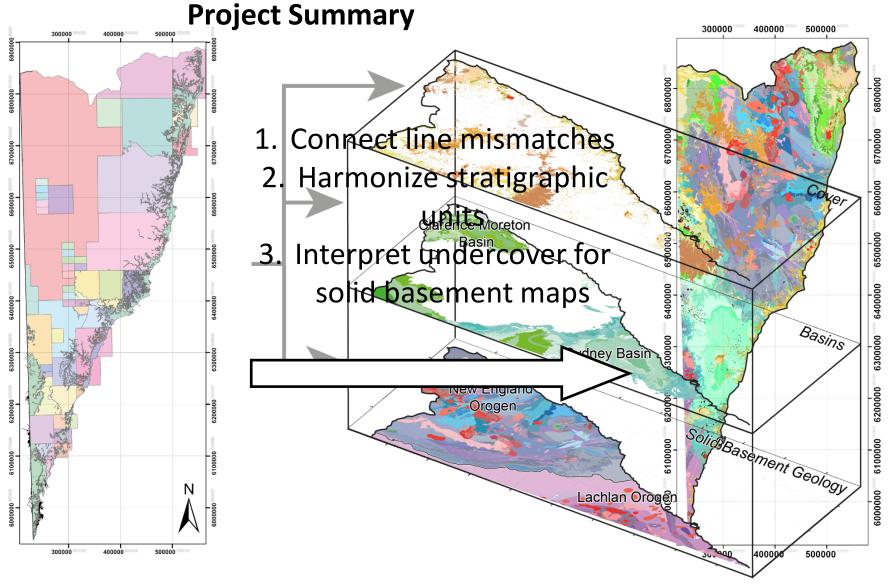


NSW SEAMLESS GEOLOGY PROJECT

John Greenfield on behalf of the project team:

Glen Phillips, Gary Colquhoun, Kyle Hughes, James Ballard and Liann Deyssing

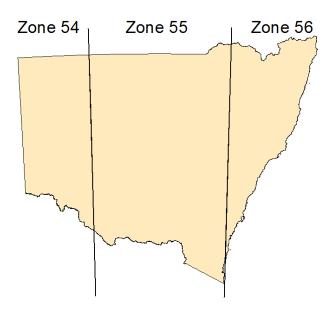




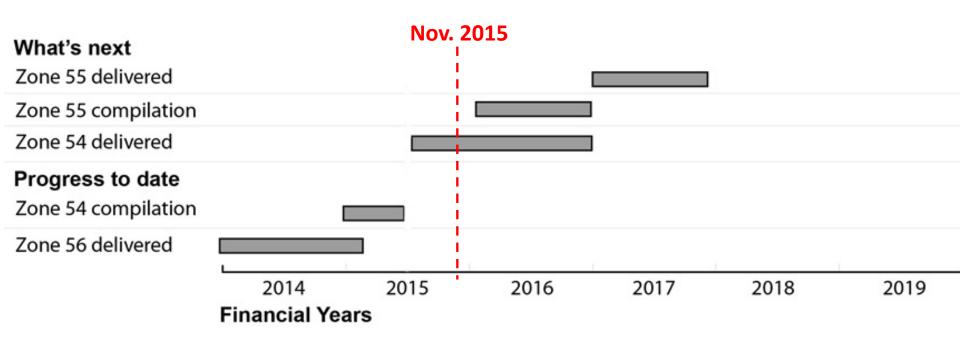


Project aims:

- (a) Seamless vector geology for NSW combining the best-available geological maps using a standard database structure and schema
- (b) The dataset will be made seamless in a standard set of overlapping stratotectonic layers by interpreting and inferring boundaries
- c) Basis of future map delivery at GSNSW









Zone 56 milestones for 2015

Release of version 1 Zone 56 Seamless Geology in February 2015 for free download

Downloads: FSRI ArcGIS 192

> MapInfo 77

Date released Feb 2015

Version Version 1.0

Data formats ESRI ArcMap (10.2 or later), MapInfo (11.5 or later)

Extent

Covers UTM Zone 56 in New South Wales (ie. east of longitude 150°E to the coast).

