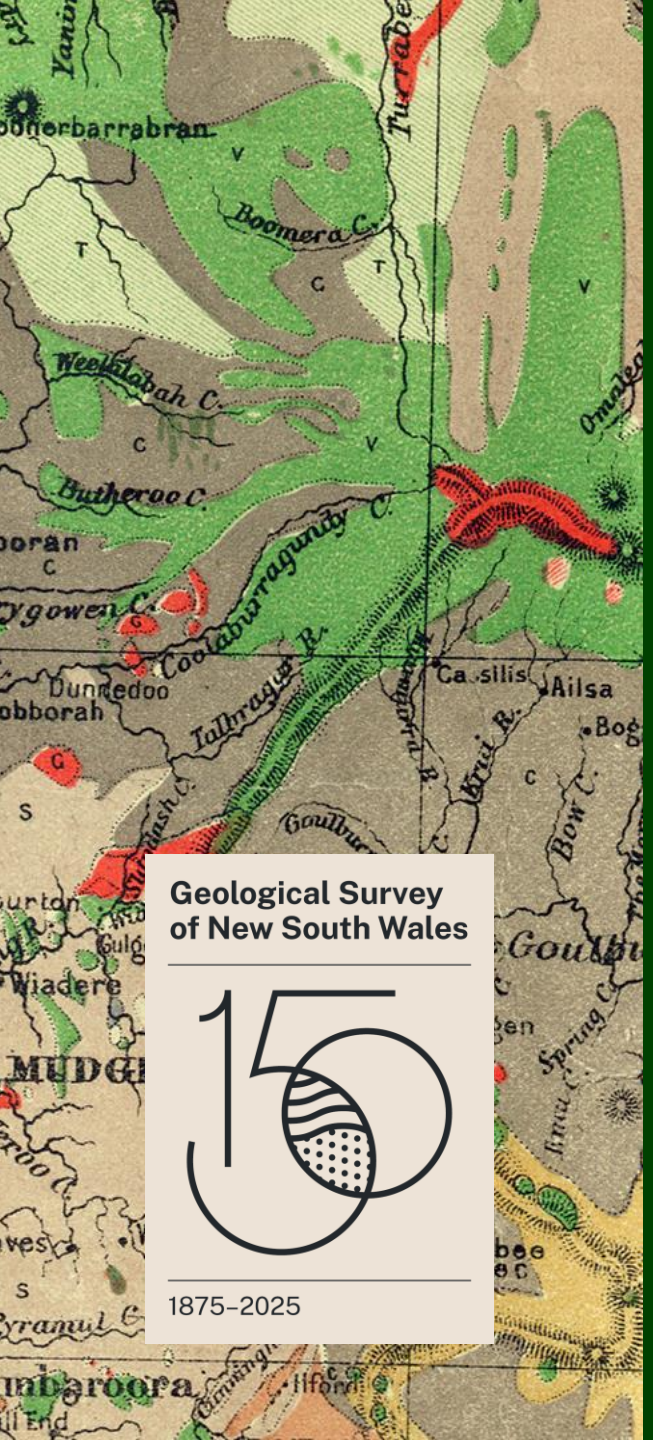


Geological Survey of NSW, 150 years of excellence in geoscience

Subtitle

Dr Phillip Blevin
Chief Scientist and Head of the Geological Survey

9 May 2025

NSW GOVERNMENT

1

NSW GOVERNMENT

150 Years

150th Anniversary Year of the GSNSW

National Gallery of Victoria

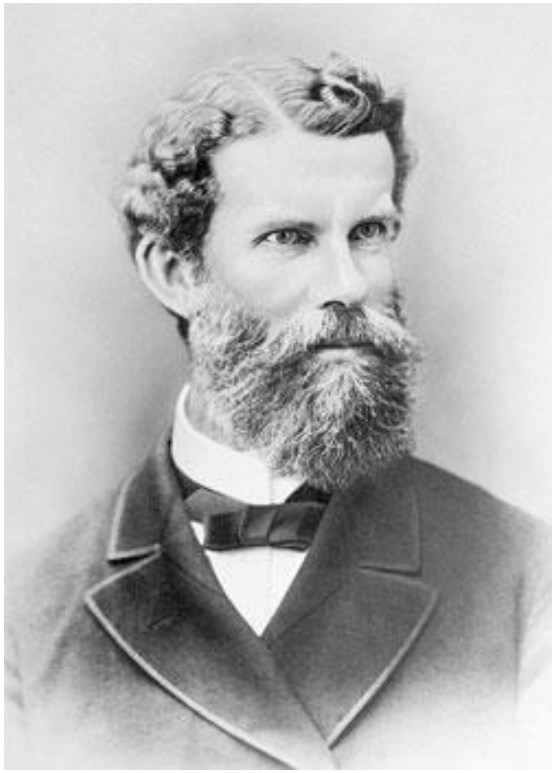
Governor Fitzroy to Earl Grey
1st March 1849

"I am desirous of…a Mineral and Geological Survey to be made of the Colony.."

"…if the country were examined by a competent Geologist…valuable metalliferous ores would be discovered…"

National Portrait Gallery London

150th Anniversary Year of the GSNSW

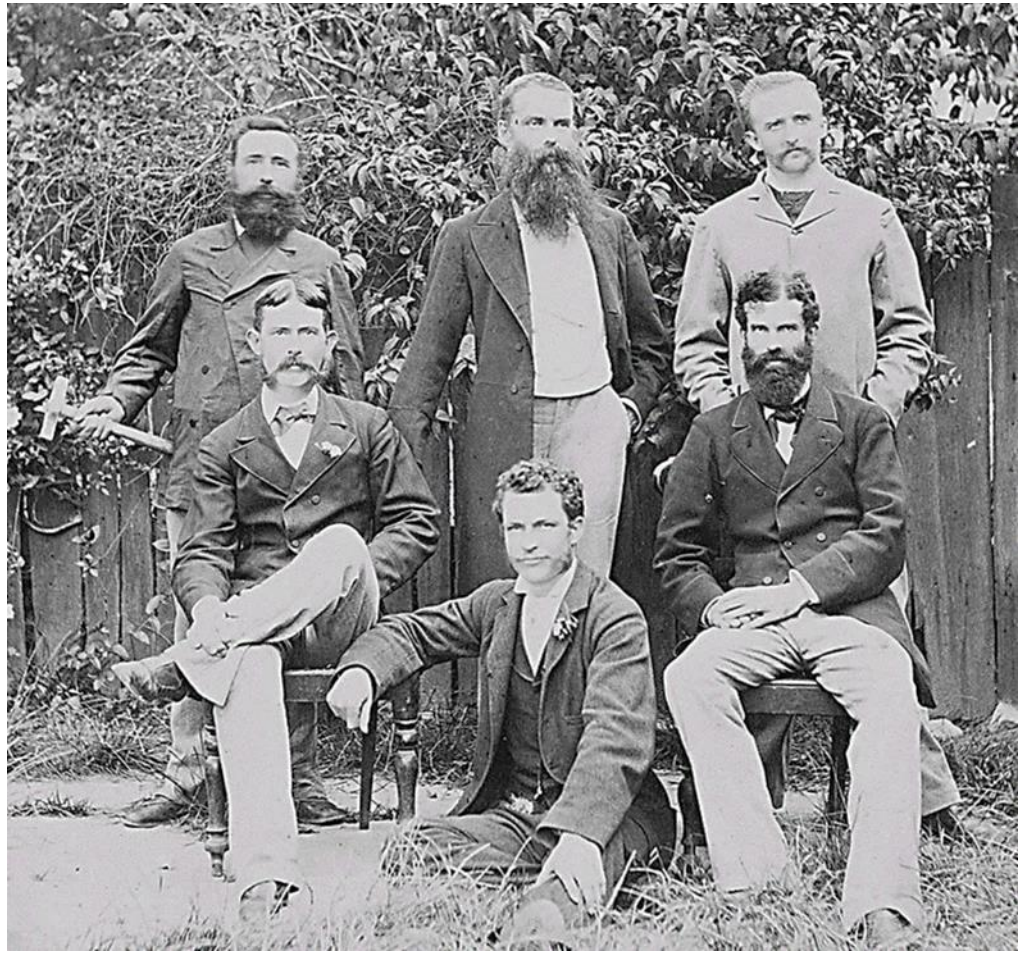


"The (proposed) Mining Department should include a geological survey; it would be incomplete without one.

Mining and geology are inseparable; they mutually contribute to each other's advancement."

C. S. Wilkinson. Gold Fields Royal Commission, 1870

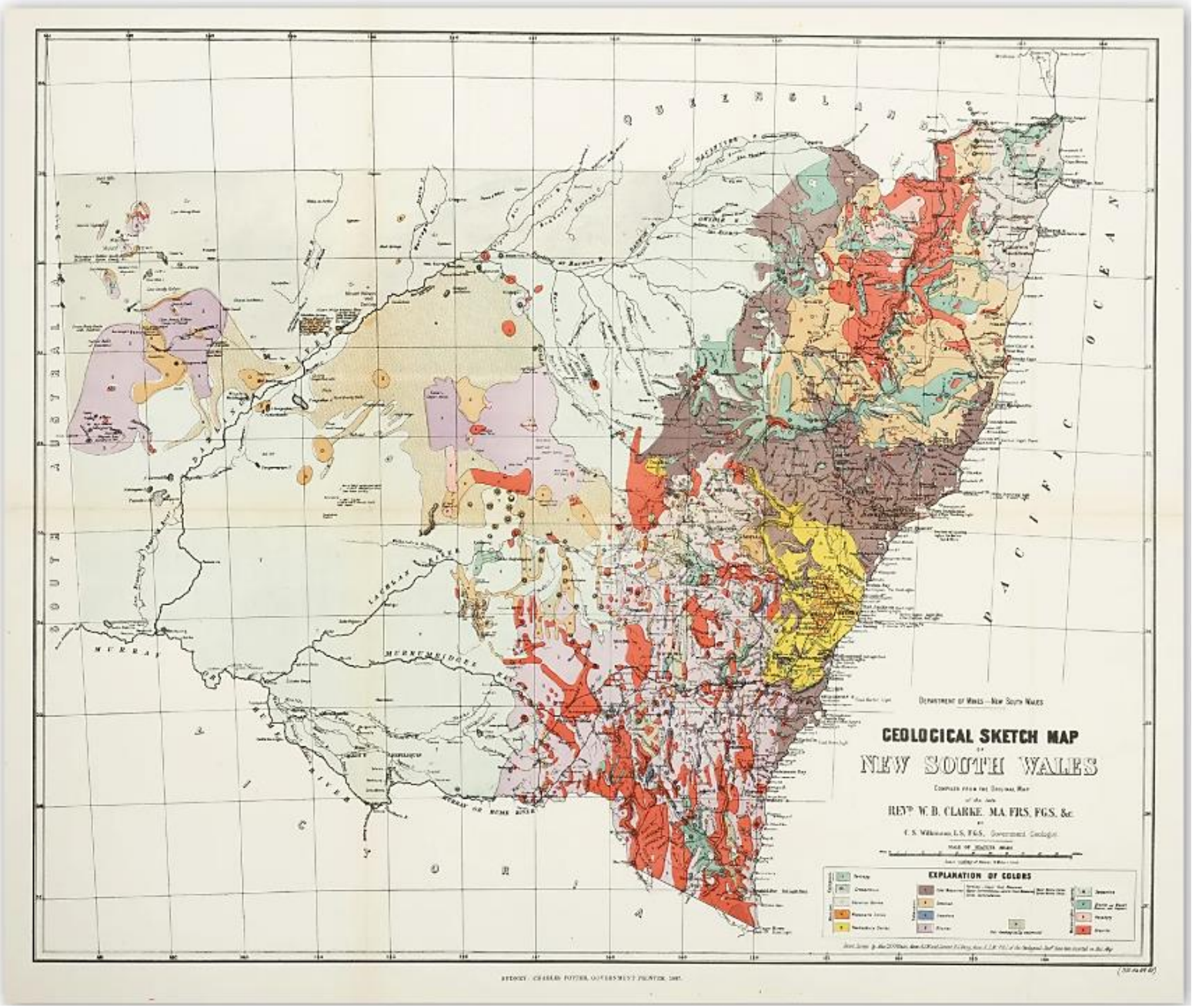
150th Anniversary Year of the GSNSW



1879

1875: GSNSW established. First geological map.
1879: The Museum of Mining was established.
1880: First state geology map (after Clarke)
1886: Mining and Geological Museum.
1883: *Discovery of the Broken Hill ore deposit*
1890s: Search for underground water
1928: The Mineral Industry of N.S.W.
1930s: Aerial mapping; Field vehicle.
1950s: Systematic geological mapping.
1968: Londonderry Core Library established
1974: First NSW map based on plate tectonic theory.
1995: Museum closed.
2002: MinView.
2004: Relocation to Maitland.
2018: Seamless Geology.

