



Regional  
NSW

# **The right data in the right places: New Frontiers Five Year Strategic Plan 2020-2025**

# Contents

1. A bit of history
2. Drivers
3. NFI plan 2015-2020
4. NFI plan 2020-2025
5. A quick look at current and planned NDI work



Regional  
NSW

# A bit of history...

GS  
Advisory  
Committee

1994 – 2000	<b>DISCOVERY</b> <b>2000</b>	\$35 million
2000 – 2006	<b>EXPLORATION</b> <b>NSW</b>	\$30 million
2006 – 2012	<b>new</b> <b>frontiers</b> new south wales	\$24.5 million
2012 – 2020	Investment Fund (New Frontiers)	\$46 million

\$ Multiplier  
Effect  
x **12**



Regional  
NSW

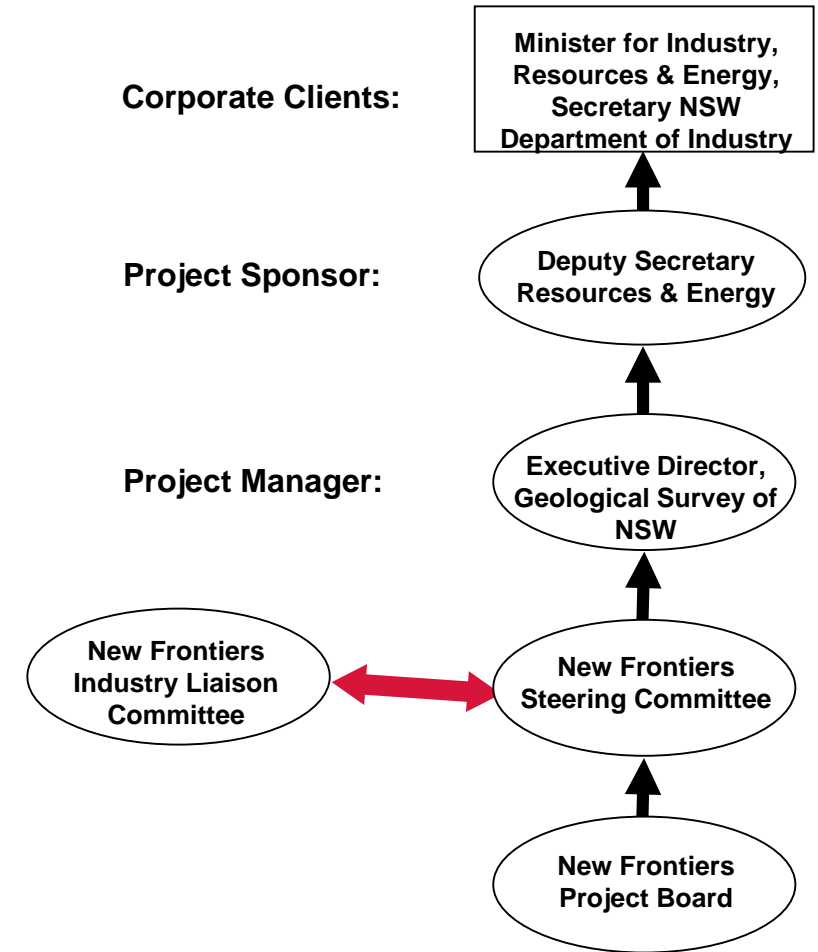
~\$136 million since 1994

# A bit of history II...

- From July 2012, rental fees for tenements were introduced and deposited in an investment fund (New Frontiers) with the purpose:

***To stimulate mineral and petroleum investment in under-explored terrains***

- A new liaison committee was established (NFILC), with reps from NSW Mining, AMEC, APPEA and later, GA
- Although there were 10-year plans for geological mapping and geophysics, at July 2012 there was no forward plan for New Frontiers beyond the 2011-2015 bid document
- NFILC advised that we should create a five year plan, that then evolved into a rolling five year plan.



New Frontiers Governance

# Drivers



Regional  
NSW

People of NSW

Minister

Mountain stream

Mining Act (+ 7 others)

Resource Operations

MEA and Land use Planning

Resources Policy Planning & Programs

Rehabilitation

Geological Survey of NSW

Resource Strategy and Planning

Investment Attraction

Royalties

Mining

Exploration

Gorge

Tributary

Meander

Mature river

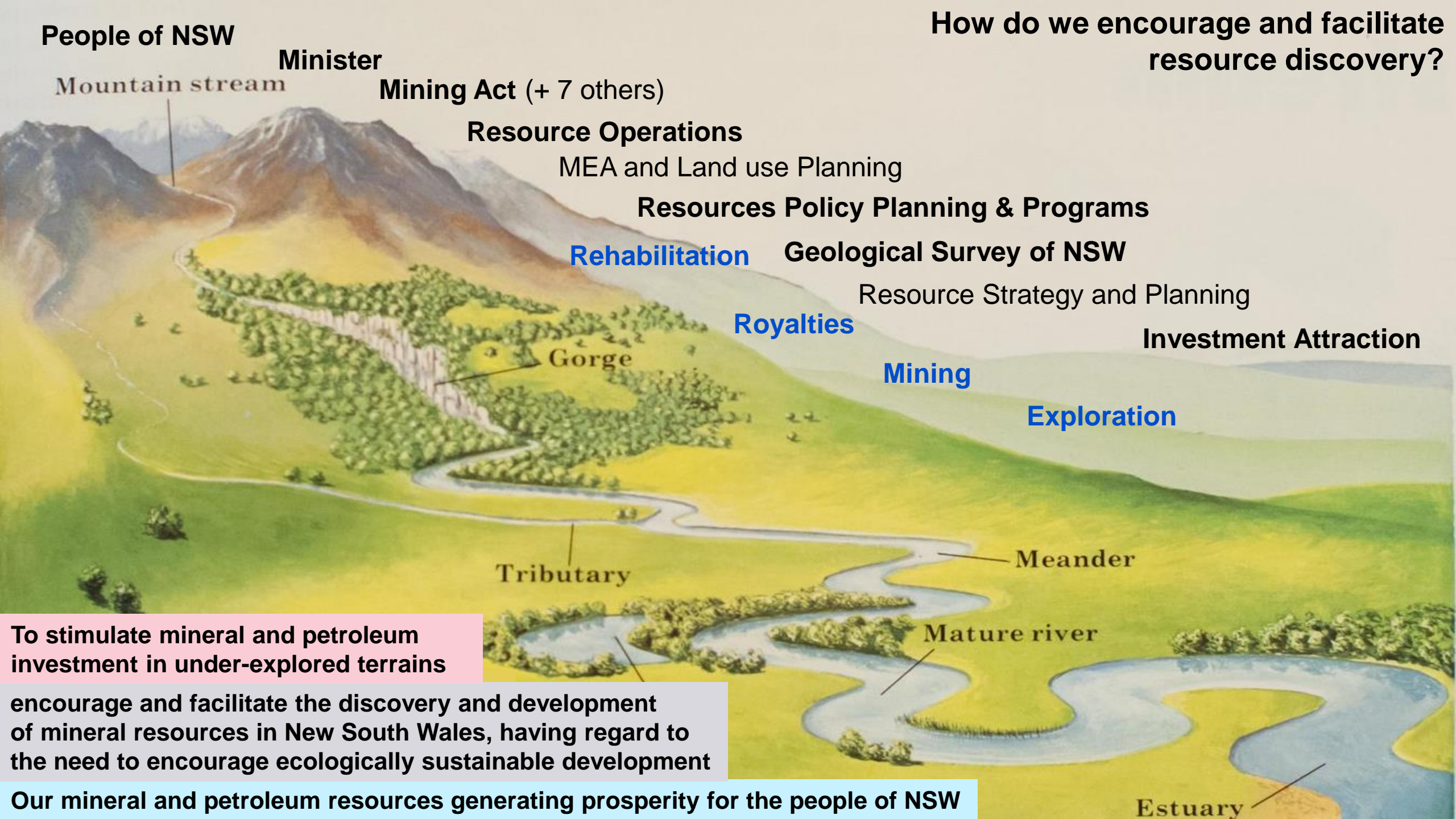
Estuary

To stimulate mineral and petroleum investment in under-explored terrains

encourage and facilitate the discovery and development of mineral resources in New South Wales, having regard to the need to encourage ecologically sustainable development

Our mineral and petroleum resources generating prosperity for the people of NSW

How do we encourage and facilitate resource discovery?





