

TSUNAMI

TSUNAMIS are surges of water in the ocean that can be generated by earthquakes, volcanic eruptions, landslides or meteorite impacts. Most tsunamis that reach the Australian coastline are too small to have any noticeable effect, or even be seen by people. On average, a local tsunami occurs once every two years in Western Australia.

The biggest tsunami reported in Western Australia occurred in August 1977, at Cape Leveque and reportedly reached ground six metres above sea level. On 26 December 2004, a seafloor earthquake near Indonesia measuring 9 on the Richter Scale generated one of the most devastating tsunamis within living memory. It killed more than 270,000 people and made millions homeless along the coastline of 11 Indian Ocean countries from Africa to Thailand. The physical impact on Western Australia was minimal. Only minor environmental and property damage was reported. However, the event drew the community's attention to the potential threat of tsunami on the state.

The severity of any impact will depend on the nature, intensity and location of the earthquake that causes the tsunami and the physical characteristics of the coastal zone in its path. It is not just beaches that can be affected by tsunamis. Bay mouths or tidal flats and the shores of large coastal rivers are especially vulnerable to tsunamis.

As the hazard management agency for tsunamis in Western Australia, FESA is responsible for community preparation, response and recovery in relation to this hazard.

PREPAREDNESS

TSUNAMI MODELLING

FESA has commissioned research which will address a broad range of issues involving tsunami risk in Western Australia. It will provide impact estimates and tools to support emergency management planning and response processes for urban communities along the WA coast.

The WA coast is particularly vulnerable to the impacts of tsunami inundation. This is especially so given its proximity to the Java Trench, the close relationship of the urban environment to the coast and the generally low relief of the coastal hinterland. Western Australia has little understanding of the relative risk to its urban communities from the threat of tsunami and only broad plans for how it might respond to such events.

The Modelling Tsunami Behaviour project is a joint research project involving Geoscience Australia and FESA established in September 2005. It aims to provide a sound basis for tsunami planning and response operations. The research project will take two years and should be complete in July 2007.

As part of the progress to date, Geoscience Australia has published a Preliminary Tsunami Hazard Assessment for Western Australia. FESA has established a WA Tsunami Reference Group to provide a forum for coordinated actions in relation to tsunamis in Western Australia as well as supplying user feedback to Geoscience Australia to refine the tsunami model design for Western Australia.

To date, two north west communities have been assessed and a computerised assessment and mapping program has been developed. A hazard map and report for application to the WA coastline will be provided in July 2006.

The research is developing measures and tools to support emergency management training and response activities for urban environments along the WA coast. Typical tools will include visualisations of the

exposure within communities and the impact of inundation – for example, water depth, the number of dwellings affected, the impact on critical infrastructure and casualty estimates.

The research is providing estimates that accurately reflect the comparative risk of tsunami from one community to another and from one region to another along the WA coast. When completed in 2007, this will support emergency management decision-making as well as longer term planning and mitigation options.

RESPONSE

No major tsunamis impacted on the Western Australian coast in 2005-2006.