



Australian Government
Geoscience Australia

Submission to the Inquiry into Australia's Disaster Resilience

Geoscience Australia

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Terms of Reference

The Senate Select Committee on Australia's Disaster Resilience is considering the role of the Australian Defence Force, volunteer groups, not-for-profit organisations and state-based services, and the support required to improve Australia's resilience and response to natural disasters. The associated inquiry's Terms of Reference (ToR) are as follows:

(a) current preparedness, response and recovery workforce models, including:

- i. the role of the Australian Defence Force in responding to domestic natural disasters,*
- ii. the impact of more frequent and more intense natural disasters, due to climate change, on the ongoing capacity and capability of the Australian Defence Force,*
- iii. the impact on the Australian Defence Force in responding to domestic natural disasters, and*
- iv. the role of Australian civil and volunteer groups, not-for-profit organisations and state-based services in preparing for, responding to and recovering from natural disasters, and the impact of more frequent and more intense natural disasters on their ongoing capacity and capability;*

(b) consideration of alternative models, including:

- i. repurposing or adapting existing Australian civil and volunteer groups, not-for-profit organisations and state-based services, and*
- ii. overseas models and best practice;*

(c) consideration of the practical, legislative, and administrative arrangements that would be required to support improving Australia's resilience and response to natural disasters; and

(d) any related matters.

Geoscience Australia's submission addresses specifically point (c) of the ToRs - *consideration of the practical, legislative, and administrative arrangements that would be required to support improving Australia's resilience and response to natural disasters.*

Recommendations and Observations

Response to ToR item (a) iv:

1. **Capability Disparity.** Geoscience Australia observes significant disparity in capability across local, state and territory governments to respond to disasters. Any reorganisation of Australian civil and volunteer groups, not-for-profit organisations and state-based services will need to be mindful of the inherent limitations (i.e. staffing, equipment, capability) in those lesser resourced organisations and jurisdictions to respond to disasters which are of increasing geographic extent, magnitude and period of impact.

Response to ToR item (b):

2. **Spatial support.** Effective and efficient disaster response and resilience is best undertaken with the benefit of comprehensive and up to date geospatial information. Any repurposing or adapting of existing Australian civil and volunteer groups will need to address how their activities will be supported with spatial information, product and services (i.e. mapping, Earth observation, and integrated geospatial products and services). Including the Department of Defence, the Commonwealth lacks a fit-for-purpose spatial capability for disaster response and recovery, noting that Geoscience Australia (nominally the Commonwealth's lead spatial entity) currently lacks the capacity to support a new disaster organisation within its existing resourcing base.

Response to ToR item (c):

3. **Post-disaster surveys.** Consideration should be given to establishing, or mandating, a civilian agency to systematically capture post-disaster information in a nationally consistent manner. This would include observations of consequences for people, communities, property, infrastructure, the economy and the environment from disasters. This agency would maintain a capability to undertake post-disaster surveys, noting that Geoscience Australia has the expertise to train that agency in post-disaster survey methodology.

Response to ToR item (d):

4. **Land Access.** In the immediate period after earthquake disasters, organisations such as Geoscience Australia are required to obtain clearances to support the deployment of aftershock instrumentation. This process has the potential to delay deployment, impacting our ability to: capture scientifically valuable data; and add to situational awareness for emergency responders. Consideration should be given to ensuring emergency powers are available to relevant government agencies to access public and private land in post-disaster scenarios to undertake geoscientific observations (e.g. earthquake aftershock deployments of seismometers) to support disaster response.
5. **Royal Commission.** The 2020 Royal Commission into National Natural Disaster Arrangements made several recommendations, including *Recommendation 4.1 – National disaster risk information*, that call for improved data standards and the open sharing and transparency of climate, disaster risk and impact information. Despite progress, including the establishment of the Australian Climate Service in 2021 and the passing of the *Data Availability and Transparency Act 2022*, data standards and sharing

across governments, particularly between the State and Territory governments and the Commonwealth, remains a challenge.

Background

This submission provides Geoscience Australia's recommendations and observations noting our specific context and role that is undertaken as part of the Australian Government's overall response to disasters.

Geoscience Australia is the national geoscience organisation that provides trusted information on Australia's geology and geography for government, industry and community decision making. Geoscience Australia's work covers the Australian landmass and marine jurisdiction, including external territories.

To be better prepared, and to make informed decisions to reduce disaster risk, Australia depends on availability of natural hazard, vulnerability and exposure information. Geoscience Australia provides disaster risk information to help Australians understand the consequences of natural hazard events, which contributes to more resilient communities now and in the future. Our authoritative, trusted and actionable disaster risk information allows government, business and the public to better understand the consequences of hazard events and make better decisions on how to be better prepared for disasters and take action to reduce risk.

