Mining, Exploration and Geoscience
Department of Regional NSW

NSW GOVERNMENT

Forbes–Dubbo airborne electromagnetic survey

May–July 2023

Slideshow – no audio

30 March 2023

The Department of Regional New South Wales acknowledges that it stands on Country which always was and always will be Aboriginal land. We acknowledge the Traditional Custodians of the land and waters, and we show our respect for Elders past, present and emerging. We are committed to providing places in which Aboriginal people are included socially, culturally and economically through thoughtful and collaborative approaches to our work.

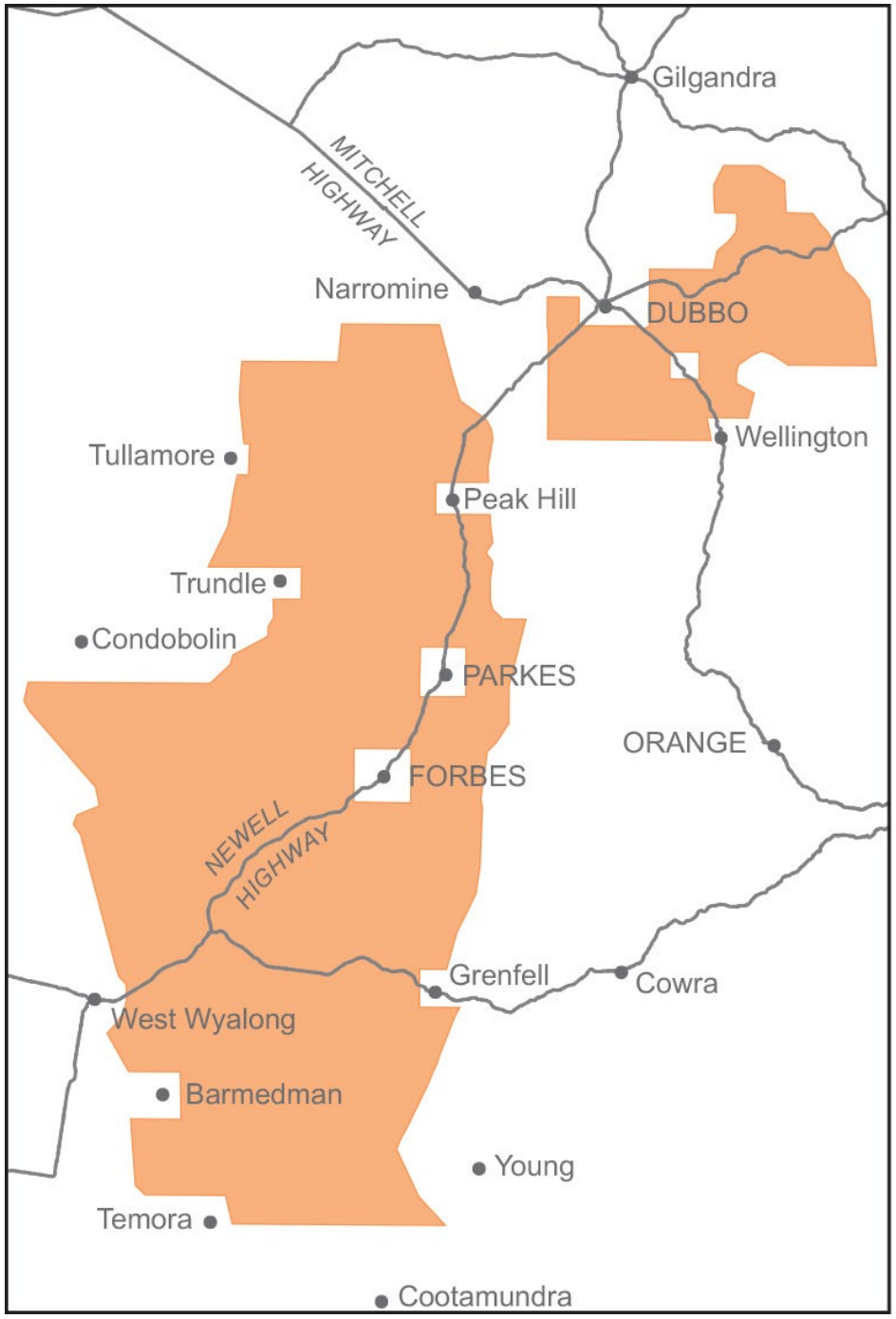
NSW GOVERNMENT

Contents

Forbes–Dubbo airborne electromagnetic survey

About this project

1



Who is doing the survey?

