

# Hazard and risk management: guidelines for local authorities

## Introduction

Natural and man-made hazards, such as land instability, flooding, earthquakes, power failure, and dam failure, have the potential to cause significant environmental, social and economic loss through damage to people, communities, ecological and heritage areas, as well as to crops, livestock and infrastructure.

Land uses that fail to recognise areas prone to hazard risk such as floodplains, coastal erosion, and earthquake faults are not sustainable, and can cause communities and the environment unnecessary harm. Communities need to be developed in a sustainable manner by ensuring a close linkage between hazard mitigation and land use planning (Daly 2000).

Local authorities in New Zealand, which include city, district and regional councils, have statutory obligations under the Resource Management Act 1991, the Building Act 1991, the Local Government Official Information and Meetings Act 1987 and the Civil Defence Act 1983 in relation to the management of hazards affecting people, communities and other aspects of the environment. The future Emergency Management legislation (currently the Civil Defence Emergency Management Bill) will require a more comprehensive risk management approach to civil defence and emergency management. In particular, the legislation provides for planning and preparation for emergencies and for response and recovery in the event of an emergency enabling communities to achieve acceptable levels of risk.

Although required to by statute, research has indicated that local authorities in the Auckland Region (four city councils, three district councils, and one regional council) seem to be having difficulty in effectively managing hazards information. (Auckland Local Authority Hazards Liaison Group 1999). This is due to a number of problems, including a perceived lack of expertise in the risk area, uncertainty in the interpretation of hazards information, and difficulty in applying the generic Australian/New Zealand Risk Management Standard (AS/NZS 4360:1999) to specific risk management issues such as this. This has led to

by Sharlene Pardy and Michele Daly,  
Auckland Regional Council, Auckland,  
New Zealand

inconsistencies in the way hazard information is managed and a lack of direction on the options available to treat risk.

In addition, the Auckland Region's population is rapidly growing. The resulting urban expansion is placing pressure on local authority decision makers to allow the development of areas previously considered unsuitable for development due to their proximity to industrial or contaminated sites, land instability, flood risk and the like. This emphasises the urgency for local authorities to capture hazard information and incorporate it into planning and decision making processes.

The hazard guidelines project aims to produce a set of guidelines focused on addressing these current management problems, assisting local authorities to meet their statutory requirements while presenting a user-friendly approach to means of assessing and treating risk.

## Auckland Local Authority Hazard Liaison Group

The Auckland Local Authority Hazard Liaison Group (the 'Group') was established by the Auckland Regional Council four years ago to enhance communication between local authorities on hazard management issues and to facilitate intra-council communication. The Group is made up of representatives from the city, district and regional councils in the Auckland Region comprising mainly planners/policy analysts. The members of this group act as coordinators for their own intra-council hazards group. The Group was set up to specifically recognise the link between hazard mitigation and land use planning, and the need to develop tools in these areas to successfully manage risk, and to improve communication between those working in the area of sustainable development and environmental management.

The Group discovered that there was a

range of management issues concerning the collection, storage, interpretation of hazard information and the way it was used to influence decisions about managing risks. Examples of issues raised include the recording of hazards information known to council staff but not presently included in hazards registers, inconsistency of hazards information, lack of knowledge of information systems, and inappropriate systems. The Group felt there was merit in working together to collectively improve the situation and resolved to develop a set of guidelines to address the various issues that have been raised.

The Group's interest in putting together these guidelines arose from the Group's commitment to:

- achieve consistency both within and between councils in the Auckland Region in the way hazards information is collected, organised and used to influence decisions about managing risk
- ensure risk management issues are appropriately addressed in land use and strategic planning
- maximise the effective use of hazards information to manage risks from hazards, and promote greater public understanding of the local hazardscape
- encourage local authorities to reduce barriers to sound risk management and in particular encourage effective risk communication practices
- minimise local authority liability through the effective capture and storage of hazards information.

The overarching goal of the Group in developing the guidelines is to:

*Minimise the risks to communities and the environment from the effects of a range of hazards, including (but not limited to) natural and technological hazards.*

## Scope of hazard guidelines 1, 2, and 3

The first guideline *Hazard Identification and Information Management for Local Authorities*, completed in June 1999, establishes the context and identifies sources of hazard information. It also looks at how this information is collected,

sorted, recorded and stored. It is especially relevant to the development and maintenance of hazard registers.

