

# *Principles for the consideration of Natural Hazards in the Planning System*

19 August 2013

TRIM Reference : 12/11635

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# 1 Scope

Tasmania does not have a clear set of principles in place to guide the intervention of governments in mitigating the impacts of natural hazards through land use and building control. Without these principles, it is difficult to establish a common direction across state and local government. It is also difficult to provide guidance to the community on public versus private responsibility in managing risks arising from natural hazards.

The principles developed in this paper are designed to promote greater awareness of the role of government in managing risks. The paper will:

- Review the concepts of public and private risk in land use planning and hazard mitigation, as a context for a clear set of principles is needed (section 2);
- Propose a set of foundation principles that inform government and non-government stakeholders of when and how government should intervene in the use of land and the built environment to reduce the potential impacts of natural hazards (section 3); and
- Provide an overview of current legislation, non-regulatory guidance, and policy and planning principles, which relate to government roles and responsibilities in managing risks from natural hazards in planning and building control (Appendix A).

The principles guide the implementation of the state framework for natural hazards and land use planning but may have broader application.

## 2 Background

### 2.1 Legislative and Policy Context

The current legislative and policy context is set out in Appendix A. Four core acts regulate the use and development of land:

- The Tasmanian Resource Management Planning System (RMPS) sets out the framework and objectives for sustainable development. The RMPS has been enacted through:
  - The *Land Use Planning Approvals Act 1993* (LUPAA) establishes the sustainable development objectives. In the context of natural hazards, the objectives relate to securing “...a pleasant, efficient and safe working, living and recreational environment for all Tasmanians and visitors to Tasmania” and providing “...a planning framework which fully considers land capability”. In other words, the RMPS objectives require that development and land use is planned in a manner that promotes safety for the community and is consistent with the ability of the land to support a particular use or development.
  - The *State Policies and Projects Act 1993* is “An act to provide for Tasmanian Sustainable Development Policies...”. The Act has been used on three occasions to introduce the *State Coastal Policy 1996*, the *State Policy on Water Management 1997*, and the *State Policy on the Protection of Agricultural Land 2009*. The *State Coastal Policy 1996* applies to all state waters, and all land within one kilometre of the mean high water mark. The Policy sets out principles that promote shared responsibility, sustainability, and the protection of natural and cultural values.
- The *Emergency Management Act 2006* (EMA) is “...an Act to provide for the protection of life, property and the environment in the event of an emergency...”. The Act defines an emergency as either an event, or the threat of an event, that requires appropriate measures, including “...to mitigate the risks associated with the threat and that possible resulting event”.
- The *Building Act 2000* gives authority to the Building Code of Australia (BCA), an objective of which is to provide “...minimum necessary standards of relevant health, safety... amenity and sustainability objectives...”. The objectives concord with the broader objectives of governments in the areas of settlement and land use planning.

Complementing the above Acts is a range of policies at Australian, state, and local government levels (a summary is provided in Appendix I). The policies collectively provide that managing the impacts of natural hazards is a shared responsibility. However, neither the above Acts nor existing policies clearly assign responsibility for managing risk when mitigating the impact of natural hazards.

## 2.2 *Managing Risk in a Market Context*

The Australian/New Zealand Standard for Risk Management (AS/NZS ISO 31000:2009) supports the principle of managing risk or ensuring that the likely cost of exposure to a natural hazard is known and balanced against the benefits that are gained from the activity that gives rise to the exposure.

Individuals and organisations face and manage risks every day. Some of these are relatively clear and can be managed easily (such as looking for traffic before crossing the road). Some risks are easily managed economically (such as accepting greater quality risks by buying a cheaper brand or paying more for an extended warranty). Other risks, however, are more complex as they are not well understood or may be experienced over very long time periods. Risks from natural hazards often fall into this latter category.

