Mayor's Foreword

I commend to you **THE GISBORNE CIVIL DEFENCE EMERGENCY MANAGEMENT GROUP VOLCANIC CONTINGENCY PLAN** to you all. Planning is the most crucial tool in the success of any activity even more so in those that happen infrequently.

I take this opportunity to thank the 'team' for putting this plan together for all of us. It has been achieved with minimal resources but is still able to provide a valuable resource for planning, dealing with and recovering from emergencies.

I can say that the Plan should give us more confidence that the Group will be able to cope with an emergency BUT the overall success still depends on the majority of the public being prepared and able to cope without assistance.

I have every confidence in our staff and our trained civil defence coordinators in our region, that all our planning and training will lessen the trauma in case of an emergency.

Our team has experience with Cyclone Bola and the close calls we have had since. This has meant that the team that developed the Plan has reality based knowledge and experience behind them when preparing the Civil Defence Emergency Group Management Plan.

But even so we should still not be complacent as the impact of any event can still provide the unknown and in reality Bola was a small emergency.

We have a good group of civil defence volunteers (community link) ready to provide leadership in an emergency, a good communication infrastructure ready to communicate with the remote parts of our region and our Council will continue to provide funds to ensure that a reasonable level of preparedness is maintained and a response structure is in place.

As long as communities prepare to a credible level and 'organisational' support is maintained we should be able to cope with the majority of disasters that the region can expect.

Meng Foon
Mayor
GISBORNE DISTRICT COUNCIL

Distribution

Internal	Number of Copies
Group Controller	1
Emergency Management Office	4
Lifelines Co-ordinator	1
Water Utilities Manager	1
Regulatory Service Manager	1
External	
Area Co-ordinators	3
Recovery Manager	1
Police	
Gisborne Station	1
Fire Service	
Gisborne Station	1
Public Health Unit	1
Eastland Group	1

Cover photo courtesy of GNS

Contents

Introduction

The purpose of this plan is to identify steps that the Emergency Management Team will use to manage the various Alert Levels of a volcanic event. The recovery phase will be managed with procedures contained in the Group Recovery Plan, except for the cleanup issues which will have to be planned for at the time.

To achieve this the following factors are considered as the priorities for close co-ordination.

- warning systems
- media/public education/information management
- essential services management, water/power/communications/fuel/food supply
- evacuations (evacuation plan)
- Water, water supplies, use of water etc
- Management of refugees coming from the Bay of Plenty

Emergency Management Team (EMT) and Sub Groups

To manage the process an EMT consisting of those listed below will meet as required to plan and implement strategies.

- Group Controller
- Emergency Manager
- New Zealand Police
- New Zealand Fire Service
- Recovery Manager
- Lifelines Co-ordinator
- Medical Officer of Health
- District Welfare Manager
- Rural Trust
- Media Officer

Consideration will need to be given at the time to including Eastland Group managers in the team, (Airport and Network) and NZLTA.

For significant events the following sub groups can be formed to implement the actions developed by the EMT - Public Information/Education, Lifelines, Recovery and Welfare.

Reawakening and Frequently Active Cones

NZ faces two volcanic scenarios, one from those that have been dormant for hundreds of years (more dangerous), e.g. Taupo and Tarawera, and others that have volcanic activity on a regular basis, e.g. Ruapehu and White Island.

While responsibilities and procedures will be similar in both scenarios, management could be different, as generally early signs of reawakening cones are not signs of an immediate threat. The build up could go on for months to years and cease at anytime. It is however possible for a reawakening cone to erupt with little or no warning.

In the Gisborne District volcanic ashfall and the possible remobilisation of the ash are the major hazards, the later especially in river catchments.

Responsibilities

Individual groups recognised in this contingency plan are responsible for maintaining their own action plans required to mitigate against, prepare for, and respond to an ashfall event.

This Contingency Plan will be maintained by the Emergency Management Office (EMO).

Command and Control

New Zealand Police are acknowledged as the lead agency responsible for physical aspects of public safety. However, Police will require the EMO to play a lead co-ordination during changes in the Alert Level process.

There is the potential for a declaration of state of local emergency prior to an eruption if the severity of the event warrants it and the powers of the Act are required. A declaration can also be made during an eruption if it becomes apparent that the powers of the Act are required for control of resources or to manage evacuees. If a declaration is in force the EMO is the lead agency.

New Zealand Police

Statutory responsibility for the enforcement of law and order remains with the NZ Police at all times. Requirements for specific Police functions prior to, and during, an emergency are detailed within Police Operations Plans, the Civil Defence Emergency Management Act 2002, National CDEM Plan & Guide, Police Operational Plans and the Group CDEM Plan. However, as a lead agency, some of the major roles that Police are expected to plan for, and undertake, during a volcanic emergency include the protection of life and property, identification of casualties, road traffic safety, evacuation and movement control.

Fire Service

Statutory responsibilities for preparatory and response measures for the Fire Service during an emergency are detailed within Fire Service legislation and operational plans, the Civil Defence Emergency Management Act 2002, National CDEM Plan & Guide and the Group CDEM Plan. In brief they relate to fire, first response to hazchem incidents and rescue of trapped people.

Tairawhiti District Health

Statutory responsibilities for preparatory and response measures for Health Agencies during an emergency are detailed within Health legislation, the CDEM Act 2002, National CDEM Plan & Guide and the Group CDEM Plan. In brief they relate to public health and medical issues and in addition particular attention to persons who would normally require evacuation for care out of the District. Health will also be expected to assist with the preparation of commonsense advice for on going healthcare during an ashfall event.

A contingency plan maintained by the Tairawhiti Healthcare will detail how they will respond to medical emergencies in the event that aircraft and ambulance movement is restricted by ash.

Emergency Management Office

The EMO has the responsibility of maintaining the CDEM Group Plan, Standard Operating Procedures and this Volcanic Contingency Plan. The EMO will co-ordinate and release all general media statements, with advice from the EMT, on public preparedness activities and updated information about the status of the volcano. The EMO is also responsible for calling meetings of the

EMT and if necessary other key personnel, to plan courses of action and dependant on the size of the threat, a declaration. The EMO is also responsible for maintaining a District wide warning system.

