

Eastern Victoria Geoscience Initiative – Southeast Lachlan Ground Gravity Survey

The Geological Survey of Victoria, an agency of the Department of Jobs, Precincts and Regions, in collaboration with Geoscience Australia and the Geological Survey of New South Wales, is conducting a ground gravity survey along the Southeast Lachlan Crustal Transect in eastern Victoria (Figure 1). The survey will measure extremely small variations in the Earth's natural gravity field in parts of eastern Victoria and southeast New South Wales.

The survey is part of the Eastern Victoria Geoscience Initiative, a program to develop a greater understanding of Victoria's underlying "geological architecture". The new survey builds on knowledge gathered by the Geological Survey of Victoria including a seismic survey that was undertaken across the Southeast Lachlan Crustal Transect in 2018.

The ground gravity survey will add to Victoria's geological knowledge base and contribute to future scientific research. It will help Government to make better informed earth resource and land management decisions.

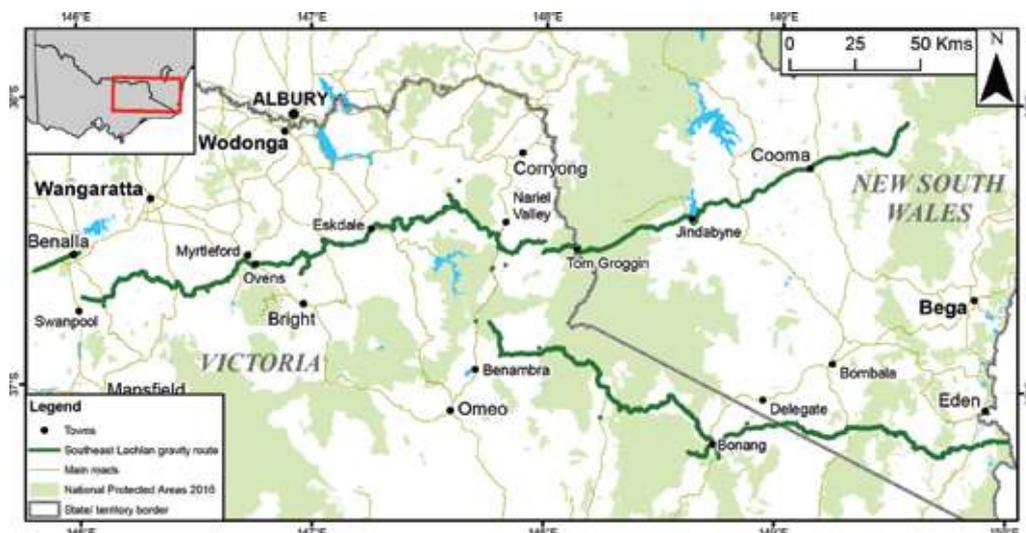


Figure 1. Ground gravity survey route.

THE SURVEY

The ground gravity survey consists of individual recording sites located 200-400 m apart on roads and tracks along the Southeast Lachlan Crustal Transect.

A series of survey routes are planned from Benalla in Victoria to east of Cooma in NSW and from Benambra in Victoria to Eden in NSW on public roads and across a few private properties.

In Victoria the routes pass through Baddaginnie, Benalla, Tatong, Edi, Merriang South, Myrtleford, Ovens, Rosewhite, Kancoona, Running Creek, Eskdale, Bucheen Creek, Nariel Valley, Tom Groggin, Cobberas, Brumby, Wulgulmerang, Wulgulmerang East, Deddick Valley, Tubbut, Bonang West, Bonang and Bendoc.

THE GRAVITY SURVEY METHOD

Measurements of the Earth's gravity and a GPS location will be recorded at pre-selected sites along the planned route. At each site, the gravity meter (a box containing what is effectively a very sensitive set of scales) is placed on the ground for 1-2 minutes while it measures the strength of Earth's gravitational "pull" at that location.

By taking measurements at many locations in the survey area, geoscientists can map the differences in

Earth's gravity from place to place. These differences in gravity are associated with the rocks that make up the Earth's crust and will be used to interpret the position and relationship of different rock types across the Southeast Lachlan Crustal Transect.

The surveyors transport their equipment in light 4WD diesel vehicles. The measurements are passive and do not create any disturbance apart from footprints and tyre tracks (Figure 2). There is no requirement to disturb fencing or other infrastructure, and traffic will not be unduly impacted (Figures 3 and 4).



Figure 2. Gravity meter in northwest Victoria (shows footprints and tyre tracks). Photo Geological Survey of Victoria.

Eastern Victoria Geoscience Initiative – Southeast Lachlan Ground Gravity Survey



Figure 3. Geological Survey of Victoria gravity survey team near McKillops Bridge, northeastern Victoria. Photo: Clive Willman and Associates.

SITE SELECTION AND PROPERTY ACCESS

Gravity survey sites have been planned along the route taken by the 2018 Southeast Lachlan Deep Crustal Seismic Reflection Survey. Additional sites have been planned over areas adjacent to the seismic route to understand specific geological features.

Public land managers and private property owners along the route are consulted as part of the survey planning process. Site access and entry conditions will be negotiated with individual land owners and managers with permits from the relevant authority obtained where necessary.

SURVEY AUTHORISATION

Under Victorian laws, geological surveys can be authorised on behalf of the Department of Jobs Precincts and Regions under Section 112(1) of the Mineral Resources (Sustainable Development) Act 1990.

The survey will be undertaken by experienced gravity survey contractors and overseen by the Geological Survey of Victoria and Geoscience Australia.

SAFETY AND ENVIRONMENT

A detailed risk assessment and mitigation plan will be prepared by the contractor to ensure the safety of the surveyors, the public and the environment.

Biosecurity arrangements will be in place to avoid the transport of soil and organic material from site to site.

SURVEY RESULTS

The data gathered during the survey will be processed and then made publicly available through the Department of Jobs, Precincts and Regions' Earth Resources website and the Geoscience Australia website.

MORE INFORMATION

For more information on the Eastern Victoria Geoscience Initiative

Telephone the Customer Call Centre on 136 186

Email evgi.info@ecodev.vic.gov.au

Visit the Department of Jobs, Precincts and Regions' Earth Resources website at www.earthresources.vic.gov.au/evgi to download the Fact Sheets

- *Eastern Victoria Geoscience Initiative Project Overview*
- *The geology of eastern Victoria*
- *Understanding a deep crustal seismic reflection survey*
- *Southeast Lachlan Deep Crustal Seismic Reflection Survey*
- *Southeast Lachlan Ground Gravity Survey*
- *Southeast Lachlan Magnetotelluric Survey*

Visit Geoscience Australia's Scientific Topics webpage for information on gravity as a geophysical technique www.ga.gov.au/scientific-topics/disciplines/geophysics/gravity



Figure 4. Geological Survey of Victoria vehicle with gravity meter. Photo: Geological Survey of Victoria.