In terms of residential properties, perfect 'market-based' risk management would mean that all residents are aware of the risks from natural hazards and would make a conscious choice that the benefits of occupying a property outweigh the costs. Some of the features of the property market would include:

- The costs associated with natural hazards were clearly incorporated into the purchase price of the property and the ongoing maintenance costs;
- All residents would take responsibility for, and be in a position to afford, management of the costs arising from the natural hazard if it eventuated; and
- The consequences for the broader community associated with the level to which people choose to expose themselves to a natural hazard (including, for example, direct costs, costs to emergency services and costs associated with the use of land) would be understood and accepted by the community.

If the above conditions were met, there would be little role for governments. Market forces would allow communities and individuals to balance benefits and costs and to define local tolerances to risk. In the event of a natural disaster, residents could fall back on their personal arrangements (such as insurance) to support their own and the broader community's recovery.

In reality, the scenario is quite different. Residents are not always aware of the risks associated with the purchase of property; the risks associated with a property may change over time; and there may be barriers for families wanting to move their investment to manage their exposure to risks. There are also few (if any) circumstances in which residents can expose themselves to a natural hazard without attracting some potential costs for the broader community.

A question, therefore, is what role do governments play?

Governments play an integral role where unrestricted markets unreasonably impact on the community (Gans *et al* 2009, p 10). For example, when considering natural hazards and the property market, it may be reasoned that there is market failure due to instances of information

asymmetry, and inadequate understanding or management of the negative external consequences of private risks.

### **2.3 *Information Asymmetry and Natural Hazards***

Information asymmetry arises where the supplier and consumer are not equally informed of the costs and benefits of goods being transferred. In terms of the property market, a purchaser may not be able to fully consider the impact of risks from natural hazards on the 'fair value' of the property. Two properties may, therefore, attract an equal price, despite one property having a significantly increased exposure to costs associated with natural hazards (such as flooding or coastal erosion).

There is some evidence to suggest that, even with clear information, people will not consider the long-term costs of natural hazards when judging the fair value of property. For example, Yeo (2004) reasons that the designation of an area as a floodplain in Australia and New Zealand has not been shown to have a significant impact on the value of property compared to recent knowledge of flooding severity. This suggests that either the market is not considering the cost of the hazard on property value, or that other factors, including environmental and social amenity, or affordability, are weighted above the risk of flooding when decisions are being made in the Australian context (Willis *et al* 2011). Yeo (2004), however, notes that areas in the USA declared as flood exposed and covered by a National Flood Insurance Program are valued at between 4-12% less when compared to non-flood exposed properties.

Costs of ongoing maintenance may also be difficult to judge when properties are exposed to high consequence, low frequency events. For example, it may not be immediately apparent to a person purchasing a property that they need to protect their investment in that property from a 1 in 100-year flood or landslide. Assuming that the property has a 100-year life, perfect risk management would require that the ongoing cost of maintenance for the property included the costs associated with its replacement at least once (possibly more). This cost would be particularly high if insurance was not available.

### **2.4 *Negative Externalities and Natural Hazards***

An individual's choice regarding their own exposure to natural hazards (private risks) can rarely be disassociated from broader public risks. Development is likely to attract public investment by way of infrastructure (eg roads, sewerage); moral obligations in terms of helping families to recover from emergencies; obligations for emergency services to rescue individuals; and reduced utility of land for use in ways that are more sustainable and affordable. Similarly, it is difficult to ensure that the choices an individual makes today are clearly transferred to others who may purchase that property in the future.

### **2.5 *Consequences of Market Failure and Moral Hazard***

A particular sensitivity associated with managing risks from natural hazards includes the consequences of market failure on individuals and families. In the majority of cases, the investment in the family home represents a significant proportion of a family's wealth. Any

short-term changes in value can, therefore, have a devastating effect on a family's wellbeing. Similarly, large impacts on infrastructure or commercial activities can severely affect the wellbeing of individual communities in the short and long term. The ability of governments to refrain from assisting communities following a natural disaster, irrespective of the ownership of risk, is very low. This can often undermine public perceptions regarding the ownership of risk and, potentially, weaken incentives to manage private risks.

