Safeguarding New Zealand's Future: Emergency Management's Role in Shaping the Nation

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Introduction: The Changing Face of Emergency Management

Emergency management has been defined as the process by which the uncertainties that exist in potentially hazardous situations can be minimised and public safety maximised. The goal is to limit the costs of emergencies or disasters through the implementation of a series of strategies and tactics reflecting the full life-cycle of an emergency. This is a four-stage approach termed Comprehensive Emergency Management (CEM), and covers reduction, readiness, response and recovery.

Over the past few years, however, there has been a growing realisation that the application of CEM is, by itself, not providing sufficient community protection from the vagaries of natural or technological hazards impact. One reason for this is because adherents of CEM tend to follow a linear planning path: a specific hazard agent (or the disaster impact created by that agent) is studied in relative isolation; alternatives to reducing the assumed effects of the hazard (or recovering from its specific consequences) are developed, often again in isolation; a remedial option is chosen, more likely on the advice of a small group of specialists and with little involvement from the wider community; and the next hazard (or the next impact consequence) is tackled. This process has been termed the adjustment model since in both the hazard management and emergency management context, actions are dependant on what adjustments have been preferred over others.

Current thinking suggests that a broader perspective can be gleaned if the principle of sustainability[1] and a public risk management[2] process be included into the CEM approach. By incorporating these into decision- and action-cycles, the likelihood of achieving community resilience and effectiveness in overcoming the problems presented by hazards is greater. Amongst other attributes, sustainability recognises a time dimension to the management of hazards. In like manner, public risk management enables emergency management to be contextualised into a wider arena of relevant actions and activities.

Time and context dimensions are both important, since an effective emergency management approach needs to be problem-focused as well as process-oriented. It also has to be inter-disciplinary and inter-governmental, as well as allowing private and public sector input, and

[1] In its broader sense, sustainability is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In the context of emergency management, this meaning remains and it is linked to creating places that are less vulnerable to natural and technological hazards and that are resilient to those events. Sustainable hazard management has five components: environmental quality; quality of life; disaster resilience; economic vitality; and inter- and intra-generational equity. Reducing the risk from hazards, reducing losses from disasters and working toward sustainable communities go hand-in-hand.

[2] Public risk management is a process that is used to decide what to do where a risk has been determined to exist. It involves identifying the level of tolerance the community has for a specific risk or set of risks and determines what risk assessment options are acceptable within a social, economic, cultural and political context. To achieve this, the process must be open since it has to factor in benefits, costs of control and any statutory or socially approved requirements needed to manage the risk. Hence, it requires communicating and consulting with the public-at-large, either directly or through appropriate representation as well as with specialists.

