South Australian Chamber Of Mines & Energy

SACOME

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Mineral Exploration - The challenge of discovery

WHAT IS MINERAL EXPLORATION?

Exploration is the term used to describe a wide range of activities aimed at searching for minerals or determining the extent of a discovery or deposit. It includes activities such as soil and rock chip sampling, geophysical surveys, airborne surveys and drilling under an exploration licence.

Mineral exploration is a low impact activity - it is not mining. The process of exploration can be split into several phases. Largely it begins with historical data collection and assessment to identify discovery prospects. The next phase of exploration involves collection of new data. For mineral deposits this data is collected through low cost sampling, and geophysical and airborne surveys to identify potential exploration targets. Considerable value can be added to the research data in this phase.

Armed with the required data, the next phase requires significant financial investment to drill the target which is the only way to determine the existence and extent of the potential mineral deposit.

SOUTH AUSTRALIA - A UNIQUE CHALLENGE

In 1841 at Glen Osmond South Australia , Australia's first metal was mined (Lead). Within ten years exports of Copper and Lead from South Australia earned more than the whole of Australia's wool and wheat export industry put together.

However, much of our resources wealth lies hundreds of metres underground and undiscovered. The risk and cost of unearthing these resources can be prohibitive to junior exploration companies.

"Exploration Investment in South Australia rose 55 per cent to $85 million in 2018/19 - well above the national growth rate of 19 per cent."

THE DISCOVERY TIMELINE

Exploration begins over a wide area with low-impact surveys and using high-technology to map the geological story of the land. Land is rarely walked on at this stage.

→ As the geological story becomes clearer, explorers narrow their search using electromagnetic airborne and roadside surveys

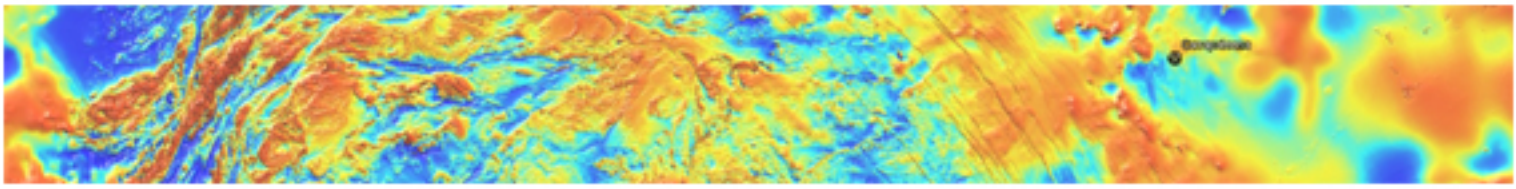
→ Walking ground magnetics are measured to further narrow the land search

→ Drill holes provide accuracy

→ Resources area identified

A LOCAL EXAMPLE

South Australian exploration company Hillgrove Resources began exploring 490 sq km of land. Airborn and roadside surveying reduced the site of interest down to 50 sq km. Drilling took place on 0.5 sq km. The final mine site covers 4.4sq km (440 hectares) and has generated over $200 million to the local community.



DEEP COVER

Although challenging, mineral exploration is often successful when the 'critical evidence' is at the surface. When the evidence of mineral deposits is buried deep underground, exploration is difficult, expensive and time consuming. 80% of South Australia's land mass is classified as 'deep cover'.

LAND ACCESS

Minerals are the property of the Crown in South Australia and are managed on behalf of all South Australian's. Access to the minerals is controlled through the Mining Act 1971 and the Mining Regulations 2011. Any person wishing to prospect, explore or mine for minerals in South Australia must be authorised under the Mining Act. Landowners have rights in relation to an explorer entering their land. Before entering, the explorer must either issue a detailed 'notice of entry' form to enable the landowner to make an informed decision. The alternative is for the explorer to negotiate an agreement with the landowner.

"The increase of publically shared geological data, new drilling technologies and survey equipment means exploration companies are becoming increasingly more accurate with their predictions."

REHABILITATION

Rehabiliation of any land disturbed through exploration is an important part of the process. Revegetation, access road upgrades and ensuring no or minimal loss of land-use is all discussed with land-holders before exploration begins.

NEW TECHNOLOGY

New technology, such as South Australia's own invention, the Roxplorer, is inproving drilling techniques and making exploration more efficient and affordable for young exploration companies.

EXPLORATION IN NUMBERS

South Australia currently accounts for **0.5%** of global exploration spend.

There is only a **1 in 137** chance of success.

It takes **2-3 companies** on average **12 years** to make a discovery.

Less than **50%** of discoveries become mines.

4 new mines in South Australia would bring **2,200 jobs** and USD **$1700M.**