Mining, Exploration and Geoscience
Department of Regional NSW

GSNSW Geological Mapping update

SMEDG showcase

Dr Chris Folkes
Senior Geoscientist – Projects & Acquisition

24 November 2022

NSW GOVERNMENT

NSW Seamless Geology

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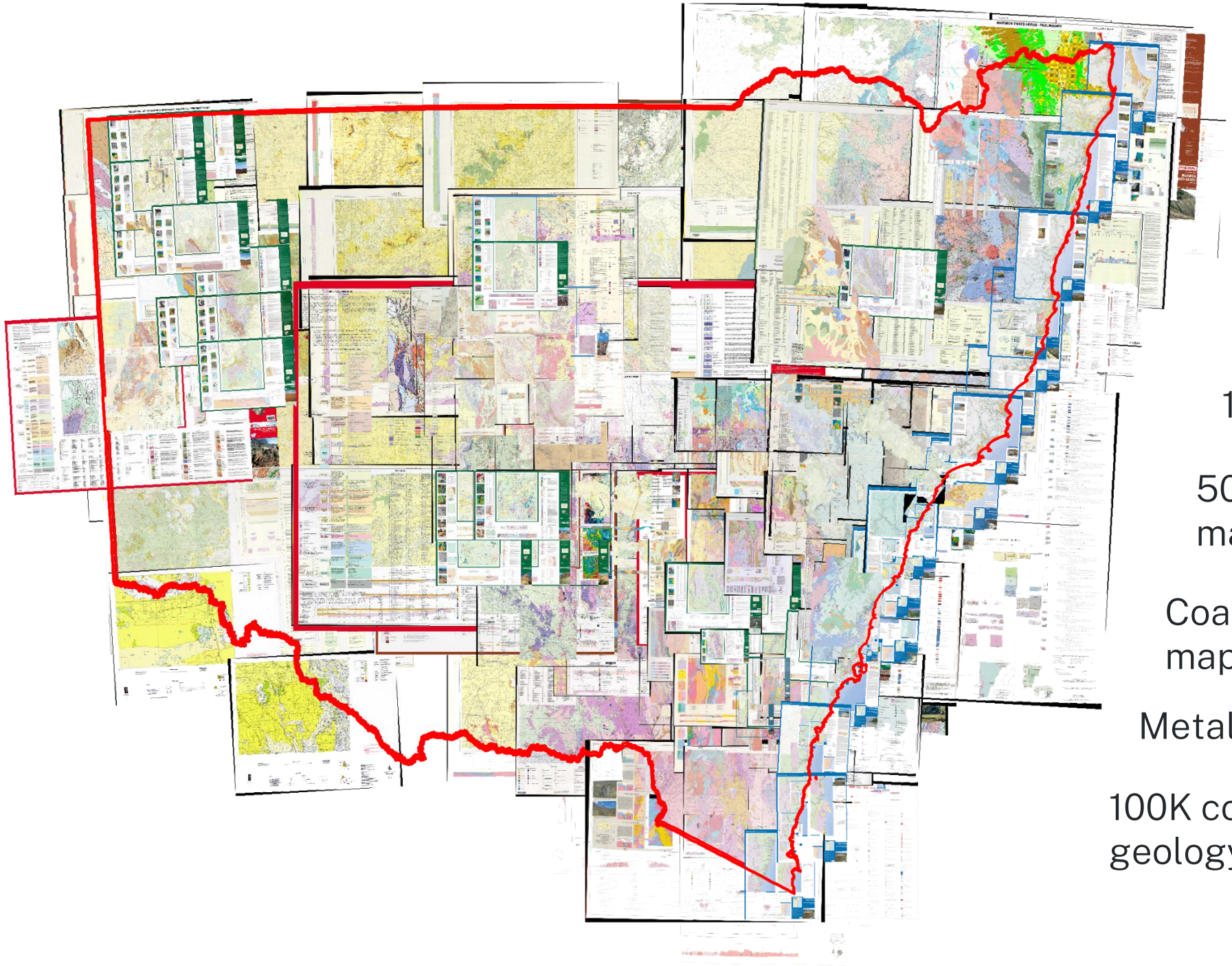