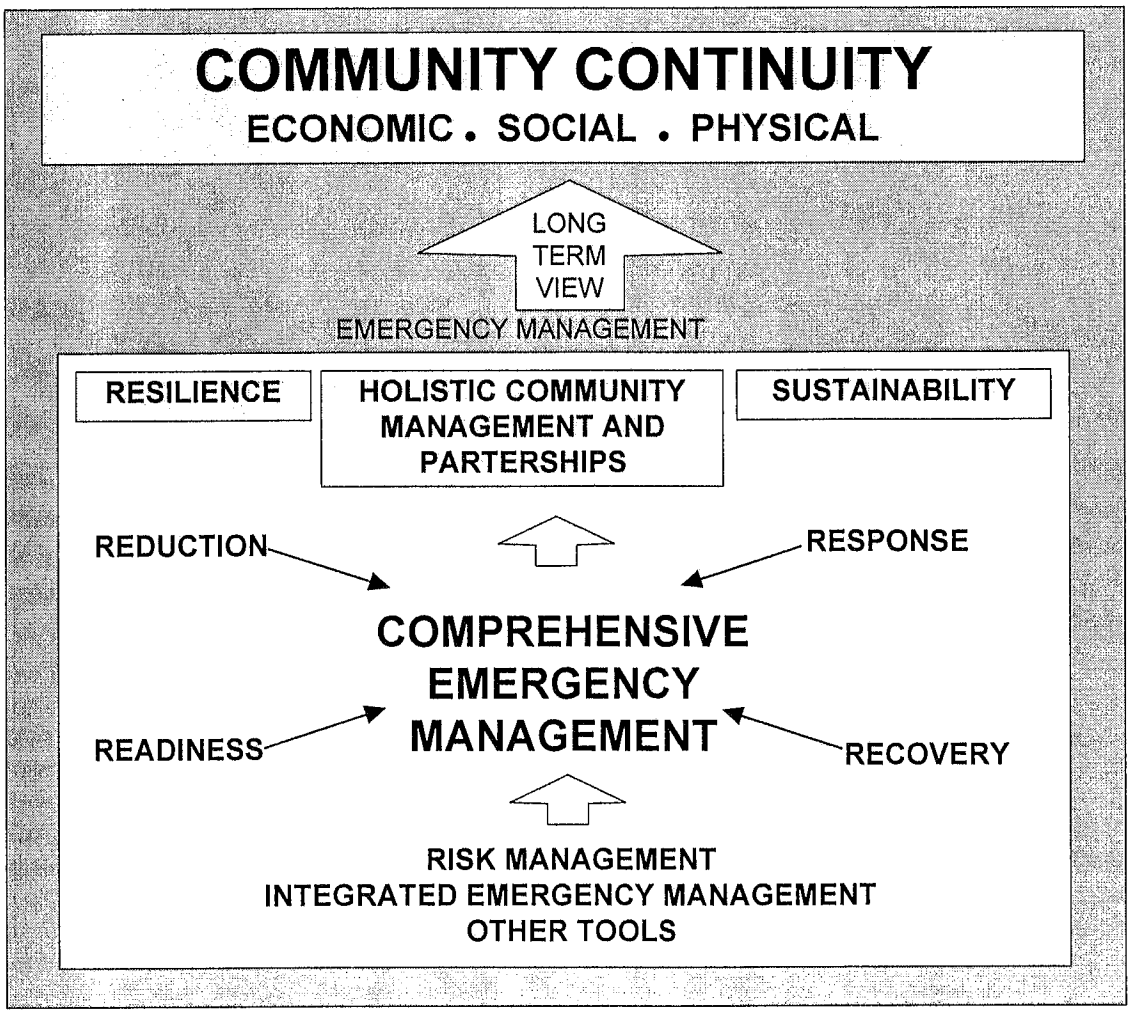
be flexible enough for members of the wider community to have input. And, at the same time, solutions need to be applied for the present as well as the future.

This requires some major policy shifts if emergency management is to meet the challenges of reducing uncertainties and ensuring public safety. The major shift is the need to anticipate and assess environmental risks better, rather than rely on being prepared for, and responding to, hazard impacts when they occur. This is closely associated by the need for concerted effort to be directed at understanding how land use planning and management practices affect the vulnerability of a community, how greater resilience can be injected into these approaches, and what alternative approaches there may be which can better provide sustainability.

In essence, a focus on risk reduction measures that builds resilience at the earliest planning stages is the aim, rather as an afterthought. Risk reduction and emergency management need to be viewed in a comprehensive and integrated fashion.

Key Features of Risk-Based Emergency Management

The key features of the risk-based emergency management approach are sustainability, resilience and holistic community management and partnerships. The diagram illustrates their relationship with CEM and public risk management.



What is new about the approach illustrated above are the linkages between land-use planning and risk (hazard) reduction with each other, and with sustainable communities - where people and property are kept out of the way of natural and technological hazards, where inherently mitigating qualities of natural environmental systems are maintained, and where development is designed to be resilient in the face of natural forces. It is important to note, however, that in the context of emergency management sustainability does not mean the non-use of areas at risk from hazards, but rather managing the balance of the economic, environmental, social and cultural interests at play there.

Emergency management has the capability to create resilience in communities through its recognition of the risks in the wider hazardscape, and the essential resources required to reduce their consequences. Resilience is also brought about through emergency management helping the community choose a level of risk appropriate to the circumstances of the community. In this way, emergency management helps communities manage as sustainable entities, knowing that simply reducing losses from future disasters is too narrow a goal.

