

## Rangitoto: Auckland's Youngest Volcano

### What is Rangitoto?

Rangitoto is Auckland's largest, most recent and least modified volcano of the Auckland Volcanic Field, forming a symmetrical cone at the entrance to the Waitemata Harbour. Today it is part of the Hauraki Gulf Maritime Park, administered by the Department of Conservation in partnership with the Tangata Whenua Nga Tai and Ngati Paoa. There are a number of well marked tracks through what is the largest remaining pohutukawa forest in New Zealand, and it is visited by large numbers of sightseers. Access is provided by regular ferry services.

### How was it formed?

It is believed that Auckland's volcanoes are formed when huge bubbles of molten rock pinch off a "hot spot" about 100 km below, and rise to the surface. In Rangitoto's case, it is thought that this happened with little warning about 600 years ago, while Maori inhabited Motutapu island, only four kilometres away.

The early stages of the eruption would have been excessively violent, because of steam explosions where the molten rock came into contact with the shallow seawater. Large amounts of rock and ash soon smothered Motutapu.

Rangitoto finally emerged from the sea as a broad eruption crater with liquid rock building up a number of cones (*refer Hazardfacts H02 - How do Auckland Volcanoes Form?*).

Experts differ on the exact pattern of the Rangitoto eruption, some estimating it to have continued violently like this for a decade, while others believe it was built by a series of intermittent eruptions, starting 800 years ago and continuing for perhaps 200 years. Either way, Rangitoto produced a volume of lava equalling that of all the previous Auckland eruptions combined.

When the eruptions finally ceased, lava in the base of the cone cooled and shrank. As a result, the entire top of the mountain subsided by 10 to 20 metres, leaving a moat-like ring around the summit. This is visible today as the hummocky profile of the top of Rangitoto, which looks almost the same from whatever angle it is viewed.



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## What happened to local Maori?

Although the eruption would have quickly made Motutapu island uninhabitable for a while, little appears to suggest that serious hazard to human occupation was more widespread. Rangitoto's birth and growth may have been watched for years from the Waitemata shoreline, and it would have made an awesome sight. Translated from Maori, Rangitoto appropriately means "bloody sky". However the name is derived from the phrase "Te Rangi i totongia a Tamatekapua - the day the blood of Tamatekapua was shed", a reference to an injury to a chief during a battle fought on the island.

## How does Rangitoto compare to other Auckland volcanoes?

Apart from its large size and the volume of lava it produced, Rangitoto is fairly typical of Auckland's hill-forming volcanoes. Its relative youth and inaccessibility mean it has changed little since its formation.

## Could Rangitoto erupt again?

Although it's not impossible, long periods of inactivity between eruptions have never been a feature of Auckland's volcanoes, and it appears unlikely that Rangitoto will become active again. On the other hand, there is nothing to suggest that Rangitoto will be Auckland's last volcano. The Auckland Volcanic Field is monitored by the Auckland Regional Council in order to provide a warning of any new activity (*refer Hazardfacts H05 - Auckland Volcano-Seismic Monitoring Network*).

## References and further reading

Cox, G.J. (1989) *Fountains of Fire: The Story of Auckland's Volcanoes*. William Collins Publishers Ltd, Auckland.

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Johnston, D.M., Nairn, I.A., Thordarson, T., Daly, M. (1997) *Volcanic Impact Assessment for the Auckland Volcanic Field. Auckland Regional Council Technical Publication No. 79, April 1997.*

Kermode, L. (1992) *Geology of the Auckland Urban Area*. Institute of Geological and Nuclear Sciences Ltd, Lower Hutt.

Hazardfacts in the volcano series: H01 (Auckland's Volcanic Field), H02 (How do Auckland Volcanoes Form?), H04 (Auckland's Volcanic Hazards), H05 (Auckland Volcano-Seismic Monitoring Network), H10 (Volcanic Eruption in Auckland).

<http://www.arc.govt.nz/volcanic>

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