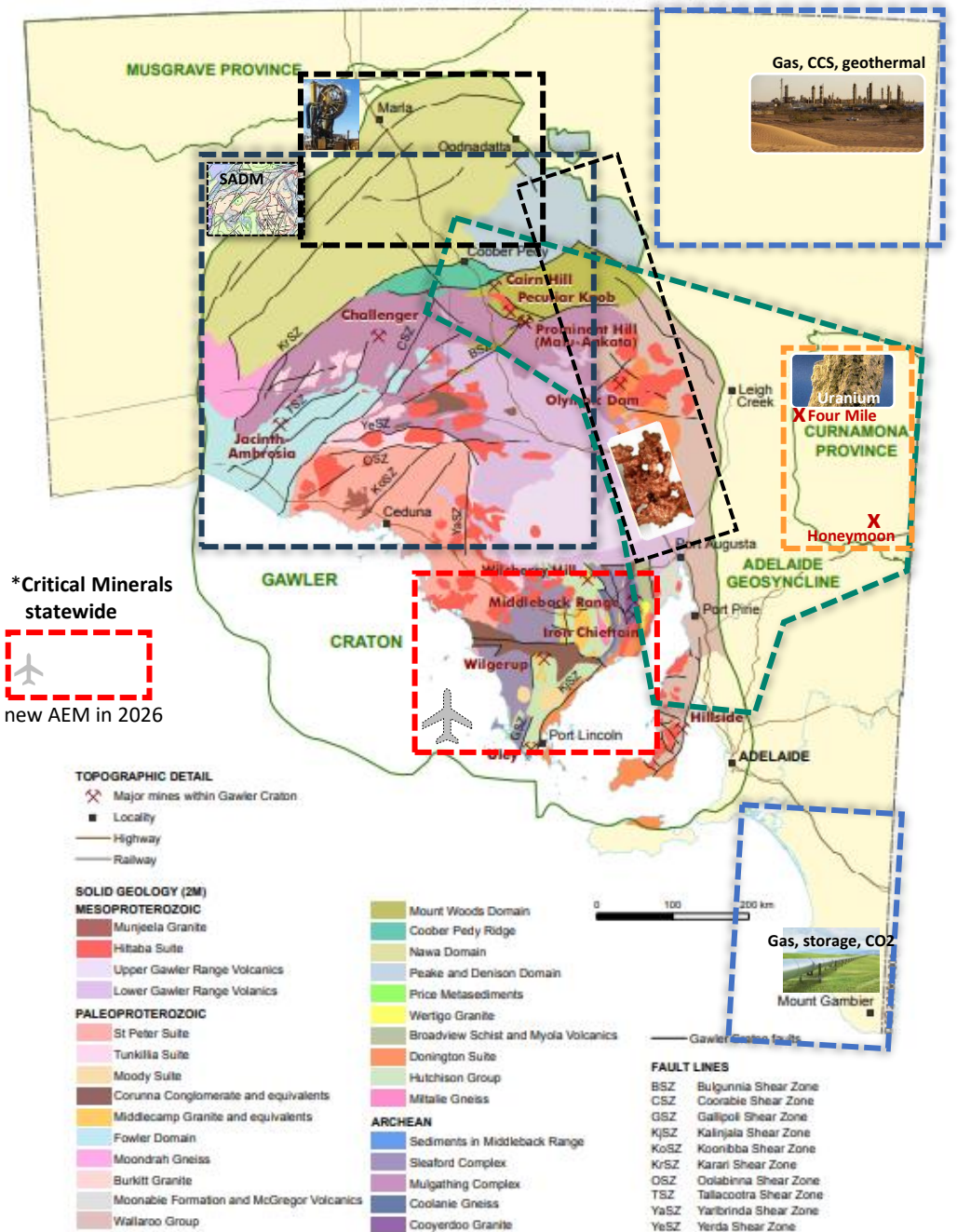
Hydrogen

- Natural Hydrogen + Helium
- Subsurface hydrogen storage



Energy resources

Natural gas and oil, Carbon capture and storage CCS, Food grade natural CO₂, Geothermal energy



SARIG

South Australian Resources Information Gateway

Delivering pre-competitive geoscience and innovated data tools that enable data-driven exploration and discovery



SARIG map

Delivering
geological,
geospatial data
and GIS tools

REVIVE



SARIG explore

Visualise,
interrogate to gain
data-driven
insights

IMPROVE



SARIG catalogue

Connect to
geoscience data
packages, 3D models
and publication APIs

DELIVER



SARIG core

Digital access and
visual intelligence to
SA's physical
geoscience footprint

EVOLVE

SA Geology 1st Edition – Describing SA Geology in space and time

Government of South Australia
Department for Energy and Mining

COLLECTION

South Australia Discovery Mapping Project

Geological Survey of South Australia

[Get started](#)

SA Geology (1st edition)

Digital Explanatory Notes (DEN)

SA Geology Web Services

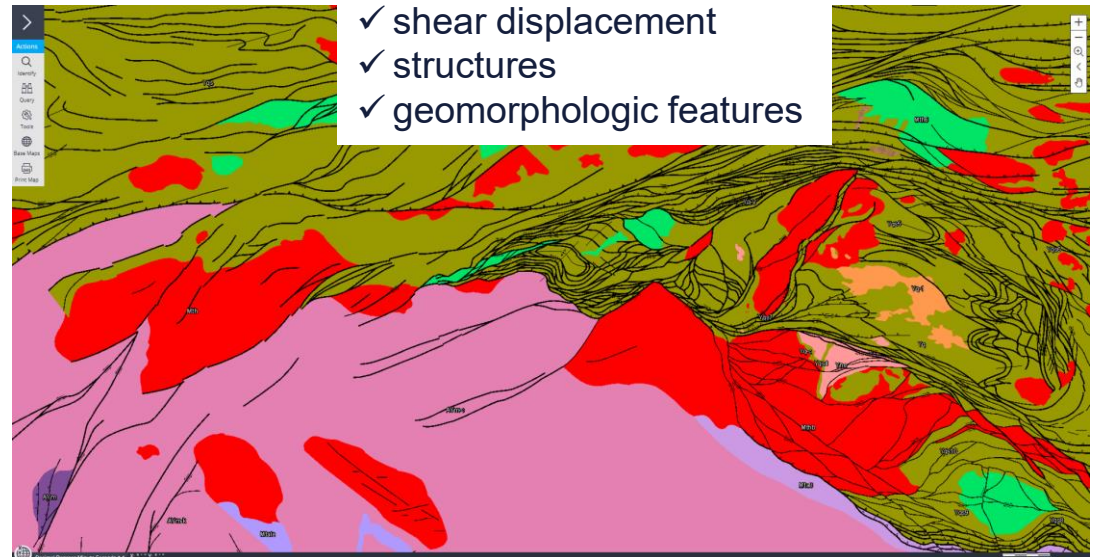
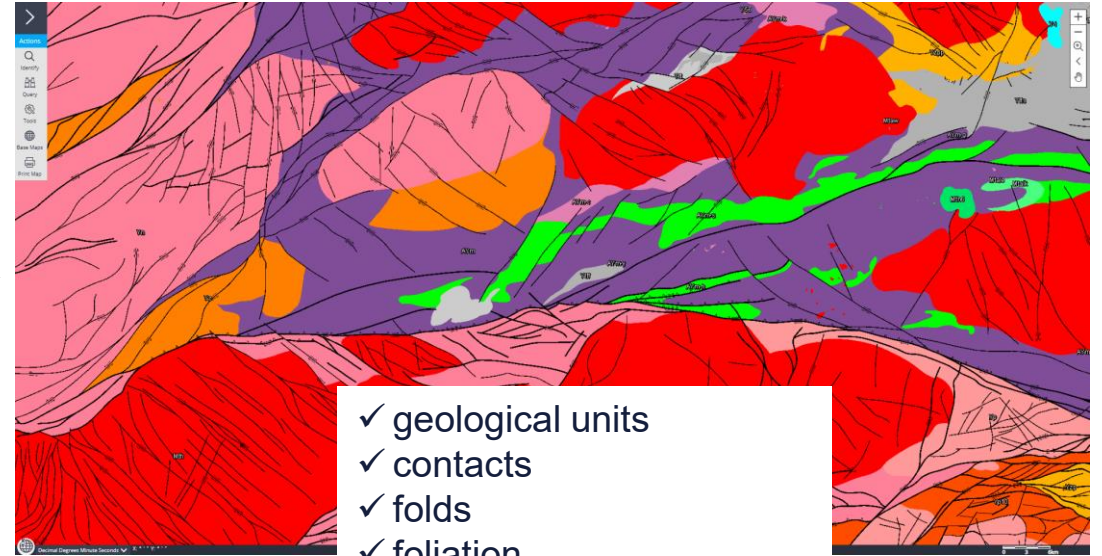
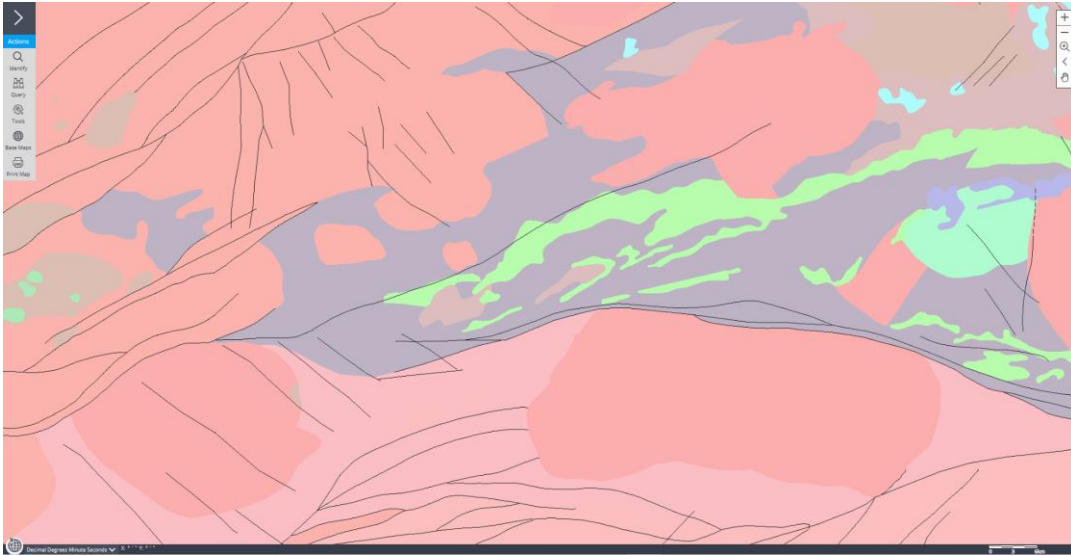
14
Time slice

>3400
Stratigraphic unit

226
Province

12
Event

SA Geology 1st Edition



SA Geology 1st Edition



- 45 new geology spatial layers
- 14 Time slices – including polygon, structures, boundary, trendline
- Time slice tool – ability to slice through geological time scale with a slider bar
- Downloads – spatial formats for ESRI & MapInfo

Easy access to new geology in GIS software & API

- GIS data package includes:
 - ESRI File Geodatabase
 - 45 spatial layers and symbology legend files
 - associated attribution tables with extensive detailed descriptions
- Web service API includes:
 - GeoSciML lite – IUGS CGI standard
 - **Machine readable**

The image shows two screenshots of the SARIG map interface. The top screenshot displays the 'Map Layers' panel on the left, listing various geological units under categories like 'Timeslice - SA Geology 1st Edition' and 'Geology - SA Geology 1st Edition'. The bottom screenshot shows the 'SA Geology geological units - 1st Edition' page, which includes a 'Downloads' section with a table of download options and a 'Links' section with download links for various file formats.

Name	Description	Download	Select
SA Geology geological units		PDF (1.24 MB)	<input checked="" type="checkbox"/>

Name	Description	Link
Download ESRI SHP file	Download ESRI SHP file	SHP
Download MapInfo TAB file	Download MapInfo TAB file	TAB
Download ESRI Geodatabase file	Download ESRI Geodatabase file	GDB
Download Google Earth KMZ file	Download Google Earth KMZ file	KMZ

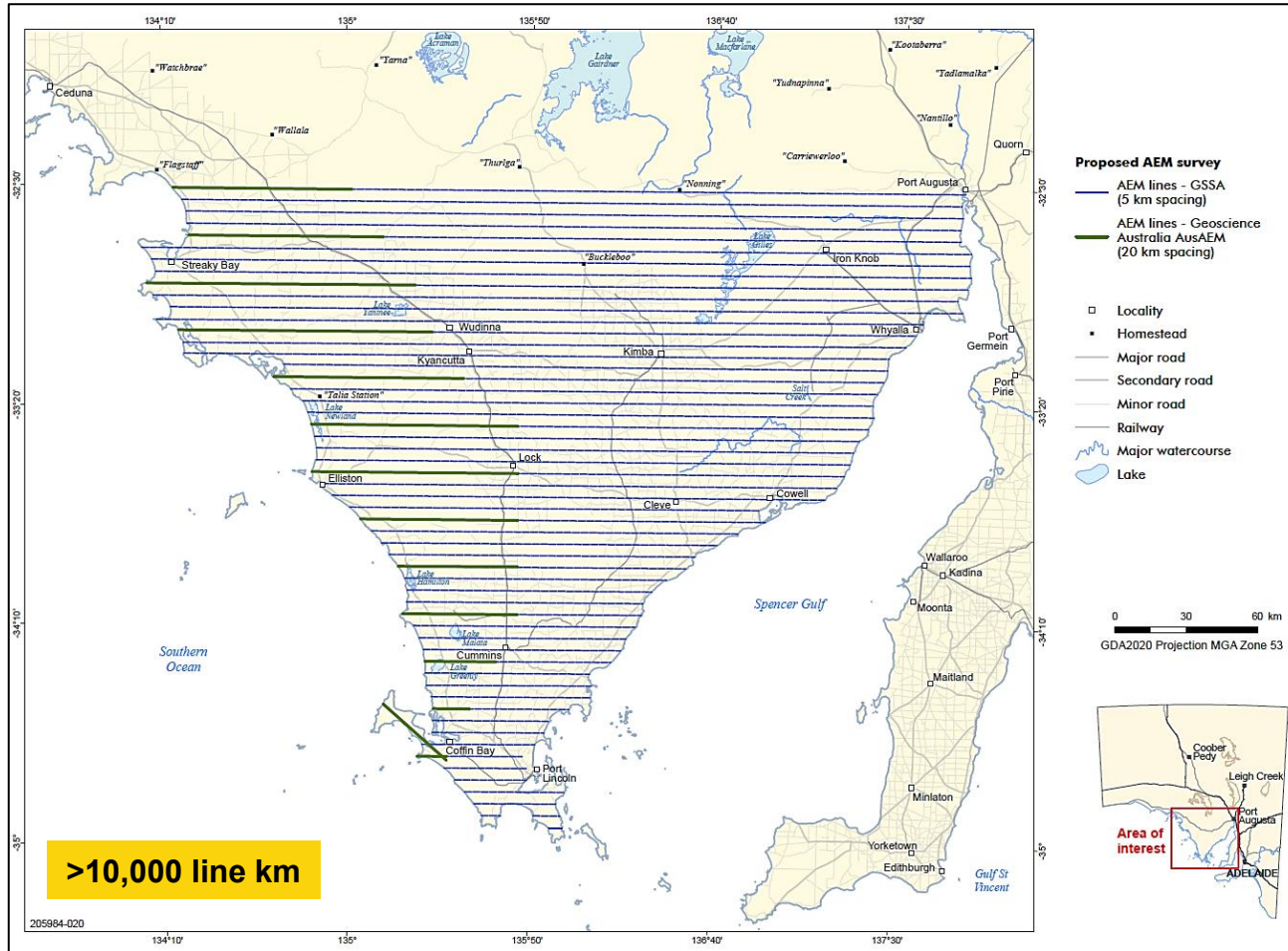
SA Geology 1st Edition

- **Digital Explanatory Notes (DEN)**
- DEN provides “google like” search and advanced search functionality of four interconnected note types:
 - Geological Provinces
 - Stratigraphic unit summaries
 - Events
 - Time Slices
- Search results *.csv downloads and all DEN records can be downloaded as PDF templated report
- SARIG map layers and DEN notes fully integrated

