

# Exploration

Exploration involves more detailed search for and assessment of mineral resources including data gathering over smaller, more specific areas to test if the resource is commercially viable.

Exploration activities can include aerial or seismic surveys, intensive surface-sampling and drilling core samples, trenching, bulk sampling and economic and mining feasibility studies could be undertaken.

If analysis of data collected from these activities looks promising companies may decide to drill an exploration well.

## Mineral exploration drill sampling

Drilling is also an important tool to explore for mineral deposits, including coal. The solid rock core or rock chips (cuttings) that are brought to the surface by drilling are examined and information about any minerals is recorded. As drilling can be very expensive it is generally only used where other exploration methods have shown positive signs of minerals in the earth.

On land, minimum impact drill sampling may include the use of small non-motorised auger-drills that can be carried in an explorer's backpack. As it is not possible to hand-sample offshore, ship-borne vibration and reverse circulation sampling – both types of drilling - or grab sampling are used to get samples from the seafloor sediments. No equipment is permanently left on the seafloor. Seabed sampling is considered minimum impact when the sampling has a small diameter, is shallow (less than 10 metres below the seafloor) and is widely-spaced across the permit area.

Motorised drilling rigs can range from small ute-mounted drills through to large truck-mounted or platform-mounted rigs (onshore or offshore), which can reach depths of several hundred metres. If need be, where there are no existing roads or tracks, drilling rigs can be flown in using helicopters to minimise environmental effects.

## Trenching or pitting

Trenches or pits may be dug by mechanical excavators as part of mineral exploration or mining permits. Trenches and pits may be dug when areas of earth containing minerals are shown to be present and need further testing. The trenches or pits are typically back-filled after testing.

## Bulk sampling

This is often the last stage of physical sampling when exploring for mineral deposits. A bulk sample can take the form of a relatively large pit or cutting. The purpose of taking a bulk sample is to confirm the quality and grade of a mineral deposit on a larger scale than is possible with other exploration methods. Bulk sampling can occur under an exploration or mining permit. In some circumstances royalties may be payable.

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