



Integrating geophysics to provide the big picture

Outline

1. Geophysical products
2. Resource exploration
3. Geological mapping
4. Water identification
5. Online systems



Geophysical products



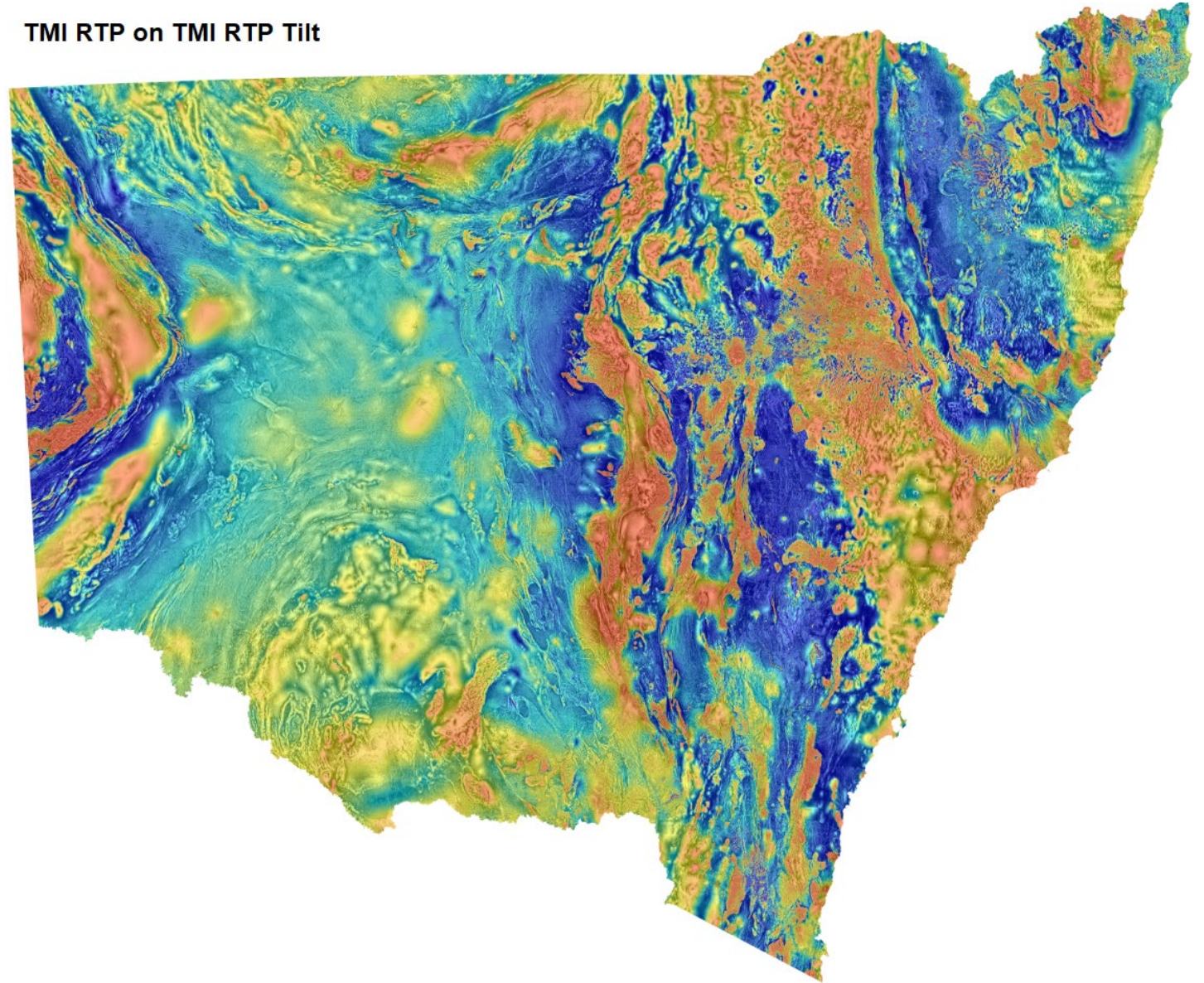
Geophysical products

- Magnetic
- Radiometric
- Airborne Electromagnetic (AEM)
- Elevation (DEM)
- Gravity
- AusLAMP Magnetotelluric (MT)
- Seismic
- Remote sensing
- Assorted ground techniques