One of the key activities that will need to be implemented is a public education program prior to ashfall in the District. The structure and content will depend on whether it is a reawakening cone or one of the frequently erupting ones.

Life Lines

Essential industries (including utility companies and the Gisborne District Council utility providers) have a statutory responsibility for the maintenance and delivery of essential services such as power, gas, airport, roading, telecommunications, water, drainage and sewerage. As such they must prepare and maintain their own contingency plans to mitigate against, prepare for, respond to, and recover from the effects of any volcanic emergency within the Gisborne District. The process to do this must involve wide consultation with the users that are generally recognised as essential users (not the public). This process is dynamic and will involve some planning being done just prior to and also during any eruption.

Government Agencies

Statutory responsibilities and functions of Government Agencies, both prior and during an emergency, are detailed within the Civil Defence Emergency Management Act 2002, National CDEM Plan & Guide and the Group CDEM Plan. This generally involves the continuation of service to the public, but may also involve some increase in core activity.

Ministry of Primary Industry (MPI)

As a government agency, MPI has similar statutory responsibilities during an emergency as detailed above. As the effects of a volcanic event will also impact on rural communities MPI has a lead role in advising on such matters as effects of volcanic ash on livestock, horticulture, agriculture and pastoral based industries. During a major volcanic event MPI will play an essential role in response and recovery matters within the Gisborne District and also by activating and managing the Rural Trust.

Logistics

During a state of local emergency the available resources required for the response in the Gisborne District are under the control of the Controller to ensure they are best utilised for the protection of people. In a volcanic emergency policy's and priorities will need to be established relating to overall control for distribution of fuels, transport resources (including air assets) food stocks and water etc, as well as equipment for the protection of people and facilities.

Welfare

Most care agencies and voluntary organisations already have a role in the response to local community needs during an emergency. They are recognised in the CDEM Group Plan and are responsible for preparing and maintaining their own contingency plans to ensure they fulfil their role during a volcanic emergency. However assistance may be required with the co-ordination of some welfare activities, such as provision of food and water, housing, transport and psychological support during a volcanic event.

Media

The key function of media (both electronic and print) will be to keep the public informed and well advised during a volcanic emergency. News releases may be co-ordinated nationally by the Director of Civil Defence and Emergency Management (MCDEM). However releases on local conditions and actions people should take will be co-ordinated by the EMO.

A media release will, as a guide, be triggered by upwards change to the Alert Level to explain what is happening and what preparations people should be making. Each media release should stress the uncertainty around volcanoes and that they can either have an unexpected eruption or 'go back to sleep'.

Public Education

Is primarily the responsibility of the EMO, but should be a combined effort as messages should contain information about public safety and health. Messages should be programmed to link in with the progress towards the eruption and cover off;

- Methods of communication
- effects of ashfall
- preparedness at home and work
- how to survive when ash starts falling
- evacuations

Ashfall Monitoring

The Councils Environmental Health Section will be responsible for collecting ash samples and ensuring that timely analysis is undertaken: Procedures are at Annex H.

The community link will provide regular reports of ashfall in their communities and can also take samples if requested.

Collated information will be passed to the EMT and Sub Groups.

Warning Systems (see annex c for summary)

GNS

Geological and Nuclear Sciences (GNS) is responsible for monitoring and assessing the state of New Zealand's volcanoes as part of the GeoNet project and setting the Volcanic Alert levels. Once a volcanic threat exists GNS is responsible for updating the Volcanic Alert Levels and supplying MCDEM and affected regions with suitable updates. These updates may include Ashfall Predictions and other hazard information available.

MCDEM

Is responsible for receiving the information from GNS and other sources and passing it to the Gisborne EMO and providing event information and progress.

Emergency Management Office

The Emergency Management Office is responsible for the initiating the appropriate response to the warning received. This may involve a meeting or just notification to those on the warning list. The volcanic alerts and warnings are received by the EMO and a meeting will be called, in most cases, if:

- there is an Volcanic Alert Level change upwards (see annex D)
- there is the likelihood of an eruption
- there has been an eruption (if practicable)

Any status change upwards of a reawakening volcano or a frequently active one should require a meeting of the EMT. (The EMO may use its judgement and just notify the change if there is minimal risk of a significant escalation of volcanic activity)

The EMT must consider the addition of the following to its meetings depending on the threat:

- The Mayor
- Response Co-ordinators
- Council Leadership Team
- Councils Utilities & Roading Managers
- Eastland Group
- GEOC Team Leaders
- NZTLA (OPUS)
- Telecom (Downer)
- Area Co-ordinators

All members of the EMT and those listed above have a responsibility for briefing their own organisations on decisions made and current/predicted situations.

Notification Documentation

The following documentation is available prior to and during events to give more information about the characteristics, likely impacts and affected areas of an eruption.

They can be used to assist in the decision making process and monitoring.

- Scientific Alert Bulletins – GNS
- Ashfall Prediction maps – GNS
- NOTAMS – CAA
- Volcanic Ash Advisory – MetService
- Wind Advice – MetService
- National Media statements – GNS and MCDEM

A summary of the warning system is shown at Annex C.

Operational Priorities/Strategies

Priorities

Priorities during any volcanic ashfall event will be:

- safety of people through the release of timely information and advice
- protection of vulnerable assets – including fuel and power network
- monitoring of traffic coming from the Bay of Plenty

Unless the size of the volcanic event dictates otherwise, general strategies for management of the emergency will be:

To advise people to undertake "in-house-sheltering" within their own local community, and

To co-ordinate all matters relating to clean up after an event, so as to return the local community back to normal as quickly as possible.

In a larger event some areas will need to be evacuated, especially in the Waikohu area, priorities will be given to those with medical problems and the elderly.

The EMT will need to take plan for:

- Fuel management (number 1 Priority)
- transport restrictions – all modes
- Food supply management
- loss or restriction of most lifelines
- early evacuation of at risk groups
- a public education program

Evacuation Planning

Evacuation Plan Guidelines are shown at Annex G. It is not practical to prepare and maintain evacuation plans for all the likely scenarios for volcanic events as the time between events and the changing environment is measured in generations. Initial and subsequent meetings of the EMT will address the issue and if the event dictates, prepare an evacuation plan from the guidelines in Annex G for a given situation.

