Mining, Exploration and Geoscience
Department of Regional NSW

January 2024

Guide for geophysical surveying

Information for mineral explorers in NSW

1. Introduction

Airborne geophysical surveys are commonly used in mineral exploration projects to measure the physical properties of the ground to provide information on the geology. The surveys can measure natural Earth fields, such as magnetism, radioelements and gravity or induced fields such as electromagnetism. These surveys are typically undertaken using low-flying helicopters or light aircraft flying in a grid pattern. The instruments may be either mounted on the aircraft or towed beneath a helicopter. Depending on the type of survey, the aircraft may fly between 25 and 80 metres above the ground, with flight lines typically spaced between 25 and 200 metres apart.

Airborne surveys have low environmental impact and minimal potential to disturb residents, stock and farm activities. Airborne surveying requires appropriate and timely consultation and notification of all stakeholders within the flight areas and surrounds.

The key legislation relevant to airborne geophysical surveying is contained in:

1. *Civil Aviation Act 1988* and Civil Aviation Safety Regulations 1998
2. *Mining Act 1992* and Mining Regulation 2016

The purpose of this guide is to provide information to mineral explorers - both licence holders and contractors - who are responsible for planning, preparing and flying airborne geophysical surveys.

2. Sources of general information

Stay up-to-date

It is recommended that explorers check the Mining, Exploration and Geoscience website (under the Exploring in NSW tab) to understand ongoing changes to coal, petroleum and coal exploration requirements in NSW see the Resources Regulator website.

Annual work programs

The program should include plans for geophysical surveys, along with other exploration activities, for any current NSW exploration title.

Environmental approval: Under the Resources and Energy SEPP [State Environmental Planning Policy (Resources and Energy) 2021], airborne surveying is defined as a low-intensity exploration activity having minimal environmental impact. Being identified as exempt development allows these surveys to be undertaken without activity approval (ESF4), if they are on land that is:

- not in an environmentally sensitive area of state significance, or
- within a state conservation area but is not otherwise on land referred to in Chapter 2 of the Resources and Energy SEPP as being an environmentally sensitive area of state significance.

Further information on environmental approval is available in the Exploration Reporting guide, which is available from the Resources Regulator website.

Conducting airborne surveys

The Exploration code of practice provides details of procedures and considerations for conducting airborne surveys, notably with regards to community consultation. The handbook is available from the Mining Exploration and Geoscience website.

General exploration requirements are given in the Exploration Guideline, which is available from the Mining Exploration and Geoscience website.

3. Notification and consultation

Tenement holders and contractors need to plan, coordinate and act to ensure that landowners, residents and others with a substantial interest in the area, such as traditional owners, are adequately notified of their work. Government agencies such as National Parks and Wildlife, Local Land Services and councils, or energy companies, must also be notified in case they have conflicting work planned. Effective measures must be taken to communicate survey plans to mitigate hazards and potential complaints, particularly where stock or other animals are concerned. It is critical to engage with property holders and managers, as well as relevant organisations, about:

- mustering plans, crop-dusting or shearing, to avoid overlapping activities
- identifying when other aircraft might be operating at low levels in the area.

Landholder access arrangements and community consultation are key elements required for undertaking all exploration activities in NSW. Please stay informed of those requirements via the MEG (Mining, Exploration and Geoscience) website. If land access is required to do the airborne survey, such as use of a private airstrip, a Land Access Agreement is needed. A toolkit for land access planning is available from AMEC.

Where survey operations will extend outside of the exploration licence boundary (for example to turn the plane around), as a courtesy to any adjoining tenement holders, they should be notified in addition to the usual landholder notifications.

A community consultation code of practice applies to any titles granted, renewed or transferred after 1 March 2016 (see "When this code applies" in the Exploration code of practice: Community consultation). For pre-survey preparation, it is now a requirement that a community consultation strategy is developed, and a community consultation plan is implemented prior to survey activity, to a degree relevant to the proposed activities. Registers of contacts and complaints must be kept.

Annual community consultation reports must be prepared in accordance with the Exploration code of practice: community consultation, or with the Guideline for community consultation requirements for exploration as amended or replaced from time to time (coal and petroleum prospecting titles only), as relevant to the conditions of title.

4. Flight regulation

Australian airspace is regulated by the Civil Aviation Safety Authority (CASA) for the safety of civil aviation and related purposes (*Civil Aviation Act 1988*). CASA regulates surveys by helicopter, fixed-wing, or any other airborne platform, including commercial drones (remotely piloted aircraft).

For low-level flying of surveys, the contractor operates under CASA regulations — defined separation distances from buildings, populous areas: Sub-regulation 137.140 (3) of the Civil Aviation Safety Regulations 1998.

For more information on CASA, visit https://www.casa.gov.au/.

5. Work health and safety

Since 2013, exploring for minerals has been included as a 'mining operation' under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013 No. 54*. This Act does not apply to aircraft activity where Commonwealth aviation legislation applies. CASA supplies information regarding safety management systems (SMS) for aviation for use in airborne survey preparation and operation. This information can be found at:

www.casa.gov.au/education/standard-page/sms-resource-kit

6. Data submission

Geophysical data must be submitted in the annual reports through Titles Management System (TMS). Where files are:

- over 500 MB and less than 8 GB the Large File eXchange service (LaFiX) may be used
- larger than 8 GB, or when LaFiX experiences issues, please contact geophysics.products@regional.nsw.gov.au

TMS submission information and LaFiX submission information are available from the Mining Exploration and Geoscience website.

For guidance on geophysical data, including appropriate formats, please refer to Table 5 in the Guide for reporting on exploration and prospecting in New South Wales which is available from the Mining Exploration and Geoscience website.

7. Further information

geophysics.products@regional.nsw.gov.au