The Geological Survey of NSW and Geoscience Australia will carry out an airborne electromagnetic (AEM) survey to measure the natural electrical properties of rocks and soil to a maximum of 400 m depth in the region.

Map of the survey area

This project supports two programs: MinEx CRC and Drought Proofing NSW

MinEx CRC brings together government, industry and researchers to further understanding of geology and minerals and groundwater resources in areas where rocks aren't exposed at Earth's surface. This will help discovery of critical minerals needed for a cleaner, greener NSW.

meg.resourcesregulator.nsw.gov.au/geoscience/minex-crc

Drought Proofing NSW is MEG's program to identify potential deep groundwater resources to use in times of drought and rocks to store water in during times of surplus.

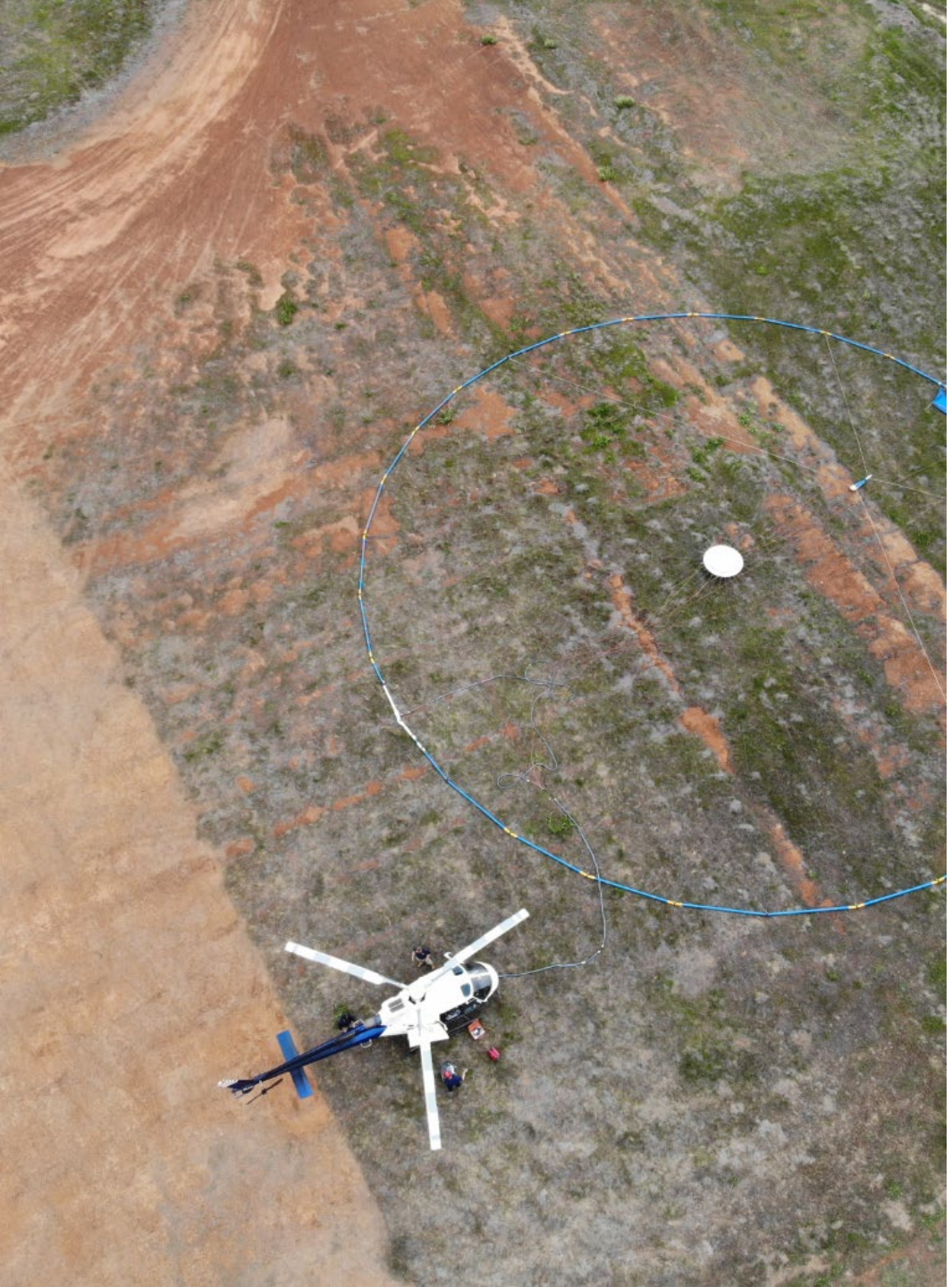
www.regional.nsw.gov.au/groundwater

When will the survey be flown?