The need for any evacuations, whether self or compulsory will be made primarily in conjunction with the communities affected, health authorities and those responsible for at risk groups. As mentioned elsewhere in this document, decisions will have to be made as early as possible.

Fuel

Once a significant eruption starts the chances of getting fuel supplies to Gisborne will be severely reduced. The resource will need strict management with the potential for fuel rationing as the likelihood of an eruption increases. Planning consideration should take into account fuel provided to evacuees from the Bay of Plenty passing through and Gisborne residents self evacuating. Those who remain in the District may also need to be rationed. The fuel contingencies shown in the CDEM Group Plan, annex b, will be initiated. Any power shut downs or road closures will affect usage. A priority for the use of generators will be limited for those stations prewired for them.

Road Closures

Roads may need to be closed by the Group Controller acting upon advice of the Police, Transit NZ, Community Link or the Council Roading Engineer. Decisions on management of the routes to the Bay of Plenty will need to be made in consultation with civil defence staff from that area and MCDEM.

Power

Priorities for the continuation of electricity distribution networks may will need to be discussed by the Group Controller and the Eastland Group.

Water

Protection of water supplies is an important aspect of managing an ashfall event. Ash can be coated in chemicals that can be harmful to human health so any tank supplies should be isolated and a monitoring regime established for the city supply. The Waipaoa treatment station has the potential to remove ash and contaminants from the city supply.

There also needs to be clarity with public information messages about how ash is cleaned from surfaces. Mass use of water for cleaning can deplete supplies but this needs to be balanced with the health risk of people falling off their roofs.

Communications

Priority may need to be given to the maintenance of telephone systems to essential services in accordance with Telecom's established procedures. Priority will need to be placed on maintaining radio services for Emergency Services, Councils' VHF network telemetry links and Civil Defence repeater networks. In a significant eruption these radio networks could be the only means of communication between agencies.

Public Information/Education

Both the Media aspects and the Public Enquiry system of the GEOC will be escalated as a priority, so that timely and accurate information can be passed to the public. This aspect of the operation should be seen as one of the most critical parts of a successful response to a volcanic event. Particularly in a prolonged event stress and low morale in the community may become a major problem.

The EMO will prepare and deliver by all means possible and linked to Alert Level changes appropriate information to enable a managed public response.

Schools

The primary need for schools will be information to assist early decision making for closures. Every effort must be made to ensure schools are closed during eruptions. Consideration for closure prior to an eruption should, if it hasn't already, start at Alert Level 4 for a frequently active and Alert Level 3 for a reawakening cone event.

Cleanup

Cleanup plans will need to be developed at the time for public areas but for the individual use the Ashfall Information guide in Annex J.

Refugees From Neighbouring Regions

Any significant event that occurs whether we have ashfall here or not could generate an unplanned and/or planned influx of evacuee from other regions particularly the Bay of Plenty or Hawkes Bay (Wairoa). Early communications must be established with their civil defence authorities and MCDEM to ensure co-ordination is put in place. If ash is to fall in the Gisborne District priority will be given to closing or monitoring traffic at the Opotiki end of the Waioeka Gorge and Coast Highway from Opotiki. Some sort of control may also be needed in Wairoa.

In the event that we are not affected and are unlikely to be, then the refugees will have to be cared for in the Gisborne District until a National solution is found. Whether we declare or not to care for them, will depend on the scale of the problem.

How we are involved in the event will depend on the scale of the event and the predicted scenario will dictate our response. Rather than 'host' evacuees it is more likely that we will have to act as a staging point for the onward movement of the refugees. It will become a priority to move them on prior to ashfall, by road and during the worst case scenario by sea, as air transport will be unlikely and road movement will only put them at risk.

Border control may need to be established at all routes into the District, in practical locations, to establish and maintain control of the situation. Any refugees entering the District must be left in no doubt that they will have to conform to the districts plan.

Ashfall Events/Declarations

Ashfall Occurs Without Warning

Not withstanding the warning system, a situation may arise when ash is erupted into the atmosphere without the EMO being notified. In this instance the first indication of a threat would be reports that ash is falling the District.

Once ashfall is reported to the EMO by anyone from within Gisborne District a meeting will be called of the EMT. If the ash is too heavy to allow vehicle use then attempts will be made to consult by phone, if this is not possible then it must be assumed that a declaration is in force and the GEOC will become operational as soon as possible.

The public will be advised of any additional precautions that may need to be taken within communities where ash is falling or could fall via the media, website and community link.

Minor Ashfall Event

Generally these will be from frequently active cones and will be preceded by changes in the volcanic activity signalled by changes to alert bulletins. Once the alert levels start to rise it is possible to have eruptions occur with little or no warning, travel time to the Gisborne District, if the wind is in our direction, is about 2 hours. Minor ashfall events would be classified as events with depths of 5mm's or less, anything greater than that is going to require a significant co-ordinated response.

Significant Ashfall Event

The reawakening cones that could cause a significant event are generally preceded by months to years of precursor activity, although it is possible for some e.g. Tarewera to erupt with little or no warning, but this would be rare. Most eruptions from these cones allow plenty of time for public education and preparation activities.

Notification that a major eruption is about to happen will require an immediate meeting of the EMT who will decide, if they haven't already:

- no action will be needed,
- monitoring of situation, continue with appropriate advice to the public and preparations of response activities, or
- a declaration of a state of local emergency will be made with appropriate actions taken as outlined in the next section.

If Declaration of a State of Local Emergency is Warranted

- declaration of a state of local emergency will be made, signed by Mayor or other authorised elected person.
- activation of GEOC will be increased to DECLARED in accordance with the GEOC Management and Activation Standard Operational Procedure.
- GEOC will be structured to meet the threat and taking into account the availability of staff.

If Declaration of a State of Local Emergency is Not Warranted (but ash is falling)
The EMO will still have a role to play where there is ashfall but the declaration of a state of local emergency is not necessary.