Magnetic surveys

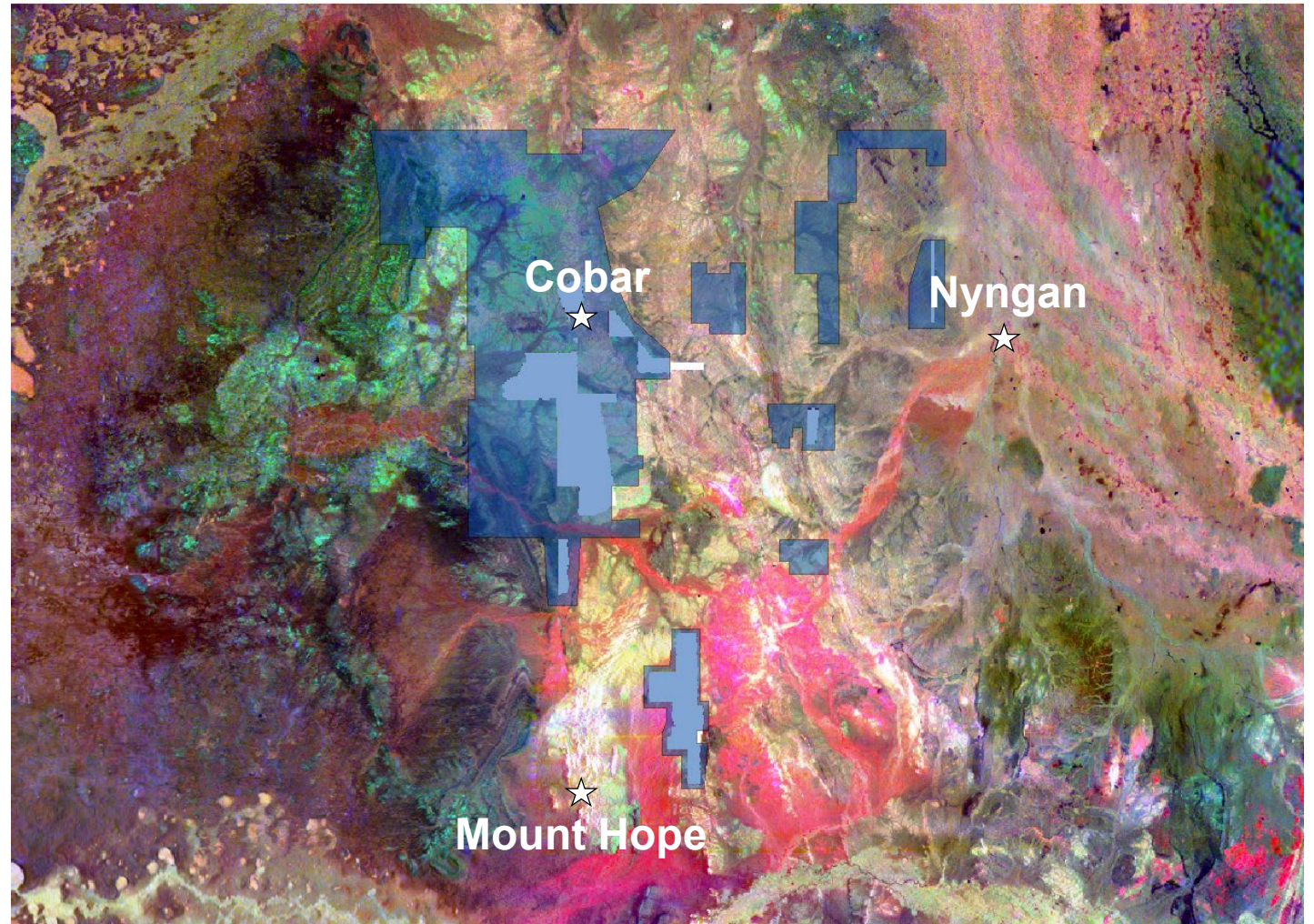
- Can be airborne or ground
- Airborne magnetics can cover large regional areas
- Merged surveys allow for the creation of statewide datasets
- Useful for exploration and geological mapping