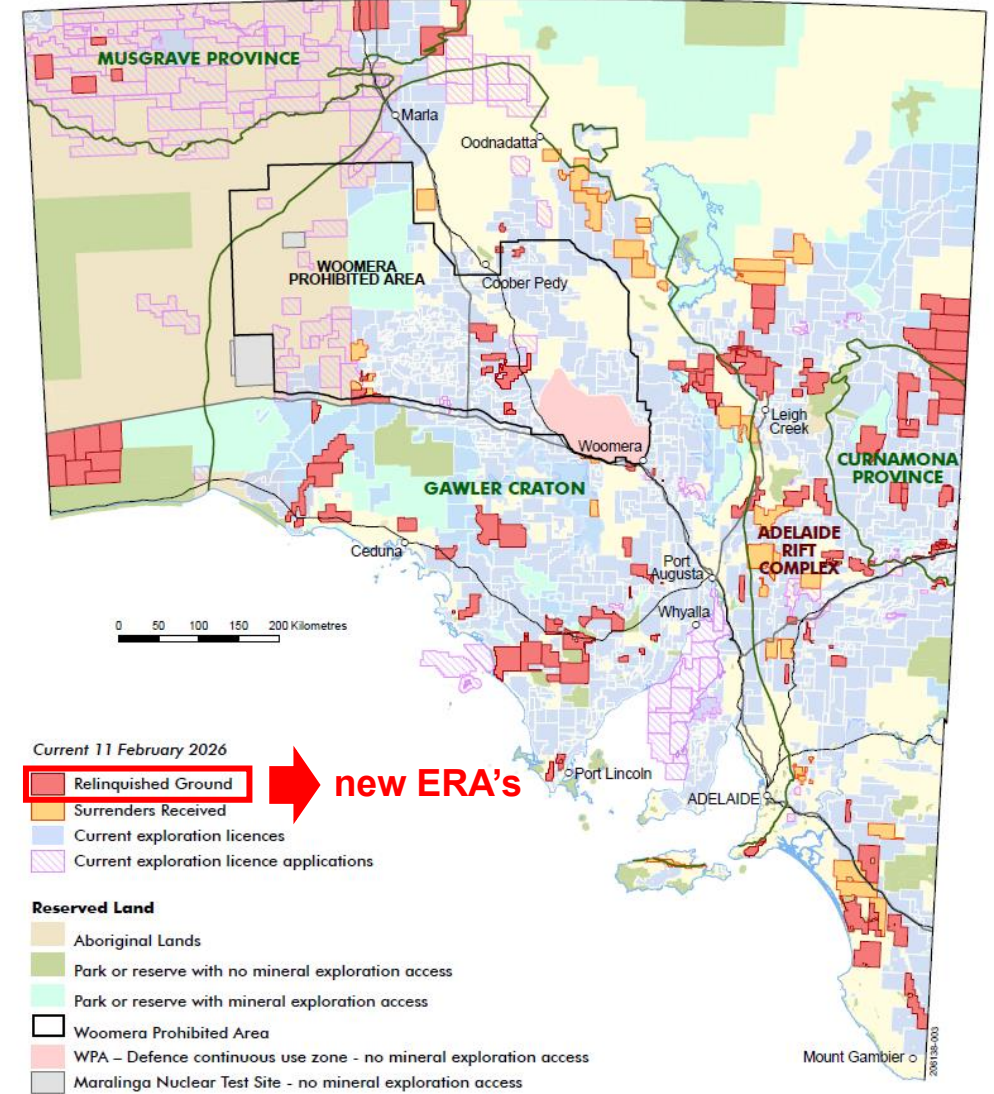
The image shows a composite of three screenshots from the SARIG catalogue website. The top screenshot is the homepage, featuring a search bar with the text 'Search Digital Explanatory Notes' and a search button. Below the search bar, there is a section titled 'BROWSE BY DIGITAL EXPLANATORY NOTE' with four icons representing different note types: Stratigraphic unit, Time slice, Province, and Event. The middle screenshot shows a search result for 'GAWLER CRATON'. It includes a map of South Australia with the craton highlighted in blue, a 'Download report' button, and a list of time slices with their corresponding geological ages. The bottom screenshot shows a search interface with filters for 'Province', 'Time Slice', 'Commodity', 'Event', and 'Time Slice(s)'. The search results for 'GAWLER CRATON' are displayed, including a detailed description of the craton and a list of time slices.

Upcoming 2026

Eastern Eyre Peninsula Airborne Electromagnetic (AEM) Survey in collaboration with Geoscience Australia



NEW Exploration Release Areas (ERAs)



<https://www.energymining.sa.gov.au/industry/minerals-and-mining/exploration/public-notice/exploration-release-areas-eras>

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Next generation geology: uncovering South Australia's critical minerals and energy resources

Dr Carmen KRAPP

Geoscience Lead | Manager Mineral Systems & Resources
Geological Survey of South Australia | Department for Energy and Mining
Carmen.Krapf@sa.gov.au



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**New precompetitive data for
exploration success in NSW**

Dr Phillip L Blevin
Chief Geoscientist and Head
Geological Survey of New South Wales





Advanced mineral projects and exploration highlights in New South Wales

January 2026

REFERENCE

- Operating mine
 - Exploration highlight previously reported
 - New announcement July–December 2025
- 32.1 m @ 1.65 g/t Au New data July–December 2025
Pinnacles (BHM) New project July–December 2025
Pinnacles (BHM) New project July–December 2025

GLOSSARY

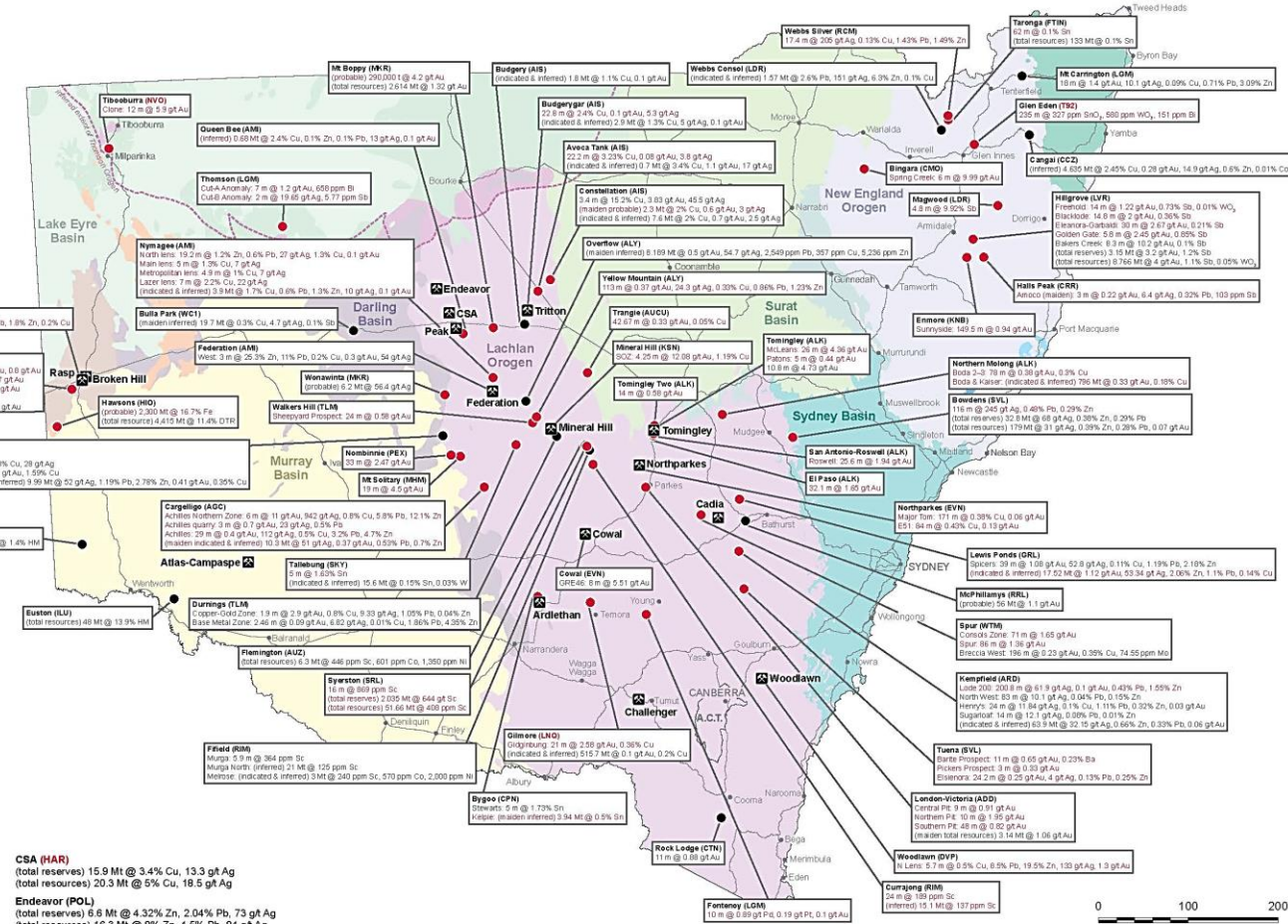
- % percent
- ct carat
- DTR Davis Tube Recovery test
- g grams per tonne
- Moz million ounces
- Mt million tonnes
- ppb parts per billion
- ppm parts per million
- w% weight percent
- Ag silver
- Al aluminium
- Au gold
- Cu copper
- Co cobalt
- Fe iron
- Hf hafnium
- HM heavy minerals (zircon, rutile, ilmenite, leucosene)
- In indium
- Mo molybdenum
- Nb niobium
- Ni nickel
- O oxygen
- Pb lead
- Pd palladium
- Pt platinum
- Re rhenium
- REE rare earth elements
- S sulfur
- Sb antimony
- Sc scandium
- Sn tin
- Ta tantalum
- TREO total rare earth oxides
- W tungsten
- Yt yttrium
- Zn zinc
- Zr zirconium

OPERATING MINES — RESOURCES & RESERVES

- Ardlethan (Aus Tin)**
Underground (total resources) 5.5 Mt @ 0.45% Sn
Tailings (total resources) 10.7 Mt @ 0.2% Sn
Waste stockpiles (total resources) 21.3 Mt @ 0.09% Sn
- Atlas-Campaspe (TROX)**
(total reserves) 105 Mt @ 5.8% HM
(total resources) 110 Mt @ 3.9% HM
- Broken Hill Operations (PEM)**
Southern Operations: (total reserves) 11.7 Mt @ 6.2% Zn, 4.9% Pb, 50 g/t Ag
Southern Operations: (total resources) 11.7 Mt @ 9.3% Zn, 6.8% Pb, 72 g/t Ag
North Mine Upper: (total resources) 1 Mt @ 7% Zn, 9% Pb, 140 g/t Ag
North Mine Deep: (measured & indicated) 3.7 Mt @ 11.3% Zn, 13.5% Pb, 219 g/t Ag
Potato: (inferred) 1.6 Mt @ 13% Zn, 3.1% Pb, 43.1 g/t Ag
Silver Peak: (inferred) 0.4 Mt @ 5% Zn, 9% Pb, 77 g/t Ag
- Cadia Valley Operations (NEM)**
Cadia: (probable) 1,051.8 Mt @ 0.42 g/t Au, 0.29% Cu, 0.67 g/t Ag, 0.01% Mo
Cadia Underground: (indicated) 1,245.1 Mt @ 0.36 g/t Au, 0.25% Cu, 0.65 g/t Ag
Cadia Underground: (indicated) 1,173.9 Mt @ 0.01% Mo
Cadia Underground: (inferred) 497 Mt @ 0.24 g/t Au, 0.47 g/t Ag, 0.17% Cu
Cadia Stockpiles and Open Pit: (measured) 30.8 Mt @ 0.3 g/t Au, 0.13% Cu
Cadia Stockpiles and Open Pit: (inferred) 11 Mt @ 0.7 g/t Au, 0.5% Cu
- Challenger (GDM)**
(total resources) 1.82 Mt @ 3.21 g/t Au
- Cowal (EVN)**
(total reserves) 140 Mt @ 1.01 g/t Au
(total resources) 280 Mt @ 0.88 g/t Au