In this circumstance the role of the EMO will include co-ordination of information concerning:

- road closures
- advice to the public on conditions, safety and actions
- monitoring extent and affects of ashfall
- call for an escalation or de-escalation of the event status

Other agencies should, within reason, maintain their normal business and continue links with the EMO.

Recovery

If the event is serious enough to warrant recovery activities and as a volcanic eruption is likely to impact over a wide area of New Zealand, a Recovery Facilitator will probably be appointed by Central Government to co-ordinate all matters relating to disaster recovery.

Unless there is large scale devastation over a wide area, it is likely that only one Facilitator will be appointed to undertake this task. Whether there is one or more, the Councils own Recovery Manager will be activated to act as the District representative and to liaise with the Facilitator. (see Recovery Plan for further information)

Annex A

Glossary (not all terms are used in this plan)

4R's

Reduction
Activities that reduce the degree of long-term risk to human life and property arising from natural and man made hazards. Identifying and analysing long-term risks to human life and property from natural and man made hazards; taking steps to eliminate these risks not reducing the likelihood and magnitude of their impact.

Readiness
Activities that develop operational capabilities for responding to an emergency.

Response
Activities taken immediately before, during or directly after an emergency that can save lives, minimise property damage, or improve recovery.

Recovery
Activities that stabilise the affected community and assure that life support systems are operational, and longer term actions for community rehabilitation and restoration. This restoration needs to have a Reduction focus i.e. it is important a robust risk management process is carried out so that the same hazard vulnerable community is not rebuilt.

Act, the, Civil Defence Emergency Management Act 2002.

Abbreviations
The following are common abbreviations used in Emergency Management, not all of them are used in this plan:

- CDEM: Civil Defence Emergency Management
- CEG Co-ordinating Executive Group
- CYF Child Youth & Family
- DWM: District Welfare Manager
- DDWM Deputy DWM
- EM Emergency Manager
- EMO: Emergency Management Office
- GEOC Group Emergency Operations Centre
- HNZ Housing NZ
- HRM Human Resources Manager
- IRD In land Revenue Department
- MCDEM: Ministry of Civil Defence & Emergency Management
- NZLTA New Zealand Land Transport Authority
- PSM Psychological Support Mechanisms
- TDH Tairawhiti District Health
- TPK Te Puni Kokiri
- WINZ Work & Income NZ
- WCM Welfare Centre Manager

Civil Defence Emergency Management Group (CDEM Group)
Means a Group established under section 12 of the Act Civil Defence Emergency Management Act 2002 and for the purpose of this constitution refers to the local authority defined area and resources of the Gisborne District and further;

CDEM Group (or Group)
Is also the name of the Group of elected representatives formed to provide the governance for emergency management in the Gisborne District. In respect of the Gisborne Group this is the Council.

Civil Defence Emergency Management—

a. means the application of knowledge, measures, and
b. practices that—
   (i) are necessary or desirable for the safety of the public or property; and
   (ii) are designed to guard against, prevent, reduce, or overcome any hazard or harm or loss that may be associated with any emergency; and
   (iii) (b) includes, without limitation, the planning, organisation, co-ordination, and implementation of those measures, knowledge, and practices

Civil Defence Emergency Management Group Plan
Means a Plan prepared and approved under Section 45, the Act.

Co-ordinating Executive Group (CEG)
Means a Committee established under Section 20 the Act.

Community, the
The Community refers to the entire Gisborne District, its population, infrastructure, volunteers, non-government organisations and resources.

Communities
Refers to individual townships or geographical areas as defined in this Plan and their population, infrastructure and resources.

Emergency

a. Is the result of any happening, whether natural or otherwise, including, without limitation, any explosion, earthquake, eruption, tsunami, land movement, flood, storm, tornado, cyclone, serious fire, leakage or spillage of any dangerous gas or substance, technological failure, infestation, plague, epidemic, failure of or disruption to an emergency service or a lifeline utility, or actual or imminent attack or warlike act; and
b. Causes or may cause loss of life or injury or illness or distress or in any way endangers the safety of the public or property in New Zealand or any part of New Zealand; and
c. Cannot be dealt with by emergency services, or otherwise requires a significant and co-ordinated response under this Act

Emergency Manager
The Council officer that is responsible for all the activities that occur in and services provided by the Emergency Management Office.

Emergency Management Office
The office within Council that has the responsibility for emergency management.

Emergency Operation Centre
A facility where the response to an event may be supported and managed.

Emergency Services
Means the New Zealand Police, New Zealand Fire Service, National Rural Fire Authority, rural fire authorities and hospital and health services.

Group, the
Means a Group of elected representatives established under Section 12 Act, in this case Council.

Group Controller
Means a person appointed as a Controller under Section 26, the Act.

Group Recovery Manager
Means a person appointed by the Group to act as Recovery Manager. The function can be performed after an Adverse Event i.e. non-declared event or a after a declared event.

Hazard
Means something that may cause, or contribute substantially to the impact of an emergency.

Recovery Activities
Means activities carried out under the Act or any civil defence emergency management plan after an emergency occurs, including, without limitation:

a. The assessment of the needs of a community affected by the emergency; and
b. The co-ordination of resources made available to the community; and
c. Actions relating to community rehabilitation and restoration; and
d. New measures to reduce hazards and risks.

Risk

Is the relationship between likelihood/probability and consequences.

Annex B

Effect on District

Ash fallout has the potential to be the most disruptive disaster in the District.

Any event has the potential to cause wide spread loss of services, including transport, power, phones, water supply, sewerage and disruption to most commercial and farming activity in the District. A 700 year Okataina event could last for 3 years, which means the disruption to our social and economic systems will be significant.

Isolation will become one of the more significant issues, with the likelihood of SH 2 (North and South closing for long periods. Closed also for extended periods will be the airspace/airport and the rail link (if it still exists).

