Extreme Weather Events

Submission by: Spatial Industries Business Association

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Terms of Reference

That the following matters be referred to the Environment and Communications References Committee for inquiry and report by 20 March 2013:

a. recent trends on the frequency of extreme weather events, including but not limited to drought, bushfires, heat waves, floods and storm surges;

b. based on global warming scenarios outlined by the Intergovernmental Panel on Climate Change and the Commonwealth Scientific and Industrial Research Organisation of 1 to 5 degrees by 2070:

   (i) projections on the frequency of extreme weather events, including but not limited to drought, bushfires, heat waves, floods and storm surges,

   (ii) the costs of extreme weather events and impacts on natural ecosystems, social and economic infrastructure and human health, and

   (iii) the availability and affordability of private insurance, impacts on availability and affordability under different global warming scenarios, and regional social and economic impacts;

c. an assessment of the preparedness of key sectors for extreme weather events, including major infrastructure (electricity, water, transport, telecommunications), health, construction and property, and agriculture and forestry;

d. an assessment of the preparedness and the adequacy of resources in the emergency services sector to prevent and respond to extreme weather events;

e. the current roles and effectiveness of the division of responsibilities between different levels of government (federal, state and local) to manage extreme weather events;

f. progress in developing effective national coordination of climate change response and risk management, including legislative and regulatory reform, standards and codes, taxation arrangements and economic instruments;

g. any gaps in Australia's Climate Change Adaptation Framework and the steps required for effective national coordination of climate change response and risk management; and

h. any related matter.

About the Spatial Industries and SIBA

At the national and global level, location intelligence is at the heart of some of our most pressing problems: environmental degradation, climate change, crime and security, defence, border security, social welfare, asset management, controlling disease and pests, planning our cities, managing and recovering from natural hazards and disasters and coping with poverty and starvation.

Governments use location data to determine where and when their services are needed. Companies make loans and investments, build factories and offices, analyse risks and assign insurance rates according to location information. Farmers use location based information to boost their productivity in operations like controlled traffic farming and precision agriculture.

Spatial information also meets many of our personal needs, particularly those arising from our increasing desire for mobility while maintaining instant access to location information – from GPS navigation systems for our vehicles to the rapidly growing use of location based devices for personal communication.

Australia's spatial industries provide the tools and methods to meet, represent, analyse and resolve these important activities and demands of our modern society. These tools are, therefore, crucial to the information age of the 21st century.

The latest economic study of the industry shows that it contributes in excess of $12.5 billion annually to Australia's gross domestic product and that it delivers significant other financial and social benefits.

The Spatial Industries Business Association (SIBA) represents companies throughout Australia and New Zealand that deliver a range of business services and products such as remote sensing, surveying, mapping, geographic information systems software and services, GPS technologies and systems and location intelligence systems and services.

SIBA members range in size from large multi-national corporations to small to medium enterprises (SME). Our members operate in most sectors of Australia's economy including resources and energy, defence, transport, on-line services, property services, agriculture, emergency management, and insurance amongst many others.

Executive Summary

SIBA recognises:

- The **impacts** of **extreme weather events** on life and property arise from multiple factors.
- The **response to extreme weather events is an immediate requirement** (it cannot wait for longer term responses to climate change).
- **Protecting lives, property** and **physical infrastructure** (and importantly building **resilience)** in the community is paramount.
- Such tasks are highly dependent on high quality **spatial information.**
- Such spatial data should be **well maintained**, delivered in **standards-based formats** and broadly **accessible** to those who need it.
- **Insurance** cost and availability is **based on an understanding of risk** which, in part, can be improved with high quality and accessible spatial data.
- Australian governments have not yet accepted that spatial data is a **critical infrastructure,** despite its acceptance in most western countries around the world and by the United Nations.
- Language used to describe and define **risk is often misunderstood** (eg. 1:100 year flood) and the presentation of such data is inconsistent and unclear.
- **Planning** for high risk (often high return) areas such as coastal and river locations can be improved ensuring good risk knowledge and adequate mitigation measures are in place.

SIBA believes that the Committee should:

- Acknowledge the importance and value of spatial information infrastructure in supporting the development of improved development and built infrastructure planning as well as the more practical mitigation, resilience building tasks that face the country.
- Encourage the provision of **comprehensive resources** (spatial data infrastructure[i]) that permit relevant spatial data to be readily accessed through a standards-based interoperable framework.[ii]

Understanding the Challenge

Over the past decade SIBA has sought recognition of the linkages between government policies, both within and between jurisdictions. In many cases, there remains a stovepipe focus on single issues. SIBA believes that spatial information (and its related technologies and services) can help the business of government significantly.

SIBA provided a detailed submission on the Review of the NSW Planning Legislation. The Review Committee agreed with most of SIBA's recommendations. The end result was a Committee recommending to the NSW Government that they adopt a Spatial Information Act that would, amongst other things, "*facilitate a 'whole of government' approach and foundational basis for all spatial information held across government and local government. It will permit external private sector service to integrate data concerning telecommunications networks, gas pipelines and the like into a common spatial database*" (more commonly referred to as a spatial data infrastructure).

This followed the recommendations that SIBA made to the Review Committee:

It is vitally important that the NSW Government adopts as its overarching objective a cohesive planning framework based on standards-based interoperable spatial information. This spatial framework will enable both short and long-term planning that is evidence-based and cognizant of competing demands.