Content

Comments

This product represents a seamless compilation of the best available vector geology data for UTM Zone 56 in New South Wales. The data has been organised into a series of layers, or time slices, representing the major lithotectonic units of NSW. All layers have a consistent data structure and attribute schema from the GSNSW's Statewide Geology Geodatabase (version

2). Base data (roads, railways, rivers, localities) is also provided.

More information on the Seamless Geology Project is also available. This dataset will be updated as more information becomes available.

Please contact Geospatial if you require information or assistance.

Download

Download this product in ESRI ArcGIS format. Note: The download is a zip file which is approximately 190 Mb in size. When the download is complete, the zip file should be extracted into an empty folder on the user's hard drive.

Download this product in MapInfo format. Note: The download is a zip file which is approximately 280 Mb in size. When the download is complete, the zip file should be extracted into an empty folder on the user's hard drive.

Download this product as a viewable map on IPhone and Android phones and tablets.

Reference

Colquhoun G.P., Phillips, G., Hughes, K.S, Deyssing L., Fitzherbert, J.A., & Troedson, A.L. 2015. New South Wales Zone 56 Seamless Geology, version 1 [Digital Dataset]. Geological Survey of

New South Wales, Maitland.

Price

Available for free download



☐ MSW Seamless Geology, Zone 56 - version1, Feb 2015

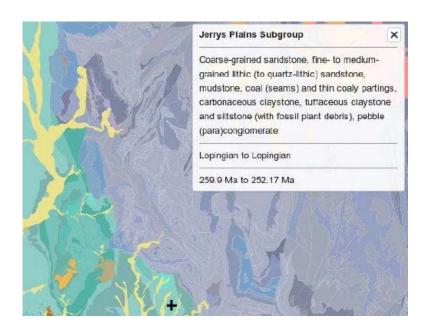


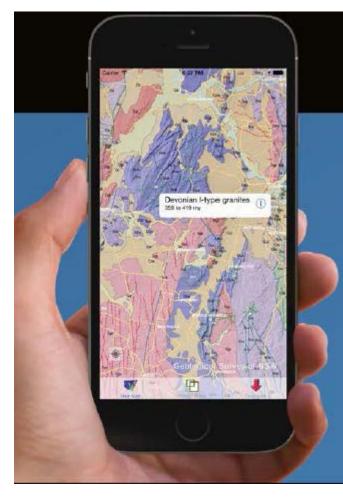


Zone 56 milestones for 2015

Mobile version release

- Release of version 1 Zone 56 Seamless Geology for Android and Apple (IOS) mobile devices in July 2015.
- Flattened into one layer. Units information is returned by tapping the screen
- Downloaded 189 times to late Nov 2015 (Size = 223 MB).







Zone 56 milestones for 2015

Quarterly Note 145 release

- Publication of Quarterly Note 145 on the Seamless Geology Project
- Included section on methodology and approach of the mobile seamless geology project.