250K maps

100K maps

50K & 25K maps

Coastal geology maps

Metallogenic maps

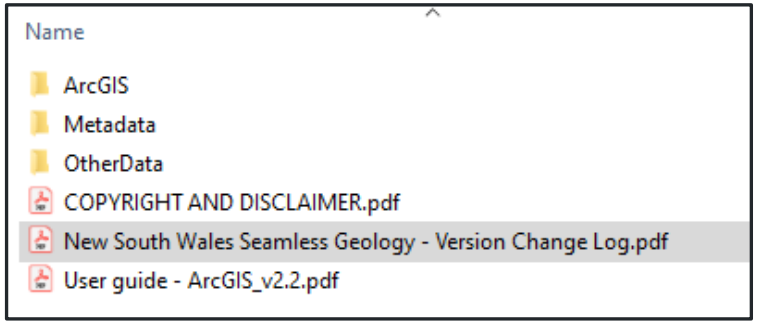
100K coalfield geology maps

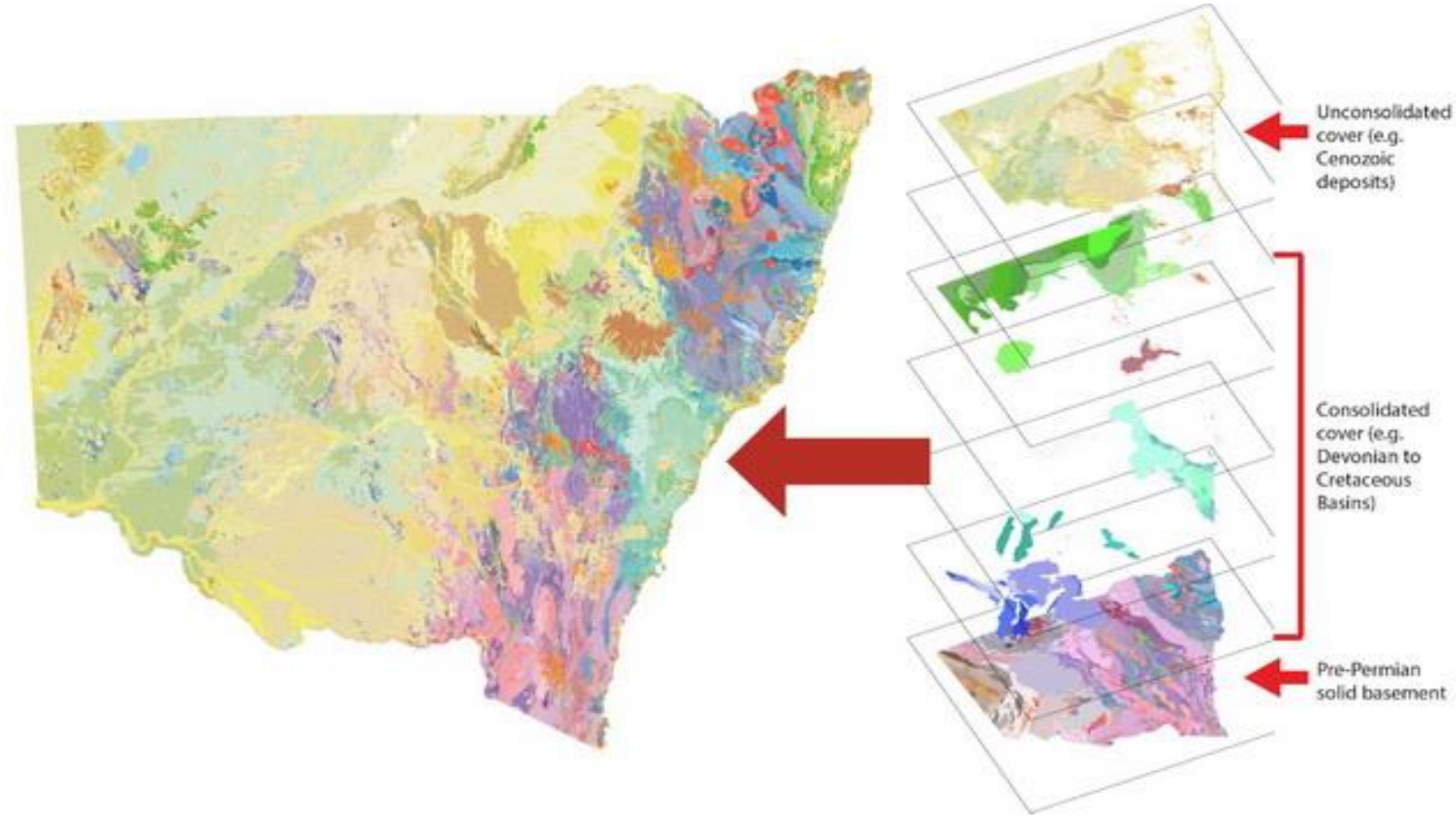
NSW Seamless Geology

An initial five-year project (2013–2018) to complete Version 1 of the statewide product.

Joins the best-available geological mapping (on a variety of scales) across NSW.

A continuously updated dataset.

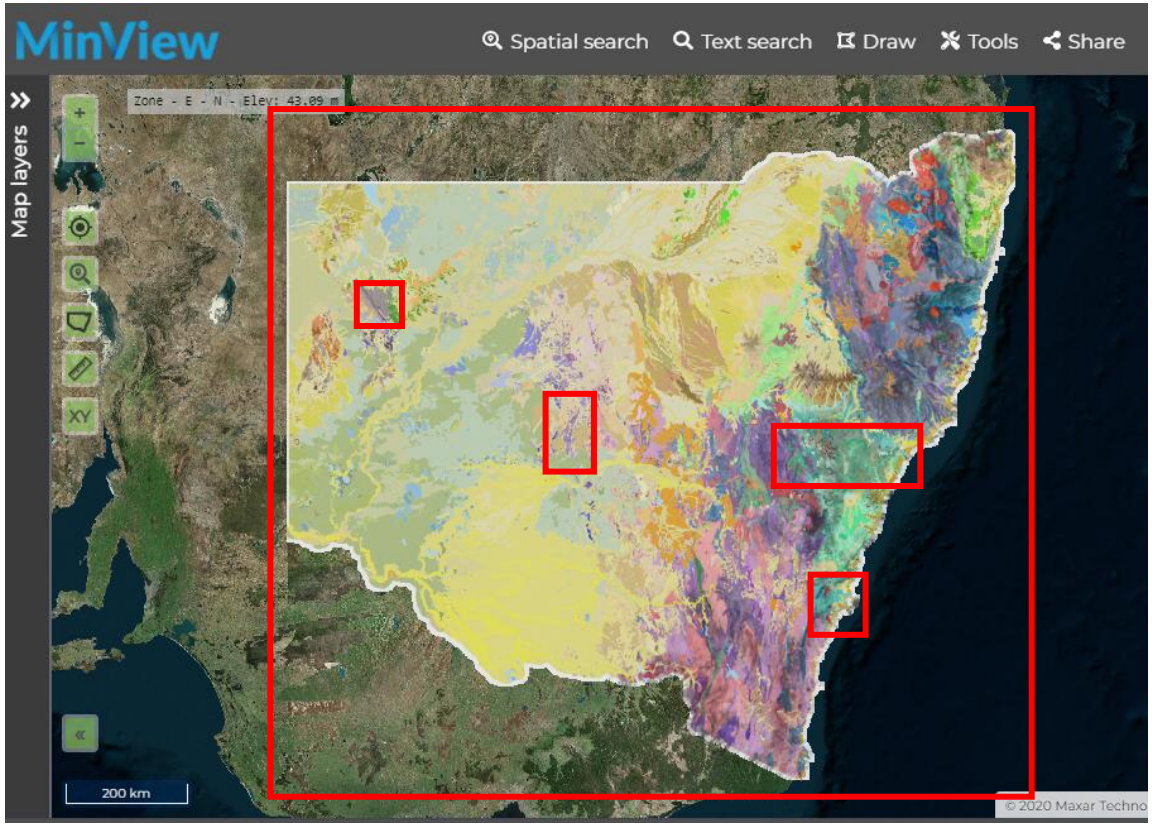




NSW Seamless Geology v2.2 – May 2022

New updates

- Parts of the South Cobar MinEx CRC area
- Ulladulla 1:100,000 map sheet area
- Unpublished/published mapping data
  - Camberwell, Hunter Coalfield, Rouchel & Dubbo
  - New data for the Lachlan Orogen
- Cupala Creek Syncline area
- Jervis Bay 1:25,000 mapping
- New DEM backdrop for MinView



Data mining

- 1538 structure points added from GSNSW FieldObs database

Error corrections

- Updates and error fixes to all layers

NSW Seamless Geology v2.2 – May 2022

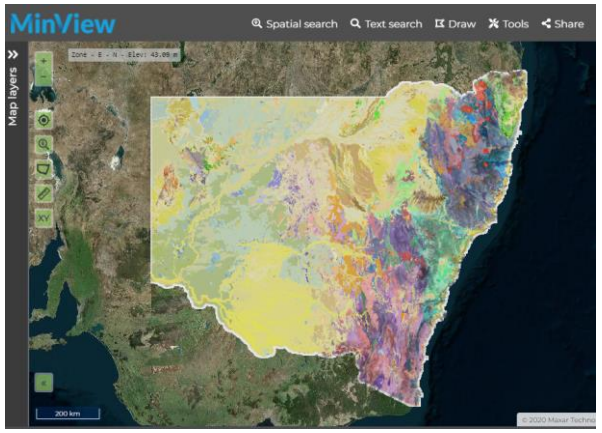
Project webpage

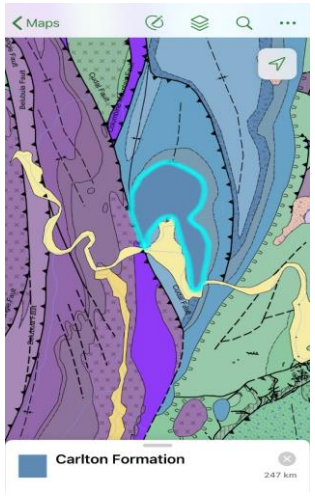
- https://www.regional.nsw.gov.au/meg/geoscience/projects/seamless-geology-project

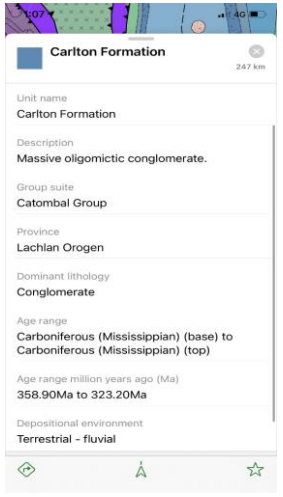
Datasets available for viewing and download

