

Working Together: Developing a CDEM Group Plan

DIRECTOR'S GUIDELINES FOR CDEM GROUPS [DGL 2/02]



Te Rākau Whakamarumaru

**Ministry of Civil Defence
& Emergency Management**



Working Together: Developing a CDEM Group Plan Director's Guidelines for CDEM Groups (DGL 2/02)

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Authority			
<p>This guideline has been issued by the Director of the Ministry of Civil Defence & Emergency Management pursuant to section 49(3) of the Civil Defence Emergency Management Act 2002. It provides assistance to CDEM Groups in the development of plans as required under section 17(1)(i) of the Act and CDEM Groups must take account of this guideline in their planning (section 53(2)).</p> <p>The Ministry consulted substantially with local government representatives, Local Government New Zealand, and the emergency services in producing this guideline (DGL 2/02).</p>			

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Director's Guidelines for Civil Defence Emergency Management (CDEM) Groups (DGL 2/02)

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Foreword



John Norton
Director

Whilst the diverse nature of New Zealand society is one of our treasures, the diversity and complexity of agencies contributing towards our safety presents challenges for those who must plan to address emergencies.

Parliament has recently enacted the Civil Defence Emergency Management (CDEM) Act 2002, to repeal and replace the Civil Defence Act 1983. The Act seeks to improve public safety through sustainable management of hazards and coordination of emergency planning. CDEM Group Plans are one of the vital foundations of a logical process to improve New Zealand's civil defence emergency management arrangements. The planning process represents a unique opportunity to strengthen the relationships and coordination necessary for effective hazard management.

This guideline provides guidance for the development of CDEM Group Plans and builds upon the Ministry's October 2000 publication: *Civil Defence Emergency Management Planning: Information for Local Government*. A deliberate emphasis is placed upon the importance of building strong relationships through the planning process.

I recognise that nationally the depth of CDEM Group planning will vary dependent upon many factors, including resource levels. What is important however is that CDEM Groups take account of this guideline and follow a similar risk management approach in planning for hazard management. Within that framework planning can be as simple or as detailed as necessary according to each Group's state of risk and the informed expectations of its communities.

To meet sector requests for varying levels of guidance, this guideline has two sections that cover:

- Part 1: Principles and desired outcomes from CDEM Group planning (key messages)
- Part 2: Detailed plan development and content (information on how to plan).

I am pleased with the positive attitudes and levels of commitment that the Ministry has encountered in producing this guideline, and look forward to working with CDEM Groups as together we improve New Zealand's resilience to disasters.

A handwritten signature in green ink that reads "John Norton".

John Norton
Director: Ministry of Civil Defence & Emergency Management

Executive Summary

The CDEM Act 2002 requires the establishment of CDEM Groups - consortia of local authorities based on existing regional council boundaries, working in partnership with emergency services (Police, Fire, Health), lifeline utilities and others to deliver CDEM at the local level.

CDEM Groups must form within six months of commencement of the Act (by June 2003) and within two years of formation they must produce a publicly consulted plan and thereafter at intervals of up to five years. This guideline sets out the framework and expectations for CDEM Group Plans and the planning process.

CDEM Group Plans must take account of this guideline. They must also be consistent with the National CDEM Strategy, to be produced by the Crown within a year of commencement and thereafter at intervals of up to ten years. It is desirable that a similar approach is taken to developing plans across the nation and that linkages are clear between CDEM Group Plans and the National CDEM Plan.

Development of CDEM Group Plans logically builds upon and improves existing civil defence emergency management arrangements and adds a risk management approach to addressing hazards. CDEM Group Plans seek to integrate policies and plans across local government and coordinate arrangements with emergency services, lifeline utilities and central government agencies. CDEM Group Plans represent a unique opportunity to improve relationships and coordinate hazard management arrangements for the benefit of public safety.

CDEM Group planning involves:

- sustainable management of hazards via risk reduction, readiness, response and recovery
- managing all hazards - natural and man-made
- integration of all agencies involved in delivering CDEM.

CDEM Group Plans address the:

- hazards and risks to be managed by the Group
- CDEM measures necessary to manage the hazards and risks
- objectives of the plan and the relationship to the National CDEM Strategy
- provision of resources for the activities of Group members
- arrangements for declaring states of emergency, and cooperation and coordination with other Groups.

Each CDEM Group is expected to draw upon the planning, hazard, risk and emergency management expertise of the local authorities, emergency services, lifelines and other agencies within its area. A plan development team will examine the Group's hazards, the risks they pose and how they are currently being managed by the combined efforts of all partners. The plan documents agreed arrangements for readiness, response and recovery coordination, as well as identifying targets and actions for improving hazard management.

Each CDEM Group is expected to analyse its risks and develop plans to a level appropriate to its state of risk and to the informed expectations of its communities. All Group members will benefit from tangible outcomes of the planning process such as:

- sound relationships that underpin everyday activity
- identified issues of shared significance
- commitment to action to address the issues
- documented plan/s, agreements and procedures.

As a nation, New Zealand will benefit from an integrated CDEM environment leading to:

Resilient New Zealand: Strong communities, understanding and managing their hazards

Key Messages

CDEM Groups must apply risk management – we suggest basing this on the New Zealand standard AS/NZS4360:1999 Risk Management.

CDEM Group Plans are expected to take a consequence-based rather than resource-based approach to planning.

CDEM Plans are expected to be based on addressing functions, with contingency plans added where necessary.

CDEM Groups require sound relationships and detailed planning between members for events including:

- agency-managed undeclared emergencies
- declared emergencies within the Group's capability to manage
- the Group's management of 'maximum likely events' that may require national assistance.

Where a CDEM Group identifies risks with the potential to be nationally significant, it is expected to:

- notify these issues to the Ministry so they can be compared with the Director's identification of national risks during development of the National CDEM Plan
- enter into discussion with the Ministry and relevant national agencies about risks and treatment options
- include its agreed role in its Group Plan (the roles of national agencies being documented in the National CDEM Plan and respective agency plan/s).

How to Read This Guideline

It is suggested that this guideline is read in the following manner:

Foreword

Executive Summary

Key Expectations

Background to Reform

Chief Executives (CEG) – read pages 1, 3-5 for information

Plan development leader and members – skim read

Part 1: Expectations

Outcomes

Process

Plan development leader – read in detail, establish broad plan development programme

Plan team members – skim read

Part 2: Suggested detail of plan development

Plan development leader – read in detail, establish individual plan development steps

Plan team members – as plan progresses, read each step in detail prior to its commencement

Background to Reform

The Need

New Zealand's emergency management agencies have to cope with the challenges posed by a broad range of hazards. Flooding is New Zealand's most costly natural hazard, causing an average NZ\$125¹ million damage per year. Potentially the most disastrous natural hazards are earthquakes, especially for large urban centres such as Wellington and Christchurch. The most underrated natural hazard threat for northern regions comes from volcanic eruption. Exposure to technological and other man-made events – such as the 1998 Auckland power crisis – is increasing as growing urban populations become more reliant upon stable infrastructure, and levels of technology become ever more complex.

For a number of years, serious concerns about emergency management in New Zealand have driven reviews and proposals for change. Many reports note unrealistic expectations of levels of preparedness and assistance, concern over levels of adequacy of local risk management, and a national capability that is untested, fragmented and, at best, only adequate.

The New Zealand Government has determined to improve the ability of emergency management sectors to manage hazards, respond to and recover from disasters, and to better coordinate limited resources. Improving New Zealand's civil defence emergency management includes:

- strengthening relationships between sectors and agencies involved in CDEM activity
- encouraging cooperative planning for continuity of service and contribution to disaster response
- seeking commitment to deliver more effective risk management, especially risk reduction through a range of policy and planning initiatives.

Making New Zealand Resilient

Parliament has enacted the CDEM Act 2002 (“the Act”), to repeal and replace the Civil Defence Act 1983. The Act is supported by a vision of:

Resilient New Zealand – strong communities, understanding and managing their hazards

The Act requires a risk management based approach to the sustainable management of hazards, both natural and man-made. This risk management process is applied across risk reduction, readiness, response, and recovery, as well as being integrated through the involvement of all sectors within the wider CDEM community. The Act's stated purposes include:

- improving sustainable hazard management to improve safety of the public and property
- encouraging communities to achieve acceptable levels of risk
- requiring local authorities to coordinate CDEM planning and activity
- ensuring integration of national and local CDEM planning
- encouraging CDEM coordination across a range of agencies that prevent or manage emergencies.

CDEM Group planning is fundamental to achieving these purposes. Whilst formally comprising the local authorities and emergency services within a regional boundary, CDEM Groups also involve lifeline utilities, government departments, local businesses, community groups and others who have a vested interest in planning for the safety and prosperity of their region.

Developing a Group Plan is an important undertaking. The relationships and arrangements that build strong communities are building blocks that together make New Zealand more resilient to disasters.

¹ Ministry for the Environment, *The State of New Zealand's Environment*, Govt Press NZ, 1997 (Ch7.16)

Part 1: Expectations of CDEM Group Planning

1.0 Planning Outcomes

The obvious plan outputs from hazard management include:

- a description of what can happen - the consequences of disasters (through risk analysis)
- specifying the tasks or functions necessary to address the consequences (via risk treatment)
- detailing how these functions will be carried out (in operational arrangements).

The broader desired outcomes of CDEM planning and activity are set by the Act’s purpose, the Group’s functions and any unique Group requirements.

Together, these three aspects can serve as a simple checklist against which processes and outcomes of the Group may be tested. As each stage of the planning process is carried out (for example a hazard workshop) the planning team should ask itself:

“Does the process or result enable the Group to carry out its functions and thereby achieve the outcomes sought by the Act?”

Example

Process/ Result	Group Functions [s17 and s48]		CDEM Outcomes [Act purpose s3]	
			Other desired outcomes	
Hazard Workshop	Identifying, assessing and managing hazards and risks	✓	Sustainable hazard management through risk identification, assessment and management	✓
	Consulting and communicating risk management	✓	Community participation in accepting levels of risk	✓
	Identifying risk reduction processes		Provision of response and recovery activity	
	Providing appropriate organisational structures and trained personnel		Coordination of local authority planning across the 4Rs	
	Performing response and recovery		Integration of local and national CDEM planning (between CDEM Groups, between agencies, between Groups and the Ministry)	
	Assisting other CDEM Groups		A multi-agency approach to CDEM planning	
	Raising awareness, monitoring and reporting compliance with the Act and other relevant Acts		Supporting the principles of the Treaty of Waitangi	
	Maintaining a CDEM Group Plan		Addressing the needs of ‘at risk’ groups of the community	✓
	Participating in the National CDEM Strategy and Plan		Displaying equity and fairness across CDEM Group partners	
	Promoting CDEM			

Another way of answering the question “Are we doing the right thing?” is to compare the Group’s work with the key principles underpinning CDEM as endorsed by the New Zealand Government (Cabinet State Sector Committee minute STA (96) M10/4). These are:

- 1 Comprehensive (4Rs – risk reduction, readiness, response and recovery) and integrated (all agency) emergency management systems
- 2 An ‘all hazards’ approach – natural and man-made
- 3 Structures underpinned with appropriate technical information and expertise
- 4 Recognition and involvement of volunteer organisations
- 5 Declarations made at the most appropriate level of government by elected representatives
- 6 Individual and community responsibility and self-reliance
- 7 Property owners are responsible for property (re) construction
- 8 Routine events and emergencies are best handled at the local level.

Reality Check

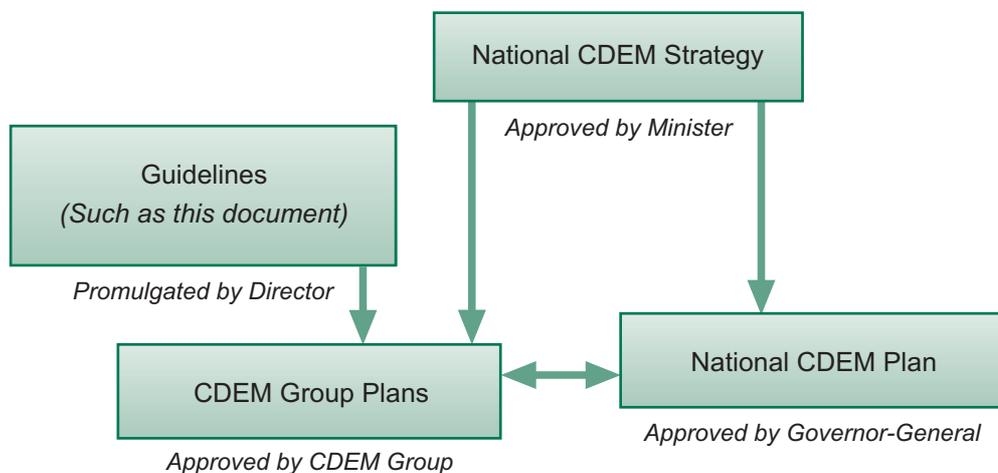
In the relatively short period of two years, CDEM Groups may not be able to produce plans to the detailed level illustrated in parts of this guideline because:

- hazard information may not be available
- longer periods of consultation with affected sectors may be required
- the planning process is not linear
- planning is subject to political considerations
- the resources available to produce the plan are limited.

Whilst plans must adequately address the required measures as robustly and comprehensively as possible, it is likely they will deliver their full range of expectations in their second generation. What is important is that a sound risk management approach is followed, relationships between partners are strengthened, and that targets and actions are put in place to address high priority issues.

1.1 CDEM Planning Relationships

Under the Act, CDEM planning relationships are as follows.



The National CDEM Strategy will set out the Crown's CDEM goals, policy objectives and measurable targets. CDEM Groups are able to influence the nation's CDEM direction through participating in the development of the National CDEM Strategy. CDEM Groups are directly linked with the National CDEM Strategy in three ways:

- CDEM Groups must state the objectives of their plan and show how each relates to the National CDEM Strategy [s49(2)d]
- the Group Plan must not be inconsistent with the strategy [s53(1)]²
- a CDEM Group's actions must also not be inconsistent with the National CDEM Strategy [s37(1)].

CDEM Group Plans are expected to be consistent with the broad goals and objectives likely to be in the strategy, such as:

People and communities able to provide for their own safety and well being

- Increase the level of individual and community awareness of hazards and risks and preparedness to deal with emergencies
- Increase public participation in determining acceptable levels of risk for the community
- Increase awareness and use of risk management in CDEM planning and decision making

Whilst the Act does not directly link the National CDEM Plan to CDEM Group Plans, both will be developed over similar time periods and must be linked to ensure a seamless transition between managing events of local and national significance.