### 3 FOUNDATION PRINCIPLES

The following set of principles are proposed for the purpose of defining the role of governments in intervening in the use of land for the purposes of managing risks from natural hazards and supporting the shared responsibility associated with natural hazards:

**1. Private risks associated with natural hazards are the responsibility of individuals and business.**

The role of governments is largely limited to building and defending 'public value'. Individuals and business must take responsibility for the choices they make and for the risks they knowingly expose themselves to.

**2. Governments should encourage public and private risks to be factored into investment decisions.**

Clear pricing of risk from natural hazards in the purchase and ongoing maintenance of property can be an effective mechanism for mitigating risk. Governments should continue to work towards ways of ensuring that the long-term costs of natural hazards are factored into both the purchase price of property and/or an understanding of the costs associated with the maintenance of property.

**3. Governments can support individuals and business to understand and manage private risks through the collection of evidence, provision of information, and facilitation of collective action.**

Information is a powerful tool for ensuring that people understand the costs associated with natural hazards. In many instances, governments are in the best position to collectively invest in an improved understanding of natural hazards and risks and inform the community about their potential consequences.

In many cases, collective work to manage natural hazards may be more cost effective and technically effective than individual action. In some cases, individual action may be totally inappropriate. Governments should provide frameworks to support the implementation of collective action by individuals or business.

**4. Governments should ensure that private investment minimises unacceptable public risk.**

It is rare that private sector investment decisions are made in a way that is completely disassociated from public risk. Governments should ensure that private investment does not give rise to unacceptable risks in terms of costs for the broader community.

Governments should signal their tolerance to public risk from natural hazards as early as possible in the private sector investment cycle to maximise public value. Governments are well placed to signal when the potential public burden from a private investment decision is becoming too great by providing guidance on the type and composition of government intervention, such as emergency management, building control, or land use planning.

5. **Governments should minimise investment, regulation, or policy that gives rise to unacceptable public or private risks.**

The development of government policy and regulation (or investment) should have regard to the risks from natural hazards and their impacts on sustainable development and current or future private risks.

6. **Governments should have regard to, and support, individuals and business to consider how natural hazards may change in the future, including through climate change.**

Arrangements for the mitigation of natural hazards need to be flexible to respond to climate change, improvements in evidence, the development of better mitigation options and tools, or changes to vulnerability.

## Appendix A – Policy and Guidance on Responding to Natural Hazards

Agencies at national, state and regional levels have provided guidance to assist in responding to natural hazards. The policies are listed below.

### National Level

- The **Council of Australian Governments** (COAG 2011) agreed to the National Strategy for Disaster Resilience (the Strategy) on 13 February 2011. The Strategy outlines a new approach to risk management that focuses on the Australian community accepting a shared responsibility to prevent, prepare, respond, and recover from natural disasters. This includes developing a shared understanding of risks posed by natural disasters.

The Strategy recognises that governments, at all levels, have a significant role in strengthening the nation's resilience to disasters, including by:

- Developing and implementing effective risk-based land management and planning arrangements and other mitigation activities; and
- Having effective arrangements in place to inform people about how to assess risks and reduce their exposure and vulnerability to hazards.

The Strategy recognises that resilience is a collective responsibility that is shared by all members of the community and reinforces the need for governments, industry, and individuals to articulate and attribute the ownership of risks to those who are going to benefit from the treatment of them. A core objective of the Strategy is to ensure that, over time, risks from natural hazards are factored into the decision-making processes and investment choices of all Australians.