- CSA (HAR)**
(total reserves) 15.9 Mt @ 3.4% Cu, 13.3 g/t Ag
(total resources) 20.3 Mt @ 5% Cu, 18.5 g/t Ag
- Endeavor (POL)**
(total reserves) 6.8 Mt @ 4.32% Zn, 2.04% Pb, 73 g/t Ag
(total resources) 16.3 Mt @ 8% Zn, 4.5% Pb, 84 g/t Ag
Tailings (total resources) 5.2 Mt @ 2.12% Zn, 1.55% Pb, 79 g/t Ag
- Federation (AMM)**
(total reserves) 2.2 Mt @ 7.1% Zn, 4.1% Pb, 0.2% Cu, 1.2 g/t Au, 6 g/t Ag
(total resources) 4.4 Mt @ 7.7% Zn, 4.4% Pb, 0.2% Cu, 1 g/t Au, 6 g/t Ag
- Mineral Hill (KSN)**
Underground (total reserves) 0.7 Mt @ 0.8% Cu, 1.4 g/t Au, 20 g/t Ag, 1.9% Pb, 1.6% Zn
Open pit (total reserves) 0.37 Mt @ 3.6 g/t Au, 52 g/t Ag
(total resources) 9.984 Mt @ 0.53 g/t Au, 0.97% Cu, 1.42% Pb, 0.98% Zn, 28 g/t Ag
- Northparkes (EVN)**
(total reserves) 81 Mt @ 0.52% Cu, 0.28 g/t Au
(total resources) 480 Mt @ 0.51% Cu, 0.19 g/t Au
- Peak (AMM)**
Copper: (total reserves) 3 Mt @ 1.8% Cu, 1.6 g/t Au, 0.1% Zn, 0.1% Pb, 6 g/t Ag
Copper: (total resources) 19 Mt @ 1.8% Cu, 0.7 g/t Au, 0.1% Zn, 0.1% Pb, 6 g/t Ag
Lead-Zinc: (total reserves) 0.36 Mt @ 3.4% Zn, 1.9% Pb, 0.4% Cu, 2 g/t Au, 13 g/t Ag
Lead-Zinc: (total resources) 1.8 Mt @ 5.3% Zn, 3.1% Pb, 0.7% Cu, 1.2 g/t Au, 23 g/t Ag

- Rasp (BHM)**
(probable) 3.17 Mt @ 6.0% Zn, 4.8% Pb, 64 g/t Ag
(total resources) 10.1 Mt @ 5.7% Zn, 5.2% Pb, 49 g/t Ag
- Tomingley (ALK)**
(total reserves) 10.362 Mt @ 1.9 g/t Au
(total resources) 19.915 Mt @ 2.2 g/t Au
- Triton Copper Operations (AIS)**
(total reserves) 2.38 Mt @ 1.5% Cu, 0.3 g/t Au, 6 g/t Ag
(total resources) 18.9 Mt @ 1.7% Cu, 0.4 g/t Au, 4 g/t Ag
- Woodlawn (DVP)**
(total reserves) 6.0 Mt @ 1.5% Cu, 1.3% Pb, 3.6% Zn, 29 g/t Ag, 0.4 g/t Au
(total resources) 11.261 Mt @ 5.8% Zn, 2.1% Pb, 1.8% Cu, 46 g/t Ag, 0.5 g/t Au



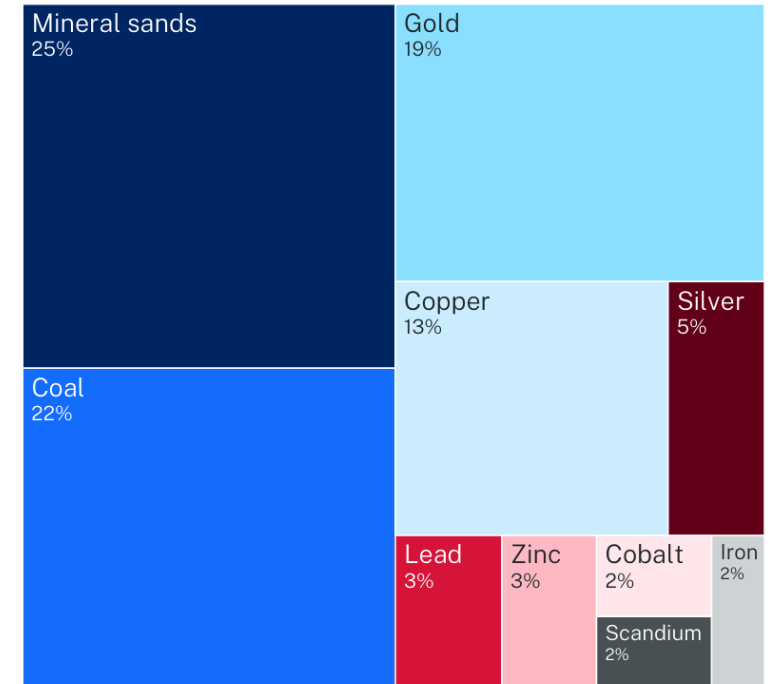
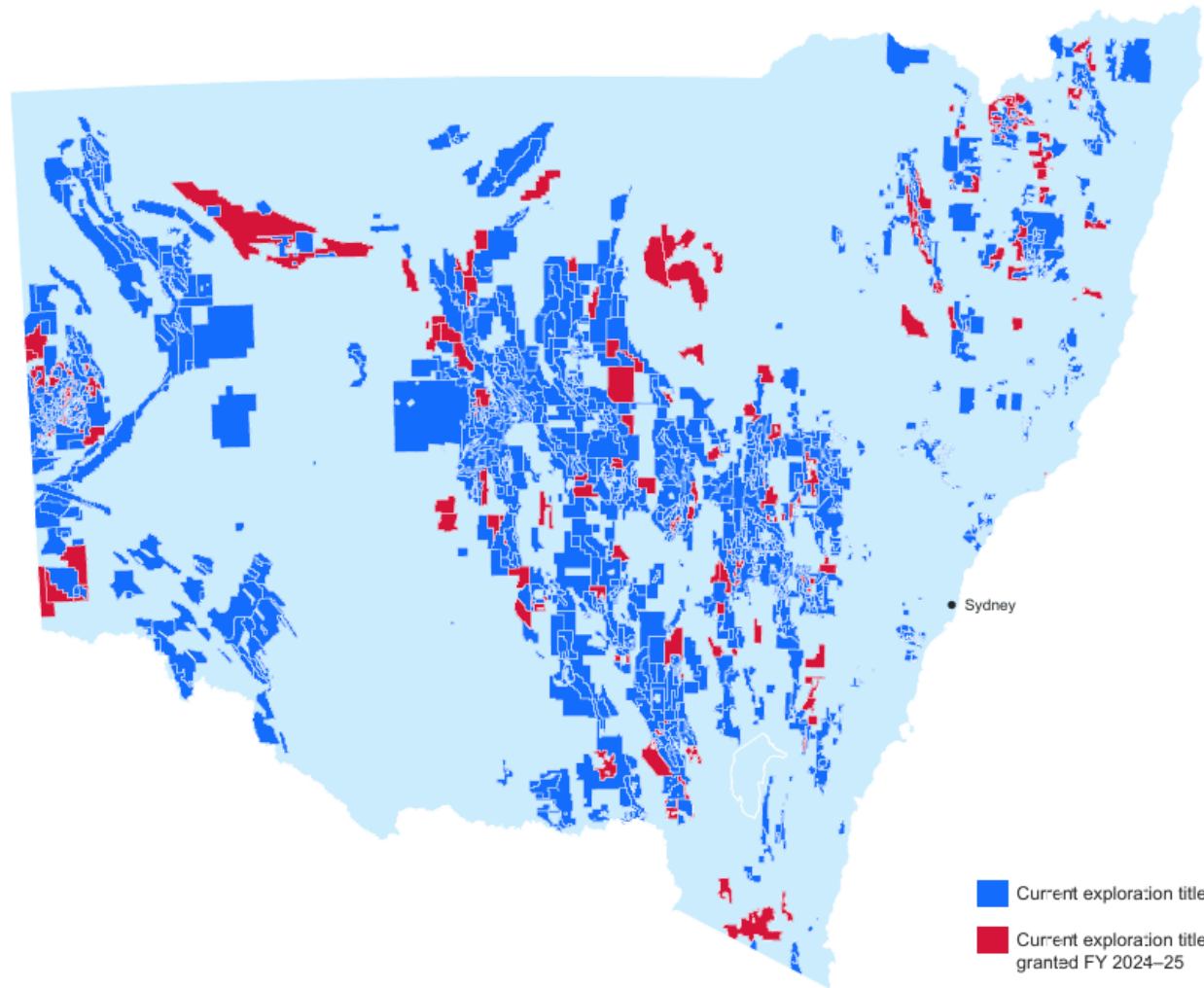
Base map shows major geological provinces of NSW. Data compiled by Geological Survey of New South Wales.

Total resources include measured, indicated and inferred resources. Reserve/resource figures and drill intersections are as quoted in company information releases. Shown in the brackets after the project name is the Australian Securities Exchange ticker code or abbreviated company name.

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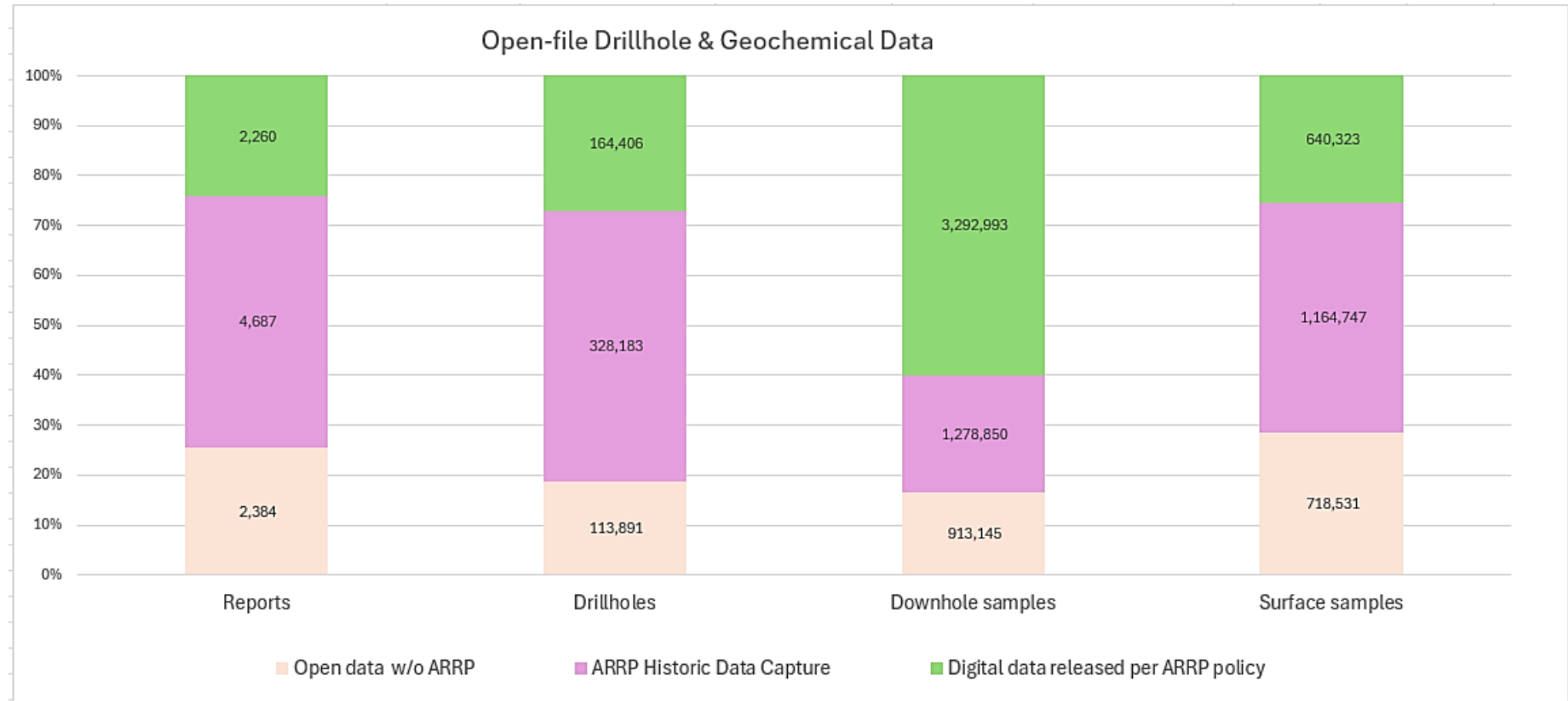
resources.nsw.gov.au

