



National
Native Title
Tribunal



Steps from mineral exploration to a mine

Developed in consultation with the WA Department of Mines and Petroleum, peak industry bodies and Western Australia native title representative bodies.

Developed in consultation with:

- Yamatji Marlpa Aboriginal Corporation
- Goldfields Land & Sea Council
- South West Aboriginal Land & Sea Council
- Central Desert Native Title Services
- Kimberley Land Council
- Chamber of Minerals and Energy of Western Australia Inc
- Association of Mining Exploration Companies Inc
- Department of Mines and Petroleum.

Step 1

The explorer may walk or drive and use hand tools on the land to collect small samples.

Exploration methods that are not ground disturbing

Literature search

Looking at history, reports and maps.

Geological mapping

Planning starts with regional and local maps, followed by new maps showing vegetation and location of rock types.

Geochemical sampling

Locating a particular mineral deposit by chemical analysis of rocks, stream sediment soils, water, gas or vegetation.

Geophysical exploration

Collecting information about the physical properties of a mineral deposit on the ground or from the air (remote sensing).



Rock chip geochemical sampling using helicopter support. © Barrick Gold of Australia Ltd.

Step 2

If there is a regional standard heritage agreement, the explorer tries their best to inform native title parties of what they plan to do (the requirement to consult with native title parties or traditional owners may also be addressed in an alternative heritage agreement).

Step 3

If non-ground disturbing exploration indicates there may be minerals in the ground, the explorer informs the traditional owners or native title parties (depending on the nature of their agreement) of plans to drill holes in certain areas.

Step 4

If there is a heritage agreement, the traditional owners or native title parties decide whether a heritage survey is required.

Step 5

If a heritage survey is done the report will say where drilling cannot happen in order to protect heritage sites.

Exploration methods that are ground disturbing

Rotary air blast and aircore drilling

Drilling a small hole (less than 100mm) through soil and loose rock using hammer or blade bit to drill the hole. This tells the geologist if minerals are present.

Reverse circulation and diamond drilling

Drilling a deeper, larger hole (usually 140mm or larger) through undisturbed or deep rock using a hammer or blade bit or an industrial diamond impregnated bit. This tells the geologist how much mineral is present.



Drillcorp Western Deephole diamond drill rig at Mt Gibson. © Barrick Gold of Australia Ltd.

Step 6

Geologists and labs analyse samples taken from the drill exploration to see if minerals are present.

Step 7

If there are minerals present the explorer will usually drill closer spaced holes and this information is used to make:

- geological models, which help engineers estimate how much ore there is and its quality
- resource models, which help engineers estimate how much ore reserves there are
- feasibility studies, which help decide whether mining, processing and marketing the ore will be profitable.

The models and studies help make estimates and decisions about whether there will be a mine.

Step 8

If the mining company decides to start a mine, it will need to apply for a mining lease and negotiate with all registered native title claimants. Mining companies usually need to raise money before they can begin mining. This can take one to two years.

In Western Australia, Aboriginal heritage is protected by the *Aboriginal Heritage Act 1972* regardless of whether the exploration method is considered to be ground disturbing or non-ground disturbing.

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Resolution of native title issues over land and waters.