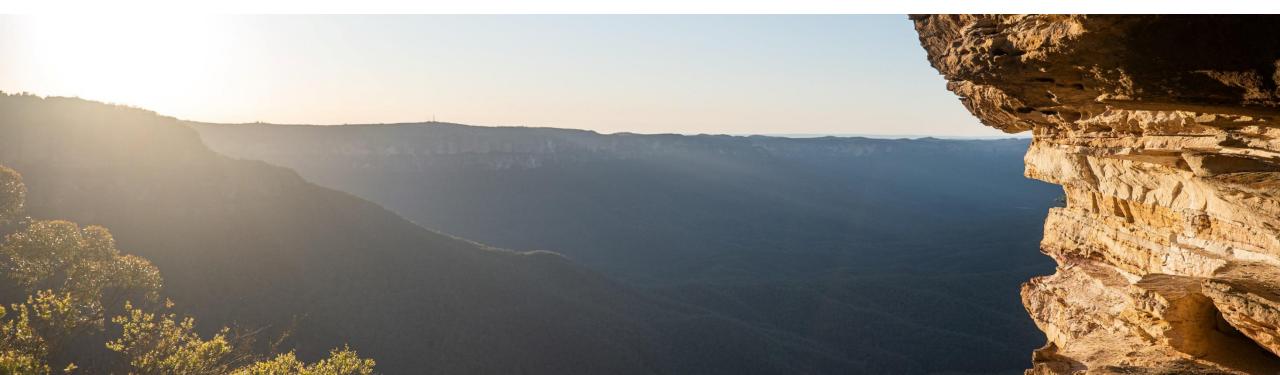


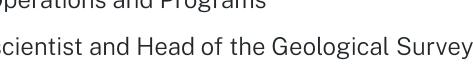
GSNSW – overview, key outputs and workplans

28 November 2024 SMEDG Annual Showcase Phillip Blevin Head of GSNSW



New Structure

- Department of Primary Industries and Regional Development (DPIRD) •
- NSW Resources (formerly MEG)
- **Business Operations and Programs**
- Chief Geoscientist and Head of the Geological Survey of NSW •



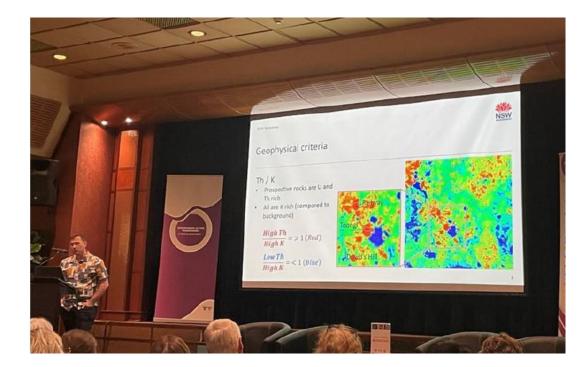






New leadership and staffing opportunities

- Three Principal Geoscientists (Astrid Carlton, Joel Fitzherbert and Gary Colquhoun)
- 2 new external Gr 1-2 geoscientist positions (G&G and P&A)
- 2 graduate recruits for 18 months