- Mapping over time
- Many other types
- Combinations of techniques
- Changes in delivery
- 2D to 3D and 4D
- Boots on the ground here to stay



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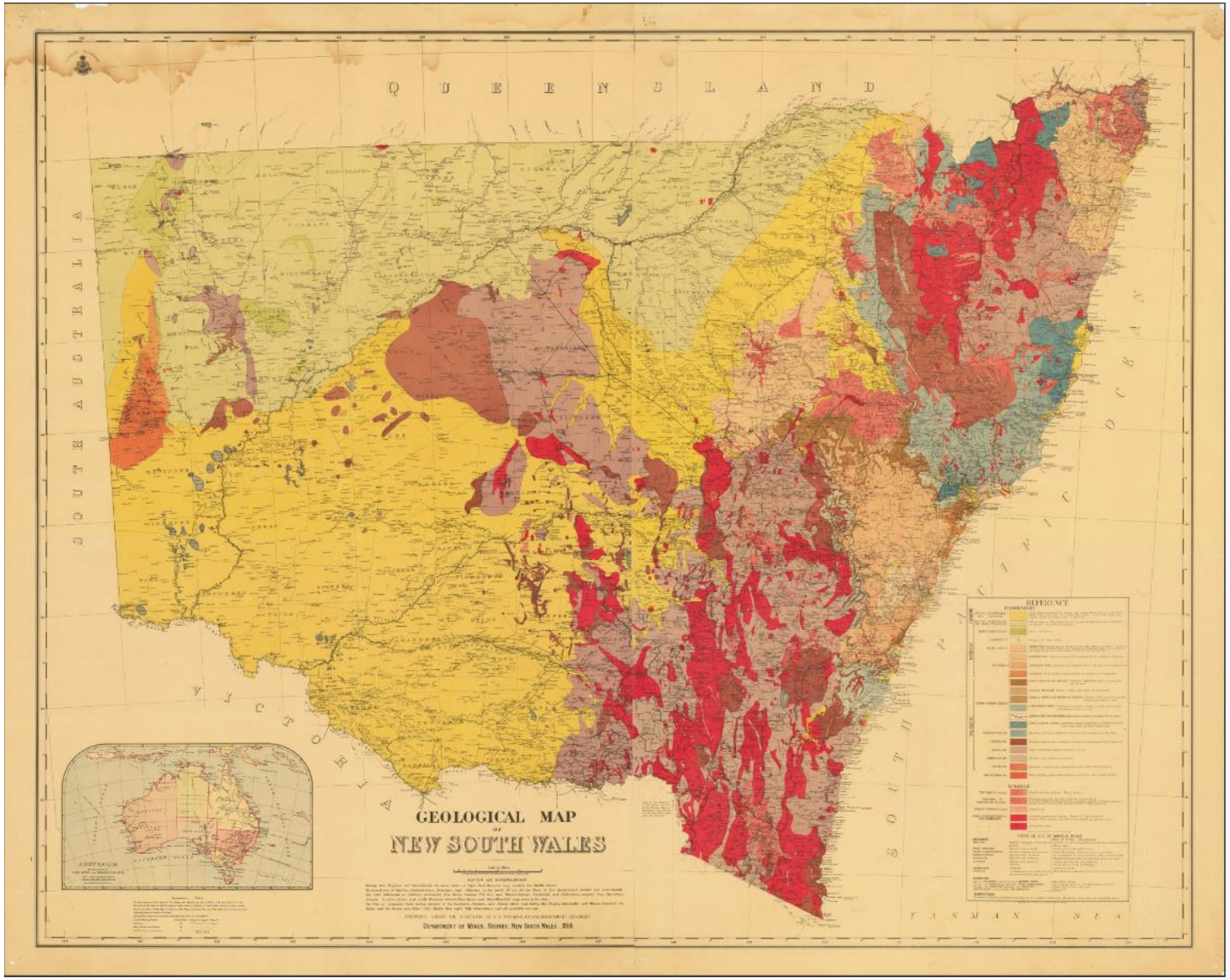

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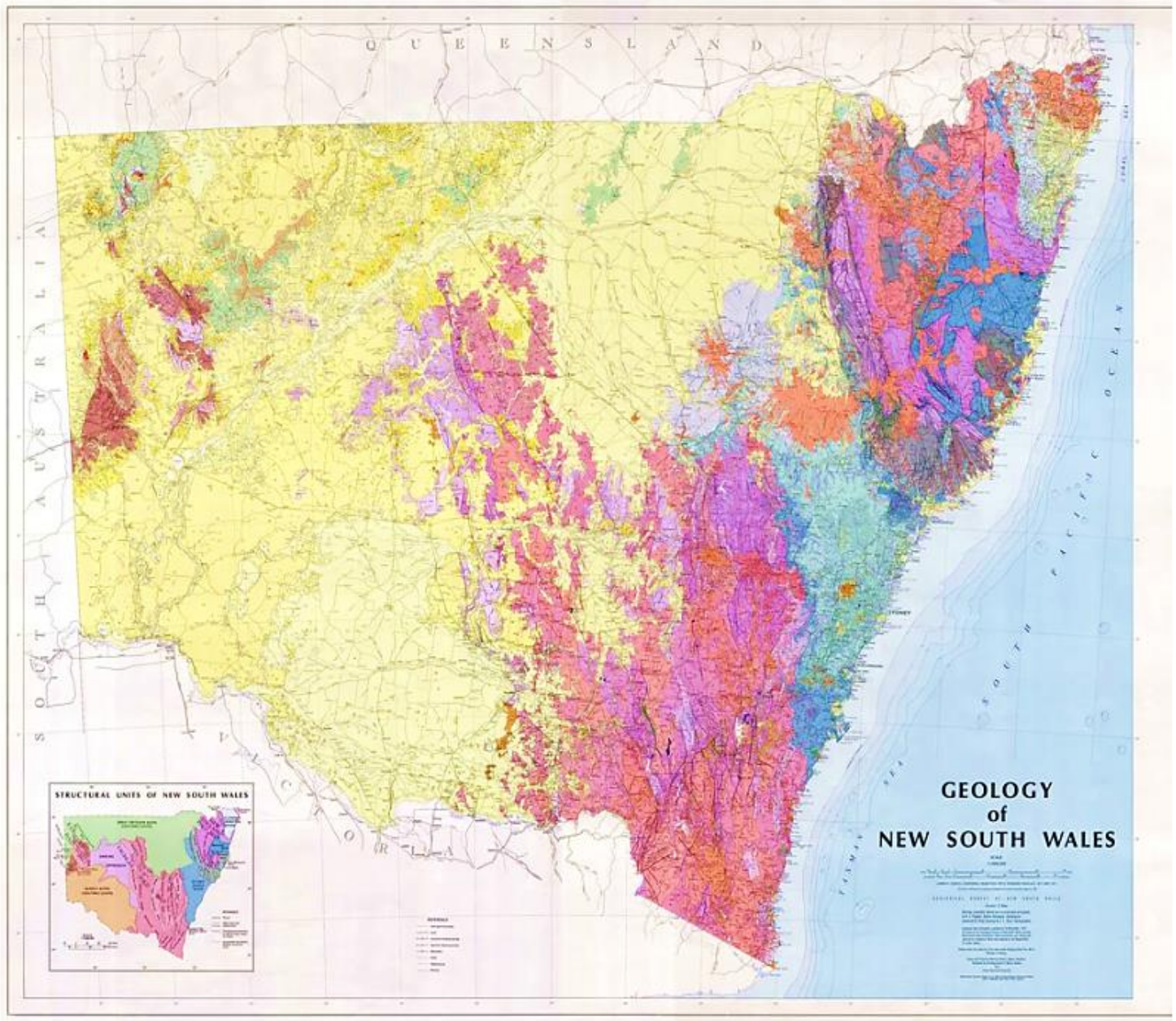