Exploration Intelligence – NSW exploration activity summary

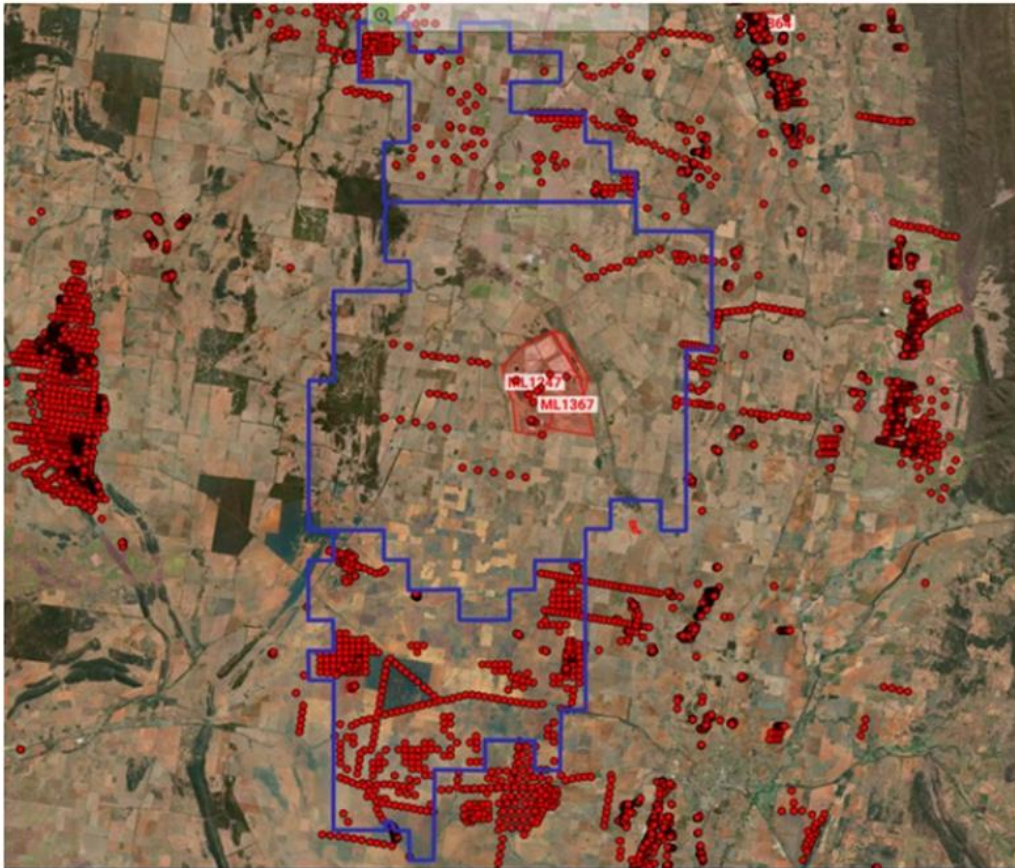


Percentage of total expenditure by top 10 target commodities

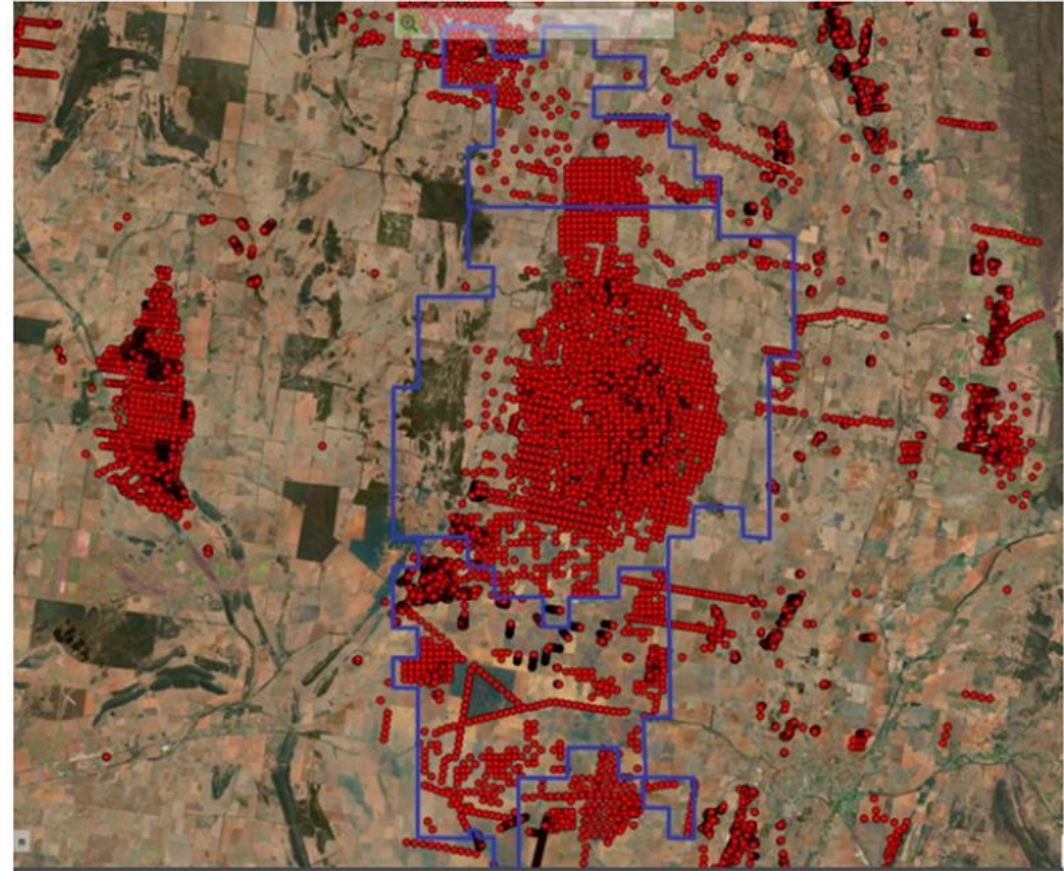
Exploration data released by GSNSW



New data released – e.g. Northparkes Porphyry Cu Deposit



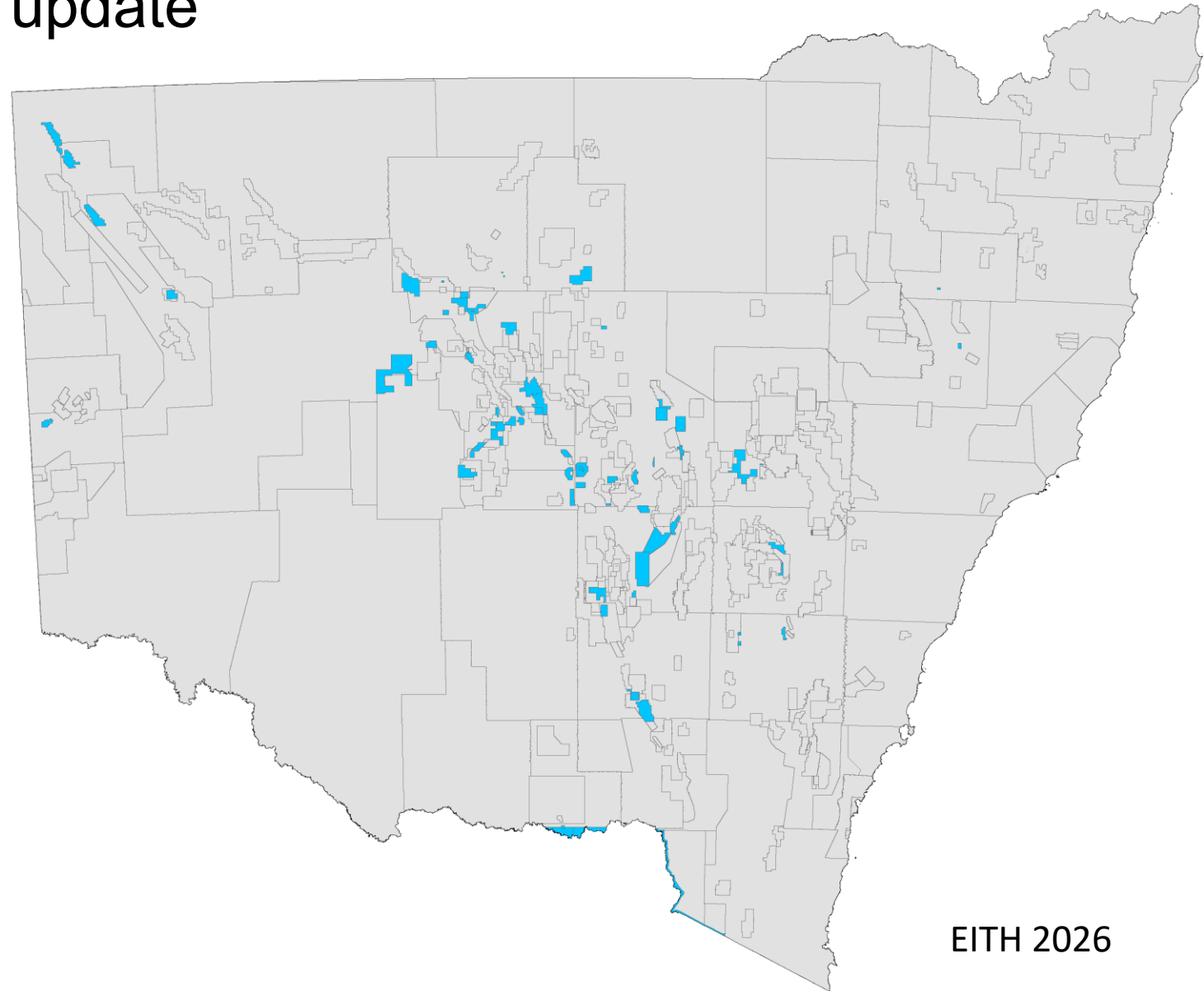
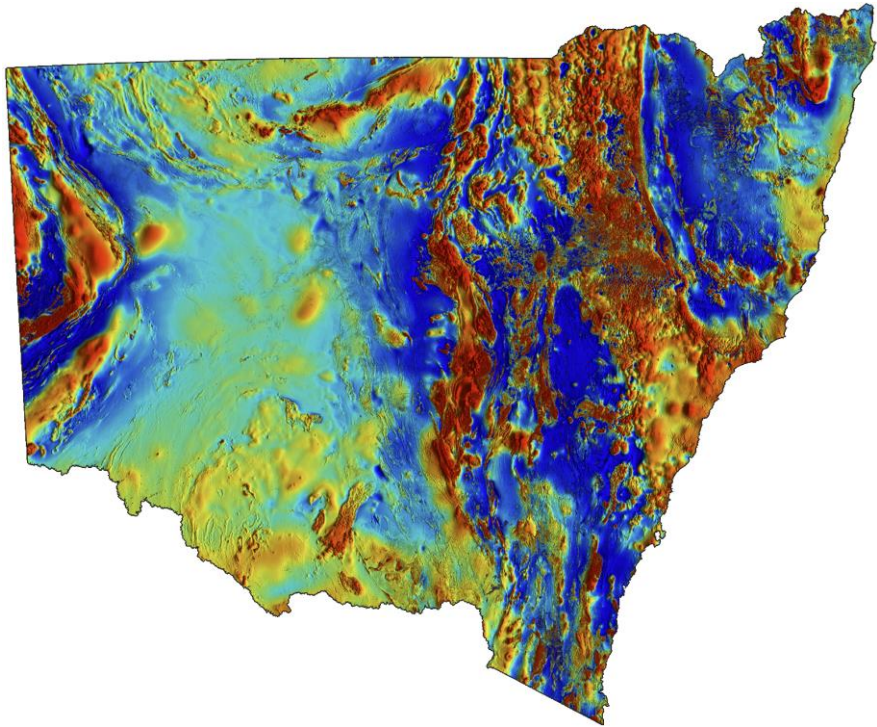
Publicly available drilling data - August 2023



Publicly available drilling data - April 2025

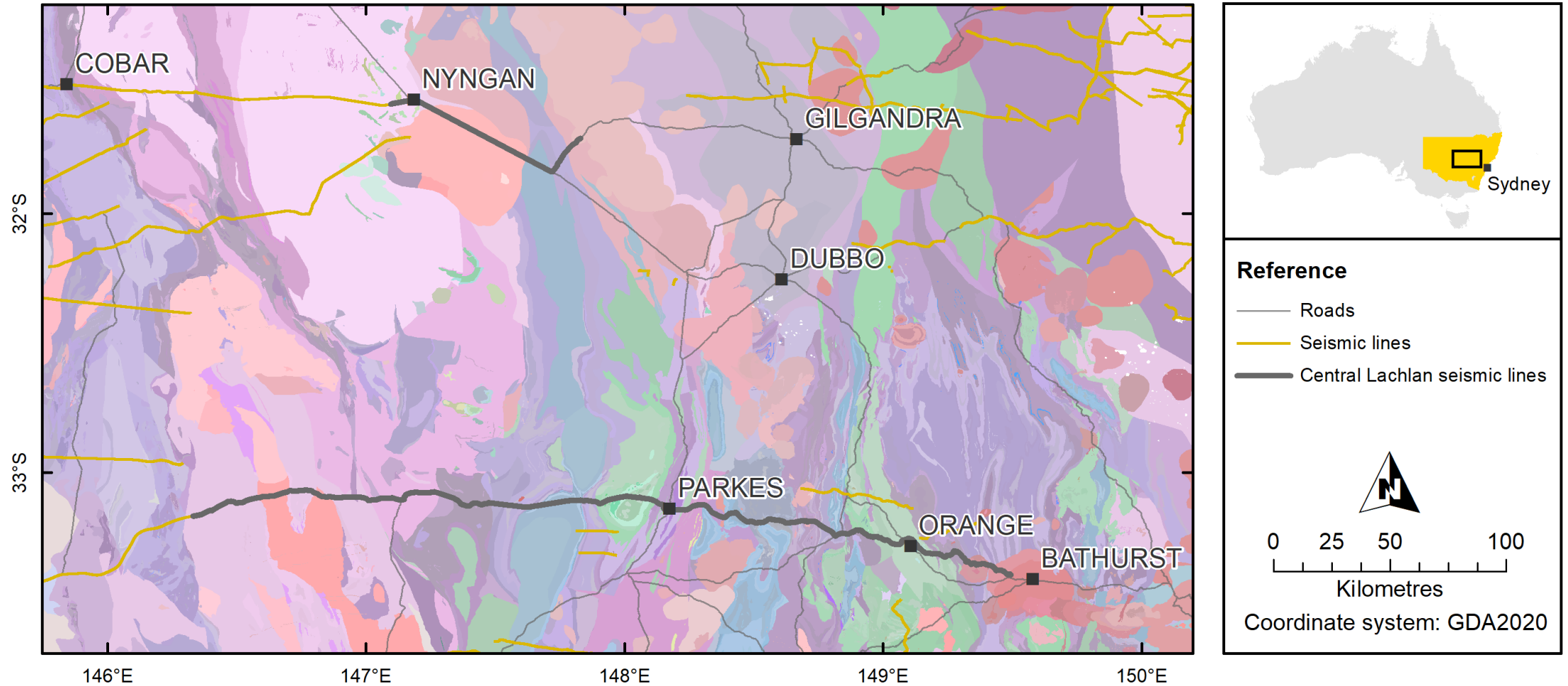
2026 NSW Magnetic Merge update

Statewide Magnetic Merge					
	2014	2020	2022	2024	2026
Cell Size	50m	25m	25m	25m	25m
Surveys	89	199	299	350	419
Comp %	3.5%	8.7%	10.9%	11.0%	11.8%
100m %	1.8%	6.4%	9.2%	10.3%	11.0%
200m %	6.7%	11.4%	14.0%	16.6%	17.6%
Value	\$29.6M	\$33.8M	\$37.4M	\$38.6M	\$39.8M



