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MINERALS FOR A SUSTAINABLE FUTURE

Case Study

June 2023

Archey's frog, pepeketua.

The Waihi North Project

OceanaGold is moving closer to an underground mine at Wharekirauponga near Waihi. This is a story of low-impact gold exploration while conserving Archey's frog, and of minimising the disturbance of ground by accessing the mineable resource from a portal outside forested conservation land.

Introduction

Wharekirauponga is a gold deposit 10km north of Waihi, where exploration restarted in 1978, culminating in intensive drilling once OceanaGold acquired the asset in 2015. The company is now developing an underground mine here as part of its Waihi North Project. The project will signify the single largest extension of operational life at the Waihi site since modern mining began in 1987. This will be an important contribution to the future of the company's gold mining operations in and around Waihi.

A significant challenge is that Wharekirauponga occupies a Department of Conservation-administered forest park, and is one of the habitats of the at-risk Archey's frog/pepeketua. This is rugged terrain, part of it old-growth native forest, while much of it is regenerating forest from historic mining. The old timers produced 19 oz of gold from 14 tonnes of ore between 1888 and 1897.

The Waihi North Project is a case study of applying the "effects management hierarchy" to the environment – avoid effects, then reduce the footprint, then remedy and mitigate effects on site, and finally offset and compensate for residual effects, to deliver no net loss in environmental values overall.

Aerial photo of exploration drilling rig on conservation land.

Going underground

In contrast to the Martha pit at Waihi, OceanaGold is developing Wharekirauponga as an underground mine, having a much smaller environmental footprint than surface mining. This choice of method has depended on the company locating sufficient high-grade resources to make the project economic.

A mining permit (60541) over more than 2,370 hectares allows OceanaGold to apply for resource consent to mine the Wharekirauponga ore body from tunnels (or drives) accessed outside the forest park. This is key to meeting DOC's requirements for granting mining access.

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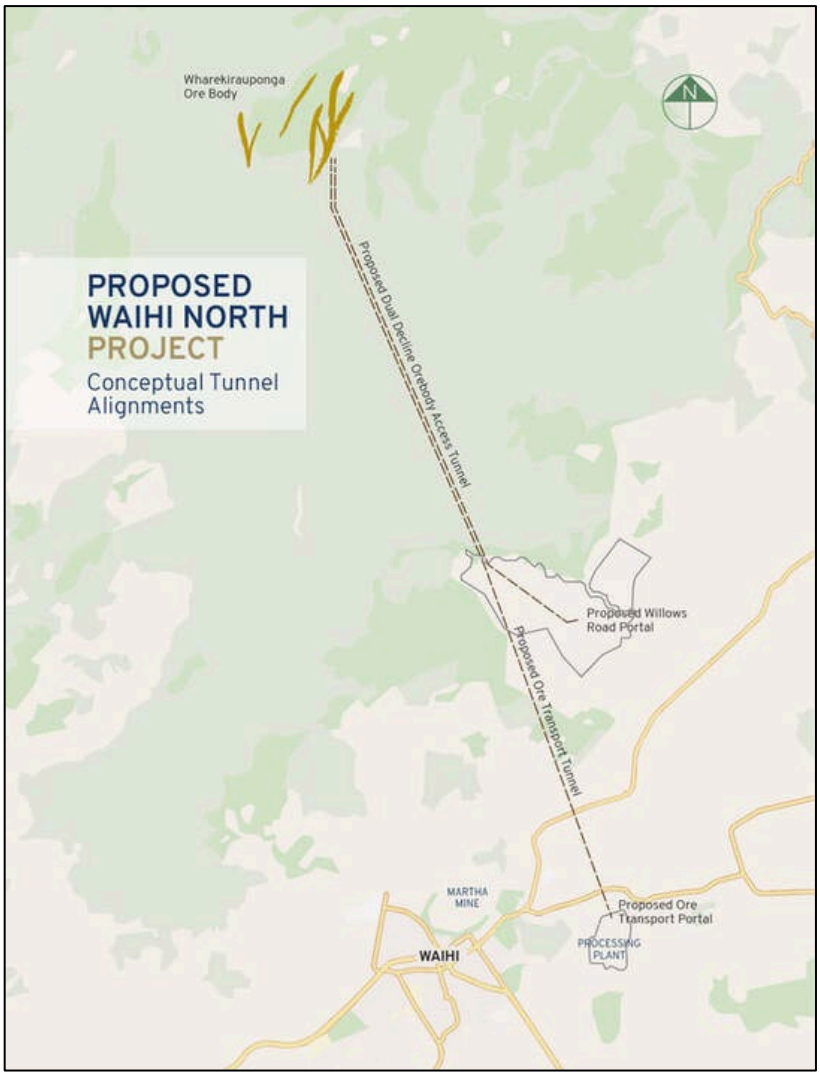
Access outside Forest Park

Company owned land at Willows Road is the site of a planned 6.5m x 5.5m portal for adual decline tunnel over 6.8km to access the Wharekirauponga orebody (see map). This design will help with underground ventilation of the mine, also reducing the number of ventilation shafts connected to the surface.

The proposed siting of four shafts in the forest park will avoid areas of high habitat value. OceanaGold will install the tops of the shafts or vent stacks via helicopter and will rehabilitate surrounding disturbed ground into native vegetation on the completion of construction, and on closure.

A single 4.7km-long transport tunnel will also run from Willows Road to the processing plant east of Waihi and provide operational access to Wharekirauponga from Waihi operations.

Also at Willows Road is the site of future rock stockpiles, holding and settling ponds to manage mine and freshwater, as well as amenities, service workshops, and magazines for explosives.



Waihi North Project map.

Managing surplus rock

As is the case for most hard rock mines, only a small percentage of the ore contains gold and silver. What's left behind is rock and tailings, finely ground rock material derived from ore processing.

The Wharekirauponga project takes advantage of OceanaGold's plans for a new 60-ha tailings storage facility adjoining the existing two TSFs east of Waihi, and a new rock stack, both part of the broader Waihi North Project.

During mining at Wharekirauponga, OceanaGold will progressively backfill underground workings with rock – a silica-rich volcanic rock known as rhyolite – further reducing the surface footprint of this project.

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Archey's frog/pepeketua

One of three species of indigenous frog in New Zealand, Archey's frog are about the size of a thumbnail. This species and its frog relatives are unusual globally for lacking eardrums, therefore not a croaking frog, and for living out of the water, in damp leaf litter.

Archey's frog, pepeketua.

The challenge for the exploration teams is to avoid Archey's frogs by at least six metres, as required under resource consent conditions. No more than five frogs are to be found in any 20m x 20m area (400m^2). If they are, the vegetation in that area may not be disturbed. With drilling platforms occupying up to 150m^2, this has resulted in numerous sites being unsuitable.

Ongoing ecological survey work has resulted in a positive finding for the species, with Archey's now found in locations they have never officially been recorded in before. This new data pushes the known range of the Coromandel Archey's frog population to the north, south, and east of Wharekirauponga.

For an idea of scale, to date OceanaGold has drilled approximately 60km of rock core from 140 holes, crucial to discovering the high-grade resources at Wharekirauponga. The company has been able to achieve this by drilling several holes in different directions below the surface from the same drilling platform, to minimise disturbance of Archey's frog habitat, and to minimise the exploration footprint.

Case study source: OceanaGold Corporation. *This information current June 2023*

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