



Mass Evacuation Planning

Director's Guideline for Civil Defence
Emergency Management Groups [DGL 07/08]



Resilient New Zealand
Aotearoa Manahau



Te Rākau
Whakamarumaru

Ministry of Civil Defence
& Emergency Management

Mass Evacuation Planning

Director's Guidelines for Civil Defence Emergency
Management (CDEM) Groups [DGL 07/08]

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Foreword

Many emergencies experienced in New Zealand lead to evacuations, and small-scale evacuations of communities are relatively common. However the scale of some hazards, such as volcanic eruptions, tsunami, flooding and chemical spills, could call for the evacuation of large numbers of people. Overseas emergencies such as Hurricane Katrina and the Indian Ocean Tsunami have highlighted the need for New Zealand communities and emergency managers to be prepared for mass evacuation.



This guideline has been prepared in accordance with my responsibilities under Section 9 (3) of the Act, to assist CDEM Groups, Local Authorities and other emergency management agencies with designing, implementing and promoting plans for the evacuation of areas likely to be affected by hazardous events. The focus of this guideline is towards planning for large-scale evacuations; however the principles can be also applied to planning evacuations of any magnitude.

This guideline is aimed specifically at CDEM Group and Local Authority Emergency Management Officers involved in evacuation planning. Other emergency practitioners in New Zealand, including members of the emergency services and government departments, who will be involved in evacuation management and planning will also find the guideline useful.

The guideline has been informed by experiences, observations and research drawn from a wide range of sources in New Zealand and from around the world. I appreciate the input and assistance that has been provided by the CDEM Groups, Local Authorities, Ministries, government agencies, non-governmental organisations and individuals in developing and producing this guideline.

The result is a guideline that promotes a holistic approach to evacuation planning to ensure that all local community needs are addressed, and that all agencies involved in evacuation management are actively engaged in the process. Thorough, integrated planning prior to an emergency will lead to a better outcome for communities should an emergency eventuate.

A handwritten signature in black ink, appearing to read 'John Hamilton'.

John Hamilton
Director
Ministry of Civil Defence & Emergency Management

Executive Summary

This Director's Guideline is for use by the Civil Defence Emergency Management (CDEM) Group and Local Authority Emergency Management Officers to assist them to facilitate evacuation planning activities and prepare evacuation plans in order to meet the requirements of the CDEM Act 2002 and the National CDEM Plan 2005. It will also be of use to those within other agencies performing similar or associated duties, roles and functions.

This guideline provides a range of practical advice, templates and models to assist the Emergency Management Officers to:

- understand the key issues involved in planning for evacuations;
- facilitate the evacuation planning process;
- build and maintain strong relationships with partner agencies, and ensure that relationships also exist between agencies;
- engage community leaders and consider the needs of vulnerable communities; and
- facilitate the development of comprehensive evacuation plans.

This guide needs to be read and used in conjunction with the Guide to the National CDEM Plan 2006, CDEM Group and Local Authority plans and requirements. It is essential for all those involved in the evacuation planning process to understand:

- the risk profile of their area;
- the hazards and risks their communities face;
- the arrangements that are in place to manage these hazards and risks; and
- the relationships with others involved.

The purpose of this guideline is to add value to this understanding, by encouraging active participation in evacuation planning activities and to ensure that, in the event of the need to evacuate a local area or to receive evacuees from a neighbouring region, Local Authorities and CDEM Groups have plans in place to ensure that all aspects of an evacuation can be handled in an efficient and effective manner.

Introduction

Purpose of this guideline

This document is designed to guide Local Authorities, CDEM Groups and their members through the evacuation planning process, and highlights issues to be addressed during this planning. This will result in a workable evacuation plan aimed at executing an effective evacuation process should the need arise.

As with all emergency planning, the **process** of planning itself is just as important as the final written plan. In addition to developing a working knowledge of the overall plan, this process also facilitates the development of relationships between stakeholders which aids in improving operational capacities.

The planning process will establish a flexibility that can deal with all anticipated aspects of a possible evacuation. These include:

- informing the public;
- the actual evacuation process;
- accommodating evacuees; and
- returning them to their homes.

Outputs

The final outputs for a Local Authority or CDEM Group at the end of the planning process will be an evacuation plan which considers specific hazards and risks, community factors, and other relevant information that may impact on an evacuation. It should also clearly state agency actions and responsibilities for evacuation scenarios including command, control and coordination details. The plan should be developed in full consultation with all relevant agencies and the communities to which the plan relates.

Response agencies involved in the evacuation plan should develop their own procedures in support of the Local Authority or CDEM Group Plans.

Exclusions

This document does not constitute a plan and does not represent a national evacuation plan or strategy.

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How to read this guide

This guide is written so that wherever possible (unless it best serves the reader to have it included), information is not duplicated. In order to achieve this, other documents have been referenced throughout. Paragraph titles (to the left of the text, as below) provide a key to the content of the paragraph, for quick referencing and ease of reading.

Here is an example of how other documents are referenced in this guide.

Paragraph title

Role of Lifeline Utilities

Lifeline utilities refer to the infrastructure needs of the community, such as water, wastewater, transport, energy and telecommunications.

These organisations support essential CDEM activity and must continue to operate and respond to customers throughout an emergency.

Refer to s 60 of the Act.

A full list of lifeline utilities is provided in Schedule One of the Act, where organisations are either named specifically or described in terms of the operation or service they provide.

See this section of the CDEM Act 2002

Refer to other documents for more information

Lifeline Utilities and Emergency Management [DGL 3/02] sets out the director's expectations of these organisations. *Lifelines and CDEM Planning, Best Practice Guide [BPG1/03]* contains information about how individual lifeline utility organisations can interact with the civil defence emergency management sector in CDEM planning.

Section 1: Putting evacuation in context

Introduction to evacuations

Introduction

The mass evacuation of a particular area is necessary when a hazard, be it natural or technological, threatens and puts at risk the safety of those within the area, or following the impact of a hazard which has subsequently rendered the area uninhabitable. Evacuation becomes necessary when the benefits of leaving significantly outweigh the risk of 'sheltering-in-place'.

Evacuation causes financial, physical, psychological and social disruption. International research shows that long-term psychological and social harm is caused to individuals and communities as a result of evacuation, particularly in the case of permanent resettlement. Evacuees can suffer up to twice the rate of illness of others affected by an emergency¹. Poorly managed evacuations tend to lead to a strong resentment of government which, in turn, decreases the ability of emergency management organisations to act effectively in the future.

Evacuation options

Refer to s 76 of The Plan

There are two main options available to emergency managers when considering ordering an evacuation. These are to direct people to 1) 'shelter-in-place' or 2) 'evacuate'.

These can be used separately or in combination to provide the most effective response to the circumstances of a specific event.

Shelter-in-place

A direction to 'shelter-in-place' is an instruction for people to remain in the building that they find themselves at that moment, be it home, office or elsewhere. As people generally recover from emergency situations faster in familiar areas, sheltering in place is considered the preferable option and is used when the nature of the hazard dictates that leaving shelter would place people at greater risk.

Hazards which may require sheltering in place include:

- Toxic chemical spill;
- Radiation release;
- Act of terrorism;
- Pandemic; or
- Volcanic ashfall.

Note: Evacuation would probably be required of people in the immediate vicinity of hazards such as a toxic chemical spill, radiation release or an act of terrorism

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1. Whiteford, L.M. and Tobin, G.A., 2004, 'Saving Lives, Destroying Livelihoods: Emergency Evacuation and Resettlement Policies. pp 195-196.

Evacuate

The evacuation of people means instructing them to leave their current dangerous or potentially dangerous location and providing assistance to them (as required) in the form of transport, shelter, and other necessary functions. When evacuation is necessary, people should be accommodated as near to their homes as possible.

Hazards which may require evacuation include:

- Riverine flooding;
- Flash flooding;
- Volcanic activity (other than light ashfall);
- Landslip/landslide;
- Wildfire;
- Lifeline utility/infrastructure failure; or
- Tsunami.

Note: The above list is by no means definitive.

Types of evacuation

Introduction

Evacuation may be pre or post event. The physical act of evacuation can be further classified into two types: voluntary-evacuation, or mandatory-evacuation.

Mandatory-evacuation

Mandatory-evacuation is directed when it is believed that the risk to residents is too great to allow them to remain where they are.

Mandatory-evacuation places a great burden on the resources of the emergency services and places a duty of responsibility on authorities to ensure that people who are evacuated are cared for.

Voluntary-evacuation

Voluntary-evacuees are those that leave their current location because of actual or perceived risk without being directed to do so. This has benefits for those that are actually threatened by an event and can make the task of emergency services easier as there may be significantly fewer people to warn and assist.

Occupants of areas outside of the evacuation zone that leave despite the fact they are not threatened by the hazard are also referred to as 'shadow evacuees'. This situation can pose significant disadvantages, as these actions can congest transport corridors. In the case of severe weather, those who voluntarily evacuate can put themselves in greater danger than if they remain in their homes or place of business.

The potentially negative consequences of people voluntarily evacuating can be minimised by effective public information management. For more information on public information management refer to Section 3 of this guideline and *Public Information Management, Information for the CDEM Sector [IS9/07]*.

Phases of evacuation

Introduction

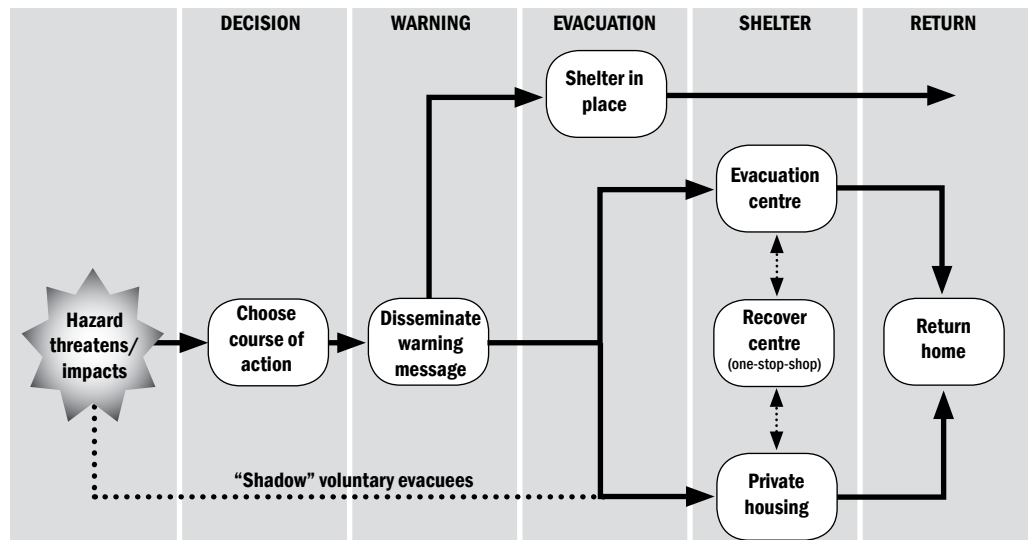
Evacuations move through five distinct phases:

- Decision (to order an evacuation);
- Warning;
- Evacuation;
- Shelter; and
- Return.

The demands on emergency managers and resources will change as the evacuation progresses through each phase. This guideline covers planning considerations for each phase. Evacuation plans should also cover all phases.

Evacuation phases diagram

The diagram below shows the generic evacuation phase sequence for a mass evacuation, including the 'shelter-in-place' option and 'shadow' voluntary-evacuees:



Decision

The decision phase constitutes the period when intelligence from the field is measured and a choice is made whether to order an evacuation or advise people to 'shelter-in-place'.

Warning

This phase occurs when notifications are issued to the public advising them of the situation and what action they should take.

Note: In this guideline 'warning' is used to describe any message/system used for notifying the public, regardless of whether the notification comes from local, Group or national level.

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Evacuation This phase describes the actual physical evacuation of occupants from an area.

Shelter The 'shelter' phase incorporates:

- the registration process;
- accommodating evacuees; and
- the assessing and provision of welfare and recovery requirements.

Return The 'return' phase involves:

- an assessment of the evacuated area;
- issuing an 'all-clear';
- coordinating the physical return of evacuees; and
- the continuation of recovery provisions.

Section 2: Planning Process

The Evacuation Plan

Introduction

Written evacuation plans will vary in style and format among Local Authorities and CDEM Groups depending on the nature of the region, its hazards and risks, and existing CDEM Group plans and contingency plans. It is important to note that the written evacuation plan should, where possible, avoid repeating information that appears in other Group documentation. However linkages to these documents must be mentioned.

Important note: When planning for evacuation, issues discussed throughout this guideline should be considered *during* planning, regardless of the fact that they may be documented elsewhere.

Plan requirements

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 4-5)

Issues to be address in an evacuation plan include:

- conditions under which an evacuation may be necessary;
- conditions under which to support people sheltering in place;
- identified 'at risk' people/communities who may require evacuation;
- command, control and coordination instructions (including designation of those authorised to order an evacuation);
- warning instructions to be issued to the media, public and businesses;
- procedures for assisting special categories of evacuees (e.g. vulnerable communities);
- specific plans and procedures that address:
 - the circumstances of the emergency;
 - transportation (e.g. arrangements for those without vehicles);
 - the evacuation of specific locations; and
 - evacuation routes;
- means of accounting for evacuees;
- welfare support for evacuees;
- security of evacuated areas; and
- procedures for the return of evacuees.

This guideline expands on these issues as well as elaborating on additional considerations.

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Local Authority arrangements

At a Local Authority level, evacuation plans should detail operational processes, supported by procedures applicable to the Local Authority itself in such evacuation activities.

The final written evacuation operational plan should include:

- community demographics;
- community/vulnerability analysis;
- clearly identified and agreed roles and responsibilities;
- logistic support processes; and
- non-emergency arrangements and activities (such as review processes and exercises).

CDEM Group level plans

At CDEM Group level, the final written evacuation plan should be a functional plan detailing the operational requirements of the Group when one or more of its constituent Local Authorities is involved in evacuation activities.

Group evacuation plans should include:

- overview of Local Authority evacuation plans/requirements;
- clearly identified and agreed roles and responsibilities;
- logistic support processes;
- anticipated ramifications for neighbouring Groups (including liaison arrangements); and
- non-emergency arrangements and activities (such as review processes and exercises).

Evacuation Planning

Introduction

Like all emergency plans, the planning process is of equal importance to the final written evacuation plan. Engaging with stakeholders in discussions and assessment activities will help to ensure that:

- all aspects of planning are considered;
- there is 'buy-in' from key stakeholders (including the community);
- stakeholder roles and responsibilities are agreed;
- stakeholders understand the evacuation plan in detail (through participation);
- all key organisations have their own procedures in place for evacuations;
- all key organisation's plans are integrated; and
- any deficiencies in resources are identified and addressed accordingly.

Note: Planning is an ongoing process of improvement and must be repeated regularly to an agreed schedule.

Local Authority and CDEM Group coordination

Like most emergency events, evacuations will typically start at the local level and then escalate as the impact, or anticipated impact, of the hazard spreads. Planning for evacuations should reflect this reality, with Local Authorities leading planning activities in their area with support and/or coordination from CDEM Groups.

