# Landslide Risk Management

## NATIONAL DISASTER MITIGATION PROGRAM
## PROJECT STATUS REPORT

### November 2006

Australian Geomechanics Society

Jointly, the Sydney Coastal Councils Group (SCCG) and the Australian Geomechanics Society (AGS) are conducting projects with funding from the National Disaster Mitigation Program (NDMP). The projects are:

- Landslide Taskforce (involving 2 elements – Hazard Zoning, and Slope Management & Maintenance)
- Landslide Risk Management Practice Note

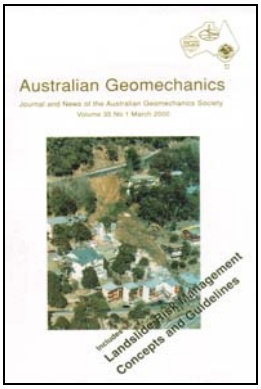
The three parts of these two projects are intimately related to management of risk associated with landslides in the coastal and near-coastal environment.

**The project:** The project involves the development of 3 guidelines to provide assistance variably to regulators, practitioners and owners and occupiers of property and land potentially subject to landslide hazards.

**Why is this important?** In recognition of the challenge between development pressures and landslide hazard, in the year 2000 the Australian Geomechanics Society (AGS) published a benchmark technical paper "Landslide Risk Management Concepts and Guidelines" (AGS, 2000) – which significantly updated an earlier 1985 guideline. The purpose of AGS (2000) was to: establish uniform terminology; define a general framework; provide guidance on risk analysis methods; and provide information on acceptable and tolerable risks for loss of life. It represents a continued recognition by AGS of the pragmatic benefits of incorporation of the concept of risk in the assessment of potential landslides, particularly in planning and management situations. AGS (2000) was the culmination of a seven-year review that was in response to increased appreciation in Australia and internationally of the benefit of a risk management approach to landslide assessment and management, and was recognised in the report of the Coroner's Inquiry into the 1997 Thredbo landslide.

Whilst AGS (2000) presented concepts and guidelines to assist practitioners, there remained a need to provide supplemental information to further assist practitioners, but to also assist regulators and provide advice to the broader Australian population. This was recognised by the SCCG and in turn by the NSW and Commonwealth Governments through the National Disaster Mitigation Program.

