

# **Emergency Risk Management and Mitigation in Victoria**

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## **Part 2: Emergency Management Manual Victoria**



# Contents

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2.1	Introduction.....	2-1
2.2	Mitigation and Risk.....	2-1
	'Mitigation', 'Risk Reduction' and 'Prevention'.....	2-2
	Principles of Mitigation.....	2-4
	Cost and benefits of mitigation .....	2-4
2.2	Mitigation at a national level.....	2-5
2.3	Mitigation at a State level.....	2-6
	State Emergency Mitigation Committee .....	2-7
2.4	Mitigation at the municipal level .....	2-8



## 2.1 Introduction

Prevention of emergencies, or the lessening of their severity is a key concern in emergency management, along with response and recovery. Emergency Risk Management, a specialised application of risk management, is the major tool for working towards this objective.

## 2.2 Mitigation and Risk

The adoption of Emergency Risk Management, and its underlying concept of risk, has helped communities and emergency managers move beyond the narrower concept of 'hazard' to 'risk'. Risk deals with the interaction of the exposure to hazard and the specific vulnerability of the area. It exists within a specific context.

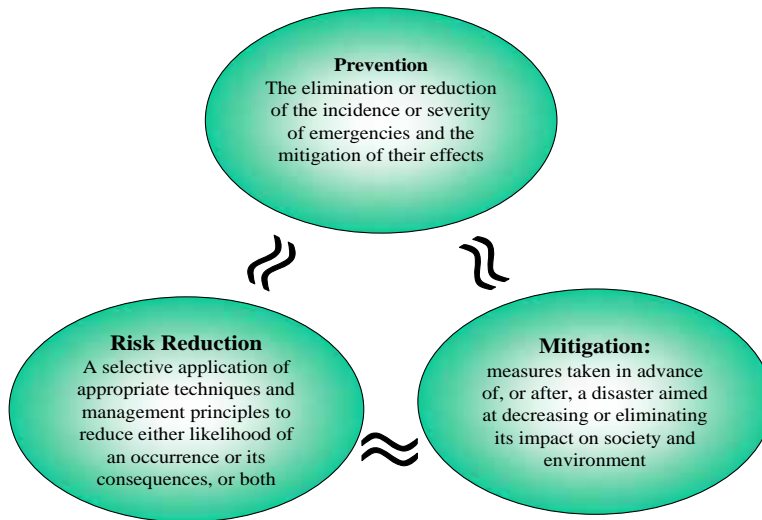
Having identified a risk and decided that it cannot be eliminated, there are two ways of increasing safety or reducing risk: lessen the likelihood of an incident or reduce its consequences. These methods of increasing safety are described both as mitigation and prevention.

The term mitigation has come into increased use both in Australia and internationally. Within Australia, the term received prominence in the report to the Council of Australian Governments *Natural Disasters in Australia* subtitled *Reforming mitigation, relief and recovery arrangements* (the COAG Natural Disasters Report). The definition of mitigation in the COAG Natural Disasters Report is: *mitigation consists of measures taken in advance of, or after, an emergency aimed at decreasing or eliminating its impact on society and the environment.*

Internationally, mitigation is an area of active work and effort with the United Nations focusing on an International Strategy for Disaster Risk Reduction.

A distinction needs to be made between mitigation and response or recovery. While some mitigative activities may happen after an emergency, as the above definition indicates, they will be ones taken to lessen the impact or likelihood of the next. For example, houses destroyed by fire may be rebuilt incorporating greater fire protection.

## 'Mitigation', 'Risk Reduction' and 'Prevention'



**Fig 2-1: The close relationship between the terms prevention, risk reduction and mitigation**

There is a high degree of equivalence between the terms mitigation, prevention and risk reduction, as illustrated above.

