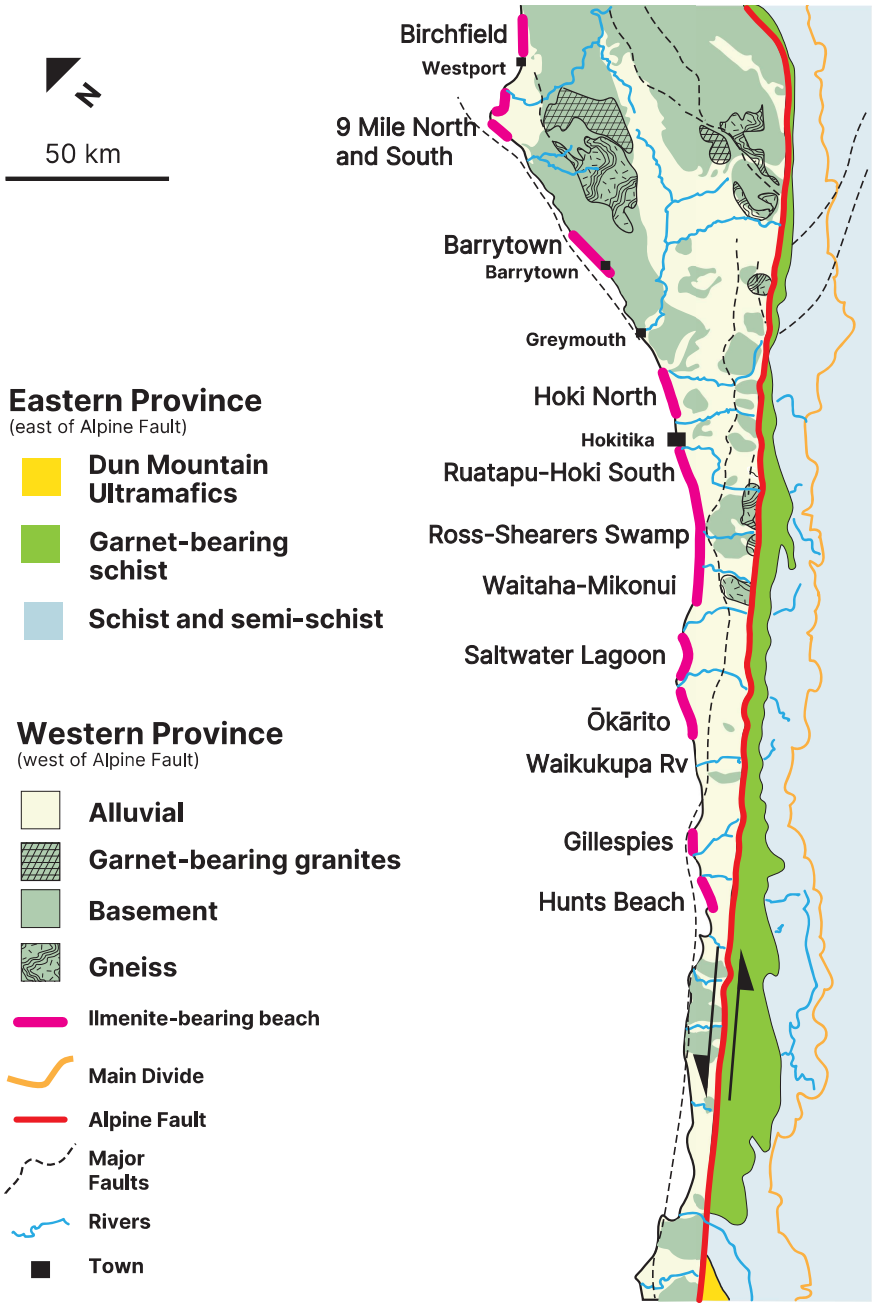
Heavy Mineral Sands on the **West Coast, South Island, New Zealand**

Heavy mineral black sands occur along more than 320 km of the South Island's West Coast. These sands contain ilmenite, magnetite, and garnet, with local concentrations of gold, zircon, and rare earth element-bearing minerals, presenting significant exploration and mining opportunities.



History

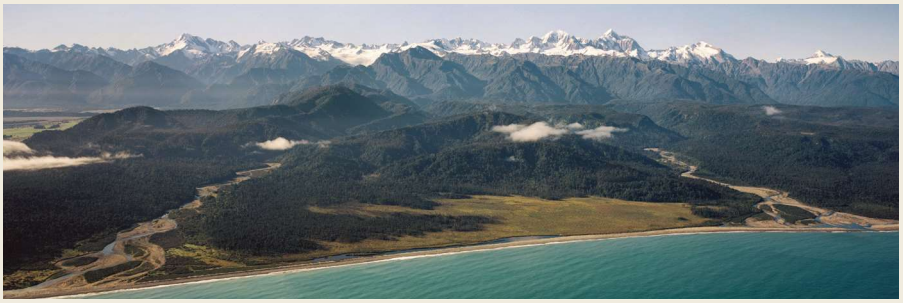
Interest in these mineral sands dates back to the 1860s gold rush. Government surveys in the 1950s and 1970s confirmed ilmenite potential, followed by private sector exploration in the late 20th century. The 2010s saw renewed interest in garnet, leading to the discovery of major deposits at Westport, Barrytown, Ruatapu, and Hunts Beach. In 2023, Westland Mineral Sands commenced mining at Nine Mile near Westport, and other projects are under development at Barrytown and Ruatapu.