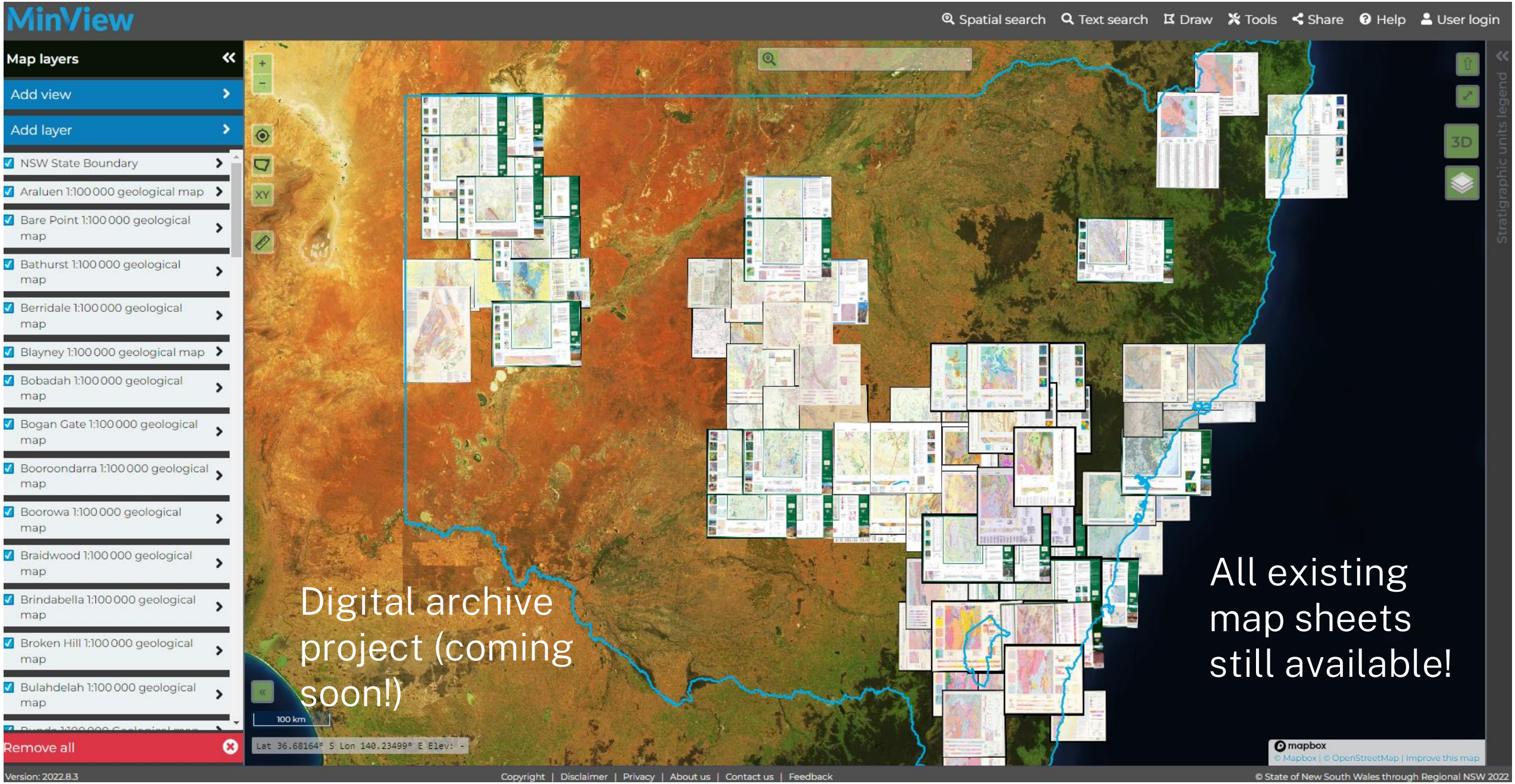
- NSW Seamless Geology Data Package:
  - Available in ArcMap and ArcGIS Pro, MapInfo, QGIS
  - https://search.geoscience.nsw.gov.au/product/9232
- Single layer version of the NSW Seamless Geology dataset
  - https://search.geoscience.nsw.gov.au/product/9258
- Viewable map on iPhone and Android phones and tablets
  - https://www.regional.nsw.gov.au/meg/geoscience/products-and-data/nsw-geology-phone-maps

Statewide seamless geology on MinView








MinView
Spatial search
Text search
Draw
Tools
Share
Help
User login
Map layers
Add view
Add layer
NSW State Boundary
Araluen 1:100 000 geological map
Bare Point 1:100 000 geological map
Bathurst 1:100 000 geological map
Berridale 1:100 000 geological map
Blayney 1:100 000 geological map
Bobadah 1:100 000 geological map
Bogan Gate 1:100 000 geological map
Booroondarra 1:100 000 geological map
Boorowa 1:100 000 geological map
Braidwood 1:100 000 geological map
Brindabella 1:100 000 geological map
Broken Hill 1:100 000 geological map
Bulahdelah 1:100 000 geological map
Remove all
3D
Stratigraphic units legend
Digital archive project (coming soon!)
All existing map sheets still available!
100 km
Lat 36.68164° S Lon 140.23499° E Elev: -
mapbox
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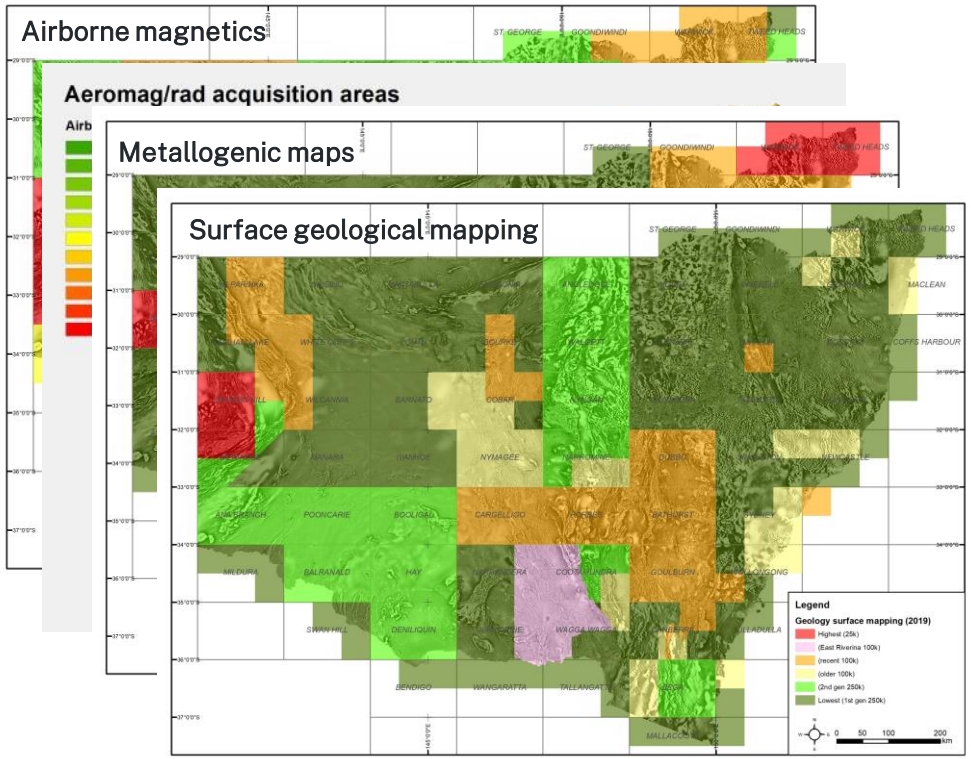
NSW GOVERNMENT