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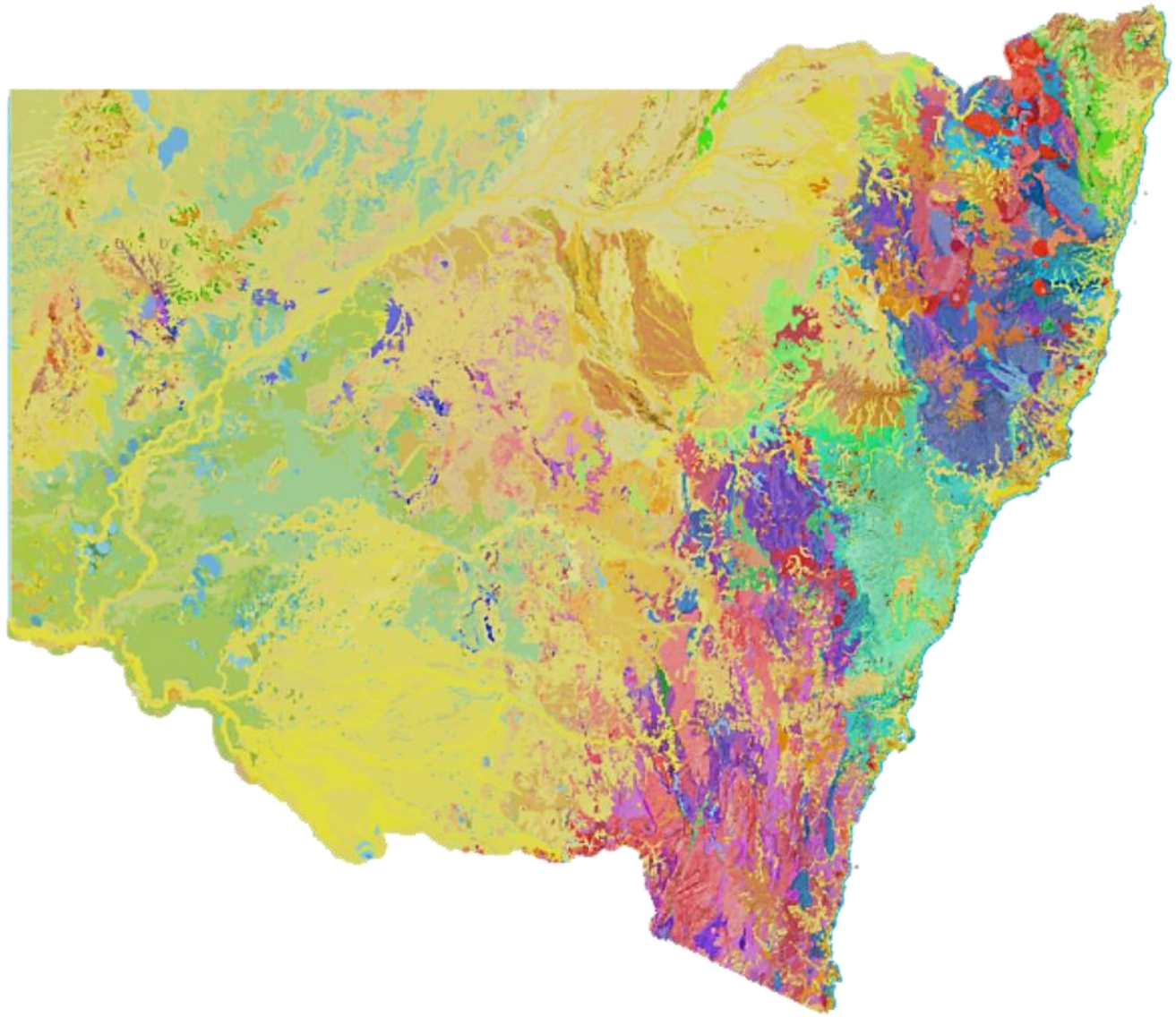

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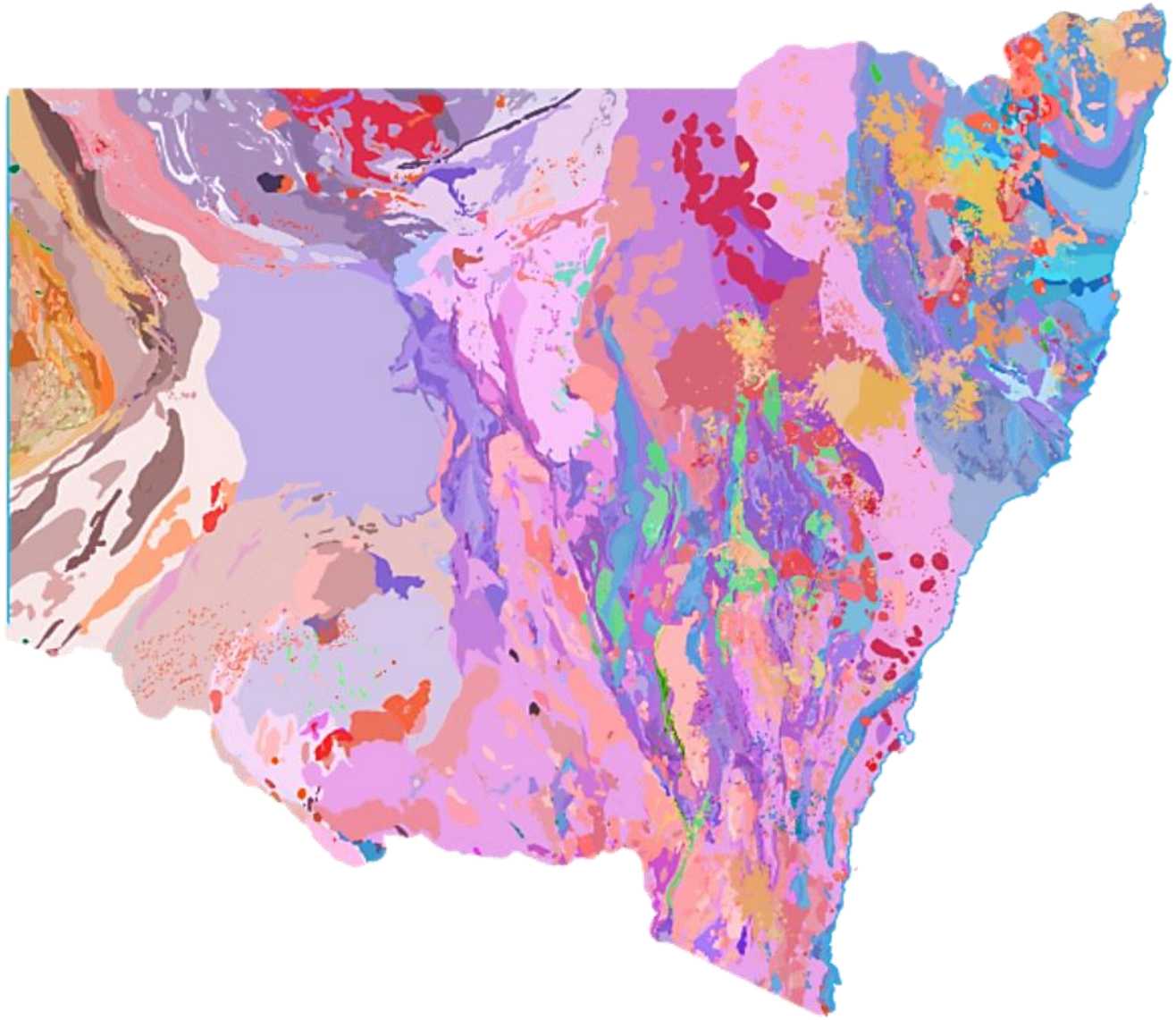

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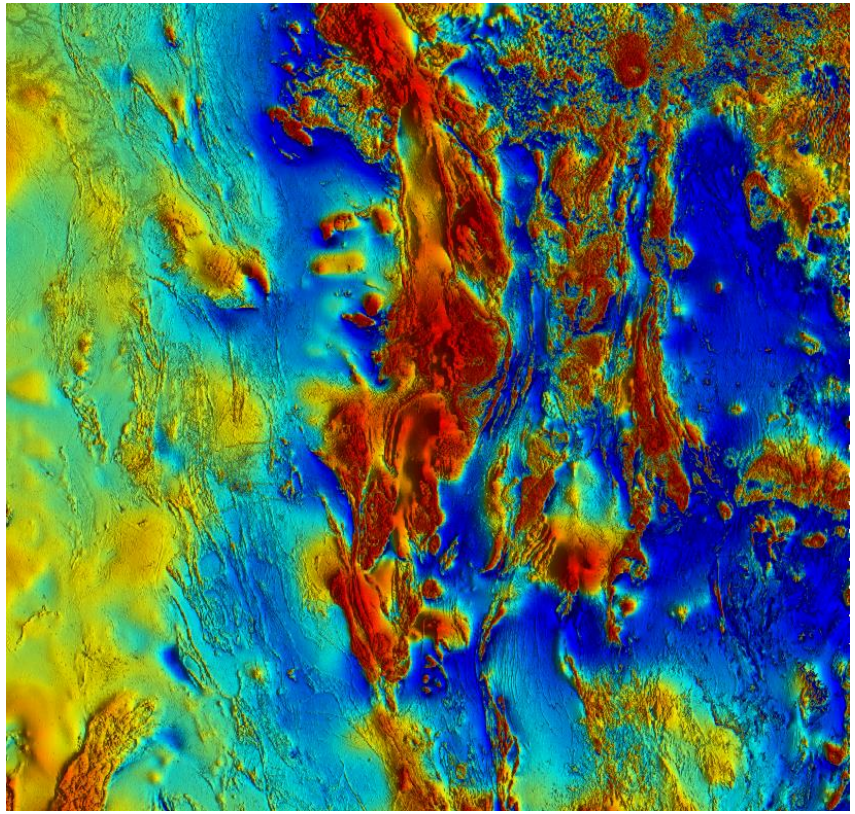

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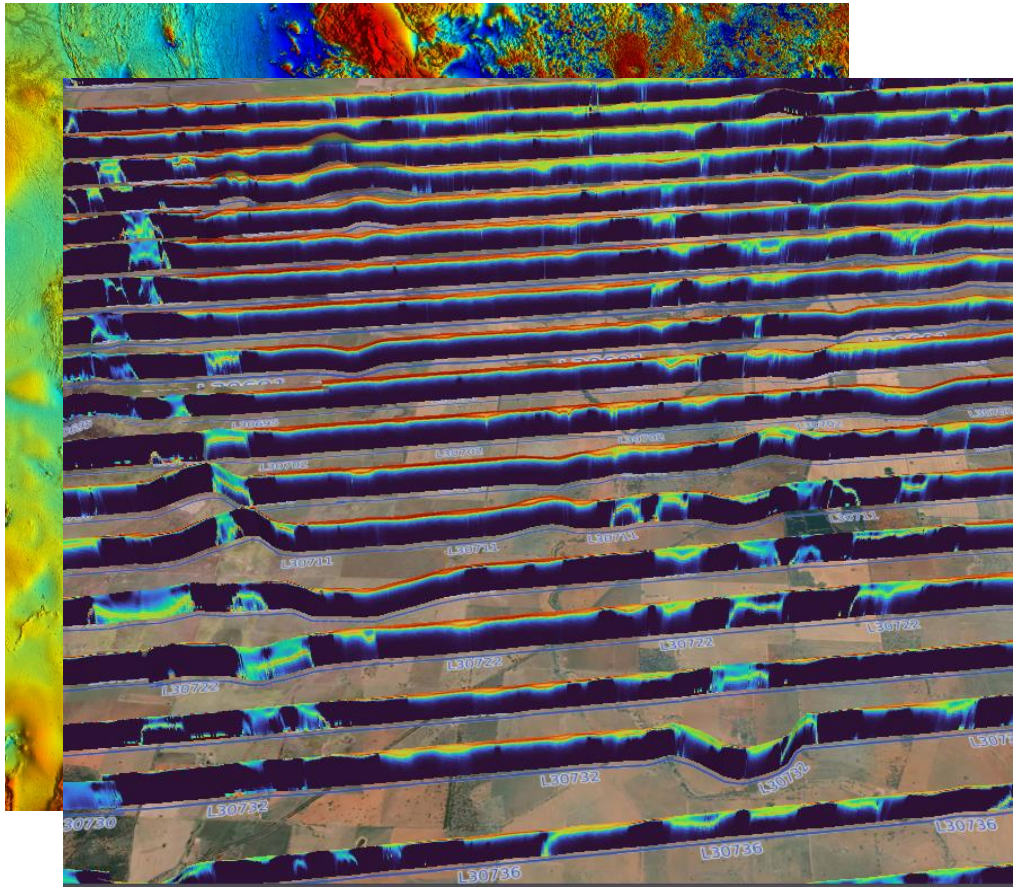

