**Exercise Tangaroa and Scientific Information** – an overview of the roles of the Natural Hazards Research Platform and the Tsunami Experts Panel in a tsunami emergency

Coordination of Science Advice for Decision-makers

The Natural Hazards Research Platform (Platform) is a research consortium funded by Government, dedicated to increasing New Zealand's resilience to natural hazards via high quality collaborative research. It was established in October 2009 to provide secure, long-term funding for natural hazard research, and to help research providers and end-users work more closely together.

The aim of the research both supported by and aligned with the Platform is to directly contribute to improved economic, infrastructural and social resilience to natural hazards in New Zealand. The Platform is obligated to provide the best science advice possible in the national interest, and research is aligned with the strategies of Government agencies responsible for reduction, readiness, response and recovery from natural hazard events.

It is also a recognised role and expectation that science capability supported by the Platform will be available to assist decision makers during significant hazard events. In accordance with the Guide to the National CDEM Plan 2015 (Section 16), if a significant natural hazard event were to occur, MBIE would expect the Platform to fulfill the coordination of science role. And if necessary after a major event, the Platform would also be expected to provide MBIE with advice as to the needs and options for additional steps, such as diverting or allocating new funding.

In summary, in the case of a significant hazard event, the Platform is expected to:

* Coordinate research-related activities;
* Coordinate and provide science advice to decision-makers;
* Provide advice to MBIE regarding any additional steps needed to integrate science advice, divert or allocate new funding.

The Platform will have limited participation in Exercise Tangaroa; it is mainly using the exercise as an opportunity to advance its planning and arrangements for future responses to natural hazard events, also incorporating learnings from its role following the Canterbury earthquakes of 2010-11. It will be coordinating workshops and activities for the research community, in order to improve the current systems it has for responding to significant hazard events. This is likely to include the development of:

* A Platform response activation protocol;
* A Platform response communications plan;
* Discipline-based science response plans;
* A code of conduct for post-event research.

Note that science advice on Day 1 will be provided by GeoNet, via existing formal arrangements. The Platform will make contact with NCMC on Day 1, will not be involved on Day 2, but will participate at the National Recovery Workshop on Day 3.

The Platform welcomes feedback following Exercise Tangaroa, from CDEM Groups who identify particular needs with respect to the provision of science advice for decision-making.

*Contact:*

Hannah Brackley

Interim Platform Manager

h.brackley@gns.cri.nz

04 570 4564 or 021 481 581

**Tsunami Experts Panel**

The Tsunami Experts panel (TEP) consists of 14 Tsunami Scientists and Earthquake Seismologists from various agencies around New Zealand, including: GNS Science, NIWA, Waikato University and independent consultants.

Once activated by the GeoNet Geohazards Duty Officer, TEP considers all available data, assesses the threat to New Zealand and provides advice to MCDEM. During a tsunami crisis they provide information to MCDEM through the GeoNet CDEM Liaison Officer who is situated at NCMC or through the GeoNet Geohazards Duty Officer if the Liaison is not in place. The TEP is in place from the time it is activated until the tsunami threat is deemed over.

Initially, TEP may have very little information, only an early estimate of the location and size of the earthquake that might have triggered a Tsunami. They are likely to make their initial assessment based on some predefined scenarios and information from the Pacific Tsunami Warning Centre bulletins.

As time passes TEP gathers more information about the event. The size and location of the earthquake will be refined and the style of faulting will be determined. This can help confirm whether the earthquake is the type likely to displace water causing a tsunami. There may also be some information from DART buoys or tide gauges that will confirm there is a tsunami and provide initial estimates of wave heights.

Some TEP scientists are able to run models to predict tsunami wave heights as they reach the coast of New Zealand. These models can also provide information about run up heights in some areas. Both wave heights and run up heights are broken down to a regional level. There may be local features that exacerbate tsunami effects such as inlets and harbours which can’t be modelled. Tsunami models take time to run and are based on information that is not instant or that gets updated. This additional information is not always available.

TEP is a group of volunteer scientists who endeavour to assess Tsunami threats to New Zealand. They have a variety of specialties from modelling how ocean waves travel to precise earthquake source information. Not every member of TEP is available 24/7/365 so the information they are able to provide greatly depends on the availability of data and the skills of the TEP members in attendance. Tsunami sources can be very close to New Zealand (<1 hour arrival time for the first wave) and there might not be enough time for the TEP to assess the threat. In some cases, the ground shaking could be the only warning.