Coordinating planning activities between the CDEM Group and its constituent Local Authorities will facilitate collaborative planning across local borders, sharing resources when required, and streamlining general planning activities, whilst still allowing local community needs and issues to be addressed. This will provide an integrated plan between the Group and the Local Authorities.

Collaborative planning

Planning for an evacuation cannot be done by a single agency or in isolation of other emergency management planning. Studies and experience from around the world have shown that evacuation plans, as with other emergency plans, are most effective when they are developed with all relevant stakeholders and reviewed regularly.

The evacuation planning process provides an opportunity for all stakeholders to participate in discussions, allowing full consideration of the issues relevant for the area and for affected agencies. It also provides a relationship-building opportunity for those involved in the implementation of the plan and facilitates an awareness of the plan itself as it is formulated.

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Planning timeline

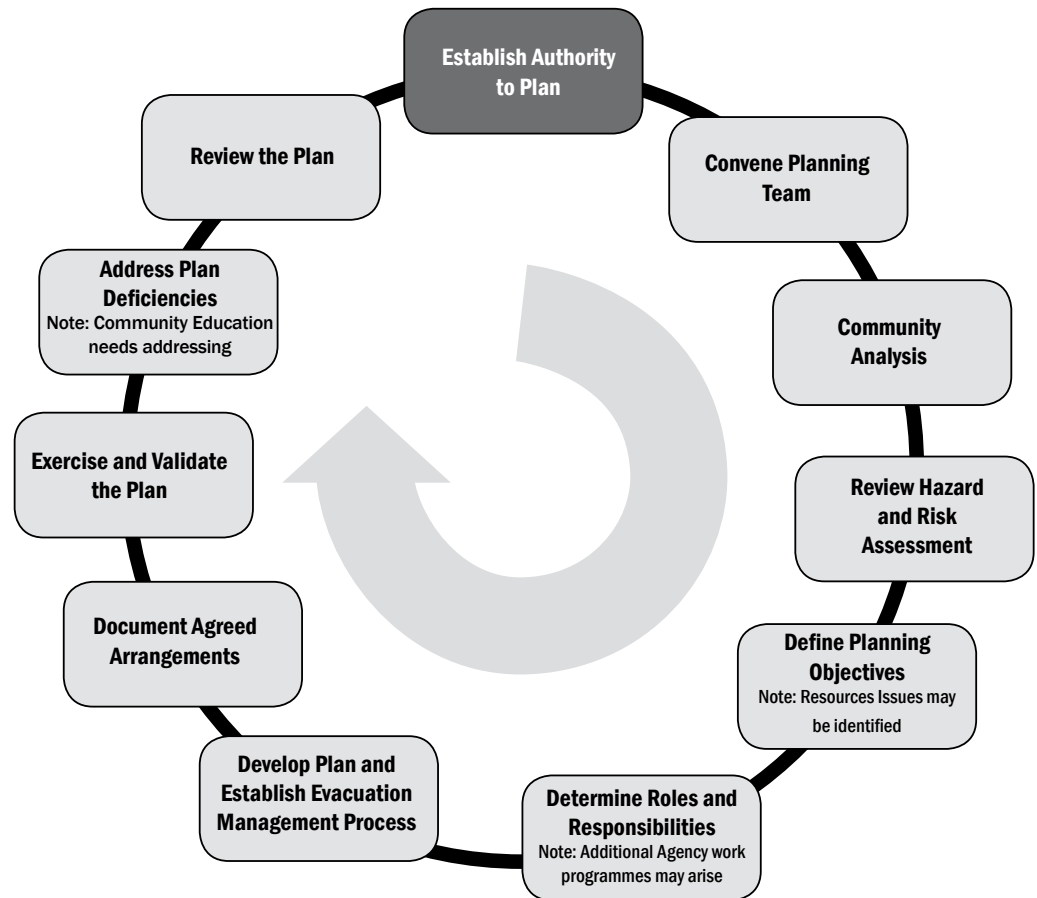
Evacuation planning is a lengthy process and should be considered an ongoing endeavour which continues to improve in successive iterations. The time taken for planning activities will be directly related to:

- geographic size of the region
- regional topography;
- regional hazards and vulnerabilities;
- demographics;
- size and density of the population;
- number of agencies involved in the planning process; and
- resources available.

Evacuation Planning Steps

Evacuation planning model

The diagram below is a model for evacuation planning:



Establish authority to plan

The authority to facilitate evacuation planning will normally fall to a CDEM Group or Local Authority Emergency Management Officer as part of their role as Civil Defence Emergency Management officers. They will carry out this out in accordance with the requirements of their Group Plans.

Convene planning team

A planning team should be assembled and should include representatives from all agencies involved in conducting an evacuation. It is important that agencies have appropriate representation in order to ensure that:

- decisions can be made with authority;
- an appropriate level of ‘buy-in’ occurs from these agencies;
- additional agency work that is generated can be followed up; and
- senior agency staff are familiar with the plan.

As large groups of stakeholders may become difficult to manage, a smaller, senior representative group may be useful for making over-arching planning decisions.

Smaller working groups may be of benefit for detailed work on specific topic areas.

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Convene planning team *continued*

Community representatives should also play a part in the planning process. Local communities may already have their own community plans in place, which may need to be integrated into Local Authority evacuation plans. The evacuation planning process needs to feedback to/from community plans.

Inclusion of community representatives in the planning team may be more beneficial later in the planning process when the evacuation plan (or concepts) have developed some form. However, community input is vital and should be planned for and encouraged.

Community analysis

Understanding the demographics of a community is important for deciding potential courses of action during an evacuation. It also aids with analysing the potential effects of an evacuation on the community.

Some important considerations are:

- socio/economic make up;
- vehicle ownership;
- pet ownership;
- school locations;
- hospital and age care facility locations;
- Maori and ethnic communities; and
- people with disabilities;

Further details regarding some of these issues are covered in more detail in the *Community Groups and Vulnerable Groups* section of this guideline.

Note: Collection of statistical and Geospatial Information Systems (GIS) data is an important part of planning for an evacuation. Although some further steps in the planning process can proceed without this information, a final complete plan must be designed with these issues in mind.

Review hazard and risk assessment

Different hazards and their risks may require different courses of action. The need for hazard-specific evacuation plans will be identified based on the results of a region's hazard and risk assessments.

If hazard and risk assessments have already been conducted for the area, then these should be analysed in preparation for the rest of the planning process.

If no hazard and risk assessment has been conducted or the existing analysis is out of date, then a new hazard and risk assessment should be carried out in order for accurate evacuation planning to continue.

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Define planning objectives

A determination of planning objectives (and exclusions) will need to be made by the planning team to clearly define the objectives and scope of planning activities.

This will take into account current and previous planning, arrangements and issues such as:

- priorities as per the National CDEM Plan;
- type/extent of hazard and it's risks;
- speed of onset;
- demographics;
- number of people to be moved;
- geographic areas to be evacuated;
- socioeconomic factors;
- vulnerable communities; and
- available resources.

Determine roles and responsibilities

All agencies involved in the evacuation should have their roles and responsibilities clearly stated in the evacuation plan. It is, however, important to ensure that all agencies are clear about their own responsibilities and those of others during an evacuation.

Some new responsibilities may need to be allocated to appropriate agencies for the purposes of evacuation. Certain agencies have clearly defined responsibilities under existing legislation. Others will have well-developed roles and responsibilities due to current arrangements, or by default.

Develop plan and establish evacuation management process

In developing an evacuation plan, all agencies that will refer to the plan should be involved in its conception. All community groups and vulnerable communities should be engaged as part of planning to ensure that they have input into plans that will affect them.

How an evacuation will be managed needs to be addressed in the planning process. These arrangements must fit within the existing CDEM structure and arrangements, and must allow for adequate control and coordination during an event. The evacuation management arrangements must be documented within the final plan.

Document agreed arrangements

Once the plan has been agreed by the planning group, it needs to be put in writing and formatted so that it is easy to read and understand.

Continued on next page

Exercise and validate the plan

Exercises should be conducted to test the validity and robustness of the plan. This may be in the form of table-top exercises and/or practical exercises. The latter are more effective, and preferred. Ideally, exercises should be held every one to two years to cover staff turnover.

All agencies detailed in the plan should exercise local evacuation arrangements². This is a good time to offer community groups a day for voluntary exercises (e.g. schools, emergency volunteers, etc.).

Address plan Deficiencies

The evaluation of the plan during exercises may highlight issues which need corrective action. These issues must be addressed post-evaluation to enhance the workability of the plan and ensure operational success.

Review the plan

All agencies involved in an evacuation should review and sign-off on the documented plan.

Repeat

Following sign-off of the evacuation plan, the planning process should be repeated regularly in-line with Group Plans. As with an evacuation plan's original planning cycle, all stakeholders should be included to continue awareness and 'buy-in'.

² The Guide to the National Civil Defence Emergency Management Plan 2006, 23.4., "Local Co-ordination"

Additional Planning Issues

Resource deficiencies

Evacuation plans must be designed around existing and available resources and infrastructure. During the planning process, it is possible that some resources will be identified as lacking, either because they are non-existent or because the resource itself is not sufficient to deal with the planned event. In these cases, the planning team should explore arrangements for gaining access to additional resources from outside the region.

Plans may also need to consider the potential limitations that may be imposed during an event due to agency personnel that may be personally affected by the emergency.

Other work programmes

Throughout the planning process, it is likely that agencies involved will identify work programmes they need to undertake internally in order to meet the evacuation plan needs (such as the development of specific procedures). This work will become an integral part of evacuation planning as the development of agency procedures is critical to the success of the evacuation plan.

Participating agencies should be made aware of the potential need to develop their own plans and procedures as part of the planning activities.

Community education

Educating community members on whether they are at risk or not, what they will need to do in the event of an evacuation, what messages to expect and who will be delivering messages, is a crucial part of emergency readiness. Once evacuation plans are complete, the best education strategy for the region can be agreed and integrated with current CDEM community education programmes and activities.

Section 3: Planning Considerations

Geospatial Information in Evacuation Planning

Introduction

Planning for evacuations will generally benefit from the use of maps and land based geospatial information systems (GIS) by creating a visual representation of local data to help inform those involved in planning activities.

There are many categories of information which may be displayed on maps and several layers of information can be overlaid on the same map to aid in planning by showing the intersection of different issues. For example, hazard inundation areas will directly constrain which evacuation routes are chosen.

GIS mapping information

GIS mapping information may include:

- hazard specific inundation areas / impact zones;
- demographic information;
- at risk/vulnerable communities;
- evacuation routes;
- welfare centres;
- boundaries (i.e. local and regional);
- topographic data;
- emergency services and other agencies; and
- lifeline utilities and other infrastructure.

Mapping resources

Local Authorities within a region (and the CDEM Group) should consider coordinating their GIS mapping activities as during a mass evacuation there is likely to be significant cross-boundary issues.

Community engagement and data collection

Engaging with local communities and community groups during mapping activities can be a useful method of data collection. This also keeps communities actively engaged in hazard awareness and personal readiness. Local communities often have detailed local knowledge regarding such things as which roads are likely to flood and people likely to need special assistance in the event of an evacuation.

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Use of maps in public education

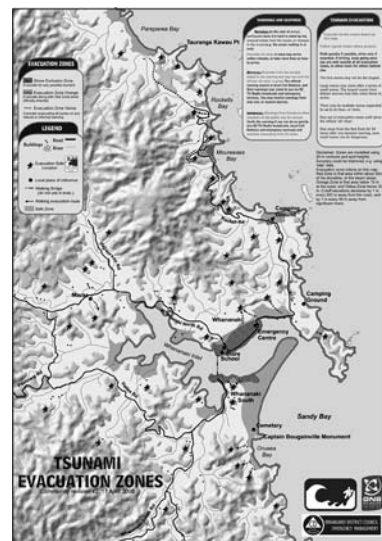
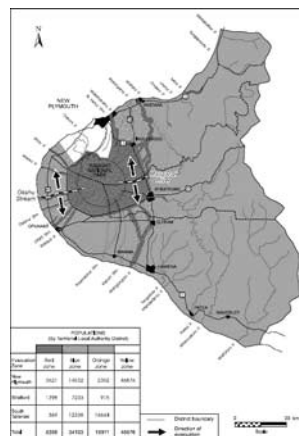
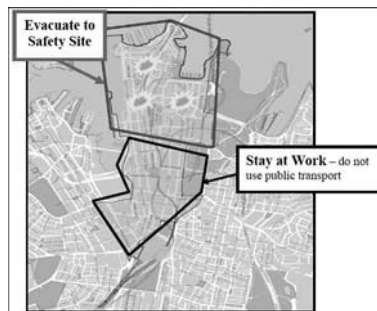
For potential rapid onset hazards (such as locally generated tsunami) it is recommended that localised, community-specific maps are produced (with the community) and publicly displayed showing impact or evacuation zones and standard evacuation routes. These maps should be available in local offices/ businesses and distributed to households. Maps should be displayed prominently in relevant public locations and include other relevant information, such as:

- evacuation routes, including direction of travel;
- impact or evacuation zones;
- welfare centres; and
- warning signals / sources of information.

Public awareness of local hazards, inundation areas, and warning systems will assist emergency managers (particularly during the warning phase) by decreasing the information demand prior to the decision to order an evacuation.

Example maps

For full colour examples of various maps used for emergency planning and education see Annex 2, page 75.



Signage

Introduction

The development of evacuation route signage is recommended to raise public awareness, increase the efficiency of an evacuation and reduce the need for human resources.

Use of signage

Signage may be permanently placed in preparation for fast onset hazards, or kept in storage for appropriate placement relevant to an impending hazard. Procedures must clearly reflect the storage location of signage and the responsibilities for placing signage. The planning process should identify protocols for sign placement, that have been arranged in consultation with the appropriate road authority.

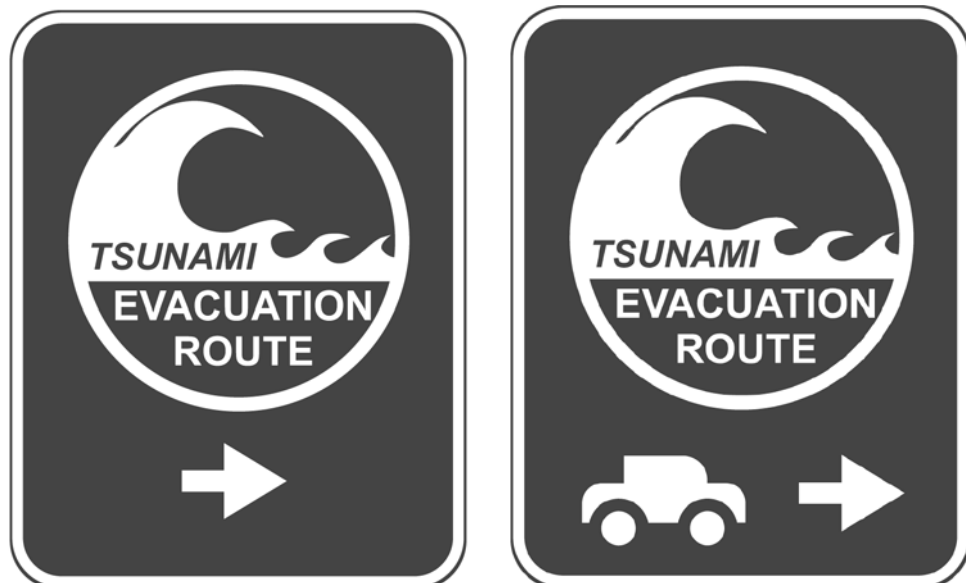
Standardised signage

It is recommended that evacuation-route signage is standardised in order to promote national consistency. Moves to standardise signage for evacuation routes has recently focused on tsunami risks, and this has led to the Tsunami Working Group Signage Subcommittee recommending standards for tsunami evacuation maps and signage, and the publication of the *Technical Standard: National Tsunami Signage*.