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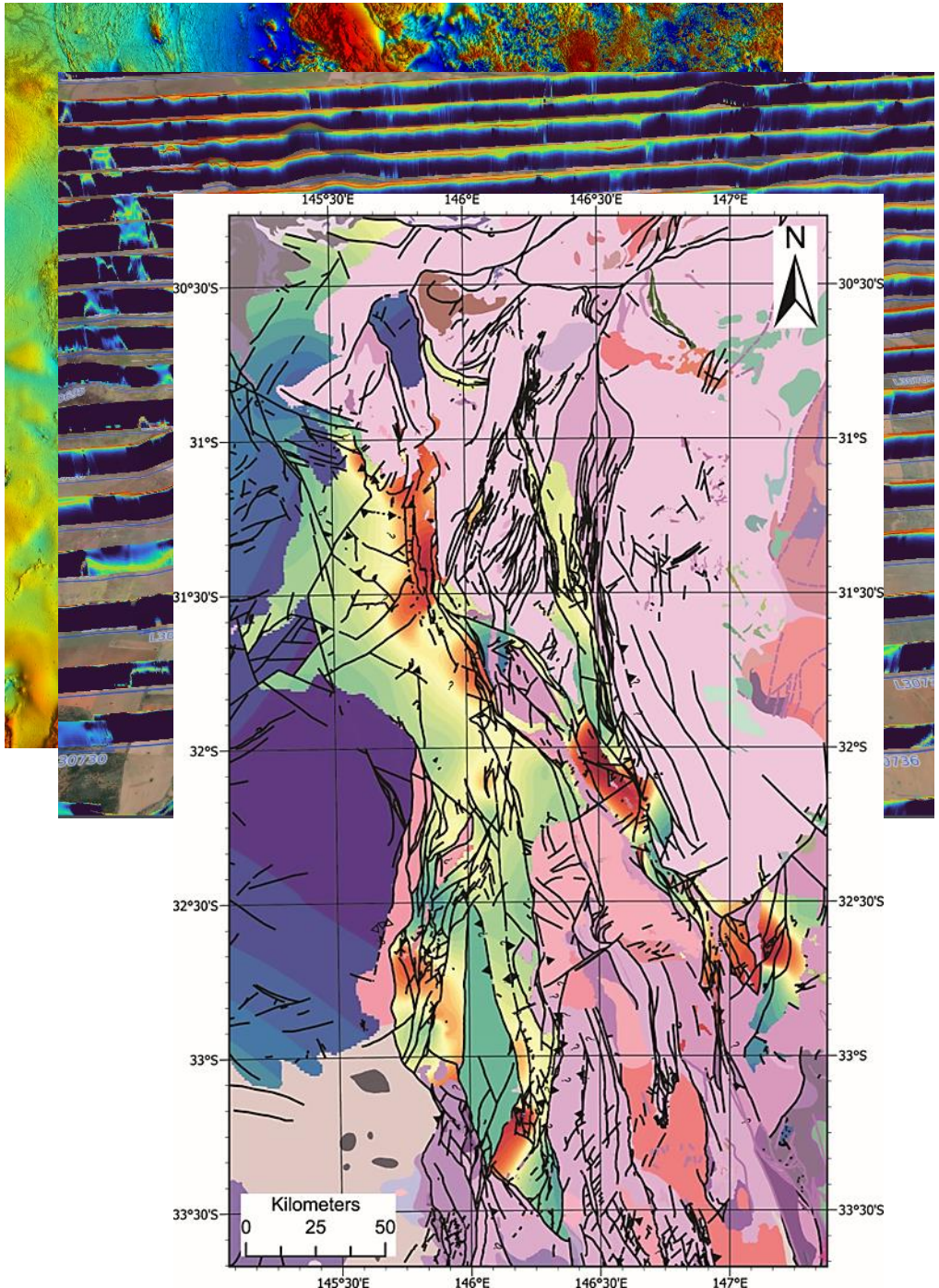

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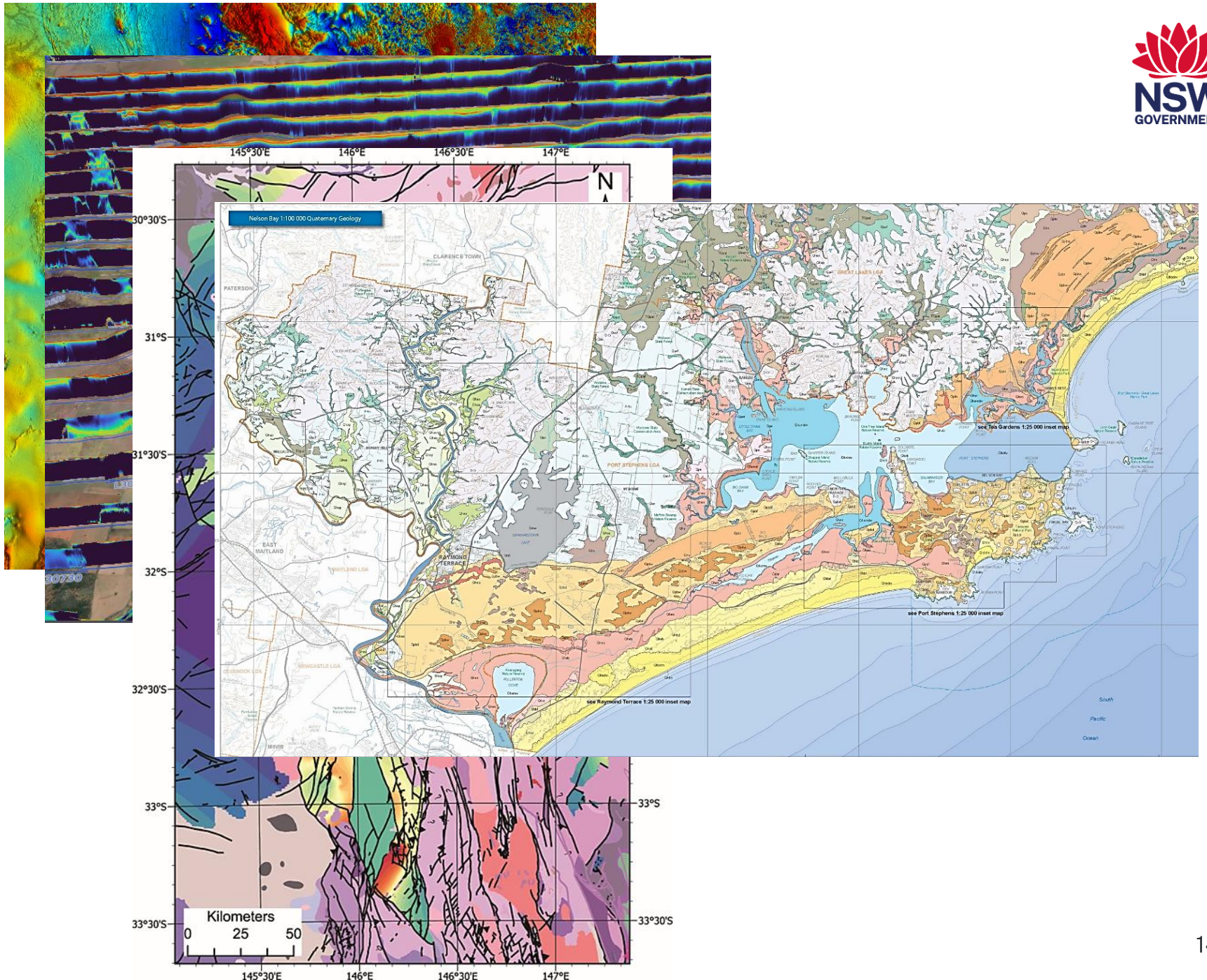

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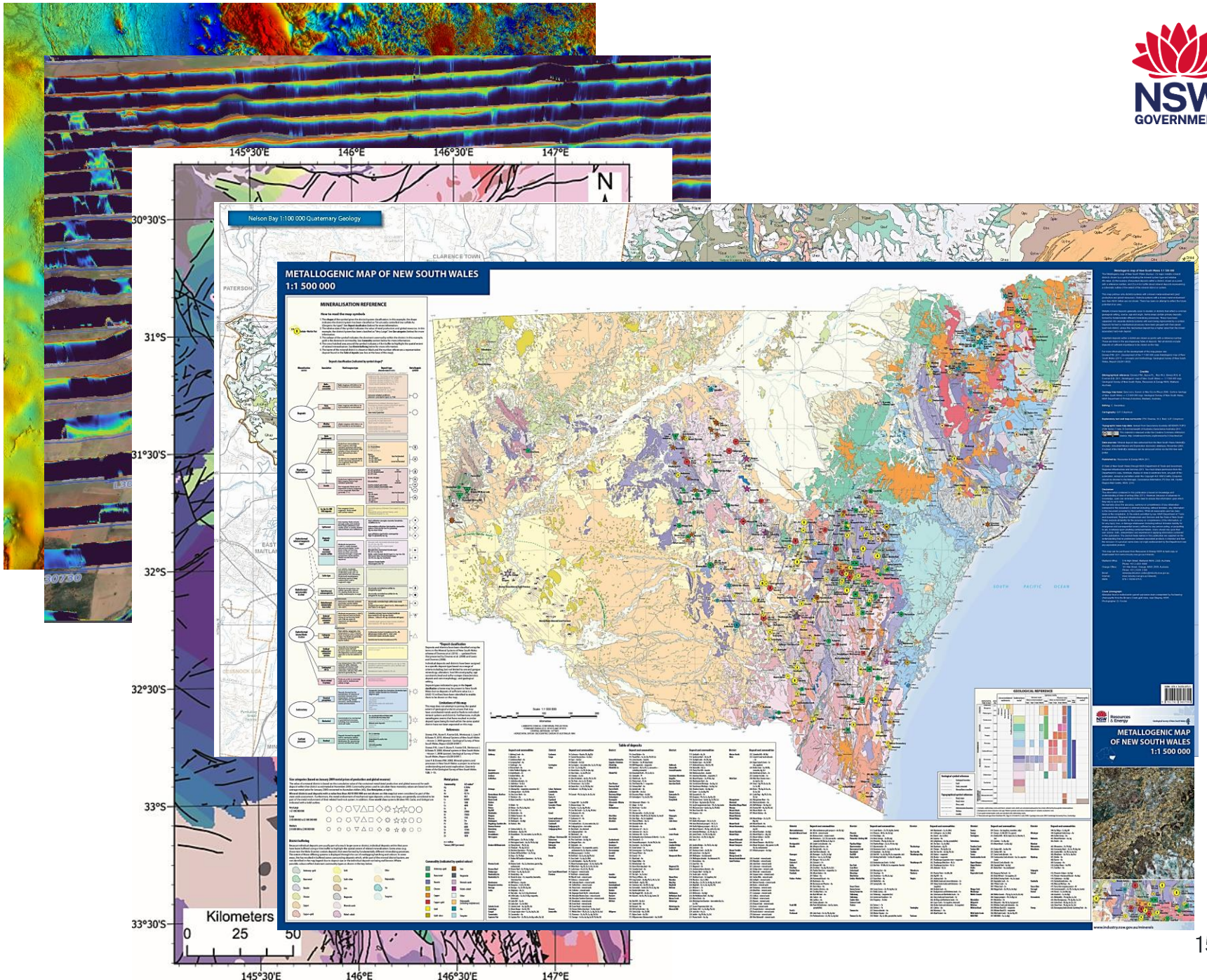