Return Periods:

Source	Size (km3)	Expected thickness In millimetres	Frequency	Annual Probability
Okataina	1	1 – 150	700-5000yrs	0.14%-0.02%
Okataina	10	1 – 1500	700-3000yrs	0.14%-0.03%
White Island	0.1	1 - 10	1000-5000yrs	0.1%-0.02%
Ruapehu	0.15	1 – 5	100-500yrs	1.0%-0.5%
Taupo	0.05	1 – 5	1300-1600yrs	0.08%-0.06%
Taupo	0.5	1 – 50	1300-1600yrs	0.08%-0.06%
Taupo	5	1 – 600	2500-5000yrs	0.04%-0.02%
Taupo	50	100 – 4000	5000-10000yrs	0.02%-0.01%
Egmont	0.1	1 – 2	1300-1600yrs	0.08%-0.06%

There has not been a significant event from Okataina for ~ 700 years or any event from Taupo for ~ 1850 years. The last volcanic event to affect the Gisborne District was in 1995 when 1-2mm of ash fell from Ruapehu. The main affects where disruption of air travel and discolouration of cauliflower crops.

In large events remobilised ash carried down rivers could choke river channels and drains and causing flooding on the Flats and potentially the City for many years. There is evidence of ash on the Poverty Bay Flats up to 500 mm thickness from some eruptions (worst case scenarios).

The impact of ash on people, structures and equipment etc, will be dependent on the: (see annex H for further information)

- type of volcanic eruption,
- volume of volcanic material erupted,

- distance from the vent,
- height of column erupted,
- wind direction at all different heights,
- wind speed at all heights,
- composition of ash,
- and size of ash particles falling.

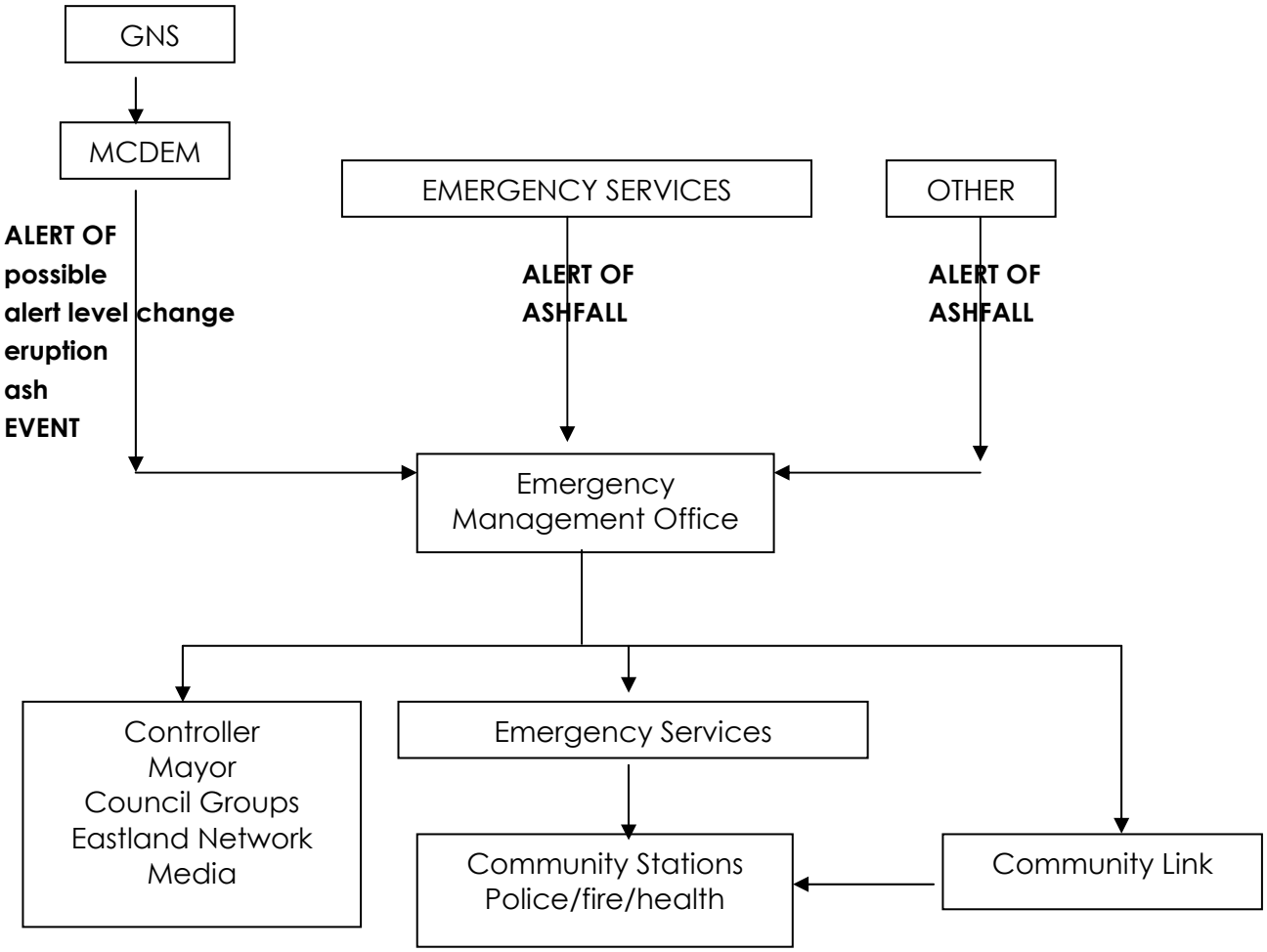
For planning purposes, no particular size of ash particle has been selected, (except being so far from the vent finer particles of ash are more likely) but deposits of between 2 mm and 300 mm would not be unrealistic in the Gisborne District.

Key impacts include:

- transport restrictions – all modes
- Fuel management
- Food supply management
- loss or restriction of most lifelines
- early evacuation of at risk groups
- need to conduct public education program

Annex C

Warning System



Civil Defence Pre Determined Stages of Activation

	ACTIVE CONE		REAWAKENING CONE	
	Alert LEVEL	**STATUS**	**Alert LEVEL**	**STATUS**
	0-1	Nil	0-1	Nil [1]
	2-4	Alert	2	Alert
	5	Activated [2]	3-4	Activated [3]
			5	Declared

Notes

1 A change from 0-1 will require a meeting of the EMT to be called

2 Wind direction and volume of ash will determine change to DECLARED.

3 Severity or need for the powers of the Act could require a change to declared.

Annex D

NZ Volcanic Alert level table (see annex 19.c National guidelines for detail)

Frequently active cone volcanoes		
Alert Level	**Indicative Phenomena**	**Volcano Status**
0	Typical background surface activity; seismicity, deformation and heat flow at low levels.	Usual dormant or quiescent state.
1	Departure from typical background surface activity.	Signs of volcano unrest.
2	Onset of eruptive activity, accompanied by changes to monitored indicators.	Minor eruptive activity.
3	Increased vigour of ongoing activity and monitored indicators. Significant effects on volcano, possible effects beyond.	Significant local eruption in progress.
4	Significant change to ongoing activity and monitored indicators. Effects beyond volcano.	Hazardous local eruption in progress.
5	Hazardous large volcanic eruption in progress.	Large hazardous eruption in progress.