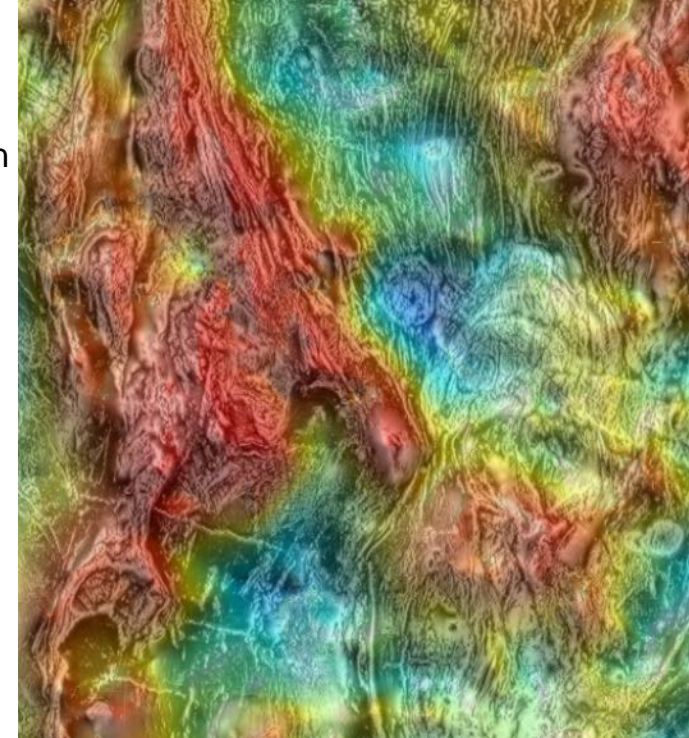
# Underlying principles: what's needed in 2025?

Balance between long term (Govt. timeframe) and short-term (explorer timeframe)

- **Long term:** exploration undercover requires better:
  - basement maps, undercover exploration tools, cheaper drilling, geophysics>geology conversion
  - Understanding of frontier terranes
  - Clean, machine-readable data
- **Short-term** requires:
  - More detailed understanding of eastern Lachlan Ordovician volcanics, Siluro-Devonian basins, Curnamona geology.
  - Better fingerprinting of key deposits e.g. Cadia, McPhillamys, Northparkes, Cowal etc.
  - Fast access to new data – always using the best available

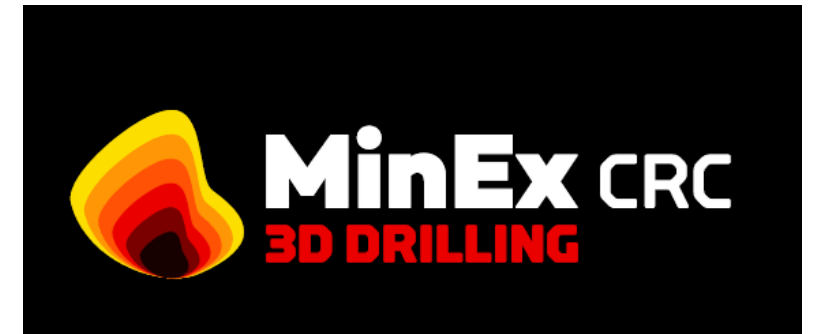
Recognition of:

- **Digital age:** increasing data volume and processing power,
- **Commodity trends:** critical metals, substitution, geopolitical forces (global to state to local)
- **Land access:** at all scales



# Collaboration drivers

- **MinEx CRC:** GSNSW is a participant in the National Drilling Initiative (NDI) program of the 10-year CRC (2018 to 2028) with five NDI areas identified (North Cobar, South Cobar, Mundi, Forbes and Dubbo).
- **Key and Critical minerals:** Prioritisation of projects to support key and critical mineral understanding, following the Future of Minerals in NSW report (2019).
- **Geoscience Australia's Exploring for the Future program:** The recently-announced expansion of the project includes a corridor covering western NSW. The program will provide the opportunity to further our geological understanding of western NSW for minerals, energy and groundwater resources.





# 2015-2020 plan



Regional  
NSW

# 2015-2020 New frontiers Plan: how did we go?

*"Expand the search space, sharpen the target for new discoveries"*



**41** Staff

27 geoscientists,  
14 tech/admin



**\$8m** Budget

Mapping, Mineral systems,  
data storage & delivery, Basin  
geoscience

## In 5 years new frontiers will deliver:

- A fast, intuitive and informative online spatial viewer
- Online delivery of geophysical data (including seismic)
- Customised on-demand map and explanatory notes web service
- Resource models for all significant mineral and petroleum systems
- Three Cooperative Drilling programs
- Baseline coverage of NSW for magnetotellurics
- The completion of the Southern Thomson Orogen project in 2017
- The completion of the Seamless Geology project in 2017
- The completion of the East Riverina Mapping project in 2018
- Statewide prospectivity maps of all significant mineral systems
- A 3D geological and resource model of NSW