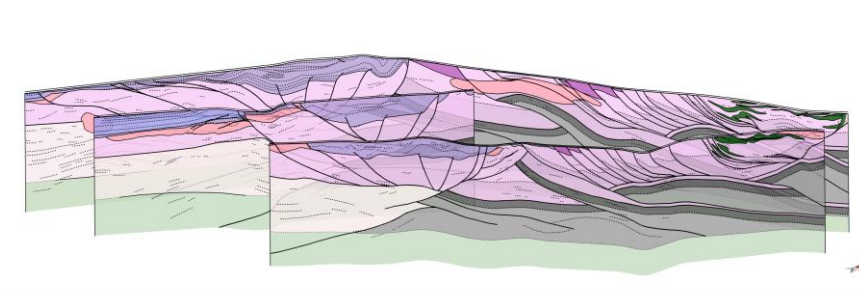
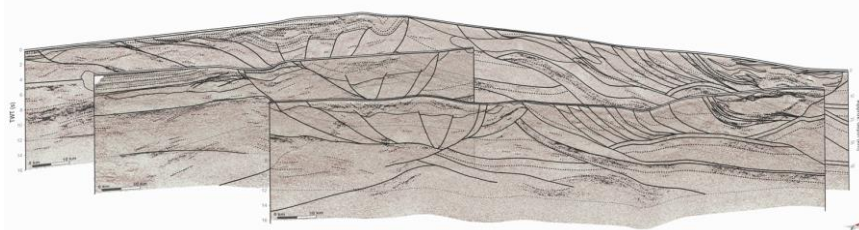
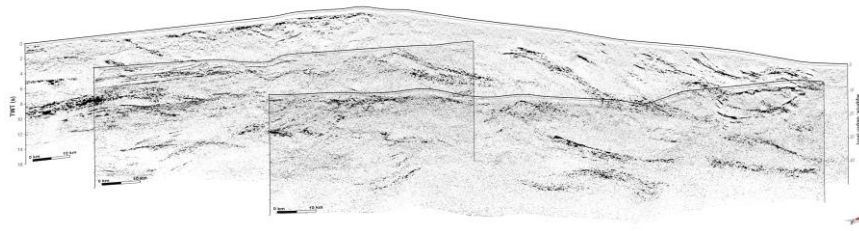
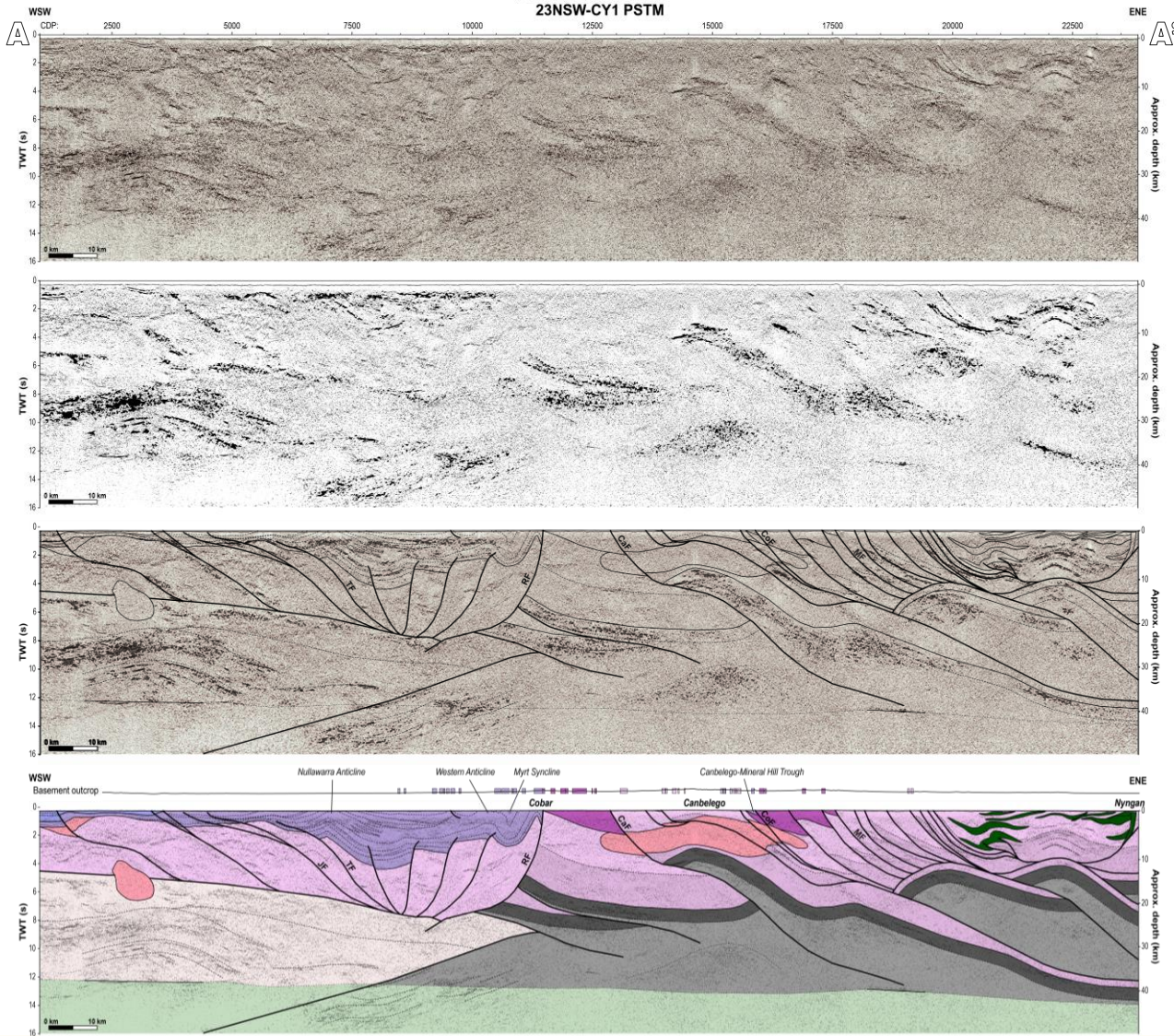
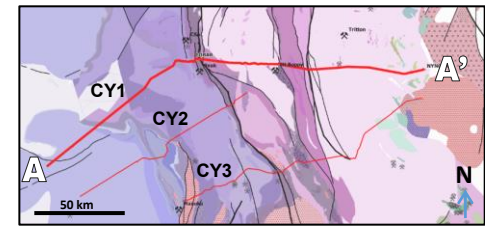
EITH 2026

Seismic acquisition in 2025



Seismic interpretation

Interpretation of the 2023 Cobar–Yathong Seismic Survey



Structure

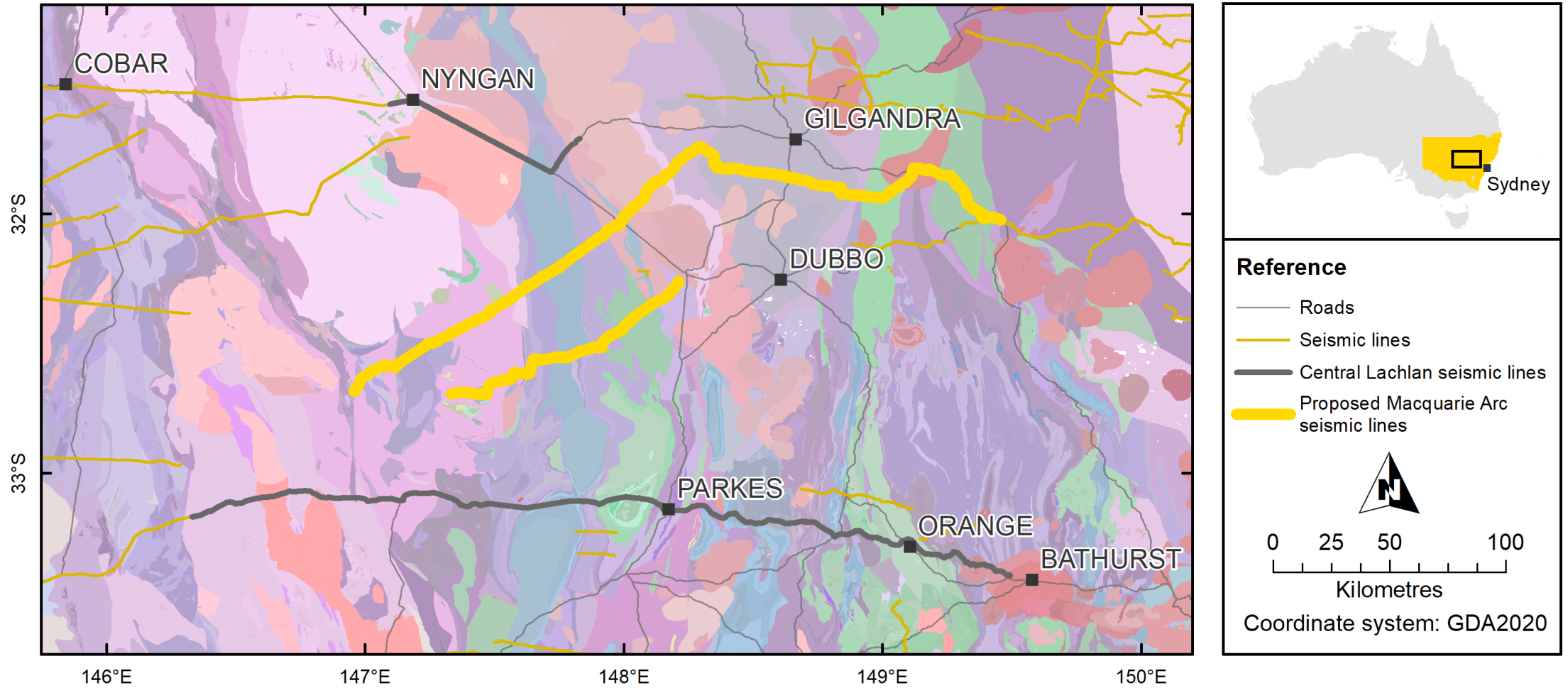
- RF Rookery Fault
- CaF Canbelego Fault
- CoF Coonara Fault
- MF Muriel Fault
- TF Thule Fault
- DTF Dusty Tank Fault
- BMF Blue Mountain Fault
- JF Jackermaroo Fault

Stratigraphy

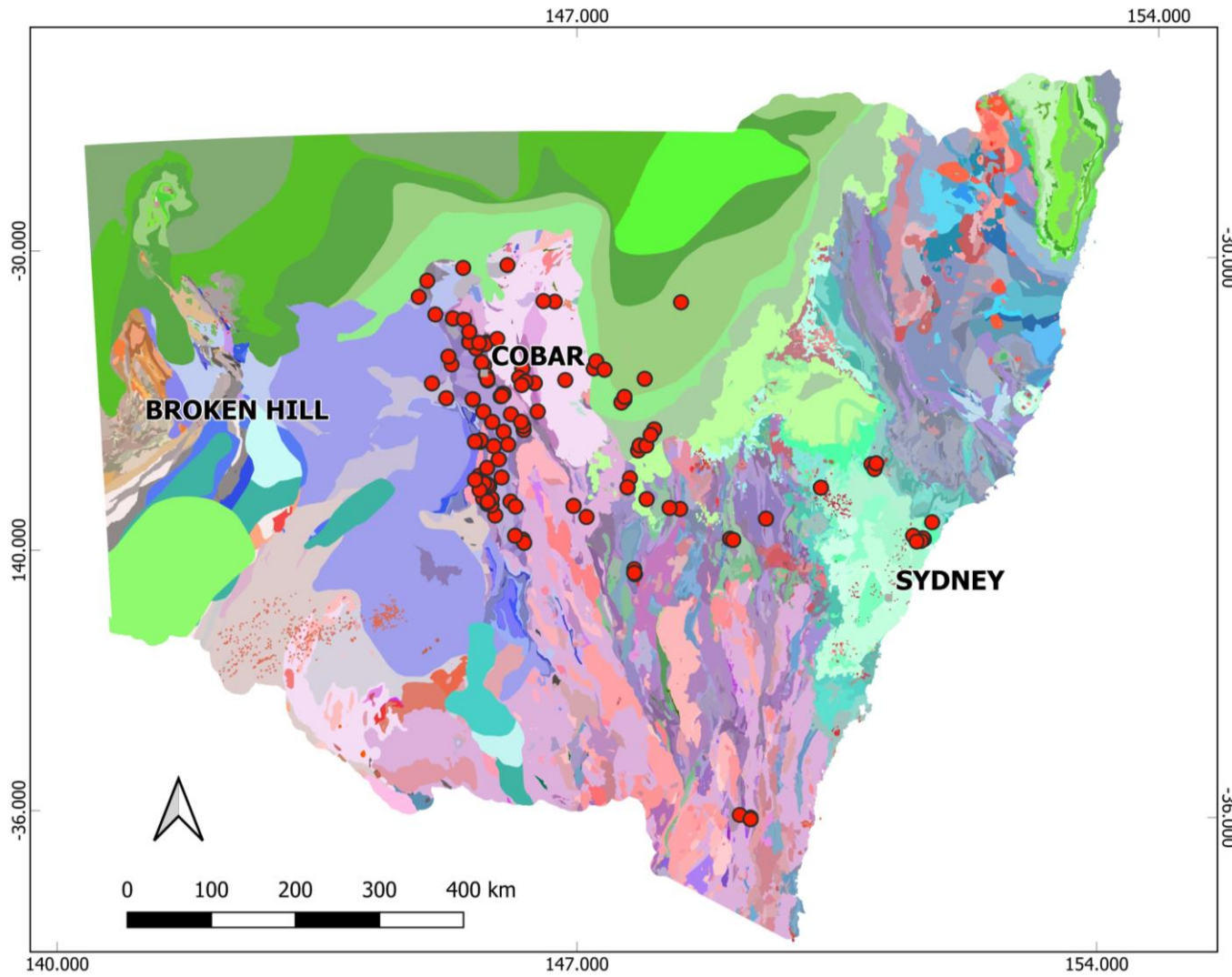
- Mulga Downs Group (undiff.)
- Cobar Supergroup (undiff.)
- Granite (undiff.)
- Major igneous bodies incl. Fiefield Suite
- Ballast Formation - Girilambone Group
- Girilambone/Adaminaby groups (undiff.)
- Girilambone Group (Cambrian)
- Continental and/or transitional crust (?)
- Uppermost oceanic crust (?)
- Sub-uppermost oceanic crust (?)
- Mantle