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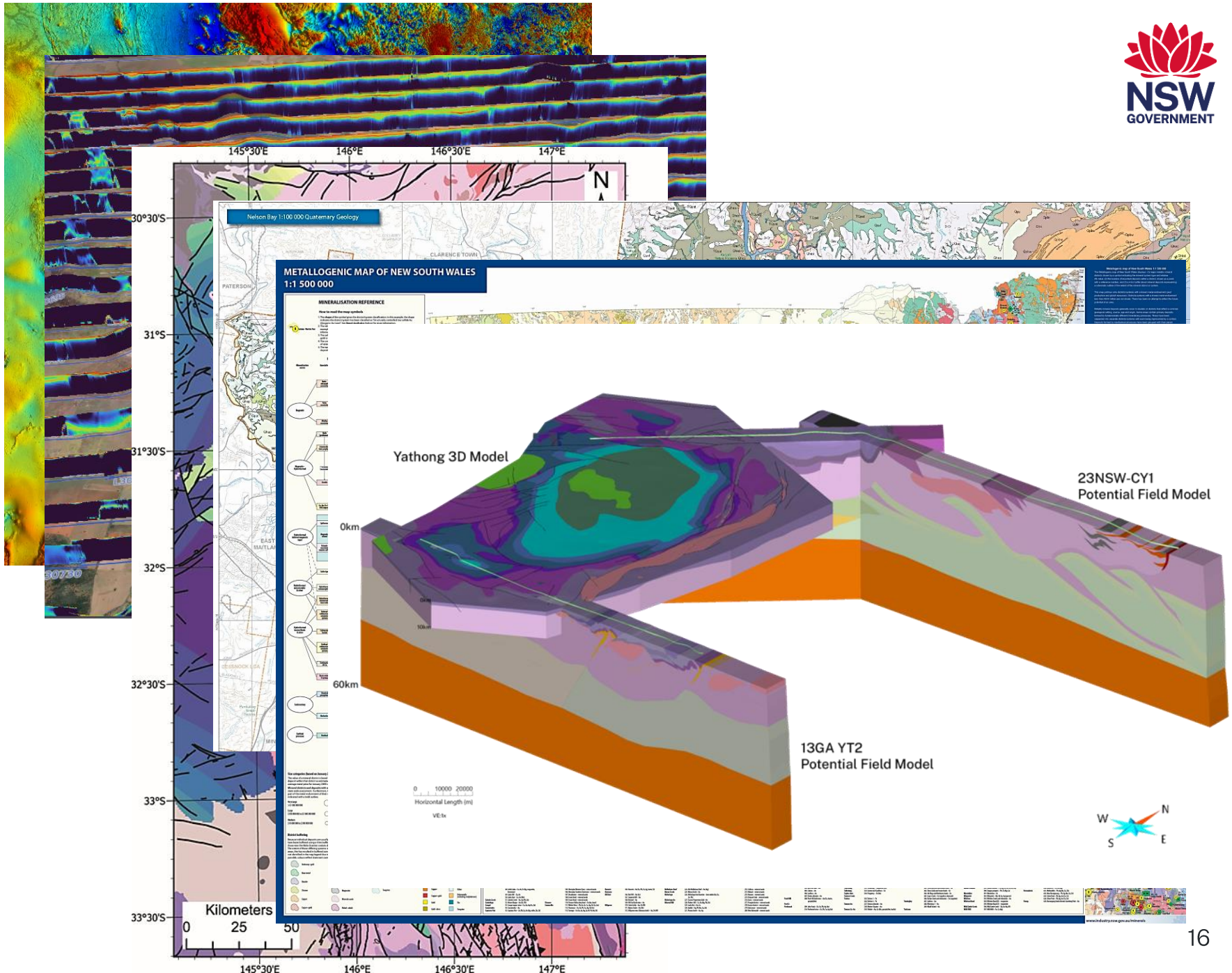
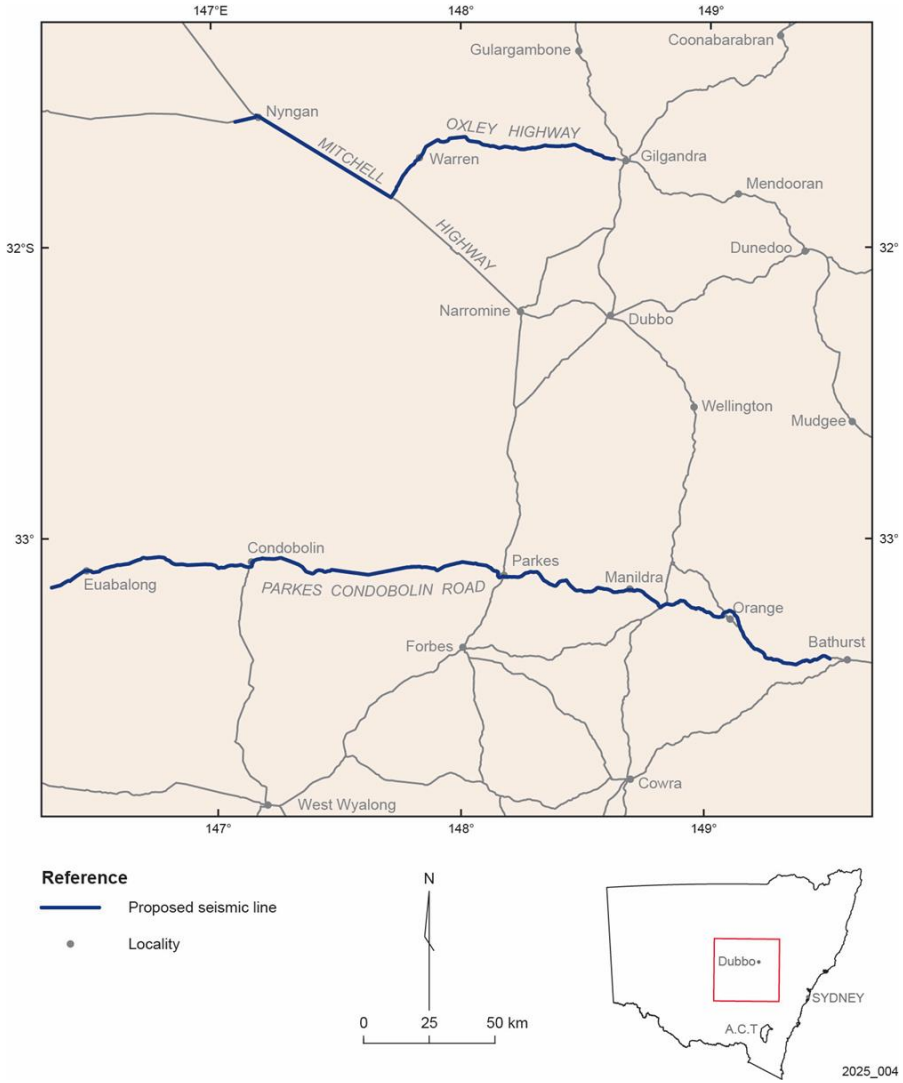