## new frontiers project areas:

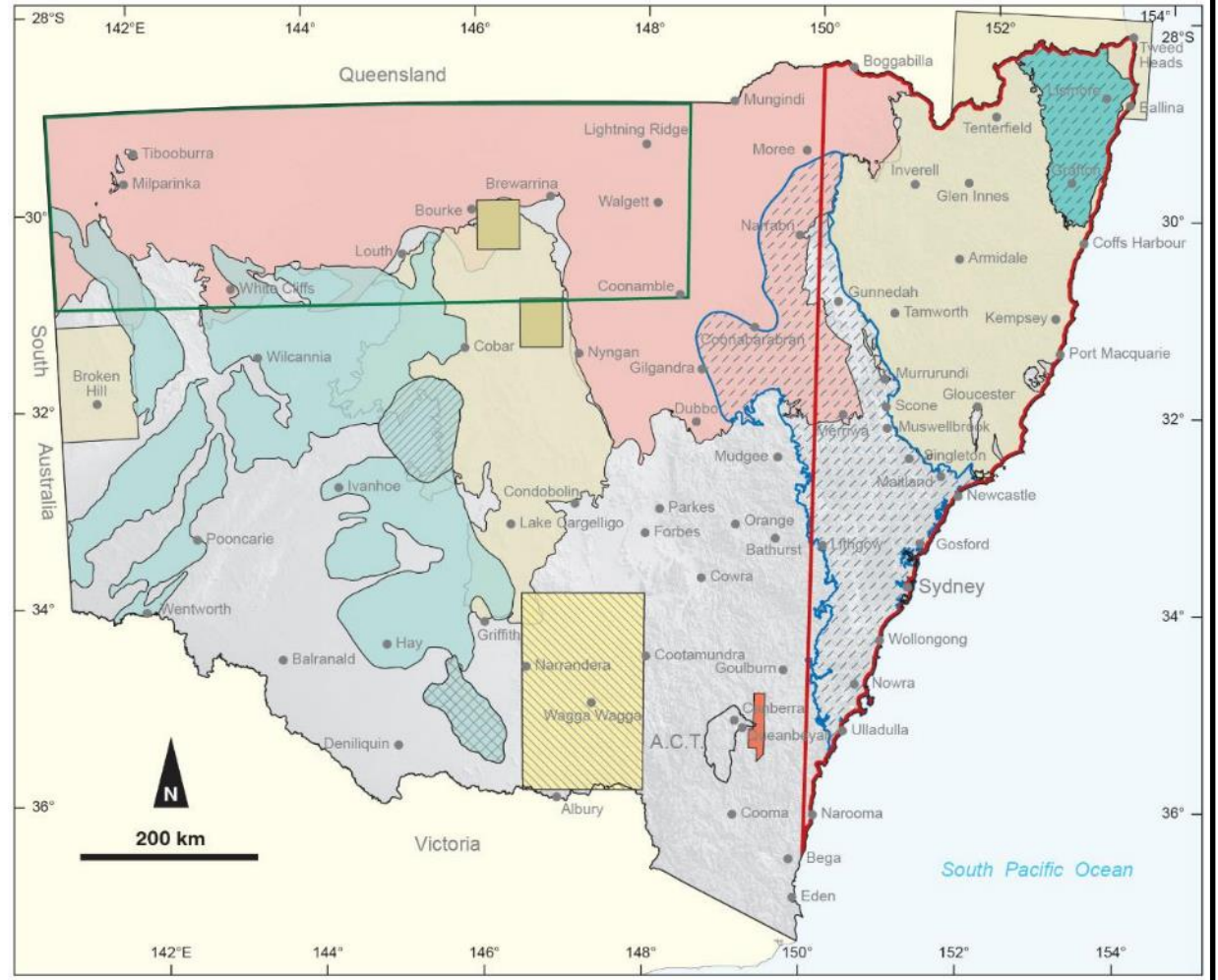


Figure 1 Projections to 2025: NSW private exploration expenditure–Options 1 and 2

% of  
national A\$

2009-10  
A\$ Million

12

11

10

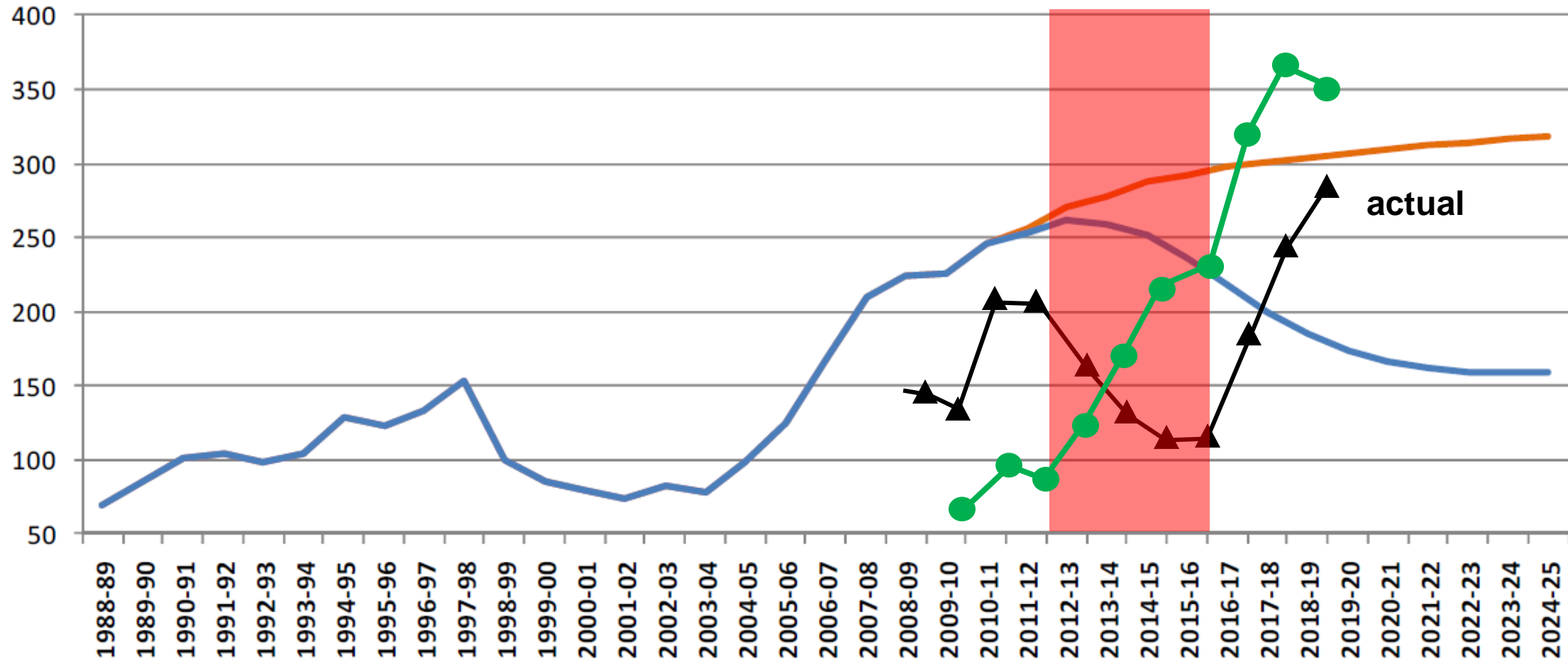
9

8

7

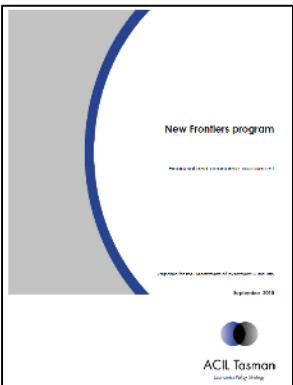
6

5



Private exploration expenditure NSW: Full Budget Appropriation (2009-10 \$M) LHS

Private exploration expenditure NSW: Pre-competitive exploration ends (2009-10 \$M) LHS



# 2020-2025 plan



Regional  
NSW

New Frontiers 5 year plan 2020-

New Frontiers 5 year plan 2020-		FY20-21				FY21-22				FY22-23				FY23-24				FY24-25				FY25-26							
		2020		2021		2022		2023		2024		2025																	
		Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun				
MinEx CRC																													
Hydrogeochemistry/biogeochemistry		Forbes, Mundi, Dubbo																											
Airborne EM		Mundi							Forbes				Dubbo																
Airborne magnetics & radiometrics				Cobar																									
Gravity							Cobar									Forbes				Dubbo									
Drilling							South Cobar		North Cobar		Mundi		Forbes		Dubbo														
Seamless Geology		Curnamona/Delamerian				Cobar								Mundi		Forbes													
Mineral system synthesis												Cobar				Mundi						Forbes							
Other collaborative projects																													
AusLAMP MT		Acquisition				Modelling																							
Critical Minerals ARC Linkage																													
Cowal Igneous Complex ARC Linkage																													
Illuminating AusLamp ARC Linkage																													
LOOP 3D ARC Linkage		LOOP 1.0			LOOP 2.0																								
Southern Lachlan Crustal Transect		MT survey, report																											
UltraFine+™ soil geochemistry		Cobar																											
Crustal framework																													
3D Basins						Darling			Murray			Oakland, Gloucester			Small basins														
3D Lithosphere						Curnamona/Mundi				Statewide																			
3D mineral districts		Cobar															Mundi												
Petroleum Systems																													
Data Packages		Neckarboo/Blantyre				Nelyambo/Poopelloe				Devonian Strat Model				Bowen Basin															
Database																													
Stratigraphic unit tables		NDI areas				East Lachlan				Central Lachlan				Curnamona/Delamerian				Cenozoic/Mesozoic				Basins							
Statewide geophysical merges				V3								V4							V5										
Data delivery																													
Maps and Reports on Demand - MinView extension		Stratigraphic reports						Seamless maps																					
3D Delivery capability		Drillholes						3D Models																					
Sunset Clause		Data Compilation & Validation								dataset & product development																			
DiGS redevelopment																													
Cooperative Drilling																													
Funding rounds		Round 3						Round 4						Round 5															