NSW data confidence and decadal mapping strategy

2

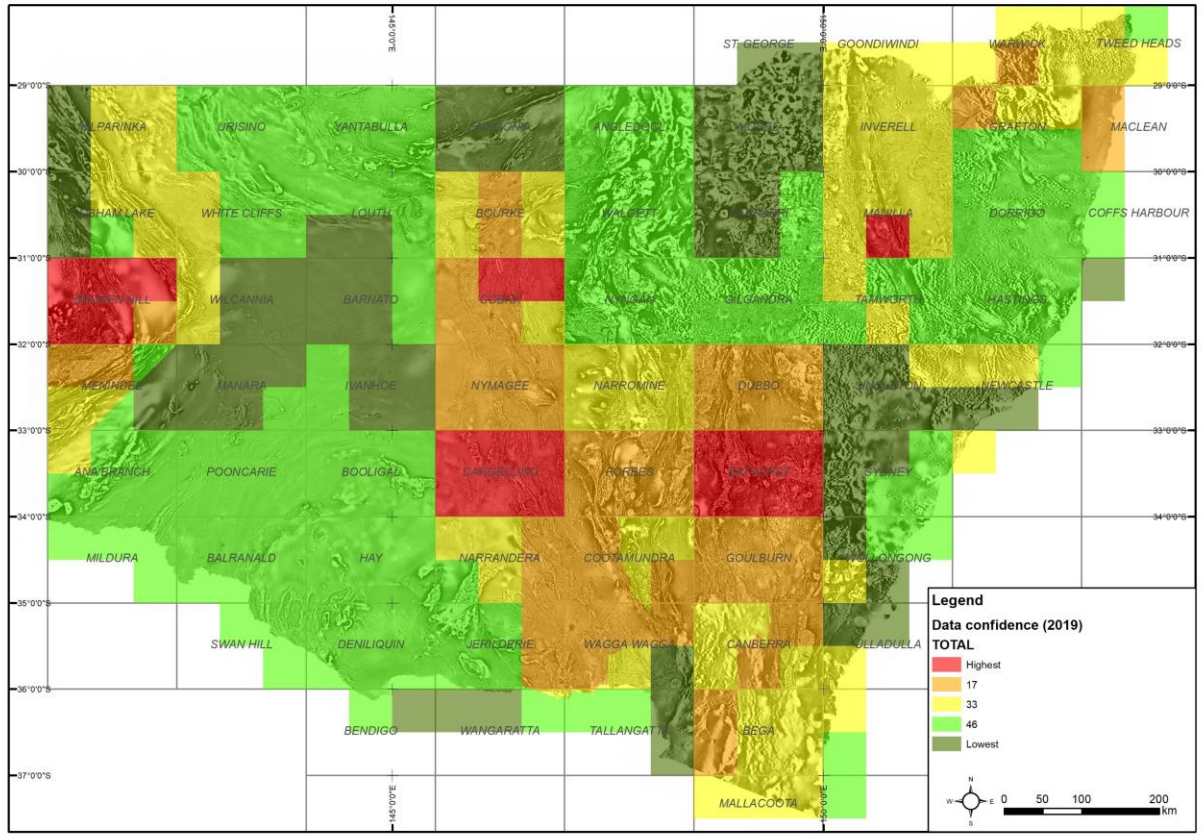
Data confidence (end-2019 update)

Report: GS2019/0172



‘Tier 1’ data – most important for exploration

Integrated tier 1 data



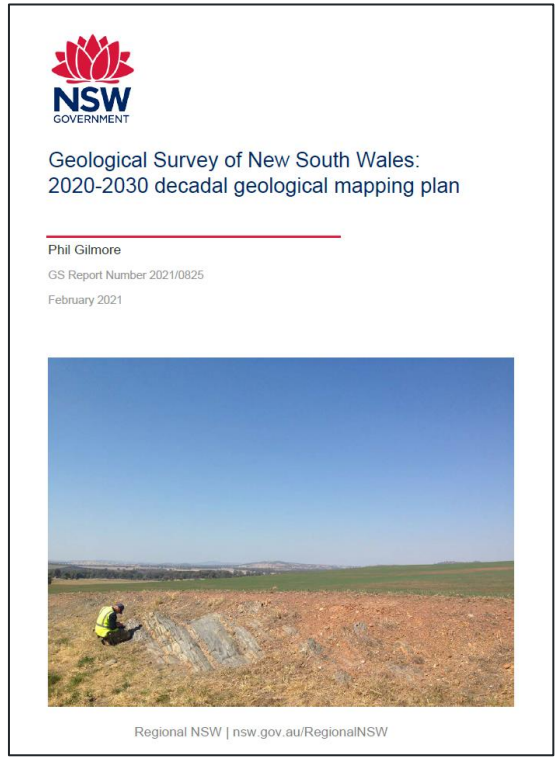
2020 – 2030 Geological Survey of NSW Decadal Mapping Strategy

High priority projects

- **NSW Seamless Geology** - ongoing enhancements to the dataset – issues register, statewide products (i.e. fault attribution, metamorphic maps)
- **MinEx CRC focus areas** (Cobar, Mundi, Forbes-Dubbo) – surface mapping and sampling, drillcore analysis and sampling
- **Supporting other major projects in NSW:**
  - Key and critical minerals
  - Geophysical acquisition program
  - Future Ready Regions – groundwater (DRNSW)
  - Current and future ARC/research projects
  - Exploring for the Future (Geoscience Australia)