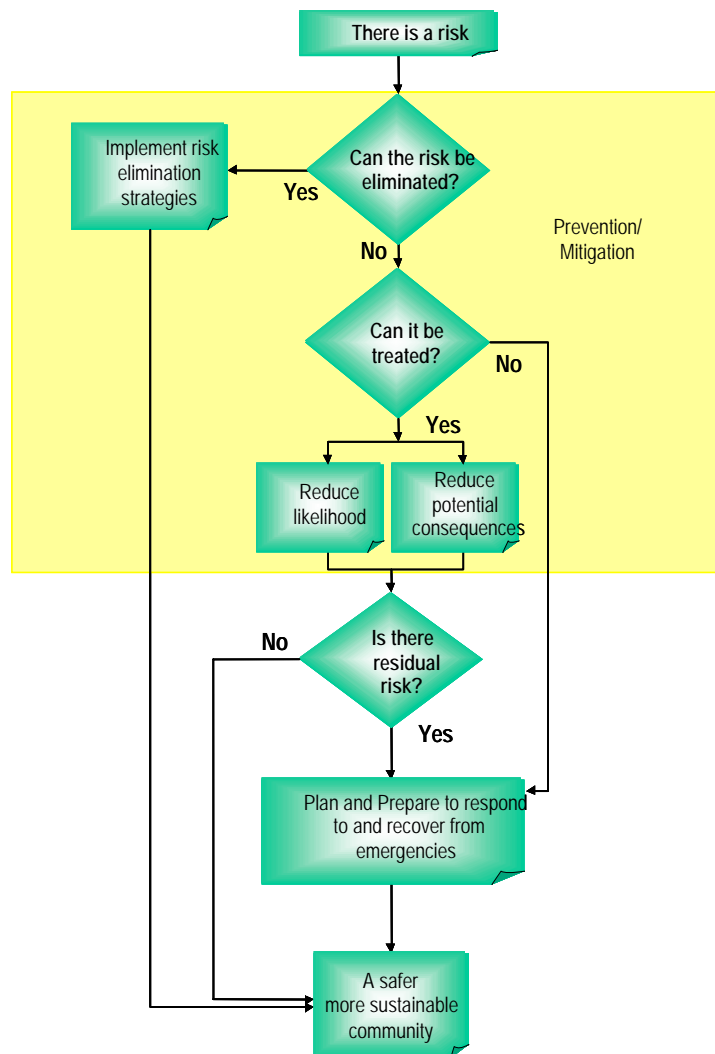
In the Emergency Risk Management approach, mitigation operates through the stages of

- assessment of the degree to which the risk can be eliminated,
- assessment of the degree to which the risk can be treated through the reduction of likelihood or the reduction of potential consequences, and
- the implementation of those risk treatments.

It does not include the acknowledgement of the residual risk nor planning and preparation for response and recovery. In particular, activities which are specifically preparation for response or recovery, such as equipping, training and exercising, are not mitigation but are part of response or recovery.

As the residual risk reduces through mitigation, less effort need be invested in preparedness.

The shaded section in Fig 2-2 clarifies those parts of the emergency risk management approach that are mitigative.



**Fig 2-2: Risk Management Articulated into Emergency Management**

**Communicable diseases: a case study in mitigation**

In past centuries, diseases such as plague and smallpox could suddenly appear to threaten the very survival of some civilisations. During the twentieth century though, life expectancy in Australia increased by almost 30 years, largely because of declining infectious disease mortality. The reduction in the risk of death from communicable disease has involved steps both to reduce the likelihood of serious outbreaks of communicable diseases—vaccination, good hygiene, sewerage systems, safe-sex practices, and the supply of clean water—and to reduce the consequences of outbreaks, such as the development of antibiotics, quarantine and border control.

Information taken from *Protecting Australia from Communicable Diseases: Everybody's Business* A Special Report from the Commonwealth Chief Medical Officer, January 2004.

## Principles of Mitigation

The principles of mitigation include:

- mitigation activities take account of vulnerability and seek to build resilience, that is they focus on risk rather than hazard;
- primary responsibility rests with the relevant community or government agencies, although emergency services also contribute greatly to mitigative activities especially in the areas of community awareness and preparedness;
- ownership of the risk should not be transferred (for example, to future generations or response agencies), but stays with the relevant community or agency which is taking responsibility for mitigative action;
- sustainability is a central concern of mitigation, in that a key effect of involvement in mitigation is to build community, regional, and State capability to prevent, survive and recover from emergencies and to continue to exist and prosper;
- mitigation is specific to a particular context. Effective mitigation builds on a risk assessment that is customised to the hazards, the vulnerabilities and the resilience of the relevant community or area.

## Cost and benefits of mitigation

The benefits of mitigation include:

- reduction of loss of life and damage to property, an important consideration given that the costs of emergencies are increasing due to factors such as the level of personal property of people in the affected area, density of population, aging infrastructure or climate change;
- speedier recovery by communities after emergencies;
- building of community preparedness, resilience and skills;
- reduction of the cost of emergencies to the national economy, communities, regions and businesses.