CDEM Group planning is partially reliant upon the two main aspects of the National CDEM Plan:

- Those hazards and risks to be managed at the national level, and how they are to be managed.
- The CDEM arrangements of national agencies to manage hazards and risks (including CDEM Group linkages).

Therefore the National CDEM Plan will be developed incrementally and consulted in stages with both local and central government. Key elements of the national plan will be available to inform the Group planning process.

1.2 Timing and Duration of Plans

The Act requires that plans be approved at a CDEM Group meeting within two years of formation [ss54 - 57]. The operative period of a plan is specified in the document, and may be up to five years – although provisions for earlier review or amendment are included. A review may result in no change, amendment, revocation or replacement. Minor changes that have no effect on the rights of any person may be made without reviewing the plan.

Each review of a CDEM Group Plan requires public consultation and Ministerial review [s49 and s9].

1.3 CDEM Group Plan Content

The content of a CDEM Group Plan must address the [s49(2)]:

- local authorities' membership of the Group
- hazards and risks to be managed by the CDEM Group

² Square brackets [s X] denote reference to section within the CDEM Act 2002

- CDEM measures necessary to manage the hazards and risks
- objectives of the plan and the relationship to the National CDEM Strategy
- apportionment of liability for the provision of resources for the activities of Group members
- arrangements for declaring states of emergency
- arrangements for cooperation and coordination between CDEM Groups
- period for which the plan remains in force.

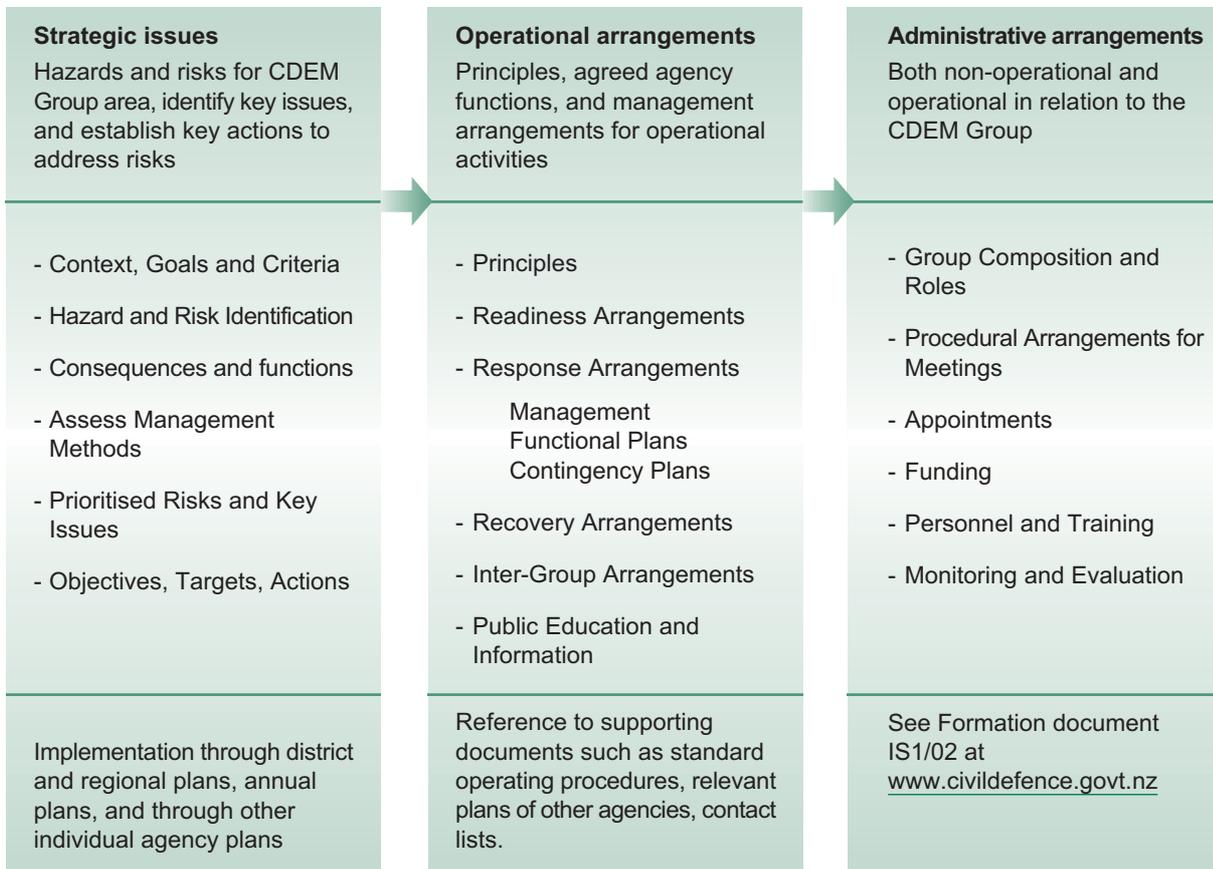
CDEM Group planning should be seen as an opportunity for bringing partners together to clarify roles and responsibilities and to foster relationships. The plan itself simply serves to document risk management outcomes, agreed actions and the principles of operation within which agencies cooperate. Planning outcomes (such as agreed targets and actions or operational arrangements) are committed to by incorporating them within the existing processes of respective Group members.

Key Message

CDEM Groups must apply risk management – we suggest basing this on the New Zealand standard AS/NZS4360:1999 Risk Management

The Group Plan should be as simple as possible and easily understood. Complex or detailed risk analysis studies (to a depth that resources and technical expertise permit) should be placed in referenced documents or annexes.

The required contents can be logically grouped together into three broad development areas or stages as suggested below:



1.4 CDEM Plan Development Schedule

The Act provides some guidance on plan development and timing:

Activity	CDEM Act 2002 Ref	Constraints
1 CDEM Act 2002 commencement	s2	1 December 2002
2 CDEM Group formed	s12 (1)	within six months of commencement
3 Plan public notice	s52(1)(a)	
4 Public submissions	s52(1)(b)	one to three months duration
5 Hearings	s52(1)(c)	
6 Ministerial review	s52(1)	20 days
7 Group meeting to approve plan	s52(1)(e) &54	within two years of formation

These steps form the basis of a project plan for the Group's formation and plan development. More flexibility exists within the project if a large amount of this planning work has been carried out in advance of enactment during the early stages of formation.

Commencement (years)	2003		2004		2005	
1 Dec 02						
Formation of CDEM Groups						
Planning Guideline (this document)						
National CDEM Strategy development						
CDEM Group Plan development						
National CDEM Plan development						

1.5 Communication And Consultation

The CDEM Act seeks to encourage and enable communities to determine acceptable levels of risk. This is achieved through the actions of representative bodies such as local authorities. It is a requirement to identify, assess, manage, consult and communicate about risks and is likely to happen via existing processes. This can be fulfilled through a process similar to the special consultative procedure used by local government as defined in section 716A of the Local Government Act 1974. Before a CDEM Group Plan is developed the Group must [s52]:

- give public and any specific notice the Group considers appropriate, of the proposal to develop a plan
- specify a period within which submissions may be made to the Group or its subcommittee/s (*between one and three months*)
- ensure that any person who makes written submissions within the specified period is given a reasonable chance to be heard by the body to which the submission was made
- make all written submissions available to the public unless there is a good reason in law to not
- make the final decision on the proposed plan at a meeting of the CDEM Group.

Local government has sound consultation processes; therefore this guideline does not attempt to provide guidance on consultation.

Before approving a CDEM Group Plan the Minister administering the CDEM Act must be allowed 20 working days to comment [s49(1)]. In practice, the Minister's representatives (the Ministry) will assist with and advise on plan development across New Zealand to promote consistency of approach. This guideline is the basis upon which the Minister's assessment will be made.

1.6 Plan Implementation

The CDEM plan process provides a structured way of coordinating and assessing risk management practices. Decisions (eg, agreed targets and actions) that flow out of the CDEM Group Plan will be implemented through existing processes. Significant activities need to be accounted for in annual or financial plans of particular local authorities or partner agencies. Other actions might relate to all local authorities agreeing to implement an action through the district plans or other existing planning instruments.

The Act does not allow CDEM Group Plans to contain legally enforceable directives eg, it does not allow for rule making as the Resource Management Act 1991 does. Other mechanisms for commitment to risk management action are already available to local authorities. For instance:

- bylaws under the Local Government Act 1974
- the Building Code
- the Resource Management Act 1991, the Soil Conservation and Rivers Control Act 1941, etc.

1.7 Plan Monitoring and Evaluation

As you develop a CDEM Group Plan, consider how it will be monitored and evaluated. Monitoring and evaluation based on progressive documentation allows a measure of success to be demonstrated, thereby ensuring continuing support of the community. The approach to the plan must be viewed as a partnership between the different organisations and groups.

Detail on monitoring and evaluation processes is provided in Part 2 of this guideline.

1.8 Transitional Arrangements

Retention of adequate civil defence plans is a continuing requirement. Existing plans will remain in force until the new CDEM Group Plans have been prepared.

No amendments can be made to the *National Civil Defence Plan* after commencement of the CDEM Act. Revisions to all sections have been made prior to commencement so that it remains adequate until replaced by the new National CDEM Plan required by the Act.

Review of regional and local civil defence plans is still required under the transitional arrangements outlined in s119(1) of the Act until the plans are superseded by the first CDEM Group Plan.

Transitional arrangements allow for review whenever the plan no longer makes adequate provision for civil defence measures. The other change from existing review provisions is that the Director will undertake approval references for regional plans, because Civil Defence Commissioners will cease to be a statutory appointment under the CDEM Act.

Existing plan revision is therefore required where the adequacy of the plan is under question; and where undertaken, the review and approval process outlined in the Civil Defence Act 1983 [ss24 and 26 for regional plans, ss35 and 37 for local plans] must be observed for changes to plans to be legally valid.

1.9 Planning Considerations

Section 7 of the Act directs all persons developing CDEM plans to be cautious in managing risk, even if there is scientific and technical uncertainty about those risks. In other words err on the side of caution. An example of how to address this planning consideration taking a precautionary approach is provided on page 29.

The Act also requires that those involved in developing a CDEM Group Plan consider wider issues including [s38]:

- (a) the responsibility of people and communities to provide for their own well-being and the well-being of future generations
- (b) the benefits to be derived for people and communities from the management of hazards and risks
- (c) New Zealand's international obligations.

So what do these statements mean?

Responsibility of people and communities

Responsibility involves ensuring that the hard decisions about hazard management are taken now, and not avoided or left for future generations to inherit. Such decision making must be through a community-wide process, using and improving consultation processes that afford communities the opportunity to accept levels of risk.

Inherent in the consultation process is the assumption that a Group's members have sufficiently educated the public to understand the hazards they face as well as the levels of reduction, readiness, response and recovery.

Benefits

In order to make sound judgements on acceptable levels of risk, communities must be presented with quantified analysis of the costs and benefits of various options, as well as the potential consequences of not managing risk. Differing risk management options must therefore be assessed and the results presented to communities prior to selection of treatment options.

This approach of analysing costs and benefits of options should apply to all CDEM Group decision making processes, whether selecting structures, processes or hazard management options. Equity and fairness considerations are common practice under the Local Government Act 1974. Section 62 of the CDEM Act reinforces this approach by placing a duty upon planners to consider alternatives and assess costs and benefits whenever CDEM Group plan provisions impose requirements on persons other than the Group itself.

International obligations

International obligations relate to agreements (and treaties) between the New Zealand Government and foreign governments and/or international organisations. These obligations do not directly extend to CDEM Groups unless given effect in domestic law and regulation. However CDEM Groups have an implied duty to not act in opposition to policy or legal commitments of the government.

Examples include acting in accordance with human rights conventions or considering linkages to international organisations or protocols for international disaster aid provision.

1.10 Consequence-Based Versus Resource-Based Approach to Planning

Consequences can be immediate or subsequent. For example, an earthquake may impact on mains power by tripping relays and severing connections. An immediate consequence is loss of service, while a subsequent result is food spoiling in household freezers. Consequences, once properly analysed, translate into functions or tasks.

The advantage of starting from examining the effects an event can create is that we produce a list of functions that must be carried out and documented in the plan. By comparison, an approach that starts with listing available resources may overlook critical gaps (for which no resource currently exists). Whilst the reality is that 'we go with what we have on the day', strategies and planning should always aim to ensure that supply meets demand.

Key Message

CDEM Group Plans are expected to take a consequence-based rather than a resource-based approach to planning.

1.11 Functional and Contingency Approaches to Planning

Emergency operational planning can be structured with an emphasis on either *functional* or *contingency-based* planning. *Functional planning* outlines the tasks and management arrangements for different agencies working together, irrespective of what event may occur. It is expressed in categories such as community welfare, public information, or evacuation. *Contingency-based planning*, on the other hand, outlines the functions needed to manage the consequences of a particular event such as a hazardous chemical spill.

There are drawbacks to contingency-based planning. Its specificity means that aspects such as community welfare or evacuation may be duplicated in each plan or section of the plan. This leads to the potential for inconsistencies, and those involved in implementing the plans must know all of this information. Implementation of the plan could well be uncertain when an unspecified contingency occurs.

Under a functional approach the evacuation section would outline the functions of different agencies and the management mechanisms in place for this task. However, where functions and management mechanisms might be challenged by a particular event (such as an large volcanic eruption) a contingency plan would be in place, identified by a reference in the (generic) evacuation section.

The framework for developing contingency plans for particular events may be based upon the Incident Action Plans (IAP) approach as advocated by the New Zealand Coordinated Incident Management System (CIMS) - describing response goals, operational objectives and support activities.

Key Message

CDEM Plans are expected to be based upon addressing functions, with contingency plans being added where necessary.

1.12 National Significance

CDEM Groups remain accountable for their area whatever the scale of the emergency. They need to plan for a continuing role if events assume national significance and require national assistance or a

national declaration. CDEM Groups may be directly affected by the event, or play an indirect role by providing assistance under mutual aid agreements or through national direction.

Thresholds for determining national significance in terms of response and recovery effort are likely to be qualitative not quantitative, and vary depending upon the capability of the CDEM Group and the circumstances of the event.

The Director of the Ministry of Civil Defence & Emergency Management (MCDEM) has to identify nationally significant hazards and risks for the National CDEM Plan [s8(2)b]. Each CDEM Group also has to identify their hazards and risks. Together all parties desire a clear and seamless transition between Group and national significance - particularly in defining how response and recovery efforts will be coordinated. Dialogue needs to occur between CDEM Groups, and between Groups and the Ministry over how significant risks are managed.