Critical Minerals & High-Tech Metals Strategy



tment of Primary Industries gional Development	nsw.gov.au	Strategic pillars		
V critical minerals high-tech als strategy		Encourage exploration	Goals • Minimise investment risk in greenfield exploration in NSW • Promote exploration in underexplored areas in NSW • Identify new critical minerals resources in NSW • Identify new critical minerals resources in NSW • Create an attractive investment environment for mining in NSW • Remove barriers to help projects move from exploration into production	Initiatives • Co-invest in the Critical Minerals Exploration Program • Undertake a targeted data acquisition program to encourage exploration at depth • Expand geological datasets through advanced techniques Initiatives • Implement a deferred royalty scheme for new critical minerals projects • Facilitate access to federal debt finance ar grant funding
35		<u>9</u> 70	 Support industry to navigate the NSW planning system 	 Promote NSW critical minerals projects to overseas markets
		Establish supply chains	 Goals Establish local processing and common user facilities in NSW Drive research and development and commercialisation of new technologies Embed circular economy practices into the sector 	 Initiatives Partner with Australian Nuclear Science and Technology Organisation (ANSTO) to investigate the opportunity for a common user rare earth refinery in NSW Support investment in domestic manufacturing, including solar panels and batteries Partner with universities and research institutions to explore metals re-processin and recycling
		Develop future-ready skills	 Goals Meet the future skills needs of the sector Deliver regional employment opportunities Provide training and education pathways to encourage careers in critical minerals sector 	 Initiatives Ensure training courses are tailored to the future skills needs of the sector Develop a bespoke skills plan for critical minerals sector Support awareness of critical minerals mining in primary and high schools
	OVERNMENT	Engage communities	 Goals Ensure responsible and sustainable mineral resource development Drive strong environmental, social and governance outcomes Encourage awareness of the benefits of the sector by local communities 	 Initiatives Increase awareness and transparency in exploration and rehabilitation activities Implement targeted assessment programs Ensure regional plans capture strategic matters for the sector

Annual Updates - Seamless and Strat Units

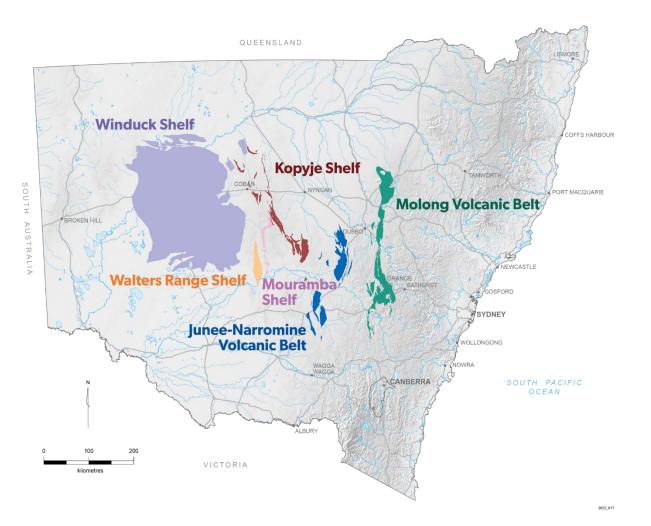


Cobar Supergroup (shallow water sequences)

- Kopyje Shelf
- Winduck Shelf
- Mouramba Shelf
- Walters Range Shelf

Macquarie Arc

- Selected areas of the Molong and Junee–Narromine volcanic belts
 - Cadia Intrusive complex and surrounding intrusions
 - Lake Cowal Volcanic Complex



Annual Updates - Seamless and Strat Units



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Further MinView enhancements

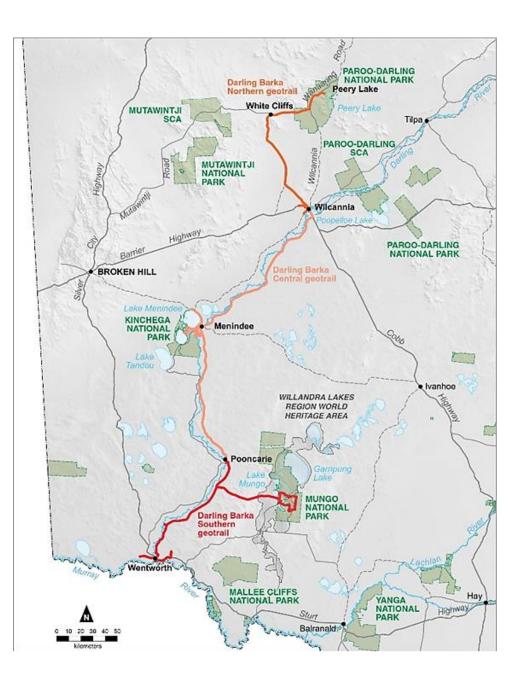
- Investigate linking to other data layers e.g. field observations, drillholes, fossils
- Investigate the integration of photos