However, to give substance to its benefits, an essential part of an effective mitigation strategy is information on the cost of the mitigative strategies, and an estimation of the damage avoided either potentially or actually, as well as information on the cost of the emergency. With this information investment in mitigation can be better targeted. This is not simple. The benefits of mitigation can be difficult to compute with precision since they take the form of an absence or an avoidance of worse consequences, depending on the nature of the emergency. Furthermore the mitigation strategies can be costly, and the costs are easier to estimate than the potential benefits. The difficulty of cost-benefit analysis varies from risk to risk. It is harder to estimate the benefits of mitigation for fire than for flood because flood is more predictable as to extent, frequency and damage.

Decisions about mitigation can involve trade-offs and are often a political process since the costs of mitigation fall on a specific group of people while the potential benefits go to the community as a whole. For example, profits foregone by land development restrictions are borne by land owners and developers whereas the benefits are to a nebulous group



of people who did not go to live on the development and were not flooded.

At a national and State level, some information on the cost of natural disasters is available. The following table, from the *Economic Costs of Natural Disasters, Report 103, Bureau of Transport Economics, January 2001*, gives clear indication of the high cost of natural disasters. This table which is based on estimates to a large degree only took disasters costing more than \$10 million into account.

### Natural Disaster Statistics (1967-1999)

Average Annual Cost (\$million)

State	Flood	Severe storms	Cyclones	Earthquakes	Bushfires	Landslide	Total
NSW	128.4	195.8	0.5	141.2	16.8	1.2	484.1
QLD	111.7	37.3	89.8	0.0	0.4	0.0	239.2
NT	8.1	0.0	134.2	0.3	0.0	0.0	142.6
<b>VIC</b>	<b>38.5</b>	<b>22.8</b>	<b>0.0</b>	<b>0.0</b>	<b>32.4</b>	<b>0.0</b>	<b>93.6</b>
WA	2.6	11.1	41.5	3.0	4.5	0.0	62.7
SA	18.1	16.2	0.0	0.0	11.9	0.0	46.2
TAS	6.7	1.1	0.0	0.0	11.2	0.0	18.9
ACT	0.0	0.1	0.0	0.0	0.0	0.0	0.2
<b>Totals</b>	<b>314.0</b>	<b>284.4</b>	<b>266.2</b>	<b>144.5</b>	<b>77.2</b>	<b>1.2</b>	<b>1087.5</b>

Cost-benefit analysis of a range of flood mitigation strategies has been explored in *Benefits of Flood Mitigation in Australia, Report 106, Bureau of Transport Economics, 2002*. Although there were limitations in the data available, the report concluded that 'case studies, consultations and literature surveyed demonstrate evidence of the benefits of various types of mitigation...in each of the case studies there is evidence that the estimated benefits of the various flood mitigation measures in terms of tangible savings are substantial'. In addition there are the unquantifiable intangible savings which include lives not lost.

The COAG Natural Disasters Report says 'additional investment in natural disaster mitigation by all three levels of government is conservatively estimated to provide a return of 15 per cent.' The Report also estimates, using the report mentioned above, that every dollar invested in flood mitigation saved more than \$2.10.

## 2.3 Mitigation at a national level

There is a wide range of mitigation strategies undertaken at the national level including:

- a national approach to building controls through the Australian Building Codes Board, with the resulting codes being expressed in State, Territory and local government legislation and regulation;
- quarantine and border control;
- weather forecasting and warnings;
- aircraft safety; and
- national public health strategies.

Within the emergency management context of all levels of government accepting responsibility for mitigation within their respective jurisdictions, the Australian Government is committed to developing a national mitigation strategy. In addition it administers the Disaster Mitigation Australia Package (DMAP) which includes a new Natural Disaster Mitigation Programme (NDMP) to fund for five years projects relating to the reform commitments in the COAG Report. These reform commitments relate to, for example, nationally consistent data and research, disaster risk assessments, disaster mitigation strategies, disaster mitigation measures, disaster-resilient infrastructure, and community awareness and warnings.

The programme funds a wide variety of risk assessment and mitigation measures including:

- disaster resilient infrastructure investments
- emergency warning systems
- community awareness and readiness measures
- local risk analyses
- development of nationally consistent data collection and analysis
- development of nationally consistent post-emergency evaluations
- flood data analyses and mapping for mitigation purposes,
- flood control structures, and
- land and building purchase schemes in high risk areas.

The current Regional Flood Mitigation Programme will be incorporated into the NDMP.

Outside DMAP, there are other Australian government emergency mitigation programmes such as Working Together to Manage Emergencies. (See Appendix 1 in Part 8.)