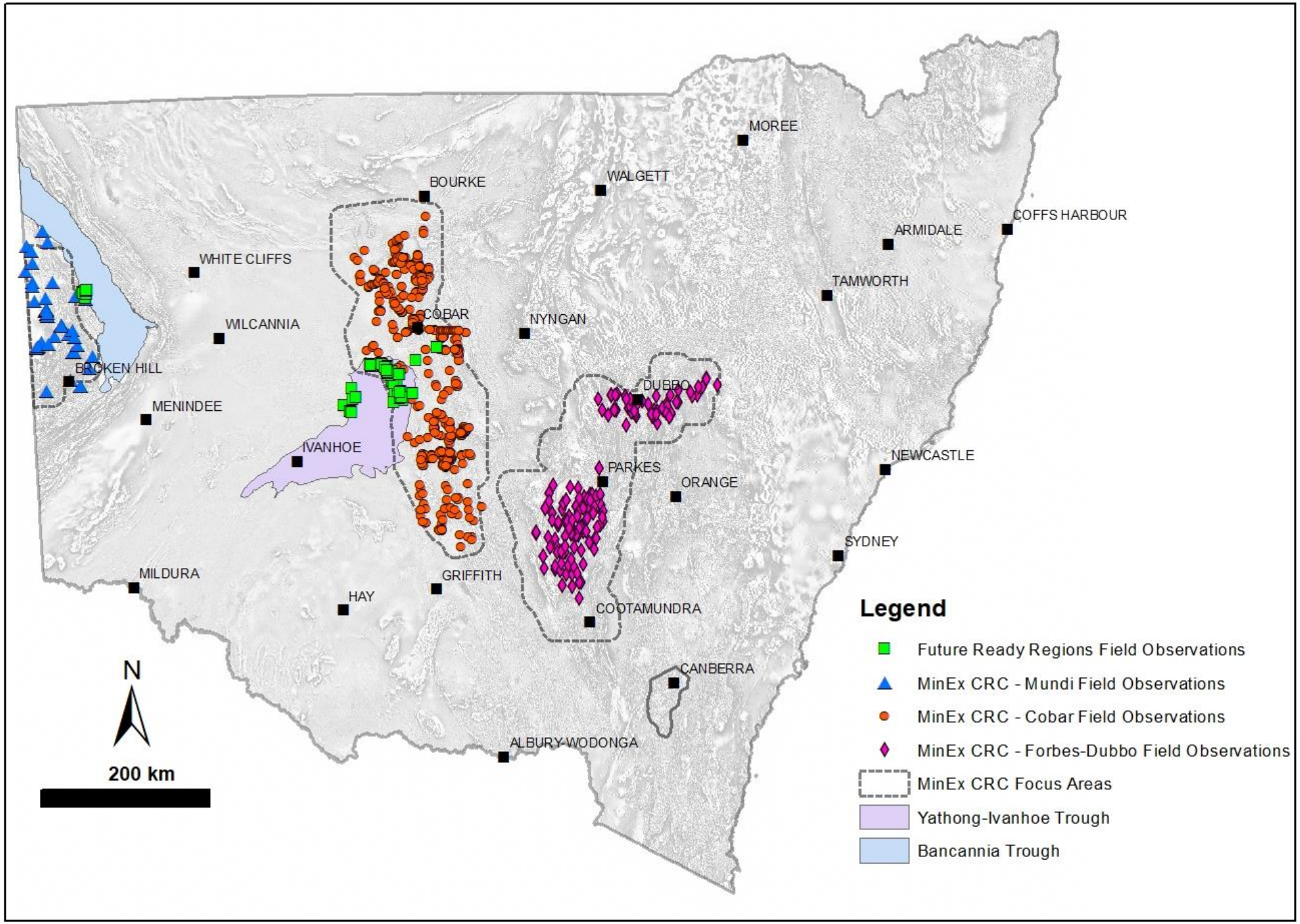
Other projects

- Macquarie Arc – supporting mineral system studies. Rockley-Gulgong Belt
- Tumut Trough – geodynamics of the Lachlan Orogen
- Geotourism – supporting various projects across NSW



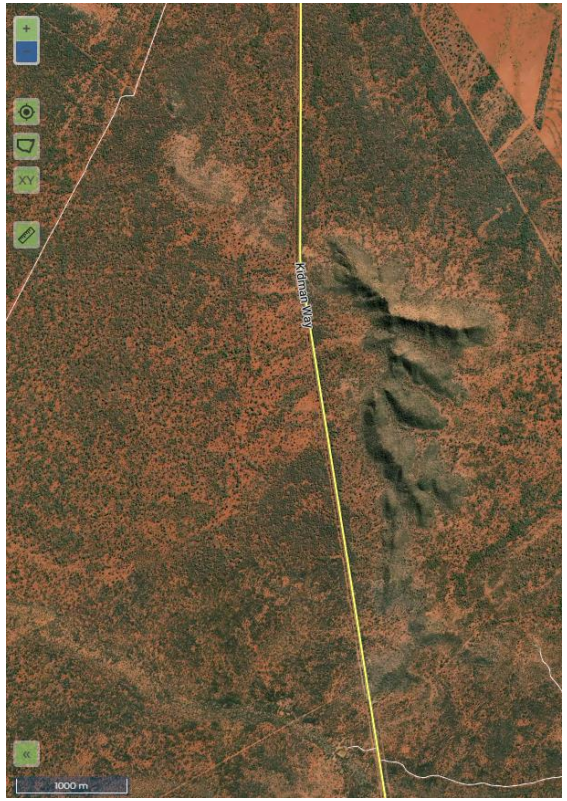
Current and future mapping activities

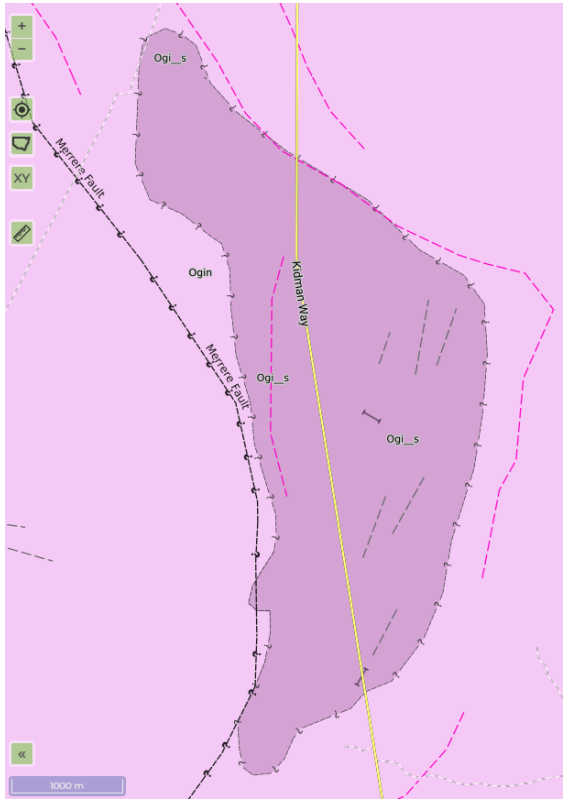
3

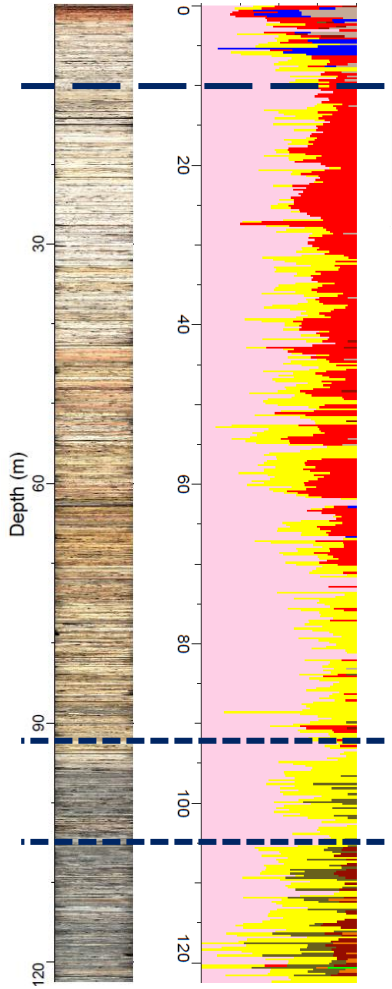

MOREE
BOURKE
WALGETT
COFFS HARBOUR
ARMIDALE
WHITE CLIFFS
TAMWORTH
COBAR
NYNGAN
WILCANNIA
BROKEN HILL
DUBBO
MENINDEE
IVANHOE
NEWCASTLE
PARKES
ORANGE
SYDNEY
MILDURA
GRIFFITH
HAY
COOTAMUNDRA
CANBERRA
ALBURY-WODONGA
N
200 km
Legend
Future Ready Regions Field Observations
MinEx CRC - Mundi Field Observations
MinEx CRC - Cobar Field Observations
MinEx CRC - Forbes-Dubbo Field Observations
MinEx CRC Focus Areas
Yathong-Ivanhoe Trough
Bancannia Trough