TMI RTP on TMI RTP Tilt



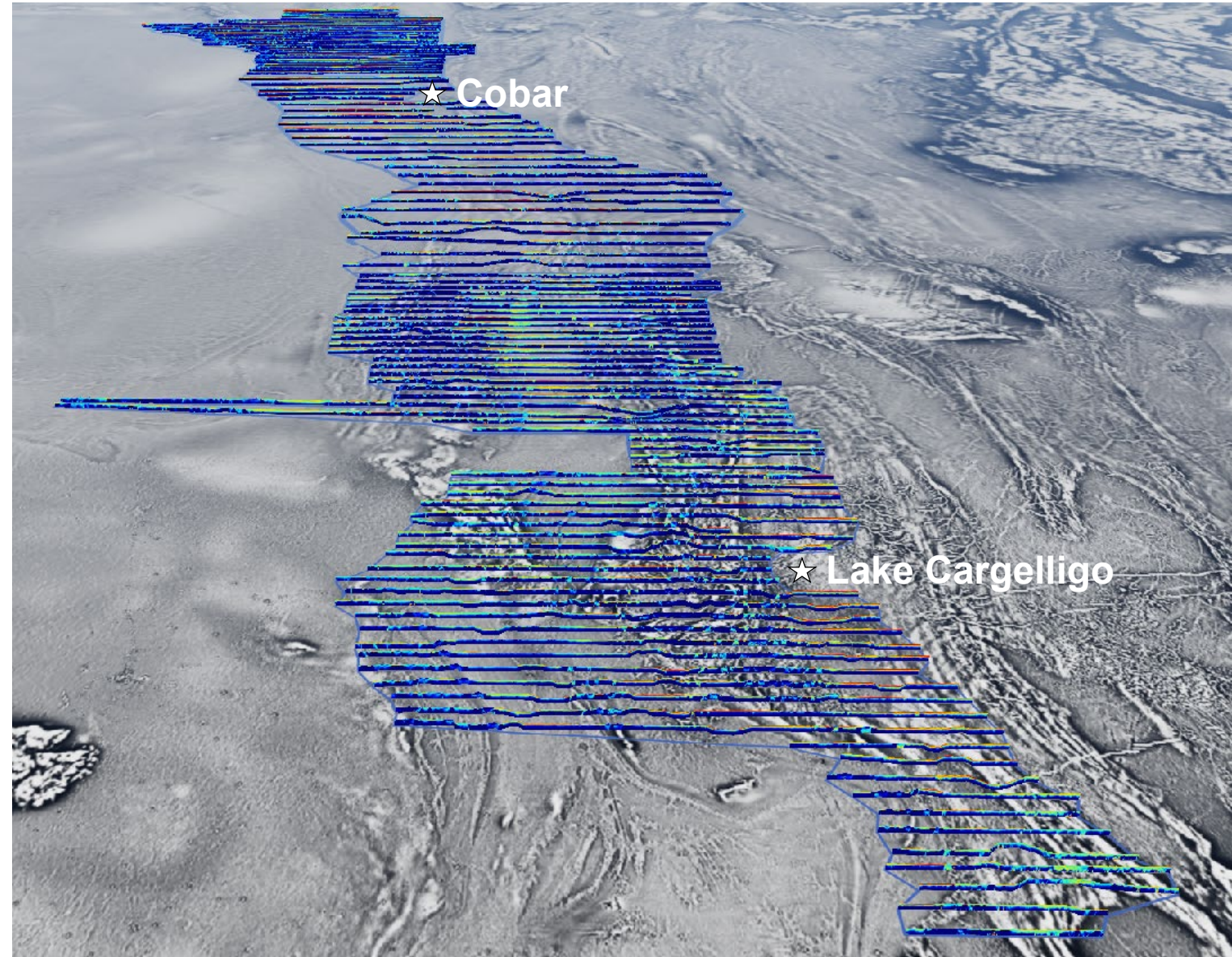
Radiometric surveys

- Predominately airborne and flown in conjunction with magnetics
- Merged surveys allow for the creation of statewide datasets
- Shallow penetration depth, making it useful for regolith and outcrop mapping