## 2.4 Mitigation at a State level

Many mitigative actions and strategies are undertaken at a state level. For example, strategies for protection related to flood, bushfire, landslip and hazardous industry are built into the State's land use planning system which consists of the Victorian Planning Provisions and the municipal planning schemes (see next section). Legislative provisions also ensure that considerations of safety are taken into account when planning decisions come before courts. Building controls also contribute to mitigation by, for example, setting standards for structural integrity, for performance of materials in a fire or by setting standards for the maintenance of air conditioning cooling towers. Building standards are set nationally, but enforced by the State. Other mitigation strategies include:

- dangerous goods regulations
- food safety regulations
- gas and electricity safety codes
- flood control structures
- immunisation programs
- requirements for vehicles to be roadworthy
- measures to lower the road toll
- measures to ensure the quality of the water supply

- warning systems
- business continuity planning, and
- community education and awareness programs.

Another significant mitigation activity, with both state and national inputs, is the Critical Infrastructure Protection project. Following experiences such as the Longford gas disaster, Victoria has emphasised the importance of protecting the continuity of supply of essential services, particularly within the energy and transport sectors, which are privately owned in Victoria.

As part of the Victorian Government's infrastructure strategy, Victoria Police provides assistance to the owners and operators of critical infrastructure within Victoria in assessing the exposure of key assets to terrorist attack. Departments and agencies need to include as key business drivers consideration of any potential impacts on the resilience and sustainability of critical infrastructure within their portfolios' area of interest in administering their functions. Departmental business management planning should have regard to measures to mitigate risks to significant infrastructure within the portfolios area of interest.

Under Part 6 of the *Terrorism (Community Protection) Act 2003*, nominated owners or operators of declared essential service facilities are required by relevant Ministers to develop a risk management plan that takes into account the threat from terrorism, undertake an annual audit of their plans and participate in exercises. These arrangements should be considered part of and consistent with existing business continuity and risk management planning in essential service sectors.

## State Emergency Mitigation Committee

Responsibility for oversight, but not implementation, of mitigation activities at a State level has been assigned to the State Emergency Mitigation Committee. It has been established to provide a State-wide focus on mitigation, to promote a culture of mitigation and to encourage more demonstrably cost-effective investment in mitigation.

It will develop a State mitigation strategy which will fulfil Commitment 2 of the COAG Natural Disasters Report.

The primary reporting line for the Chair of the Committee is to the Minister as Coordinator in Chief of Emergency Management. Executive and other support is provided by the Office of the Emergency Services Commissioner. The Committee has an initial time frame of 3-5 years to address its Terms of Reference. (See Part 5 of the Manual).

## 2.5 Mitigation at the municipal level

Local government's role in mitigation is central. Mitigation strategies based on a detailed knowledge of the local community, its characteristics, strengths and vulnerabilities, as well as a detailed appreciation of the risks faced by that community are particularly effective. Local government is in the best position to develop such mitigation strategies. Catchment Management Authorities are in a similar position in respect of flood management.

The avenue for developing the strategies is through the Municipal Emergency Management Plans (MEMPlans) described in detail in Part 6 of this Manual, especially Step 3a – Undertake Emergency Risk Management. The development of these plans can be assisted by the adoption of CERM process, as facilitated by Victoria State Emergency Service.

Important mitigation activity undertaken by municipal councils is via their Planning Schemes developed under the Victorian Planning Provisions. Planning Schemes contribute to mitigation through the creation of

- zones, such as the Urban Floodway Zone
- overlays, for example erosion overlay, land subject to inundation overlay or the wildfire management overlay
- guidelines which prescribe the consideration of the degree of hazard, and
- referral of planning applications to agencies expert in mitigation, for example, the CFA.

Municipal application of building codes operate to activate special requirements for buildings in areas where overlays operate. For example, in areas where the overlay of land subject to inundation operates, minimum floor heights may be required so that the effect of flood will be mitigated or in areas subject to the bushfire overlay, there may be water supply requirements so that fires can be more effectively controlled and limited. The controls are designed to balance the interests of emergency mitigation and development.

There are many other examples of municipal involvement in mitigation, but not all municipalities will undertake all these forms of mitigation:

- traffic/road management
- health inspections and surveillance
- immunisation programs
- warning systems for particular emergencies
- involvement with Major Hazard Industries
- community development activities
- crime and injury prevention programs and strategies
- flood and drainage management systems
- community awareness programs for specific risks
- maintenance of fire refuges, or fire access roads
- identification of, and planning for, individuals with special needs during emergencies.