Looking towards NNW

Seismic acquisition in 2026



Petrophysical Atlas – First Edition release 2026



1200 core samples – Lachlan Orogen focus

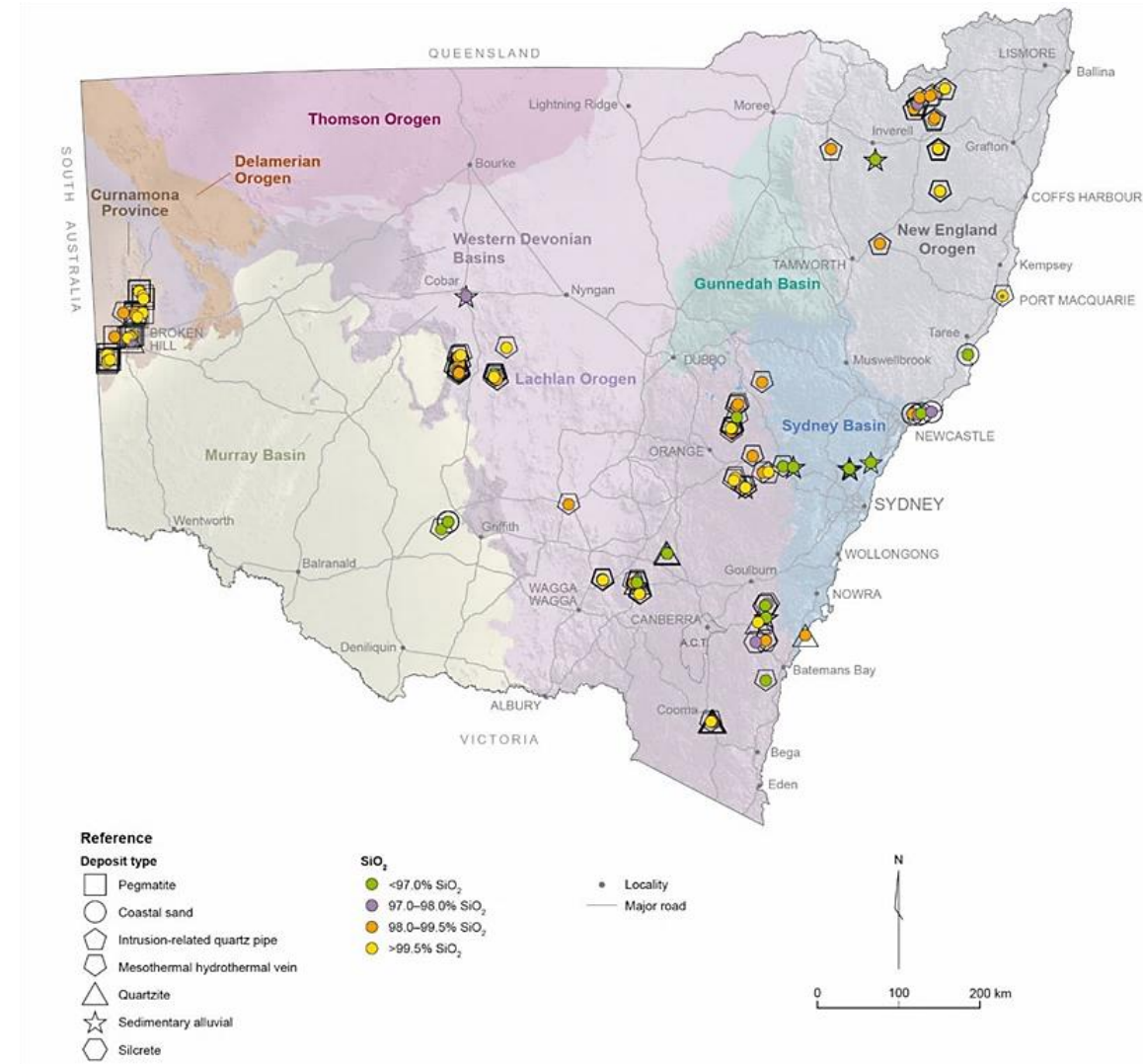
- Magnetic properties: magnetic susceptibility and Koenigsberger ratio
- Mass properties: dry bulk density, apparent porosity and grain density
- Seismic properties: P-wave velocity, S-wave velocity and acoustic impedance
- Electrical properties: galvanic resistivity, chargeability and inductive conductivity
- Gamma ray: K, U and Th

High purity silica

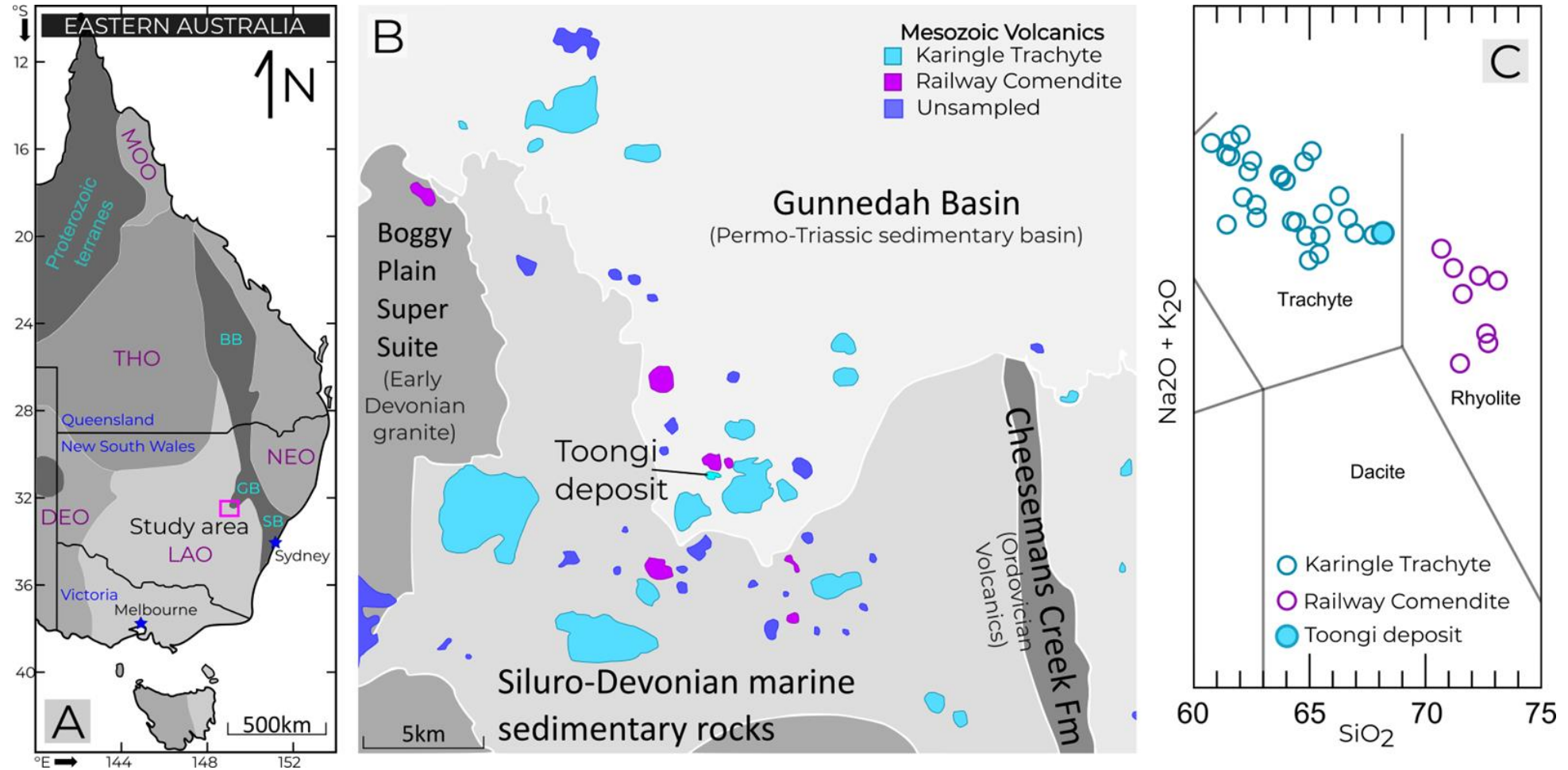
Recognised as a key resource under the NSW Critical Minerals and High-Tech Metals Strategy

Prospective regions

- New England Orogen
- Curnamona Province (Broken Hill area)
- Lachlan Orogen
- Cowra Region



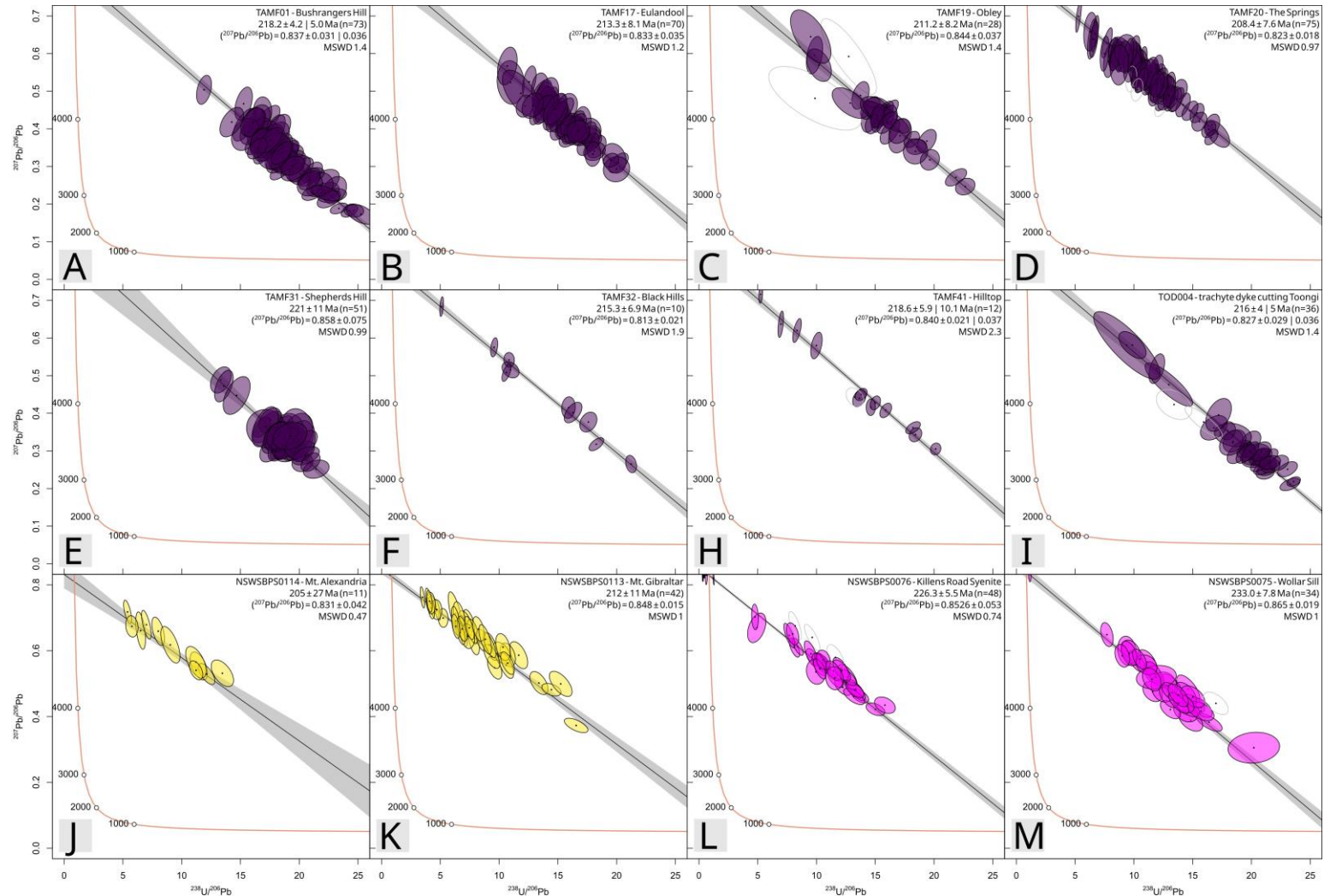
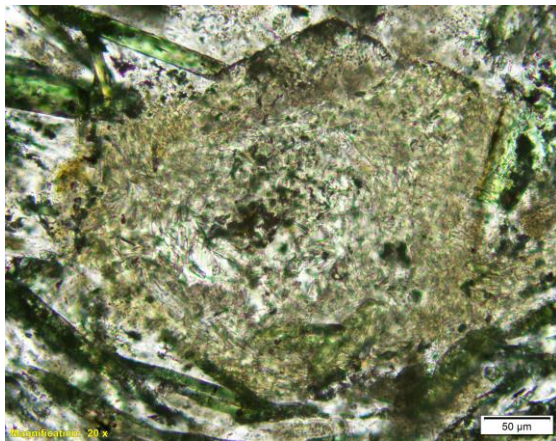
Alkaline igneous REE deposits – growing the exploration space



Apatite U-Pb geochronology

Benlong Volcanic Suite

- Age range ca. 208–221 Ma
- Paired chronometers:
 - Obley Rd trachyte 211.2 ± 8.2 Ma (apatite U-Pb) 209.1 ± 0.2 Ma (K-feldspar Ar-Ar)
 - Black Hills trachyte 215.3 ± 6.9 Ma (apatite U-Pb) 216.0 ± 0.3 Ma (K-feldspar Ar-Ar)
- How old is Toongi?
 - Unable to be dated directly
 - Dyke cutting east side of the deposit dated here to 216 ± 4 Ma