Airborne Electromagnetic (AEM) surveys

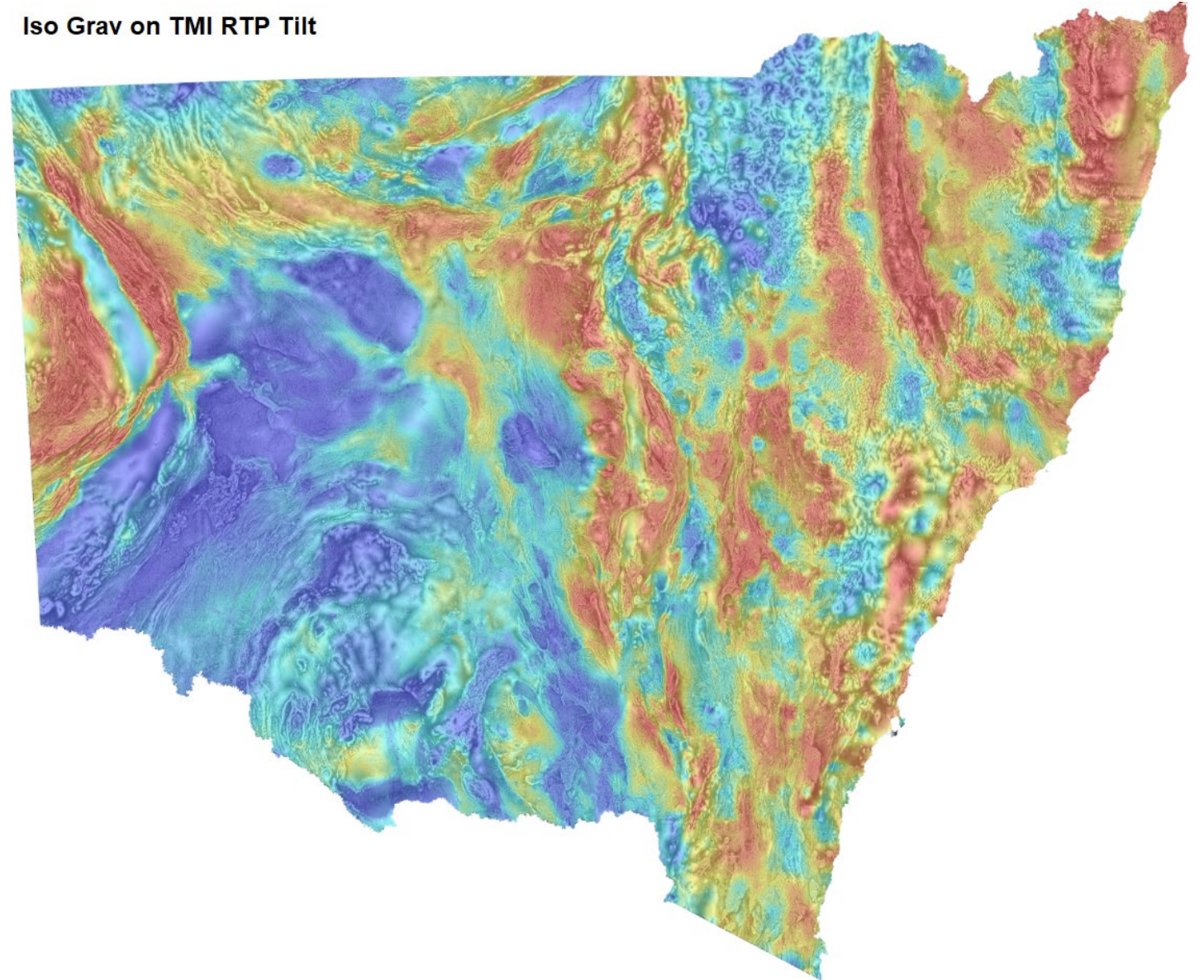
- Measures resistivity/conductivity of the subsurface
- Can be used to delineate features caused by groundwater
- Useful for subsurface mapping of geological features



Gravity surveys

- Can be airborne or ground-based, typically performed as a ground technique
- Merged surveys allow for the creation of statewide datasets
- Useful for resource exploration and geological mapping, especially in correlation with other techniques like magnetics