Emergency management should also encourage holistic and integrated community management within a wide partnership programme. Few communities, tie hazard reduction and/or emergency management plans into comprehensive community strategic plans. Business-as-usual approaches to risk reduction have focused on saving lives and, to a lesser extent, on disaster recovery. The limited attention paid to risk reduction has encouraged piecemeal resistance to hazards. For example, building dykes or levees that will withstand 'routine' flood events but will fail or be overtopped during a major flood; or introducing safety and health legislation to protect people from hazardous substances or activities but allowing industry to encroach onto housing estates; or putting out smaller forest fires but allowing a build-up of forest fuel over time and set the stage for massive wildfires.

Best practice would suggest that hazard reduction, land use planning and emergency management planning should be part of a community's overall strategy programme, and are debated, resourced and enacted in the same way that other important decisions are. In this way, the advantages brought about through community continuity, resilience and sustainability practices can be realised. By expanding our goal beyond saving lives to ensuring the uninterrupted functionality and long-term viability of communities and regions, including their associated managed and natural ecosystems, we can help create a sustainable society, resilient to disaster impact, and ensure community continuity.

However, the governing mechanisms for this new approach are still being developed and their systematic articulation and translation into user-friendly programmes is required.

Transforming Emergency Management: New Zealand's Approach

Following the findings of a Review of Emergency Services in 1995, Government accepted the need for change in the country's emergency management arrangements. A new Ministry needed to be established that would be responsible for a widened risk-based emergency management task-set, replacing the Ministry of Civil Defence, which had been in existence since 1959 and had not moved far from its original impact response orientation.

Hence, in 1996 Government agreed that 'responsibility for establishing and maintaining the emergency management framework identifying the principles, roles and responsibilities of all agencies involved in the sector and the required capacities, be accepted as part of the core business of government in line with its 'Community Security' and 'Maintaining and Accelerating Economic Growth' Strategic Result Areas' [CAB (96) M 33/3B].

Recognising the importance of partnerships, Government also sought the support of local governments for the establishment of Emergency Management Groups[3] (EMGs) at the local level as a mechanism to implement the agreed framework. Local government also agreed that emergency management is core to its roles and responsibilities. The EMG will comprise a multi-jurisdictional governance body, a co-ordinating and advisory group, and a servicing emergency management office to approve, fund and implement an emergency management strategy commensurate with the hazardscape and resources of the area (see Figures 1 and 2).

Nine principles form the basis of the new arrangements. Four framework principles, and a working definition of emergency management, complete the arrangements (Table 1). A series of five operating principles have also been developed to underpin the activities of all emergency management agencies (Table 2). Taken together, the framework principles and the operating principles have offered a platform for re-assessing and, where needed, revising the way in which emergency management would be undertaken nationally and locally.

The opportunity to re-assess the fundamentals allows the emergency management sector to be seen from a new and expanded standpoint. Hence, the focus of emergency management is shifted from being a primarily preparedness and response-oriented system to one which focuses on the need to provide balanced attention to the maintenance and ongoing development of communities in the face of uncertainties wrought by natural and technological hazards.

The occasion to re-appraise fundamentals also highlights the linkages that emergency management has between hazard management, environmental stewardship, land-use planning, public risk management, and public administration. At the same time, greater effectiveness and efficiencies are produced through enhanced co-ordination of resources and resource-holders, resulting from greater co-operation and integrated management programmes.

[3] An EMG is a purpose-designed structure, operating at the local authority level and within a defined geographical area, to co-ordinate all the resources in its jurisdiction (including those of the emergency services sector) within an all-hazards, comprehensive and integrated emergency planning programme that is congruent with the principles and practices pursued by the Ministry for Emergency Management. The EMG has specific pre-impact hazard identification, vulnerability assessment and risk management tasks, as well as post-impact emergency response and recovery functions following a declaration of an emergency .

