

2. Hazards and risks

Summary The *National CDEM Plan 2015* identifies core functions for national management of the consequences of emergencies. It may also address the management of consequences of other emergencies not otherwise able to be managed by a lead agency.

 The hazards and risks to be managed under the *CDEM Act 2002* and the *National CDEM Plan 2015* include any hazard that may result in an emergency.

 The *National Hazardscape Report* identifies the seventeen most prevalent hazards in New Zealand and the principal means by which each of them is managed.

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2.1 Hazards and risks to be managed at national level

Hazards and risks at national level

Part 3 Hazards and risks

10 Hazards and risks to be managed at national level

- (1) *This Part states the hazards and risks to be managed at the national level and this plan identifies the CDEM necessary at the national level to manage those hazards and risks.*
- (2) *The following hazards, either singularly or in combination, have the potential to cause emergencies that may require co-ordination or management at the national level:*
 - (a) *earthquakes:*
 - (b) *volcanic hazards:*
 - (c) *landslides:*
 - (d) *tsunamis:*
 - (e) *coastal hazards (including coastal erosion, storm surges, and large swells):*
 - (f) *floods:*
 - (g) *severe winds:*
 - (h) *snow:*
 - (i) *droughts:*
 - (j) *wild fires and urban fires:*
 - (k) *animal pests and diseases:*
 - (l) *plant pests and diseases:*
 - (m) *infectious human disease pandemics (including water-borne illnesses):*
 - (n) *infrastructure failure:*
 - (o) *hazardous substance incidents:*
 - (p) *major transport accidents:*
 - (q) *food safety incidents (for example, accidental or deliberate contamination of food):*
 - (r) *terrorism.*
- (3) *This plan may be used to address the consequences of an emergency arising from any hazard.*
- (4) *Understanding of the risks associated with specific hazards and event scenarios is based on assessments undertaken by CDEM Groups, agencies, and the science and research sector.*
- (5) *Possible consequences include—*
 - (a) *displaced, isolated, injured, ill, and deceased persons, psychosocial concerns, deterioration of community well-being, and other matters involving the welfare of people and animals:*
 - (b) *loss of lifeline utility services (for example, telecommunications, transport, energy, water, and waste water networks):*
 - (c) *damage to buildings and structures:*
 - (d) *direct and indirect economic losses, restrictions on commerce, migration and trade, and the impairment of financial systems:*
 - (e) *degradation of the ecological, physical, amenity, and heritage values of areas and resources.*
- (6) *The recommended risk management standard to be used as the basis for risk assessment and management in New Zealand is AS/NZS ISO 31000.2009.*
- (7) *This plan adopts a functional approach to the 4 Rs (across agencies and their activities) to cover any combination and scale of consequences arising from an emergency.*
- (8) *The co-ordination and resources necessary at the national level may vary depending on local management of the emergency.*
- (9) *Different lead agencies and emergency management planning arrangements may be mandated under other Acts.*

- (10) *Pre-planning may be undertaken, and supporting plans may be developed, in support of this plan when the consequences are identified and response and recovery arrangements are considered necessary.*
- (11) *The approach adopted in subclauses (7) and (8) acknowledges the existing and developing risk reduction measures and practices at the national, CDEM Group, and local levels.*
- (12) *The identification and assessment of hazards and risks that require management under this plan are ongoing processes that include consideration of—*
 - (a) *new knowledge; and*
 - (b) *risks that vary over time; and*
 - (c) *the potential influence of climate change on hazards and risks.*
- (13) *Each agency and CDEM Group should, to the extent that it relates to its role and responsibilities under this plan,—*
 - (a) *monitor the developments and evolving trends in hazards and risks and communities' vulnerability to them; and*
 - (b) *factor any changes into its planning and operational activities across the 4 Rs in accordance with—*
 - (i) *its duties under the Act; and*
 - (ii) *its roles and responsibilities under this plan; and*
 - (iii) *any other mandate under which it operates that supports achieving the goals of the National CDEM Strategy; and*
 - (c) *identify and implement measures and mechanisms to reduce the risks from hazards.*

Note – Plan clause 10(8)

'Local management' includes emergencies managed at a local or coordinated at a regional level.