Iso Grav on TMI RTP Tilt

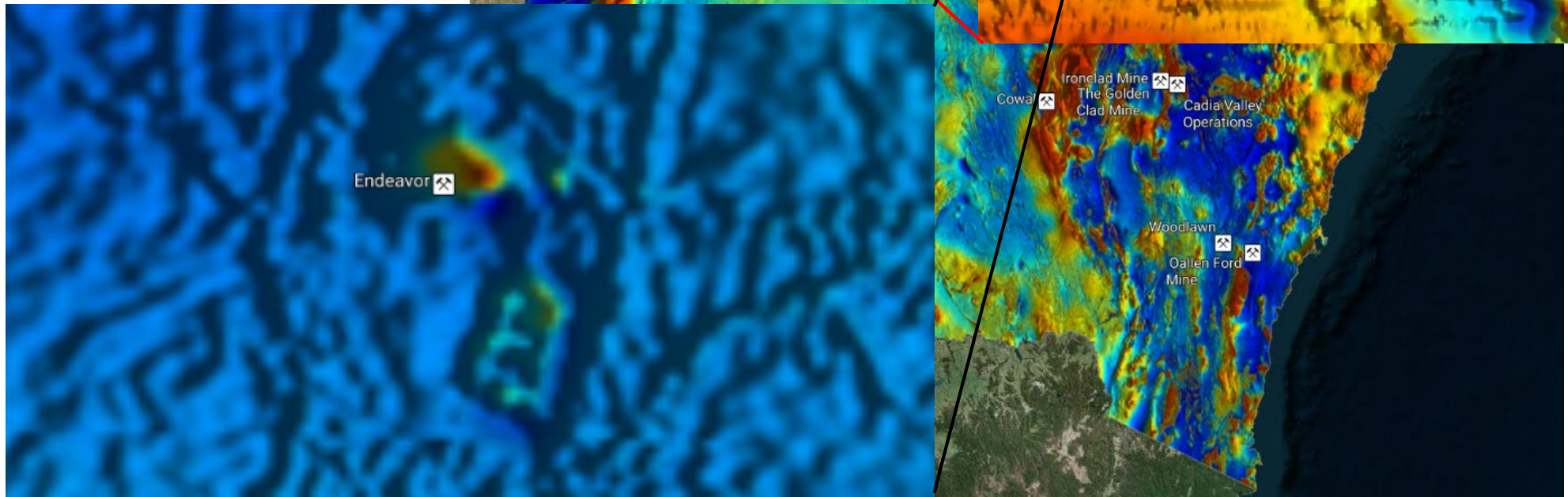
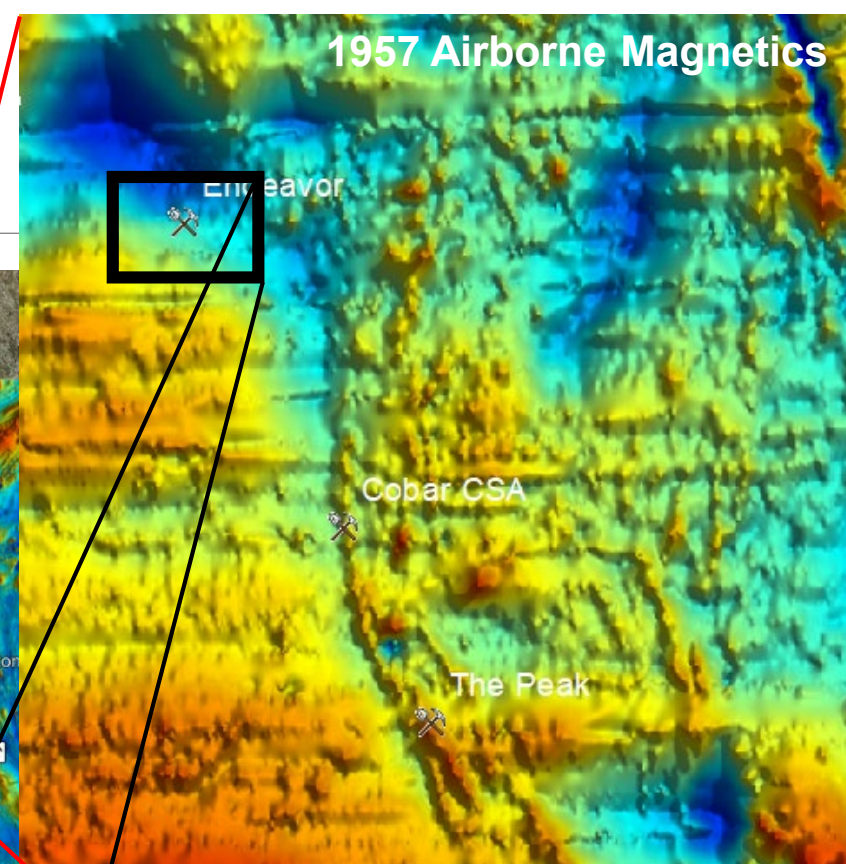
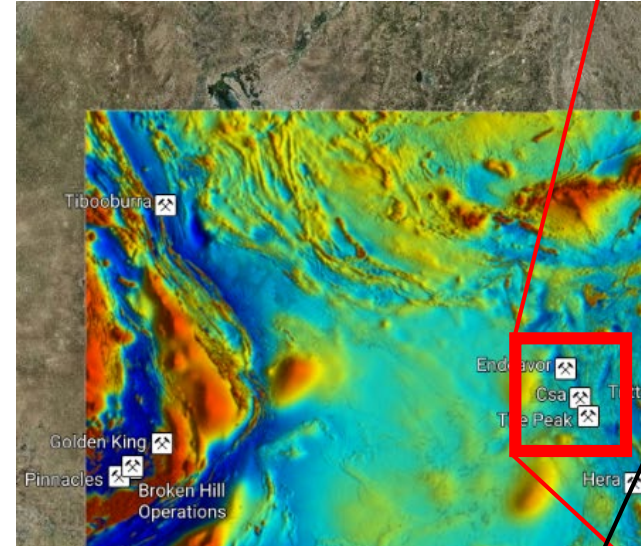