Table 1: Emergency Management Framework Principles

Framework Principle	*Defining the Principle*	*Applying the Principle*
Emergency Management	Process of minimising the uncertainty of hazardous situations and maximising public safety by applying science, technology, planning and management. Achieved by implementing strategies and tactics centring on reduction, readiness, response and recovery.	
Public Risk Management	Process of (1) considering the social, economic and political factors involved in risk analysis; (2) determining acceptability of disruption that could result from an event; and (3) deciding actions to take that will minimise likely damage or disruption.	*Principle 1*: Acceptance of individual responsibility and self-reliance, including the owner of any property being responsible for reconstruction *Principle 2*: Acceptance of community responsibility and self-reliance *Principle 3*: Acceptance that routine events and emergencies are best handled at local levels where possible
CEM	A way of fitting elements of emergency management into an inclusive framework encompassing all hazards and levels of government and the private sector. Requires integration of emergency programmes and actions, to ensure all elements are incorporated into emergency planning.	*Principle 4*: Recognition of risk reduction, readiness for, and response to emergencies, and post-impact recovery as a continuum of activities *Principle 5*: Adoption of horizontally (inter-agency) and vertically (inter-governmental) integrated emergency management systems *Principle 6*: Recognition and involvement of volunteer organisations *Principle 7*: Establish community risks via an all-hazards approach
Accountability	Emergency management is core government business achieved by separating political responsibility for policy-making and funding, from professional advice and implementation. Clearly identifying and articulating operating statements about responsibilities and relationships required to implement CEM and risk management.	*Principle 8*: Declarations of emergencies at the most appropriate level of government by elected representatives
Professional Expertise	Building an accredited professional emergency management sector by developing knowledge-based education programmes and enhancing skills-based operational training needs.	*Principle 9*: Emergency management structures underpinned with appropriate technical information and expertise

Table 2: Emergency Management Operating Principles	
Efficiency	Best use of scarce resources and avoiding unnecessary duplication of functions and facilities.
Effectiveness	Use of resources that are already employed in the related normal day-to-day activity before employing additional 'emergency' resources.
Professionalism	Development of *best practice* standards pertaining to attitudes, approaches and abilities of volunteers and paid personnel that is commensurate to the needs of public risk management and CEM requirements .
Governance-Management Split	Responsibility for policy-making should be separated from responsibility for advice, management and implementation of policy
Role Clarity	Agreed designated tasks and statutory authority to act, with clear management responsibility and accountability.

What Roles Will Emergency Management Play in the Future?

A forthcoming report currently under preparation by the USA National Research Council (NRC) which sums up that nation's involvement in the United Nations-inspired International Decade for Natural Disaster Reduction (IDNDR), provides a good backdrop to the issues raised above. The NRC suggests that future emphasis on natural hazard reduction needs to take into consideration the following four specific lessons:

1. Integrated risk management: Emergency management must be part of the wider economic development framework and not isolated from it.

2. Eco-system vulnerability: Links must be developed between natural and technological hazard characteristics so they can all be managed in a systematic way, and from an environmental management perspective.

3. Mega-disasters will occur: There will be intensifying relationships between large population concentrations, increased hazards and heightened vulnerability, and hence there is a need to anticipate the likelihood of mega-disasters.

4. Promotion: There needs to be more recognition of the increasing relevance of emergency management.

These factors point to the direction which emergency management will head in the future. There are six likely areas of activity that future emergency managers will pick up and augment their customary response management functions:

1. Emergency managers will assist in the creation and management of *community resilience* by being able to recognise resources and risks, and help communities choose a level of risk appropriate to their circumstances.

2. Emergency managers will help manage communities as sustainable entities, with the understanding that reducing losses from disasters alone is too narrow a goal.

3. Emergency managers will link emergency management concepts and practices with sustainability through long-term hazard and loss reduction and through employing public risk management processes.

4. Emergency managers will not only help reduce community losses but they will also assist in the process of enhancing the long-term equilibrium between human and natural environmental interactions.

5. Emergency managers will help ensure appropriate emergency management mechanisms are in place, are operable, and are capable of responding to the overall risk environment.

6. Emergency managers will link emergency management concepts and practices with wider community management practices and processes.

Certainly, this is the future for New Zealand and it is the direction that the New Zealand Government, through the new Ministry of Emergency Management and the EMG structure is heading.

Critical Success Factors

There are potential difficulties ahead in setting out this emergency management programme. To start with, no other country has attempted a similar programme on a national scale, hence there are no role models to emulate and no off-the-shelf programmes available to procure. Balancing this, however, no other national government has formally put its weight so fully behind such an endeavour. Moreover, the New Zealand Government has stated its decision to adopt a risk-based emergency management strategy in the absence of a major natural or technological disaster forcing its hand.