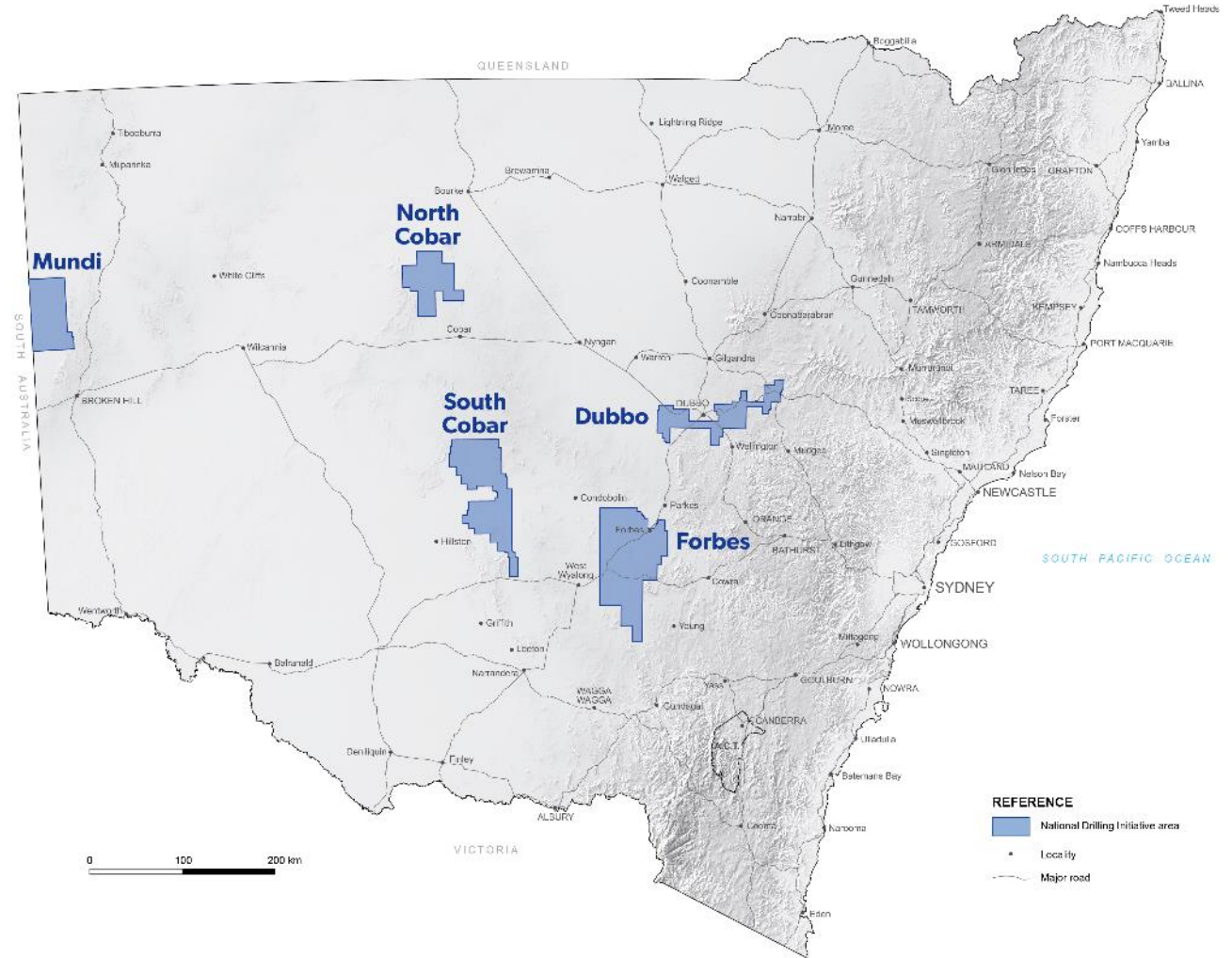


# Outcome of the NDI in NSW

Improved understanding of the basement geology and its expression in cover sequences across five areas of the state ...

... supporting development of new tools and methodologies for successful exploration undercover...

... to **open up vast new frontiers for explorers, generating a wave of discoveries that will underpin a strong mineral industry and economy for future generations of Australians.**

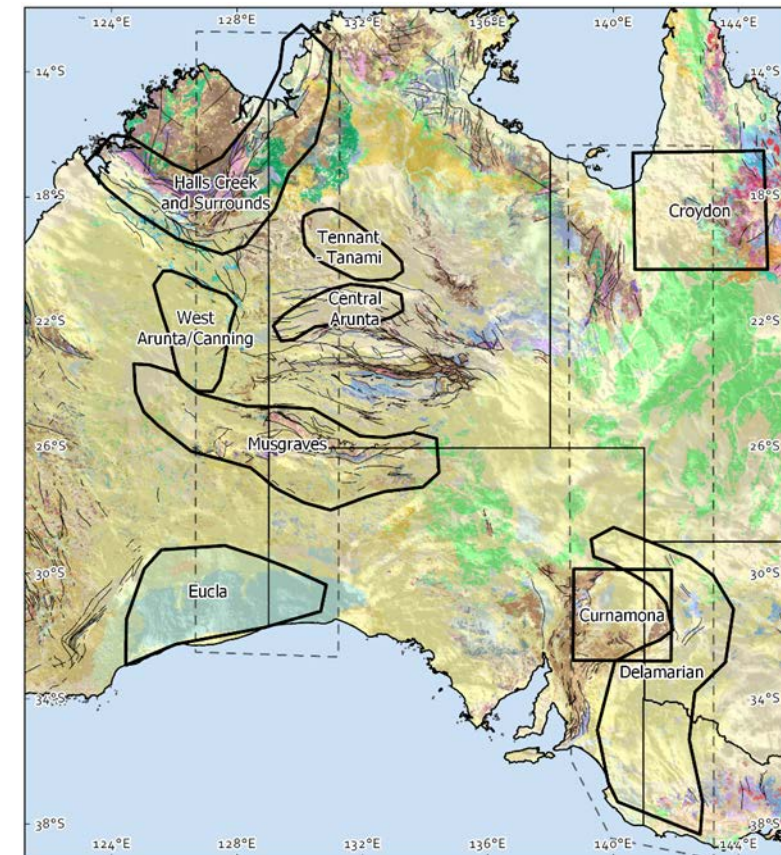


Regional  
NSW

		FY18/19		FY19/20		FY20/21	FY21/22		FY22/23		FY23/24		FY24/25		FY25/26		FY26/27		FY27/28				
Phase	Activity	2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028	
South Cobar	Pre-drilling																						
	Drilling																						
	Post-drilling																						
North Cobar	Pre-drilling																						
	Drilling																						
	Post-drilling																						
Mundi	Pre-drilling																						
	Drilling																						
	Post-drilling																						
Forbes	Pre-drilling																						
	Drilling																						
	Post-drilling																						
Dubbo	Pre-drilling																						
	Drilling																						
	Post-drilling																						

# Exploring for the Future: the sequel

- Looking to work with Geoscience Australia and geological surveys of Victoria and SA in the southeastern “corridor of collaboration”
- Proposed projects include deep crustal seismic, improved geological mapping, ‘Curnamona Cube’ MT/passive seismic model, regional AEM for groundwater/minerals etc.
- Should know what has been approved by GA early 2021
- Will adjust 5 year plan accordingly