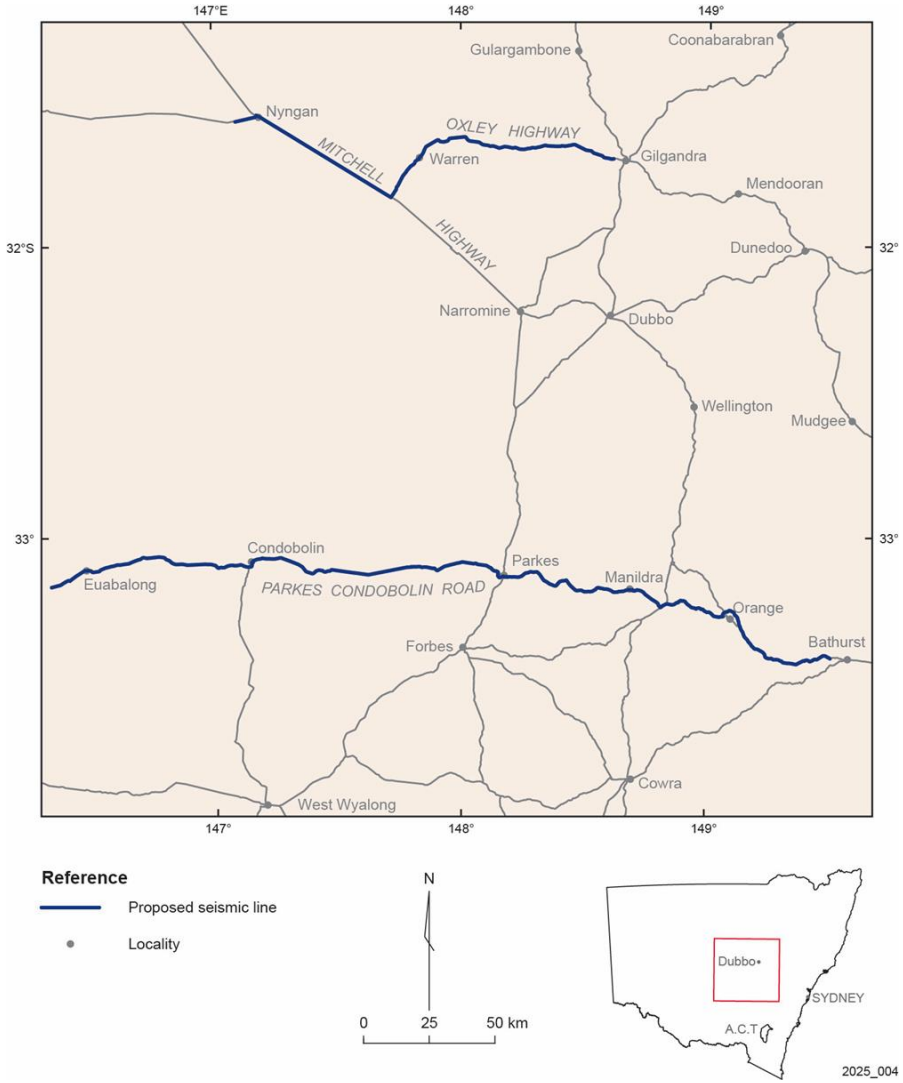
2

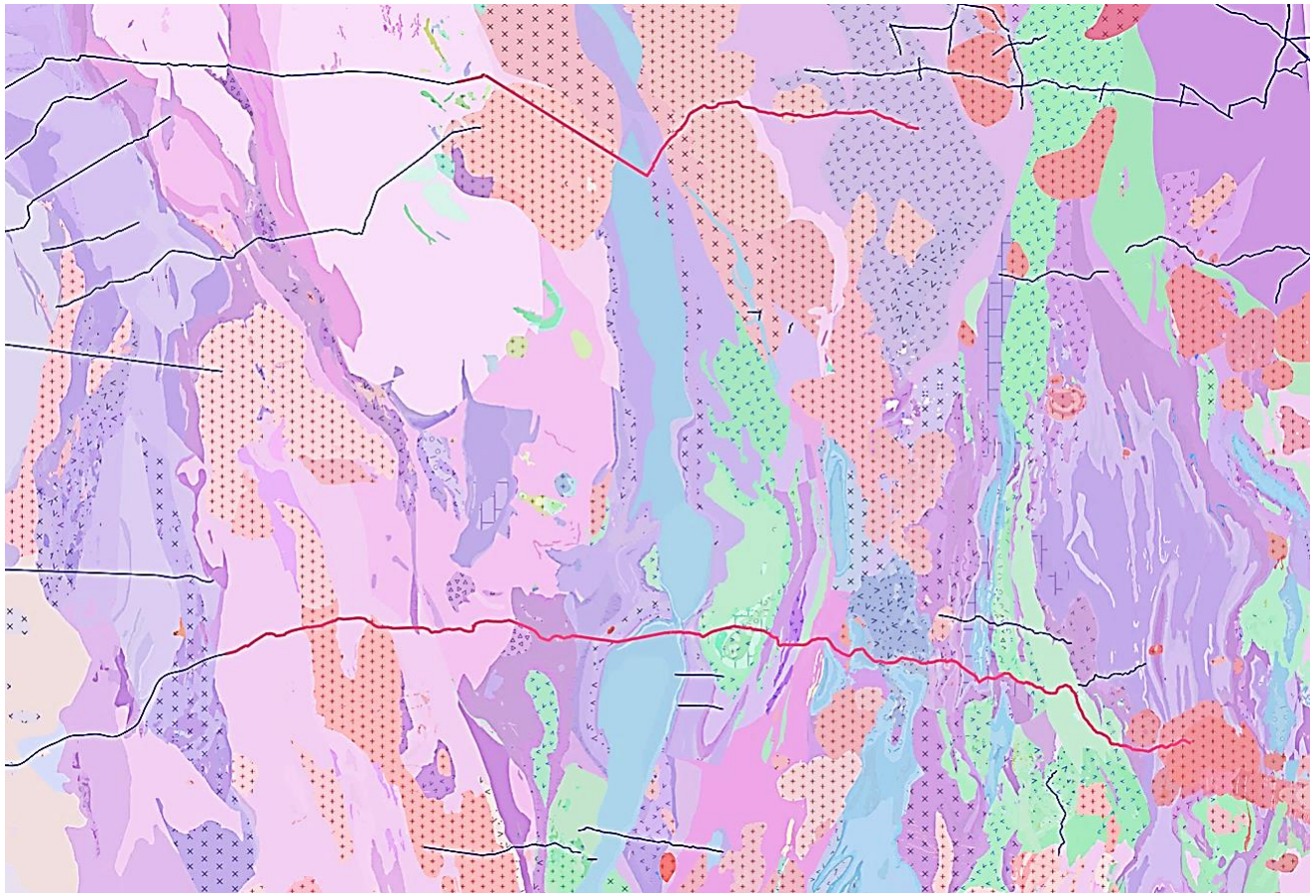
Other Projects and Outputs

Lachlan Seismic



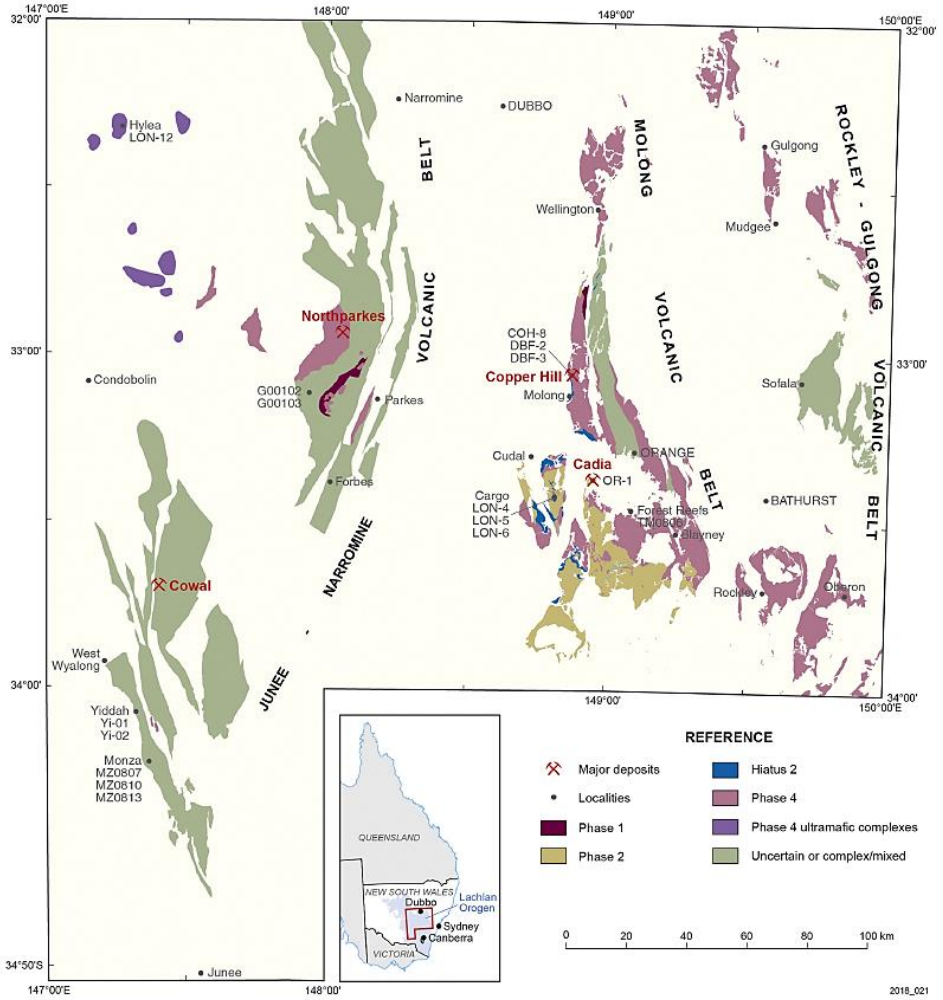
Lachlan Seismic





Macquarie Arc

- Develop a temporal framework, 4D model of the tectonic and thermal history of the Macquarie Arc and successor basins
- U-Pb dating, palaeontology & geochemistry
- Reinterpretation of Blayney and Oberon 100k
- Timing and nature of magmatism along the Parkes Thrust
- Extension of thermal and tectonic evolution studies in the Mac Arc (fission track, Arkai/Kubler)
- Industry collaboration and substantial core donations

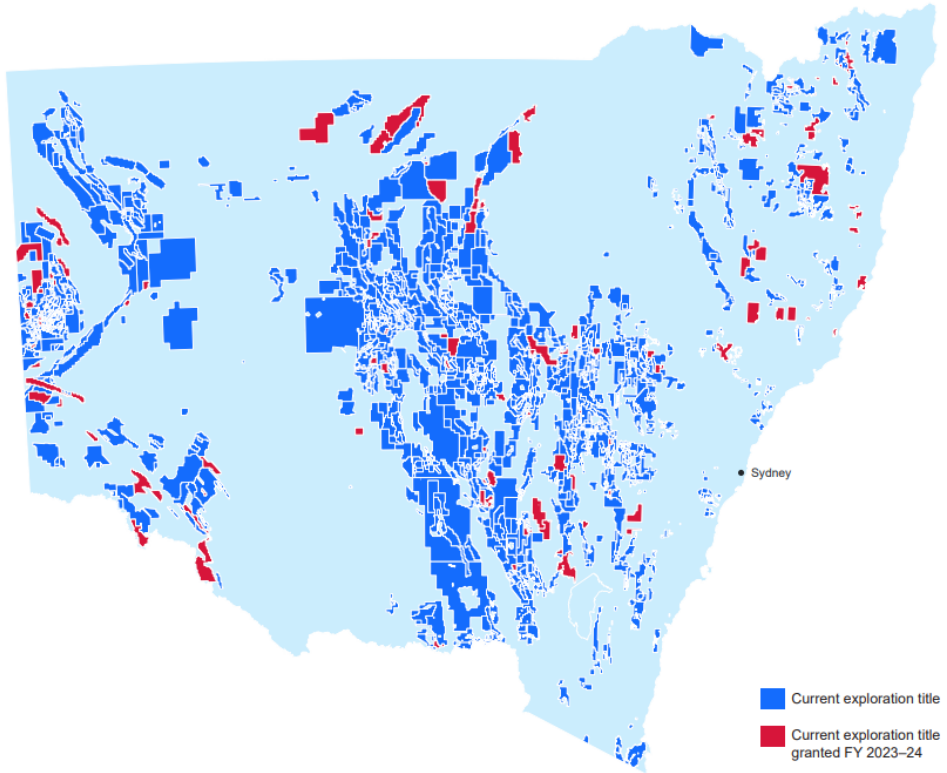


NSW exploration overview 2023–24

Titles

Exploration in New South Wales (NSW) has surged over the last decade with the total number of titles doubling since 2010 to over 2,100 titles currently.

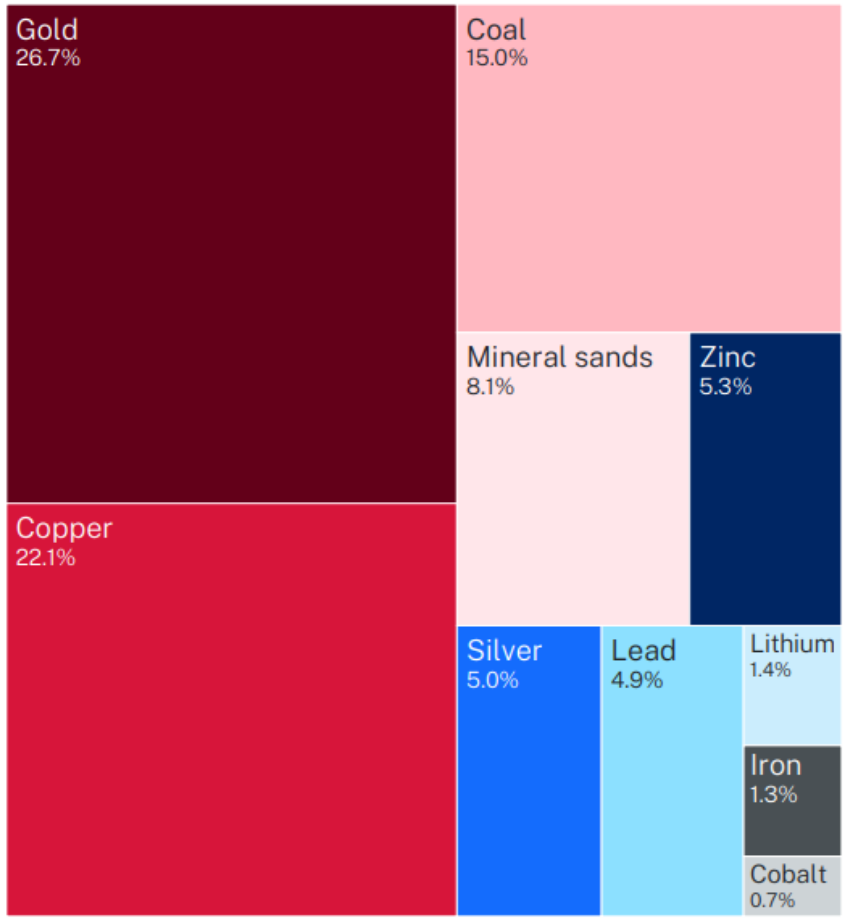
2,100+
titles



Active titles per financial year

Coal Minerals Total

Percentage of total expenditure by top 10 target commodities

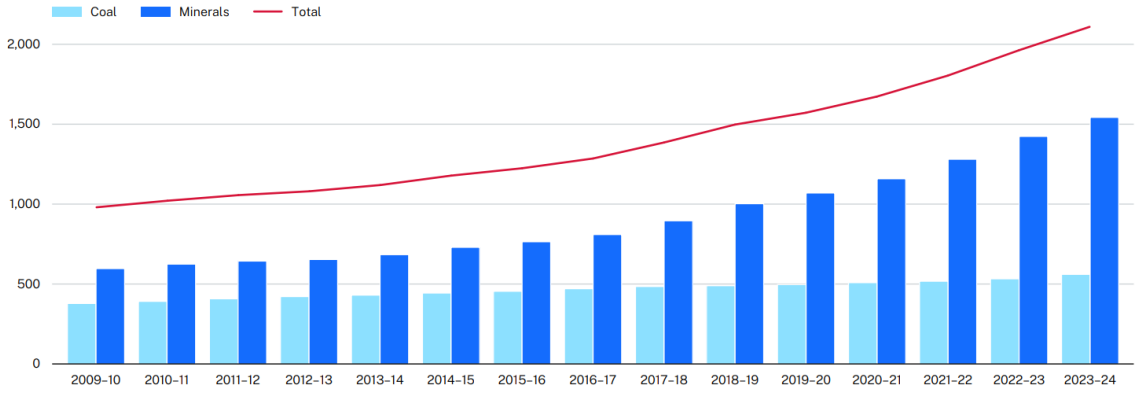


For programs targeting multiple commodities, expenditure figures are distributed equally amongst those commodities.