Darling-Barka Geotrail









Critical Mineral Reanalysis Project





Collection	Sample type	Total samples
The 'Bruce Chappell' AMIRA	Whole rock analytical pulps	798
collection		
GSNSW metallogenic mapping	Analytical pulps	442
mine dump samples		
Economic Rocks and Mineral	Ores and mineralised rock	601
Collection (ERMC)	samples/drillcore. Representative	
	clays	
Total		1841

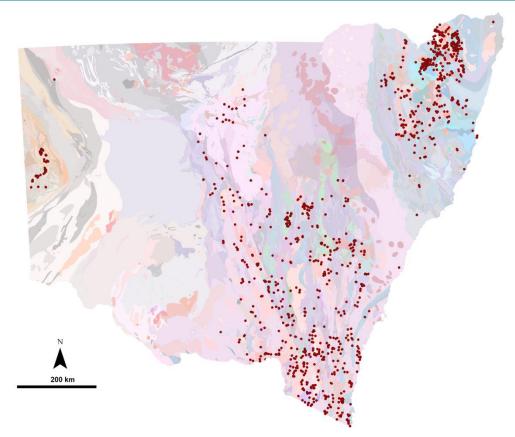


Critical Mineral Analysis Project

▶ R00076228 (GS2024/0026)
 ♥ NSW

Phillip Blevin, Kevin Capnerhurst, Ryan
 Dwyer, Melanie Ricketts
 2024





Macquarie Arc

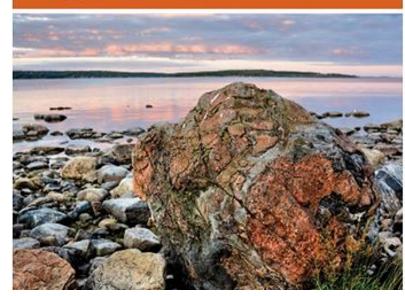


Alkaline Rocks: Economic and Geodynamic Significance through Geological Time

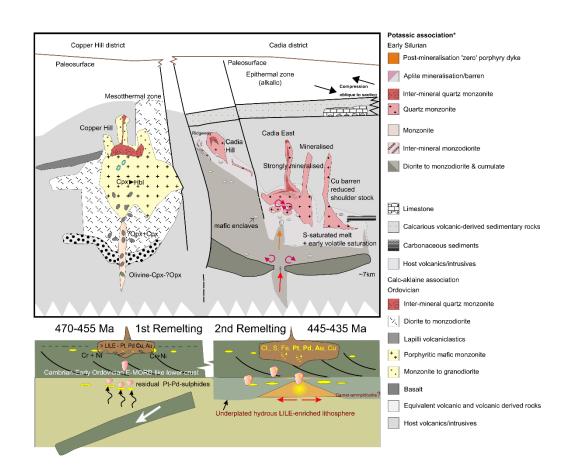
Edited by R. Pandey, A. Pandey, L. Krmiček, C. Cucciniello and D. Müller