- The **Emergency Management Australia** 2002 publication *Planning Safer Communities* states: "...the aim of emergency management is safer, sustainable communities in the face of hazards" (EMA 2002 p-ix). This principle was endorsed by the Ministerial Council for Local Government and Planning as part of the wider report in 2002. In adopting this overarching principle, a starting point is established for bringing together the Resource Management and Planning System (RMPS) with emergency management in Tasmania.
- The **National Emergency Risk Assessment Guidelines** (NERAG) (AEMC 2009) seeks the following outcomes (SES 2011):
  - Safer sustainable communities through better planning using systematic and rigorous disaster risk assessments;
  - A greater integrated and comprehensive understanding of disaster risk assessments to enhance emergency preparedness;

- Consistent, interoperable, measurable disaster risk assessments across all jurisdictions; and
- Improved understanding of world's best practice with respect to risk assessment.

The outcomes of NERAG are focused on the promotion of safety, understanding of risk, and a consistent approach to the outcomes of any risk assessment.

### State Level

- The Tasmanian Climate Change office has defined a sea level rise planning allowance to ensure planning for the State's coastal areas is undertaken consistently. The sea level rise allowances are 0.2 metres by 2050, and 0.8 metres by 2100.

The sea level rise allowance has supported the development of coastal hazard areas for storm tide, sea level rise, and coastal erosion. It is intended that the sea level rise planning allowance will also assist the State to understand and develop policy responses to the impact of climate change on environmental values.

- The **State Coastal Policy** (1996) applies the sustainable development objectives set out in LUPAA 1993 to the coastal areas, which have been identified as all state waters and all land within one kilometre of the coastline. The policy is guided by three main principles, including:

- Natural and cultural values of the coast shall be protected;
- The coast shall be used and developed in a sustainable manner; and
- Integrated management and protection of the coastal zone is a shared responsibility.

The policy sets a requirement that areas subject to significant risk from coastal process (inundation and erosion) should be identified and managed in a way that minimises the need for engineered solutions to protect land, property, and human life.

While the policy sets out strong principles and clear guidance to avoid frontal dunes and to minimise engineered solutions, it does not identify the areas affected by coastal process, what a significant risk is, or provide guidance on how established coastal communities should respond to coastal hazards.

- The **Tasmanian Planning Commission** developed a draft sea level rise policy statement in 2010 in collaboration with the Tasmanian Climate Change Office (TCCO) and the Office of Security and Emergency Management. While the principles hold no status, they are instructive as an example of how the response to sea level rise has evolved. The principles outline six broad elements to be considered when responding to sea level rise as a natural hazard.

- Apply an open, evidence-based, risk-based approach to land use and infrastructure planning and decision-making in coastal risk areas.
  - Avoid intensifying use of development in coastal risk areas.
  - Progressively reduce vulnerable assets over time in coastal risk areas.
  - Recognise the role of natural coastal defences for asset protection.
  - Use engineered coastal defences only where cost effective and does not increase risk for other coastal assets of value.
  - Adopt flexible adaptation responses to keep options open for the range of possible future scenarios.
- **Attwater (2011)** reviewed data requirements when planning for coastal hazards in Tasmania on behalf of the TCCO, and suggested that in areas susceptible to natural hazards the following principles could be used:
    - *“It should not impose significant or unacceptable costs on neighbours or the wider community.”*
    - *“The individual should be responsible for managing risk to acceptable levels (typically taken to be a level that can insured for a reasonable premium) at their own expense, including contributing to community infrastructure that supports their presence in a hazard area.”*

The above principles provide a frame with which to examine the balance between the right to develop and take on risk versus the public responsibility to provide for “safe, sustainable communities”. Attwater (2011) focuses heavily on personal responsibility, with the state being responsible for the overall risk in the area, while ensuring that the cost to the community is not excessive.

- The **Department of Primary Industries, Parks, Water, and Environment** has developed an internal policy to assist their approach to applications for development on coastal Crown Land that may be affected by coastal hazards. The policy provides DPIPWWE regulators, planners, decision-makers and public land managers with an interim policy to underpin DPIPWWE’s land-use planning and decision-making on land at risk from coastal processes and hazards<sup>1</sup> (“coastal risk areas”).