Resource exploration



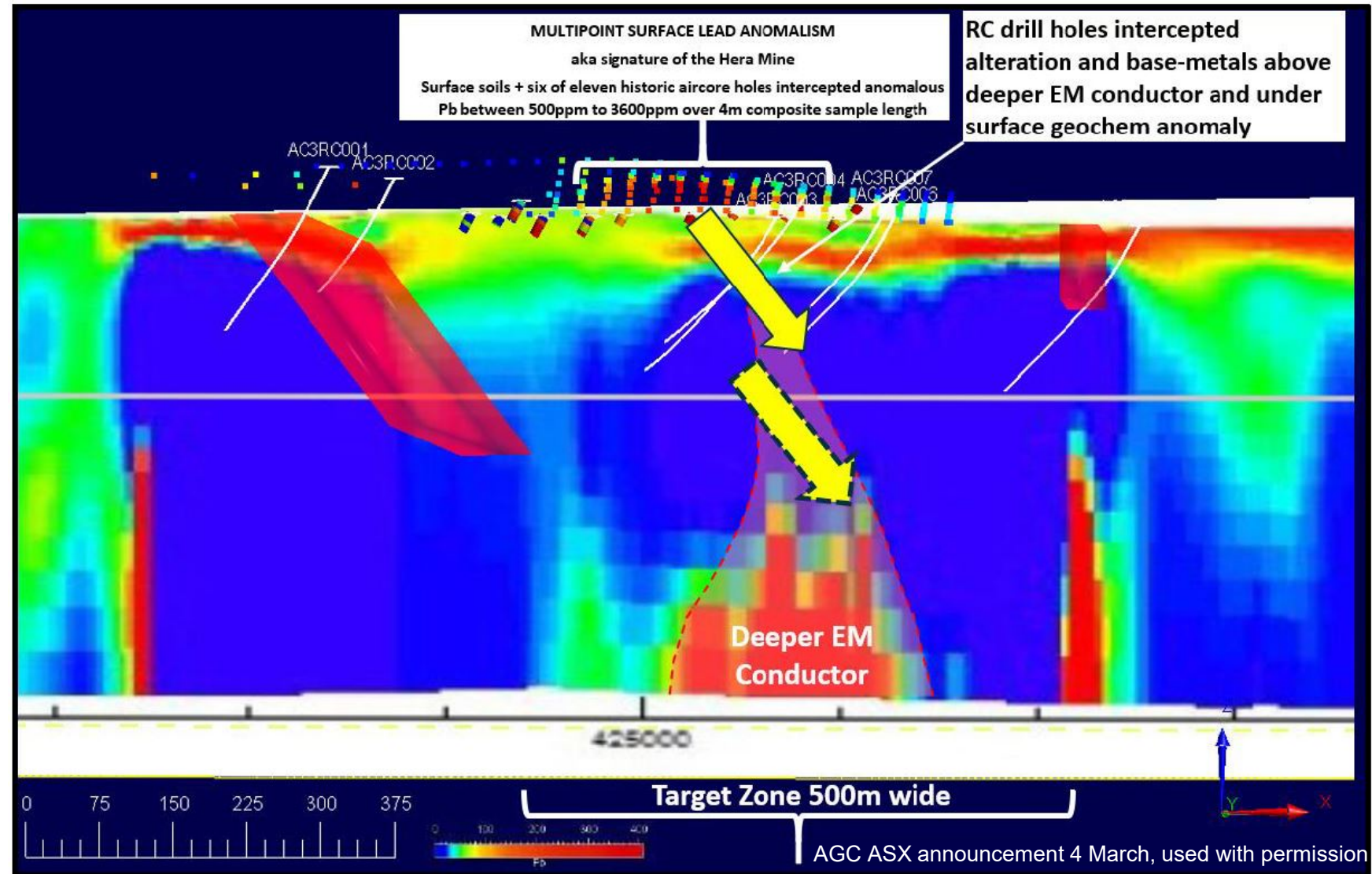
Endeavor Mine

- This mine was discovered as a direct result of airborne magnetics.
- Ground geophysics such as IP and other electrical techniques are used over many mines to guide drilling programs.