**Regional  
NSW**



**Australian Government**  
**Geoscience Australia**

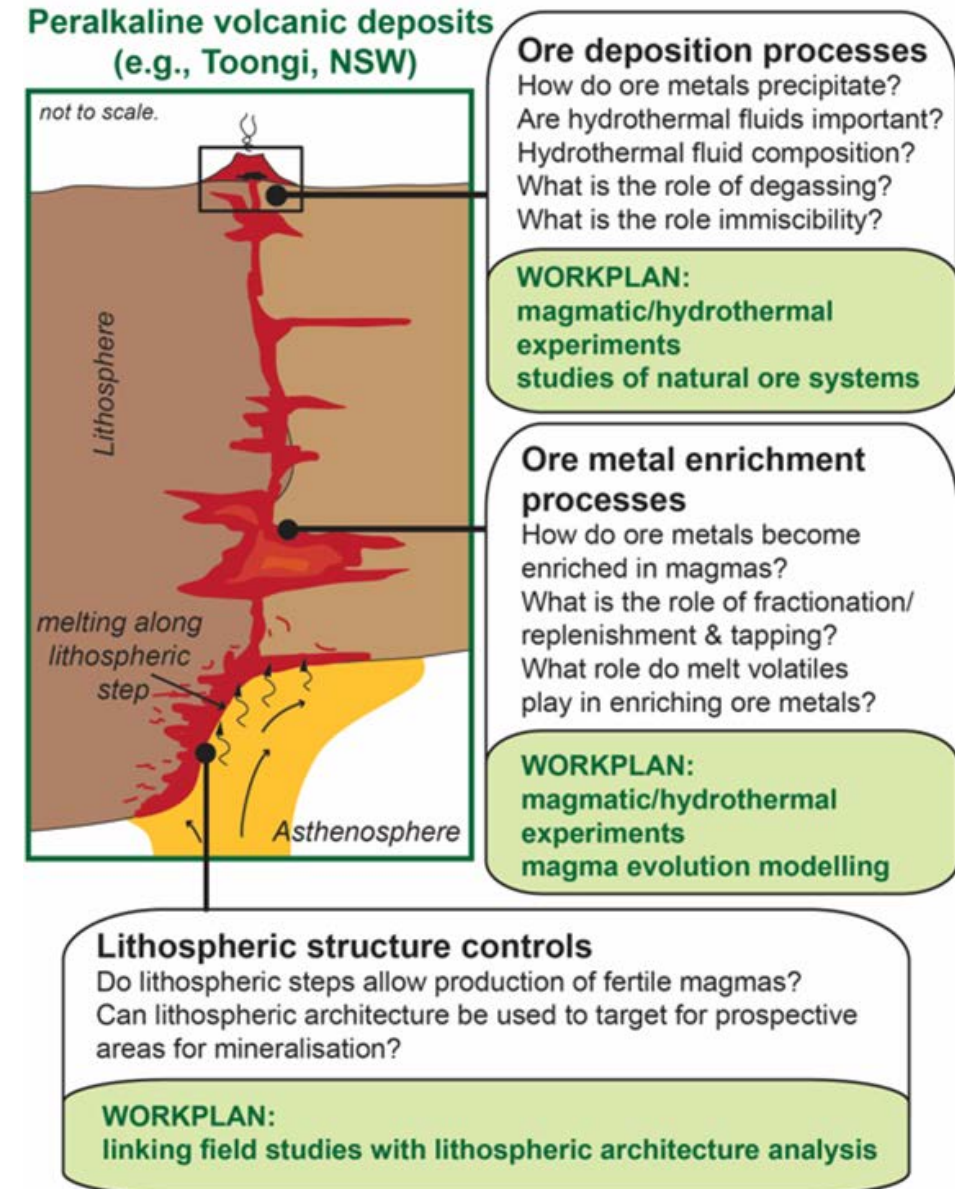


# Critical Minerals Projects

## Example:

# 2020-2023 ARC Linkage Project: Realising Australia's Rare Earth Resource Potential

- To better understand the nature and endowment Australia's rare earth element resources.
- **Develop new field and remote-sensing based criteria for exploration.**
- Based at UAdel under Carl Spandler (CI)
- GSNSW- Phil Blevin is partner investigator
- ANU, UQ, UCam, GA, GSQ, GSWA, Northern Minerals, NorthX, South32



# A quick look at current and planned NDI work



Regional  
NSW





# Cobar biogeochemistry

- Study area covers 42,000 km<sup>2</sup> or 5.2% of NSW so far!
- 1,330 low density regional samples along roadsides (MinEx CRC funded assays)
- ★ 10 high density deposit / mine sites and prospects for 1,040 samples (all industry funded)  
(Aurelia Metals, Peel Mining, Golden Cross Res, Clean Teq, 3E Steel Pty Ltd, Quintana Res)
- ★ Potential sample sites: funding/access/time dependent
- 2,370 pine samples for 66 elements assayed  
MSA06 microwave digest / ICP-MS at **LABWEST**

# Cobar biogeochemistry

- MinEx CRC PhD study undertaken by Joe Schifano at UNSW, with industry support.
- Sampling Cypress Pines.
- Covers 42,000 km<sup>2</sup>.
- Regional (42,000 km<sup>2</sup>) and detailed studies.
- Pb, W, Cd (for Zn), Sb, As are showing excellent potential as vectors to mineralisation.