Geoscience Australia provides data, product and services to the National Emergency Management Agency (NEMA) to support planning and response to active disasters. This support includes:

- time-critical information services in relation to significant earthquakes occurring in Australia and elsewhere;
- the management of the activation of the International Charter 'Space and Major Disasters', which provides access to free satellite emergency tasking, and the Copernicus Emergency Management Service (CEMS) which provides map products such as flooded or burnt area extents;
- bespoke exposure reports over specific areas of interest through the Australian Exposure Information Platform (AEIP). The AEIP reports give a detailed statistical summary of exposure: the number of people, dwellings, other buildings and structures, and agricultural and environmental assets that are within a threat area or hazard event footprint; and,
- coordination of commercial satellite derived models of flood events.

Geoscience Australia has over many years developed expertise in undertaking on-ground building and business surveys before and post-disaster contribute to better understanding of exposure and vulnerability. Geoscience Australia has trained Queensland and Western Australia emergency services in building surveys for vulnerability assessment. Geoscience Australia's Rapid Inventory Collection System (RICS) was developed specifically for post-disaster surveys with applicability across all natural hazards.

Australia's Disaster Resilience

Additional background on each of Geoscience Australia's recommendations and observations is provided below.

Capability Disparity

Geoscience Australia observes a significant disparity across local, state and territory governments regarding their capability to respond to disaster events. Any reorganisation of Australian civil and volunteer groups, not-for-profit organisations and state-based services will need to be mindful of the inherent limitations in those lesser resourced organisations and jurisdictions. The increasing geographic scale, magnitude and period of impact of disaster events means that individuals from Australian civil and volunteer groups are also personally impacted by these events and this hinders overall capability.

Spatial support

Improving Australia's disaster resilience and response requires taking a more data driven approach - much of this data is spatial. Currently disaster resilience and response is primarily the responsibility of state, territory and local government entities. As a result, repositories of relevant data are not national. There is a need for a national repository of data to enable a more data driven approach but currently there is no obvious custodian/home for such a repository. The Commonwealth also lacks a fit-for-purpose spatial capability for disasters, noting that Geoscience Australia (nominally the Commonwealth's lead spatial entity) currently lacks the capacity to support a new disaster organisation.

Post-disaster surveys

After a disaster, accurate information is required by governments to inform response and recovery. This information is key for both response and recovery and enables an accurate assessment of impact on a community. It can be used to develop building and infrastructure vulnerability models that can be used for example to assess the impact of future events and inform government policy associated with building community resilience, such as updates to building regulations or government support retrofit and relocations programs.

While Geoscience Australia has considerable experience in the collection of building and infrastructure damage assessment data following a natural disaster it is not resourced to take a more active role. The existing collection and management of post-disaster impact information is highly disparate across local, state and territory governments. Establishing, or mandating, a civilian agency to systematically capture post-disaster information would be highly beneficial.

Land Access

Following significant earthquakes in Australia, Geoscience Australia has historically undertaken the deployment of additional seismic monitoring instrumentation to augment the collection of data from the permanent Australian National Seismograph Network (ANSN). Recently, aftershock monitoring was deployed following the Woods Point, Victoria (M5.9) earthquake in 2021 and Petermann Ranges, NT (M6.1) earthquake in 2016. The data provided by the additional instruments deployed close to the epicentre of the mainshock allows for improved location estimates of subsequent earthquakes, improved understanding of the underlying mechanisms and therefore the

ongoing hazard. Timely analysis of this data can be used to provide information to aid situational awareness for emergency responders.

To realise these benefits, it is critical to deploy instruments as soon as possible after the mainshock has occurred. Typical aftershock sequences reduce in earthquake frequency and magnitude over time and delays in deployment limits the value of the information it can provide. One recognised risk to rapid deployment is land access and the increasing requirements and limitations. The deployments are considered of low impact, consisting of a shallow buried seismometer and small enclosure and solar panel on the surface. A streamlined process to acquire approval from the various States and Territories, cultural heritage groups and private land holders would improve the ability of Geoscience Australia to respond to natural disasters by providing critical information to emergency responders and developing a better understanding of Australia's seismic hazard in the future.

Royal Commission

As was emphasised in the 2020 Royal Commission into National Natural Disaster Arrangements Report: good decision-making needs to be based on useful information; decision-making for national coordination of disaster management requires knowledge, data and information to be shared, consistent and up to date; and decision-making extends well beyond the immediate crisis or operational phases of a disaster.

The associated opportunities to improve the risk and impact information used to inform strategic and operational decision-making remain elusive and despite some progress, data standards and sharing across governments is less than optimum. While the establishment of the Australian Climate Service in 2021 as a partnership between Geoscience Australia, CSIRO, the Bureau of Meteorology and the Australian Bureau of Statistics has promised to address the above points, the full opportunity remains unrealised and requires ongoing attention and continued funding. Meeting this challenge should be a consideration in the establishment of any future disaster response organisation.