Achilles Prospect

- Geophysical data correlates with many other datasets
- Deep AEM conductor coincident with surface geochemistry and proximal to ground EM plates

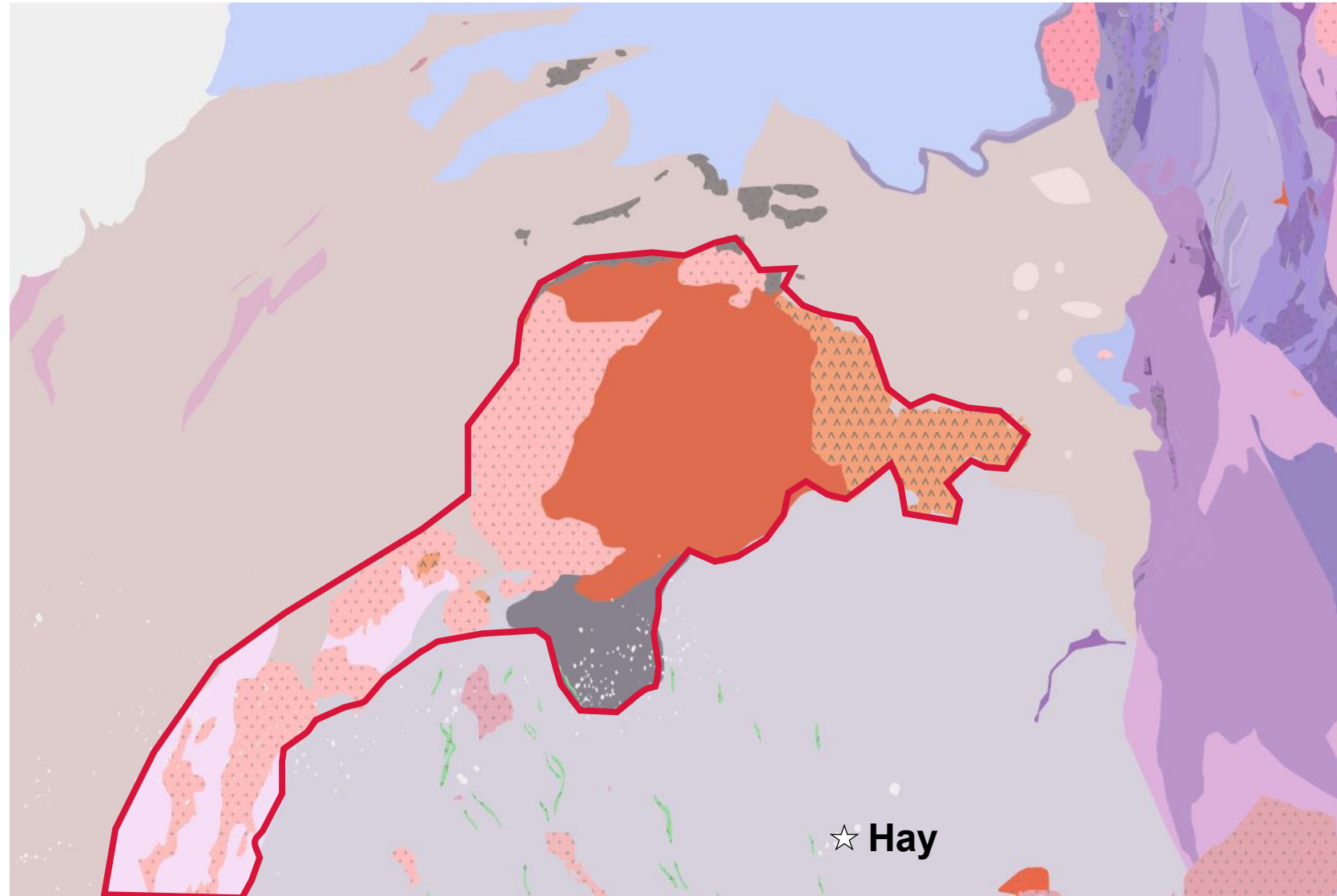


Geological mapping



Interpreted subsurface granites

- Magnetic and gravity data guided geological mapping in the Murray Basin.
- Minimal geological outcrops are in the area.
- Geophysics was used to guide subsurface interpretation, correlating with drillhole controls.