## ICP-MS pines and soils

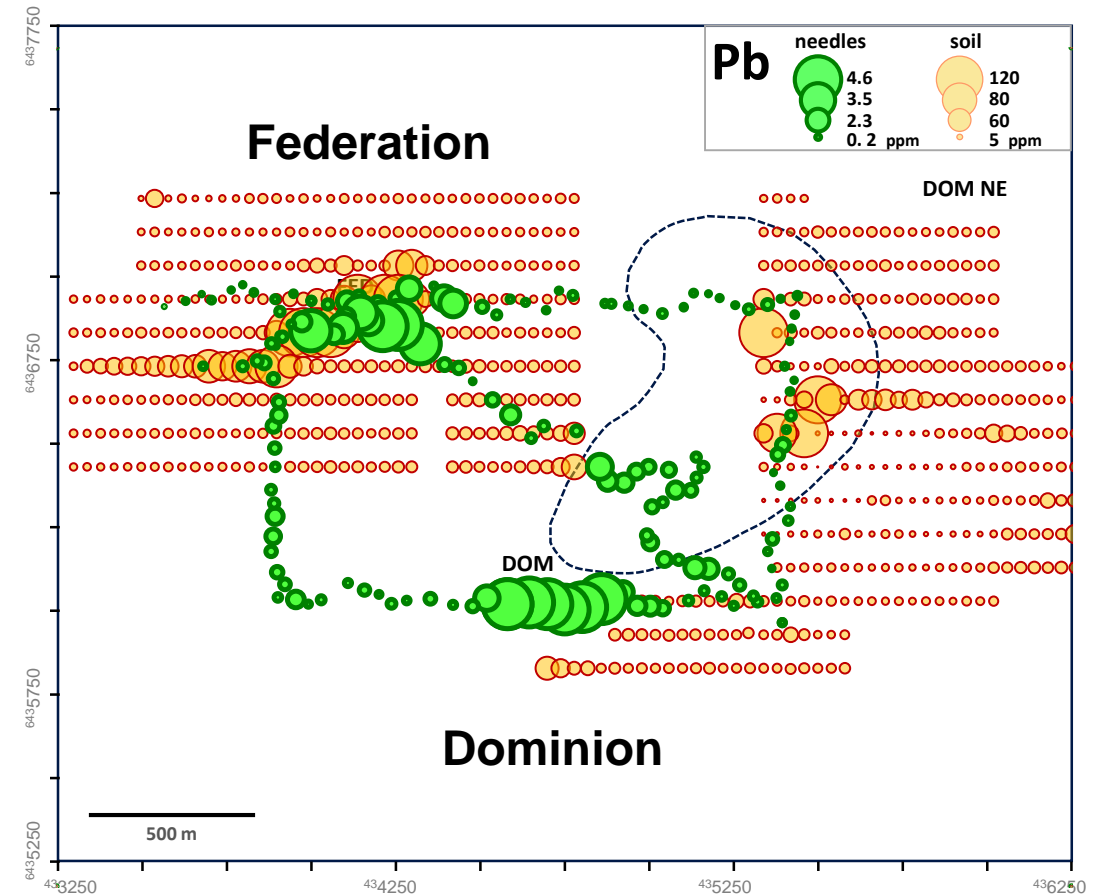
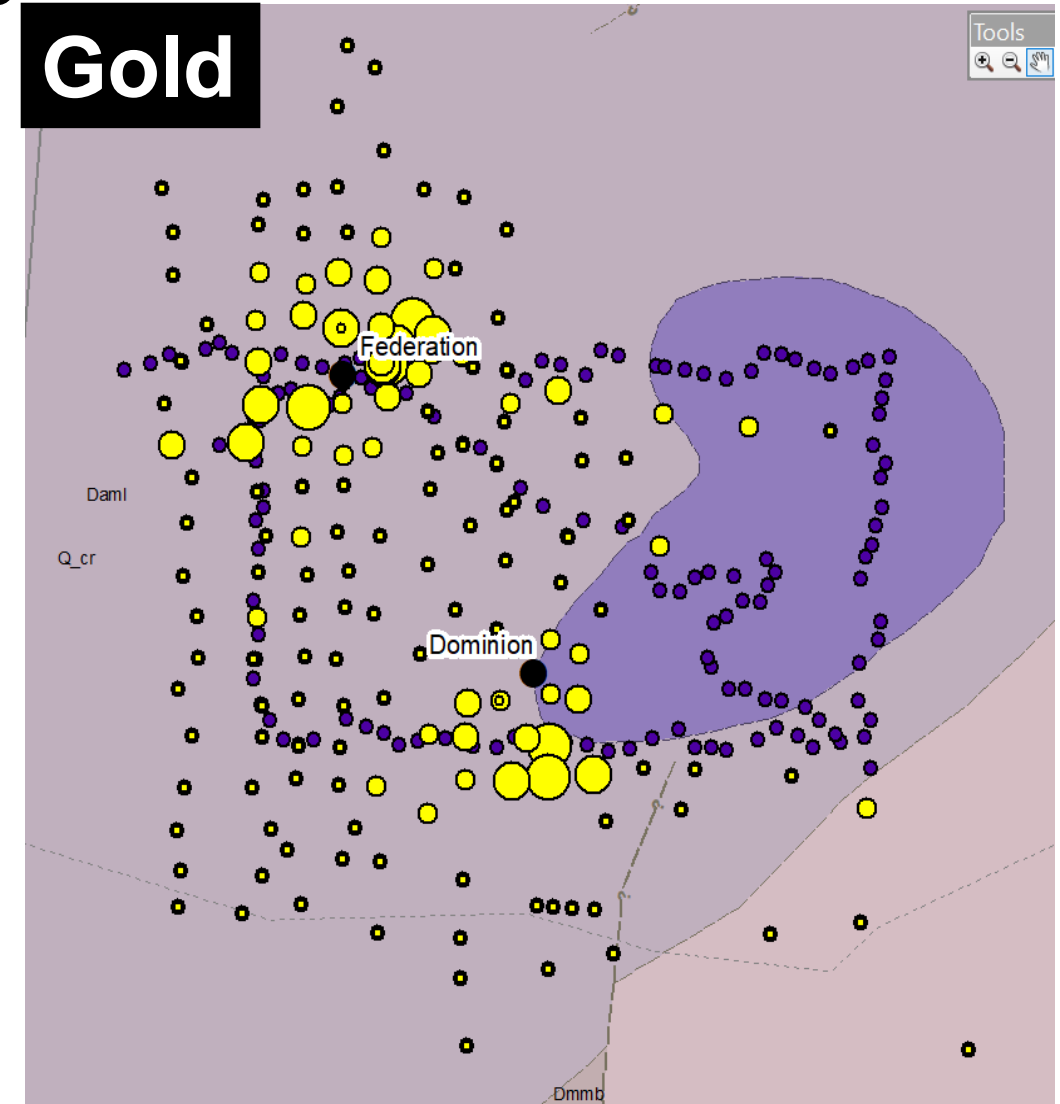


Image courtesy Joe Schifano, UNSW.

# Cobar ultrafine geochemistry

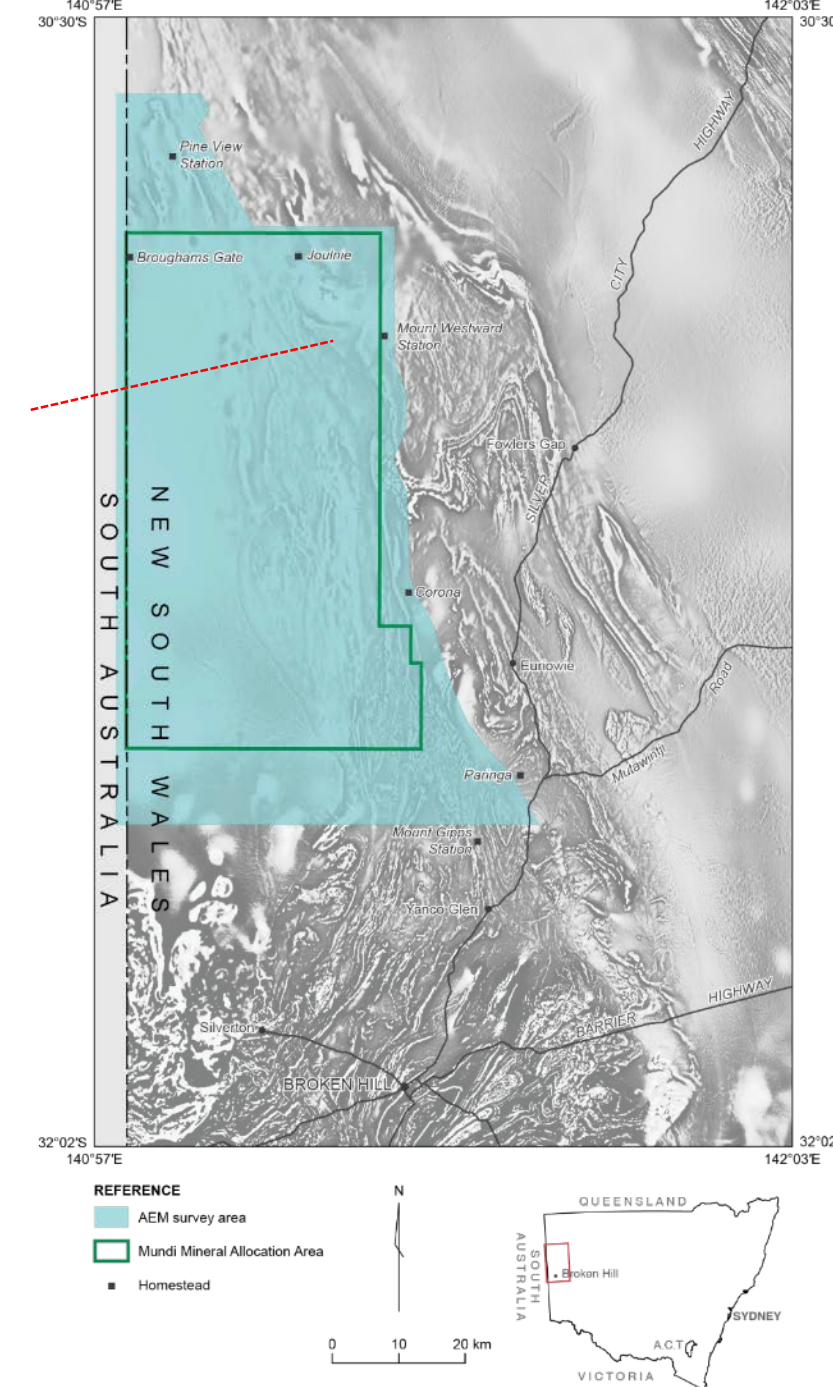
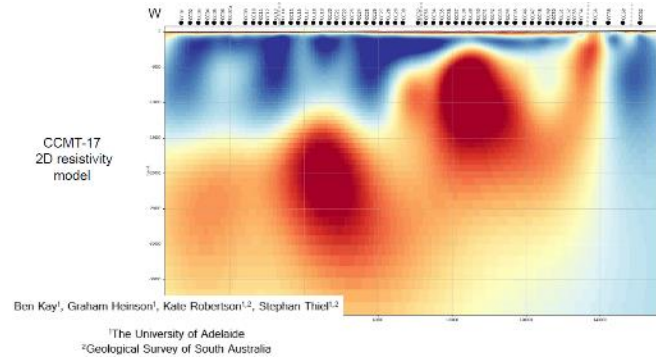
- CSIRO-led collaborative project
- The technique has the ability to “see” anomalies that are not apparent in standard surface geochemistry datasets
- 270 soil samples from Wagga Tank/Southern Nights and 163 Federation/Dominion soil samples submitted to compare with biogeochemistry