September 2015 No 145

Seamless geology of New South Wales: approach, methodology and application

Abstract

The Geological Survey of New South Wales (GSNSW) Seamless Geology Database is a compilation of the state's best available geological mapping data in an internally consistent format. This report documents the public release of the geodatabase, which at present consists of a dynamic geological model of the eastern area of NSW covered by UTM Zone 56. The geodatabase structure allocates geological data into individual layers that represent key stages in the geological evolution of the state. For UTM Zone 56, data is assigned to one of the following layers: (i) Basement — New England and Lachlan orogens; (ii) Permian-Triassic Basins — Sydney, Gunnedah and Bowen basins; (iii) Great Australian Basin - Clarence-Moreton, Ipswich and Surat basins; (iv) Mesozoic igneous province; (v) Cenozoic sedimentary province; and (vi) Cenozoic igneous province. The approach taken to build the geological model for UTM Zone 56 involved merging disparate datasets deemed the best-available mapping data for particular regions. Initial problems encountered during the compilation and merging stages include: significant georeferencing errors inherited from older maps compiled on poor base-map data; spatial and stratigraphic mismatches across map joins, where linework did not connect or rock units were called different things across the map boundary; and mapping data that was acquired at markedly different scales (1:25 000 to 1:250 000), resulting in a variable degree of data resolution. To seamlessly merge these datasets, the following workflow was used: (i) convert all existing data into a consistent statewide format; (ii) rectify georeferencing problems; (iii) edge-match geological contacts across dataset boundaries; and (iv) re-code rock units using the new statewide stratigraphic naming convention. Using this approach, a new dynamic geological model of UTM Zone 56 was constructed. The geodatabase is also linked with the GSNSW Geoscientific Data Warehouse (GDW), which contains information on the character of rock units. Consequently, the Seamless Geodatabase can act as a spatial search engine that accesses geological data stored in the GDW.

Keywords: seamless geology, Geographic Information Systems, geodatabase

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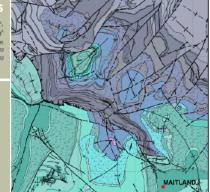
© State of New South Wales through Department of Industry, Skills and Regional Development 2015.

Papers in Quarterly Notes are subject to external review External reviewers for this issue were David Higgins (Geological Survey of Victoria) and Olivier Rey-Lescure (University of Newcastle). Their assistance is appreciated.

Quarterly Notes is published to give wide circulation to results of studies in the Geological Survey of New South Wales. Papers are also welcome that arise from team studies with external

Contact: simone.meakin@industry.nsw.gov.au

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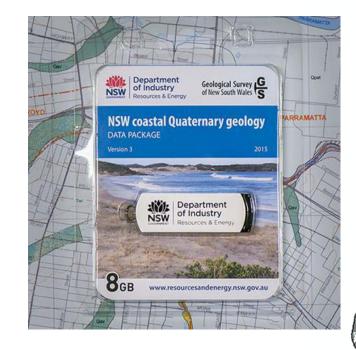
Zone 56 milestones for 2015

Outgrowth projects

Coastal Quaternary Geology -

basement geology layers were derived from Zone 56 Seamless Geology which was flattened into a single layer.

Available in a newly released data package

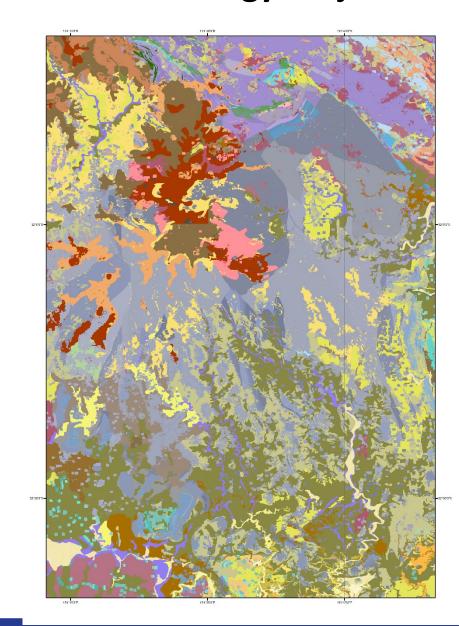


NA ROOMA



Derivative maps – Outcrop layer

- Innovative project which aims to show areas of actual outcrop (fact mapping).
- Documented in a poster and GS Report by Kyle and Glen.
- Technique uses CSIRO soil thickness data combined with GSNSW Field Observations dataset to determine areas of outcrop.