The development of other hazard specific standardised signage and generic, deployable evacuation-route signage will increase the level of public education and awareness and increase the speed and efficiency of an evacuation.

Example

The signs below are examples of recommended pre-placed tsunami evacuation signage:



Generic tsunami evacuation route sign (left) and Tsunami evacuation driving route sign (right)
Selections from the *Technical Standard: National Tsunami Signage (2008)*

Community Groups and Vulnerable Groups

Introduction	Identifying communities that may be particularly vulnerable in an emergency and evacuation is of particular importance during the planning process. There are likely to be several at-risk groups in any particular area who may need special consideration in order to ensure that, during an evacuation, they are successfully taken care of.
Knowledge of community groups	<p>Having an understanding of the numbers and locations of those at particular risk has a number of benefits. Principally, this information aids in the generation of an evacuation plan which is customised to the needs of the whole region and leads to better decisions during the activation of the plan.</p> <p>Secondly, the process of finding this information will engage Local Authorities and CDEM Groups with wider elements of the community, promoting CDEM readiness. In doing so, Local Authorities and CDEM Groups may be able to develop specific plans for the community to incorporate into the overall evacuation plan.</p>
Vulnerable groups	<p>Certain vulnerable groups to consider include:</p> <ul style="list-style-type: none">• Maori communities;• ethnic communities (non-English speakers/English as a second language);• remote/isolated communities;• aged and/or infirm;• people with disabilities;• tourists;• people in prisons or residential institutions; and• schools.
Maori communities	Māori prefer a kanohi ki te kanohi (face-to-face) approach and when engaged in this manner are most likely to collaborate with Local Authorities and CDEM Groups in developing culturally appropriate plans that will support the overall evacuation plan. Maori communities are also an excellent source of volunteers to work within their communities during emergency situations.
Ethnic communities	A general idea of the number of ethnic minorities in an area may be gained through Statistics New Zealand, however it may be difficult to ascertain the exact locations of such residents. Engagement with ethnic community and advocacy groups may help in identifying these communities.

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Remote/isolated communities

Communities that are physically remote from major centres, regardless of demographics, can be at risk during emergencies due to the potential for such areas to become isolated as a result of hazard impact, and because they do not have the same access to emergency services. Informal social networks play an important role in evacuations of remote or isolated areas, and any part that Local Authorities or CDEM Groups can play in enhancing community networks will be greatly advantageous in improving community resilience.

The Ministry of Agriculture and Forestry's Rural Support Trusts may be extremely useful in helping Local Authorities and CDEM Groups identify at-risk and vulnerable groups in the rural community, particularly farming families in highly isolated regions. Rural Support Trusts will also be a useful mechanism by which to engage with vulnerable and isolated rural communities.

Aged and infirm

Those who are incapacitated due to illness or age are also at particular risk. Nursing homes and hospitals should be considered during planning. Discussions with such facilities can help them to develop their own evacuation plans and solutions which align with Local Authorities and CDEM Groups and therefore reduce strain on group evacuation needs.

People with disabilities

Consider consulting with support organisations/groups when planning. In dealing with their clients, support agencies can help promote the principles of individual/family emergency plans on how to deal with receiving warning messages and evacuation orders. Public transport options may need to be considered for those with disabilities. Do not overlook the capacity or capability of people with disabilities to help themselves and others.

Tourists

Tourists are a challenge for evacuation operations as:

- numbers are variable and imprecise;
- tourists do not know the local area; and
- they are likely not to know how to evacuate or where to access help.

For statistics on numbers of tourists and likely tourist 'hot spots', contact regional tourism organisations or discuss the issue with local government for information specific to the region. Another source of tourism information in New Zealand is the Ministry of Tourism Research website, <http://www.tourismresearch.govt.nz>.

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Tourists *(continued)*

Each region has a duty to assist tourists when they are threatened by a local hazard. This may be best achieved by supporting tourism industry staff training. There is a misconception that warning tourists of local hazards could negatively impact on the industry. Research has shown, however, that such warnings do not affect the tourism trade, but do have a positive effect in the event of emergencies.

In promoting hazard awareness Local Authorities and CDEM Groups should engage in discussion on these issues with the tourism industry, usually through local tourism associations.

Hospitals/Health Care

Local Authorities and CDEM Groups must work with district health boards to ascertain the exact nature of health care in the community.

Health care in a given area may consist of:

- public hospitals;
- private hospitals;
- nursing homes;
- hospices;
- home patients; and
- private medical practices.

Hospitals and similar facilities have a large number of in-patients to be moved during an evacuation. It is important to consider the time it takes and the complex logistics that exist in evacuating health care facilities when calculating warning times for a geographic area and determining what support may required by these facilities.

In addition, the staff and equipment may be required as a result of hazard impact. For this reason District Health Boards and hospitals must be consulted during planning to make certain that appropriate medical facilities are identified for use during given emergencies and that the facilities themselves are aware of the potential need to evacuate, and have their own plans in place.

Note: An understanding of the nature of health care facilities in the community is vital so that plans can reflect the health care requirements that will be needed to support evacuees. This is of particular importance when evacuees are likely to be accommodated out-of-region, regardless of whether evacuees are supporting themselves or not.

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Prisons/institutions Like hospitals, prisons and residential institutions have a large immobile population that will need to be moved early as a vulnerable group in case of evacuation.

Prisons operate Coordinated Incident Management System (CIMS) based emergency operation centres during incidents or large scale emergencies. Local Authorities and CDEM Groups should contact prisons in their regions in advance to confirm warning systems are understood, and that communications channels and contacts are confirmed.

To enable early, secure and orderly prisoner movement and logistics coordination, Local Authorities/CDEM Groups should advise the prison Incident Controller as soon as any evacuation, shelter-in-place, or all-clear decisions are made for vulnerable groups.

Prison Services have plans for evacuation and major emergencies, and will self-manage all aspects of prisoner evacuation to receiving prisons. This planning falls outside the scope of Local Authority and CDEM Group evacuation planning; however during operations, CDEM EOCs should liaise with their prison EOC counterparts in order to coordinate transport methods, routes and timings. Prison Services will self-manage transport, reception, foodstuffs, security etc for prisoner transfer and should not require access to CDEM reception or registration facilities.

Note: Families of staff and prisoners may require CDEM support as members of the public.

Educational facilities

Engagement with early childhood centres, schools, tertiary organisations, and other such educational facilities in evacuation planning is of critical importance. Evidence from emergencies around the world has shown that children are particularly vulnerable to psychological stress during traumatic events, and so evacuation planning needs to be mindful of the welfare needs of children. The actions of educational facilities during an event can have a major influence on reducing the distress of children and parents.

Whilst Local Authority planning will principally deal directly with all the educational facilities in their areas (early childhood facilities, schools and tertiary organisations); CDEM Groups should consult with regional offices of the Ministry of Education, particularly with regard to their Response Teams who deal with traumatic events in schools.

Additionally, educational facilities will prove to be logistical challenges during evacuations due to their large day-time population of students who are principally dependant on public and private transport. In the event of a local or regional mass evacuation, transport for school students will have to be well coordinated and it is preferable to have options organised well in advance.

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Educational facilities *(continued)*

Exact transport plans for educational facilities may vary from hazard to hazard and will be dependant on many issues such as onset time and resources available.

Transport options may include (but are not limited to):

- sending students home as per normal at standard finishing times, to evacuate with their families (suitable only for slow onset);
- sending students home early by bringing forward finishing times and arranging transport to come earlier. This requires considerable planning and communication as parents will need to go home from work, or pick children up from school; or
- arranging wholesale transport away from school and out of the evacuation area (to be reunited with family later). This option is the least preferable, but may be the only available choice.

Note: Any transport options and plans must be well understood by parents of students, as it is the reaction of parents that can further complicate an emergency response. Parents need to be assured that their children are being taken care of, whether they are sheltering-in-place, being sent home, or being evacuated directly from their school. They need to trust that the schools evacuation plans will look after their children and that reunification is planned for.

Information Collection on Vulnerable Communities

Introduction

Identification of vulnerable communities can be best achieved through the employment of statistical analysis, community surveys, or discussions with local groups (such as Welfare Advisory Groups). Central government agencies may also have useful data, such as the Ministry of Education, Ministry of Health, Work and Income New Zealand, Statistics New Zealand, District Health Boards and the Department of Internal Affairs (Local Government and Community Branch).

Focus groups with local community leaders are also useful for gaining information on communities whilst establishing or reinforcing relationships and networks.

Collation of data

The exact format and presentation of this information collation will depend on what is appropriate for the Local Authority or CDEM Group, however enough detail should be presented so that it is easily understandable to those with minimal involvement in the collection process.

Note: Collected information should remain confidential and only used for the purposes of Local Authority and CDEM Group planning and communications.

Vulnerable groups database

Suggested information for a vulnerable groups database includes:

- nature of vulnerability;
- estimated numbers;
- areas of concentration;
- suggested ways of assisting these people and their needs; and
- source (of information).

Engaging with Vulnerable and Community Groups

Introduction	Engaging with vulnerable groups during the planning process can help determine solutions to potential challenges to be faced in evacuation. In addition, engagement with these vulnerable groups may help identify appropriate warning methodologies as well as provide a conduit to needs-tailored community education.
Usefulness of engagement	Community groups possess the knowledge of, relationships with, and the resources for assisting their own community. As community groups offer one of the best methods of promoting CDEM messages in their particular community, it is more likely messages will be received if community group engagement features in Local Authority and CDEM Group planning and exercises. This will also facilitate community buy-in and understanding of evacuation plans and strategies. Through engagement processes with 'vulnerable' community groups, opportunities may emerge for utilising these groups as a resource during evacuations and other emergency situations ³ .
Community forum	Working directly with community groups can be very time-intensive. It may be helpful to establish a regional community forum by inviting representatives from several community groups (not just vulnerable groups) to meet to discuss readiness and response issues. Community forums can transcend evacuation planning alone and can provide a useful mechanism for community inclusion in all local emergency planning. Forums can be used to build relationships which can promote ongoing engagement between communities, government organisations and agencies.

3. Davis, E. and Mincin, J., 2005, 'Incorporating Special Needs Populations into Emergency Planning and Exercises.'

Evacuation of Livestock

Introduction

The evacuation of agricultural livestock is beyond the scope of Local Authority and CDEM Group evacuation plans. The primary responsibility for the management of stock (including during an emergency) lies with farmers, and as such, farmers should make their own contingency response plans which incorporate local hazards.

Generally stock evacuation will not be feasible during a hazardous event due to the considerable logistics and time requirements involved. Recent studies have shown that the time required to evacuate approximately 200,000 head of livestock during a volcanic emergency would be in the vicinity of 19 days assuming a continuous, 24 hours-a-day, 7 days-per-week operation of 50 stock trucks⁴.

Livestock

Refer to s 48 of The Plan

These limitations, however, are not to suggest that livestock is an issue that can be ignored. Livestock forms a critical part of local businesses and regional economies and not evacuating these animals may slow the overall economic recovery prospects of a region, leading to greater individual disadvantage for farmers.

Farmers are encouraged by the Ministry of Agriculture and Forestry (MAF) to develop their own contingency response plans to deal with situations such as natural hazards as well as biosecurity threats.

Overseas experience has shown that often during an emergency, people are extremely reluctant to evacuate and leave behind their livestock, in much the same way as they are reluctant to leave without their pets. Pre-event engagement and education activities may assist in encouraging farmers to plan on evacuating without their livestock in events where their stock are not able to be evacuated.

Limited evacuation

When the hazard impact analysis anticipates large scale stock loss, farmer's business continuity plans may give consideration to the potential evacuation of limited, selected breeding stock. This option should only be considered feasible in events when time is available.

In some situations, localised stock movements to areas of lower risk within the same region may be appropriate (e.g. upwind of a volcano or to higher ground in times of flood).

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4. Wilson, T., Dantas, A., Cole, J., Johnston, D. and Cronin, S., 2007, 'Modelling Livestock Evacuation During/Following A Volcanic Crisis - A Taranaki Example'

Limited evacuation
(*continued*)

In addition to the large transportation challenges, the evacuation of any livestock is critically dependant on being able to relocate livestock to a suitable 'receiving' or 'destination' farm. The receiving farm must have the capacity to feed and water evacuated livestock for the required relocation time, which could be anywhere from weeks (e.g. flooding) to potentially years (e.g. volcanic eruption).

Note: This is the responsibility of the owner or manager of the stock and these arrangements should be contained within business contingency response plans.

**Livestock
consideration in
warning messages**

Local Authorities and CDEM Groups should consult with local offices of MAF to provide advice to farmers during the issuance of evacuation warnings as to the best protective action they can take for livestock left in place.

Local Authorities and CDEM Groups should consider consulting with industry organisations such as Federated Farmers regarding communicating with farmers (both before and during events) in order to aid in developing warning message content regarding livestock.

Public Information Considerations

Introduction

Public information management is an extremely important part of evacuation management. Clear, accurate and timely information is crucial to ensuring an efficient evacuation. It also ensures that evacuees and other community members are informed of support services available, and the likely length of time away from home.

Public information management helps to reassure the public that emergency management and services are acting in response to the situation – this helps reduce anxiety levels and increases the likelihood that instructions will be followed.

Effective communication in evacuation

Effective communication, to the public and amongst emergency managers, is essential and enables an evacuation to be carried out with maximum response from organisations and evacuees, and minimal injuries to evacuees and staff.

It helps ensure that, should an evacuation be necessary:

- all the organisations involved know their roles and work together well; and
- the people being evacuated trust the authorities involved, and understand what to do.

Other roles for communication include:

- assisting local communities to prepare for an emergency, so they can respond efficiently should an evacuation ever be necessary, and
- explaining how family and friends can get information about evacuees during and after an evacuation.

Communication stages

Communication about evacuation plans should occur:

- during the development of the evacuation plan;
- as on-going public education about the plan; and
- during an evacuation (including the return).

Details of providing targeted messages to the public during an evacuation operation, and delivery methods, are covered in Section 5.

continued on next page

Audiences

The audiences for communication can be put into four broad categories:

- Operational (organisations that will be involved in evacuating people)
- Welfare (organisations who provide welfare support during and following an evacuation)
- Influencers (organisations and individuals that can be sources of information to the community)
- Community

Note: An organisation can fit into more than one audience. For example, a school may be a Welfare Centre (operationally); and it could also teach its students about local hazards and readiness activities (as an influencer).