DPIPWWE has adopted the following principles to underpin its land-use planning and decision-making in coastal risk areas:

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<sup>1</sup> A DPIPWWE General Information Paper on *Coastal Hazards in Tasmania* can be found at <http://www.dpiw.tas.gov.au/inter.nsf/Attachments/HBAW-7HNW35?open>

- Coastal processes and hazards such as flooding, storms, erosion, landslip, littoral drift, dune mobility and sea level rise are natural, and the risks to properties appropriately rest with the property owners, whether they be public or private.
- Under both statute and common law, DPIPWE does not have, nor does it accept, specific future obligations to repair or reduce the impacts of natural coastal hazards on private property.
- Unless otherwise agreed, DPIPWE does not accept obligations to repair or reduce the impacts of natural coastal hazards on any non-government owned or managed assets sited on public land.
- DPIPWE will use an open, evidence-based, risk-based approach to land use planning and decision-making in coastal risk areas and will consider both the short and longer-term consequences of planning and land use decisions.
- On land it manages in coastal risk areas, DPIPWE will generally avoid intensifying use or development, and will progressively reduce vulnerable infrastructure as resources permit.
- Engineered coastal defences and other physical interference with the coastline can have expensive and unforeseen consequences (potentially shifting, exacerbating or not resolving coastal hazard issues in the longer-term), and DPIPWE will generally not support their use to resolve or manage the impacts of natural coastal processes or hazards on either natural or man-made assets.
- DPIPWE will work with other organisations and agencies in assisting the development of whole-of-government strategies to deal with ongoing and changing or developing coastal processes and hazards.

## Regional Level

The regional planning projects have been established through a memorandum of understanding between the Tasmanian Planning Commission and the regional planning authorities. The projects have responsibility for the development of regional and settlement strategies. In preparing strategies, each project has developed a set of principles that sit under LUPAA and guide the detailed policies of the strategies.

- The **Cradle Coast framework** sets out the principles that guide the development of the regional strategies and plans that include or are consistent with: the RMPS objectives, planning directives, state policy, and projects of state significance. The strategies and regional plans also seek to “...direct places where people live and work from areas where there is an unacceptable level of risk for the health and safety of people, property, and the environment from natural or man-made hazards.”

- The ***Northern Regional Land Use Planning Framework May 2011*** sets out the principles that underpin policy development and focus on the desired outcomes of the strategy, such as “...provide outcomes which collectively reflect...” or “ensure investors...decision makers have a clearly defined framework within which to make decisions.” The principles are articulated into policy and strategies. The policies specify that “...land designated for housing, industry, community and infrastructure services must not be located within or adjacent to areas which are vulnerable to an unacceptable level of risk including coastal inundation, landslip, flooding or contaminated land.” Strategies to be promoted for the reduction of the risk from natural hazards include:
  - *Ensure that new areas zoned for residential, commercial and community purposes are not within areas identified as high risk.*
  - *Identification of hazard areas is to include the likely impacts of climate change such as sea level rise, storm surge, increased temperatures and intense/extreme rainfall events.*
  - *Reduce the risk for the loss of life and property by avoiding development on land that has been identified as being subject to a high risk of landslide, bushfire, sea inundation and flooding.*
  - *Where avoidance of hazards is not possible, or the level of risk is deemed acceptable, ensure best practice construction and design techniques and management practices are implemented. If required, plan for retreat in vulnerable areas.*
  
- The ***Southern Tasmanian Regional Land Use Strategy 2010-2035*** sets the strategic directions that are then implemented through the more detailed regional policies. As an example, the strategic directions that form part of the response to natural hazards include:
  - SD1: Adopting a more integrated approach to planning and infrastructure.
  - SD2: Holistically managing residential growth.
  - SD6: Increasing responsiveness to our natural environment, including a risk approach to natural hazards, recognition that future developments and use will not be able to avoid hazards, and, finally, that spatial information is critical when developing settlement strategies.
  - SD10: Creating liveable communities.

## Appendix B – References

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