See the Ministry's discussion paper *Developing a new National CDEM Plan* available at www.civildefence.govt.nz.

National Significance [s3] includes, without limitation, any case where the Minister (administering the CDEM Act) or Director (of MCDEM) considers that:

- there is widespread public concern or interest; or
- there is likely to be significant use of resources; or
- it is likely that the area of more than one CDEM Group will be affected; or
- it affects or is likely to affect New Zealand's international obligations; or
- it involves technology, processes or methods that are new in New Zealand; or
- it results or is likely to result in or contribute to significant irreversible changes to the environment (including the global environment).

1.13 Basis, or Levels, of Planning

Each CDEM Group needs to consider whether to plan on the basis of anticipated maximum likely events, or on worst-case scenarios. Unless scenarios truly reflect what is reasonably credible, participants may become disillusioned with the process - hence the use of maximum likely events is favoured. Sound planning and arrangements are expected to exist for this level of event.

Maximum Likely Event: The largest adverse event scenario that is manageable by the Group, is the Group's responsibility to manage, and has a probability of occurrence high enough to merit attention.

When planning for maximum likely events, consideration is expected to be given as to how adequate arrangements will be when/if a worst-case event occurs. High-impact, low-probability disasters are often viewed as being beyond our economic and social means to address in full. However, CDEM Group planning objectives are expected to provide continuous long-term improvement towards being better able to manage worst-case scenarios.

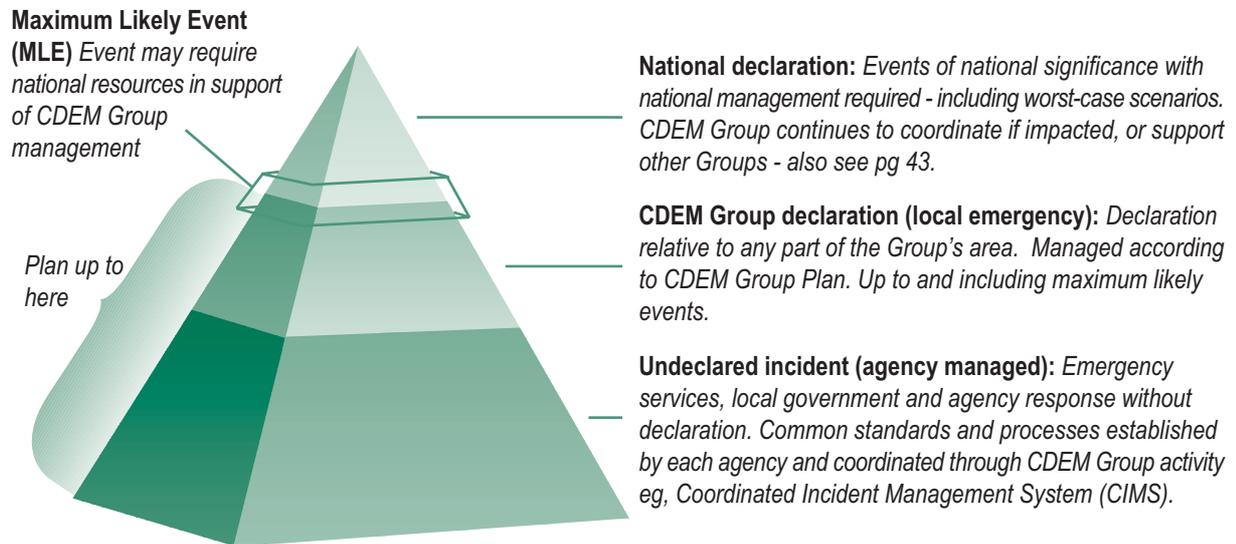
Contributing to national capability

One of the aims of effective CDEM planning is to ensure improved capability for managing large-scale events. This is built upon three platforms as shown in the pyramid overleaf.

- 1 Effective local arrangements.
- 2 Mutual aid agreements with other authorities and agencies (which in turn are premised on the effectiveness of the partners' readiness).

- 3 National coordination in a major event (which is premised on the combined strength of the constituent authorities and agencies).

The levels, or basis of planning may therefore be viewed as a pyramid:



Maximum Likely Event - example:

Scenario: Prolonged low-level volcanic activity necessitates evacuation of large numbers of people via transportation methods that are beyond the resource capacity of the CDEM Group (and neighbouring CDEM Groups) to manage. National and local politicians agree that regional control is to be retained - there is no national declaration. The issue of evacuation resource shortfall was raised by the CDEM Group during its plan development and is addressed in the National CDEM Plan functional plan for mass evacuation. Resources from national agencies are brought in to assist a locally managed gradual large-scale evacuation.



Once a CDEM Group is confident that it has all of the basics right (that sound relationships and arrangements exist to address undeclared emergencies), then it is expected to focus its Group planning effort at the MLE level of the pyramid. The CDEM Act's definition of the term **emergency** includes events that require a significant or coordinated response excluding events that can be dealt with by the emergency services.

Key Message

CDEM Groups require sound relationships and detailed planning between members for events including:

- agency managed undeclared emergencies
- declared emergencies within the Group's capability to manage
- the Group's management of maximum likely events that may require national assistance.

Where a CDEM Group identifies risks with the potential to be nationally significant, it is expected to:

- notify these issues to the Ministry so they can be compared with the Director's identification of national risks during the development of the National CDEM Plan
- enter into discussion with the Ministry and relevant national agencies on the risk and treatment options
- include its agreed role in its Group Plan (the roles of national agencies being documented in the National CDEM Plan and respective agency plan/s).

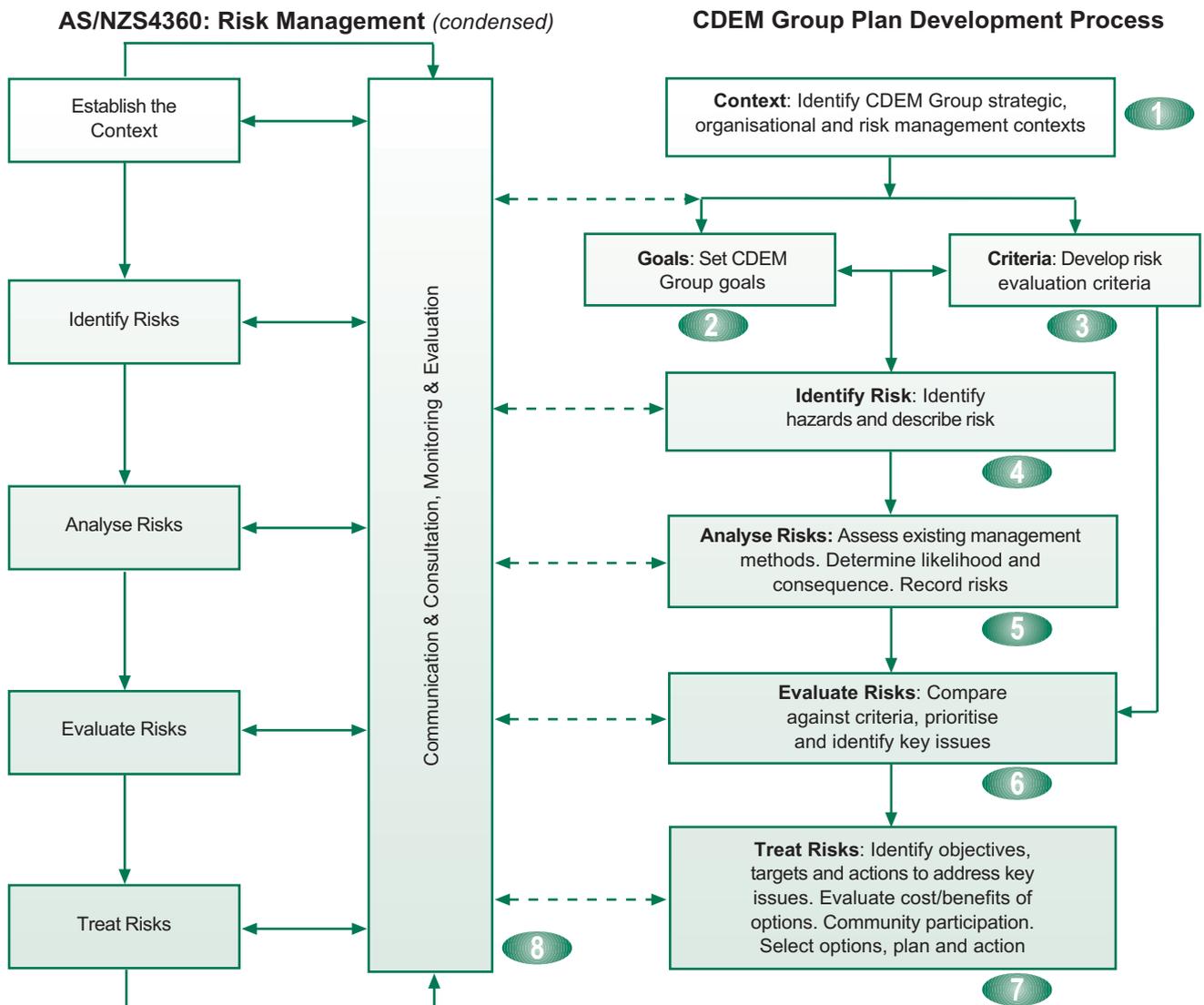
Part 2: Developing a CDEM Group Plan

Strategic Issues

2.0 CDEM Risk Management

The purpose of risk management is to clarify the risks we face and how best to manage them.

The requirement to practice sound risk management is implicit throughout the CDEM Act. CDEM Groups are required to apply risk management to their planning and activities. Whilst planning is not a linear process and may involve many iterative steps, it is expected to follow a risk management based approach. Established best practice is provided by the New Zealand standard *AS/NZS4360:1999 Risk Management* and can be adapted for CDEM planning as follows:



2.1 Step 1 : Establish Context

Context is about defining the parts of the world we own and/or can influence. It helps provide clarity about the bounds of our responsibility. CDEM Group planning occurs within the CDEM Group's strategic, organisational and risk management context³.

Strategic context

Strategic context is defined by our relationship to our environment. This may include financial, operational, competitive, political (public perceptions/image), social, client, cultural and legal aspects of the Group members.

Possible steps to describe this context include:

- identifying internal and external stakeholders and their objectives
- identifying applicable strategic operational plans and reports defining legal, financial, political, social and cultural obligations
- describing the physical environment of the Group and including a map.

Many regional, local and agency plans already include much of the above in their introductions and these may be compiled and gaps filled to reflect a Group perspective.

Organisational context

Organisational context can be established via a concise description of the CDEM Group's proposed structure, personnel and financial resources. Establishing this context will include describing the local authorities and emergency services that comprise the Group, and their roles.

Risk management context

Ideally all CDEM Group members are already applying risk management principles in their respective management of finances, assets and processes. The CDEM Group Plan is just one of many tools in the risk management toolbox.

For example, best practice guidelines for risk management in local government are detailed in SNZ Handbook 4360:2000 *Risk Management for Local Government*. Utility asset management best practice for local government can be found in the *New Zealand Infrastructure Asset Management Manual* - contact Ingenium at www.ingenium.org.nz.

The Health sector applies risk management to its activities. For example, public health risk management plans (PHRMP) are required for drinking water and a risk management framework has been established for food safety. The Fire Service Commission has adopted a risk management policy that informs all decisions concerning the operation of the Fire Service, in particular the way it seeks to promote fire safety. Police operate on the continuous basis of assessing risk and targeting resources to areas of high risk (Strategic Plan 2006).

CDEM Group members will need to carry out cooperative CDEM planning activities within a risk management process. The Ministry suggests that this should be based upon the AS/NZS4360 standard.

2.2 Step 2 : Identify Goals

Activities flowing from the plan will impact communities so it is necessary to define the goals and criteria against which those activities will be assessed in consultation with those communities.

An obvious community issue is potential loss of life or property damage from disasters. Other issues are also important and will impact on whether the different activities investigated in the plan are worthwhile or not. The identification of these will depend on the nature of the communities themselves.

For instance, in areas where unemployment is high, risk-reduction measures that create further unemployment are less likely to be accepted. Rather, risk-reduction measures that support employment opportunities would be more acceptable. By identifying these goals, the CDEM Group Plan provides an opportunity for CDEM to gain a higher level of integration with other functional areas that participants are involved with.

In developing goals, it is useful to consider:

- legislative outcomes sought by the CDEM Act 2002, Local Government Act 1974, Resource Management Act 1991, Building Act 1991, and others
- statements in annual plans, strategic plans, regional policy statements, regional plans, district plans, and existing civil defence plans
- relevant non-statutory documents prepared by local authorities and emergency services
- traditional or historic community preferences.

Example

This plan is based upon the following goals:

1 To provide cost effective and efficient emergency management through partnership and improved coordination.

2 To reduce or mitigate the risks from natural and man-made hazards in a cost effective manner.

3 To minimise the adverse effects of hazards upon life, social and economic fabric of communities, infrastructure, property and the natural environment.

4 To ensure that there is an effective region-wide emergency management capability to respond to, and recover from, natural and technological disasters.

Goals feed into
all following steps



Goals are expected to be:

- communicated to the affected communities before incorporation in the draft CDEM Group Plan
- evaluated against the CDEM Act's purpose and CDEM Group functions.

2.3 Step 3 : Establish Risk Evaluation Criteria

Establishing risk evaluation criteria may include:

- specifying acceptable and unacceptable risks
- outlining methods or processes for assessing cost/benefits of risk treatment measures.

Risk evaluation criteria help determine whether or not a risk should be treated, and if so what level of cost effective measures are required to protect against them. Risk evaluation criteria also include 'real world' constraints imposed upon the theoretical risk evaluation process.

Risk acceptability and treatment options may be based on operational, financial, legal, social or humanitarian issues. For example, a particular risk is identified but the ongoing management of it could be affected by political acceptability or financial affordability.

Criteria may be broad – a general direction to be followed as set out in a growth strategy. They may be more specific – a financial priority set within a budget, or even highly detailed such as a specific target to be achieved.

Examples

Goal 1: To provide cost effective and efficient emergency management through partnership and improved coordination.

Criteria: **Budget** – capped and priorities are set for the next five years

Application: Flood protection measures requiring significant forward budget provision may be the first priority whereas earthworks to protect against landslide may be a much lower priority. The Group Plan risk analysis must acknowledge these constraints.

Goal 2: To reduce or mitigate the risks from natural and man-made hazards in a cost effective manner.