2.2 National risk assessment for hazards

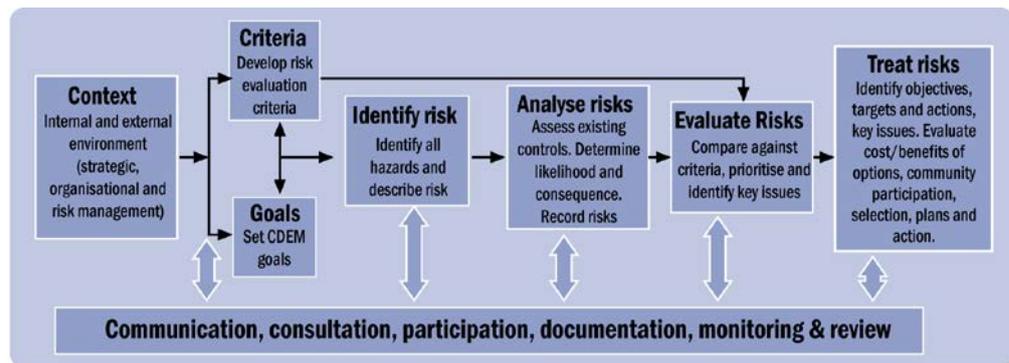
New Zealand's prevalent hazards

The Department of the Prime Minister and Cabinet (DPMC), in support of the Committee of Officials for Domestic and External Security Coordination (ODESC), published the *National Hazardscape Report* in 2007. The report provides more information on the most prevalent hazards in New Zealand listed in clause 10(2) of the *National CDEM Plan 2015*. It also outlines the principal means by which those hazards are managed across the 4Rs.

Determining risks and the means to manage them

The *National CDEM Strategy* seeks comprehensive and integrated approaches to hazard and risk management. All hazards and risks are to be addressed. Risk reduction aims to avoid creating further risk and to mitigate existing risk. Readiness, response, and recovery arrangements recognise that emergencies will occur and that not all risk can be reduced. Good preparation before and management of consequences during an event can lessen its impacts. The recovery stage may present opportunities to further reduce risks.

Determining acceptable levels of risk, and how best to achieve this across the 4Rs, requires integrated and coordinated approaches to CDEM and hazard management planning. Identifying risks and the best means to manage them across the 4Rs is part of a risk management process (**Figure 2.1**).



Adapted from:
 AS/NZS 4360: 2004 Risk Management
 SNZ HB 4360:2000 Risk Management for Local Government

Figure 2.1: The ISO 31000 Risk Management Standard has been adapted for CDEM practice.

The application of risk management at the national level extends beyond core CDEM arrangements. This application underlies the design, development, efforts, and implementation of risk management principles. This includes integrating legislation, policies, and services across central government and other sectors aimed at building individual, community, and societal resilience to hazards.

Sources of information on risk

Within this broader context, national CDEM planning is primarily concerned with risks that may lead to a state of national emergency or an emergency of national significance. Planning should include information from many sources including:

- ◆ CDEM Group risk assessments
- ◆ hazard and risk research of universities, Crown research institutes, and other organisations, and
- ◆ hazard and risk reports prepared by government agencies and the managers of strategic assets, such as lifeline utilities.

Coordination and integration of management

Agencies are mandated through legislation or expertise to manage emergencies arising from specific hazards (see clause 14 and Appendix 1 of the *National CDEM Plan 2015*). The lead agencies' hazard specific emergency plans are supported by CDEM planning arrangements. For example, an infectious human disease pandemic may result in interruptions to lifeline utilities services. CDEM planning allows for the management of the consequences of lifeline utilities failure, integrated with the arrangements of the Ministry of Health's *New Zealand Influenza Pandemic Action Plan*. Overall coordination, in support of the Government, is achieved by the ODESC system.

See Part 4, Management of Emergencies in the *National CDEM Plan 2015*.

2.3 National consequences to manage

Consequences related to the four environments

Those risks unable to be avoided or mitigated through reduction initiatives are managed through readiness, response, and recovery arrangements at both the national and local levels¹. The *National CDEM Plan 2015* and Guide describe these arrangements at the national level.

Exactly what form each emergency may take is uncertain, and therefore CDEM planning must provide for the consequences of any likely event. See clause 10(5) of the *National CDEM Plan 2015* for a general description of these consequences, covering the four community environments (social, built, economic, and natural).

¹ For example, one aspect of reduction in the case of an earthquake is strengthening buildings; and although this will reduce damage, it will not stop an earthquake happening and the need to provide for Urban Search and Rescue (USAR) in the event of collapse (see Section 10, Fire services).