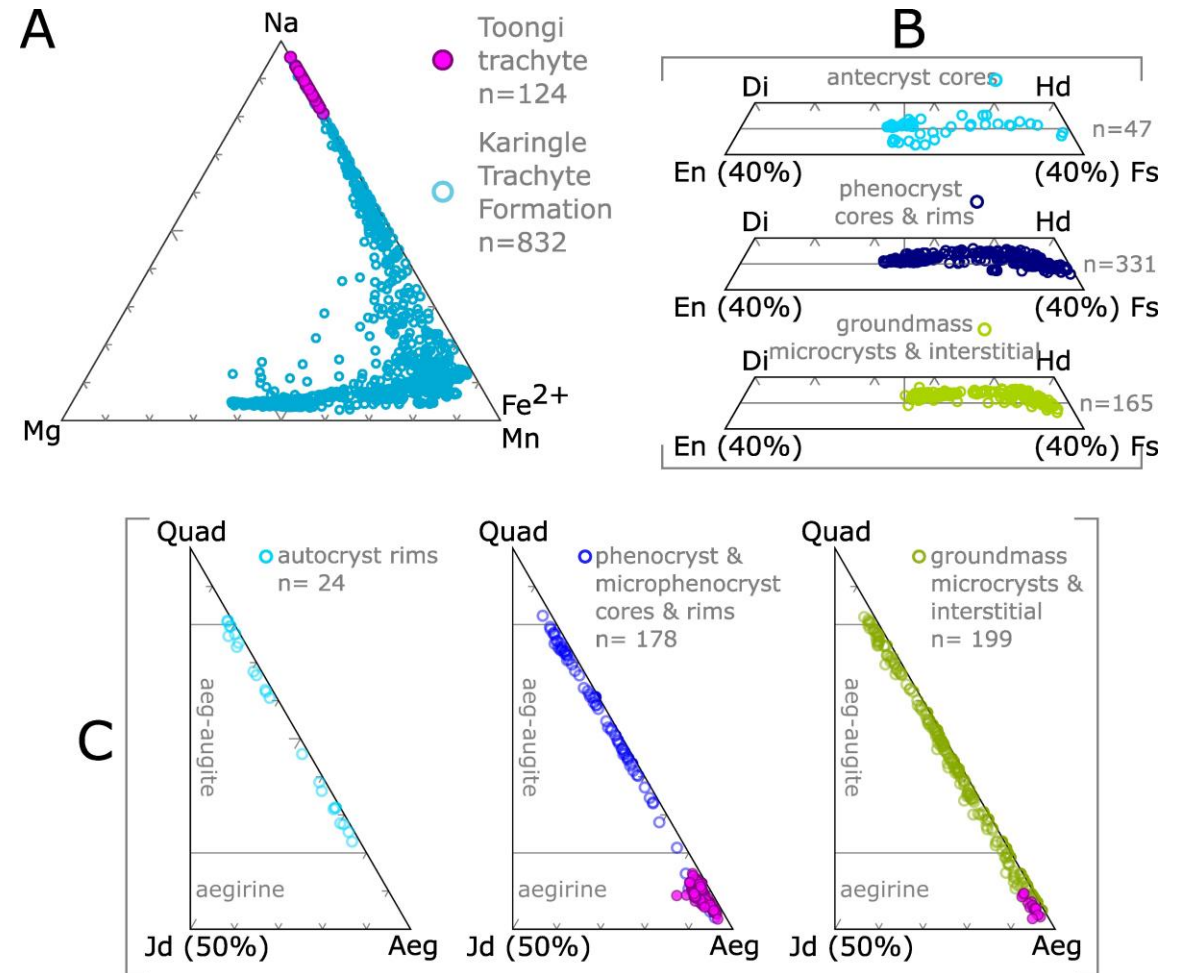
Mittagong

Mudgee

Small volume intrusions and volcanics near Mittagong and Mudgee part of the same system

Development of fertility criteria for alkaline igneous REE systems

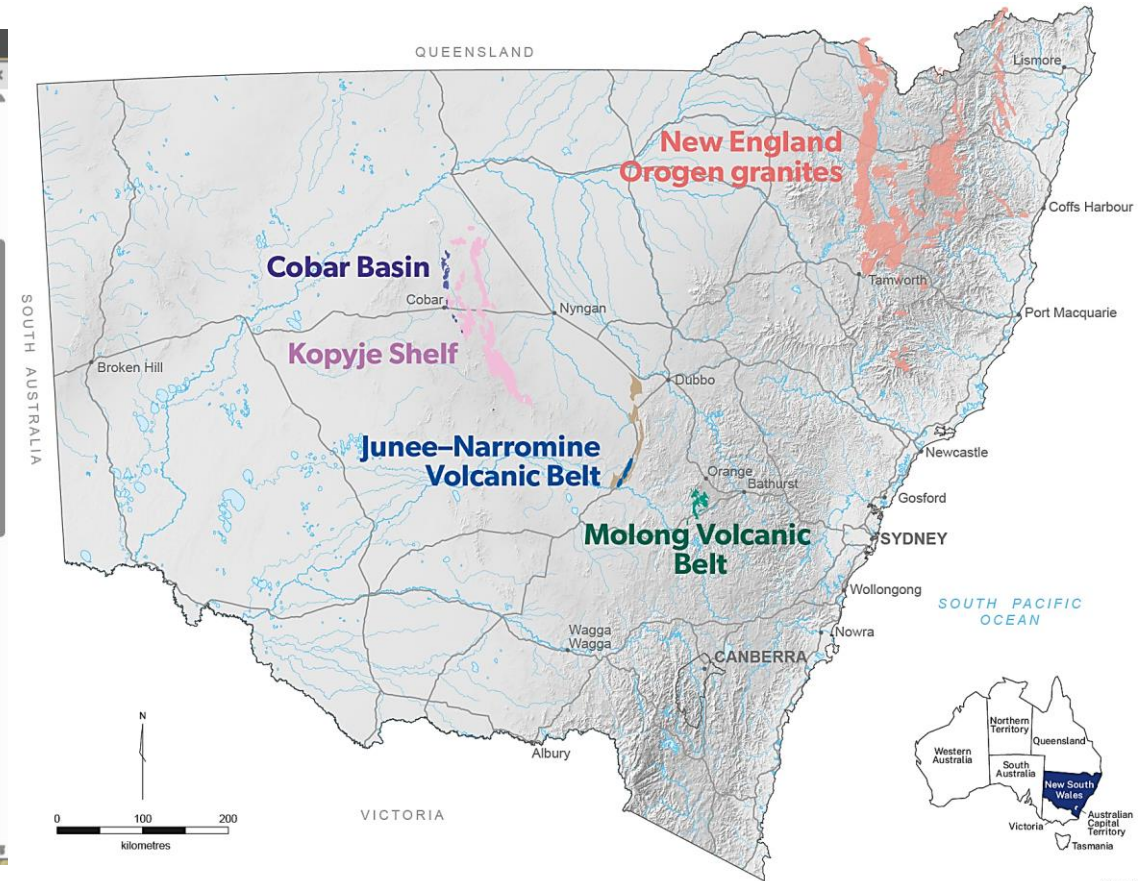
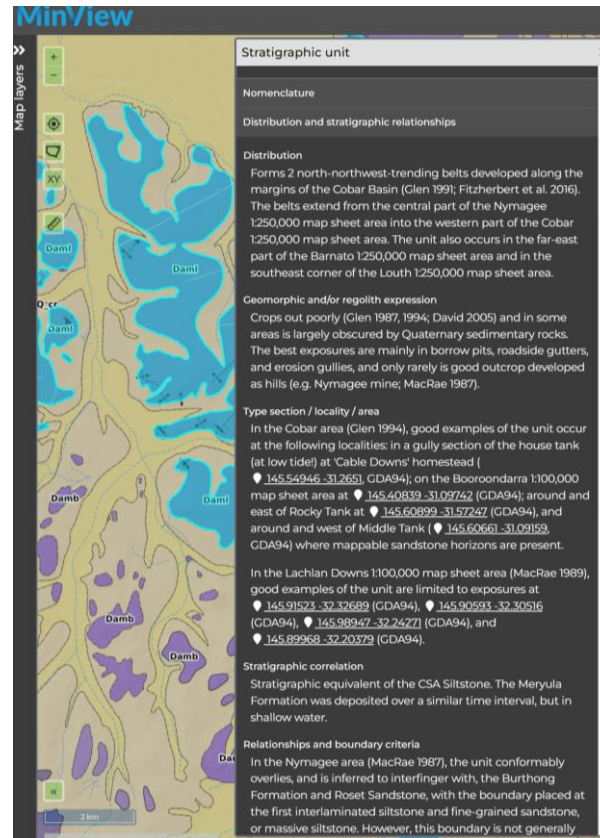
- Clinopyroxene is a powerful recorder of magmatic process.
- In peralkaline rocks, Cpx can evolve along different pathways which may be recording important enrichment processes.
- Benolong Volcanic Suite clinopyroxene composition evolves from diopside to hedenbergite to aegirine.
- Same magma chemistry evolution as the Gardar Igneous Province notable for Rare Earth Element resources in Greenland.



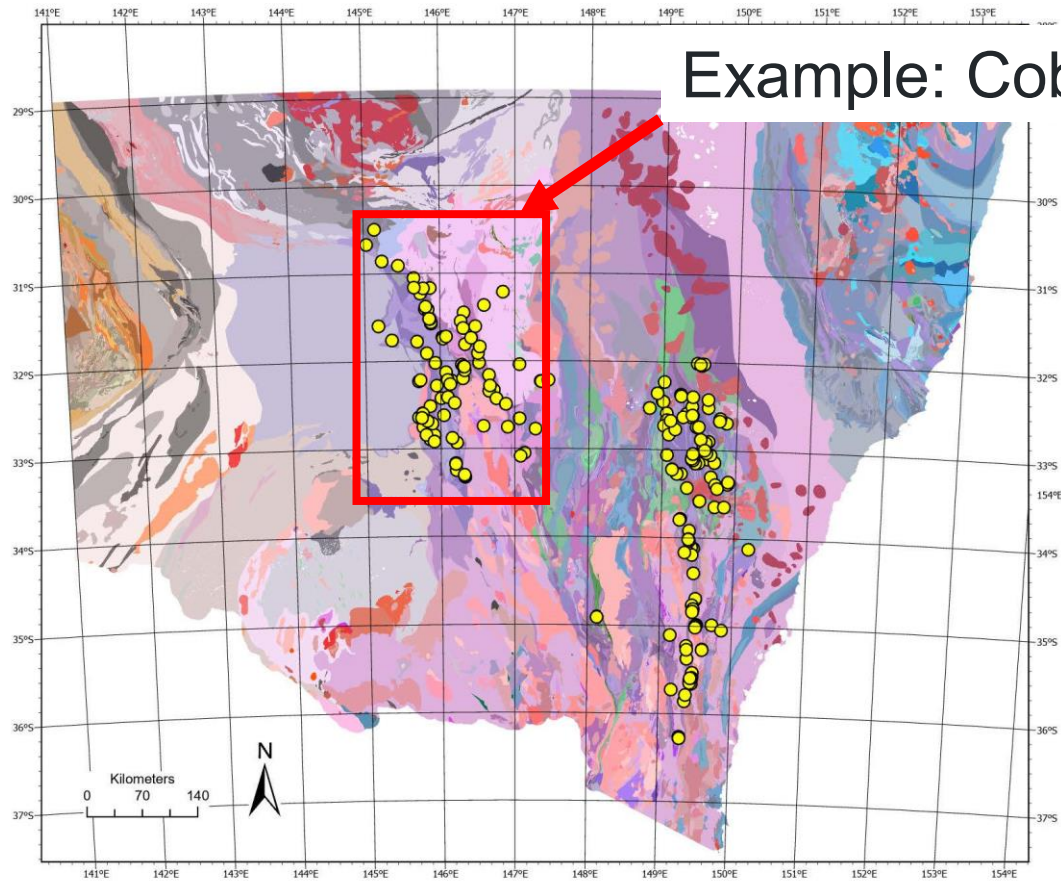
Simpson et al. 2025 DOI: <https://doi.org/s43247-025-02040-7>

Stratigraphic Unit Database – detailed rock unit descriptions in 2026

- 154 New England Orogen Granite units
- Macquarie Arc
 - Forest Reefs Volcanics
 - Weemalla Formation
 - Parkes Volcanics
- Cobar Supergroup
 - 10 Kopyje Shelf units
 - 3 Cobar Basin units
- Other units
 - Cotton Formation

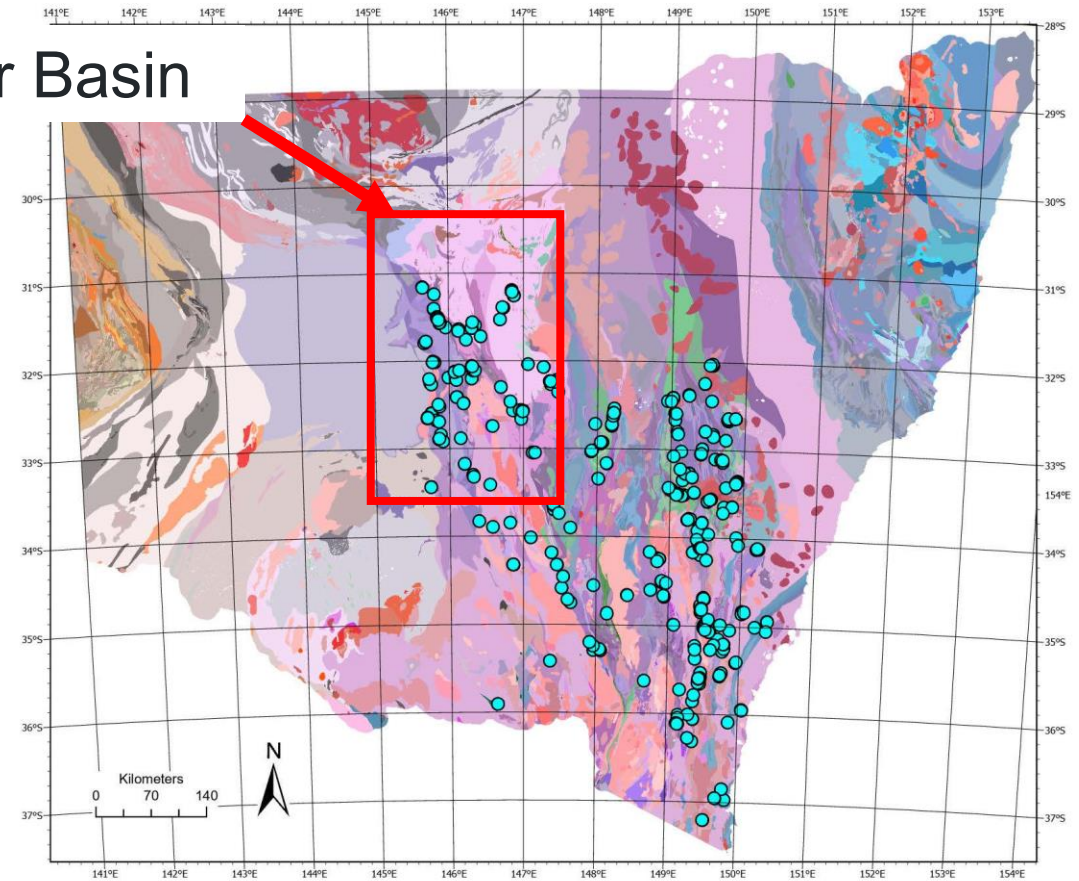


Mappable mineral system elements in NSW



Thermal mapping

- > 300 combined white mica and chlorite crystallinity measurements
- Peak regional/contact metamorphic & hydrothermal temperature maps
- Peak thermal contrast mapping - regional V hydrothermal metamorphism
- Maximum burial depth mapping - combine with B0 measurement.