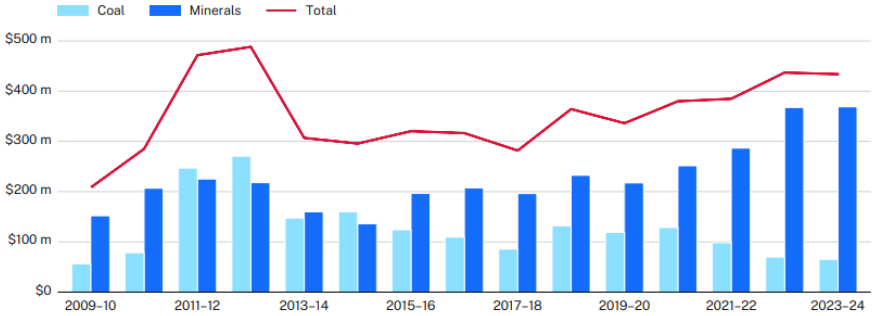
https://www.resources.nsw.gov.au/sites/default/files/2025-03/NSW_exploration_overview_2023-24.pdf

NSW exploration overview 2023–24

Active titles per financial year

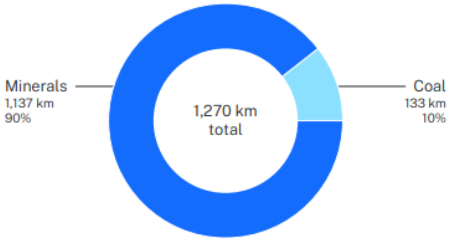


Exploration expenditure by resource per financial year



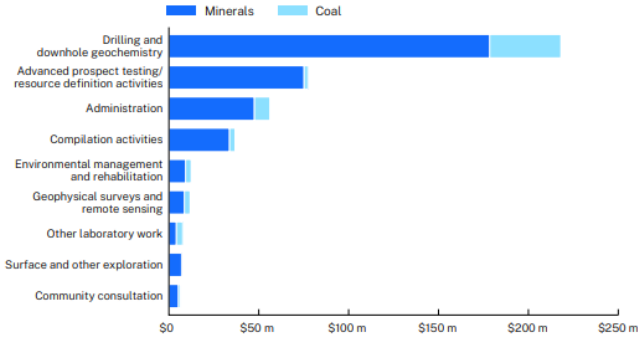
Minerals exploration expenditure reached $369 million in the 2023–24 financial year, reflecting increased confidence in mineral prospectivity in NSW.

Kilometres drilled by resource



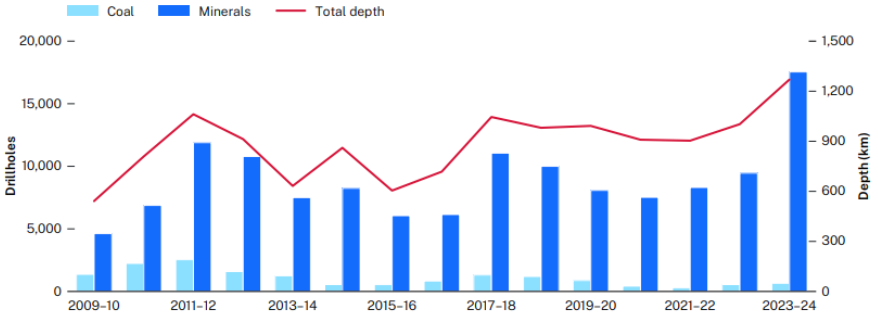
Drilling totalled 1,270 km across NSW with minerals drilling representing the majority at 1,137 km (90%). This in part reflects the sector's strategic focus on copper-gold and critical mineral exploration in NSW.

Exploration expenditure by activity



Minerals exploration accounts for 85% of total expenditure with drilling being the major exploration activity.

Drillholes and depth by resource per financial year



NSW drilling activity has surged to a decade high with over 18,000 exploration drillholes completed during the 2023–24 financial year.

https://www.resources.nsw.gov.au/sites/default/files/2025-03/NSW_exploration_overview_2023-24.pdf

Cobar MinEx Drilling

→ Deep holes to investigate internal stratigraphy & structure ± basement of mineralised Cobar Basin and Hermidale Terrane. All along deep crustal seismic lines.

1. *Currawatha-Bundycoola Anticline*

→ Deep drillhole in the western Cobar Basin targeting lower basin stratigraphy and basement rocks uplifted in the 'Currawatha-Bundycoola Anticline'

2. *Nullawarra Anticline*

→ Deep drillhole in the central-western Cobar Basin targeting lower basin stratigraphy and basement rocks uplifted in the Nullawarra Anticline

3. *Western Anticline*

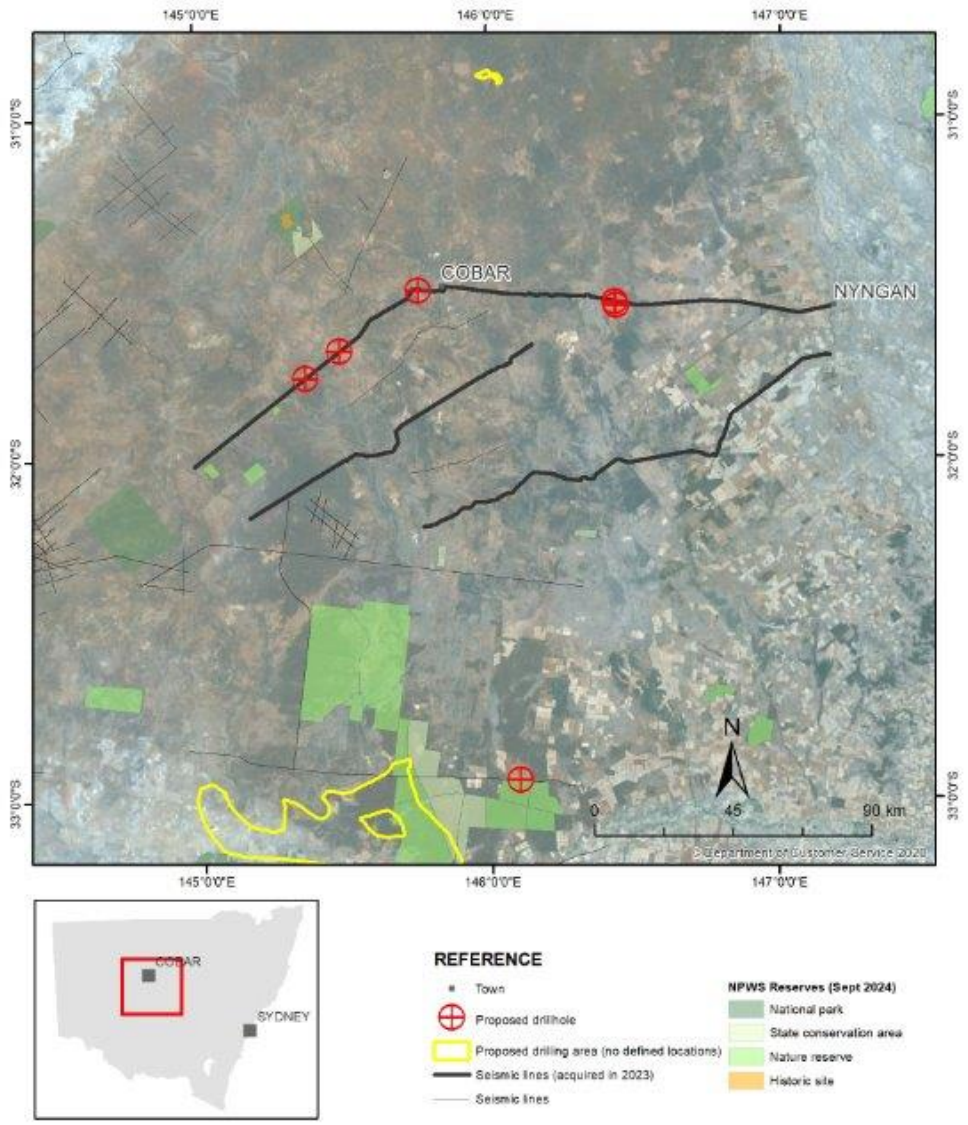
→ Deep drillhole in the eastern Cobar Basin targeting lower basin stratigraphy and basement rocks uplifted in the 'Western Anticline'