# Mundi AEM

- NCF agreement
- Funding secured and paid to GA
- 2.5 km and 5 km line spacing
- 1,900 line km
- Adjoins GA/GSSA Frome AEM survey
- Tender process complete – more expensive than anticipated
- Survey to be flown in March 2021
- One EOI received from industry for infill



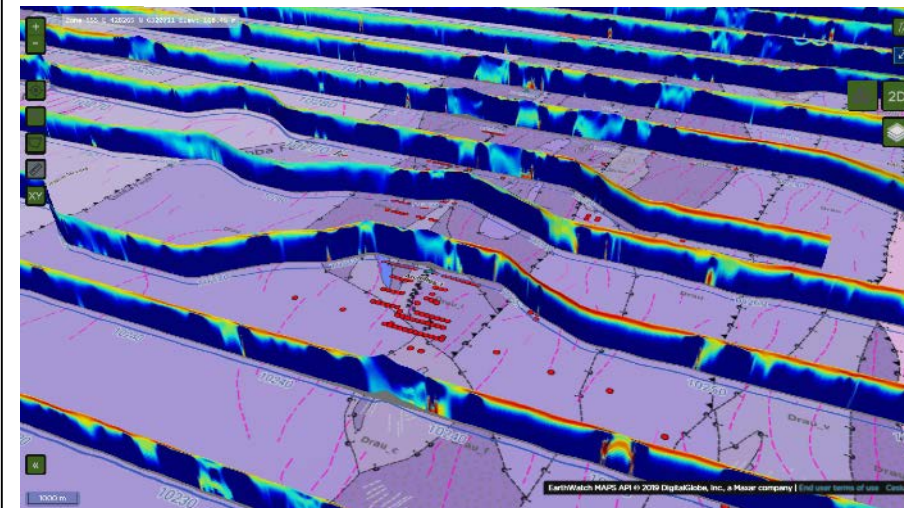
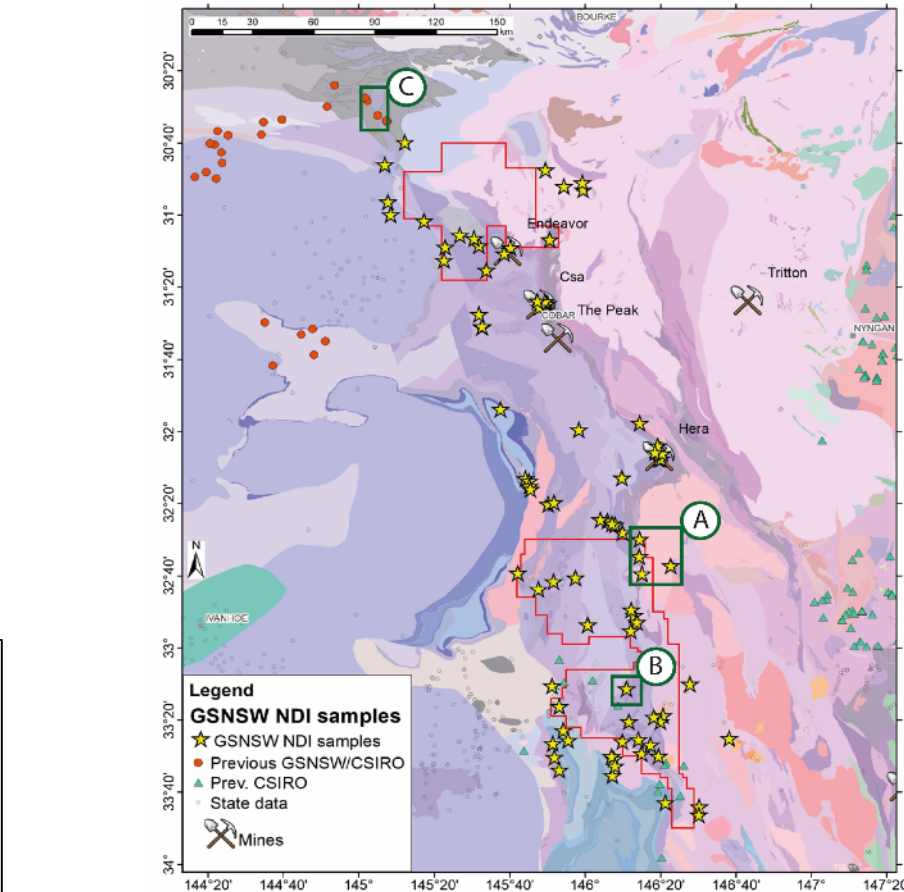
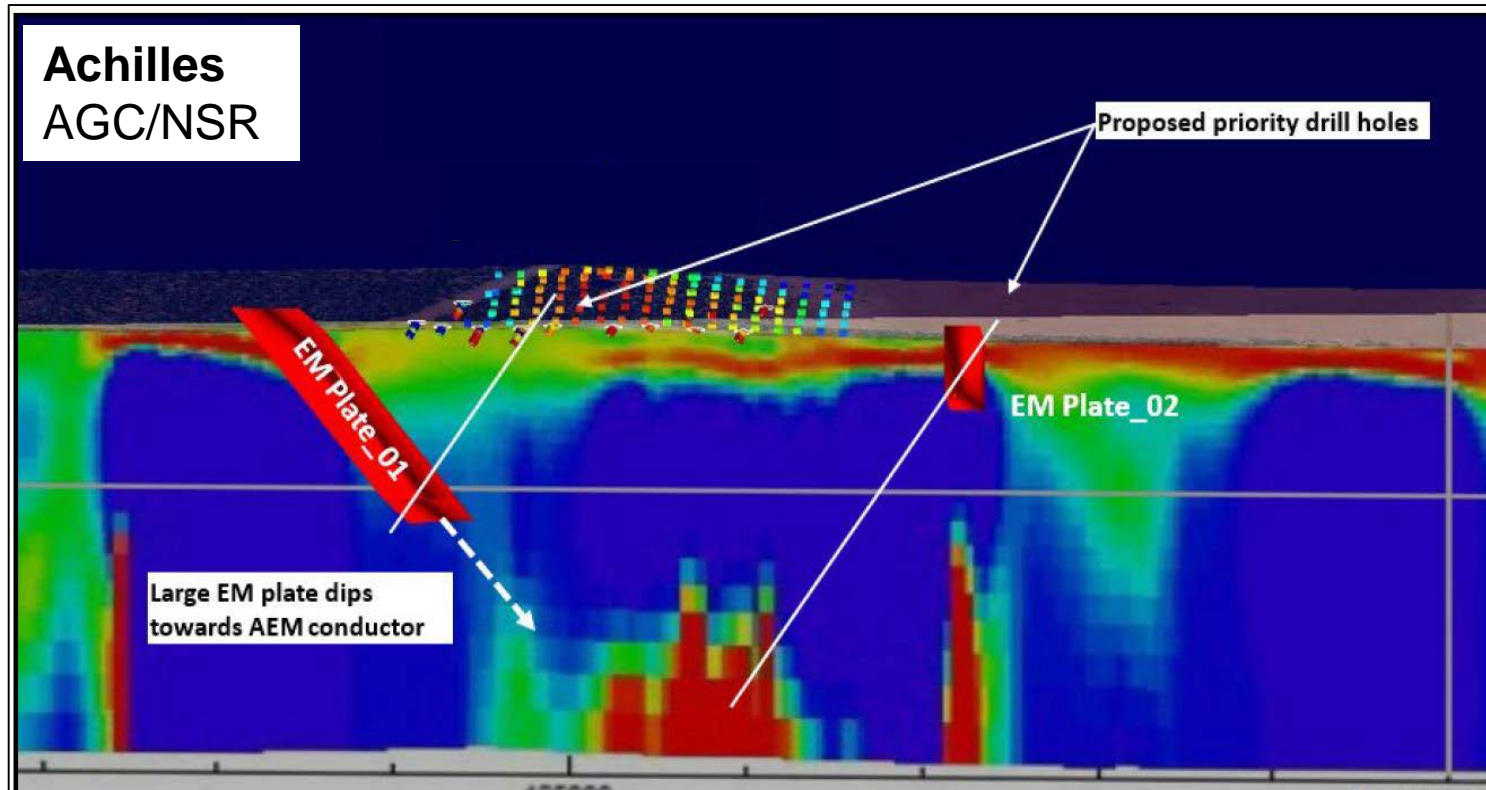
Regional  
NSW