Reawakening volcanoes		
Alert Level	**Indicative Phenomena**	**Volcano Status**
0	Typical background surface activity; seismicity, deformation and heat flow at low levels.	Usual dormant or quiescent state.
1	Apparent seismic, geodetic, thermal or other unrest indicators.	Initial signs of possible volcano unrest. No eruption threat.
2	Increase in number or intensity of unrest indicators (seismicity, deformation, heat flow, etc.).	Confirmation of volcano unrest. Eruption threat.
3	Minor steam eruptions. High-increasing trends of unrest indicators, significant effects on volcano, possibly beyond.	Minor eruptions commenced. Real possibility of hazardous eruptions.
4	Eruption of new magma. Sustained high levels of unrest indicators, significant effects beyond volcano.	Hazardous local eruption in progress. Large scale eruption now possible.
5	Destruction with major damage beyond active volcano. Significant risk over wider areas.	Large hazardous volcanic eruption in progress.

Annex E

Summary of Procedures

Incident	Civil Defence Status (note 1)	Action	Emergency Services Action
initial Volcanic Alert Level change (note 2)	**Alert**	EMO assess threat, EMT notified, meet to plan response notification to warning list (see Aide Memoire Annex E)	notify senior officer notify community stations core business
eruption possible	**Alert**	notification to warning list procedures reviewed, meet if necessary	notify senior officer notify community stations core business
eruption occurs	**Activated (note 3)**	threat assessed, meet if necessary, notification to warning list, contact between liaison officers occurs	notify community stations review core business presence at Civil Defence
ashfall imminent or falling	**Activated**	contact between liaison officers, procedures reviewed, meet if necessary	notify community stations review core business presence at Civil Defence
magnitude increases	**Activated**	Emergency Services Liaison Officers to GEOC	notify community stations limited core business presence at Civil Defence
significant threat to public safety	**Declared**	establish full GEOC	civil defence declaration move to GEOC limited core business notify community stations

notes 1. These automatic status indications are a guide only and could change once the threat has been assessed
2. Which volcanic centre the alert is issued for will dictate the pace and urgency of the following actions
3. The threat from some volcanic centres could require a move to a declaration at this point.

Annex F

Aide Memoire

The following are the key points (but not limited to) to be considered at volcanic planning meetings of the EMT.

Public Information/Media Plan

- what needs to told at this point
- who's going to do what
- what mediums are available
- frequency

Community Link Activation

Communications

- need to confirm day to day and emergency
- security of remote sites

Evacuations

- are they necessary and where
- which areas
- at risk groups
- self – encourage/discourage
- which parts of NZ are safe to go to and through
- compulsory

Logistics

- transport
    - vehicle protection
    - road restrictions
    - road control points
    - Airport
- resources
    - fuel
    - food
    - water
    - power

Welfare

- care of evacuees

Education

- information for schools

Refugees from outside Regions

- close roads/manage roading network
- reception

Extra Planning Considerations

- need to get people home
- affect on river catchments

Annex G

Evacuation Plan Guidelines

The following format will be used as a guide for writing an evacuation plan in the event of a particular volcanic event requiring evacuation from within the Gisborne District. Parts of the format may also be used to formulate a policy for the handling of refugee's from other regions.

1. Background

a. Outline of events which are occurring/have occurred/may occur which make evacuation imperative.
b. Detail the area affected or likely to be affected.

2. Aim of the Plan

State the aim in clear and concise terms e.g. 'The aim of this plan is to effect an evacuation of all persons from the expected impact areas, ... and their removal to places of safety in . . . . . '

3. Executive Summary

4. Responsibilities

a. Identify person ordering the action and their authority to do so.
b. Identify person controlling the evacuation.
c. Identify other key personnel for key functions by name and service

6. Communications Plan

a. Summary of points from following headings
b. Nets to be used and control factors
c. Special maintenance features and redundancies

7. Public Information/Media Matters

a. Management of information release.
b. Media Liaison
c. Help line info.
d. Timings.
e. Assembly areas/pick-up points for those without own transport.
f. Limits on personal luggage for those without transport.
g. Self evacuee's routes and suggested destinations
h. Help en route
i. Self evacuee's actions on reaching destination.
j. Advice as to personal effects and documentation.
k. Actions to be taken to secure homes e.g. electricity, water, gas.
l. Security matters e.g. area patrols, cordons on evacuated areas etc. (reassurance of those departing).
m. At risk groups.
n. Policy on domestic pets.
o. Advice re livestock
p. Advice to tourists and tourism industry.
q. Insurance and financial matters.

8. Evacuation Routes

a. From communities to assembly/reception areas.
b. From assembly/reception areas to.....
c. Roads closed/to be closed for general use(notification).
d. Identification of possible problem areas/planned solutions/diversions/road clearance teams.
e. Allocation of routes.
f. Traffic control points.
g. Alternate routes.
h. Key link points.
i. Establishment and maintenance of traffic priorities.
j. Control of self evacuees.

9. Assembly and Embarkation

a. Manning and control of assembly points.
b. Identification of personnel.
c. Vehicle allocation.
d. Care en-route.
e. Special needs categories.
f. Baggage identification.
g. Communications to Central Control Point.
h. First aid/infant-care/welfare facilities.
i. Catering at assembly points and en-route.
j. Institutions.

