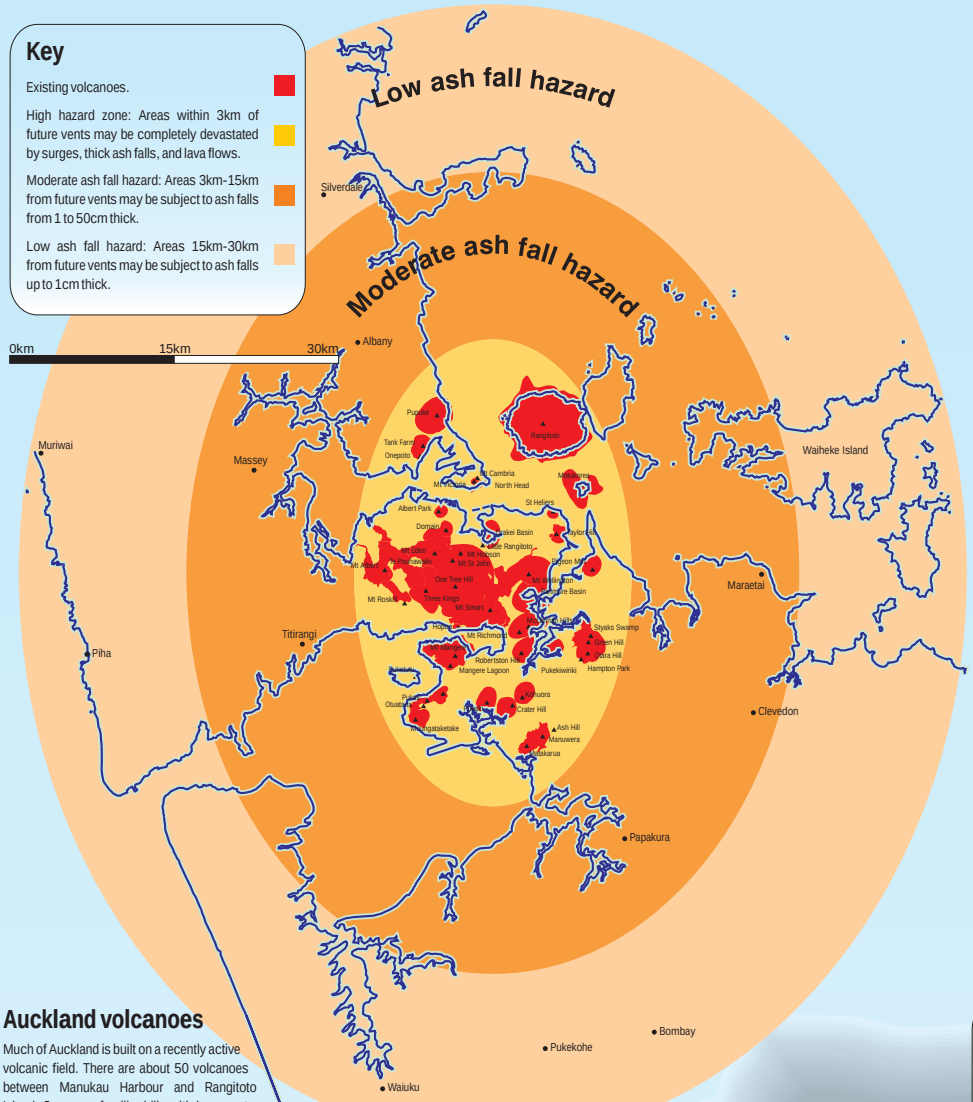
Auckland Volcanic Hazards

Auckland Regional Council
EQC EARTHQUAKE COMMISSION
Institute of Geological & Nuclear Sciences Limited



Eruption history

Auckland volcanoes started to appear about 140,000 years ago - the Domain and Lake Pupuke being among the oldest. Rangitoto is the biggest and most recent - it formed about 600 years ago. Scientists estimate the field has a life of about one million years, so geologically speaking, it is still very young. There has been a trend to bigger and more frequent eruptions in the past 20,000 years.

Suppose you live on or near an old volcano. Are you at risk?

The next eruption is unlikely to occur at an existing volcano, however the entire field must be considered as a future source of eruptions. Your risk is the same as anyone else living within the Auckland Volcanic Field.

Suppose you live outside the Auckland area. Are you still at risk ?

Yes, you may experience light ash fall from an eruption in the Auckland area, particularly in Northland and Waikato. However, social and economic impacts will be felt nationwide.

How likely is an eruption ?

The chances that an eruption will occur in your lifetime may be small, but scientists agree that another eruption is inevitable at some time in the future. There have been 20 eruptions in the Auckland area in the past 20,000 years. See the table below for comparisons with other hazards.

What should you do in the event of an eruption ?

- Listen for instructions from Civil Defence - some people may need to be evacuated
- Stay indoors as much as possible
- If you need to go outside, wear a breathing mask and goggles
- Try to keep ash from accumulating on the roof
- Don't go sightseeing - you'll add to congestion and put yourself and others at risk.