Consistent messages

Communications from all organisations involved in the evacuation plan must give consistent messages. This is important when a plan is being developed and explained, and absolutely crucial during an evacuation. Conflicting or confusing messages during an evacuation can lead to people not responding or responding inappropriately. It can also lead to a loss of trust in authorities, and potential injury and loss of life.

Key messages

The key messages need to be tailored for local circumstances. These can include information about:

- who is responsible for the evacuation plan;
- who is in charge during an evacuation;
- how to contact the right people for information;
- how the community will be advised of the plan and of an evacuation;
- what signs, symbols, warnings, and advisories etc mean;
- key operational and welfare information (what to do, routes, transport, assembly areas, destinations etc);
- where detailed information is available;
- local hazards;
- individuals', families' and workplaces' responsibilities; and
- assurance messages.

More information on public information management can be found in *Public Information Management Information for the CDEM Sector [IS9/07]* and on the MCDEM website, www.civildefence.govt.nz.

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Where and how to communicate

There are three key factors in planning how to communicate messages about an evacuation plan. These apply to communications about the plan and communications during an evacuation. They are:

- multiple sources;
- repetition; and
- timeliness

Multiple sources

Many different methods need to be used to reach as wide an audience as possible because any one method will reach only some of the people some of the time.

Repetition

Messages must be repeated and communication must be on-going. People do not necessarily use the same media each day and their frequency of media usage will change throughout the day. Education and warning messages must compete for public recognition against the enormous volume of information and advertising transmitted each day via the media. In addition, populations change and people need reminders.

Timeliness

Prepared 'ready-to-use', templates aid in getting warning messages out quickly during an operation. During an emergency the public demand for information is extremely high and this demand needs to be met as soon as possible to prevent the spread of misinformation through unofficial channels.

Pre-event education around the evacuation plan(s) for an area can be scheduled around particular events specific to that area for optimum effect and exposure.

Planning

Organisations involved in planning and carrying out an evacuation should be involved in crafting the information to be communicated to the public, and how it will be communicated. During an evacuation, it is vital that all agencies involved know what is being announced publicly and by whom.

Consider forming a small communications planning group (made up of staff from agencies involved in planning and participating in evacuations) to develop key messages and plan how to communicate those messages. If many agencies are involved, the communications planning group should be representative of the key agencies so that it remains a manageable size.

Public Education

Introduction

In addition to increasing public awareness of local hazards and risks, localised public education campaigns and ongoing education should focus on public readiness. This includes addressing warning systems, evacuation signals, routes, and maps, and promoting household emergency plans and getaway kits.

Printed material on evacuation awareness should detail some of the social support in place following an evacuation and emphasise the importance of registering following an evacuation.

Public education can be promoted through involvement in the planning process and engagement of the public in exercises.

Public education method

Suggested public education methods include:

- publications/signage;
- presentations;
- schools' kit;
- advertisements;
- direct Mail;
- notices/events in public places; and
- public relations opportunities.

Note: Some of methods used for disseminating warnings during evacuations may also be appropriate methods for pre-event public education activities. Warning methods are discussed in Section 5.

Publications

Brochures, fact sheets, maps, signage and other publications can be produced to provide summaries of the evacuation plan for people to keep for reference.

Presentations

A standard presentation, speech notes or talking points can be prepared for people who will be talking to groups.

Schools' kit

All primary and intermediate schools already have copies of *What's the Plan Stan?: a resource for teaching civil defence emergency management in schools*. Specific local information could be prepared for local schools to supplement this kit. This might be as simple as a letter and copies of brochures and posters.

Advertisements

Paid advertising in local media is one way of guaranteeing that specific wording about an evacuation plan will be broadcasted or published. This has an advantage over issuing a media release, as media are unlikely to publish or broadcast releases 'word-for-word', and have the right to decide not to publish it at all if they choose.

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Direct mail

Some organisations involved in evacuation planning will already be undertaking regular direct mailing of newsletters and other material to their communities. These mailing lists could be used to include information about the evacuation plan in a regular mail-out.

Notice/events in public places

Information about the evacuation plan can be provided at places that people already use to get information. This may include:

- libraries;
- information centres;
- public notice boards;
- motel and hotel receptions;
- medical centres;
- pharmacies; and
- emergency service/CDEM open days.

Note: In areas with large numbers of tourists or seasonal visitors, information should be provided at places often used by visitors, and in multiple languages.

Public relations opportunities

Making the most of public relation opportunities can assist in spreading messages about the evacuation plan and assist in strengthening relationships with media outlets. Some opportunities which may be of use in this way are:

- articles in local papers;
- articles in community papers;
- utilising local radio stations; and
- regular briefings for media.

Neighbouring CDEM Groups

Introduction

In the design of an evacuation plan, CDEM Groups should be conscious of the evacuation plans and welfare arrangements of neighbouring groups. This is particularly important when planning where to send evacuees if they cannot be housed within the CDEM Group's region. In addition to supporting evacuees from within its boundaries, CDEM Group Evacuation Plans should consider:

- receiving external evacuees (from neighbouring regions);
- supporting neighbouring Groups evacuation plans; and
- evacuees moving through the region (i.e. additional traffic/road congestion).

Receiving external evacuees

Refer to s 75 of The Plan

CDEM Groups should be prepared to receive evacuees from neighbouring regions. It is important to be aware that the receipt of evacuees from neighbouring regions may (in the case of long-term mass evacuations) have a serious effect on local arrangements, the local economy, local infrastructure and services, general and public health services, and social dynamics. Evacuation and recovery strategies should take these issues into account.

Supporting neighbouring Groups

As with all emergency scenarios, neighbouring Local Authorities and CDEM Groups may be required to provide assistance during a mass evacuation operation. This may be to supply equipment, personnel, logistics support, or to establish evacuation and Recovery Centres.

Memoranda of Understanding (MOU) or mutual assistance agreements may have to be entered into with neighbouring CDEM Groups to ensure that adequate support can be delivered when evacuating large numbers of people, whether from within or outside the CDEM Group's borders.

Emergency Management Officers from neighbouring regions must be included when planning to move evacuees into those regions.

Section 4: Planning for Decision Making

Decision Making

Decision to order evacuation

There are no 'hard-and-fast' rules as to when to order an evacuation. Like the evacuation plan itself, the parameters around the decision to order an evacuation should be flexible enough to suit the unique circumstances surrounding the impact, or likely impact, of hazards to a region and its communities.

Given that the first preference is for people to 'shelter-in-place', the decision to order an evacuation needs to consider all available data on the situation. As a result, it is imperative that accurate intelligence is being received from the field.

The issues discussed in this section are applicable during evacuation operations and during planning. It is important to plan for as many of these issues as possible prior to an event. This eases the pressure on decision makers by providing clear decision making processes and triggers.

Authority

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 3)

The authority to order an evacuation is defined in legislation:

Prior to a declaration of emergency: Police (under Common Law) have the legal authority to order an evacuation and use reasonable force as necessary⁵. The New Zealand Fire Service is similarly able to order an evacuation if life or property is in danger.

Following a declaration of a state of emergency: the Police and a CDEM Controller (CDEM Act 2002, Section 86) may authorise the evacuation and exclusion from any premises or place. This can be effected pre- or post-event.

Note: If the New Zealand Fire Service effects an evacuation following a declaration, it would be done in consultation with the CDEM Controller whenever possible.

5. However, this only applies when danger is imminent; People cannot be ordered to move as a precaution if danger is expected. (New Zealand Police, 2004, 'New Zealand Police: Manual of Best Practice, Volume 1, Emergencies' , p9)

Shelter-in-Place or Evacuate?

Shelter-in-place

Refer to s 76 of The Plan

In most emergencies people are better off sheltering where they are. The National CDEM Plan states that sheltering in place is the first option in a hazardous situation, but specifically mentions this option when:

There has been a significant disruption to transport. Such as following a major accident, power failure or infrastructure failure

Going outside could expose people to hazardous contaminants. Such as in the case of a hazardous chemical spill, biological, radiological or terrorist event.

It should be noted that the above examples do not preclude an evacuation, as area evacuations may still be necessary depending on vulnerabilities and influencing factors (for example wind direction).

Evacuate

Refer to s 76 of The Plan

Evacuations should only occur when the risk of sheltering in place is greater than the risks associated with leaving. Evacuation should be considered when one or more of the situations below exist:

- Personal safety is under continuing threat
- There are properties classified as unsafe or insanitary or both and there is a lack of suitable shelter or alternative accommodation
- Public health is gravely threatened
- Food and water are not available
- The burden of caring for people in the area is far greater than it would be if they were evacuated.

General Considerations

Introduction

There are many factors which must be taken into consideration when planning for or deciding to order an evacuation. Some of these include:

- vulnerability analysis;
- time available for evacuation;
- time of day;
- number of evacuees;
- egress routes;
- safety;
- resources;
- environmental factors;
- social factors; and
- information and intelligence.

Vulnerability analysis

Local vulnerability analysis should identify the best course of action for given hazards, be it evacuation or sheltering in place.

Time

The amount of time available before a hazard strikes will determine whether immediate evacuation is required or if a staged evacuation is a more suitable option.

Time of day

The time of day will effect the methods used for warning people, as well as the availability/access to resources and personnel. Seasonal holiday periods may also be a factor regarding resources and personnel, as well as increasing the size of the population.

Number of evacuees

The number of people that need to be moved, their level of vulnerability to the hazards, and the transport they have available are all issues that will inform planning and decision making about what transport may be needed to be arranged.

Egress routes

Certain routes will be more suitable than others for particular hazards and timeframes. Traffic conditions may need to be changed accordingly (contra flow, lights, etc.).

Safety

Due consideration must be given to the risks to evacuees and emergency workers.

Resources

Physical assets in place and human resources available to conduct the evacuation will impact on what courses of action are available.

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Environmental factors

Seasonal environmental conditions (hazard-related or otherwise) may alter what is required during an evacuation, or the planning associated with an evacuation.

Social factors

What are the social issues surrounding the evacuation of communities, and who are the particularly vulnerable communities who may need particular assistance or attention?

Information and intelligence

During an operation, accurate and reliable field information and intelligence is crucial in order for Controllers to be able to confidently order an evacuation.

Evacuation Areas, Triggers and Escalation

Introduction

The combination of different hazards and vulnerabilities combined with other local factors may require unique evacuation areas and time scales for each evacuation. As a result there can be no exact universal rules for determining evacuation areas and time-frames.

Triggers

Pre-determined triggers for things such as the mobilisation of resources and the issuing warnings are extremely beneficial. These can be used as a guide to decision-making under specific circumstances.

It is good practice during evacuation planning to consider local vulnerability analyses in order to determine evacuation areas and time scales (including triggers for escalation) for predictable hazards.

For example, river height indicators may be pre-established as triggers to evacuate certain at-risk residents.

Example of triggers

The table below shows an example of how predetermined flood heights can act as triggers for planned actions:

River height (m)	Event	Response
1		
2		
3		Visual inspection of flood gauges
4		Brief CEG, PIM, Mayor Activate EOC staff Emergency services on standby
5		Commence evacuation North Road road-block in place
6	North Road access flooded	
7		Evacuation complete
8	South Road access flooded town isolated	South Road road-block in place
9		
10	Town inundation	

Phased evacuations

Planning for a zone-by-zone evacuation may be a viable solution to logistic problems encountered with large scale evacuations or for when evacuations are caused by escalating hazard risks. Area specific evacuations may be decided by topography or may be based on geographically determined suburbs. This will depend on the nature of the hazard.

Note: Phased evacuations require extensive pre-planning, operational coordination and public information management strategies.

Time Management

Introduction Time is a crucial resource when conducting evacuations. It is useful to evaluate time scales to determine how much time may be available, and whether additional resources will be needed.

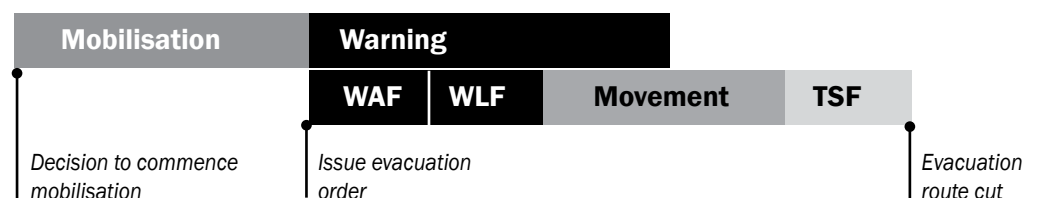
Evacuation timings An evacuation timing model is useful during planning in assessing time limitations affecting an evacuation and in order to calculate timings required for ordering an evacuation.

The evacuation timing model below shows time considerations for:

- Mobilisation of resources;
- Dissemination of evacuation warnings;
- Warning Acceptance Factor (WAF) – the time taken for people to accept that a warning is real;
- Warning Lag Factor (WLF) – the time allowance for packing and getting ready to leave;
- Movement of people within the area to outside of the evacuation zone; and
- Traffic Safety Factor (TSF) to allow for breakdowns and road crashes.

This model can be used for multiple neighbouring geographic areas when considering phased evacuations and can also be used operationally to monitor the progress of the evacuation.

Evacuation timing model The example below illustrates an evacuation timing model showing time considerations⁶. This model can then be used to calculate timings required for ordering an evacuation:



Calculating times In order to calculate when to order an evacuation using the timing model, it is best to work backwards from the time that an evacuation route is cut-off (or hazard impacts). Working with the above timing factors gives an approximate indication of time (in hours) as to when the decision to evacuate must be made.

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6. Opper, S., 2004, 'The Application of Timelines to Evacuation Planning', Coffs Harbour FMA Conference 2004.

Calculating times
(*continued*)

The times for the Warning Acceptance Factor (WAF) and the Warning Lag Factor (WLF) are hard to accurately predict, but are an important consideration in the overall movement of people from the evacuation zone. Timing indications for these two areas are dependant on levels of public education and awareness. Workshops, surveys and community consultation are some methods of gauging approximately how long it may take for warnings to be accepted and evacuees to ready themselves.

Indicative travel times

To allow for approximate calculations on how long area evacuation may take using roads, the table below shows indicative road capacities (by road type) of vehicles per lane per hour⁷. These figures can be used to calculate timings for the movement component (including a Traffic Safety Factor) of the evacuation timing model:

Road Type	Capacity (vehicles/lane/hour)
Motorway	1200
Rural	1000
Urban	500

These calculations were made by reducing maximum observed road capacity by a factor of 50% to allow for adverse driving conditions, including factors such as weather and traffic accidents.

These figures can be used to calculate basic and conservative evacuation travel times considering regional roads and vehicle ownership levels, however it is recommended that Local Authorities with CDEM Groups engage in detailed traffic modelling for their area in order to develop a clearer understanding of local traffic conditions and to help in the development of traffic management solutions/plans for evacuation scenarios.

Mobilisation times

Mobilisation describes the period of preparing emergency managers, emergency services, support agencies and equipment in order to facilitate the effective and efficient movement of evacuees. Ideally, these human and physical resources should be in place prior to publicly ordering an evacuation.

Understanding how long mobilisation in an area gives an indication of when the decision to evacuate needs to be made in comparison to when the public order to evacuate is made.