Water identification



Cobar AEM

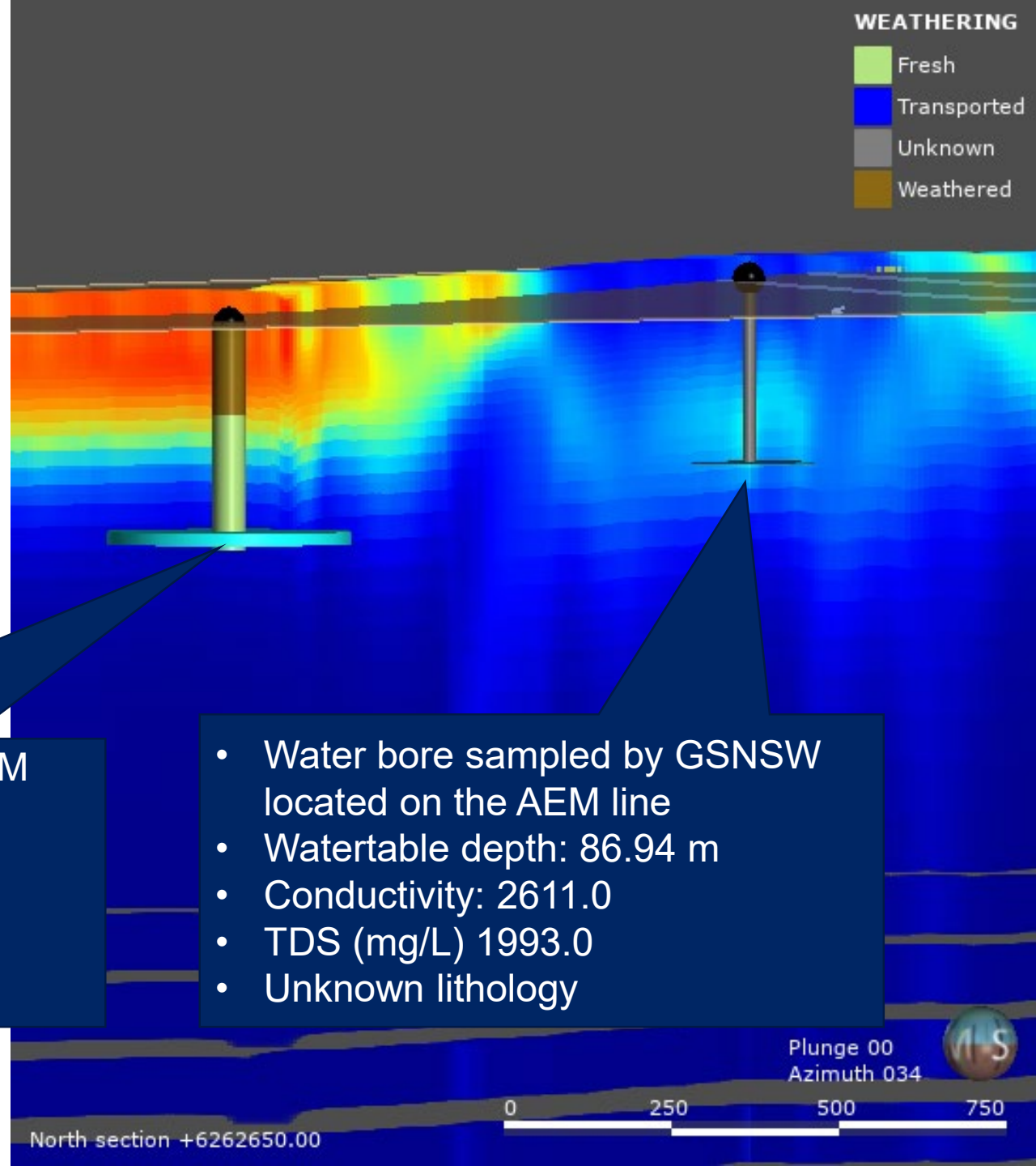
- The Cobar AEM survey has delineated many features correlating with groundwater.
- Borehole control is used when available to 'confirm' the observation.
- Similar anomalies without borehole control are worth following up.

- Water bore approx. 400 m south of AEM line
- Water BZ: 103.6–109.7 m, fractured
- Located at a sandstone/slate contact
- Salinity description: good stock
- S.W.L: 94.5 m

- Water bore sampled by GSNSW located on the AEM line
- Watertable depth: 86.94 m
- Conductivity: 2611.0
- TDS (mg/L) 1993.0
- Unknown lithology



Line 10020



North section +6262650.00

0 250 500 750

Plunge 00
Azimuth 034

Online systems



MinView and contact details

MinView

- Download individual surveys
- Download statewide products

Email contacts

- geophysics.products@geoscience.nsw.gov.au
- minview.info@geoscience.nsw.gov.au
- minex.crc@planning.nsw.gov.au



A screenshot of the MinView web application interface. The top navigation bar includes links for Spatial search, Text search, Draw, Tools, Share, Help, and User login. A dialog box titled "Download data in GIS & CSV formats" is open, showing a form to send a download link to "samuel.matthews@planning.nsw.gov.au". The "Map extent" is set to "All of NSW". A list of datasets is shown, with "Geophysical imagery" selected. The "File format" is set to "GeoTIFF", the "Coordinate System" is "MGA55(GDA2020)", and the "Imagery" is "Magnetics (TMI RTP)". A "Download" button is at the bottom of the dialog. The background shows a geophysical map of NSW with a 3D view button on the right.



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