



**NEW ZEALAND**  
PETROLEUM & MINERALS

## **GUIDE TO THE SOUTH ISLAND AEROMAGNETIC SURVEYS**

New Zealand has a long history of mining, but much of the country remains relatively under-explored and has real potential for further mineral discoveries. Commencing in November 2015 New Zealand Petroleum & Minerals began a scientific survey of parts of Nelson, Marlborough, Murchison, Otago and Southland, to help us get a better understanding of the geology of these areas.

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### **AEROMAGNETIC SURVEYS**

Aeromagnetic surveys provide high quality data about the geology of an area. It is a very cost-effective way to gather data. We fly survey aircraft (a plane or helicopter) over the area and use instruments to measure the magnetic fields and natural radiation characteristics of the ground below.

#### **Why are we carrying out the survey?**

It will help with identifying mineral deposits, and provides information on faults, groundwater aquifers, and soils.

For these reasons the Marlborough District Council and Venture Southland (representing Environment Southland, Southland District Council, Invercargill City Council and Gore District Council) are partnering with NZP&M on the project.

Aside from using the information obtained in the survey to better understand the potential mineral endowment of metals such as gold, platinum or tungsten in the region, MBIE is also interested in understanding if and where there are deposits of 'green minerals' used in renewable technology.

#### **How will this affect people on the ground?**

The aircraft must fly at a low altitude - usually around 35 metres for a helicopter or 60 metres for an aeroplane above ground. This will create some noise and may be disturbing for people (or animals) on the ground.



Survey flights are only allowed during daylight hours and are subject to the rules/regulations of the Civil Aviation Authority. Usually flights last around three hours, but aircraft will pass quickly (they will not spend long over any one place).

### **What does the survey helicopter look like?**

It is a standard helicopter with a protruding boom housing the survey instruments (see image below).



### **How many helicopters will be used?**

A maximum of two helicopters can be used at any one time. For safety reasons the helicopters will operate in different areas of the survey area to maintain a safe separation distance from each other.

### **When will the helicopters be flying?**

Survey flights are only allowed during daylight hours and are subject to the rules and regulations of the Civil Aviation Authority. Helicopter flights usually last around three hours, but aircraft will pass quickly (they will not spend long over any one place).

### **What is the data used for?**

Our main aim is to use information from the surveys to better understand the potential mineral endowment in the region.

The data collected also provides benefits for geological mapping, forestry, agriculture and horticulture, groundwater resources (aquifers), geological hazard assessment, and engineering and construction investigations.

A previous survey identified a fault hazard that led to a planned water pipeline in Southland being rerouted. For these reasons Venture Southland (representing Environment Southland,

Southland District Council, Invercargill City Council and Gore District Council) has partnered with MBIE on the project.

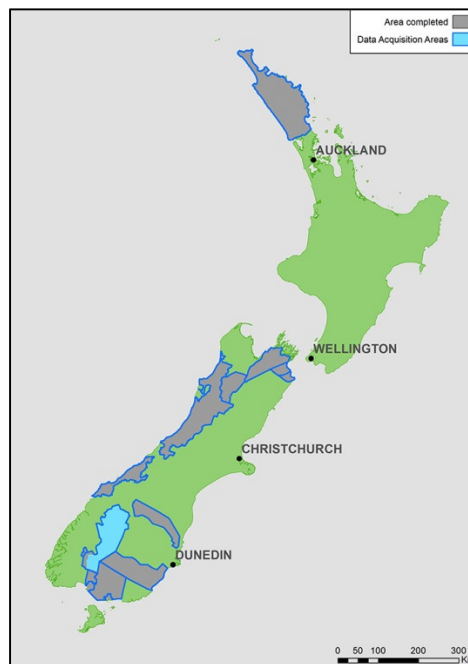
### **What are the aircraft measuring?**

The survey will measure natural variations in the earth's magnetic field and naturally occurring radiation levels. This information can identify areas which have mineral potential. It can also identify other useful geological information, such as fault lines. The instruments used for the surveying only receive information – they do not emit any signals or energy

### **What previous surveys have taken place?**

Surveys have been conducted over Northland, Nelson, Marlborough, Murchison, the West Coast, northern Otago and Southland in recent years.