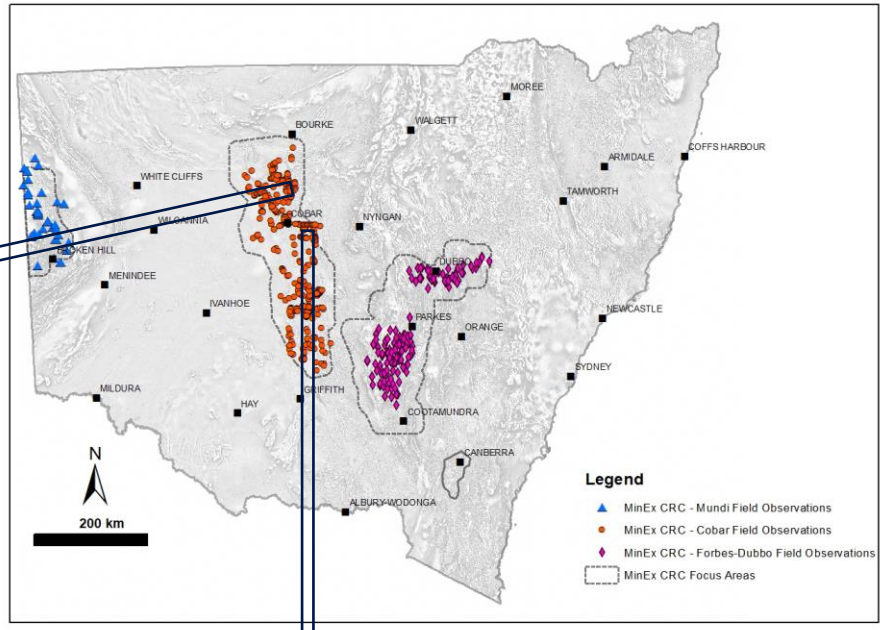
Mineral Exploration (MinEx) CRC

Gunderbooka 100K sheet









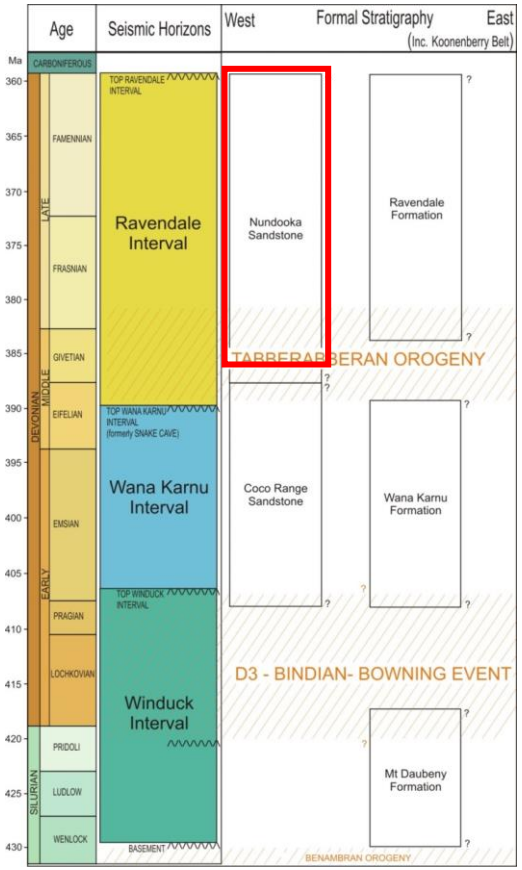
Canbelego 100K sheet

- Improving understanding and characterisation of Girilambone Group (basement) – structure, litho-stratigraphy
- Improved mapping and identification of Girilambone Group vs. Cobar Supergroup units
- https://www.regional.nsw.gov.au/meg/geoscience/minexcrc