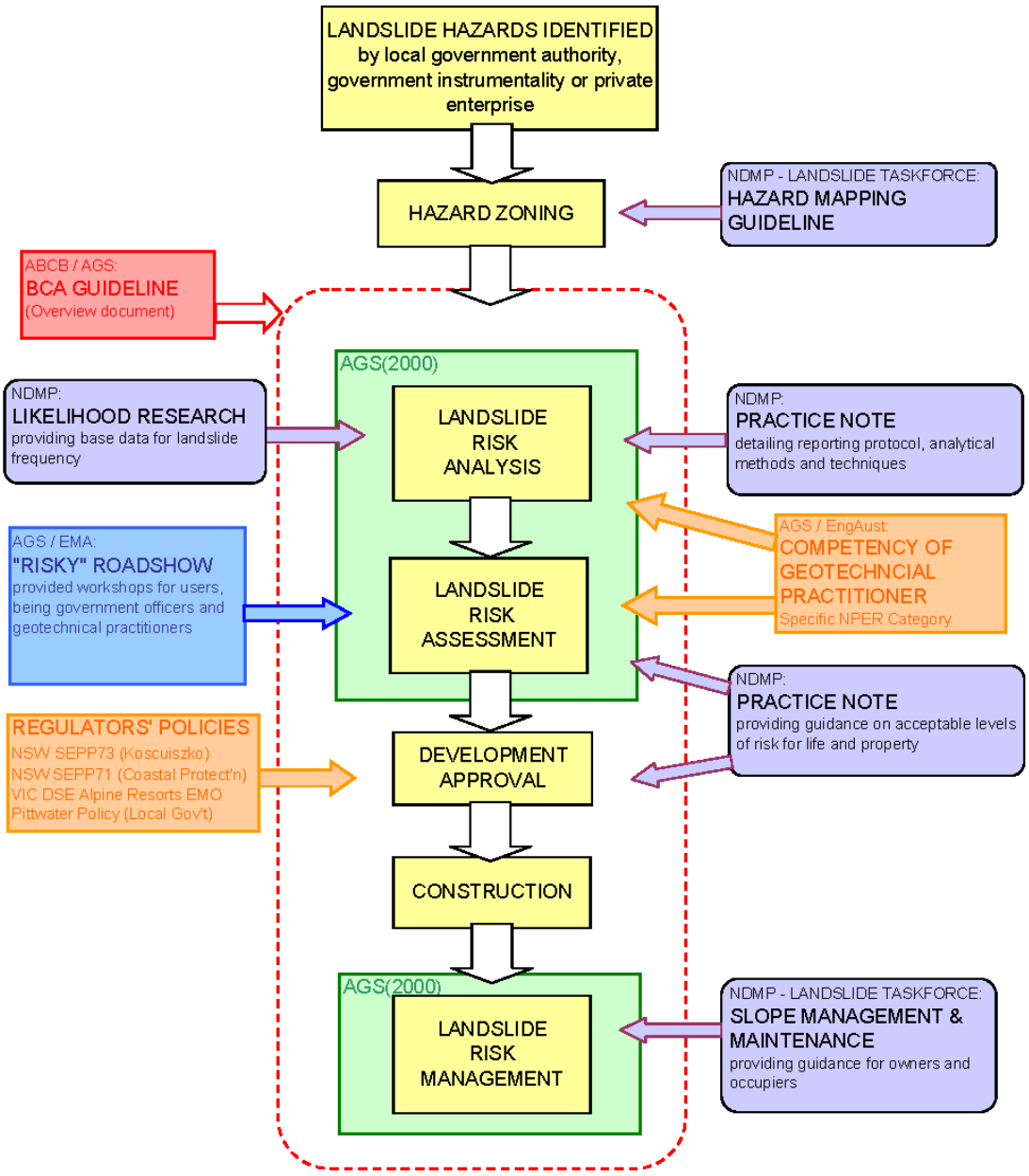
**Description:** There is a natural synergy between the two projects, with common development and interlinking between them, as a result of commonality of purpose and their relevance to the development of a national framework for landslide risk management (see diagram overleaf).




The **Hazard Zoning** project will provide guidance to government regulators (officers of local government and state government instrumentalities) and geotechnical practitioners in the methods of Landslide Hazard Zoning. Such characterisation will provide input to the planning process in areas of landslide hazard. The **Slope Management** guideline will provide owners and occupiers, and therefore the public in the broader sense, with guidance on management and maintenance of properties subject to landslide hazard. These two guidelines are important contributions to the management of landslide hazard at both ends of the process – initial identification of landslide hazard in the planning process, and management of properties prone to landslide hazard by the end-user.

The guidelines proposed will benefit the general community (**Slope Management and Maintenance Guideline**) and Local Government regulators (**Landslide Hazard Zoning**) through achieving safer, more sustainable communities in relation to their exposure to landslide risk, and will reduce risk to the community through improved planning and slope management practices. These guidelines will link with the risk management practices presented in AGS (2000) and the recently published Building Code of Australia (BCA) Guideline, and will provide long-term natural disaster mitigation benefits to housing and infrastructure.

The **LRM Practice Note** will provide guidance to practitioners in the performance of project specific landslide risk assessment and management, and to government officers in interpretation of the reports they receive. The Practice Note could be an external reference document for legislative requirements. The Practice Note is to complement the recognised industry "standard" on LRM in Australia – AGS (2000).




**Development of systematic and defensible landslide risk management process**

The Practice Note will also have application under the particular requirements of NSW SEPP 73 Koscuiszko Alpine Resorts and the Pittwater Geotechnical Policy. The Practice Note also has application under the requirements of NSW SEPP 71 Coastal Protection. Further, it is envisaged that the Practice Note will have application nation-wide – for example under the Victorian Alpine Resorts Planning Scheme. This will provide uniformity in the quality of assessment and reporting, and so promote confidence in the planning and risk management process in regard to landslide hazards.