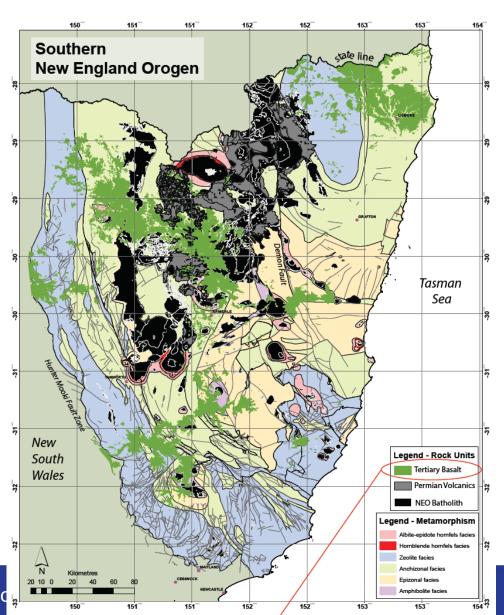




Zone 56 milestones for 2015

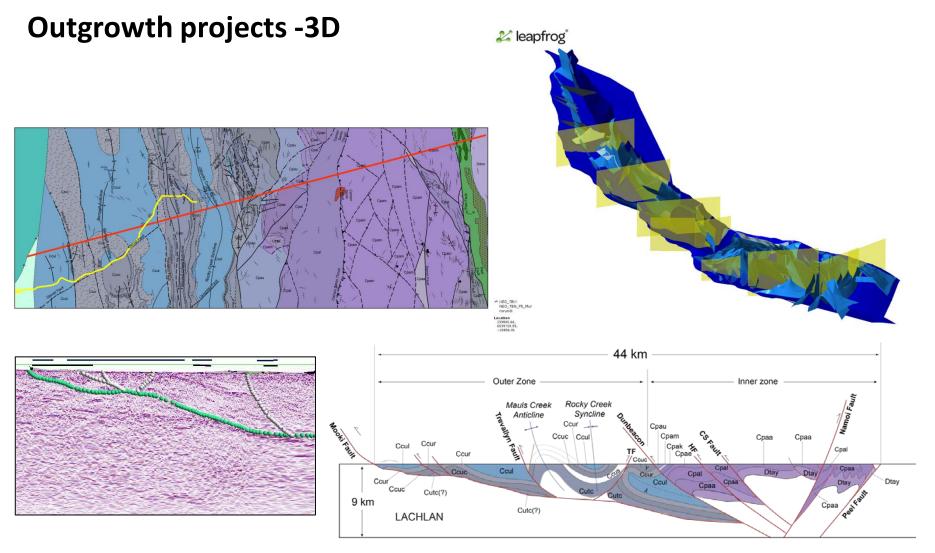
Outgrowth projects – NSW Statewide Metamorphic Map

- Aims is to update the Vallance et al.
 1983 Metamorphic Map of NSW.
- Seamless Geology layers will be used to provide the framework for the updated map, by integration with the GSNSW petrology database and other external data.