Criteria: **Regional Growth Strategy** – new subdivisions and infrastructure indicated for the next 20 years

Application: If a hazardous area is not identified for development within the period of an already approved regional growth strategy, then the associated risk might be excluded from the risk analysis process.

Goal 3: To minimise the adverse effects of hazards upon life, social and economic fabric of communities, infrastructure, property and the natural environment.

Criteria: **Flood Targets** – no more than 1% of homes should be vulnerable to a 1:100 year flood

Application: If the 1:100 year flood risk in a particular suburban area has been modelled and is likely to impact greater than one percent of the homes in the suburb then the risk must be addressed within the planning framework.

2.4 Step 4 : Identify and Describe Risk

This step involves two main activities:

- identifying hazards
- describing risk.

Identify hazards relevant to the CDEM Group

Firstly, list all known hazards irrespective of subjective judgements (see example below).

Secondly, refine the list by removing hazards where factors such as scale, probability, timeframes, location or speed of onset make them irrelevant to a CDEM Group (see example on next page). Objective decisions can be made - for example a region without snowfall will not include avalanche as a hazard. In most cases a subjective decision will be required. For example, drought might be disregarded where a region has high annual rainfall and has never experienced drought, or financial crisis might be removed as the location of its control renders it outside the ability of a CDEM Group to actively manage.

The Resource Management Act 1991 already requires local authorities to keep information about the natural hazards relevant to their communities (RMA s35(5)). The CDEM Act does not place any further requirements on local authorities for natural hazard identification. The CDEM Act will however require CDEM Groups to manage technological hazards and therefore collect relevant hazard information.

The hazard list is expected to be developed through consultation with all agencies associated with the CDEM Group - perhaps through workshop forums and the review of existing plans, lifeline and scientific studies. The refined hazard list should be compared against those of adjacent and/or similar CDEM Groups to highlight any oversights.

Example: Hazards – full list

Group	Hazards name/source	Remarks or examples
(N) Natural <i>Geological</i> <i>Atmospheric</i> <i>Meteorological</i> <i>etc</i>	1 Flood	
	2 Storm/cyclone	
	3 Storm surge	<i>Includes tidal and coastal erosion issues</i>
	4 Snowstorm	
	5 Drought	<i>Urban or rural implications</i>
	6 Tornado	
	7 Avalanche	<i>Rock, ice or snow</i>
	8 Earthquake	<i>Distant or local, includes liquefaction</i>
	9 Volcano, geothermal and lahar	<i>Distant or local</i>
	10 Tsunami	<i>Local or teletsunami</i>
	11 Fires – rural	<i>Wildfire</i>
	12 Landslip	<i>Includes serious erosion, subsidence, land loss due to sea level rise, instability</i>
(H) Man-made <i>Technological</i> <i>Anthropogenic</i> <i>Biological</i> <i>Sociological</i> <i>etc</i>	1 Lifeline utility failure	<i>Electricity, water, w/water, gas, telecom, computer systems</i>
	2 Major Infrastructure failure	<i>Bridge, dam, building structural failure</i>
	3 Hazchem incident	<i>During production, transport, storage – spillage, leakage, fire, explosion</i>
	4 Explosion	<i>Gas, petroleum</i>
	5 Fire – urban	<i>Includes fire following earthquake</i>
	6 Major transport accident	<i>Air, sea, road, rail</i>
	7 Environmental pollution	<i>Significant in scale</i>
	8 Space debris	<i>Meteorites, comets, man-made vehicles (natural and man-made)</i>
	9 Agricultural/horticultural emergency	<i>Animal or plant disease/epidemic, insect pests, crop failure</i>
	10 Public health crisis	<i>Pandemic, community quarantine</i>
	11 Financial crisis	<i>Stock market crash, computer systems failure</i>
	12 Criminal acts	<i>Civil disturbance, terrorism, cyber-terrorism, vandalism</i>
	13 Hostile acts	<i>War, insurrection, nuclear/biological/chemical threat</i>

Describing risks – areas of impact

Risk is defined as *the chance of something happening that will have an impact on objectives (or people and property for CDEM purposes) – measured in terms of consequences and likelihood⁴.*

Approaches used to describe risk impacts can include checklists, judgements based on experience and records, brainstorming, flow charts, and scenario analysis. The most common and intuitive way to describe risk is in the form of scenarios. For each hazard, a plausible maximum likely event (regional scale) scenario can be developed to help participants consider possibilities. Scenarios include event descriptions, broad descriptions of physical impacts and wider consequences. Scenarios should be in précis form and reference made to other documents, studies, etc.

It is important to re-emphasise that plans are expected to take a consequence-based approach. Scenarios as a minimum need to identify the areas of impact for the relevant source or classification of risk⁵. Particular emphasis should be placed on describing consequences that impact upon the goals and risk evaluation criteria established in Steps 2 and 3.

Example

Goal 3: To minimise the adverse effects of hazards upon life, social and economic fabric of communities, infrastructure, property and the natural environment.

Useful areas to address in the scenarios descriptions of consequence are therefore:

- (H) Human impact (in terms of numbers of dead, injured, displaced)
- (E) Economic cost (total dollar costs for all categories, human and infrastructure, includes long-term recovery plus loss of business, includes direct and indirect costs)
- (S) Social impact (disruption to normal social function)
- (I) Infrastructure impact (buildings, structures, utilities)
- (G) Geographic impact (impact on environment, topography, natural resources)

This 'HESIG' analysis of impact can be represented in tabular format – for example, a reduced list of hazards considered relevant to the CDEM Group could be:

Example: Reduced relevant hazard list and impacts

Source of Risk	Area of Impact				
	H	E	S	I	G
- Hazards (natural)					
1 Flood and storm/storm surge		●		●	●
2 Earthquake	●	●	●	●	
3 Volcano		●	●		●
4 Tsunami	●	●	●	●	
5 Fires – rural					●
6 Landslip	●			●	●
- Hazards (man-made)					
7 Lifeline utility failure		●	●	●	
8 Hazchem/substance spill and pollution		●			●
9 Fire – urban		●		●	
10 Major transport accident	●	●			
11 Agricultural/horticultural emergency		●			●
12 Public health crisis	●	●	●		
13 Civil unrest	●	●	●		

See explanation above

Insufficient detail may exist for particular hazards to enable detailed scenarios to be developed - especially for man-made hazards. However, the risk management process is an iterative one. A 'first-cut' scenario simply serves to initiate the planning process and get workshop participants thinking along the same lines. Seeking more technical information about a risk could be a target at the end of the process if the risk is found to be a high priority following the analysis at Step 5.

Example: Scenario (maximum likely event)

Scenario #X: Transport Accident – Air **Location:** Welauckurch International Airport

Scenario: At 9am local time, a fully laden Ustral Airlines 747 bound for Hong Kong collided mid-air with a light aircraft at 5,000 ft AGL 10km out from Welauckurch International Airport. Debris, damage and fires are spread over a 2km radius centred on the suburban centre of Heathshore and Ponds Lake directly below the northern flight path.

Impact/consequence

Human:

- Passenger and crew fatalities: up to 320 people
- On ground fatalities: up to 40 people during peak shopping hours if Heathshore Mall is impacted
- On ground injuries: ‘dozens’ of trauma injuries including many severe burns cases
- Entrapped persons and building collapse
- Severe pressure on emergency, health and mortuary services

Economic:

- Negative impact upon regional reputation and tourism industry
- Possible 5% downturn in visitor numbers for a six-month period yields a \$20m loss to the region
- Long-term regional economic loss of 1% due to business closure

Social:

- Severe psychological impacts due to the loss of life and random nature of the incident
- Political impacts of adverse international media pressure, loss of international reputation and tourism

Infrastructure:

- Fire and structural damage to buildings - potential fire spread
- Damage and disruption to above ground infrastructure eg, power transmission lines, road blockages
- Car accidents and gridlock due to peak hour traffic

Geographic:

- Fuel and contaminants flow into Ponds Lake, the Afron River and subsequently Manuiwi harbour

Consequences and functions

Scenarios are employed as a means of achieving:

- risk analysis, prioritisation and key issues identification
- an understanding of consequences, identification of functions which can then be addressed in operational arrangements.

A list of functions required to address the consequences must therefore be developed during the planning process. The agreed operational arrangements will document the lead and support agencies with mandated responsibility to perform the functions, along with the requisite processes and resources.

Example

Consequence:	Building Fire
Function:	Fire suppression
Lead Agency:	NZFS
Mandate:	Fire Service Act 1975
Process:	National Commanders Instructions
Resource:	800 appliances, 9690 staff

Documented in operational response arrangements - page 40



2.5 Step 5 : Analyse Risk

This step involves four activities:

Assessing and recording the ways in which the risks can be managed by identifying:

- (a) existing methods for managing the risks
- (b) gaps, inconsistencies and inefficiencies in the existing methods.

With this informed understanding of how the hazard is managed, the Group can then:

- (c) refine its analysis of the likelihood and consequences of the event
- (d) record the risks – for example in a 'Risk Register'.

(a) Identifying existing management methods

It is important to identify existing controls across the 4R's for all hazards in each of the local authorities, emergency services, lifeline utilities, departments and others who participate in the CDEM Group Plan development process. The following are possible sources/functional criteria for identifying relevant mechanisms:

- statutes, regulations, codes of practice
- policies, rules, methods in regional policy statements, regional plans, district plans, by-laws
- strategic and annual plans
- 10-year financial strategy – especially activities identified under section 112L(h) of the Local Government Act. This requires local authorities to identify estimates of commitments and contingencies for future events that they could reasonably expect to occur
- civil defence and risk management plans
- lifeline studies where applicable
- emergency services continuity or contingency plans
- departmental regional continuity or contingency plans
- programmes, projects or initiatives by any Group participant.

It is important to emphasise that this process does not duplicate existing regional, district or other planning. The objective is to gather together and make sense of many individual strands of hazard management information. The plan can compare different methods in a variety of ways:

- within each of the 4Rs
- for different hazards or risks
- within different regulatory mechanisms – such as those under the Resource Management Act, Building Act, Fire Service Act, Civil Defence Emergency Management Act, etc
- within different functional areas of local authorities/agencies
- by grouping within categories such as MANDATE, PROCESS and RESOURCE by which an agency or sector is able to perform a function to consequences.

(b) Identifying gaps, inconsistencies and inefficiencies

Once everyone within the CDEM Group understands clearly the different mechanisms in place, it is possible to identify gaps, inconsistencies or inefficiencies in those mechanisms. Highlighting differences may lead to agreement on improvement or standardisation of approach.

Relevant controls may not be in place specifically to address hazards and risks. Often, different policies and rules adopted by local authorities have unintended spin-offs for emergency management.

For example, where policies are in place to ensure public access to riversides, risks to the community from flooding may be reduced because building has been restricted in potentially flood-prone areas. Similarly, where height restrictions on buildings are in place for aesthetic reasons, the risk from earthquakes to the community may also be reduced. However, because these policies have an effect on the risks faced by the community, they should be identified in this plan (or at least in its development).

Gaps may relate to particular members – for instance an emergency service may not have a process (such as a plan) in place to adequately address the consequences of a volcanic hazard, while local authorities do. Gaps may also relate to specific hazards and risks across the entire CDEM Group area – the mechanisms in place may not adequately address the earthquake risk for the entire area to the Group’s satisfaction. Note that at this stage it is unnecessary to find solutions. You simply need to identify where the gaps occur.

As a general rule, it is desirable to have consistency across the Group area, except where local circumstances (or a local community’s expectations) provide a reason for a different approach. Examples of areas where consistency is particularly desirable include:

- public education and information – particularly for risks shared across the CDEM Group area
- operational processes and facilities
- risk reduction measures where risks are shared across the CDEM Group area.

It is also important to consider whether the mechanisms are efficient and effective across the CDEM Group area. There are likely to be considerable opportunities to identify areas for improvement in the initial years of CDEM Group development. For instance:

- a change or increase in the number of emergency operation centres may produce a more appropriate arrangement for emergency response (refer also to the Formation guideline)
- cost savings might be achieved by coordinating public education and information, for example through producing common educational and informational products.

Following detailed study, the controls/management mechanisms can now be tabulated for display. The following examples show controls grouped and examined by consequence and function, by hazard, and across the 4Rs:

Example of existing management methods grouped by consequence and function

Consequence	Building Damage	
Function	Inspection/Assessment	
Lead & Support Agencies	Local Government - NZFS	
Mandate	Building Act 1991	Weak 'loose' mandate only
Process	NZSEE guidelines	Not widely implemented
Resource	Inspectors	Small pool only, lack of resources and trained assessors

Example of existing management methods grouped by hazard

<p>Earthquake</p> <p>Building Code Territorial authorities A, C, and D have processes to ensure that any proposed structures meet the Building Code standards. Existing structures that do not meet current standards have been identified and will require strengthening if any change of use or alterations is proposed.</p> <p>District Plan Territorial authority A's district plan prohibits new building within areas of seismic risk. Territorial authority D's district plan prohibits any new building within 20 metres of identified fault-lines. Both authorities have identified these areas and fault-lines on planning maps and have rules in respective district plans.</p> <p>Financial Provisions Local authorities A, B, and E are members of the Local Authority Protection Programme scheme, and C has financial provisions to ensure adequate finance to undertake restoration of structural assets.</p> <p>Lifeline Utility Continuity Plans Eight out of ten core lifeline utilities in this area have contingency plans that consider the effects of an earthquake.</p> <p>Emergency Services Continuity and Response Plans Police and Fire have both identified critical facilities within the fault-affected zone but have yet to develop continuity plans for these facilities. Fire Service response plans for the region are to be revised to consider fire following an earthquake. Health services, including ambulance services, have major facilities in the zone and have yet to consider this hazard and plan accordingly.</p> <p>Government Department Contingency Plans Civil Defence Plans Education Programmes.....etc</p>
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Example of existing management methods grouped across 4Rs

Control Source/ Functional Criteria	Controls	Gaps	Inconsistencies	Duplication	Possible Solutions
What is being done across the 4Rs within: local government, Police, Fire, Health, and other partners eg, MAF, DoC					
<p>Planning: (Regional and district plans, building codes, emergency services planning) Sub-division planning linked to analysis of all hazards? Building code enforced? Clarity on 'at risk' buildings? Emergency service plans linked to TA's and DHB's? Health plans consider regional hazards and risks?</p> <p>Finance Education, etc</p>	<p>Local Govt – reduction All TA's have identified hazards within their regional and district plans. There is relatively good information about landslip susceptibility.</p> <p>Emergency Services – 4Rs ESCC and HSTLC committee processes exist within the region – but are variable in effectiveness.</p>	<p>Local Govt – reduction The consents processes are not well linked to hazard management knowledge within several councils.</p> <p>Emergency Services – readiness Planning for major transportation accidents is inadequately based upon 'scale-up' from small incidents.</p>	<p>Transport Utilities – response CIMS is not adapted to the same standard by airport and port emergency staff compared to Police and Fire.</p>	<p>Emergency Services – response Transportation accident planning reveals duplication of roles.</p>	<p>Group – all Combined major transport accident scenario workshop led by the ESCC to ensure respective planning is coordinated and adequate within Group Plan process</p>

(c) Refining likelihood and consequences

At this point a general understanding of the hazards and their consequences has been gained through scenario development. The effectiveness of existing controls has also been reviewed in light of these scenarios.