The challenges ahead are primarily about changing mind-sets, the ability of the new Ministry to promote the changes, and the ability of the new Ministry to encourage the development of workable frameworks to build the new system. More specifically, the following factors will determine success:

1. The willingness of Government and its instrumentalities to follow through on its policy pertaining to risk- and emergency management practices, in the face of conflicting demands, the 'tyranny of the immediate', powerful interest groups and the like.

2. The speed with which specialist and funding agencies are able to re-focus and assist initial development of, and continued maintenance of, holistic sustainable hazard management and public risk management approaches

3. The capacity of the New Zealand research, science, technology , and the education and training communities to develop and promulgate appropriate risk analysis and risk assessment tools. A recent Ministry of Research, Science and Technology survey conducted during 1996-97 has highlighted this issue.

4. The ability of local government to develop and implement public risk management tools, especially risk communication practices that will allow vulnerable communities to make informed choices.

5. The willingness and ability of emergency services providers to adopt and implement risk-based emergency management research, education and training programmes within an appropriate timeframe.

6. The commitment and capacity of local government to engage appropriate land-use planning and management practices that will lead to resilience and sustainability.

7. The ability of the new Ministry of Emergency Management to effectively convey the concepts, principles, frameworks and models to the wider community so as to elicit the necessary change behaviours.

Research is an Essential Prerequisite

Research is needed to drive this transition. It will require national and international co-operation to develop models and provide practice and process frameworks for key sector users such as local governments and emergency services.

In emergency management, there is a direct relationship between research and its application. Without appropriate, well-defined and grounded research, neither CEM nor risk management can be adequately pursued. The linkages between theory and practice are illustrated in the following two diagrams that depict the relationship between the Emergency Management Groups (EMGs) and one of its principle tasks, which is to develop and implement an Emergency Management Strategy.

With assistance from the new Ministry and specialists, including hazards and risk professionals, an Emergency Management Strategy will set out a programme (Diagram 1) that will identify all the likely hazards a community is expected to encounter (all-hazard identification), and the consequences these may have on its members (vulnerability assessment), both for the present and the next three generations (if individuals think of the future beyond their own lifespan, most tend limit it to their children's childrens' children)

This will require conventional vulnerability assessment data to be mixed with community trend analysis. The information will enable an assessment of what mechanisms are available and appropriate to reduce the risk (risk assessment). In turn, this information is

offered to the community so they have a full explanation of what the aggregate risk their community faces now and in the future; with this members of the community can decide the level of risk they are prepared to tolerate and what they are prepared to trade-off to ensure an acceptable quality of life (public risk management). At the same time, and armed with this information, the EMG will set out a series of actions (Diagram 2) that will allow parallel technical and community involvement that is appropriate in the formulation, debate and approval of plans leading to the development of effective resilience and risk reduction programmes.

To successfully formulate, adopt and implement risk reduction programmes, community members must not only be aware that a threat exists and consider it important relative to other community issues; they must also believe there are effective methods of coping with the threat. It is important therefore to develop tools that are politically and economically acceptable and which can be implemented to manage the risk environment.

In particular, research is needed in the following:

1. The physical, technological, biological and ecological structure and character of the hazards themselves.

2. Holistic, systems-level understanding of the socio-economic factors driving societal vulnerability; understanding why communities are vulnerable to disruptions from hazards; and why some sectors of the community are more at risk than others.

3. The links between hazards and land use planning, development management, and population vulnerability.

4. Improved risk assessment techniques to guide risk reduction

5. Public risk management, and in particular risk communication, practices that permit meaningful interaction between specialists and affected populations

6. Investigating ways to improve the implementation of planning mandates, plans and risk reduction prescriptions contained in devices such as building codes and land-use regulations, and to link these more firmly with wider risk management practices.