Zone 56 milestones for 2015

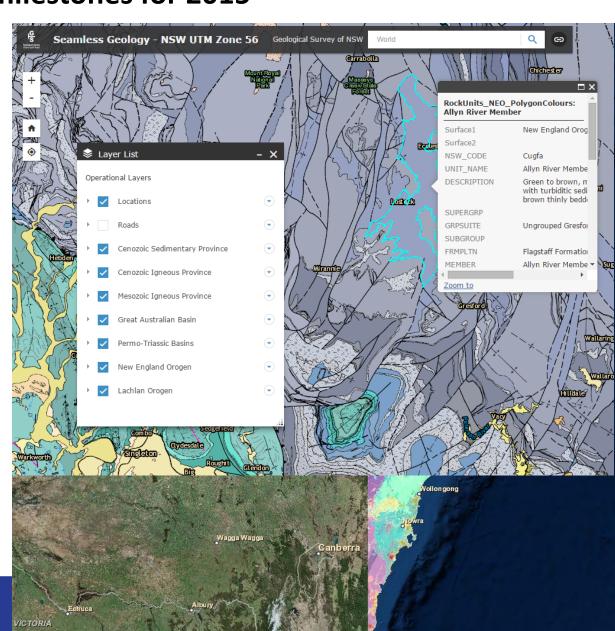




Zone 56 milestones for 2015

Outgrowth projects – Web Service Delivery

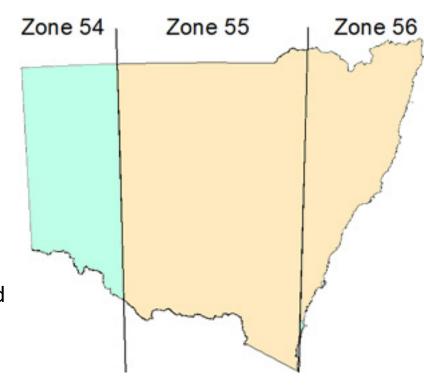
- Zone 56 layers were uploaded to ArcGIS Server (GIS101). A simple we b map of the layers was prepare and distributed internally.
- External publication of awaits upgrading of Dept of Industry Production and Test ArcGIS Server platforms (in progress).
- Can be served as WMS, WFS, KML, or full featured ArcGIS services.





Zone 54 – Current status

- Very different to compile than Zone 56.
- Approximately 85% covered by Cenozoic regolith
- Best available datasets ranged from 1:1 million scale (Murray Basin) to very detailed 1:25,000 maps of the Broken Hill Block.
- Datasets are a mixture of basement interpretations of orogenic belts and surface geology maps.
- 2 merges were produced surface geology and basement geology. The various layers were extracted from these and turned made seamless using similar techniques to Zone 56.

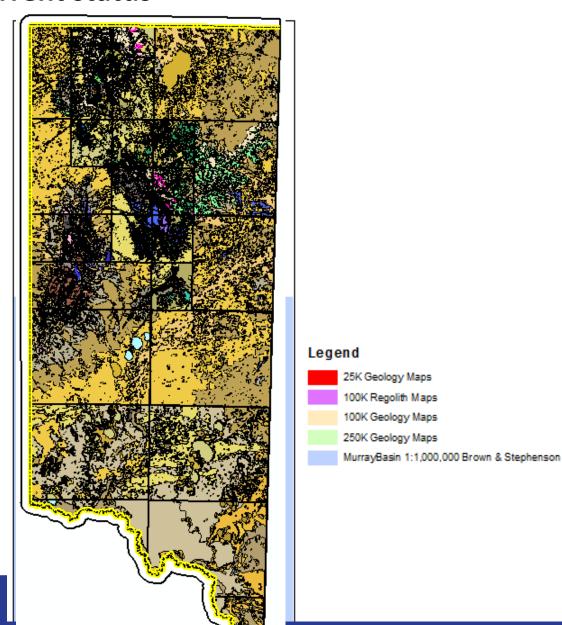




Zone 54 – Current status

Surface geology merge

- Composed of over 50 individual map sheets
- Sedimentary basin layers
 (Western Devonian Basins, GAB)
 and Cenozoic Sedimentary
 Province layers were extracted
 from this merge for editing

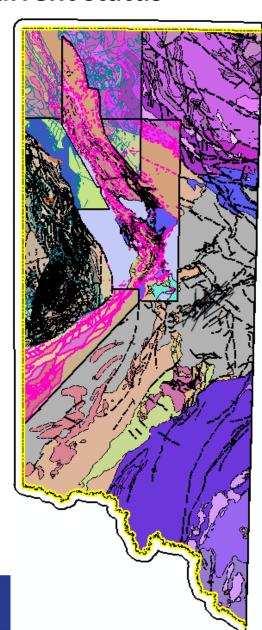




Zone 54 – Current status

Basement geology merge

- Composed by merging best available basement interpretation maps
- Then merged with the surface geology maps (to retain the surface detail
- Orogenic belts layers and Curnamona Province were extracted from the final merge and handed over to editors.