10. Reception at Debarkation Points and onward Movement (if applicable)

a. Reception/welfare facilities.
b. Staffing.
c. Temporary accommodation and catering.
d. Arrangement of onward movement to final destination.
e. Communications to Central Control Point.
f. Registration/recording onward movement.
g. Schooling.
h. Arrangements for ISS/benefit/unemployment etc. payments.

11. Registration

a. Policy e.g. in or out of area.
b. Staffing.
c. If out of area, alternate location.
d. Co-ordination of Registry matters.

12. Movement Control

a. Liaison with transport agencies/operators.
b. Route control (in area and out of area e.g. control of incoming/returning traffic).
c. Manning of checkpoints and control points.
d. Route surveillance.
e. Clearance policy.
f. Communications co-ordination.

g. Progress reports.
h. Route status reports.
i. Administrative support for control and checkpoint personnel.
j. Pre-positioned support vehicles e.g. plant, emergency services etc.
k. Management/control responsibilities.

13. Security

a. Responsibilities.
b. Street/area clearances.
c. Cordons/patrols.
d. Progressive shut-down of utilities.
e. Safety information for security personnel.
f. Protective equipment for security personnel.
g. Communications.
h. Withdrawal Plan.
i. Specialised protected transport.
j. Administrative support for security personnel.

14. General Matters

a. System for checking/marking evacuated properties.
b. Monitoring self-evacuation (mail re-direction ?).
c. Problem areas foreseen ? (e.g. reluctant movers).

Annex H

Public Information/Education and Media Procedures

Media statements concerning public safety and preparedness during a volcanic event will be prepared by the EMO. Where appropriate members of the EMT will be consulted about content, especially in their areas of responsibility.

International best practices for volcanic ash are available from the following web sites:

http://volcanoes.usgs.gov/ash/

http://www.ivhhn.org/

All messages should be preceded by

"This a message from the Gisborne CDEM Group.....".

Public Information Checklist

- water supply safety
- in house protection
- protection of vital/electrical equipment
- air conditioners
- What's happening with schools and the workplace
- what to do about ash on your property and roof
- who to call for assistance
- motor vehicle protection
- animal welfare
- personal services
- ash Information
- travel restrictions and road conditions
- power related issues
- communication issues
- messages for people thinking of self evacuating

Information dissemination methods

If possible community meetings will be held to explain the situation and what people should be doing to prepare.

Every opportunity will be taken to use mass media resources - news paper and radio. Use will also be made of websites and emails, and SMS to targeted groups.

After the eruption is over community meetings will again be held to explain what will happen in the recovery phase. There may be a need to produce a community newsletter.

Annex I

Ash Collection Procedures

Ash collection will be co-ordinated by the Environmental Health section of the Gisborne District Council.

Ash will be collected by placing clean ice cream containers in an open area, this should be done as soon as possible after the ash starts falling or if possible prior to. It may be necessary to secure the containers or raise them above the ground to stop them tipping over or being contaminated from ground splash.

The containers will be left out either for a set time or until a suitable quantity of ash has been collected. The exposure time should be recorded and sent with the sample to an appropriate laboratory. The type of analysis will depend on what concerns are associated with it. i.e. for water supplies a water leaching test will be performed rather than the straight chemical analysis of dry ash.

It is hoped that which labs will be used will be directed from a national source to ensure a co-ordinated program. (The Ministry of Health may have information on suitable labs)

In addition the Council's has 3 high volume samplers which can be operated for a minimum 24 hour period to collect the airborne component below 10 microns. The unit can also give an indication of the pH.

Annex J

How to deal with Ash

Volcanic ash can have two impacts, the immediate and a secondary one due to remobilisation days to weeks latter. Lessons the Mount St Helens May 1980, Pinatubo 1991 and other eruptions demonstrate volcanic ash will be a major issue. Listed below are some tips drawn from overseas experience to help you cope with volcanic ash, if eruptions should occur. Also International best practices for volcanic ash are available from the following web sites:

http://volcanoes.usgs.gov/ash/

http://www.ivhhn.org/

- **Keep the Ash Outside**

  Lessen the chance of volcanic ash getting into your house by keeping doors and windows closed. Maintain 'clean' areas in your homes.

- **Protection**

  When outside, use a damp cloth over your mouth and nose to filter volcanic ash. This is especially important if you have breathing problems. If you get ash on your skin, wash it off. Make sure you drink water that hasn't been contaminated by ash - if on tank supply you should disconnect until ash has been cleaned or washed off your roof.

Civil Defence is common sense

- **Cleaning**

  Use a yard broom to remove volcanic ash from your roof. The roof can collapse from the weight of accumulated ash especially if it gets wet. If possible, use the vacuum cleaner to remove dust from surfaces. When cleaning surfaces by hand, avoid excessive rubbing. Volcanic ash particles are very abrasive and will cut through material. When cleaning glass or similar surfaces, use a detergent soaked cloth. Dab the surface - wiping it will cause abrasions.

Volcanic Eruption – People and Animals

- **Breathing**

  Use dust filter or dry cloth over nose and mouth. Those with respiratory conditions should try to keep out of ash fall.

- **Eyes**

  Protect with goggles.

- **Head and Shoulders**

  A scarf around head and neck will also assist.

- **Body**

  Keep completely clothed where possible, wrist bands and gloves will assist.

- **Feet**

  Ankle or calf-length footwear is preferable, seal around ankles if possible.

- **Food**

  Protect animal's food from ash fall. Seek advice about grazing animals. Seek advice about fresh vegetables and fruit. Protect all water supplies store some water as soon as you hear there may be an eruption.

- **Psychological**

  Seek early advice if problems develop.

Motor Vehicles (in heavy ash conditions)

- **Windscreen**

  Don't use washers or wipers. Ash is abrasive. Dust off with a brush.

- **Air and Oil Filters**

  In heavy ash conditions change air filter every 80km and the oil filter regularly.

- **Windows**

  Seal all window edges with tape.

- **Brakes**

  Clean daily.

- **Electrical Parts**

  Where possible seal with plastic and tape or ash can cause short circuits.

- **Ventilation / Air Conditioning**

  Don't use, seal all inlets and outlets, if possible disable.

- **Speed Restrictions**

  Not more than 30km/hour.