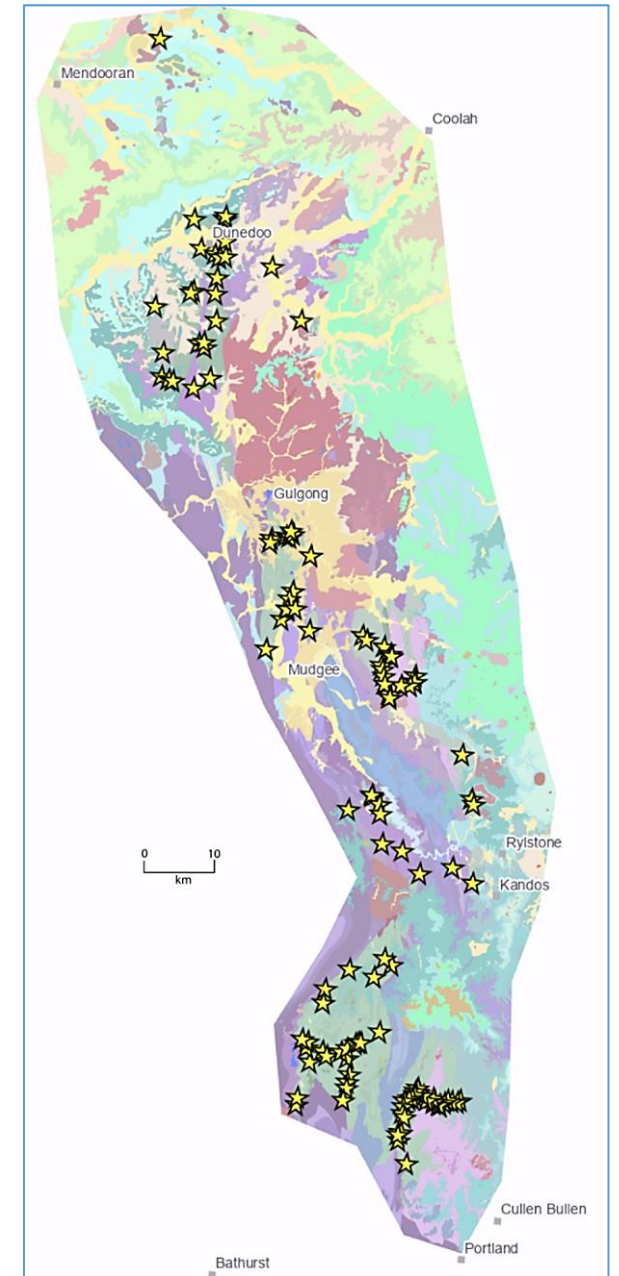
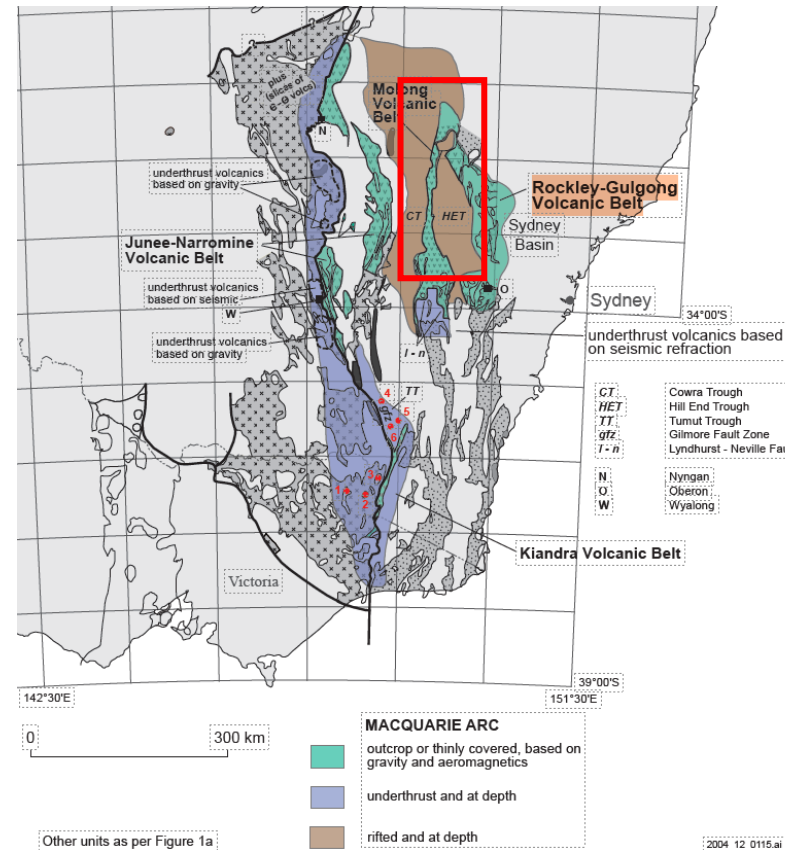


Sulfide isotope mapping

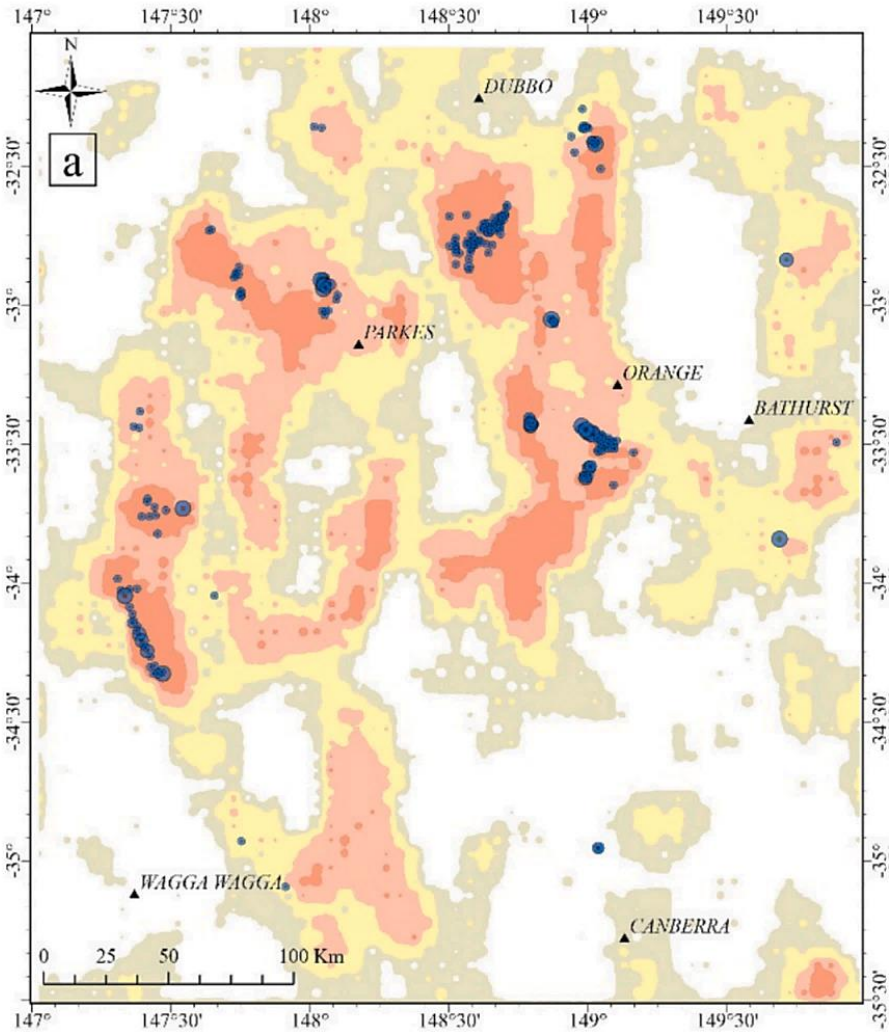
- > 4700 mixed sulfide S isotope analyses & > 400 galena Pb isotope analysis (+ 210 prospects)
- Maps of raw $\delta^{34}\text{S}$
- Maps of inferred sulfur source based on known reservoir (basement, magmatic, basin etc...)
- Maps of Pb extraction age and Pb source (crust V mantle).

Rockley–Gulgong Volcanic Belt Project

- Easternmost Belt
- Least well dated
- SHRIMP dating
- Conodont dating of cherts
- Mapping has been substantially updated and merged with the NSW Seamless Geology.
- FY2026–27:
 - Rockley Volcanics
 - upgrading the mapping of the Oberon–Rockley region.



AI and ML based mineral prospectivity mapping



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Full length article

Machine learning framework for prospectivity mapping of Cu–Au porphyry mineralisation in the Lachlan Fold Belt, eastern Australia

Elnaz Heidari ^{a,*}, Ehsan Farahbakhsh ^a, Hojat Shirmard ^a, Fabian Kohlmann ^b, Phillip Blevin ^c, R Dietmar Müller ^a

^a EarthByte Group, School of Geosciences, The University of Sydney, Sydney, Australia

^b Lithodat Pty. Ltd., Melbourne, Australia

^c Geological Survey of New South Wales, Sydney, Australia



Porphyry Mineralisation

Weight_Size

- 0.1, Prospect
- 0.2, Small
- 0.3, Medium
- 0.4, Large
- 0.5, Very Large

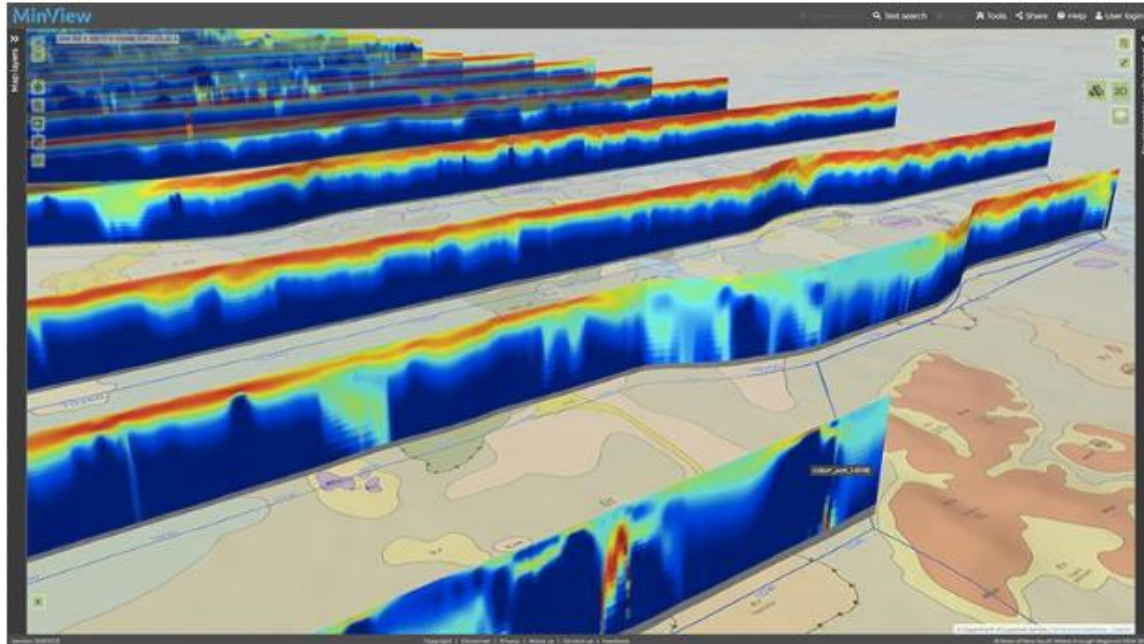
— Faults

MPM

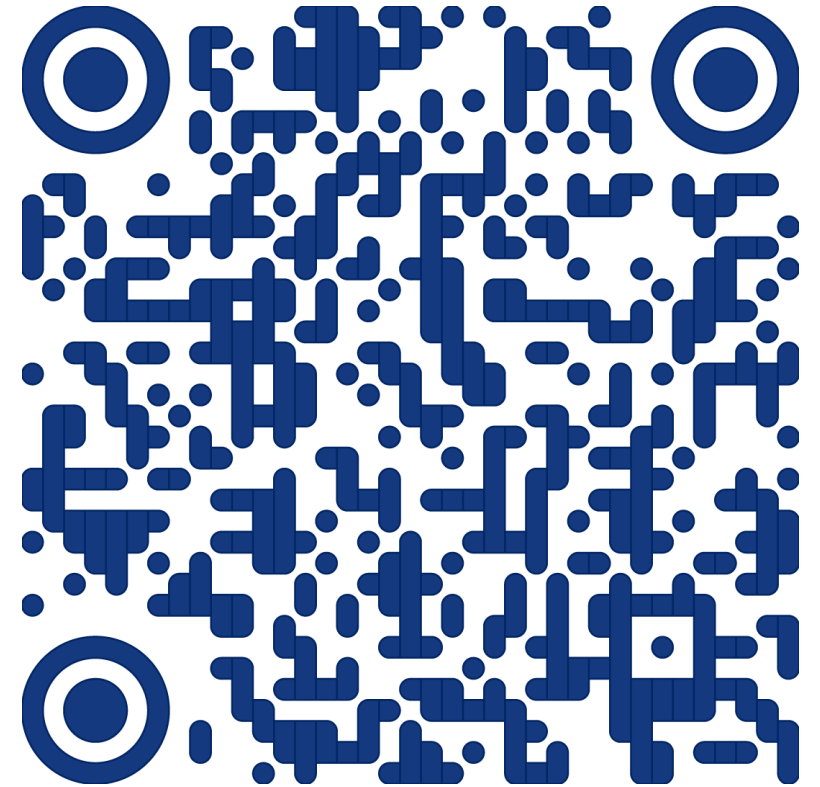
Probability

- 0 - 0.2
- 0.2 - 0.3
- 0.3 - 0.45
- 0.45 - 0.6
- 0.6 - 1

Explore our data here



MinView



AUSTRALIA MINERALS

REALISE THE OPPORTUNITY

New precompetitive data for exploration success in NSW

Dr Phillip L Blevin
Chief Geoscientist and Head
Geological Survey of New South Wales