The survey will be flown in May–July, but will finish sooner if we use 2 aircraft.

An aircraft will fly 70 m above the ground, with a sensor suspended 35 m below.

Helicopter and sensor (Source: Xcalibur Multiphysics)



The aircraft will fly east–west lines approximately 1.25 km to 2.5 km apart, except when:

- flying to or from an airfield
- turning around.

To help correlate the results and aid interpretation, the flight path will deviate from east–west lines to go over:

- water bores
- mineral boreholes.

The aircraft will avoid infrastructure including dwellings, agricultural buildings and towns.

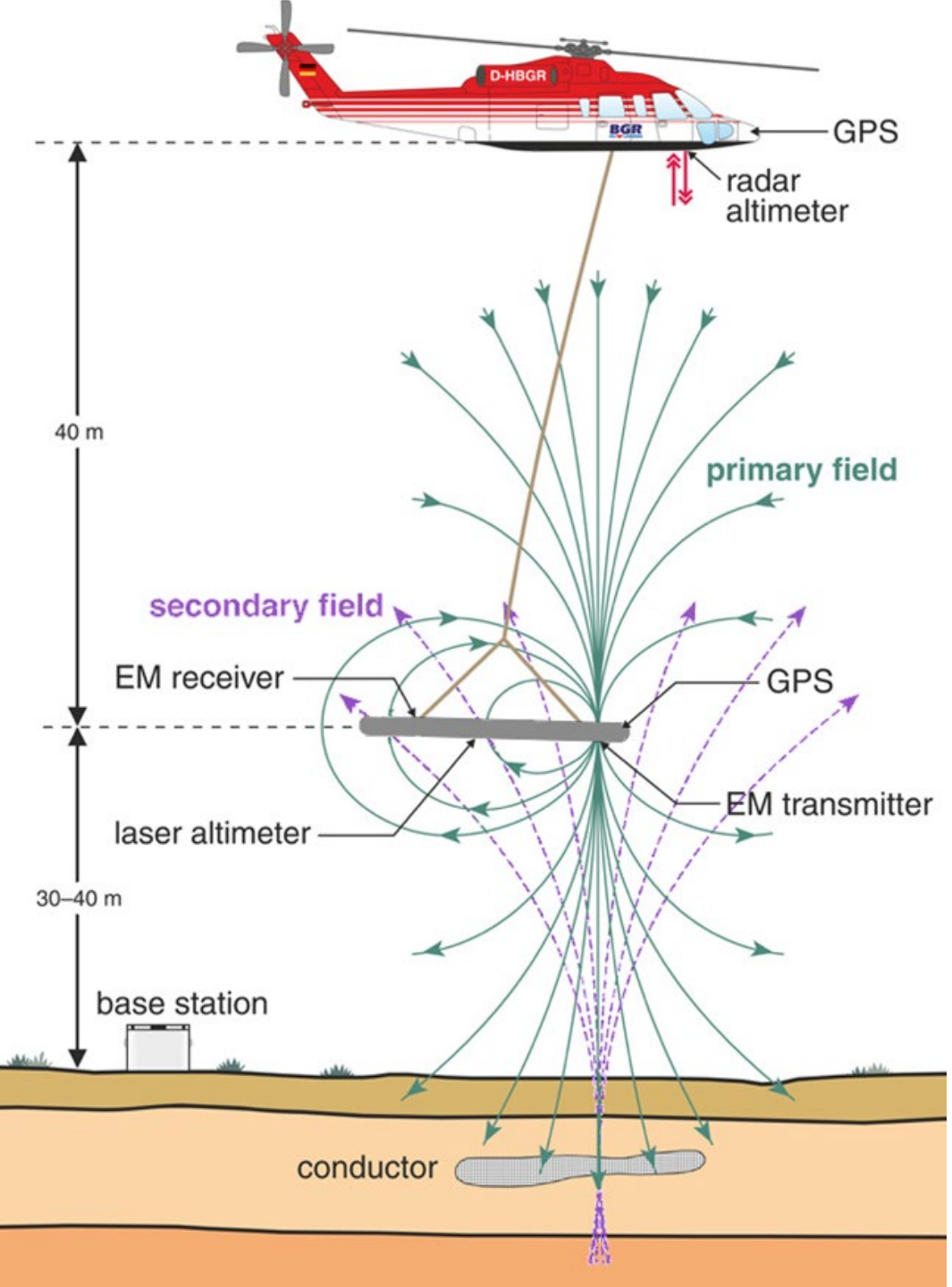
Helicopter and sensor on the ground (Source: Xcalibur Multiphysics)