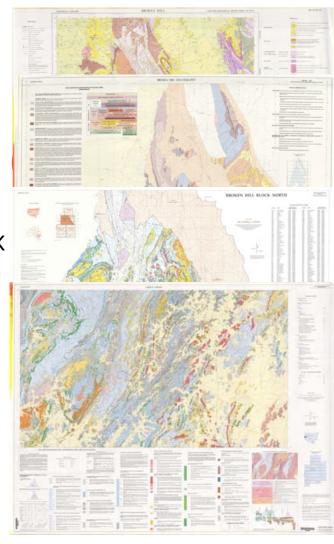




Zone 54 – Current status

Curnamona Province

- Western side of z54, extending into SA.
- Host to Broken Hill mineralisation
- The "most mapped" part of state. Broken Hill and Euriowie Block area is covered by 25K, 50K, 100K, & 250K surface geology and interp maps.
- Difficult to combine best available data into one dataset
- There will 2 layers in the final Seamless data:
 - Best available interpretive stratigraphic mapping
 - Best available surface lithological mapping



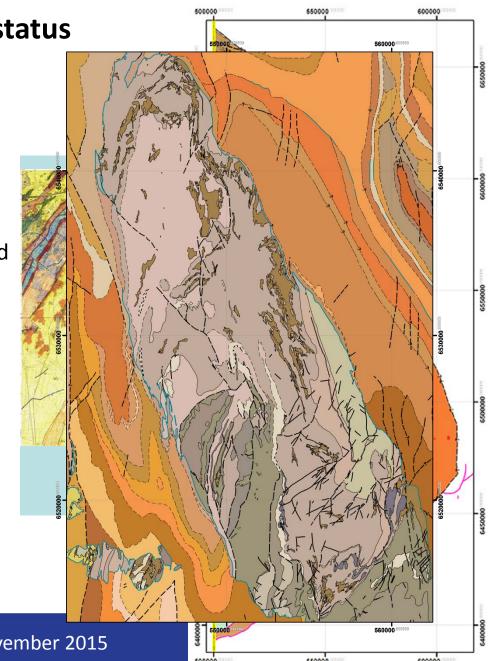


Zone 54 – Current status

Curnamona Province

Best available stratigraphic mapping layer

- Data was derived from 1:25,000 scale interpretive maps of Paleoproterozoic Willyama Supergroup by Barney Stevens and compilation of Neoproterozoic (Adelaidean) sequences by Bill Reid. Presented at BHEI 2009.
- The 2 datasets were combined and edited extensively for the Seamless Project.
- Recent work has involved updating stratigraphic names for many units and removing schist zones from the map (these will be held separately in the geodatabase).



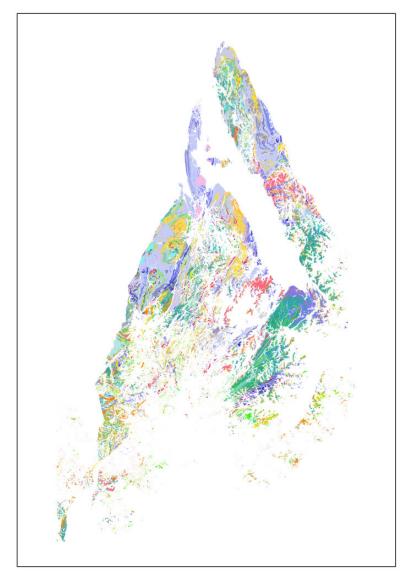


Zone 54 – Current status

Curnamona Province

Best available surface lithological mapping layer

- Derived from merging 23 x 1:25,000 maps lithological maps of Broken Hill Block.
 150,000 polygons, 400,000 lines.
- Work involved initially sorting out thousands of topology and line attribution errors.
- Next phase involves symbol simplification -~3000 unique symbols on these maps.
 These can simplified down to ~80 by getting rid of "local variation" subdivisions of each sheet.
- 3000 Original symbols retained as well so that data can be displayed as simplified or unsimplified





