

Student 1 – Low Excellence

The problem:

Identify the areas' directly at risk and the immediate impact of a volcanic eruption in the Manukau Harbour.

A volcanic eruption will create significant impacts on people, transport and the economy in the Auckland region. ..If an eruption occurred in Manukau Harbour the Onehunga Port and many suburbs within 15km of the volcanic vent will be damaged or destroyed...

Volcanic activity includes earthquakes, ash clouds, falling scoria, lava flows etc. Ash from the volcanic eruption will affect areas mostly to the North East and South West; this is due to the prevailing winds which could carry ash for more than 10 km. The main suburbs affected by the ash cloud are Onehunga, Mangere, Mt Wellington, Penrose... and could reach the CBD [1] these are shown on map 1 [2]. The ash cloud could leave a 0.5cm – 50cm deep cover of ash over buildings, transport links...Lava flows are likely to reach the Onehunga Wharf and Ambury Regional Park... Damage from shock waves could extent out as far as 2km reaching... [3].

Transport in the area will be severely hindered. The airport which is only 8 km from the potential vent and also the Onehunga Port will be immediately and severely affected. Planes will not be able to enter the air space for a long time due to the risk of ash blocking their engines...The lava flows that could be created by the eruption will fill in parts of the Manukau Harbour blocking access for shipping in the future. Lava flows will also cause fires which will destroy wharf facilities and ... [4].

State Highway 1 and State Highway 20 may be shut down due to ash, scoria and lava bombs reaching as far as 10km from the vent. The lava bombs will reach and affect State highway 20 but only the ash will reach as far away as State Highway 1. Ash in the Mangere area could be up to 50cm deep and if this becomes wet it would set solid, like cement, leaving the roads clogged making them impassable [5]... State Highway 20 crosses over a busy bridge linking Mangere and Onehunga which will likely be blown out by the shock wave... (see map 6) [2]. Regional highways e.g. Ellerslie-Panmure Highway 5 and Great South Road, Highway 9 ...will also be affected to varying degrees... Road damage will seriously hinder evacuation of residents and also make it difficult for emergency services to reach the worst affected areas like...

Taking in to account the wind direction in the likely event of an eruption, six major train stations could be affected by volcanic ash, Glen Innes, Ellerslie...All of these railways operate as commuter services and depending on the time of the eruption, damage to rail networks could result in increased risk to human life with large numbers of people unable to leave the high risk areas [6]...

Overall a volcanic eruption in Manukau Harbour will be absolutely devastating for large areas of Auckland specifically Onehunga and Mangere which would suffer... It will disrupt transport, cause injuries, impact on most sectors of the economy...24,000 people would be immediately affected...[7].The GDP would drop by an estimated 47% and exports would decrease drastically, especially in the short term due to the Onehunga port being non-operational. Auckland would be the largest transport network affected...