Mobilisation time requirements are best assessed through both table-top and practical exercises. Understanding mobilisation time allows for planning how much notice is required of those facilitating the evacuation to be ready before the main body of evacuees starts moving. Mobilisation should consider the briefing and movements of agencies such as Police, Fire Service, Transit NZ and the placement of traffic management devices, such as road blocks and signage, and the movement of additional support resources.

7. Transit NZ, 2007.

Section 5: Planning the Warning Phase

Overview

Introduction

The warning phase is categorised as the period between the public becoming aware of an emergency, through official messages, until they have physically evacuated.

During this phase, public information management should be aimed at disseminating information that is:

- clear;
- accurate;
- consistent;
- timely;
- specific to the situation; and
- from a credible source.

Types of warnings

The public need to be advised through official channels if they can expect to be affected, to what extent, and what actions they should take. Warnings may take the form of advice that a hazard is impacting, or may be expected to impact; an instruction to shelter-in-place; or a direction to evacuate.

Note: Natural warnings may feature in the design of evacuation plans and education (e.g. earthquakes as a warning of near-source tsunami). The public awareness of such natural warnings may determine the actions of responding agencies.

Keeping the public informed

Throughout all phases of an evacuation, effective public information management is critical to ensure that any uncertainty felt by those affected during the impact of a hazard is minimised. Timely, consistent, and well delivered information will give the public a sense of control and understanding of the situation, limit their anxiety levels, and assist in reassuring them that emergency services are responding to the situation. This in turn aids responders in the field with the execution of their tasks.

Responsibility

Prior to an emergency event, plans and procedures must clearly identify which organisation, and who within that organisation, is responsible for issuing warnings and who authorises the content of warnings.

Warning Methods

Multiple sources of warnings

Research has shown that people tend to have the most faith in sources that they trust, such as friends and family. These sources will tend to be thought of as more reliable than others, such as those from the government.

As a result, it is important to distribute emergency information via as many channels as possible and to realise that no single method of public warning is all encompassing.

This also highlights the importance of including community groups in the development of emergency plans, as it ensures a greater level of understanding which will aid in creating respect and trust in government agencies.

Appropriate methods

The appropriate methods for the dissemination of warnings should be identified during the planning process and procedures for the release of warning information should be decided. Different methods will suit different geographic regions and community groups. Depending on the methods of warning suitable for a given region, Memoranda of Understanding may need to be agreed upon between various organisations and agencies. Appropriate alternatives should also be considered to allow for potential failures of electricity or telecommunications.

Suggested methods

Methods for disseminating official warnings include:

- media releases;
- radio messages;
- television announcements;
- television news or on-screen 'crawlers';
- internet websites;
- email;
- telephone;
- text messages;
- fax;
- CB radio;
- sirens;
- public address systems (both static and vehicle mounted);
- door knocking;
- community groups; and
- warden systems.

Note: Some of these methods may also be appropriate for pre-event public education activities along with those discussed in Section 3.

Media releases

Local media can be asked to broadcast or publish information about the evacuation and should be briefed in advance about what sorts of messages to expect, what they mean, and who they will come from. Media will also actively seek information during an emergency.

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- Websites** Websites can be used to provide detailed information about the evacuation. During emergencies they are frequently visited and should be updated as quickly and as often as possible.
- Decide which of the organisations involved in the evacuation will use their websites to provide information about the plan and about an evacuation in progress.
- Email** Specific evacuation warning email lists can be used. An email warning can be issued very quickly, however only some of the people receiving it will open it as soon as it arrived.
- SMS text messages** Warning messages can be sent by text to people who have asked to receive such a service. A specific list would have to be created for this. The technology for these services are already used by some transport operators to advise of timetable delays, and by other businesses to provide updates about their services. Some CDEM Groups are also using similar text messaging services.
- Sirens** Sirens, if used, should be different to any other sirens in the area (e.g. volunteer fire brigade) and there must be repeated communication and public education about what they mean and about testing in order to avoid confusion.
- Loudspeakers** In some areas it might be possible to use an existing public loudspeaker network, or build a new one. Care should be taken to find out how many people would be able to hear messages broadcast through the system. Some agencies, such as Police and Fire Service, may have the capacity to use vehicles fitted with loud speakers to broadcast messages.

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Door knocking resources

Trials and experience have shown that door knocking, when conducted by the emergency services, is the most effective method of issuing warnings. It is however extremely resource intensive and slow in delivery⁸.

Field trials have shown that the average rate of door knocking for evacuation warning is 12 houses per team per hour. This is based on teams of 2 people in a typical urban centre⁹.

If door knocking is used as a method of ordering evacuations then it is recommended that doorknockers:

- are uniformed members of a recognised organisation;
- that they work from a script; and
- if possible provide handouts of written information to residents.

8. Keys, C. and Opper, S., 2002, 'On the Proper Conceptualisation of the Warning, Evacuation and Community Education tasks in the Context of Planning for Dam Failure'

9. Molino Stewart, 2003, 'Pitt Town Local Environmental Study Flood Emergency Risk Management Review' and Murphy, G. (2007)

Structure of Written and Verbal Warnings

Introduction

When an evacuation is ordered, the public must be clearly informed of the actions to be taken and to whom the warning applies. Warning templates should be designed during the process of planning in order to speed up the delivery of messages during an emergency event.

Warning needs will vary according to:

- nature of the hazard;
- speed of onset and time available;
- demography; and
- time of day/week/year.

As a result information included in warnings will differ from situation to situation.

Warning information

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 5-6)

As a general guide, information included in a Warning/Evacuation message should comprise:

- issuing authority;
- date and time;
- brief description and details of event;
- area(s) affected / to be affected;
- instructions to those affected (as applicable):
 - whether to ‘shelter-in-place’ or evacuate (include anticipated duration);
 - actions in sheltering in place (to minimise risks);
 - what to take;
 - securing of premises and personal effects;
 - evacuation routes;
 - assembly areas;
 - reference to ‘Get Ready, Get Thru’ checklist; and
 - what to do with pets / livestock.
- response activities regarding the hazard (i.e. what the authorities are doing);
- statement to follow directions of emergency service personnel;
- timing for the next warning update; and
- direction as to where to seek further information (established 0800 number).

Other public information requirements for evacuation events can be found in Section 23.9.2 of The Guide.

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Warning message templates

Ideally any anticipated messages for agencies should have a pre-designed template format (which has been agreed to in advance) in order to increase operational effectiveness.

Templates planned during non-time-critical periods will decrease the workload during an operation and will guide emergency managers in collating the required data. Templates of this nature will aid in maintaining clarity and consistency of information which helps to ensure a well-executed operation.

With this in mind, it is ideal to aim for consistency of templates and messaging within and across Local Authorities and CDEM Groups. This can be established by collaboratively creating documents in working groups, sharing ideas through the sector and assessing these documents during exercises.

At the very least, the content requirements and methodologies of these communications should be collaboratively agreed on and recorded as appropriate in plans and/or procedures.

Vulnerable groups

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 6)

Warning messages must include details, information or methodologies which allow for certain categories of evacuees. This may include such things as:

- special directions for tourists;
- subtitles for the hearing impaired; and
- consideration for those who do not speak English or for whom English is a second language.

Information to emergency services

In addition to warnings and information disseminated directly or indirectly to the public, consideration must be given to information that will be issued to, and passed to, the emergency services undertaking the evacuations, and to the wider CDEM sector agencies. Ideally this will be in the form of an action plan coordinating and detailing all agency actions during the evacuation. The issue will be how to create and disseminate this action plan in a timely manner.

Section 6: Planning the Evacuation Phase

Overview

- Introduction** The evacuation phase relates to the movement of people away from the area of immediate danger. Issues of particular concern during this phase are the control of traffic flow, evacuation routes, safety of evacuees, and access to and security of the evacuation zone.
- Influencing factors** Several factors influence the ability of Local Authorities and CDEM Groups to effect a mass evacuation. These factors need to be evaluated in order to gain a realistic picture of how many people can be removed from threatened area. Factors include:
- the size of the area to be evacuated;
 - the number of people within the evacuation area;
 - specific infrastructure in the evacuation area (e.g. hospitals, prisons, lifeline utilities);
 - time available;
 - personnel within the local and neighbouring emergency services and volunteer organisations;
 - the resilience of local transport infrastructure; and
 - the capacity of the local transport system.
- Families** Dislocation from sources of social support significantly adds to the stress of evacuees and can considerably reduce their ability for recovery in a timely fashion.
- If sufficient time allows, it is ideal to allow families to assemble together before they evacuate the area. Only in the most immediately life-threatening situations should people be evacuated without being able to gather with their family first.

Transportation

Introduction

A mass evacuation is likely to cause a significant strain on transport systems and infrastructure. Careful planning will help emergency managers identify weaknesses in existing infrastructure and arrangements, as well as develop solutions.

Transportation options

The nature of the hazard and the demographics of the population will affect Local Authority and CDEM Group planning with regard to methods of evacuee transport. In cases of self-evacuation, there is an assumption that evacuees have access to private transport. In some scenarios however (for example in the case of a large urban area) it may be wiser to have arrangements for mass public transport in order to relieve congestion on the roads.

Self-evacuees

Self-evacuees are those that can leave their current location via their own means of transport such as a personal car, bike, or other vehicle.

Assisted-evacuees

Assisted-evacuees are those that do not have their own, or access to a, vehicle and therefore need assistance in the form of transport organised as part of the emergency response. Supplied transport may vary in nature, depending on the region affected, available assets and what pre-existing arrangements may have been agreed to.

Vulnerable groups

See *The Guide to the National CDEM Plan (23 Mass evacuation, p. 12)*

Consideration of vulnerable groups with limited transport options should lead to the development of plans that will allow a well coordinated evacuation. Engagement and consultation with vulnerable groups of this nature during planning will ensure that their needs are met, and may indeed lead to transport solutions.

The use of *evacuation assembly* areas for those groups without access to transport may need to be considered. Some people with disabilities may also need assistance to get to such assembly areas.

Public transport

Consideration should be given to the use of public transport as appropriate, and available, and to the use of Memoranda of Understanding with transport companies to ensure timely activation and operation. Depending on the nature and/or size of the evacuation, planning may need to include transport options from outside the local area to supplement numbers of vehicles as well as to allow for any potentially evacuated staff.

Planning arrangements should also allow for the discontinuation or alteration of normal services preceding or during the evacuation effort. Evacuation planners may wish to have pre-designated evacuee collection points (evacuation assembly areas) to allow for ease of coordinating mass public transport.

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Luggage

Luggage limitations of public transport vehicles must be assessed against the anticipated belongings that will be carried by evacuees, to gauge the capacity and appropriateness of specific transportation.

**Transportation of
pets**

Vehicle capacity will also be affected by people wishing to evacuate with their pets. It is recommended in such circumstances, that pets in carry-cases can be carried on public vehicles.

In order to deal with domestic animals too large for carry-cases, separate animal vehicles may be required. It may be possible to make these arrangements through local SPCA and/or animal rangers. Procedures for registering animals being transported in separate vehicles from their owners should be considered.

**Pedestrian
evacuation**

In some circumstances, evacuation by vehicles may not be the most appropriate option for some areas. Hazard and risk assessments will help determine this.

Evacuation-in-place

‘Evacuation-in-place’ refers to the concept of evacuating to a higher elevation within a current location. This method of evacuation may be most appropriate option for some locations in the event of a hazard such as a near-source tsunami. A rapid onset hazard such as this may require occupants of lower levels to proceed upstairs to floors above the anticipated inundation level.

Roads and Traffic Control

Managing traffic flow

Good information flow is critical in order to ensure a well coordinated and efficient egress from the evacuation area. Regardless of the nature of the evacuation, a streamlined process for the distribution of traffic information must be devised well in advance. During an evacuation, the status of the land transport system needs to be continually updated, informing evacuees and others on-the-road to any changes. Although multiple systems of dissemination should be used, radio stations will be the most effective means of communication.

Transport Support Group

See *The Guide to the National CDEM Plan (23 Mass evacuation, p. 7-9)*

Establishing a Transport Support Group is recommended in order to assist with evacuation transport strategies during the planning process, and to support the Controller to coordinate strategies during evacuation operations.

The Transport Support Group may develop a Traffic Control Management Plan which will include details of temporary changes to traffic control to facilitate traffic management during the evacuation. This may be planned, or partially planned, prior to an event with specific details adjusted during the operation to accommodate the unique issues on the day.

Routes and signage

The planning process should decide upon primary and secondary evacuation routes from an anticipated affected area. This should be coupled with the identification of routes *into* the affected areas for the use of emergency services or returning empty people-movers.

Evacuation routes should be designed with due consideration to local area hazard maps to ensure that selected routes are appropriate for any anticipated hazards. The process of mapping should also identify any potential bottlenecks in traffic movement. Early identification of these issues allows for planning of alternative routes, or the development of other on-the-day solutions. Additionally, public-works planning can be guided towards alleviating such problems, by increasing transportation infrastructure capacity.

Identified routes should be mapped for inclusion in procedures and can be used as the basis for designing evacuation route signage. It is recommended that Local Authorities and CDEM Groups publish information about evacuation routes and when to use them. This includes maps, and road signs indicating direction. Advanced public knowledge of evacuation routes is likely to reduce disruption during an evacuation and increase the speed of egress, either during self evacuation or in coordinating public transport.

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Roads and traffic management

In order to increase the speed and coordination of mass evacuation, planning should consider the management of roads. Critical intersections should have Traffic Control Points established to disperse evacuees correctly. Planning should allow for the number of personnel and the amount of resources required to execute proposed traffic management strategies. It may be necessary to bring in external personnel/resources, as local response capacity may be reduced. Additionally, inbound roads must be closed to ensure that entry into the evacuation area is made only by those who are authorised to do so.

Powers and authorities for road closures

The New Zealand Police have the authority to close any road under the Local Government Act s342A. Fire Services have this authority under the Fire Services Act s28(h).

Refer to s 86 of the Act

Transit New Zealand Regional Managers may close sections of state highways in emergencies under the Transit Act s61(4)(i).

Following a declaration of a state of emergency, a CDEM Controller (CDEM Act 2002, Section 86) may authorise the exclusion of people from any place.

Contra Flow

Reversing traffic flows on roadways (contraflow) may be an option for some evacuation plans.

Contraflow can capitalise on the number of lanes moving away from the evacuation zone, and hence allow a faster evacuation time, however: contraflow will generally be easier to implement in isolated or rural areas, where there are only one or two access roads. Due to the large number of intersecting roadways in urban areas the logistics of setting up road blocks, diversions and signage and ensuring that the inbound lanes are free of traffic is extremely resource-intensive, personnel-dependent, and time-consuming.

These issues need to be considered in planning and assessing 'mobilisation' times when using the *Evacuation Timing Model*. The same issues should be considered against the time and resources available during potential mass evacuation situations.

Regardless of perceived difficulties in establishing contraflow, the Transport Support Group should engage in pre-event modelling and analysis to ascertain how long it would take to establish traffic management, what resources would be required and what difference this would make to an evacuation. Having modelling calculations and resource requirements allows the planning group to accurately assess all possible roading options.