The second and third guidelines, in the process of being developed, examine how this hazard information can be assessed, in particular, hazard and risk analysis and evaluation, and the choices of appropriate actions to mitigate the consequences of risk, e.g. local authority planning and decision making processes. A monitoring component will also make up part of the third guideline to determine the effectiveness of all three guidelines in achieving their desired outcomes.

All three guidelines are inter-related and are intended to provide a comprehensive set of principles for managing risk. They are intended to facilitate communication about hazards within and between a number of agencies. Those agencies include those with responsibility for hazard and emergency management and control of development, such as local authorities and emergency services, and also those which provide information and advice to decision making authorities, such as Crown Research Institutes (e.g. Institute of Geological and Nuclear Sciences (IGNS), National Institute of Water and Atmospheric Research Ltd (NIWA)), universities, and consultancies. The guidelines are also intended to facilitate communication between these agencies and the public they serve.

The aim of the guidelines is to achieve consistency both within and between local authorities in the way hazard information is managed, particularly with regard to the application of the Australian/New Zealand Risk Management Standard (4360:1999). However, the aim is to achieve consistency—not standardisation—of practice. There will continue to be differences in the ways in which local authorities store and process information, and in the practices they adopt to fulfil the functions for which they have statutory responsibility, but applying this Guideline to those practices should ensure that the outcomes achieved are consistent within and between local authorities.

### **Hazard Guideline 1: Hazard identification and information management**

Prudent execution of the hazard management functions placed on local authorities by various statutes (noted earlier) requires the establishment and maintenance of an information base which records information about hazards known to those authorities. Some pro-

visions of the statutes rely on that information to trigger the need for further investigation if or when development is proposed. Other functions within local authorities use the information as a basis for carrying out risk assessments, either as part of the development control process, or to identify and avoid or mitigate unwanted consequences of hazards.

In either case, the recording of information about known hazards is important for the protection of people, property and the environment from unwanted consequences of hazard events. The Australian/New Zealand Risk Management Standard (4360:1999) sets out a series of steps designed to reduce unwanted

The aim of the guidelines is to achieve consistency both within and between local authorities in the way hazard information is managed...

consequences of activities i.e. reduce risk.

Hazard Guideline 1 develops outcomes and corresponding principles designed to bring about consistency in the identifying, recording and storing of information about hazards. Figure 1 provides an excerpt from Hazard Guideline 1. It provides guidance on developing processes to identify, record, and store information relevant to the hazard concerned. The Guideline has been kept general to allow the principles introduced to be applied to a broad range of hazards (natural, technological and biological hazards) in a variety of locations. This should ensure that local authorities discharge the responsibilities placed on them by various statutes in relation to natural and other hazards, in a consistent and effective manner.

The following outcomes have been identified in Hazard Guideline 1.

#### **Identification of hazards and sources of hazard information**

1. The range of hazards about which information is to be recorded is decided with regard to the roles and

responsibilities of the local authority, and the characteristics of the district.

2. Sources of hazard information are identified including: actual (existing), potential, externally generated and internally generated.
3. A formal documented process for collecting/receiving hazard information is implemented.
4. Information providers are aware of local authority's requirements for hazard information and its procedure for managing the information.
5. Local authority staff are trained in and aware of the duty to identify hazards and sources of hazard information.

#### **Categorising hazards information**

1. Hazards information is consistently assessed in terms of integrity/validity of source, quality of information and the level of verification.

#### **Storage and maintenance of hazards information**

1. A formal documented process for storage and maintenance of hazards information is implemented.
2. The source of the hazards information is apparent.
3. The hazards information is accessible/available to end users and is tailored to the needs of end users as much as is possible (with given technology).
4. The integrity and consistency of hazards information is maintained through rigorous and ongoing checks so there are no gaps in time or information.
5. Corporate knowledge is retained.

This guideline can also be used to evaluate existing processes and systems. It can be most effectively used to assess current practice of hazard information identification, collection and storage, to evaluate current practice in light of the outcomes and principles, and to develop better practice.

#### **Implementation of Hazard Guideline 1**

A working draft of Hazard Guideline 1 was completed in June 1999. The six months to the end of December 1999 focused on its implementation in each of the local authorities in the Auckland Region. In January 2000, a review was conducted of the process used to develop Hazard Guideline 1 and on how well implementation was progressing. The aim of this review was to improve the development process for subsequent guidelines.