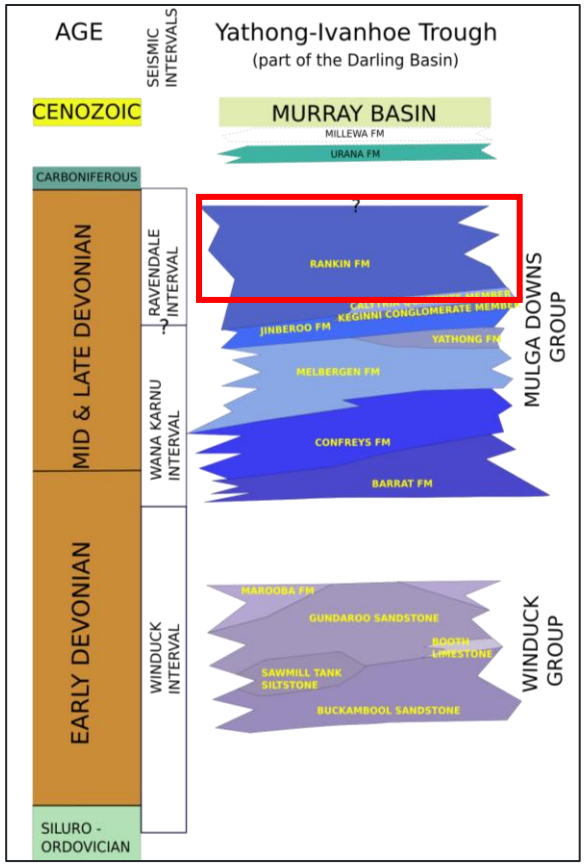
MinEx CRC

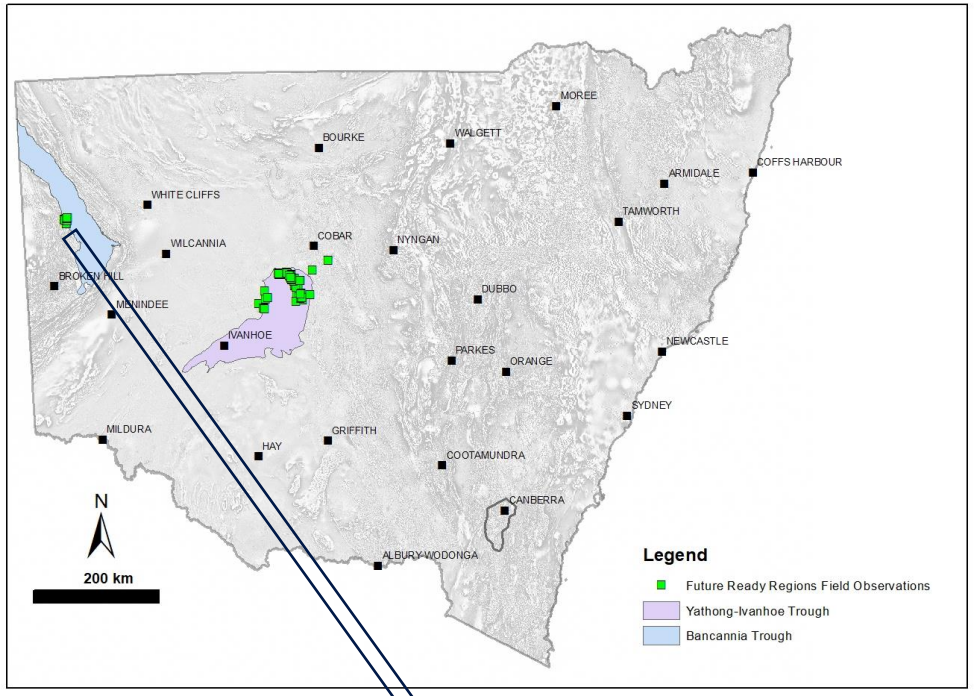
Future Ready Regions

Bancannia Trough



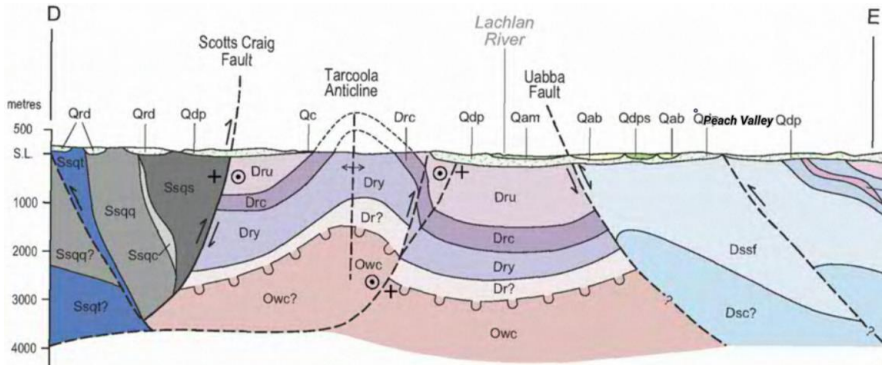
Yathong-Ivanhoe Trough

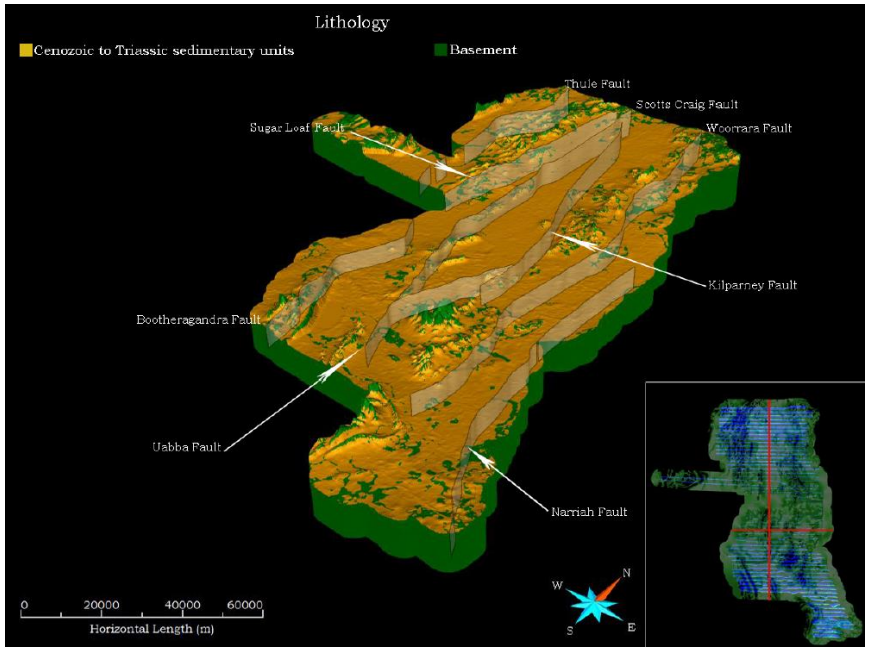


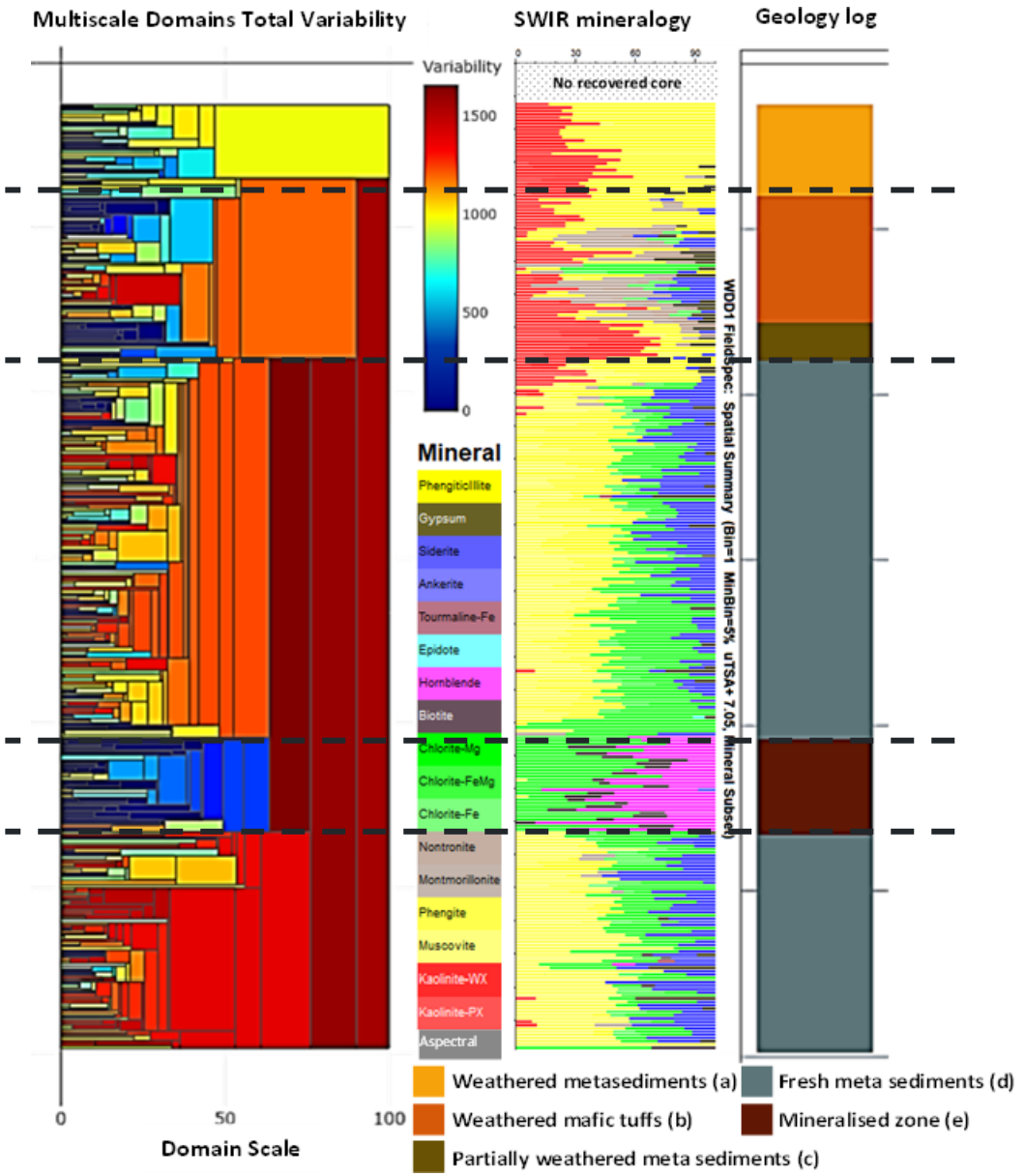


- Drought resilience strategy for NSW regional communities
- GSNSW project - mapping Devonian sedimentary sequences. Identification of deep groundwater and rocks to store water in periods of surplus
- https://www.regional.nsw.gov.au/meg/geoscience/projects/groundwater