Australian Government  
Geoscience Australia

# Cobar AEM and Hydrogeochemistry combine

- Hydrogeochemistry over the Achilles 3 prospect picked up anomalous Mo and Sn
- Also coincident Pb soil anomaly with Em and AEM anomalies at depth
- Drill-ready target



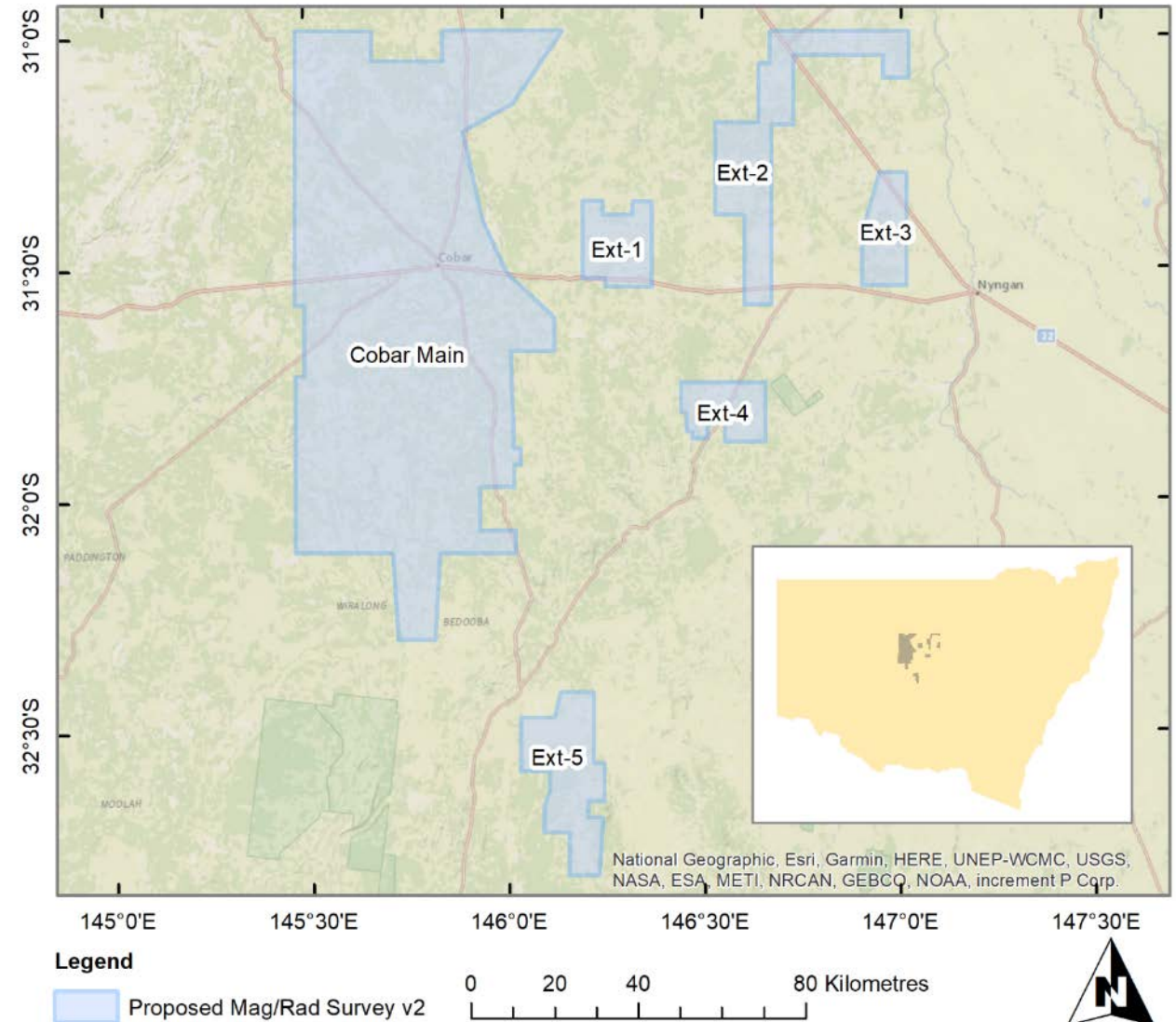


# Cobar airborne magnetics-radiometrics

- NCF agreement
- Funding secured and paid to GA
- 200m spacing, 60m clearance
- 43,100 line km
- Tender process will commence soon
- Planned for ~April/May 2021.



**Regional  
NSW**

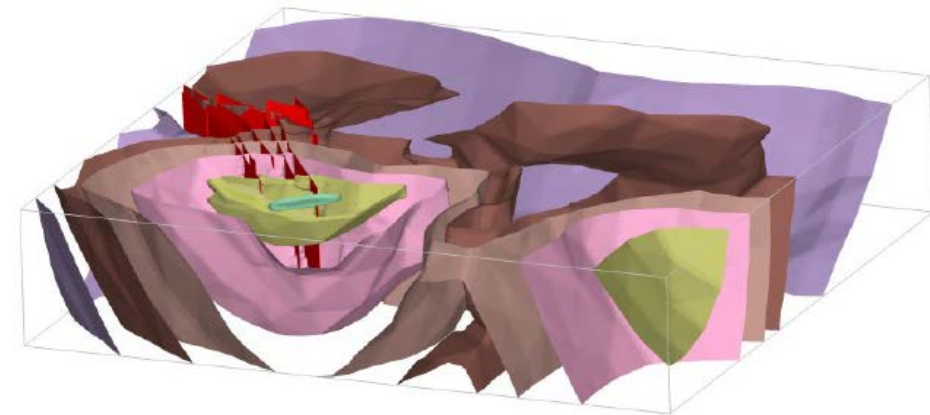


# Summary: major targets and goals 2020-2025

1. Deliver **MinEx CRC**
2. 2 more rounds of **Cooperative Drilling**
3. Leverage **Exploring for the Future** in Western NSW
4. release **Sunset Clause** data.
5. Customised on-demand **map/explanatory notes service** on MinView.
6. Deliver new **critical mineral data/maps/geophysical products** on MinView.
7. Release an interactive, implicit **3D geological and resource model** of NSW that shows explorable depths and resource prospectivity.



Regional  
NSW





Regional  
NSW

© State of New South Wales through the Department of Regional NSW, 2020.  
Information presented is based on knowledge and understanding at the time of writing and may not be accurate, current or complete.

# John Greenfield

---

[john.greenfield@planning.nsw.gov.au](mailto:john.greenfield@planning.nsw.gov.au)