Given this knowledge, it is now possible to refine the likelihood and consequences and begin comparing risks against each other.

A note on cumulative risk

International events reveal that damage that can be inflicted from sources that are smaller and more frequent in activity than from a single source that might be considered for a maximum likely event. It is therefore important to consider total risk as being a combination of individual scenarios and probabilities. This means considering the cumulative effects of individual hazards (eg, multiple fault-lines) and combining a suite of scenarios, together with the probability of each.

Example

The Alpine fault has a return period of 300 years approx, however other faults such as the Hope fault contribute significant risk to Canterbury. The cumulative probability of a damaging earthquake in Christchurch City for MM VII is a return period of 170 years and for MM VIII a return period of 1700 years.

Quantitative analysis is where numerical values are assigned to both consequence and likelihood using data from studies. This can be a useful modelling technique where more specific criteria rather than subjective assessment are made.

Qualitative assessment techniques are offered by the AS/NZ4360 standard with descriptors for consequence of impact and likelihood of events. It is recommended CDEM Groups use or adapt the standard to produce a consistent approach to risk analysis. Qualitative analysis will be the preferred method by most Groups. The example below shows a qualitative matrix adapted from the tables at Annex E of AS/NZS 4360.

Example: Measure of consequence of Impact

Level	Descriptor	Detail description
1	Insignificant	No injuries, little or no damage, low financial loss
2	Minor	First aid treatment, minor building damage, medium financial loss
3	Moderate	Medical treatment required, moderate building and infrastructure damage, high financial loss
4	Major	Extensive injuries, high level of building and infrastructure damage, major financial loss
5	Catastrophic	Deaths, most buildings extensively damaged and major infrastructure failure, huge financial loss

Example: Measure of Likelihood – generic

Level	Descriptor	Description – (general)
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Might occur at some time
D	Unlikely	Could occur at some time
E	Rare	May occur only in exceptional circumstances

CDEM Groups may wish to refine the analysis quantitatively to address specific hazards. For example the NZS 4360 matrix for likelihood might be adapted as below:

Example: Measure of Likelihood – hazard specific quantitative

Level	Flood (Annual exceedance probability) AEP	Earthquake – return period	Rationale/benchmarking
A	1:20	0-20 years	
B	1:50	20-50 years	Likely – better than even chance of occurring within a design standard or accepted timeframe (eg, 50 years for a building)
C	1:100	50-100 years	
D	1:200	100-500	
E	1:500	500+	

Categorising risk

When the two tables (likelihood and consequence) are combined the resultant qualitative matrix yields four levels of risk - Low, Moderate, High and Extreme.

Risk Analysis Matrix – level of risk

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A Almost certain	High	High	Extreme	Extreme	Extreme
B Likely	Moderate	High	High	Extreme	Extreme
C Possible	Low	Moderate	High	Extreme	Extreme
D Unlikely	Low	Low	Moderate	High	Extreme
E Rare	Low	Low	Moderate	High	High

Using this process the CDEM Group can build a picture of levels of risk in relation to relevant scenarios.

Example: Risk Analysis Matrix

Risk	Likelihood	Impact	Level of risk
Landslide on Craig Bend	D	2	Low
Flood on Tiwi Westbank (1:200 AEP)	C	3	High
Tsunami - Eastern Beach	E	3	Moderate
Earthquake – MMVII Riki fault line	C	4	Extreme
Bush fire – Hawks Plantation	B	4	Extreme
Airport plane crash – 747 at Welauckurch Airport	D	5	Extreme

(d) Recording risk

Risks are usually recorded in a register where they impact on respective responsibilities. A risk register, treatment schedule and action plan could be incorporated within the CDEM Group Plan or maintained separately. Many regions and districts already hold some form of register that may suit the Group's requirements. Any risk register should be reviewed annually as part of the annual planning and review cycle. An example of a risk register is contained in Appendix H to AS/NZS4360:1999.

Precautionary approach – example 'Climate Change'

In many cases a CDEM Group may have insufficient technical information to provide certainty to the hazard analysis process, particularly the assessment of the future likelihood or severity of hazards. Section 7 of the Act directs all persons developing CDEM plans to be cautious in managing risk, even if there is scientific and technical uncertainty about those risks. In other words err on the side of caution.

For example, it is now generally accepted that global warming, caused by human emissions of greenhouse gases, will affect the climate, leading to a rise in temperatures and sea levels, and changes in weather patterns. However, there is acknowledged uncertainty about the extent of those changes, and changes in the frequency or scale of meteorological hazards such as flood, storm, storm-surge, drought and coastal erosion. While the general direction of future changes is relatively well established, different climate models show different degrees of change indicating the likely range that a precautionary planning approach should consider.

Example

Range of projected changes in annual mean temperature and precipitation between 1970–1999 and 2070–2099 from four global climate models, for continued increases in greenhouse gas emissions:

Region	Temperature (°C) ⁶	Precipitation (%)
Northland, Auckland	+1.0° to +2.8°C	–10% to 0%
Western North Island from Waikato to Wellington	+0.8° to +2.7°C	0% to +20%
Eastern North Island from Bay of Plenty to Wairarapa	+0.9° to +2.7°C	–20% to 0%
Nelson, Marlborough, to coastal Canterbury and Otago	+0.8° to +2.5°C	–20% to +5%
West Coast and Canterbury foothills	+0.6° to +2.5°C	+5% to +25%
Southland and inland Otago	+0.6° to +2.2°C	0% to +30%

See: www.climatechange.govt.nz/impactsr.pdf

As climate impacts upon many areas of local government activity, it must be aware of and plan for the climate and meteorological hazard changes. It is generally accepted that under climate change, New Zealand's risk of extremely heavy rainfall will increase. However specific model projections for changes in flooding range from no appreciable change in flood frequencies to a twofold increase by 2030 and a fourfold increase by 2070. Specific scientific assessments, such as for increased flooding for West Coast catchments due to climate change, are unlikely to reduce this range of uncertainty for several years.

Adequate CDEM planning steps need to weigh the projected range in flood risk (from “no change” to “fourfold increase by 2070”) against the additional protection costs associated with these plausible scenarios. The simple answer to “What does this mean for the risk analysis process?” is for Group planners to consider such factors – **not simply use historical or current records**, and be cautious when assigning ratings to measures of likelihood, growth or seriousness in any risk evaluation matrix.

⁶ The range of changes indicates differences between the four models. Note the potential for strong gradients in rainfall changes across some regions.

2.6 Step 6 : Evaluate Risk

This step involves two key activities:

- Prioritise categorised risks from step 5 against criteria from step 3.
- Identify key issues.

Prioritise categorised risks against criteria

Relevant hazards were identified in step 4. There needs to be a balance between the ideal amount of risk treatment that can occur, and what can realistically be addressed given resource constraints. It may not be possible in the five-year period of the CDEM Group Plan to address all of the hazards and risks that have been identified. Risk analysis prioritises risks in order to achieve realistic levels of control and treatment - not all risks must be addressed immediately.

The CDEM Group will have set risk evaluation criteria in step 3 against which all the risks can be evaluated. By explicitly prioritising which hazards and risks need to be addressed, the community (through the consultation process) can provide feedback on whether the remaining risks are acceptable, or whether they believe the CDEM Group should invest more of their resources into addressing these.

At the end of step 5 the risks had been categorised into Extreme, High, Moderate, Low. However as there are several risks in each category, how do we determine the order in which to address them?

To keep it simple the Group could agree that all Extreme risks are of equal importance and will be addressed with equal effort. Alternatively the extreme risks could be prioritised further by professional opinion (Delphi technique).

Alternatively, if risks are not considered of equal priority, or when more evidence is required about their relative weighting, a number of numerical techniques exist to help prioritise them. Techniques can be employed that place an emphasis upon particular criteria. For example, from step 3 our criteria included:

- | |
|---|
| Criteria 1: Budget - capped and priorities are set for the next five years |
| Criteria 2: Regional Growth Strategy - new subdivisions and infrastructure indicated for the next 20 years |

From Step 3



Given that our budget is set, and we have defined regional development objectives, the focus of our risk evaluation may therefore be on the speed with which we manage the hazards in relation to the growth of our communities. A risk analysis tool that emphasises these aspects should be selected - for example the SMUG model as explained below.

Caution: The following two pages represent a complex numeric risk prioritisation process.

SMUG Model

A useful model to assist with prioritising risk is the SMUG model. Under this model, the following criteria are considered:

- *Seriousness* – the relative impact in terms of people and/or dollars
- *Manageability* – the relative ability to reduce the risk (through managing the hazard or the community or both). CDEM Group planning is all about addressing the hard issues - the risks that are hardest to manage, which usually have the lowest effort being expended upon them. They should rate high in relative importance – hence the reversal of ratings in the table below.
- *Urgency* – the measure of how imperative or critical it is to address the risk (associated with the probability/likelihood of the risk from the hazard – including return period considerations)
- *Growth* – the rate at which the risk will increase (through an increase in the probability of the extreme event occurring, an increase in the exposure of the community, or a combination of the two).

Each of the criteria is applied to each risk. For each of the four criteria, one risk is chosen as a benchmark on the basis that it is likely to represent the highest score and the other risks are compared to this. Once all of the risks have been rated, a numeric score is assigned to the results:

Seriousness	High = 3	Medium = 2	Low = 1
Manageability	High = 1	Medium = 2	Low = 3
Urgency	High = 3	Medium = 2	Low = 1
Growth	High = 3	Medium = 2	Low = 1

The range of the resulting rank is naturally very small, because the minimum possible score is 4 and the maximum is 12. In our earlier example we had three extreme risks (earthquake, bushfire and aircraft accident) that could be prioritised as follows:

Risk	Likelihood	Impact	Level of risk	Refinement				Rating	Priority
				S	M	U	G		
Earthquake	C	4	Extreme	3	2	2	2	9	2=
Bush fire	B	4	Extreme	2	2	2	3	9	2=
Air Crash	D	5	Extreme	3	2	3	2	10	1

If on completing the above exercise all of the risks fall within a very small range, or some are equal as shown, then more refinement may be desired. The risk evaluation can be made more specific by breaking down the analysis of each SMUG component into detailed rankings from say 1–5, or considering part scores as opposed to whole numbers. Once again – seriously consider whether the following complexity and detail is required. For example:

Seriousness rating

For each risk, rate each of the impact areas (human, social, economic, infrastructure, geographic) between 1-5 using the AS/NZS4360 descriptors then take the average:

Level	Descriptor	H	S	E	I	G	Av
1	Insignificant						
2	Minor						
3	Moderate						
4	Major						
5	Catastrophic						

Manageability rating

Manageability includes both a measure of how **difficult** a hazard's risks are to address and a measure of the level of cross-sector management **effort** being applied to hazards across the 4Rs directly or indirectly assisting in reducing risk. The level of difficulty may, in some cases, be inversely proportional to the management effort, particularly where a hazard appears too big to address and therefore little effort is being applied. Conversely, a lot of effort may be expended upon a relatively easily managed hazard.

There are nine combinations of *difficulty* and *effort* if each is assigned a three level weighting (h/m/l), which can be grouped into a five level rating system as shown:

Management Difficulty	Current Effort (4Rs)	Rating
Low	High	1
Low	Med	2
Med	High	
Med	Med	3
High	High	
Low	Low	4
Med	Low	
High	Med	
High	Low	5

Urgency rating

Rate each of the risks between 1-5 using the AS/NZS4360 descriptors in relation to expected return period:

Level Rank	Descriptor
A (5)	Almost certain
B (4)	Likely
C (3)	Possible
D (2)	Unlikely
E (1)	Rare

Growth rating

There are nine combinations of probability rise and community exposure if each is assigned a three level weighting (h/m/l), which can be grouped into a five level rating system as shown:

Event Occurrence Probability Rise	Changing Community Exposure	Rating
Low	Low	1
Low	Med	
Med	Low	2
Med	Med	
Low	High	3
Med	High	
High	Low	4
High	Med	
High	High	5

Final result and criteria scaling

The evaluation process as described assumes Seriousness, Manageability, Urgency and Growth are of equal merit. In addition to refining the scoring to distinguish priorities, the Group could scale any one or combination of criteria. For example - to focus upon cost implications the process could place greater importance upon the Seriousness of events and therefore total or scale this factor as opposed to taking an average of the impact areas. This refinement process is applied to our earlier example as follows:

Risk	Likelihood	Impact	Level	S					M	U	G	Total	Priority
				H	S	E	G	Av					
Earthquake	C	4	Extreme	4	4	4	3	4	4	1	1	10	2
Bush fire	B	4	Extreme	2	1	1	3	2	2	4	3	9	3
Air Crash	D	5	Extreme	4	2	3	1	3	3	3	5	11	1

Following completion of the risk analysis stage, the Group is expected to seek external peer review and validation of the results.

Identifying key issues

Having identified hazards and risks, existing controls, their gaps and inconsistencies, then prioritised risk, a summary of key issues to be addressed by the plan can be provided. These key issues will form the basis for developing goals, objectives, targets, and actions under treatment options in Step 7.

Without being too specific, the plan is expected to state the particular areas that will be addressed. These may be revisited later in the process. For instance, if later analysis shows that there are no cost-effective measures to address a particular issue, then that will not be listed as a priority.

NOTE: This is an important step – identifying key issues provides a visible summary of the agreed weaknesses to be addressed.

Key issues may identify weaknesses in:

- relationships and communications
- processes or resources
- hazard and risk management.