Geological Society Special Publication 55

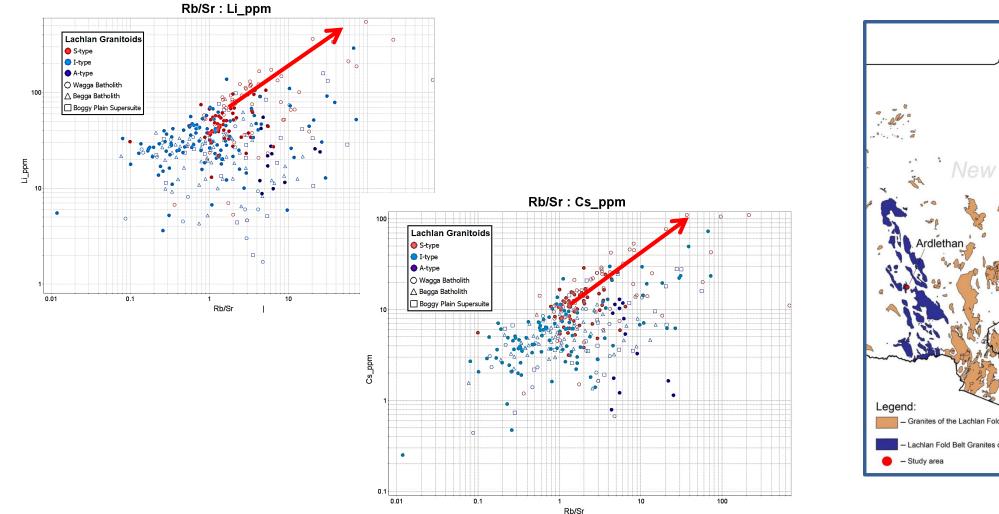


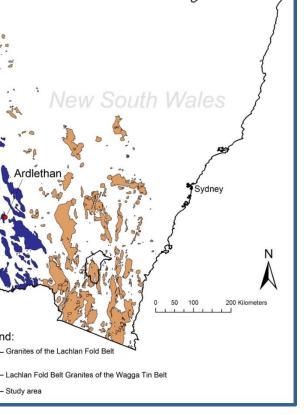




Critical Mineral Reanalysis Project







Bancannia Water Drilling



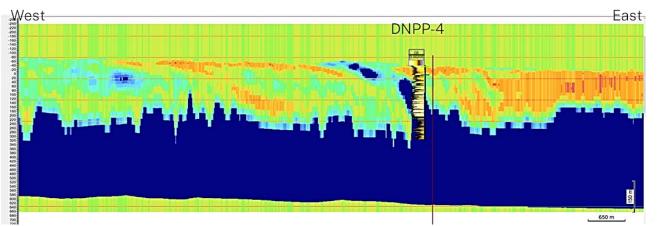


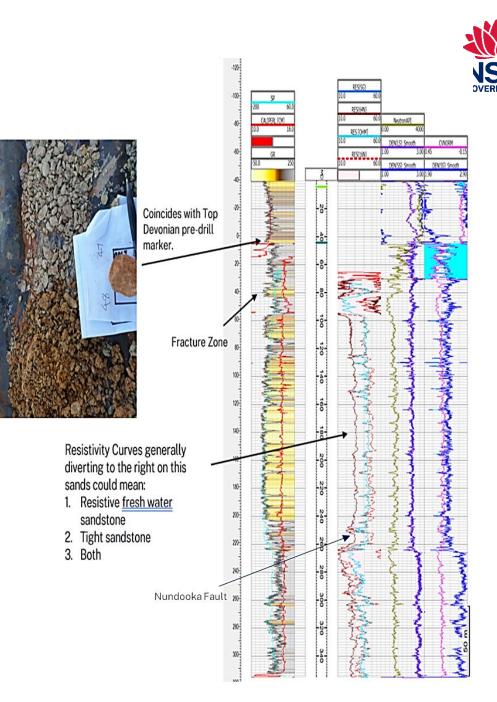


Bancannia Water Drilling

DNPP-4 bore (Coogee Station)

- Final depth 356 m
- ~50 m of sedimentary rocks were drilled before reaching the Ravendale interval (Late Devonian)
- Tested potential aquifers below 130 m depth
- Sandstone was in the middle section of the bore (160–240 m); finer grained material was above and below
- Porosity from logs was above 10%
- Fractures present at ~70-80 m depth
- Nundooka Fault was crossed at ~245 m depth
- Yielding 1.0 L/s after air lift and 2L/s in 24 pumping test