Conclusions

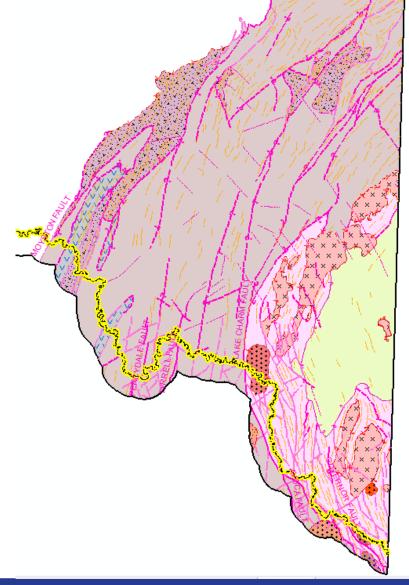
- 1. Five Year project to deliver a Seamless, best available vector geology dataset for all of NSW.
- 2. Project is divided into UTM zone, with Zone 56 delivered in early 2015 and Zone 54 scheduled for release mid 2016.
- 3. The project features many innovation outgrowth projects and will develop into one of the GSNSW's core datasets.



Zone 54 – Current status

Lachlan Orogen

- SE corner of Zone 54
- Complete for Zone 54
- No outcrop is present in NSW, so layer was compiled entirely from geophysical interp. and boreholes.
- Helped by detailed work south of the border by the GSV.
- Dominated by Cambrian St Arnaud Group in west (Stawell Zone), and metasediments and granites of the Bendigo Zone and Hay-Booligal Zones in the east

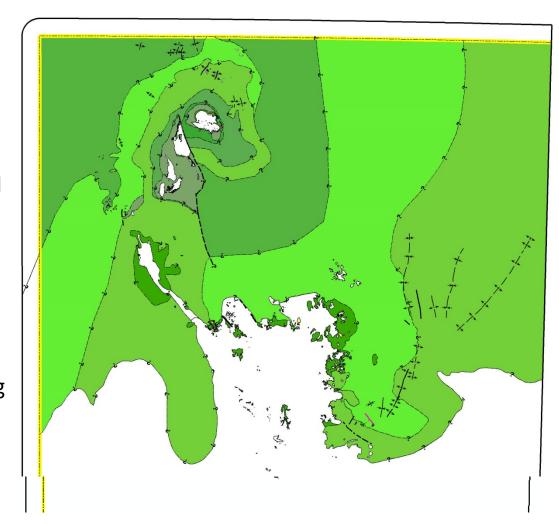




Zone 54 – Current status

Great Australian Basin

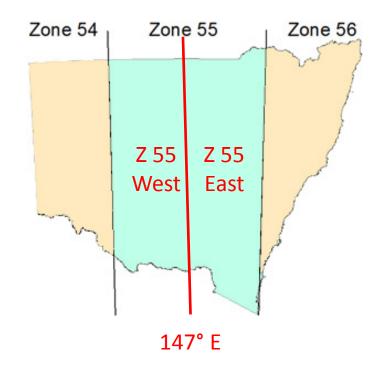
- Cretaceous Eromanga Basin sedimentary rocks occur in subsurface and outcrop in most of the northern parts of Zone 54.
- Appears on existing mapping in small isolated patches usually surrounded by regolith.
- This layer is complete apart from QC checks and general tidy-up.
- Main part of the work was inferring units of the Rolling Downs Group defined by the Koonenberry mapping project in subsurface and into areas on older 250K sheets mapped as undiff. Rolling Downs Group.





New South Wales Seamless Geology Project Zone 55 – Future plans

- Will complete the Seamless Geology coverage for the state.
- Scheduled to commenced mid 2016 following release of Zone 54.
- Over 50% of NSW. Due to size, will be done in 2 parts Zone 55 east and Zone 55 west.
- Constituent datasets in the 2 parts are in very different states of preparation....





Zone 55 – Future Plans

Zone 55 East (147-150 °E)

<u>Basement Layers</u> will mainly be an update of the Eastern Lachlan Orogen dataset (version 2 – 2006).