Example

- 1 Across the Group better communication and coordination is needed between members.
- 2 Staff training and public education are inconsistent throughout the Group.
- 3 There is no Group-wide communication strategy and there is insufficient compatibility between systems across local authorities and emergency services.
- 4 Historical and demographic research suggests that Maori in the CDEM Group area are more at risk from natural hazards.
- 5 The impact on the tourism and service industry from hazards is significant and this is exacerbated as many of these businesses do not undertake sufficient continuity planning.
- 6 Specific hazards requiring more technical analysis are infrastructure failure and tsunami.
- 7 The level of integration with lifeline utilities across the Group is inadequate and there is a lack of information about the risks associated with a major utility failure.

The CDEM Group subsequently checks its list of key issues for obvious conflict with the specified functions of the Group and the desired outcomes of the Act.

2.7 Step 7 : Treat Risk

This step involves three key activities:

- Establish objectives
- Develop targets and actions
- Link strategic risk treatment to operational planning.

Steps 5 and 6 prioritised risks, which the risk management standard⁷ recommends are treated in the following manner:

- E: Extreme risk, immediate action required
- H: High risk, senior management attention needed
- M: Moderate risk, management responsibility must be specified
- L: Low risk, managed by routine procedures

Risk treatment options, which are not necessarily mutually exclusive, include:

AVOIDING the risk by not proceeding with the activity

REDUCING LIKELIHOOD through actions such as project management and preventative measures

REDUCING CONSEQUENCES by actions such as planning and design

TRANSFERRING the risk to another party

RETAINING the residual risk in part after reduction or transfer and plan to manage the consequences.

Within a CDEM Group Plan this treatment process is achieved through agreeing objectives, targets and actions to address the key issues. Responsible agencies must commit to these treatment options.

Establishing objectives

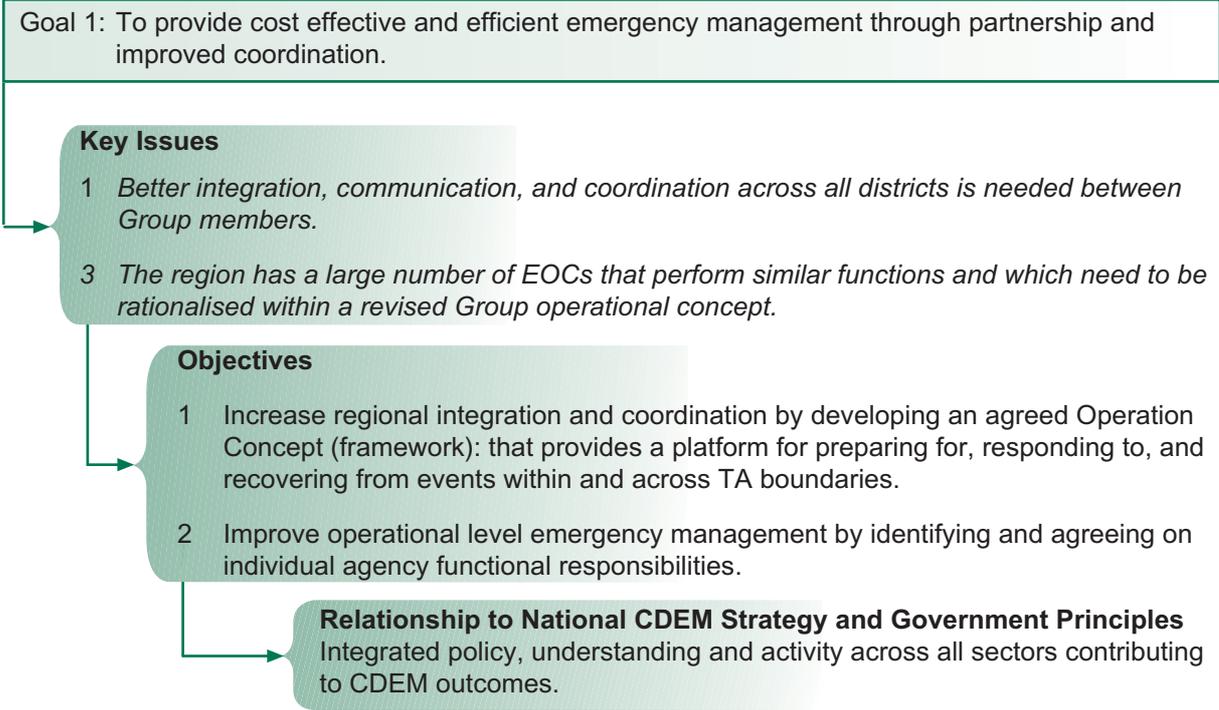
Objectives provide high-level statements that form the basis for determining the more concrete outputs of the CDEM Group Plan – targets and actions based on the treatment options. One or more objectives may address a single, or groups, of key issues.

Objectives in a CDEM planning context:

- are not specific to any particular organisation, business unit, or sector of the community
- provide an overarching framework so that targets and actions which relate to specific organisations all complement each other and are not duplicating effort unnecessarily
- help those involved in, or affected by, the plan to understand what the more detailed recommendations relate to and what they are trying to achieve
- increase the likelihood of acceptance and approval of the plan
- allow those involved in developing the plan to step back from current activities and increase the chance of coming up with new and innovative solutions.

Plan objectives flow out of the goals, and the Group is expected to show how they link to objectives in the National CDEM Strategy.

Example



Develop Targets and Actions

Targets

Targets are intermediate programme results that contribute to achieving an objective. They are quantitative and ideally have a specific timeframe for completion.

There are likely to be a number of targets in relation to each objective. At this stage, the targets do not relate to specific agencies or actions. They are simply measurable outcomes that will help to contribute to an objective. The following example shows how targets might be developed from an objective:

Example: Developing targets and actions from objectives

Objective	Target
Reduce the risk of flooding in the region through an integrated approach within, and across, local authorities	<ul style="list-style-type: none"> • Development of an integrated catchment flood management plan by 200X • Household awareness campaign by 200X on agreed flood treatment methods and advising households of options to treat residual risk such as house and contents insurance
Increase the number of trained volunteers involved in civil defence and emergency management	<ul style="list-style-type: none"> • Survey of community to determine current level of involvement in voluntary activities related to civil defence and emergency management, and reasons for involvement or otherwise by 200X • Development of a CDEM volunteers' strategy for CDEM Group, by 200X

Actions

Actions are agency-specific. They outline agreed agency responsibilities to contribute to targets. In other words they are where the various agencies agree to commit to a particular programme, and to undertake their part in that programme. Prior to agreeing on the particular actions to be undertaken, the following activities are expected to be carried out to ensure that the actions chosen are appropriate:

- alternative actions are considered (including doing nothing)
- the costs and benefits of the different alternatives are considered.

There is likely to be more than one action in relation to each target.

Example

Target	Action
Household awareness campaign by 200X on agreed flood treatment methods and advising households of options to treat residual risk such as house and contents insurance	<ul style="list-style-type: none"> • Territorial authority D will hold public meetings during November and December 200X to inform tourist operators and accommodation owners of extreme flood risks • Regional council will distribute leaflets summarising existing flood management programmes (4R activities) and specifying the residual risk to communities that has been accepted through annual planning processes • Territorial authorities C and D will undertake a joint publicity campaign with the Insurance Council by April 200X for at risk communities

Ensure that every action has commitment through a 'home and owner' giving:

- senior level sponsorship
- reflection in corporate documentation
- funding and resourcing.

Link strategic risk treatment to operational planning

These four checks will assist in linking the strategic and operational aspects of the planning process.

CHECKLIST	✓
We will apply the overarching goals from step 2 (page 19) in order to inform the development of the operational principles (page 38).	
We confirmed that any key issues from step 6 (page 30) that have operational relevance will be linked to the operational principles.	
We ensured that targets and actions from step 7 (above) will be used as benchmarks for improving existing readiness, response and recovery arrangements.	
We took the consequences from step 4 (page 21) and where necessary expanded them to gain an exhaustive list of functions. Where the function is adequately addressed, this is recorded in the response arrangements (page 40). Where deficiencies exist, stakeholder consultation occurs. We will use this list to check the completeness of response planning.	

2.8 Step 8 : Communication and Consultation

Communication and consultation

The CDEM Group Plan is a public document. Therefore it is important to outline the development process and its outcomes to the public. In theory this should be done at each stage of the process to gain assent prior to moving to the next stage. In practice however public acceptance requires presentation of the entire picture, not individual aspects. Consultation involves presentation of the Group's goals, the risks it must address for the public, proposed treatment options and their benefits and costs.

Those reading the plan should be able to identify for themselves the:

- different steps taken to arrive at decisions
- different groups that have been consulted in its development
- decision making processes that were used, and how these relate to the goals.

Interested parties may be given an idea of the submissions received through the consultation process. By including this information, those who disagree with aspects of the CDEM Group Plan are more likely to understand why certain decisions have been made.

The following checklist has been developed to help with the final stages of developing the strategic aspects of the CDEM Group Plan.

CHECKLIST	✓
We have communicated the CDEM Group's overall goals to the community	
We have evaluated those goals against the Act's purpose and the Group's functions	
We discussed our hazard list with the scientific community and compared it against those of adjacent and/or similar CDEM Groups	
We sought peer review or external validation of our risk analysis process	
We validated the key issues for conflict with the CDEM Act's purpose and Group's functions	
The objectives address the key issues and help achieve the goals listed in the plan	
The objectives relate to those in the National Strategy	
The objectives are at the right level – directive and qualitative, with no specific timeframe	
Each target supports the achievement of an objective	
Each target is measurable (quantitative) and has a specific timeframe for completion	
Each action supports a target	
Actions are agency-specific so that it is clear who is responsible for undertaking the action	
We have considered the costs and benefits of the proposed targets and actions	
We have considered the goals of the Group in determining costs and benefits	

Monitoring and evaluation

See pages 47 – 54.

Operational Issues

2.9 Principles for Operational Arrangements

Operational response planning is one option for treating risk – it aims to reduce the consequences of risk.

Operational arrangements primarily address readiness, response and recovery. In contrast, the strategic part of the plan identifies agreed targets and actions for all CDEM Group partners (local authorities, Police, Fire, Health, utilities, etc) so that they can improve performance across the 4R's over the five-year period of the plan.

This section describes the process of defining the operational arrangements and writing them into the plan:

- defining the principles underlying operational readiness, response and recovery arrangements and the issues for consideration
- stating the functions to be performed
- allocating roles and responsibilities
- identifying the supporting documents that are annexed to the plan or managed by contributing agencies.

Under the Act [s49(2)], operational arrangements focus upon:

- civil defence emergency management necessary to manage the relevant Group hazards and risks including roles and responsibilities and how activities are carried out
- arrangements for declaring a state of emergency in the area of the Group
- arrangements for cooperation and coordination with other Groups.

The plan needs to clarify MANDATE, PROCESS and RESOURCE issues for performance of functions. However, it does not need to include all the detailed information and can refer to, rather than duplicate, external documents such as a Fire Service plan on hazardous materials releases. Subordinate documents, such as call-out procedures, will normally be referred to rather than incorporated in the central plan.

It is important that operational arrangements are linked to the strategic aspects, such as the goals, objectives, targets, and actions identified in the plan. Developing and defining principles relating to the strategic part of the plan means that those agencies undertaking activities in operational arrangements have an agreed basis on which to work. In addition, members of the community reading the plan (and making submissions on it) will be better able to understand why various decisions are made in, or flow from, the plan.

The National CDEM Plan will also develop a set of underlying principles that may be referred to during the Group planning process.

Example

Agencies and individuals with responsibilities under this plan agree to work according to the following principles:

- The priority during an emergency will be to minimise loss of life and injury to the public.
- CIMS provides the basis for incident management at respective incident sites.
- Recovery activities will ensure minimisation of risk from future events.

The CDEM Group is expected to communicate its operational principles to the communities of interest.

2.10 Readiness Arrangements

Readiness activities are those things that are done to get the community ready to respond to an emergency. They include:

- public education (where this is not dealt with through targets and actions in the strategic part of the CDEM Group Plan)
- training for response
- testing systems and other elements of the plan
- maintaining and exercising warning systems
- maintaining and testing operational systems, eg, communications systems including alternative systems.

The key information that you should include in the plan regarding readiness activities should answer:

- what is the activity?
- who is responsible for it (lead agency)?
- what is the timing of the activity?

In the example, note that different local authorities are offering training in specific issues for the entire CDEM Group. This may be one way in which specialisation and cooperation can result in cost savings and consistent provision.

Example

Activity	Responsibility – lead agency	Timing
Maintenance of XXXX flood warning system	Regional council	Ongoing, with three-monthly system check
Volunteer training: - introduction to CDEM - information management - communications - action planning - search and rescue	Regional council CDEM office Territorial authority A Territorial authority B	Three courses annually Two courses annually Two courses annually One course annually
Major response exercise for CDEM Group area	All EOCs, with planning support from Police, Fire and CDEM office	One every two years

2.11 Response Arrangements

Response arrangements document the agreed manner in which functions are carried out to address the consequences of an emergency. This includes identifying the lead and support agencies, their mandate/s and the processes and resources required to perform the function. A scenario analysis approach to developing these functions (from page 23) is shown below:

Example

Impact/Consequence	Functions	Lead Agency, Mandate Process and Resource
Human Passenger and crew fatalities - up to 350 people	Disaster Victim Identification (DVI)	Police Crimes Act 1956, Coroners Act 1988 Police Operations Manual Officers and DVI kits
	Personal effects reconciliation	
	Victim transportation	
	Site clearance and restoration	
	Mortuary services	
	Forensic services	
	Counselling services	
	Public inquiry	
Media relations	Etc	

Who needs to know what?

When writing the plan:

- ensure that each agency or individual with functions and responsibilities knows what they are. Each agency also needs to understand the general functions and responsibilities of all the other agencies. This ensures there are no conflicts or overlaps between agencies and individuals. Agencies must also know the principles upon which all response actions are based.
- ensure that readers can quickly identify how the plan is structured, and what arrangements are in place to manage the identified hazards. This is particularly important when formal consultation on the plan is involved.

The proposed structure includes a section on the general organisation and arrangements for response. It then deals with specific agency roles and responsibilities within broad functional groupings.

Proposed structure of 'Response Arrangements' section

Introductory Section – How You Are Organised To Respond

It is important to give readers an overview of the different processes and organisations in place to respond to an emergency, and how this will occur. In this section you should consider including:

- an outline of why response arrangements are necessary (residual risk)
- declaration and activation processes
- the relationship between incident control (CIMS) and wider CDEM coordination
- description of EOCs and their role

- description of controller(s) and their role
- a definition of the tasks included in each functional grouping
- an overview of emergency services and other key agencies
- management arrangements (how roles and responsibilities are allocated)
- key resources to support response efforts (eg, communications, specialised equipment etc).