Currently, there is no formal guidance provided to the geotechncial profession or regulators as to acceptable minimum levels of investigation and the extent of reporting required for documentation to support Development Applications in areas prone to landslide hazard. There is some guidance for projects within the Pittwater LGA within Sydney's northern beaches under the Interim Pittwater Policy (2003), though this policy would benefit from an ability to reference a credible external source as to acceptable practice. Furthermore, the desirability of formal guidance on acceptabe levels of investigation has wider relevance, both state and nation-wide.

The guidance will be of a technical nature provided to the geotechnical practitioner. This will involve guidance on appropriate methods and techniques, and guidance on acceptable levels of risk. Currently, an acceptable level of risk to life for the individual most at risk is reasonably well identified, though perhaps conservatively so. As a result of a number of issues, there is no similar guidance for risk to property. This will be provided in the Practice Note.

The Practice Note will provide guidaance for the production of landslide risk assessment and management for development in areas prone to landslide hazard. This can involve development upon slopes and cliff lines prone to instability, but also is applicable to development which can be impacted by instability that occurs uphill, adjacent or downhill of a subject site.

**Project Quality** The SCCG has established an External Observer Group to provide a national perspective to activities as well as a means for national implementation of outcomes from the project. The members of the External Observer Group include managers of commonwealth and state government departments and local government areas responsible for coastal processes throughout the nation.

A peer review process will be implemented by AGS. A nation-wide peer review will be performed for the technical portions of these guidelines. The Geotechnical Expert Panel of the SCCG and the External Observer Group will each also have responsibility for review.

The output from the studies will be nationally endorsed guidelines for Landslide Risk Management.

**How does this all fit together?** As the LRM research, volunteer commitments and funding have come together over the last decade, a nation-wide framework for landslide risk management has become feasible. It is fair to say that the pieces of the jigsaw are now close to fitting together. The figure shows how the pieces of the process are coming together. The essence of this is:

1. The technical basis is provided by AGS (2000).
2. The Building Code of Australia provides an overarching legislative requirement.
3. Implementation of universal and uniform policies at state and local government levels is fundamental.
4. Hazard zoning guidelines for legislators is provided by a Landslide Taskforce guideline.
5. Landslide likelihood research is to provide some fundamental data as a starting point for semi-quantitative or quantitative assessments.
6. The Practice Note provides guidance on the process and minimum requirements for conducting a landslide risk assessment, and augments AGS (2000).
7. Slope management principles are provided for the owner and occupier through a Landslide Taskforce guideline.
8. Technical competence of practitioners can be demonstrated through the specific area of practice within the National Professional Engineers Register.

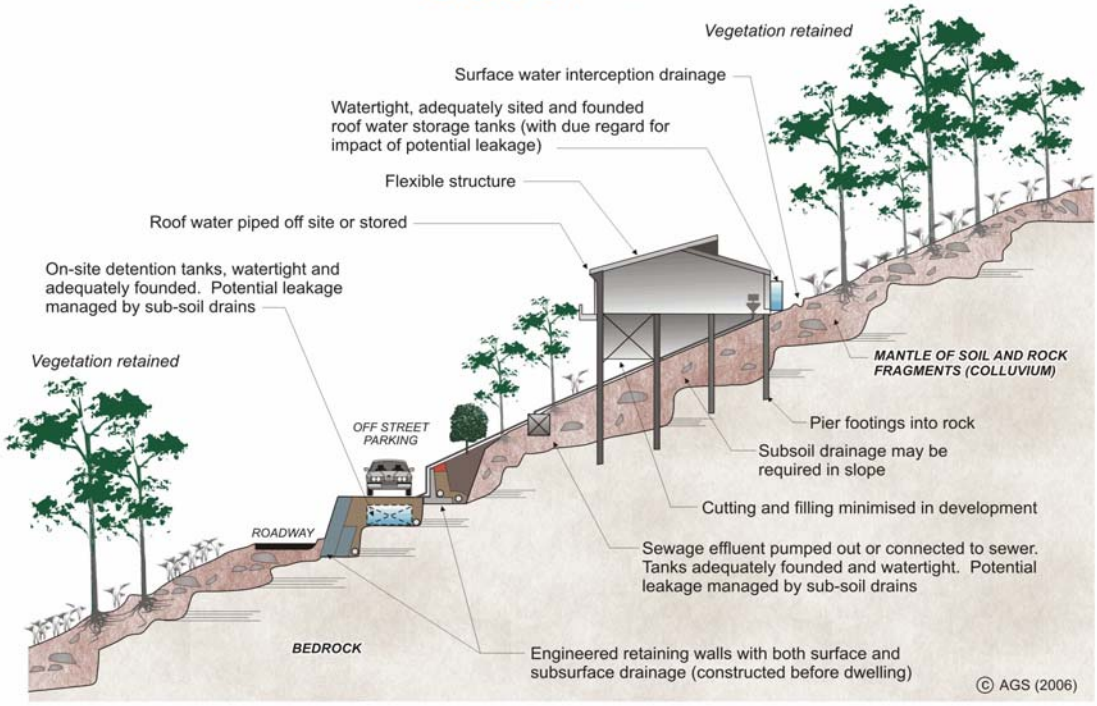
The flow diagram shows the inter-relationship between each of those elements, and the outcome of a systematic and defensible landslide risk management process throughout Australia.