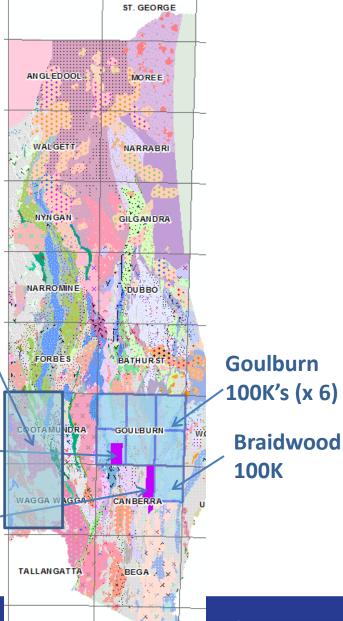
Updated to include:

- the final 100K's from the Goulburn Project
- Braidwood 100K
- Captains Flat Special 50K
- Yass Special 50K.
- Edge match Zone 56 Seamless Lachlan Orogen layer
- Updates from East Riverina Mapping Project as it becomes available.

East Riverina Mapping Project

Yass 50K

Captains Flat 50K



MALLACOOTA



Zone 55 – Future Plans

Zone 55 East (147-150 °E)

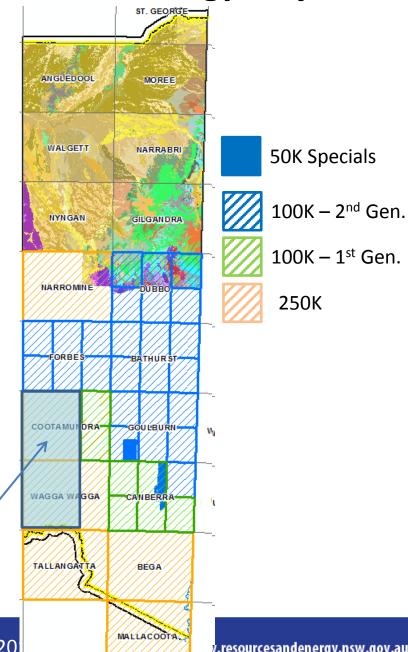
Basins and cover sequences

A northern merge of best data was completed in 2005 by Mark Dawson (just needs updating with final Angeldool 250K).

Southern part will need to be a merge of:

- 2nd generation 100K mapping
- 1st generation 100K mapping
- Older 250K mapping
- Will need updating as sheets of the East Riverina Mapping Project are finished.

East Riverina **Mapping Project**

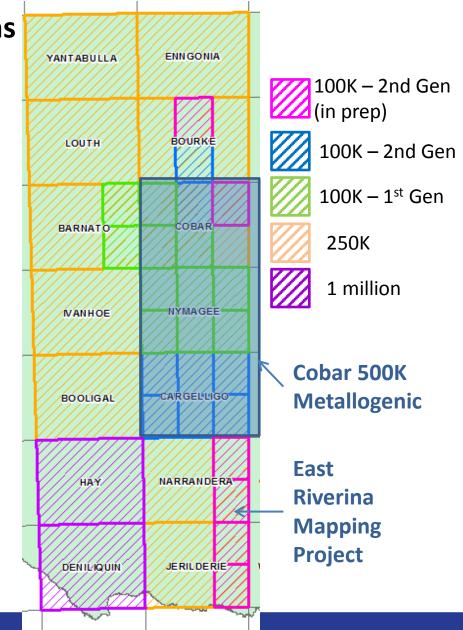




Zone 55 – Future Plans

Zone 55 West (144-147°E)

- The final phase of project.
- Contains very disparate scales of data (as with zone 54).
- Orogenic belts in north and south west are under deep cover, requiring substantial interpretation.
- Best available surface mapping is frequently 250K, many have georeferencing problems to be resolved before commencement
- Active mapping project in Riverina this data will need to be stitched in as it becomes available.
- Helped by recent merge of best available basement datasets for the forthcoming Cobar 500K metallogenic map (Joel, Hannah, Gary).



BENDIGO

WANGARATTA