Evacuation Support Issues

Welfare en route

For large scale mass evacuations it may be necessary to deploy resources along chosen evacuation routes in order to ensure that traffic flow continues and to ensure the welfare of those being evacuated.

En route resources

Consideration should be given to the following:

- Ambulance/medical responders (including health logistics supply);
- Fire fighting/rescue appliances and personnel;
- Tow-trucks or brake-down services;
- Refuelling facilities; and
- Alternative emergency transport (in case of any permanent breakdowns).

Required resources should be stationed at tactical locations and should be staged prior to the evacuation being ordered. Consideration should also be given for on the day environmental/logistical issues that may influence welfare requirements (e.g. drinking water).

When considering en route resource support, it is useful to engage with welfare agencies (through the local Welfare Advisory Group) to identify how they may be able to provide appropriate welfare support during this stage.

Security in evacuated areas

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 10)

Evacuation planning should make some preparation towards maintaining the security of the evacuated area. Crime levels during natural disasters have been shown to be equivalent to the typical amount of crime in non-emergency times¹⁰, however evacuees and the public at large will need to be reassured that steps are being taken to ensure the security of their property. It is important that public information messages contain statements as to what protective action is being taken (e.g. police or security patrols around the evacuated area, etc).

However, careful consideration should be given to exactly how many staff and resources are used for security purposes as this can remove personnel from more critical jobs such as further evacuation, rescue and traffic control. Police may be able to establish primary security cordons, however, their resources will be needed elsewhere. Additional long-term security arrangements should be planned.

Note: The safety of personnel being used for security purposes need to be carefully considered when deploying in or near an evacuated area.

10. Tierney, K., Bevc, C., Kuligowski, E., (2006) Metaphors Matter: Disaster Myths, Media Frames, and Their Consequences in Hurricane Katrina, *The ANNALS of the American Academy of Political and Social Science*, Vol. 604, No. 1, 57-81

Section 7: Planning the Shelter Phase

Overview

Introduction The shelter phase primarily relates to the receiving, registration and the temporary accommodation of evacuees. As the length of the evacuation increases, the support requirements will also increase.

This phase requires careful coordination of government departments and agencies, Local Authorities, the CDEM Group(s) and welfare delivery agencies to provide emergency accommodation for those in need, and to ensure that welfare requirements and long term recovery needs of the evacuees are assessed and met. Local Authorities and CDEM Group evacuation plans need to have the capacity to assist those evacuees without access to billeting or commercial accommodation.

Shelter phase issues There are four broad issues which need addressing during this phase, regardless of the size of the event:

- registration;
- accommodation;
- general health and public health; and
- recovery centres (one-stop-shops).

The physical size of the event and the number of evacuees will determine the logistics of how these issues are handled.

Need for shelter During evacuations people tend to seek shelter in second homes, hotel/motel accommodation and then with family and friends, before seeking public shelter¹¹.

However, in a mass evacuation, those who are immobile, without social networks or financial resources will require assistance with accommodation from the CDEM sector.

¹¹. Quarantelli, E. L., 1985, 'Social Support Systems: Some Behavioral Patterns in the Context of Mass Evacuation Activities'.

Scale of Evacuation

Small-scale evacuations

For smaller events, an all-in-one *Welfare Centre* may be all that is required to service evacuees. Such a centre will have facilities for temporary emergency accommodation, registration of evacuees, (regardless of where they will be accommodated), and recovery services.

Welfare Centres are most likely to be used for intra-area evacuations where a CDEM Group or local authority is dealing with evacuees within its own boundaries.

Large-scale evacuations

When the volume of evacuees is likely to be large, a traditional Welfare Centre may not be adequate in size to cope with the excessive number of people or with the social issues associated with accommodating a large number of people for a prolonged period.

In such a scenario it is recommended that two physically close (yet separate) facilities are established. Firstly, an *Evacuation Centre*, and secondly a *Recovery Centre*, also known as a 'one-stop-shop'.

An **Evacuation Centre** provides temporary emergency accommodation (for those evacuees who cannot accommodate themselves) and registration services (only for those who will be staying at the Evacuation Centre).

A **Recovery Centre** provides a range of welfare, support and recovery services for all evacuees, and registration services for any evacuees not staying in accommodation provided at the Evacuation Centre. The Recovery Centre itself does not provide accommodation.

More details of recovery services can be found in *Recovery Management, Director's Guidelines for CDEM Groups [DGL 4/05]*.

Evacuation and Recovery Centres

Separation of centres

In the case of a mass evacuation, physically separate Recovery and Evacuation Centres promote better logistical coordination at centres and better coordination of evacuees. They also reduce disruption, stress and anxiety levels at Evacuation Centres among staff and long-term occupants.

In addition, this operational approach is easier to scale down as people leave the Evacuation Centre for other longer term accommodation while the Recovery Centre continues to operate.

These arrangements are most likely to be used for inter-area evacuations where Local Authorities and/or CDEM Group(s) are receiving and accommodating evacuees from neighbouring regions.

Multiple evacuation centres

Several Evacuation Centres may be required in mass evacuations simply because of the excessive volume of evacuees. These may be in multiple regions or just within one town.

Staffing requirements will obviously be higher when operating multiple centres. Plans may need to include arrangements to bring in additional support staff from outside the region.

If a town or area is likely to require multiple Evacuation Centres, then only one Recovery Centre should be required. However, due attention must be given to the need for well trained and managed staff. If there are Evacuation Centres in different regions, then each region will require a separate Recovery Centre.

Registration

From The Guide to the National CDEM Plan (23 Mass evacuation, p. 9-10) and (12 Welfare p.14-17)

Registration is an extremely important function during an evacuation as the information obtained at this time will be fed into the National Inquiry Centre. The National Inquiry Centre provides access to information for concerned relatives and provides a useful tool for reuniting family members and friends while they are in emergency accommodation.

The New Zealand Red Cross Registration Form is the standard registration form to be used for the registration of evacuees.

Local Authorities and CDEM Group evacuation plans should include a strategy to encourage self-evacuees to register via the NZ Red Cross' 0800 number: 0800 733 276. This aids repatriation activities and supports the information line.

Facilities and Logistics Issues

Introduction

When assessing potential Welfare, Recovery and Evacuation Centres there are many considerations which should be taken into account. Most of these are covered in the *Recovery Management, Director's Guidelines for CDEM Groups [DGL 4/05]* however some specific considerations with regard to mass evacuation are:

- ad-hoc transport;
- shuttle services;
- phone banks;
- security;
- signage;
- staffing levels;
- traffic control;
- waste management; and
- access to health care.

Ad-hoc transport

To aid with reuniting separated families/communities and the movement of people without transport to other accommodation, transport between Evacuation Centres and/or towns may need to be arranged on a small-scale basis.

Shuttle services

For long term Evacuation Centres, shuttle services to local facilities (e.g. libraries, banks, shops, medical centres) will help evacuees with establishing routines and keeping busy.

Phone banks

Multiple free phone facilities should be set up in Evacuation Centres to allow evacuees to get in contact with family, friends and services as needed.

A phone number for the centre will be needed for inbound calls to evacuees. This may need to be coordinated through a receptionist position.

Security

On-site security for Evacuation and Recovery Centres is important for the wellbeing and peace of mind of all occupants.

Signage

Desk functions, facilities and the requirements of recently arrived evacuees should be clearly sign-posted in any centre to limit congestion and aggravation and help reduce anxiety.

Staffing levels

Consideration should be given to staffing levels at all centres to cope with the likely number of evacuees to be processed or cared for.

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Traffic control

The design of any centre should take into account the anticipated number of vehicles that may arrive on site. Allowances should be made for vehicle movements and parking.

Waste management

Waste management for both garbage and sewage will need to be arranged with relatively short notice, therefore pre-event arrangements may be necessary.

Access to health care

Local health care facilities should be assessed to establish their ability to cope with an influx of patients during a large evacuation. Support plans may have to be devised with the local District Health Board to support these facilities in such times. Another possibility may be to establish a mobile clinic or health post to temporarily supplement existing health infrastructure.

Pets and Animal Welfare

Introduction

It is reasonable to assume that many evacuees will arrive at Evacuation Centres with their pets. To accommodate this, plans must consider arrangements for handling pets.

Animal housing

For hygiene reasons, animals must be housed away from the main accommodation area of the Evacuation Centre. However, access to this area must be readily available for owners. Accommodated animals remain the responsibility of their owners; not only due to resource issues, but also as it is likely that owners will want to take care of their pets. This must be communicated clearly to evacuees before evacuating.

Local animal rangers, the SPCA, or boarding kennels may be able to assist with animal housing and transport issues.

Note: For people with disabilities with companion animals there is a need to consider how they can remain together within an evacuation centre. This may be achieved by providing a separate room/area within the evacuation centre with facilities to care for the animals and their owners together, or a completely separate evacuation centre that caters for people with disabilities and their companion animals.

Animal supplies

Planning arrangements should consider the need to supply pet food, litter supplies and the availability of veterinary services.

Spontaneous Volunteers and Donation of Goods

Introduction

Reception Centres and Evacuation Centres are likely to become ‘dumping grounds’ for well intentioned donations of goods (food, clothing, toys, etc) as well as a site where people wishing to help will come to volunteer their time.

Plans for donations

Local Authorities and CDEM Groups and welfare agencies involved in running Welfare and Evacuation Centres must have plans in place to manage donations and volunteers of this nature. If plans are not in place prior to the establishment of a centre, then the unstructured and ad-hoc management of volunteers and goods will place enormous strain on the staff at the centre and take them away from duties associated with the care of the evacuees.

Ensure that centre staff are aware of the planning arrangements for donated goods and volunteers, so that they can best direct on-the-day volunteers or donors.

Planning for spontaneous volunteers and donations should include a communication strategy to inform the public of how they can best help. For more details on this subject, see *Donated Goods Management Planning: CDEM Best Practice Guide [BPG2/06]* and *Spontaneous Volunteer Management Planning: CDEM Best Practice Guide [BPG3/06]*.

Section 8: Planning the Return Phase

Overview

Introduction

The return phase covers the period from issuing an 'all-clear' message informing evacuees that it is safe to go home, transporting those who are returning and their arrival back into the evacuated area.

This phase may potentially be drawn out as groups of evacuees may have to return in stages as the area is declared safe. The timely return of evacuees is crucial as the sooner they return home the sooner they will find themselves actively engaged in the recovery process; and this increases long-term psychological recovery.

Decision making

Before giving an 'all-clear', the evacuated area must be assessed to ensure that it is safe for evacuees to return. Area hazard and risk assessment should be coordinated by the Local Authority and CDEM Group, and activities should be carried out by the appropriate agencies and authorities as required.

Evacuation area assessment

Assessment of the evacuated area should include:

- presence/status of original hazard and risks;
- potential reoccurrence;
- infrastructure safety (engineering assessments);
- building safety (engineering assessments);
- restoration of lifeline utilities;
- availability of local accommodation (particularly if many homes are uninhabitable);
- hygiene; and
- general security.

All-Clear

Introduction

As with evacuation warnings, the 'all-clear' needs to be disseminated using as many methods as possible and the language used must be clear and accurate.

All-clear information

As a general guide, information included in an all-clear message should comprise:

- issuing authority;
- date and time;
- brief description and details of event;
- area(s) now safe to return to;
- instructions to those affected (as applicable):
 - now safe to return;
 - how to return home;
 - road/traffic conditions;
 - security of area;
 - return routes; and
 - assembly areas (if applicable);
- response activities still underway in area;
- statement to follow directions of emergency service personnel;
- recovery services available; and
- direction as to where to seek further information (established 0800 number).

Effectiveness

As with warning messages, there are several factors which determine the effectiveness of an 'all-clear' message. Generally these factors are that the message:

- is from a source of authority;
- is simple and free of jargon;
- gives clear guidance; and
- is repeated regularly.

'All-clear' messages must also be disseminated via as many communication channels as possible and must cater for people with disabilities, language barriers and other special needs.

Most importantly the 'all-clear' must plainly state which areas are safe to return to, in order to discourage people returning too soon.

Physical Return

Transport

The nature of transport for the return of evacuees will reflect the evacuation itself. If evacuees were largely unassisted, then the return will see the roads filled with private vehicles. If a large number of public transport vehicles were used, then a similarly coordinated effort will be needed for the return.

Staged return

If dealing with a large number of returnees, promoting returning by stages (e.g. by suburbs) maybe preferable. This will be particularly useful if dealing with self-evacuees and where it is likely that major transport arteries will become congested as residents return.

It is likely that following a mass evacuation, any return activities will be in stages, as only parts of the affected areas may be assessed as habitable, while other areas continue to be uninhabitable for some time. Careful planning around staged returns will be required, particularly with regard to public information management. Evacuation plans should include a strategy and process for dealing with the return phase.

Traffic management

Traffic control will pose a large logistical challenge during any return operation. It will be important to have a well planned traffic management system in place before giving the 'all-clear'. This may include the use of road blocks, contraflow, police and traffic control staff.

Traffic control strategies need to be designed in conjunction with any staged returns to minimise the impact on transport infrastructure.

The same en route logistical issues considered for the evacuation may also have to be considered for the return phase.

Communications through various sources should keep the travelling public updated on the state of traffic, roads, and current conditions.

Accompanied return

In certain situations, the return phase may also include 'accompanied-returns'. This is a time where residents are allowed to return to their home for a very short visit (accompanied by emergency service) in order to collect important or valuable possessions.

This option can be used when homes may still be damaged and still uninhabitable. In cases of mass evacuation, this option may be difficult to facilitate due to the scale of impact and number of evacuees.

Recovery

Introduction	Recovery is a long-term and ongoing process. The welfare and recovery issues discussed in the previous section will continue to be needed during and following the return of evacuees to their homes/neighbourhoods.
Recovery strategy	Prior to issuing an 'all-clear' message a recovery strategy must be devised for those returning to the evacuated area. Refer to Recovery Management, Director's Guidelines for CDEM Groups [DGL 4/05].
Recovery issues	It is worthwhile setting up Recovery Centres in affected neighbourhoods prior to the return of evacuees to service their needs from the moment they arrive. It is important that communication is ongoing with affected members of the community throughout this period to aid in their individual recovery.
Information line	<p>It is important to maintain a dedicated phone number to handle inquiries regarding the 'all-clear' and any recovery issues.</p> <p>The number for this information line should be issued on all media communications during and following the return phase.</p>

Annexes

Annex 1 – Planning Central Business District Evacuations

Introduction	<p>This annex concentrates on some of the particular issues associated with the evacuation of a central business district (CBD), or part thereof, in fast-onset situations such as local-source tsunami, chemical spill, transport accident or terrorist attack.</p> <p>Note: This annex is to be used in conjunction with all other elements of this guideline when planning for CBD evacuations.</p>
CBD evacuations	<p>The evacuation of a city CBD can be challenging, as the population varies greatly between day and evening. The dissemination of warnings can be particularly difficult in this context, as day-time office occupants are unlikely to have ready and ongoing access to media (such as radio and television) which may otherwise be used to warn residents that they should evacuate or shelter-in-place.</p>
Warnings	<p>In addition to the warning methods discussed in Section 5, trained personnel (e.g. fire wardens) could be used to facilitate a CBD warning system. Those personnel could be sent warnings (e.g. via a subscribed text system) with instructions of what action building occupants should take. Then using existing building evacuation schemes or procedures, trained personnel would advise building occupants of the required action (evacuate or shelter-in-place).</p> <p>Note: Sirens and public address systems are limited in their use for CBD evacuations as the environment creates audibility problems due to the day-to-day abundance of other sirens/alarms in CBD areas.</p>
Shelter-in-place	<p>A direction to 'shelter-in-place' would require building occupants to remain in their building until advised that it was safe to leave.</p>
Evacuation	<p>If an evacuation is required, then the building is evacuated using existing procedures with building occupants moving to their designated assembly point. From here, the trained personnel would direct the assembled building evacuees to the CBD's designated Safety Sites.</p>

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Safety Sites

A Safety Site is an open area where the occupants of evacuated buildings go (from their building assembly points) to await organised transport away from the CBD or an ‘all-clear’. A number of Safety Sites should be designated during planning within or around a CBD area.