**Progress:** Each of the guidelines will be in final draft form by the end of November 2006.

**Timeline to completion:** The projects will be completed early in 2007. The guidelines will be published in the March 2007 edition of the AGS journal, *Australian Geomechanics*. The guidelines will be downloadable from the AGS website (www.australiangeomechanics.org) and electronic copies will be available through the SCCG.

**How can you help?** Provide assistance to finalise the documents and be part of the consultation phase. For more information Contact the SCCG: info@sydneycoastalcouncils.com.au or ph: (02) 9246 7791.

# EXAMPLES OF **GOOD** HILLSIDE PRACTICE

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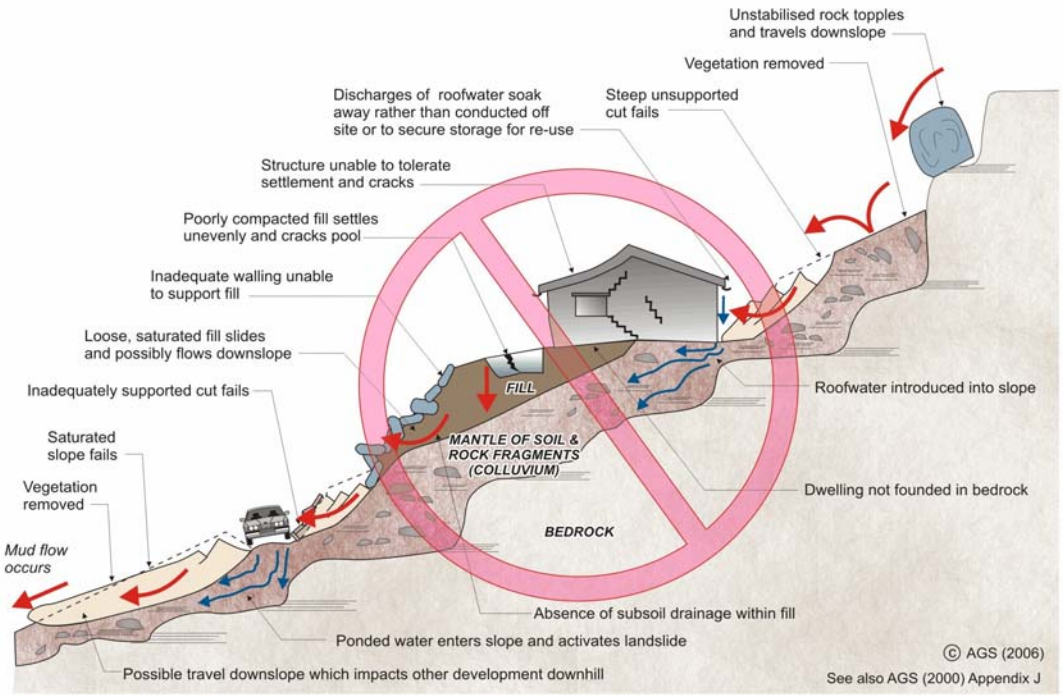


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