Emergency response arrangements

In setting out response arrangements, reference to the structures and procedures of emergency services and other key agencies should be included. You are expected to consider the Coordinated Incident Management System (CIMS). This management system provides the model for command, control, and coordination of an emergency response. It sets up a means of coordinating the efforts of agencies as they work towards the common goal of stabilising an incident. It is an integral part of emergency response. CIMS booklets, available from the Fire and Rescue Service Industry Training Organisation, are a useful reference source.

CIMS arrangements can be reflected in the structures of EOCs, and the relationship between incident management and the support arrangements provided through CDEM.

For each aspect of emergency response, you should discuss the responsibilities of the different agencies involved, document the management arrangements, and outline the specific contingencies. Where possible, place details in supporting documents, referencing rather than duplicating them.

Ensure that MANDATE, PROCESS and RESOURCE are addressed for all identified functions.

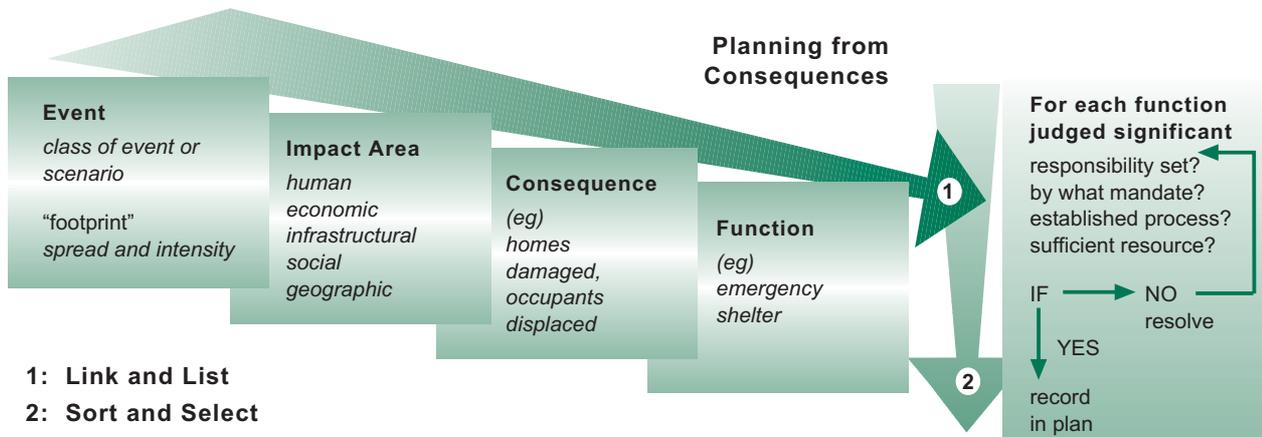
Suggested content of response arrangements

The response content of your plan will address the most relevant needs for your Group. The following areas are suggested.

Response Issue	To be addressed
<ul style="list-style-type: none"> • Coordination and control • Law and order • Community welfare • Rescue • Evacuation • Fire fighting • Public information and media management • Communications • Logistics • Infrastructure (lifelines) • Safeguarding health 	<p>Introduction - what the section aims to achieve, how it links to the principles for operational arrangements</p> <p>Agreed agency responsibilities and functions - including national agencies if required</p> <p>Management arrangements - for instance key resources available or key information for decision making</p> <p>Reference to supporting documents - where more detail may be kept</p> <p>Issues relevant to specific contingencies - where agency responsibilities and management arrangements do not address the contingency adequately</p> <p>Arrangements with neighbouring Groups - how you will support other Groups during their emergencies, how they will support you, and how you will work together during a joint emergency</p> <p>Contribution to national capability - how the arrangements in each contribute to, are consistent with, and complement, the national capability to respond to a national emergency</p>

The planning process so far

A useful way of viewing the planning process so far is illustrated below:



2.12 Recovery Arrangements

The plan should deal with recovery following emergencies in a similar manner to response arrangements. First, you should outline the general arrangements for recovery (ie, arrangements for a recovery manager, insurance, or similar, held by the local authorities, etc). Second, identify functional responsibilities and management arrangements. Note that the particular groupings of activities will differ from the response section.

Reducing risks from future events

When a community is recovering from an emergency, there are opportunities to reduce the risks of future events. For example, if building stock has been destroyed, an opportunity exists to either avoid building in the hazard-prone area, or to build in a way that better addresses the risks present – dependent upon addressing existing ownership issues. Similarly, if a community has suffered significant losses because of economic or social factors (for instance, the lack of insurance), assistance granted to those communities can include incentives to address the vulnerability of the community. It is important that you include issues around future risk reduction in all aspects of your recovery section, as well as in the principles for operational arrangements outlined previously.

Proposed structure of recovery arrangements section

Preparing a Recovery Plan: Information for Local Authorities [IS4/02] is a recently published Ministry document that addresses recovery planning issues in detail. It suggests that the content of the Recovery section should be:

- (a) Transition from response
- (b) Management structure
- (c) Community involvement
- (d) Impact and needs assessments
- (e) Central Government involvement
- (f) Public education and information
- (g) Rehabilitation and restoration (personal, economic and social)
- (h) Implementation of reduction measures

- (i) Financial management
- (j) Reporting
- (k) Managed withdrawal

(a) Transition from response

The recovery section should recognise that activities that are initiated in response will contribute to or affect recovery efforts. For example, initial assessment of how an event has disrupted infrastructure will help to establish any further information needed for recovery purposes.

(b) Management structure – how you are organised for recovery

Different processes and organisations are involved in recovery from an emergency and in how recovery occurs. In this section you should include:

- an outline of why recovery arrangements are necessary
- when and how recovery arrangements are activated
- a description of emergency recovery managers and their role
- finance – covering financial arrangements for local authorities themselves (eg, insurance)
- management arrangements (how the above aspects will be supported).

(d) Impact assessment

A comprehensive assessment of impacts and their consequences is an essential part of the recovery process. Key aspects include:

- support of communities (mayoral relief funds, tax relief in certain circumstances, etc)
- infrastructure – services such as power, water, roading, transport, etc
- health
- built environment – assessing the safety and status of the built environment
- economic impact – the disruption of normal economic activity
- housing/shelter
- rural sector
- community welfare – including both the degree of personal property loss and the level of social disruption.

(e) Central Government involvement

Initial and primary responsibility for recovery rests with the local community. However, where a community is overwhelmed – despite taking responsibility and acting to manage its risks – the government may share the burden of recovery. Current policy is outlined in Part 2 (Response) of the *National Civil Defence Plan* available at www.civildefence.govt.nz

Government assistance for both short-term and long-term recovery is available through a number of different government agencies. Information about these agencies, and their potential areas of contribution, can be found in the *National Civil Defence Plan*. In some instances, government agencies, through their day-to-day functions, will be closely involved in local recovery efforts. An example is Transit New Zealand managing repairs to roading structures damaged as a result of an emergency.

2.13 Supporting Documents

Not all of the detail that is necessary in operational planning should be kept in the main body of the document. Many aspects can be annexed, or form part of subordinate or partner agency plans, with references made to them in the body of the Group Plan where necessary. These links may be to either:

- an externally produced document, such as the contingency plan for fire produced by a major industrial plant that is assessed as extremely significant to the Group's area in terms of economic benefit, numbers of employees, potential for environmental damage, etc
- subordinate or supporting documents written to augment or give effect to provisions of the main CDEM Group Plan, such as:
 - standard operating procedures
 - contact lists
 - resource lists.

The rationale for making these documents supporting documents rather than having them in the body of the plan is that they:

- are referred to in several parts of the plan, so duplication is reduced
- are relevant to other plans as well as this plan (for instance individual EOC's plans, emergency service plans, etc)
- may be a part of an external plan that is relevant to this plan
- may require regular updating within the CDEM Group Plan's five-year lifespan.

Procedures

Procedures (or standard operating procedures – SOPs) are an essential element. They contain specific information on day-to-day operations and lists of resources and individuals involved in the agency operational system. Operational plans must reference up-to-date procedures that ideally have consistency across the CDEM Group area. Given that a procedure is normally a series of inter-linked parts, the need to cross-reference accurately and provide a navigation map for readers must be given careful attention. The information in standard operating procedures has to be kept up-to-date in order to remain effective. Examples of such procedures are:

- procedures for an EOC
- call-out procedures
- warning systems.

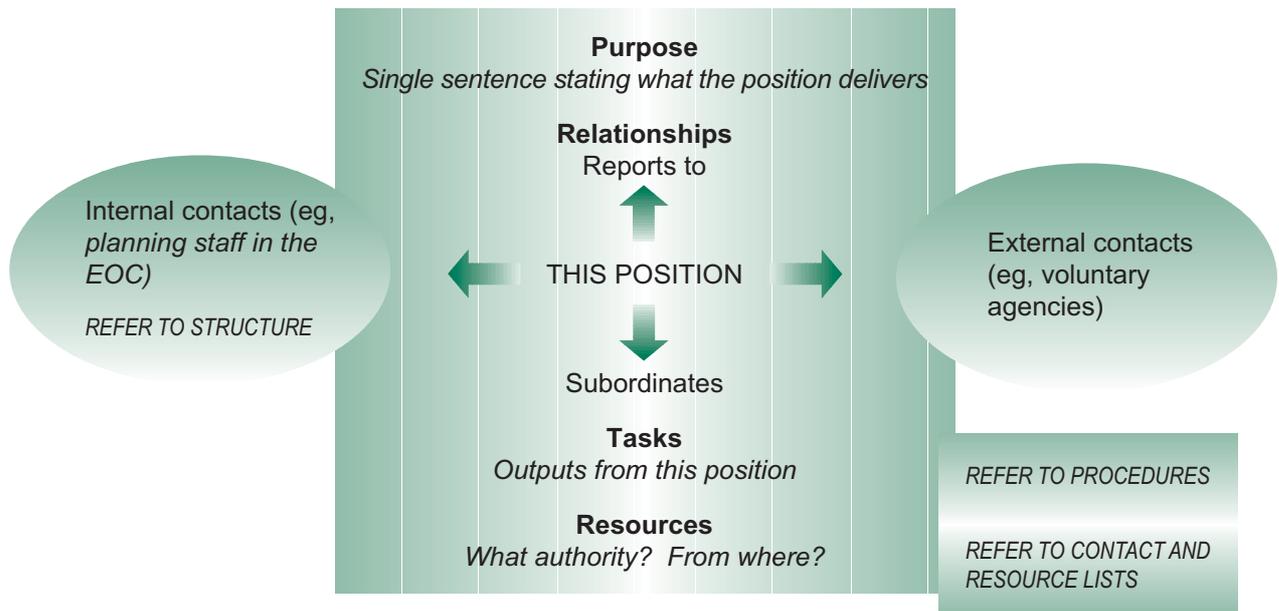
One way of arranging the procedures for an operations centre is to provide a succinct core document with links to detailed descriptions. The diagram below indicates how this can be done.



The centre's procedures give essential background for the reader to understand the shape and functions of the whole before dealing with the detail.

- The *introduction* should cover the purpose of the EOC, its location, a summary of its functions, and a concept of how it is to operate. It may include a plan of the layout of parts of the centre.
- The *structure* provides a broad outline of the procedure's components and summarises the responsibilities of each section's principal staff member/component manager. Job descriptions provide clarity as to who does what and can take the form of either a detailed action sheet or a job card setting out general functions. Staff details and accompanying job descriptions should be contained in an annex to the main SOPs.

Job descriptions



Key tasks include:

- details of how the plan is activated including the authority to activate, degrees and levels of activation, and staff numbers appropriate to each level
- management of operational information and its processing. This specifies recording and internal distribution arrangements as well as those for information display. Responsibilities for briefings and times should be given
- arrangements and responsibilities for supporting the internal functioning of the EOC and its staff.

Call-out procedures

Call-out procedures contain a list of the:

- names and contact details of all EOC staff as well as their alternatives
- representatives of principal agencies, departments, utilities, emergency services, media, welfare agencies, etc and their alternatives.

Call-out procedures may also include the actions to be taken by the person(s) responsible for activating the EOC.

When developing contact lists, note that they must:

- contain similar information to that in a call-out procedure, but with added specific detail designed to meet the purpose (eg, what expertise an agency has)
- be updated frequently and distributed widely within the operations staff circle; copies also go to neighbouring EOCs and Ministry staff
- be updated at regular intervals.

Warning systems

While warning systems will be outlined in the readiness arrangements part of the CDEM Group Plan, detailed procedures are provided in SOPs. It is important to remember that until a new National CDEM Plan has been approved, warning systems must link with the national warning system as prescribed in Part 3 of the existing *National Civil Defence Plan*.

Resource lists

At individual agency level an inventory of resources to combat identified risks lists a variety of equipment, its location and must include people available or needed for key functions such as rescue. The inventory's format will vary according to the source of supply but usually identifies who controls resources, who to contact, and any special authorisation required. Councils, government agencies, and the private sector will have their own detailed inventories. The CDEM Group Plan addresses the resource shortfalls of agencies' individual planning.

Existing inventories published by specialist organisations such as Yellow Pages, Universal Business Directories, and other agencies should be utilised. Only essential information needed for immediate purposes is recorded, otherwise the task can become unmanageable.

Administrative Issues

2.14 Administrative Issues

The administrative issues for inclusion in the plan should cover:

- local authorities that make up the CDEM Group, their roles and responsibilities within the Group
- CDEM Group (political level):
 - the local authority representatives and the chairperson
 - procedural arrangements for meetings
- the Coordinating Executive Group:
 - members and chairperson
 - procedural arrangements for meetings and dissemination of minutes to member organisations
- appointments such as controllers or recovery managers (where possible refer to the position, not the individual, so that frequent changes are not necessary)
- agreements for funding and resource contribution of the CDEM Group between the local authorities
- emergency management office arrangements
- administrative arrangements for managing Group meetings
- the role of the Administering Authority

- training and personnel requirements
- liaison arrangements such as Memoranda of Understanding with neighbouring CDEM Groups
- monitoring and evaluation – see Part 5 following.

Note: for information about how to structure administrative arrangements, refer to *DGL 1/02 Directors Guideline for Local Government: The Formation of CDEM Groups*. See www.civildefence.govt.nz

Monitoring and Evaluation

2.15 Principles

Measuring the practice and outcomes of CDEM policies and programmes, both nationally and locally, is essential in determining whether they are achieving the desired outcomes for communities.