### **Government funded aeromagnetic survey coverage to date, 2011 to 2017**

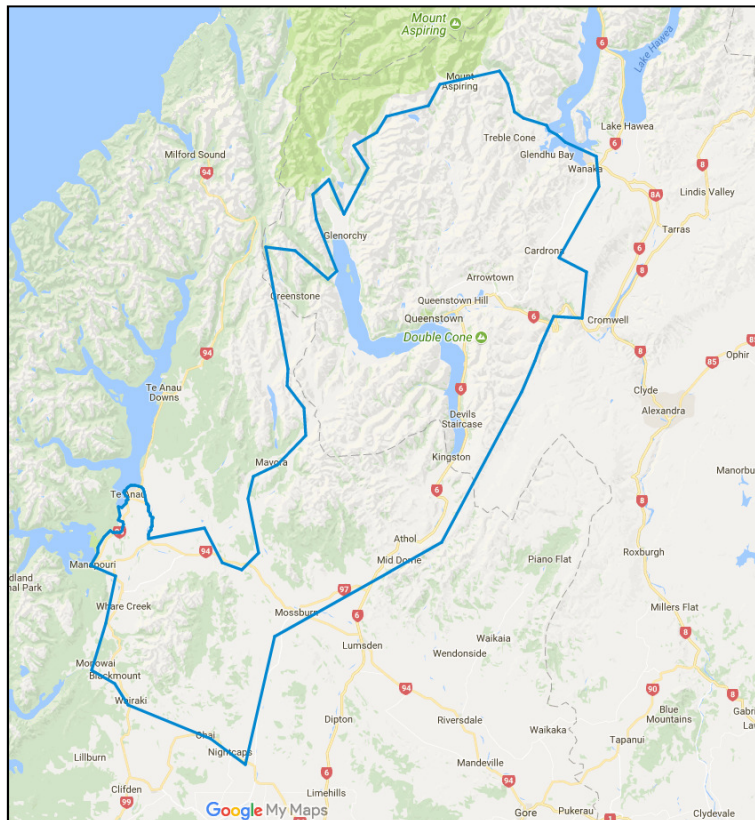


## WHERE AND WHEN ARE THE SURVEYS TAKING PLACE?

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The remaining portion of the project is the area around Wanaka, Queenstown and Nightcaps as shown in blue in the map below. We intend to commence operations from early December 2017 in this area. The progress of the aeromagnetic surveys is weather dependent, so our anticipated timing may change. Surveying will continue until weather conditions deteriorate – we estimate this to be in April - May 2018.

### Map showing area of the upcoming survey



We estimate it will take three summer seasons to complete this survey area.

### Who is carrying out the survey?

Thomson Aviation won a tender to do this work in 2015. They are an experienced operator with a strong track record working on similar projects, including similar surveys in 2012. Thomson was chosen based on their approach to health and safety, their ability to manage the project, and carry out the surveys.

Thomson Aviation are required to obtain any relevant consents needed for the surveys (such as from the Civil Aviation Authority and Airways – New Zealand's air navigation provider), and manage community-level communication and operational queries once the operation has commenced.

**Will the survey aircraft fly in bad weather?**

The aircraft will not fly in bad weather. Thomson Aviation is responsible for ensuring the safety of flights, identifying any hazards, such as power lines, adverse topography, etc. They will brief crew on these. They will also evaluate weather conditions.

**WHO IS FUNDING THE SURVEY?**

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The surveys are part of an \$8 million government investment in new data over six years, announced in Budget 2014. Of this, \$6 million is earmarked for aeromagnetic surveys. Other funding is coming from Marlborough District Council and Venture Southland (representing Environment Southland, Southland District Council, Invercargill City Council and Gore District Council).

**WILL THE GOVERNMENT OPEN UP THESE AREAS FOR MINING?**

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Our aim is to get a better understanding of the geology of these regions and identify sites that are worthy of further exploration. This will help attract investment to the region.

The survey covers large areas to find sites with mineral potential. But it is important to remember that this is the first step in a long process and if anything is found it could be years before any further exploration takes place.

If geologically prospective areas are identified, it is not a given that the area will be explored or mined. Any resource development will need Resource Management Act (RMA) authorisation before it can be commenced.

**What about areas in these regions that are protected?**

New Zealand's most important conservation areas are identified in Schedule 4 of the Crown Minerals Act 1991. These are closed for exploration or mining activity.

The Government has also made a firm commitment that no mining will be allowed on World Heritage Areas.

So while the helicopter may fly over them, it is not possible for companies to explore or mine for minerals in these locations.

Any changes to the existing regulations will be applied if it affects the conservation estate.

## **MORE INFORMATION/CONTACT US**

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New Zealand Petroleum & Minerals leads and actively manages the New Zealand government's petroleum and minerals portfolio. As part of the Ministry of Business, Innovation and Employment (MBIE), our goal is to use our wider understanding of the energy and resources sector to increase national and regional prosperity through petroleum and minerals exploration and production.

If you would like to know more about the surveys, please contact:

**Jono Weir**

**Project Principal, Ministry of Business, Innovation and Employment**

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Once surveying has commenced if you have operational or aviation questions please contact:

**Thomson Aviation Geophysical Operator**

**021 269 6870**

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