The overarching objective of the NSW Planning Legislation should be to ensure that all land-based activities are brought together into a single spatial framework that includes:

- *Population*
- *Rail transport*
- *Road transport*
- *Shipping ports*
- *Zoning and development assessment – residential and commercial*
- *Risk assessment – including floods, rising sea levels and bushfires*
- *Agriculture – including food security, forestry*
- *Environmental management – including climate change response (carbon sequestration)*
- *Resources and energy – including biofuels, coal-seam gas*
- *Smart infrastructure – including communications, energy, water, and transport*
- *Native title*
- *Conservation and heritage*
- *Water resource management*

The planning framework must recognise the interconnectivity of each element in the total decision-making process so that there is a comprehensive understanding of competing demands, long-term perspectives and efficient use of public funds. This spatial information must follow international interoperability standards. Data sets can be managed within appropriate lead agencies that have been identified as 'custodians' of particular fundamental data sets.

SIBA believes that, if there were readily available high quality standards based spatial data to support decision making around (for example) urban planning, infrastructure,

communications, transport, health, water and almost every aspect of human habitation then our understanding of the challenges and risks associated with extreme events would be much improved. Quality spatial data and systems will help ensure that we understand and better manage our response to these risks.

It is interesting to note that an investment in quality spatial data is far less than the cost of recovery after extreme weather events while also providing a foundation for significant improvements in government service delivery and productivity more generally .

Cause and Effect

This Committee has a broad Terms of Reference and we encourage you to look at how spatial information and infrastructure is central to the mitigation of the impacts of extreme weather events.

Cooperation and collaboration between the states, territories and the Australian Government is essential; we believe it should be addressed as a COAG issue. By focusing on the need for **quality spatial data** (data that is, in may cases, **already being collected** by a myriad of agencies at all levels of government) requires active coordination and fundamental agreement on and implementation of appropriate standards (for example, the range of Open Geospatial Consortium (OGC) standards are widely accepted internationally).

How far has the world of information technology and communications come since the advent of Google Maps, Google Earth and the large number of alternative spatial products and services? How many of today's mobile devices are geo-enabled? How much will Australia's emergency management services and planners rely on spatial in the future? Location intelligence is one of the fastest technology growth sectors for good reason; location-based issues are fundamental to almost every aspect of our lives.

The cost of action is far less than the cost of inaction. Much of the spatial data that is required is already in existence (albeit often in disconnected "silos"). Updating the data, bringing it into a standards framework and making it broadly accessible will require a fraction of the cost of the repair of damaged physical infrastructure.

Applications

Knowledge in and of itself is not power. It is the application of knowledge delivers value. At present we have pockets of knowledge distributed around the country. Those who would benefit most from these resources do not know they exist or how to access them.

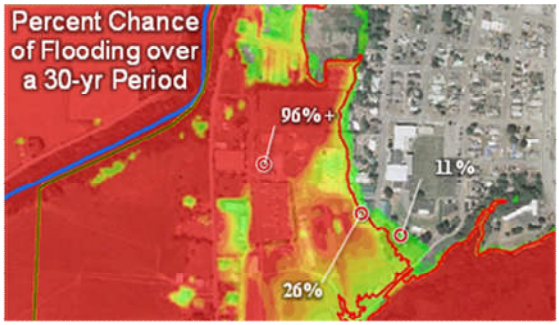
The improved use of quality spatial data offers the potential to better plan where we place infrastructure, housing and commercial enterprises and how we should improve the resilience of communities to withstand extreme weather events. There is a need to carefully examine the preventative measures we can take; built on the knowledge and evidence about our geography provided by spatial data and, in many cases, spatial analyses.

There is no doubt that Australia has been facing increasing challenges associated with extreme weather events, particularly with the frequency of such events expected to increase.

The challenge for governments and the community is to develop and enhanced capacity and ability to mitigate, respond to and recover from such events.

With sound spatial data, appropriate visualisations are able to be prepared that convey clear messages to citizens such as the example below, which has adopted a unit of time that has direct relevance to the community – the period of a typical mortgage.

Fig. 1



- communicates the chance of flooding over a period of time
- combine with consequences for a 30-yr, etc. "risk" map

Such mapping provides an effective mechanism for insurers, owners and purchasers to clearly understand the nature and level of risk. These types of information products are more easily produced and supported by comprehensive spatial data infrastructure.

Conclusion

SIBA believes that an investment in spatial data infrastructure will improve our ability to lessen the impacts on life and property of extreme weather events. Australia's spatial industries stand ready to assist the government and the community in this important area of policy. We urge the Committee to acknowledge the importance and value of spatial information infrastructure in supporting the development of improved development and built infrastructure planning as well as practical mitigation, resilience building tasks that face the country.

[i] For a definition of Spatial Data Infrastructure see: http://en.wikipedia.org/wiki/Spatial_data_infrastructure

Fig. 1 - Example of new risk communication products produced by AECOM for clients around the globe.

[ii] An example of this type of framework was developed under a government-funded applied research project, managed by SIBA in 2005 – the Spatial Interoperability Project. For more information see: https://www.seegrid.csiro.au/wiki/pub/Main/SeeGridIIProgram/SIDP_VLUGT_SEEGRIDII.pdf