However *what* to measure and *how* to go about it are complex issues. The CDEM Act's purposes are broadly based and encompass a range of activities falling under other legislation. The outcomes sought such as – *resilience* to hazards and consequences, and *capability* to manage emergencies when they occur – are intuitively sound, but difficult to define in practice. There are many social, economic, environmental and organisational factors within a community that influence such outcomes. These factors can vary over time and result in complex relationships. Evaluating trends, let alone relative states, is difficult.

It is against this challenge that monitoring and evaluation programmes for CDEM Groups are to be developed.

Monitoring and evaluation are standard parts of the risk management process⁸. Though often referred to together, monitoring and evaluation involve distinctly different aims and processes.

Monitor: *to warn, check, control or keep a continuous record of*

Monitoring may involve:

- signalling a current state or trend, such as public awareness of hazards or household insurance cover
- measuring performance against standards, such as compliance with a statutory code or benchmark practice
- tracking progress against a plan ie, the delivery of specified outputs against specified inputs and timelines.

Monitoring primarily involves quantitative data that, although mathematically or scientifically manipulated, is still largely free of value-laden interpretations.

Evaluate: *to judge or assess the worth of*

Evaluation is about measuring effectiveness. It compares what is happening against what was intended by the plan (ie, the goals, objectives and targets), and interpreting the reasons for any differences.

Evaluation tends to occur after implementation of a plan although it may also occur at key stages as a means of assessing progress towards the goal. In cases such as CDEM Group Plans where there will be breadth and depth, it is good practice to periodically review not only the progress towards completion of the plan, but the continuing relevance of each section.

As monitoring and evaluation can be complex, it is important that the process chosen is based on the KISS (Keep It Simple) principle and is practical.

⁸ AS/NZS 4360:1999, Risk Management Process, s4.6

2.16 CDEM Group Monitoring and Evaluation

Monitoring, evaluation and where necessary audit activity fall into four groups of activity:

- **CDEM Group Plan monitoring**
 - Check progress of targets and actions against milestones
 - Check effectiveness of results of actions
- **CDEM Group Plan review**
 - Regular review of CDEM Group Plans for currency and adequacy
- **Legislative compliance**⁹
 - Monitor and report on compliance with the CDEM Act and other relevant legislation such as the Biosecurity Act 1993, Fire Service Act 1975, etc
- **External monitoring**¹⁰
 - External performance monitoring of CDEM Group activity by the Director of MCDEM.

2.17 CDEM Group Plan Monitoring

As you develop a CDEM Group Plan, consider how to monitor and evaluate it. Monitoring and evaluation based on systematic documentation allows a measure of success to be demonstrated, ensuring continuing support of Group members and the community.

Monitoring and evaluation needs to go well beyond simply checking whether measurable targets and actions have been undertaken. An effective monitoring and evaluation programme helps support decision making by providing relevant and robust information. Such qualitative information helps by:

- informing decision makers about whether the CDEM Group Plan is achieving the purpose of the proposed CDEM Act
- informing decision makers about whether the CDEM Group Plan is addressing the issues raised within it, and in a way that it reflects goals the community has identified
- providing justification for current and future activities to address risks
- providing information that enables the plan to be fine-tuned or improved, especially in light of changes over time
- enabling information to be made available to local, regional and national indicator monitoring programmes in related areas
- ensuring that the plan has both breadth and depth
- demonstrating that the plan will be adequate to respond in an operational manner.

2.18 CDEM Group Plan Review

The principle of adequacy

Emergency planning is in part an activity undertaken to meet statutory requirements. An underlying requirement as expressed in the repealed Civil Defence Act 1983 was that plans must be “adequate” (sufficient) to support civil defence measures.

The CDEM Act continues the emphasis on adequacy of planning. Councils have a general duty to “*plan and provide for*” CDEM within their district [s61], and the preparation of and participation in a CDEM

⁹ CDEM Act s17(1)h and (3)

¹⁰ CDEM Act s8(2)f

Group Plan is an essential part of meeting that duty. The plan must provide for the CDEM necessary to manage the hazards and risks identified [s49(2)(c)].

The plan must consider alternatives carefully [s65] where it imposes a duty, because it is an offence to fail to comply with its provisions [s95]. A thorough and formal consultation process [s52] will help ensure a quality outcome.

Evaluation

To this principle of adequacy the CDEM Act adds an emphasis on **participation and partnership**. Lifeline utilities [s60(c)] and emergency services [s63(b)] are obliged to contribute to national and Group planning processes. In the same way, the members of a CDEM Group are required to be active participants in the formation of the Group Plan.

In **evaluating** whether a plan is adequate, a CDEM Group or MCDEM is expected to consider whether it:

- is accurate
- is practical
- covers all necessary functions
- provides for the coordination of CDEM organisations.

Accuracy can be assessed in a variety of ways, including questions such as:

- do supporting documents referred to in the plan exist, are they relevant, complete and up-to-date?
- are references to organisations, which specify locations, functions and resources, current or out of date?
- are the component sections of the Group actually structured in the manner described in the Plan, and are they capable of carrying out their functions?

Coverage is assessed by:

- considering the hazards described in the plan
- management mechanisms described for the consequences that would arise from an emergency event. For example, the provision of welfare for persons displaced by an emergency should be addressed or arrangements referenced in every plan
- assessing the linkages that exist between the Plans of participating organisations. Are these linkages adequate?

Provision is assessed by asking whether the Plan defines responsibilities and roles, describes how agencies will work together in an emergency, and functions in the plan are described adequately.

Review process

CDEM Groups are expected to establish a review process that meets the CDEM Act's broad requirements of five years validity for the plan, the ability to review the plan within the five years and either revoke, amend in part, replace or retain the plan¹¹.

¹¹ CDEM Act s56

2.19 Legislative Compliance Monitoring

Monitoring arrangements

The Group must determine what aspects of compliance with the provisions of the CDEM Act and other legislation (some of which is listed in section 17(3) of the Act), are of particular relevance to achieving their communities' CDEM outcomes.

It is important to remember that the CDEM Act is largely premised upon voluntary participation and enabling cooperative outcomes. The CDEM Act will not establish CDEM Groups as regional policemen with the powers to audit or force other agencies to carry their functions out in a different manner. The aim of the process is to identify weaknesses in regional CDEM arrangements and collaboratively improve them. This is primarily achieved through the CDEM Group Plan process. External monitoring of legislative effectiveness should therefore be directly linked to Plan targets and actions.

Follow these steps:

- 1 List the lead authority and legislative mandate they use for action, against the plan targets and actions.
- 2 Review the list of legislative coverage from the Plan (step 1) against the suggested list at section 17(3) of the Act, and add any other legislation, subordinate policy, regulation, method or rule that may have direct relevance for sustainable hazard management in your Group's area eg, Mining Act 1971, District Plan rules, etc.
- 3 Where there are obvious gaps between Plan targets and actions and desired legislative coverage, liaise with the appropriate lead agencies and determine if any desired outcomes, timeframes and quality measures need to be monitored by the Group.

2.20 External Monitoring of CDEM Groups

Monitoring arrangements

Under section 8 of the Act, the Director of MCDEM has a function to “*monitor the performance of CDEM Groups and persons who have responsibilities under this legislation*”.

As a collection of autonomous authorities, local government has a wealth of experience in performance and compliance monitoring and in many respects is self-regulating. In addition, Audit New Zealand plays a role in reviewing specific performance if necessary. Representative agencies like Local Government New Zealand further add to the monitoring environment.

In the longer term the Ministry may eventually use external audit agencies to formally assess CDEM Group performance. However, the Ministry's intention in the three years immediately post-commencement is simply to monitor CDEM Group formation and planning processes in a low-key manner. Liaison and planning staff will have regular involvement whilst providing CDEM Groups with assistance. Ministry involvement must be at the start of the Group formation and plan development as opposed to any 'tail-end' review.

Two prime indicators are sought through observation:

- progress monitoring against development or planning milestones
- quality of output.

Progress monitoring

Examples of CDEM Group formation and plan development schedules/plans have been provided in this guideline and DGL 1/02 (Formation). CDEM Groups are asked to keep their regional Ministry representatives informed of the Group's progress - perhaps by affording informal Ministry representation at CEG level.

Progress reports are likely to be matters of public record, and the Ministry foresees no requirement for separate reporting systems. The Ministry’s aim is simply to understand the progress of the CDEM Group against its intended plan. It has no need to seek access to sensitive records of decisions or conversations. Where requested, CDEM Groups are expected to provide Ministry representatives with formation or plan development progress reporting.

Evaluation of quality of CDEM Group outputs

Measuring quality is a subjective process. However, the Ministry may review levels of quality as assessed against three standards in order of importance:

- 1 The CDEM Group’s own published intentions
- 2 Standards of other CDEM Groups (where applicable, noting the significant differences between CDEM Groups and that one plan does not ‘fit all’)
- 3 A broad set of Ministry criteria (below).

CDEM Group criteria

The public, the Ministry or any external audit agency may assess the quality of a CDEM Group’s activity against the Group’s benchmarks and goals.

Standards of other CDEM Groups

If a CDEM Group fails to develop its own indicators and meet Ministry criteria, it would be failing in its functions. A further way of confirming such an evaluation is to review the progress and quality of similar sized and resourced CDEM Groups.

Ministry criteria

A CDEM Group’s quality of output may be evaluated through demonstrated performance of its functions and how it supports the purpose of the CDEM Act and contributes towards a resilient New Zealand.

Purpose of CDEM Act (s3)	Functions of CDEM Group (s17)
<ul style="list-style-type: none"> • Sustainable hazard management contributing to social, cultural, economic, environmental well-being and safety of public and property • Communities achieving acceptable levels of risk • Plan and prepare for emergencies • Coordinated local government CDEM • Integrated national and local planning • Coordinated CDEM across all agencies 	<ul style="list-style-type: none"> • Hazard and risk management • Provide CDEM personnel and organisational structures • Provide CDEM material, services, resources • Manage emergencies and recovery • Inter-Group assistance • Promote awareness of, monitor and report on CDEM Act compliance • CDEM Group planning • National planning participation • Promotion of CDEM

Ministry Evaluation Criteria (optional)

Factors	Indicators/measures
Member participation (integration, coordination)	Meetings at Group and CEG levels are regular, well attended, gain senior level representation and are procedurally sound Financial and personnel resources allocated in annual plans/LTFS Quality of agendas, papers, reports
Community participation (in risk management)	Risk management material published, accessible, easily understood Consultation process length, accessibility, level of participation, feedback Assessed levels of community hazard awareness Assessed levels of community preparedness Number and extent of public education/awareness projects Sound overall feedback process
Emergency response	Prior evaluation via exercising Improved response time against prior similar events Prevention of injury or loss Timing and level of response acceptable to community Subjective quality of decision making External post-event inquiries, reviews
CDEM planning	All-hazards based, integrated (all agencies), comprehensive (4Rs), risk management based Number of all-agency participants, level of participants Internal authorities integration across business units Clear integration/linkage to national strategy and plan Actions measured against risk evaluation criteria Risk management options analysed Communication plan followed
Human resources	Number of training courses and course results Numbers of staff and volunteers Levels of training and qualification
Physical resources	Funds, plant, equipment and infrastructure
Long-term evaluation	Considering long-term indicators of effectiveness (beyond targets and actions) eg, long-term land use pattern changes away from high-risk, lowered trend of indicators such as insurance claims, etc

CHECKLIST FOR MONITORING AND AND EVALUATION PROPOSALS

Aim

This series of questions is to act as a checklist for deciding on monitoring and evaluation needs, and developing proposals for them. The aim is to achieve a reasonable level of consistency in thought and approach to framing proposals so that their relative merits and linkages can be assessed.

Questions

Scope of proposal	✓
• Is the proposed monitoring or evaluation programme needed to:	
- meet a specific requirement in the CDEM Act to monitor and/or evaluate?	
- determine the effectiveness of an identified policy, programme or process that supports the administration and implementation of the Act	
- measure, in general terms, achievement of the Act's purpose?	
- assess a particular policy, activity and/or interest of a council, emergency service or lifeline utility that may impact on the interests of the CDEM Group?	
- assess in general the wider policies, activities and/or interests of the public and the private sector that may impact on the CDEM Group's interests?	
Relative importance of proposed monitoring or evaluation programme	✓
• Does the proposal relate to policies or activities that:	
- will be significant in achieving CDEM goals and/or have a high potential for producing adverse outcomes for the sectors within the CDEM Group?	
- will provide a good overall picture of CDEM outcomes?	
- allow for the setting of benchmarks and/or identifying best practice in a key area of CDEM?	
Timing	✓
• Does the proposal concern a component of the CDEM framework that is currently far enough advanced to determine the priorities for, and best forms of, monitoring and/or evaluation?	
• Is baseline data needed now to enable measurements and analyses later?	
Links to other policies and programmes	✓
• Is the proposal to be developed and introduced in the context of other relevant policies or programmes?	
• Will other agencies readily understand the reasons for it and accept their role within it?	
• Does the proposal involve all relevant agencies in the design to ensure a good match with their interests and processes?	
• Does the proposal concern a policy or programme that can be readily modified (or performance under it improved) as a result of monitoring and evaluating findings? Can the means available to modify the policy or programme (or improve performance) be listed?	
• Does the proposal build upon or otherwise complement other existing or proposed monitoring and/or evaluation programmes within or across councils of Group agencies?	

Relative costs	✓
• What are the likely costs of the programme?	
• What proportion of the total budget available for such programmes do these costs represent?	
• What is the ratio of costs to likely benefits from the programme overall? If costs and benefits cannot be quantified, can they be summarised in a way that some measure of relative value is available?	
Form of monitoring and evaluation	✓
• How politically or legally defensible will the results need to be?	
• How much separation is needed between the monitoring or evaluation programme and the policy or programme under scrutiny to ensure objective results?	
• What level of standardisation is needed to enable comparisons across agencies, or different parts of the country?	
• What aspects of standardisation, presentation and storage of results should be considered now to allow for meaningful comparisons in the future?	
• Can 'background noise' be adequately controlled such as measuring the result of policy or programme under consideration, and not natural variability or the influence of other uncontrolled factors?	
• Is the information gathered or results obtained likely to be useful for other purposes beyond CDEM? Should this factor influence the form that the programme may take?	

Ministry Contacts

For more information, Ministry of Civil Defence & Emergency Management staff are available for advice and support to those who are involved in forming a CDEM Group. Other resources, including guidelines on CDEM Group Planning and lifeline utility involvement, can be found on the Ministry's website at:

www.civildefence.govt.nz

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