The development of Hazard Guideline 1 has served to highlight the importance of adequate hazard information processes

## Desired Outcome: Sources of Information Identified

Sources of hazard information are identified including:

- actual (existing) sources
- potential sources
- externally generated sources
- internally generated sources

## General Principles

- ▶ Risks arising from hazards change depending on the nature of both the physical events and the characteristics of the community under threat.
- ▶ Establish a contact list of hazard information producers or sources.  
For example, information may be collected from:
  - hazards analysts or consultants undertaking district-wide hazards analyses (eg. a 'scan' of a district, to identify hazards, the risks from which may require formal assessment as a basis for preparing an Emergency Management Strategy) or investigations of specific hazards in parts of a district (eg. investigations of areas of forest or regrowth, which may pose 'wildfire' risks; or of coastal areas which may be erosion prone).
  - council's engineering staff, engineers of infrastructure providers, or consulting engineers, carrying out engineering investigations for infrastructure works (such as road realignments or reconstruction, new road construction, and pipeline or transmission line construction, and the like).
- ▶ Record the source with the hazard information so future users can refer to the original source if necessary.
- ▶ Set up a process to maintain this database of sources (change of contact details etc.). This should be as simple as possible to encourage its use.

Figure 1: Identification of hazards and sources of hazards information, Hazard Guideline 1.

within local authorities and has assisted some local authorities to acquire additional resources. Implementation overall however has been patchy for various reasons including council restructuring, variable resourcing and lack of internal awareness (Daly 2000). As part of the development of Guidelines 2 and 3, the Auckland Local Authority Hazards Liaison Group and local authority management are making renewed effort to ensure implementation occurs.

### **Hazard Guideline 2: Hazard risk assessment, and Hazard Guideline 3: Hazard risk treatment and monitoring**

The Auckland Local Authority Hazards Liaison Group reconvened in May 2000 to continue the development of the guidelines. Following recommendations arising from the initial review of Hazard Guideline 1, the Group then sought support and buy-in from local authorities in the Auckland Region and also further afield from various local authorities across the country for the development of guidelines 2 and 3. The support and commitment has been very encouraging.

A comprehensive review of Hazard Guideline 1 is currently being commissioned with the aim of improving the suitability of the content of Hazard Guideline 1 and the process used for its

development and implementation. Given that implementation began in June 1999, it is considered that any issues arising from the implementation phase will now be apparent.

The content and the process for developing Hazard Guideline 2 and Hazard Guideline 3 is currently being scoped in detail and will incorporate the findings from the review of Hazard Guideline 1 where appropriate. It is anticipated that a draft of Hazard Guideline 2 will be completed by November 2001, and a draft of Hazard Guideline 3 by February 2003.

### **References**

Auckland Local Authority Hazards Liaison Group 1999, *Hazard Guideline 1: Hazard Identification and Information Management for Local Authorities*, Auckland Regional Council Technical Publication No. 106, June 1999.

Daly M.C. 2000, *The Development of Hazard Information and Risk Management Guidelines for Local Authorities*, unpublished research paper, Auckland University.

### **About the authors**

Sharlene Parady is a Strategic Policy Analyst with the Auckland Regional Council and has four years experience developing and analysing policy in the areas of land, air and water quality

management, risk management, infrastructure including stormwater and roading policy, and the coastal environment. She has a BMS(Hons) in environmental management and economics from the University of Waikato. Sharlene is project coordinating the hazard guidelines project.

Sharlene Parady can be contacted at:  
Auckland Regional Council  
P.O. Box 92-012, Auckland, New Zealand  
Email: spardy@arc.govt.nz

Michele Daly is the Manager of the Hazards Management department of the Auckland Regional Council. She has a MSc (Hons) in geology from Auckland University and a Diploma in Environmental Management, as well as papers in law, environmental economics and planning. Michele brings over 15 years combined experience working mainly in the areas of hazard and risk assessment, hazard monitoring, geohydrology, water resource management, and emergency management. Michele was involved in the preparation of Hazard Guideline 1, and was instrumental in establishing the Auckland Local Authority Hazards Liaison Group.

Michele Daly can be contacted at:  
Auckland Regional Council  
P.O. Box 92-012, Auckland, New Zealand  
Email: mdaly@arc.govt.nz