What is vulnerable?

- Transport - roads, sea, air, and rail
- Communications - computer, telephone, radio, and television
- Energy - electricity and gas
- Services - water supply and waste disposal
- Business - negative impacts on employment and the economy.

Volcanic eruptions are difficult to accurately forecast and the only practical way to live with volcanoes is to prepare for them to misbehave. The Auckland Regional Council is developing emergency plans to manage risks associated with an eruption. An initiative called The Auckland Engineering Lifelines Project, involving about 40 organisations, is currently assessing the vulnerability of the city's infrastructure to volcanic hazards.

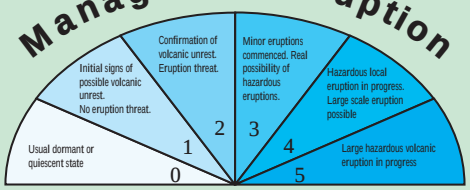
Auckland volcanoes

Much of Auckland is built on a recently active volcanic field. There are about 50 volcanoes between Manukau Harbour and Rangitoto Island. Some are familiar hills with large craters like Rangitoto, Mt Eden, and One Tree Hill. Some like Albert Park and Mount Smart have been quarried away, and others like Panmure Basin and Orakei Basin have always been large craters. Scientists do not expect these existing volcanoes to erupt again.

The lack of surface activity in Auckland leads to the false impression that the field is extinct. The hot spot of molten rock deep below the city remains active and it will almost certainly send up more magma some time in the future. Where and when that eruption will take place is unknown.

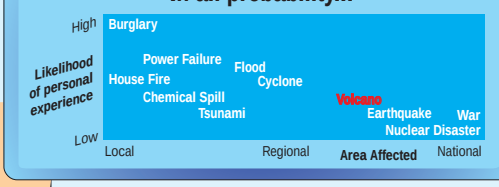
Even a small, brief eruption would have a major impact on Auckland. The level of destruction and disruption would depend on the size and location of the eruption, type of activity, warning time, wind direction, and preparedness. Seismic activity is continuously monitored around Auckland to provide early warning of renewed volcanic activity.

Managing an eruption

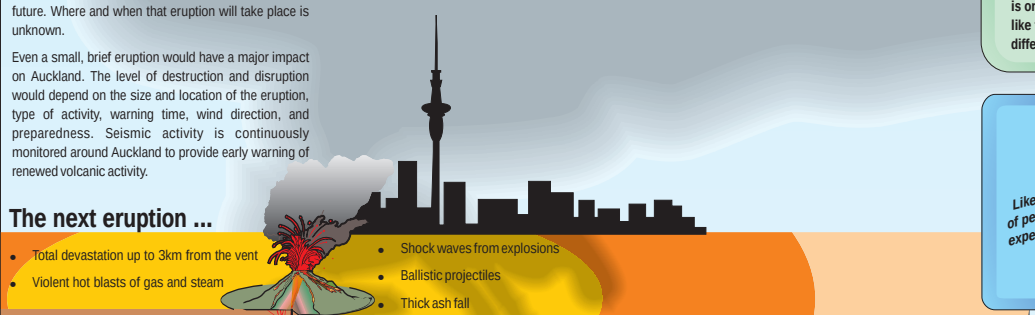


Eruption crises are managed through volcanic alert levels.Civil defence responses are related to changes in the levels. At present, the entire Auckland Volcanic Field is on level 0. There are six alert levels to reflect changes in activity in volcanoes like those in Auckland.The alert levels used for volcanoes like those in Auckland differ slightly to those used for White Island and Mt Ruapehu.

In all probability...



The next eruption ...



Predicting eruptions

Continuous seismic monitoring can warn scientists of the onset of an eruption. As rising magma breaks its way through the earth's crust, it generates small tremors which are recorded by seismometers. An eruption in Auckland could be expected after several days or weeks of such tremors. The Auckland Regional Council has a network of seismometers in the Auckland area to provide advance warning of any volcanic activity.

How Auckland volcanoes form

Auckland sits over a hot spot of molten rock which lies about 100km below the city. Every so often some of this magma pinches off from the hot spot and rises towards the surface. As it gets near the surface, the magma may or may not react with water. If the magma meets water, it results in violent wet eruptions. These form craters like Panmure Basin. If there is no water, a dry eruption occurs and these form scoria cones and lava flows.

Acknowledgment: Prepared by the Institute of Geological & Nuclear Sciences Limited and the Auckland Regional Council, with assistance from the Earthquake Commission.

For more information contact the Institute of Geological & Nuclear Sciences Limited : Ph. 07-374 8211, or Auckland Regional Council's ENVIROLINE :Ph. 0800-806040.

websites	http://www.gns.cri.nz/volcano
	http://www.arc.govt.nz
	http://www.eqc.govt.nz

Disclaimer: This hazard map and graphic illustrate probable effects of a typical volcanic eruption in the Auckland area. The model is based on geological studies of prehistoric eruptions, and the representation here is purely schematic. Hazard zone boundaries are approximate only.