Houses/Buildings

- **Roofs**

  Remove ash by brushing to prevent collapse if the ash begins to accumulate. Its best to wait until the ashfall has stopped, take care not to fall off. You may have to remove spoutings

- **Stormwater**

  Protect from ash, divert if necessary. Don't flush ash into stormwater drains.

- **Windows**

  Can be sealed with wide tape if they have gaps.

- **Water**

  If on tank supply, remove down pipes or seal outlet hole. Maintain emergency supplies, conserve use.

- **TURN OFF Air Conditioners**

  Don't use during ash fall and clean with air or dusting. Remember ash can cause short circuits especially if it gets damp.

- **Food**
  Protect as far as possible. Ash can be toxic.
- **Furniture**
  Clean with dusting or dabbing motion, not by wiping.

What you should "NOT DO" if there is an Ash fall or there is a major eruption

- Use your car unnecessarily.
- Go sightseeing
- Only call relatives who might be affected by the eruption if really necessary - if you do call be as brief as possible.

Remember

- If ash begins to fall start dealing with it as early as possible.
- If you need more information phone Civil Defence.

867 2049

or

0800 653 800

Annex K

Volcanic Products and their Effects

Ashfall Deposits

Tephra is a collective term for all material which travels through the air during a volcanic eruption. Clasts greater than 64 mm are bombs or blocks; lapilli are between 2 and 64 mm diameter, and ash is smaller than 2 mm. The widespread ash falls associated with most eruptions consist of ash and lapilli, which decrease in clast size with distance from the volcano. Ash is composed of various proportions of glass (shards), crystals and older rock particles (lithic's). Ash particles commonly have sharp broken edges which make volcanic ash a very abrasive material. Due to surface electrical charges, fine ash can cluster into interlocking aggregations.

The thickness of fall deposits is dependent on volume of material erupted, distance from the vent, wind strength and wind direction. Large clasts (blocks and bombs) follow ballistic trajectories and are termed projectile. This material is usually greater than 10 cm (100 mm)diameter. These clasts may land in a hot state and are capable of starting fires. Finer material (ash and lapilli) is convected upwards in the eruption column before settling out downwind of the volcano. Fine ash can therefore be deposited hundreds to thousands of kilometres away from its source.

Impact Zones for Convected Airfall Tephra

The impact of tephra falls on people and animals, flora and fauna, structures and equipment, depends largely on ash thickness. In order to simplify hazard analysis, and to allow the definition of risk within certain areas, four main impact sizes are used. The thicknesses given are for un-compacted tephra.

The affects given in each group of course carry into the next group and in most cases worsen.

<10 mm (<1 cm) thickness

- A light dusting of ash.
- Possible closure of airports.
- Light damage to vehicles, houses and equipment caused by fine abrasive ash.
- Possible contamination of water supplies, particularly roof catchment water tank supplies and river catchment supplies.

10-100 mm (1-10 cm) thickness

- Falling ash will act as an irritant to lungs and eyes. Where possible, masks should be worn by people in the open.
- Ash will affect vegetation, causing burial of pasture and low plants. Foliage may be stripped off some trees but most will survive.
- Livestock will not be unduly stressed but may suffer from lack of feed, wear on teeth, and possible contamination of water supplies. Most pastures will be killed by over 50 mm (5 cm) of tephra.
- Most buildings will support the ash load but weaker roof structures may collapse at 100 mm (10 cm) ash thickness, particularly if wet. Minor damage to houses will occur if fine ash enters buildings.

- Electricity may be cut; ash shorting occurs at substations if the ash is wet and therefore conductive.
- Electrical supply through the National Grid may be affected once ashfall reaches 20 mm (2 cm), particularly if the ash is wet.
- Telecommunications may be affected due to ash in components and overloading of circuits. Air born ash will also restrict or cut signals from any microwave towers.
- Disruption to radio communication due to electrical interference and disruption to microwave transmission network due to ash particles, particularly if wet.
- Reception of broadcast radio transmissions will be similarly affected.
- Water supplies may be cut, or limited, due to failure of electricity to run the pumps.
- Unprotected water pumps may suffer mechanical failure due to ash restricting air intakes.
- Contamination of water supplies by chemical leachates may occur.
- Storm water systems may become blocked.
- Sewage systems may be blocked by ash, or disrupted by loss of electrical supplies.
- Road transport may be halted to the build up of ash on roads making road surfaces slippery. Poor visibility will result from dust clouds if ash remains dry. If ash falls are heavy, near total darkness may result (headlights are ineffective due to light being unable to penetrate and being reflected back)
- Engines may soon stop due to clogging of air filters.
- Rail transport may be forced to stop due to signal failure brought on by short circuiting if ash becomes wet.
- Airports will close due to the potential damage to aircraft, and lack of control facilities.
- Damage to electrical equipment and machinery may occur.

100-300 mm (10-30 cm} thickness

All of the effects that occur with 10-100 mm (1-10 cm) of ash will be amplified, with additional impacts for:

- Buildings that are not cleared of ash will run the risk of roof collapse especially large flat roofed structures, and if the ash becomes wet.
- Severe damage to trees, stripping of foliage and breaking of branches.
- Loss of electrical reticulation due to falling tree branches and shorting of power lines.

>300 mm (30 cm) thickness

All of the effects described above with additional impacts of:

- Heavy kill vegetation. Complete burial of soil horizon.
- Livestock and other animals killed or heavily distressed.
- Kill of aquatic life in lakes and rivers.
- Major collapse of roofs due to ash loading.
- Loading and possible breakage of power and telephone lines.
- Roads unusable until cleared.

Annex I

Other Agencies to Have Plans

The following agencies identified in this plan need to have their own planning arrangements in place to manage the effects of a volcanic event on their business, to ensure they can meet their obligations in this plan and the CDEM Act 2002. This annex acknowledges those that have confirmed they have plans in place and those that haven't.

Agency	**Plan Confirmed**
Council	
• Roading	No
• Water	Yes
• Sewerage	Yes
• Waste water	Yes
NZ Police	Yes
NZ Fire Service	Yes
Tairawhiti Health	Yes
Eastland Group	
• Power	Yes
• Port	Yes
• Airport	Yes
NZTLA	No
Telecommunications	Yes