4. *Ballast Formation*

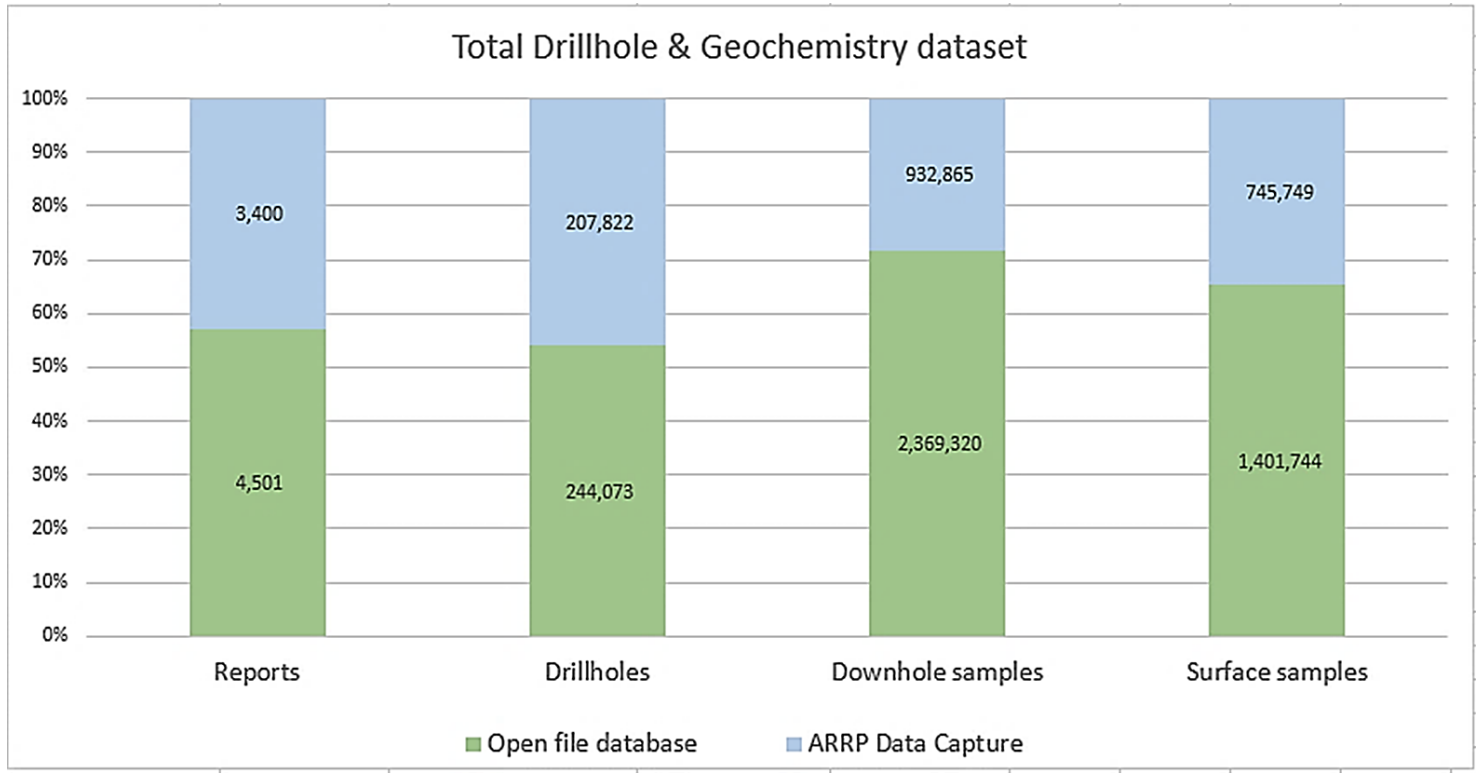
→ Deep drillhole in the Hermidale Terrane to investigate the internal stratigraphy of the Cambro-Ordovician Girilambone Formation

5. *Walters Range*

→ Deep drillhole in the southern Cobar Basin to characterise the nature of the Walters Range 'block'



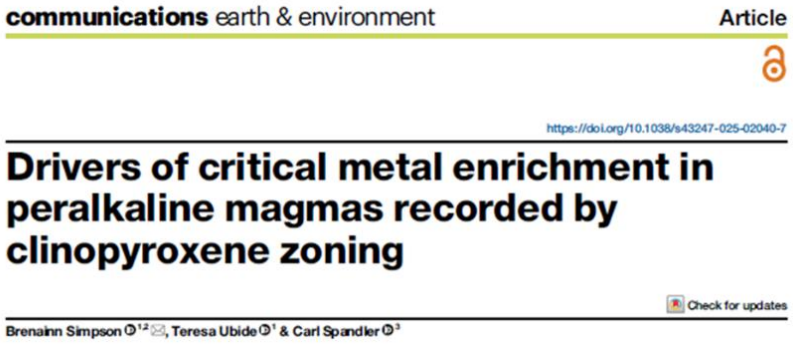
Annual Report Release Project



- 1,815 of the 1999 eligible reports have already been released (91%) for 24/25
- 1664 reports were released without redactions
- 151 redacted reports have been assessed and released in DiGS

Major Mineral Projects

- Understanding metallogenesis through heat and isotope mapping of NSW
- Copper: Scientific Drilling in Cobar Basin
- Silver: Re-characterising the Rylstone Volcanics- NCRIS/CSIRO part funded study.
- REE and HFSE critical metal resources related to alkaline igneous rocks in NSW



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communications earth & environment

Article

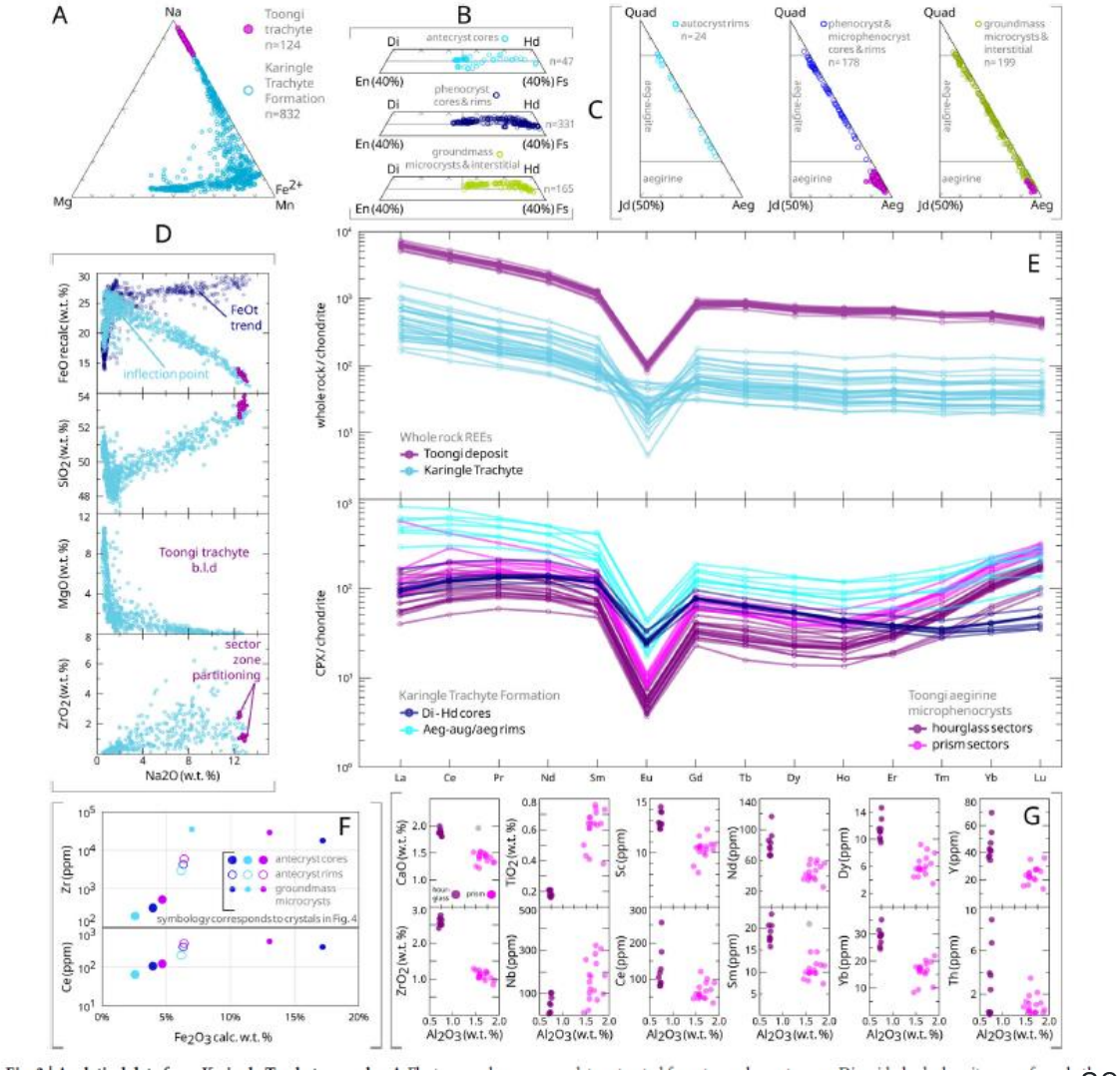
https://doi.org/10.1038/s43247-025-02040-7

Drivers of critical metal enrichment in peralkaline magmas recorded by clinopyroxene zoning

Check for updates

Brenainn Simpson[1,2], Teresa Ubide[1] & Carl Spandler[3]

https://doi.org/10.1038/s43247-025-02040-7 Article



Palaeontology

ALCHERINGA: AN AUSTRALASIAN JOURNAL OF PALAEONTOLOGY
https://doi.org/10.1080/03115518.2025.2463062

Taylor & Francis
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Check for updates

Latest Cambrian–earliest Ordovician conodonts from far western New South Wales and their biostratigraphical significance

Yong Yi Zhen, Ian G. Percival, Patrick M. Smith and Barry D. Webby

Revision of two *Prioniodus* species (Conodonta) from the Early Ordovician Emanuel Formation of the Canning Basin, Western Australia

YONG YI ZHEN

ZHEN, Y.Y., 2025:02:28. Revision of two *Prioniodus* species (Conodonta) from the Early Ordovician Emanuel Formation of the Canning Basin, Western Australia. *Australasian Palaeontological Memoirs 57*, 137–155. ISSN 2205-8877

Prioniodus oepiki (McTavish 1973) and *Prioniodus transitans* (McTavish 1973) are revised based on re-examination of the original types and topotype specimens from the Emanuel Formation (Early Ordovician) of the Canning Basin in Western Australia. Both species consist of a septimembrate ramiform—pectiniform apparatus including pastinate Pa and Pb, makellate M, symmetrical triform Sa, tripennate Sb, modified bipennate Sc, and quadriramate Sd elements. *Prioniodus oepiki*, possibly of cosmopolitan palaeobiogeographic distribution, has been recognised as an age-diagnostic species in lower Floian strata. The P and S elements of *Prioniodus transitans* are characterised by having a short posterior process with small rudimentary denticles. This species is similar to *Prioniodus gilberti* Stouge & Bagnoli 1988 and *Prioniodus antiquus* Zhen, Zhang & Chen 2023, reported from upper Tremadocian slope facies of the Laurentian margin and South China respectively, and might occupy a basal position in the evolution of *Prioniodus*.

Yong Yi Zhen (yong-yi.zhen@regional.nsw.gov.au), Geological Survey of New South Wales, W.B. Clarke Geoscience Centre, 947-953 Londonderry Road, Londonderry NSW 2753, Australia. *Received 26 February 2024*

Keywords: Conodonts, Early Ordovician, taxonomy, ramiform—pectiniform apparatus, evolution

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Contents lists available at ScienceDirect

Gondwana Research

journal homepage: www.elsevier.com/locate/gr

Novel pterygotid sea scorpions from the Silurian and Devonian of Gondwana

Russell D.C. Bicknell [a,b,*], Patrick M. Smith [c,d], Aaron Goodman [e,f], Izak Schoon [c], Yong Yi Zhen [g]

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[b] *Palaeoscience Research Centre, School of Environmental and Rural Science, University of New England, Armidale, Australia*
[c] *Palaeontology Department, Australian Museum Research Institute, Sydney, New South Wales, Australia*
[d] *Department of Biological Sciences, Macquarie University, Sydney, New South Wales, Australia*
[e] *Division of Invertebrate Zoology, American Museum of Natural History, New York City, NY, USA*
[f] *City University of New York, Graduate Center, New York City, NY, USA*
[g] *Geological Survey of New South Wales, WB Clarke Geoscience Centre, 947-953 Londonderry Road, Londonderry, NSW, Australia*

Thank you

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