Safeguarding the Future

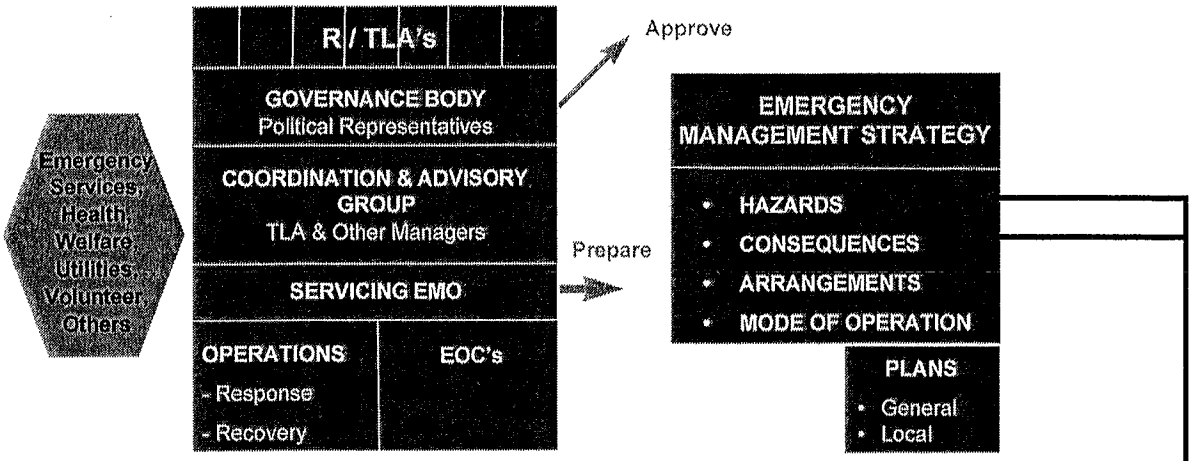
Action plans and research agendas of the type mentioned above are important for community development, both now and for the future. A sustainable community is one that seeks to avoid exposure of people and property to hazards to ensure its continued existence. Communities are sustainable when they can survive and prosper in the face of major dislocations. Avoidance is the preferred approach, but sustainable communities recognise that some exposure is inevitable and can lead to achieving other important community goals. Sustainability does not mean that all risk is eliminated; what it means is that the community strives to balance risk against other social and economic goals. Sustainability does not mean the abandonment of sites or the refusal to pursue options

outright; what it means is the development of sensible consensual policies to strengthen and enhance the natural and built environment and, as a minimum to preserve the quality of life of its inhabitants. Sustainability also implies an equitable distribution of the costs of risk and the programmes for reducing them.

Where communities choose to allow development to occur in areas that are exposed to hazards, and where few alternatives exist, which is the case for many parts of New Zealand given its natural hazardscape, development can occur in ways that support or advance sustainability and can generally help create resilience. A sustainable community then, is a resilient one. It is a community that seeks to understand and live with the physical and environmental forces present in its location. The vision of sustainability strongly supports the need for planning and management at a broad level.

Disaster impact jeopardises community continuity and sustainable development. Inaction today regarding hazard reduction compromises safety, economic growth, and environmental quality. However, forward-looking decision-making today regarding land use, the direction and nature of economic development, and needed investment in societal infrastructure and capital facilities can improve the prospects and opportunities afforded to future generations. Hence, emergency management is an essential component of environmental stewardship; it helps to not only reduce losses but to also increase the long-term equilibrium that is essential between the social and the natural setting.

How we prepare for disasters today will greatly affect the longer-term viability of communities. Thus, the steps and phases identified in these planning frameworks will link the requirements, responsibilities, resources, expectations and commitments needed to achieve a holistic community management and partnership approach not only for emergency management, but for the management of the New Zealand community now and in the longer term.



STEP 1

ALL-HAZARD IDENTIFICATION [comprehensive hazardscape analysis]
⇒ what is likely to go wrong?
⇒ where is it likely to go wrong?
⇒ what are the characteristics of the hazards?
⇒ under what circumstances will risk conditions develop?
⇒ how will the hazardscape change over the next 50-150 years?

STEP 2

VULNERABILITY ASSESSMENT [consequence analysis; trend analysis]
⇒ who is likely to be affected and how badly?
⇒ why will they be at risk?
⇒ how will they be affected, where, and for how long?
⇒ how will our community change over the next 50-150 years?
⇒ how will vulnerabilities alter?