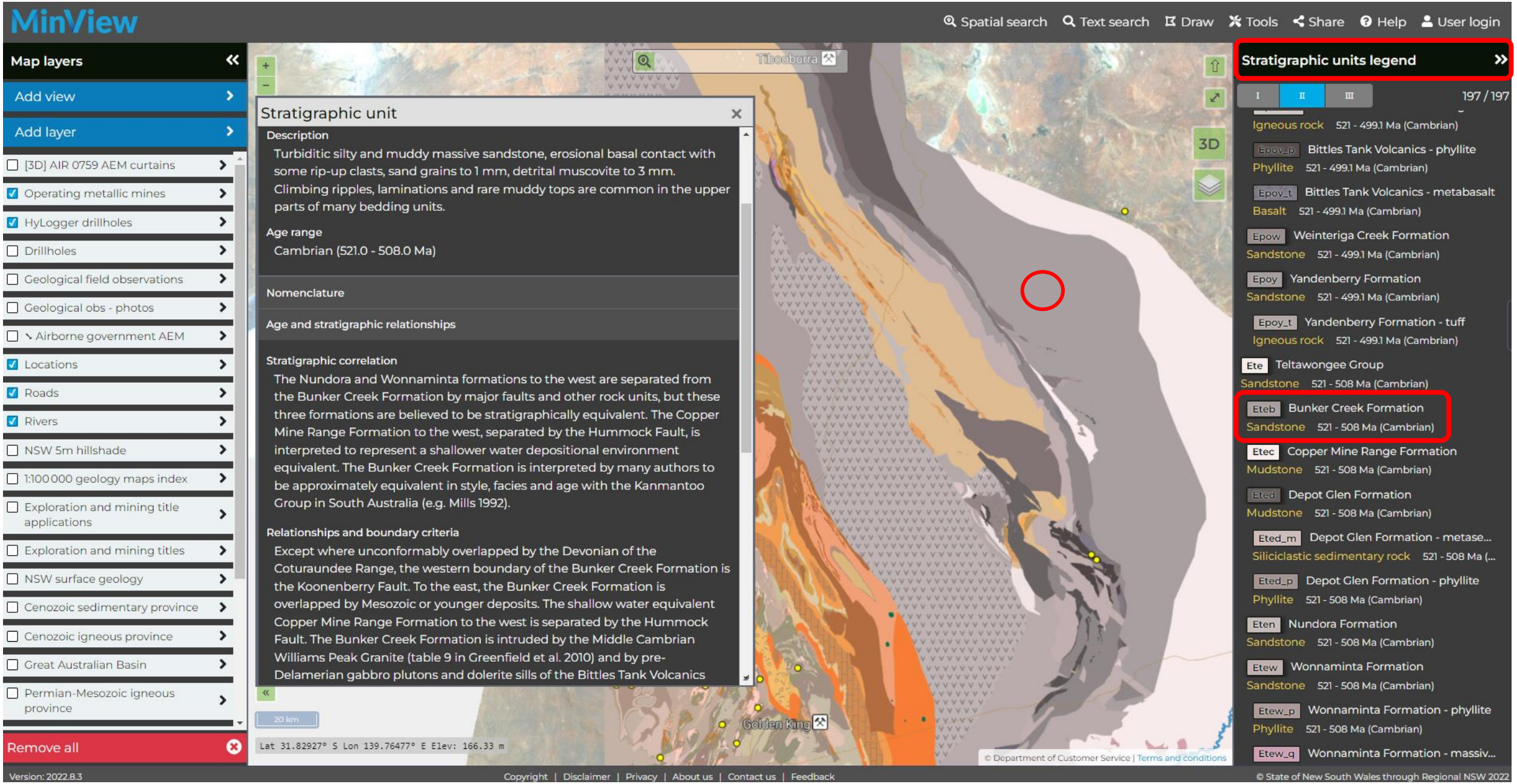
Data integration and 3D mapping







- Bringing traditional geological mapping into 3D
- Mapping key stratigraphic and lithological interfaces in 3D


MinView
Spatial search
Text search
Draw
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Share
Help
User login
Map layers
Add view
Add layer
[3D] AIR 0759 AEM curtains
Operating metallic mines
HyLogger drillholes
Drillholes
Geological field observations
Geological obs - photos
Airborne government AEM
Locations
Roads
Rivers
NSW 5m hillshade
1:100 000 geology maps index
Exploration and mining title applications
Exploration and mining titles
NSW surface geology
Cenozoic sedimentary province
Cenozoic igneous province
Great Australian Basin
Permian-Mesozoic igneous province
Remove all
Stratigraphic unit
Description
Turbiditic silty and muddy massive sandstone, erosional basal contact with some rip-up clasts, sand grains to 1 mm, detrital muscovite to 3 mm. Climbing ripples, laminations and rare muddy tops are common in the upper parts of many bedding units.
Age range
Cambrian (521.0 - 508.0 Ma)
Nomenclature
Age and stratigraphic relationships
Stratigraphic correlation
The Nundora and Wonnaminta formations to the west are separated from the Bunker Creek Formation by major faults and other rock units, but these three formations are believed to be stratigraphically equivalent. The Copper Mine Range Formation to the west, separated by the Hummock Fault, is interpreted to represent a shallower water depositional environment equivalent. The Bunker Creek Formation is interpreted by many authors to be approximately equivalent in style, facies and age with the Kanmantoo Group in South Australia (e.g. Mills 1992).
Relationships and boundary criteria
Except where unconformably overlapped by the Devonian of the Coturaundee Range, the western boundary of the Bunker Creek Formation is the Koonenberry Fault. To the east, the Bunker Creek Formation is overlapped by Mesozoic or younger deposits. The shallow water equivalent Copper Mine Range Formation to the west is separated by the Hummock Fault. The Bunker Creek Formation is intruded by the Middle Cambrian Williams Peak Granite (table 9 in Greenfield et al. 2010) and by pre-Delamerian gabbro plutons and dolerite sills of the Bittles Tank Volcanics
Tibooburra
Golden King
20 km
Lat 31.82927° S Lon 139.76477° E Elev: 166.33 m
3D
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Stratigraphic units legend
I
II
III
197 / 197
Igneous rock 521 - 499.1 Ma (Cambrian)
Epov_p Bittles Tank Volcanics - phyllite
Phyllite 521 - 499.1 Ma (Cambrian)
Epov_t Bittles Tank Volcanics - metabasalt
Basalt 521 - 499.1 Ma (Cambrian)
Epow Weinteriga Creek Formation
Sandstone 521 - 499.1 Ma (Cambrian)
Epoy Yandenberry Formation
Sandstone 521 - 499.1 Ma (Cambrian)
Epoy_t Yandenberry Formation - tuff
Igneous rock 521 - 499.1 Ma (Cambrian)
Ete Teltawongee Group
Sandstone 521 - 508 Ma (Cambrian)
Eteb Bunker Creek Formation
Sandstone 521 - 508 Ma (Cambrian)
Etec Copper Mine Range Formation
Mudstone 521 - 508 Ma (Cambrian)
Eted Depot Glen Formation
Mudstone 521 - 508 Ma (Cambrian)
Eted_m Depot Glen Formation - metase...
Siliciclastic sedimentary rock 521 - 508 Ma (...
Eted_p Depot Glen Formation - phyllite
Phyllite 521 - 508 Ma (Cambrian)
Eten Nundora Formation
Sandstone 521 - 508 Ma (Cambrian)
Etew Wonnaminta Formation
Sandstone 521 - 508 Ma (Cambrian)
Etew_p Wonnaminta Formation - phyllite
Phyllite 521 - 508 Ma (Cambrian)
Etew_q Wonnaminta Formation - massiv...
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Thank you

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