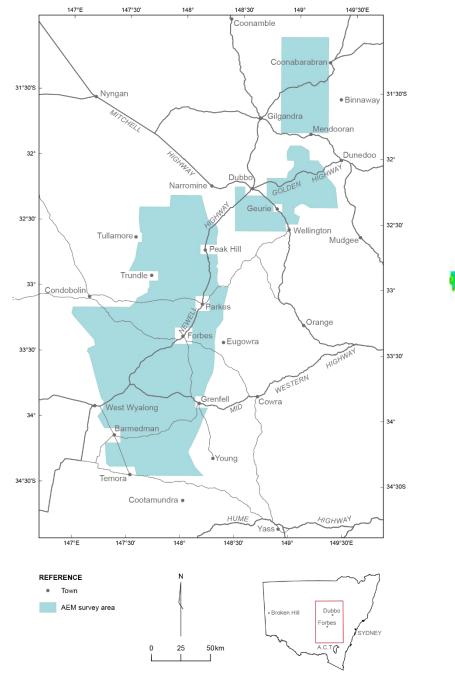


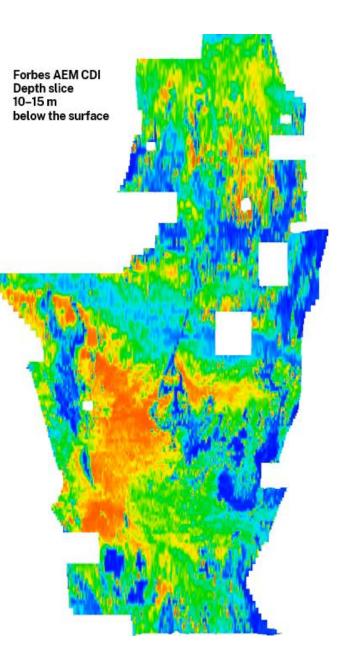


AEM Surveys

Forbes–Dubbo AEM survey

- Same sensor as used in the Yathong AEM survey
- Variable line spacing
- 60 m terrain clearance.



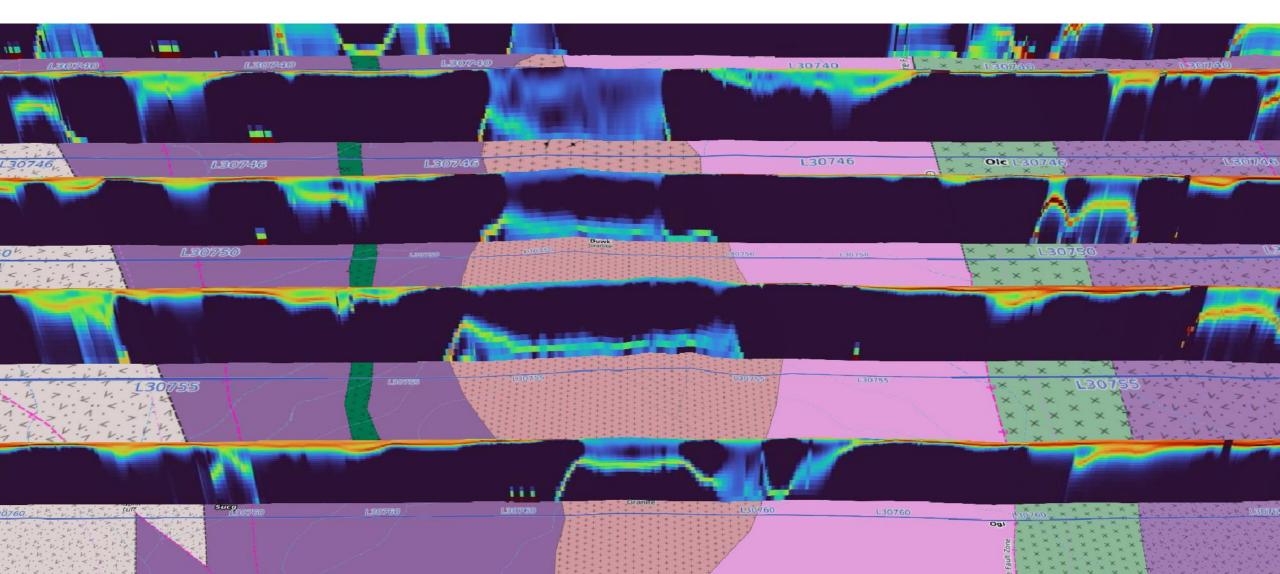




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Forbes AEM survey 1.25–2.5 km spaced lines