Regional Geology

New Zealand's South Island is divided by the active Pacific-Australian tectonic plate boundary, marked by the Alpine Fault. Displacement of 480 km has occurred since the Miocene, driving rapid uplift of the Southern Alps and resulting in vast erosion and supply of sediment to the coastal plains of the West Coast. Here, ocean currents and wave action concentrate heavy minerals into rich placer deposits.

Mineral Deposits

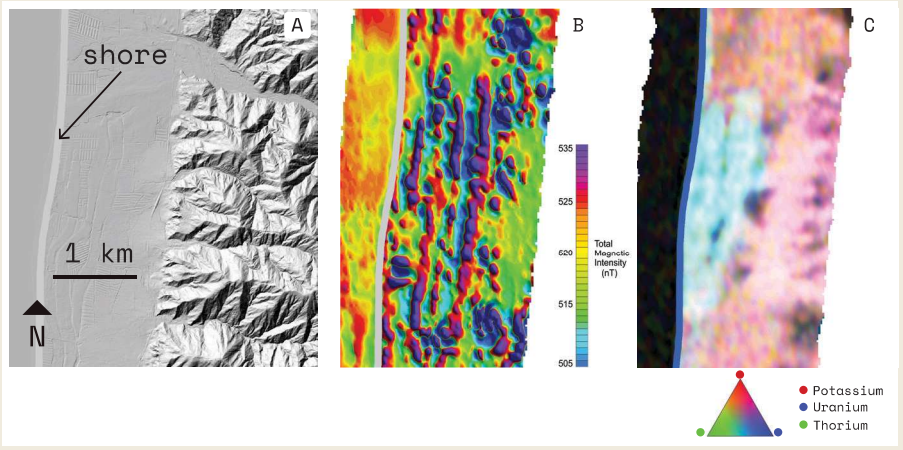
The region hosts placer deposits rich in ilmenite, magnetite, and garnet, with valuable concentrations of gold, zircon, and rare earth element-bearing minerals (monazite, allanite, xenotime). These minerals originate from garnet-bearing schists eroded from the Southern Alps, gold from the West Coast's Ordovician metasediments, and REE-bearing minerals from felsic intrusions. The modern and ancient deposits extend up to 5 km inland.



Beaches and Omoeroa and Waikukupa river mouths with the Southern Alps in the background. Photo: Lloyd Homer CN 6053H

Exploration Data and Surveys

New Zealand Government permits are required for exploration and mining, with open-file data available at www.nzpam.govt.nz. Extensive airborne and ground-based geophysical surveys, mineral sampling, and drilling results offer valuable insights and new exploration opportunities.



Example of high resolution airborne geophysical data (above) over the Barrytown mineral sands prospect. The data can be used to differentiate paleo-shorelines and different deposits based on their heavy mineral characteristics as in the maps above. Geomorphology interpreted from LiDAR-derived shaded terrain images shows recent beach ridges (a); vertical derivative of the magnetic field showing anomalies associated with the different sand deposits along the coastal strip (b); and, radiometric data shows a dominance of Th and U in some sand deposits along the coast (c).

Investment and Development Opportunities

The West Coast offers substantial potential for new discoveries and resource development. Existing geological data can be reinterpreted to identify new heavy mineral targets. Joint venture opportunities may exist within current permit areas, creating a favourable investment environment.

Infrastructure and Accessibility

Key population centres include Greymouth (population 8,640), Westport (4,680), and Hokitika (3,250). Greymouth and Westport have ports supporting coastal shipping, while Hokitika and Westport have airports with regular domestic flights. A national railway network links Westport, Greymouth, and Hokitika to New Zealand's east coast and international shipping routes. State Highways 6 and 67 provide reliable road access.

Heavy mineral concentrates along Fox River Beach (Photo: Tom Ritchie)

Photo of pan with mineral concentrates (Photo: Tom Richie).

Why Invest in West Coast Heavy Mineral Sands?

- Rich in industrial and rare earth element minerals.
- Established mining operations with ongoing investment.
- Strong West Coast community and central government support for mining.
- Extensive open-file geological data and regional airborne geophysical surveys.
- Excellent regional infrastructure.

GNS SCIENCE TE PŪ AO

NEW ZEALAND PETROLEUM & MINERALS