When planning the use of Safety Sites, procedures need to be arranged with regard to the logistical management of the site and the methods of communicating with those assembled there.

Development and education

Like any evacuation plan, the community will need to be engaged in its development and will need some level of education about the plan. Once devised, evacuation maps need to be published and sign-posted.

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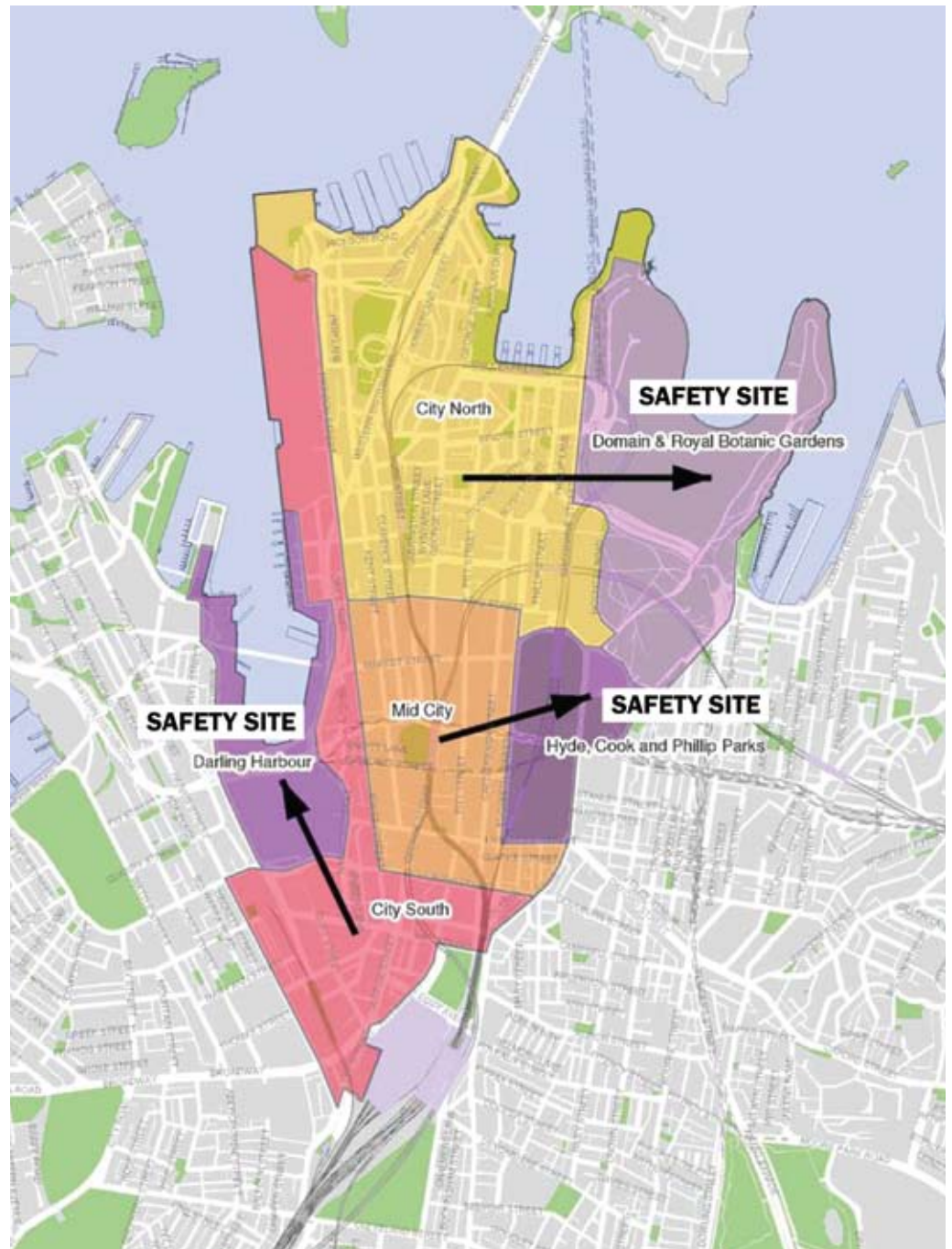
Example of CBD safety sites

Sydney's CBD has been split into three precincts (City North, Mid City, and City South) with large, public areas designated as safety sites adjacent to each section.

Example of map CBD safety sites

The map below is an example of the Safety Sites used in Sydney's CBD (arrows show which is the appropriate safety site for each precinct):

New South Wales Office of
Emergency Services



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CBD evacuation example 1

An emergency in the CBD may require some to evacuate and others to shelter-in-place. The picture below is an example of a single incident showing the nature of the warning messages that would be issued, and for which areas around the incident:

New South Wales Office of
Emergency Services



CBD evacuation example 2

A large scale emergency in the CBD may require the evacuation of a large area. The picture below is an example of a large scale incident (or multiple incidents) showing the nature of the warning messages that would be issued, and for which areas around the incident:

New South Wales Office of
Emergency Services



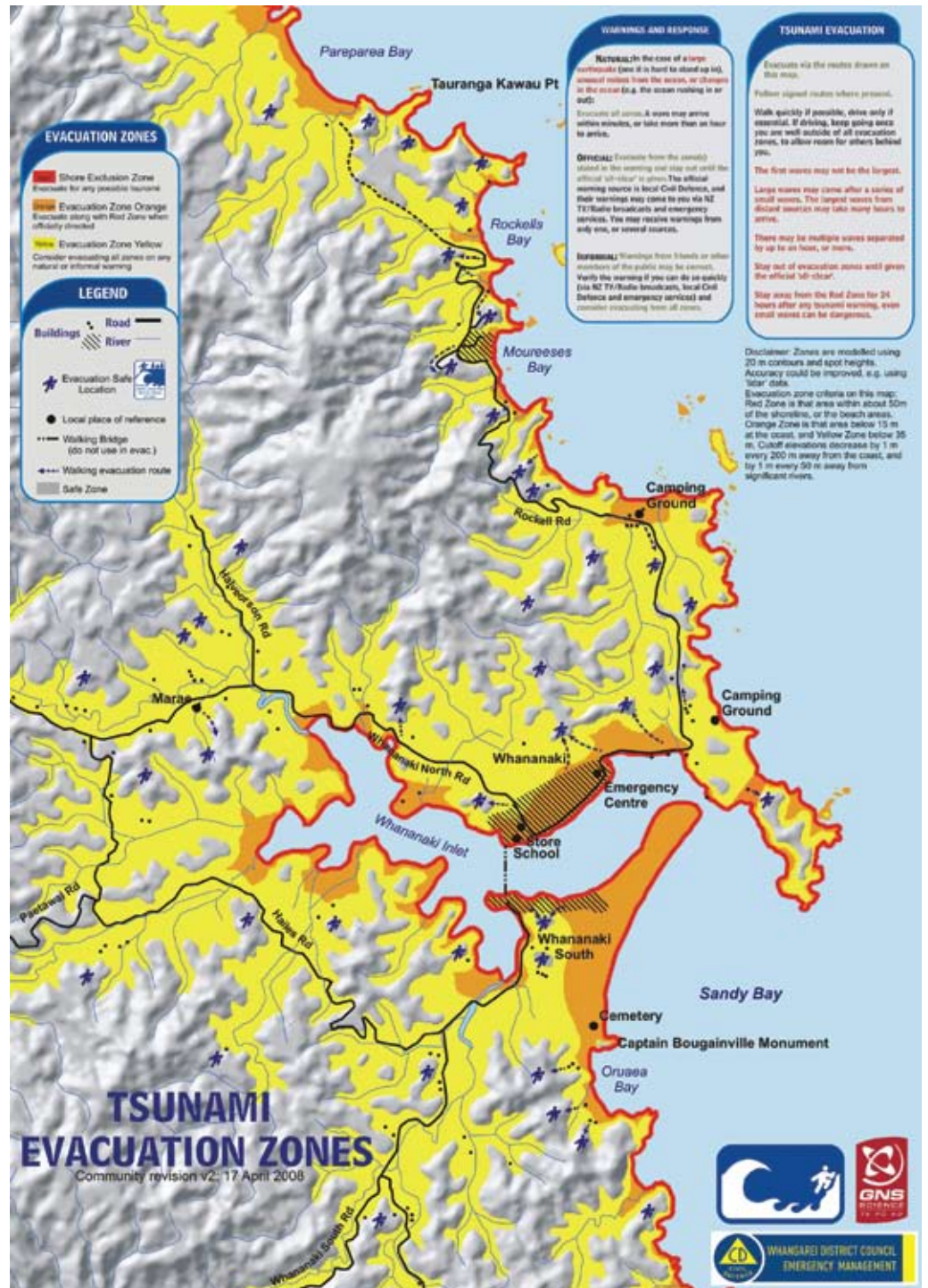
Annex 2

Examples Maps

Example map 1

The map below is an example of GIS layered information that can be used in evacuation planning. It shows evacuation zones, marae, schools, buildings and main roads, and was developed by the local community:

Whangarei District Council

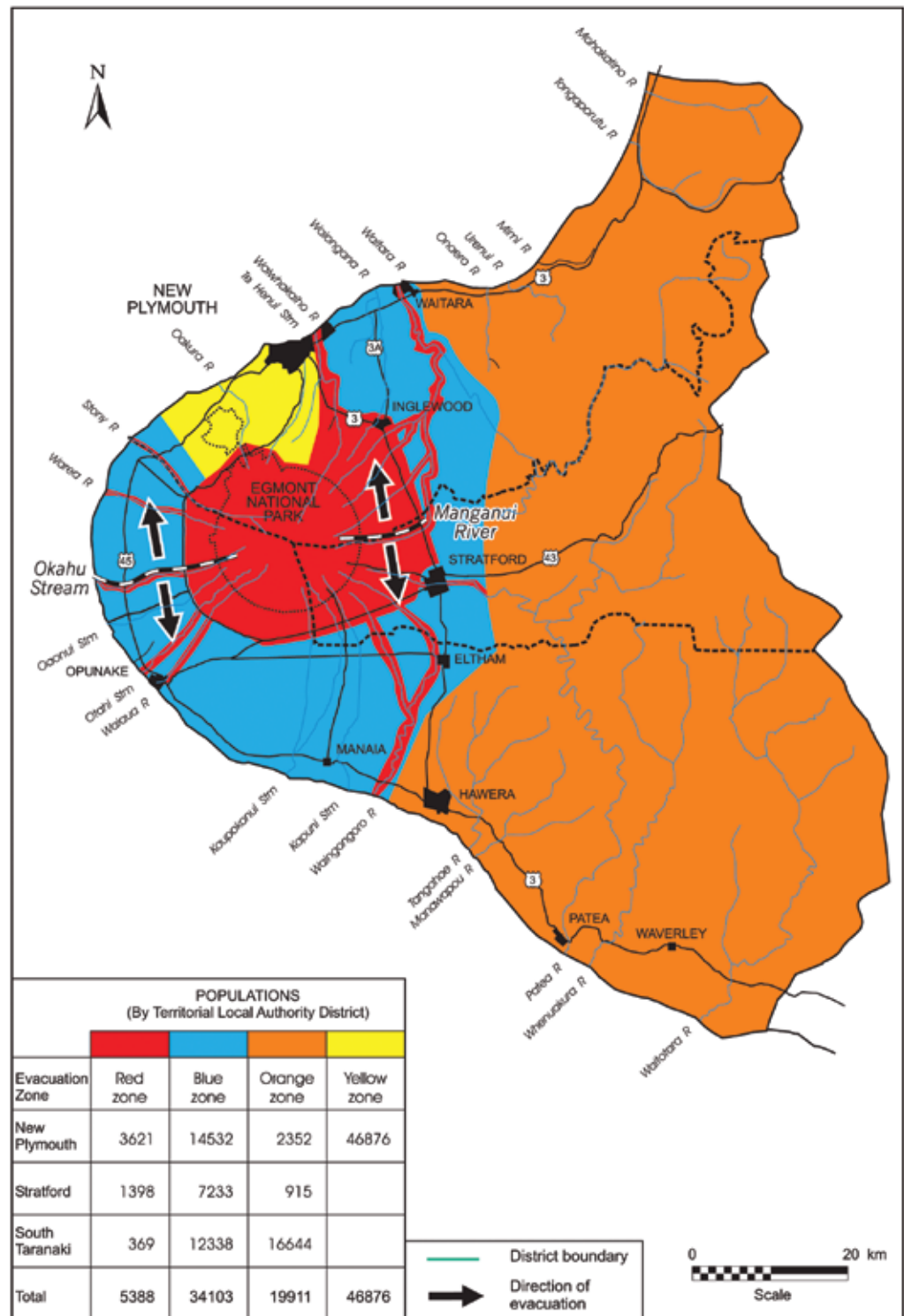


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Example map 2

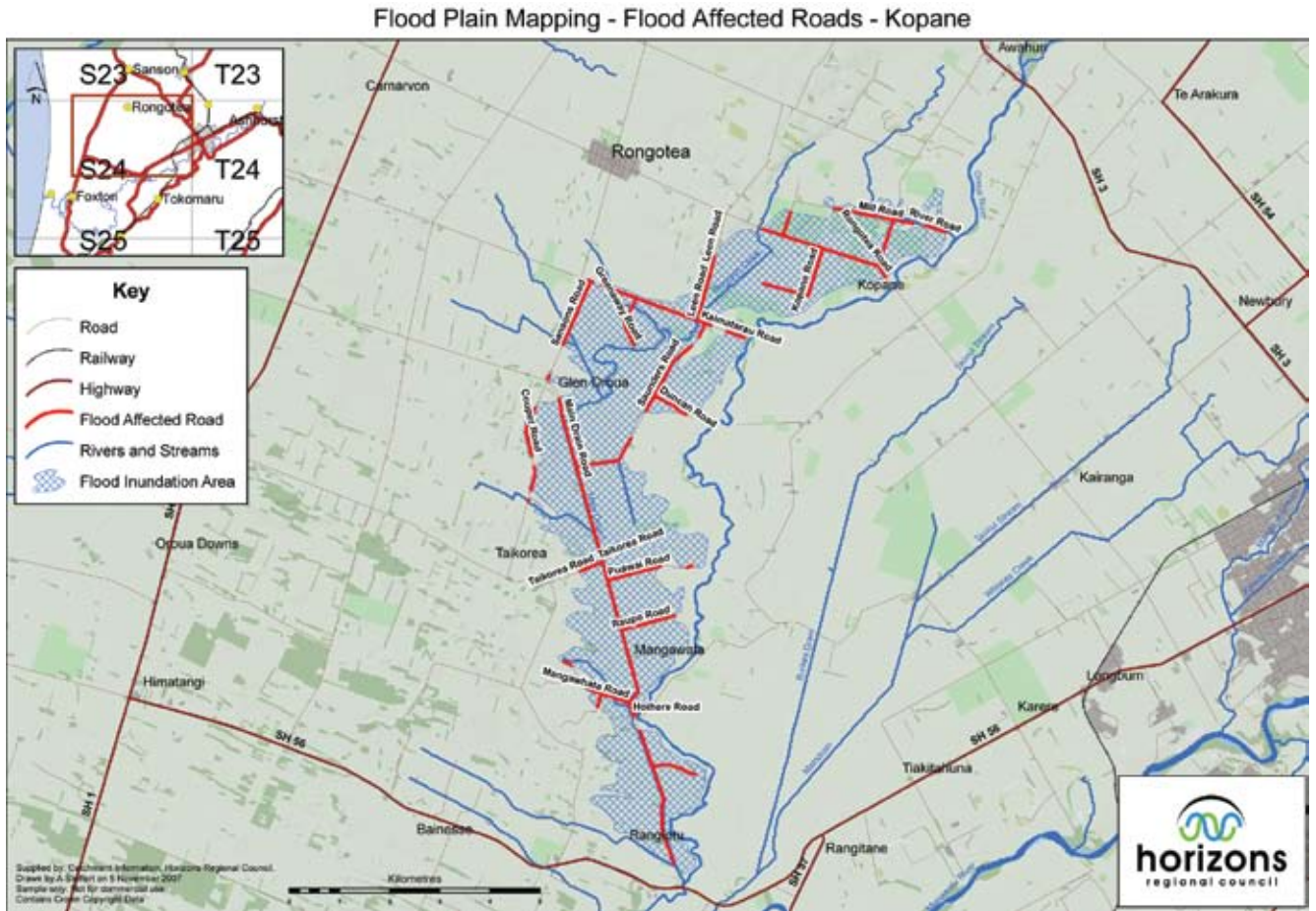
The map below shows the evacuation zones and evacuation directions (including population details for zones) around Mt Taranaki:

Taranaki Regional Council



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Example map 3 The map below shows flood inundation areas and flooded roadways:



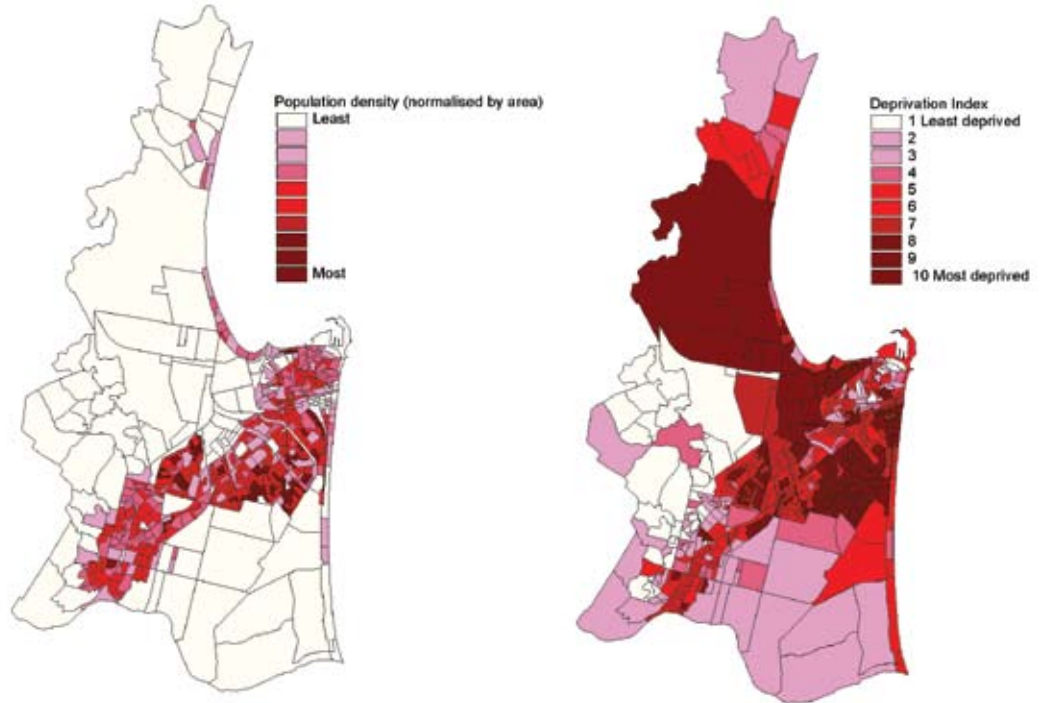
Horizons Regional Council

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Example map 4

The maps below show the population density and the deprivation index for a geographic area:

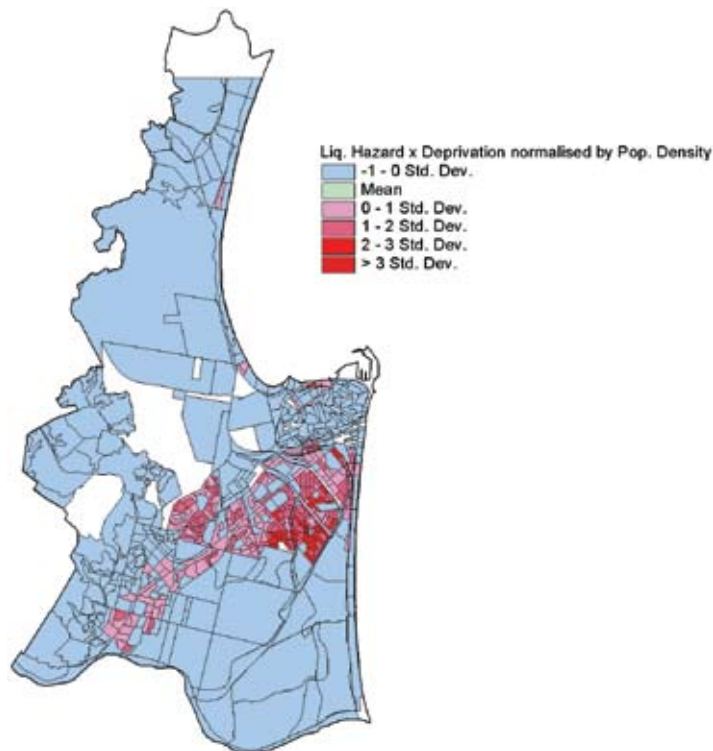
Hawkes Bay Regional Council



Example map 5

The map below is an example of combining demographic and hazard data for use in planning. It overlays the normalised population data and the deprivation index data from Example Map 4 with hazard data (liquefaction) for the area:

Hawkes Bay Regional Council



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Example map 6

The image below shows an example of the incorporation of a tsunami evacuation map on an public display information board:

Whangarei District Council

Tsunami - Are you ready?

What is a tsunami?
Tsunamis are a series of waves most commonly generated by major disturbances of the sea floor, usually caused by undersea earthquakes, landslides, or volcanic eruptions. Tsunamis can occur at any season of the year and at any time, day or night. Some tsunamis can be very large and can rapidly and violently inundate coastlines, causing loss of life and property damage. Others can be small and dangerous to those near or in the water.

Tsunami Facts
New Zealand's entire coast is at risk of tsunami.
• The biggest tsunamis in New Zealand are likely to be caused by waves close to our shores and can arrive within only a few minutes.
• Some tsunamis can travel thousands of kilometres and still be big enough to cause loss of life and damage.
• The first waves may not be the biggest.
• Large waves may come after a series of much smaller. The largest waves from distant sources may take many hours to arrive.
• There may be many waves separated by up to an hour, or more.
• Tsunamis can travel around corners, up coastal streams and streams.
• One or two tsunamis pick up debris and can knock down houses. The force of tsunamis is enormous.
• Harbours, bays and inlets often amplify tsunami waves.

Tsunami history
No less than 10 tsunamis with run-up heights of 10 m or more have occurred in the last 100 years. Two of these tsunamis were generated by local earthquakes (1931 and 1947), the other by a large South American earthquake (1960). Tsunami with run-up heights of 10 m or more have been found in the geological (sediment) record of the last 1000 years. New Zealand also has a long shore boundary (within 500 km east of the North Island), similar to the boundary between the Indian Ocean and the Pacific Ocean.

DRAFT TSUNAMI EVACUATION ZONES

continued on next page

Map used for public education

The brochure below incorporates a tsunami evacuation map showing local evacuation routes and evacuation zones. This brochure is a good example of how evacuation maps can be used for public education:

Christchurch City Council

WHAT IS A TSUNAMI?

A tsunami is a series of waves most commonly caused by an earthquake beneath the sea floor. As tsunamis enter shallow water near land, they increase in height and can cause loss of life, injury and property damage where they come ashore. They can occur at any time of the day or night, under any and all weather conditions, and in all seasons. Beaches open to the ocean, bay entrances, estuaries, tidal flats, and coastal rivers are especially vulnerable to tsunamis.

WHAT ARE THE DIFFERENT TYPES OF TSUNAMI?

Tsunamis are categorised into three groups:

Distant source tsunami, which take more than three hours to reach New Zealand. A distant source tsunami that will affect the City and Banks Peninsula is likely to be generated around South America or Alaska. When a tsunami has been generated from these areas, it will not reach the City and Peninsula coastline for an estimated 12 to 14 hours. There will be sufficient time to issue a warning and activate the Coastal Evacuation Plan which has been developed by the Police and Christchurch City Council.

Regional source tsunami, which take one to three hours to reach New Zealand. The sources of this type of tsunami include earthquakes and volcanoes in tectonically active areas to the north and east of New Zealand. Regional source tsunamis are generally considered less likely than distant and local source tsunamis and are a very low risk to the City and Banks Peninsula.

Local source tsunami, which take less than an hour to reach the nearest New Zealand coastline. When a local source tsunami is generated by a strong offshore earthquake, the first waves would reach the coast within minutes after the ground starts shaking. Feeling an earthquake could be your only warning. The probability of a local source tsunami impacting on the City and Banks Peninsula coastline is considered low.

PLEASE KEEP THIS LEAFLET FOR REFERENCE

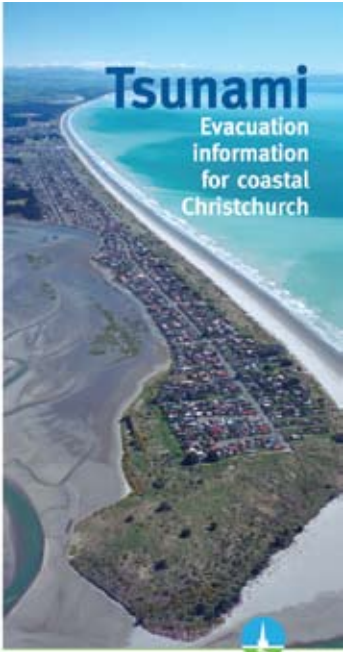


WHERE CAN I GO FOR MORE INFORMATION?

Check out the following websites:
www.ccc.govt.nz/CDEM
www.getthru.govt.nz/
www.educate.govt.nz/
 or contact Environment Canterbury
 for a copy of The Q Files - Tsunami booklet









WHAT CAN I DO TO PROTECT MYSELF FROM A TSUNAMI?

- Develop a household evacuation plan. Everyone in your household needs to know what to do on their own to protect themselves in case of emergency.
- Know where to go to be out of the tsunami evacuation area (coloured pink on the map) and move beyond the Police cordoned off area. Arrange to stay with family or friends who live well away from the evacuation area or prepare to go to a designated Welfare Centre - (look to the radio for details about the location of the Welfare Centres).

HOW DO I KNOW WHEN TO EVACUATE?

Listen to the radio stations listed below for information. For a distant source tsunami the Police and Civil Defence will bring together their teams and start evacuating the area coloured pink on the map. A local source tsunami is unlikely to be generated near Christchurch or Banks Peninsula. However, if you feel an earthquake lasting more than several seconds, during which you have difficulty standing or walking, immediately move out of the evacuation area. Strong ground shaking in Christchurch will most likely come from an earthquake on an inland fault that won't generate a tsunami, but there is a possibility that it is from an earthquake on a fault in Pigeon Bay, and a small possibility that this has generated a tsunami. If you notice a sudden drop or rise in sea level, immediately move inland or to high ground.

WHAT SHOULD I HAVE IN MY GETAWAY KIT?

You should prepare a getaway kit containing only essential items you can carry. The kit should be adapted to your family's needs, but only include those important items mentioned below that you can easily carry. Have it ready to go for immediate evacuation.

Your kit should include:

- Cash and credit cards
- Family documents
- Birth and marriage certificates
- Driver's licences and passports
- Financial information (insurance policies, mortgage information etc)
- Family photographs
- Personal items
- Medical items
- Toilets, soap, toothpaste, toilet paper and sanitary items
- Hearing aids, glasses, mobility aids for elderly or vulnerable members of your household
- Warm clothing

PETS

Strict rules apply if you wish to take pets on public transport or to a Welfare Centre where they will be registered and cared for by Christchurch City Council animal control and RSPCA staff:

- dogs - muzzled, on a lead and under strict control
- cats - in suitable cage or box
- birds - in suitable cage

WHAT SHOULD I DO BEFORE I EVACUATE

- Check whether your neighbours require assistance
- Leave a telephone book outside your door to indicate to emergency staff that you have evacuated
- Secure your home.

WHERE DO I EVACUATE TO?

- The map shows the coastal evacuation area - coloured pink. You must move well beyond this area.
- If you live near the coast or Estuary between Cannon Hill through Taylor's Mistake you might choose to stay with friends or family who live higher up in these hillside suburbs.
- If you don't have time to travel to high ground, but are in a multi-story building, go to an upper level.
- If you are on the beach and unable to get to high ground, go inland as far as you can.
- Where possible use the route through the coastal evacuation area closest to your home indicated by the evacuation route on the map. This will help to get people out of the area more efficiently and reduce possible congestion.

DO NOT RETURN TO YOUR HOME UNTIL CIVIL DEFENCE ANNOUNCE THE EMERGENCY IS OVER AND IT IS SAFE TO GO BACK.

The first tsunami wave is often not the largest; successive waves may be spaced many minutes apart and continue to arrive for many hours.





WHERE CAN I STAY UNTIL THIS IS OVER?

- Stay with family or friends who live well outside the evacuation area or go to a designated Welfare Centre - (look to the radio for details about the location of the Welfare Centres).

WHAT IF I CANNOT RETURN HOME?

Longer-term accommodation will be organised if it is not possible for you to return home because of the impact of the tsunami.

WHICH RADIO STATIONS SHOULD I LISTEN TO?

Heretūhū 2B 108AM
 More FM 92.1FM
 The Breeze 94.9FM

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