Each hazard may result in specific consequences that need to be planned for². Planning includes defining and grouping agency roles and responsibilities, and developing consistent procedures for common functions, irrespective of the cause of the emergency. This planning supports an integrated 4Rs approach to hazard and risk management, in that well prepared and executed response and recovery arrangements will lessen the impacts of an event and maximise opportunities for further risk reduction.

When preparing their plans, CDEM Groups identify hazards and risks for which they may require the support of *National CDEM Plan 2015* arrangements, including support from other CDEM Groups, to manage an emergency. The criteria in **Table 2.1** (on the next page) are used to evaluate whether the consequences of any emergency may require management under the *National CDEM Plan 2015*.

Table 2.1: Hazard and risk evaluation criteria.

Category	Notes
CDEM Group planning for local emergencies identifies a hazard or consequence requiring management at the national level.	National planning is necessary for additional resources and/or higher levels of coordination.
Consequences of emergencies are likely to be of national significance.	Identified in accordance with the Director of CDEM's function under S.8(2)(b) of the <i>CDEM Act 2002</i> , or at the direction of the ODESC system.
Where a hazard or risk is generally managed at the national level and requires CDEM involvement.	The lead agency seeks the support of CDEM arrangements to address one or more consequences.

Climate change

Climate change may increase the likelihood and severity of weather and climate-related hazards listed in clause 10(2) of the *National CDEM Plan 2015*. In New Zealand, likely climate change impacts include:

- ◆ higher temperatures, more in the North Island than the South, (but still likely to be less than the global average)
- ◆ rising sea levels
- ◆ a change in rainfall patterns – higher rainfall in the west and less in the east, and
- ◆ more frequent extreme weather events, such as droughts (especially in the east of both main islands) and floods throughout New Zealand.

Adaptation to climate change means taking action to minimise risks and maximise opportunities resulting from climate change. Adaptation responses include actions to reduce the impacts of extreme weather events, and enhance the resilience of households, communities, businesses, and urban and rural environments.

Because climate change alters the risk associated with existing hazards, rather than introducing new types of hazards, the arrangements in the *National CDEM Plan 2015* are able to take account of climate change.

For more information on climate change and its implications for New Zealand, see the Ministry for the Environment website www.mfe.govt.nz.

² For example, one consequence could be the mass displacement of people as a result of either a terrorist act or a volcanic eruption. In either case, this consequence requires generic planning for the functions of mass evacuation, public information, and welfare support (including the nine welfare service sub-functions, including registration, and emergency shelter and temporary accommodation).

2.4 References and links

Other sections of the Guide

- ◆ Section 1, Introduction
- ◆ Section 3, Management of emergencies
- ◆ Section 4, General roles and responsibilities
- ◆ Section 5, Ministry of Civil Defence & Emergency Management (MCDEM)
- ◆ Section 6, Civil Defence Emergency Management Groups (CDEM Groups)
- ◆ Section 11, Health and disability services
- ◆ Section 25, National warnings and advisories

Other documents

- ◆ Officials' Committee for Domestic and External Security Coordination, Department of the Prime Minister and Cabinet (2007) National Hazardscape Report; ISBN 0-478-29455-7 (www.civildefence.govt.nz – search for 'hazardscape report')
- ◆ ISO 31000 Risk Management Standard (www.iso.org – search for '31000'), including:
 - *ISO 31000:2009, Risk management – Principles and guidelines* provides principles, framework and a process for managing risk.
 - *ISO Guide 73:2009, Risk management – Vocabulary* complements ISO 31000 by providing a collection of terms and definitions relating to the management of risk.
 - *ISO/IEC 31010:2009, Risk management – Risk assessment techniques* focuses on risk assessment. Risk assessment helps decision makers understand the risks that could affect the achievement of objectives as well as the adequacy of the controls already in place. *ISO/IEC 31010:2009* focuses on risk assessment concepts, processes, and the selection of risk assessment techniques.
- ◆ CDEM Group Plans (www.civildefence.govt.nz – search for 'CDEM Groups')
- ◆ Department of Internal Affairs (2008) National Civil Defence Emergency Management Strategy 2007; ISBN 0-478-29453-0 (www.civildefence.govt.nz – search for 'National Civil Defence Emergency Management Strategy')
- ◆ Ministry for the Environment website (www.mfe.govt.nz) for information on climate change in New Zealand