NSW GOVERNMENT

Forbes–Dubbo airborne electromagnetic survey

What is an airborne electromagnetic (AEM) survey?

2



How does it work?

The sensor transmits an electromagnetic (EM) signal (primary field) similar in amplitude to that of a powerline. This signal induces a current in conductive materials in the ground that produces a secondary EM field.

The sensor measures the secondary EM field from the ground.

The voltage of the secondary current is less than 1% of the voltage in an electric fence.

As the aircraft is moving, your exposure to the signal on the ground is limited.

The physics of AEM surveys. Source: modified from https://www.bgr.bund.de

How noisy is an AEM survey?

The noise level from the ground is about 74 dB.

That's less than a lawn mower (about 90 dB).

Video of an AEM survey flying over a sound meter can be viewed on our webpage:

meg.resourcesregulator.nsw.gov.au/geoscience/minex-crc/airborne-electromagnetic-surveys

Helicopter with sensor suspended below in operation near Lake Cargelligo in 2019.

An interactive map showing the survey area and proposed flight lines will be available on our website.

Flight lines will be updated weekly to show progress and acquisition planned for the coming week.

Helicopter and AEM system on the ground. Source: Xcalibur Multiphysics

Forbes–Dubbo airborne electromagnetic survey

How will the data be used?

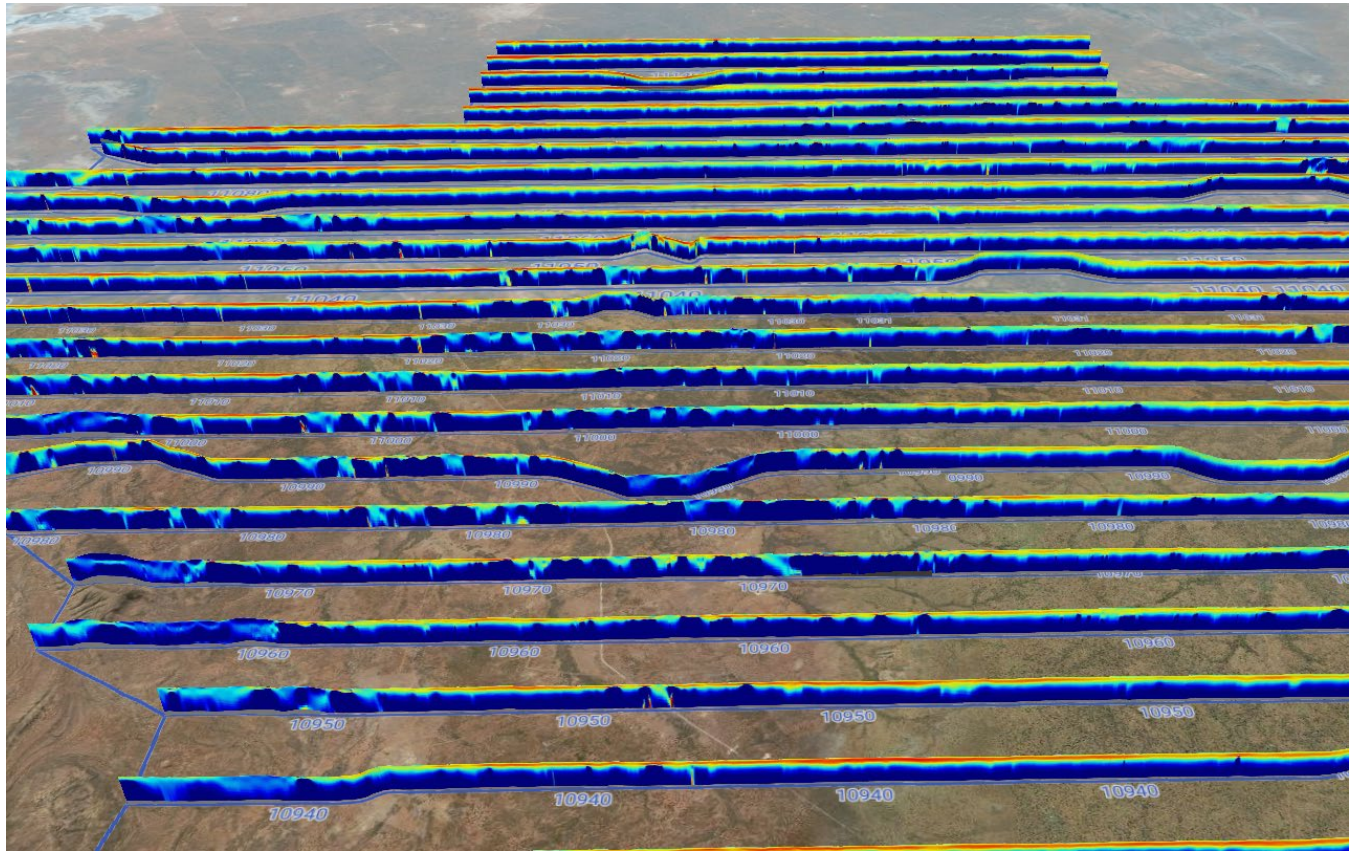
3

How will the data be used?

The survey data will help tell us:

- rock types buried under cover soil
- their age and history
- thickness of the cover material
- physical properties of the rocks
- their potential to host mineral deposits or groundwater.

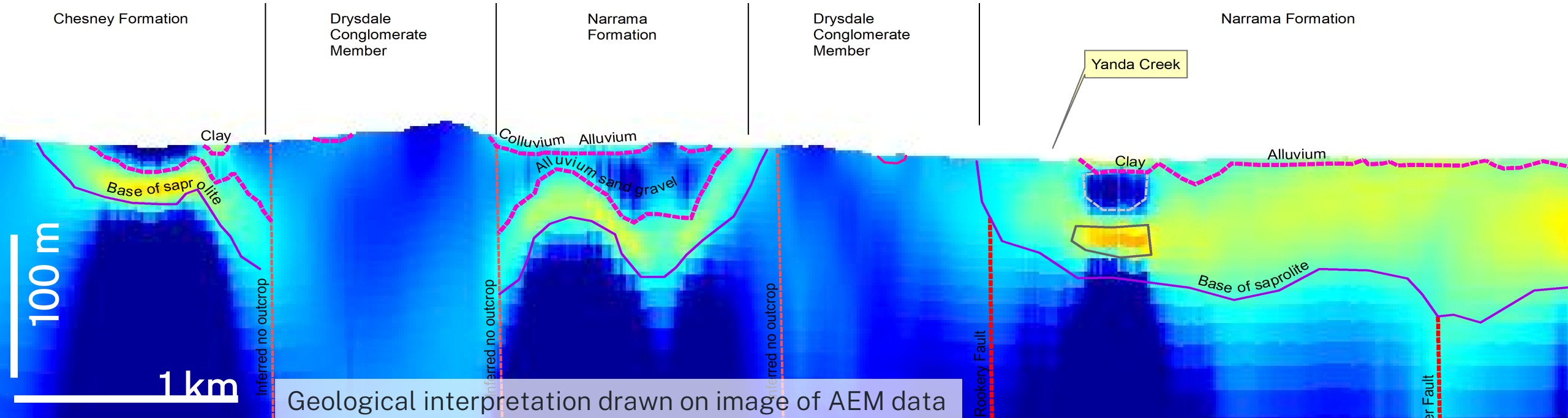
The data will be used to help identify areas with potential deep groundwater and those that could store groundwater (in times of surplus).



Forbes–Dubbo AEM survey

AEM data helps geoscientists map:

- different rock and soil types
- thickness of cover sequences and weathered rocks
- geological features such as folds and faults
- potential mineral or groundwater resources.



Geological interpretation drawn on image of AEM data

NSW GOVERNMENT

The data collected will be used to make informed decisions by mineral explorers, the government, and farmers.