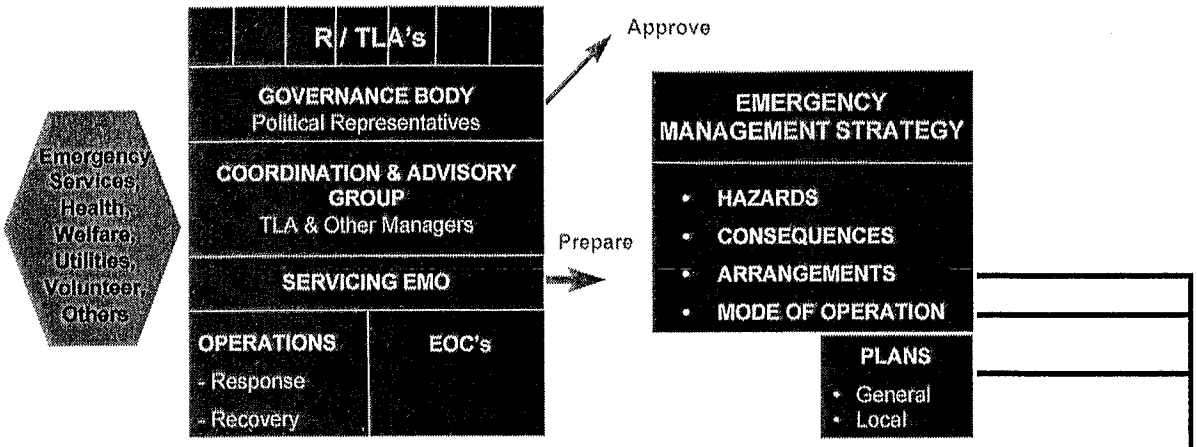
STEP 3

RISK ASSESSMENT
⇒ what mitigation tools and options are available?
⇒ how appropriate are they for the local circumstances?
⇒ how technically feasible are they?
⇒ how reliable are they (what is the predictive track record like)?

STEP 4

PUBLIC RISK MANAGEMENT
⇒ what is the aggregate risk the community faces (1) now and (2) over the next 50-150 years?
⇒ what solutions are socially, economically, politically and culturally acceptable and practical to apply?
⇒ under what time-frame?
⇒ what are the likely benefits from managing risks?
⇒ who will benefit?

Diagram 1: Characterising the Problem



PLANNING PHASE 1 - INFORMATION COLLECTION & SORTING

1.1 EMG FOCUS
⇒ Setting the context.
⇒ readiness info dissemination (accent on spread, conformity & consistency of messaging)
⇒ response and recovery planning frameworks
1.2 TECHNICAL ACTIVITIES
⇒ all-hazard identification [hazardscape analysis]
⇒ vulnerability assessment [consequence analysis]
1.3COMMUNITY INVOLVEMENT
⇒ attendance at public awareness/education programmes

PLANNING PHASE 2 - ESTABLISHING GOALS & OBJECTIVES

2.1 EMG FOCUS
⇒ public risk communication framework/internal consensus building
⇒ drafting initial EMS goals and objectives
⇒ refining and rehearsing response/recovery plans
2.2 TECHNICAL ACTIVITIES
⇒ risk assessment [technical options]
⇒ consequence analysis
⇒ capability analysis
2.3COMMUNITY INVOLVEMENT
⇒ visioning, goal setting, consensus building for community continuity and resilience
⇒ offering choices for debate

PLANNING PHASE 3 - DEVELOPING POLICES & PROGRAMMES

3.1 EMG FOCUS
⇒ analyse alternate EMS policies and programmes
⇒ develop focused awareness programme on specific target groups
3.2 TECHNICAL ACTIVITIES
⇒ technical advise and clarification on resilience and sustainability options
⇒ additional studies and/or assessments
3.3 COMMUNITY INVOLVEMENT
⇒ debating policy and programme options

PLANNING PHASE 4 - MONITORING & EVALUATION

4.1 EMG FOCUS
⇒ **agreement and programme for modifications**
⇒ **monitoring/pursuing progress**
4.2 TECHNICAL ACTIVITIES
⇒ updating baseline data
⇒ maintaining hazard monitoring
⇒ impact measurement
4.3 COMMUNITY INVOLVEMENT
⇒ take part in EMS evaluation/revision procedures

Diagram 2: Working Through the Issues