Core Libraries





Andreas Bjork, Jon Huntingdon, Alicia Caruso Peter Bukey, Kyle Hughes





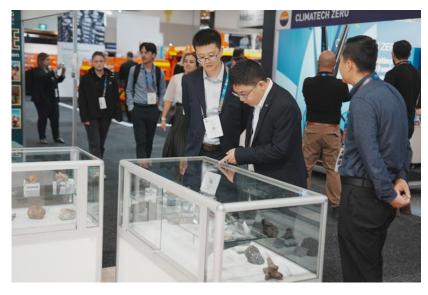


Engagement





Engagement











Engagement

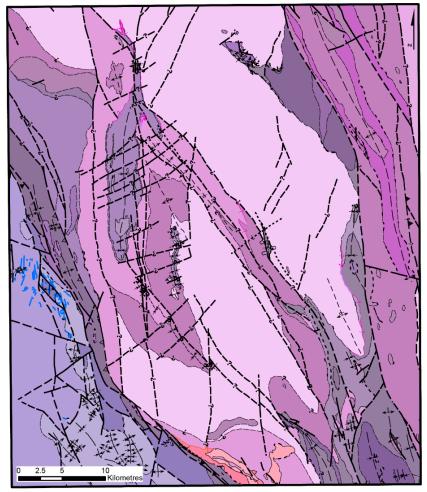


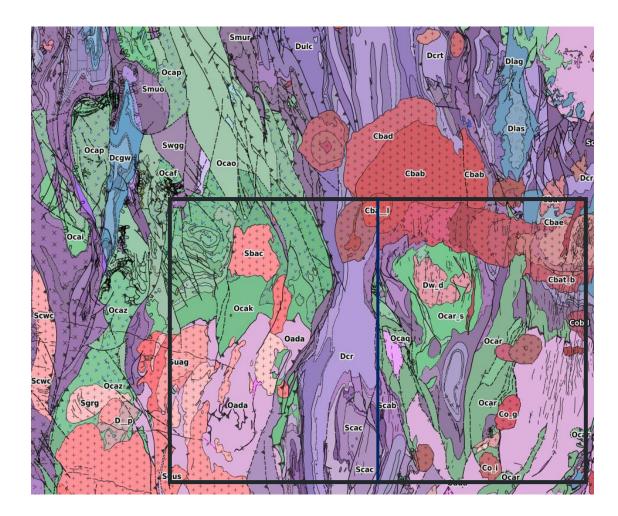






New solid geology -Canbelego





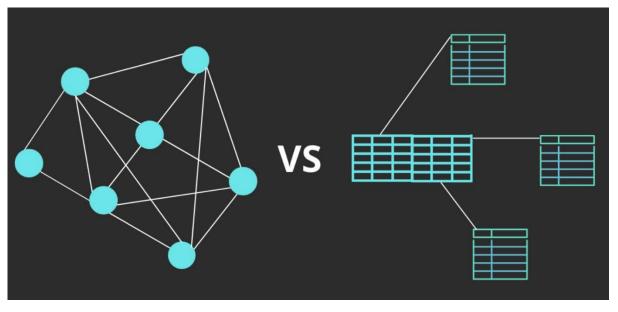
Digital Data Transformation



Knowledge Graph databases capture information about data entities and the multidimensional relationships between them, supporting powerful data integration, analytics, and sharing.

The knowledge graph is a reusable and flexible data layer or network used for answering complex queries across data silos, whereas relational or SQL databases employ SQL to retrieve and manipulate data from tables with columns and rows.

They are an essential part of a typical data lake system.



Knowledge graph versus relational (SQL) databases

Digital Data Transformation

Example: The Geological Survey of Western Australia's data lake system Architecture

Discussions with ICT, DMD, NIER, USyd

Our service Your access Data Optimization to bring out Industry Reports and Data **High Performance Computer** hidden and orphan data and develop easy access to HPC for academic linkages between databases to improve Data Integration. research and industry innovation. 間ににつ Lodgement Portal A portal for company data and Data Maintenance Portal will Big Data Storage to accomodate report submission. Semi-automate consolidate, enhance and the extensive data collection. validation to improve data quality improve data standards to and process timeframe. improve data standards and quality. Ingest Integrate DATA LAKE Data Lake - one integraged data Maintained by Data Engineers and layer to bring all geoscience data Scientists. Improve Data Science into a single, unified ontology view. skillset and capability to ensure that the new data platform will be supported long term. Enrich Enable **Discovery Portal** Spatial Intelligence Smart Search **BI** Reporting Machine Learning Machine to Machine One stop portal to discover geoscience data.



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Our Sesquicentenary - 2025