Image caption here

Forbes–Dubbo airborne electromagnetic survey

How can the data be accessed?

4

Data release

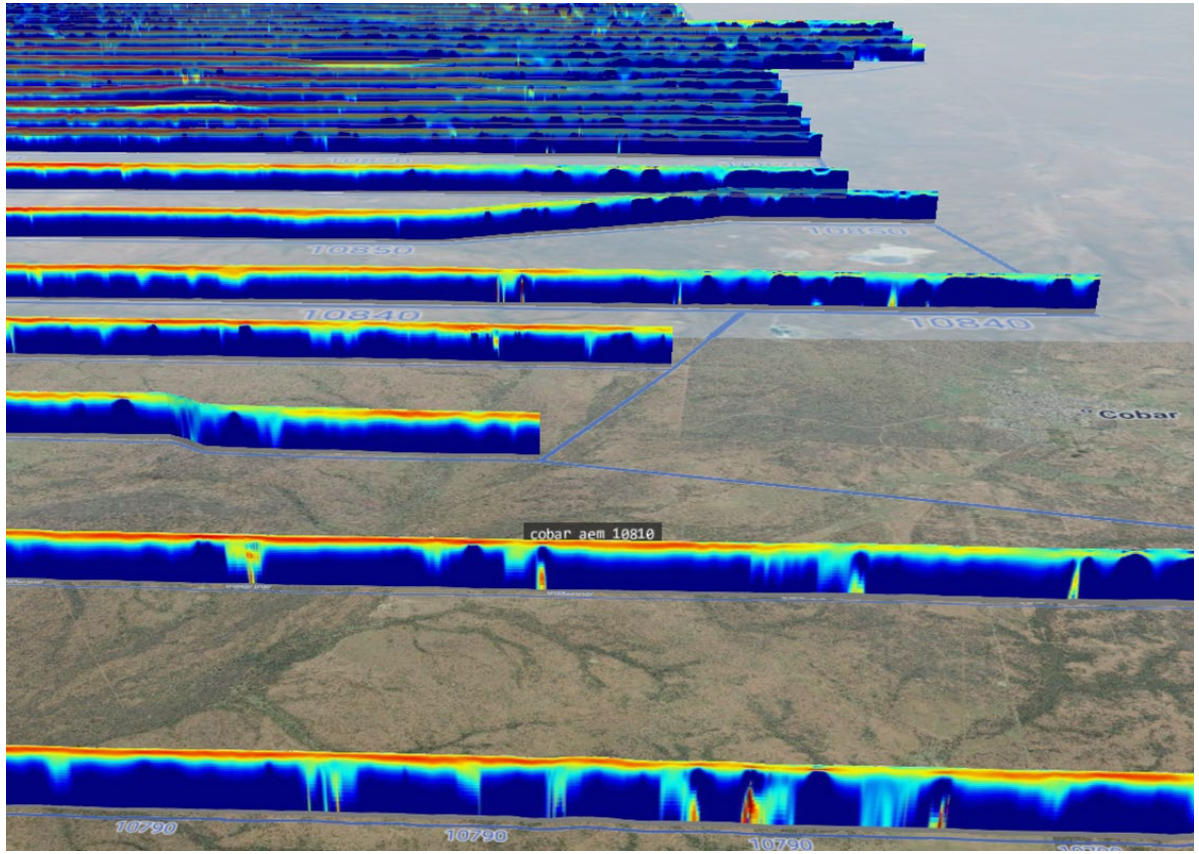
The AEM data will be publicly available in late 2023.

It will be available through our online geoscience platform, MinView

minview.geoscience.nsw.gov.au/

To register your interest in the data release, please email us.

MinView



Cobar AEM data displayed in MinView (3D mode) with aerial photograph in the background.

Contacts

If you have any concerns or questions please contact us.

Airborne survey phone number: 1800 960 522
Email: geophysics.products@regional.nsw.gov.au

Forbes-Dubbo MinEx CRC webpage:
meg.resourcesregulator.nsw.gov.au/geoscience/minex-crc/forbes-dubbo

AEM webpage:
meg.resourcesregulator.nsw.gov.au/geoscience/minex-crc/airborne-electromagnetic-surveys

NSW MinEx CRC webpage:
https://meg.resourcesregulator.nsw.gov.au/geoscience/minex-crc

Drought proofing webpage:
www.regional.nsw.gov.au/groundwater