

SIAM-2, C-4 Component
Environmental, Risk and
Resource Management

Proposed National Disaster Management Plan for Samoa

March 2006

Prepared for
**Ministry of Natural Resources, Environment and
Meteorology**

by
BECA International Consultants Ltd.



▪ Report

Proposed National Disaster Management Plan for Samoa

March 2006

Prepared for

Ministry of Natural Resources, Environment
and Meteorology

By

Beca International Consultants Ltd

March 2006

Ministry of Resource Management, Environment and Meteorology

21 March 2006

Our Ref:

Private Bag

Apia

SAMOA

Attention: Vitaua Peleiupu Fuatai

Dear Sir

Proposed National Disaster Management Plan for Samoa.

Please find enclosed a report on the Proposed National Disaster Management Plan (NDMP) that has been completed as part of the Disaster Management workstream of SIAM-2.

In terms of the project reporting schedule (31 January 2006), this report is reference number 2b).

Due to timely feedback from the Disaster Advisory Committee during consultation on the Plan, the input and support from the Disaster Management Office, and the progress made with the development of the legislation, this final draft of the NDMP has been able to be completed approximately 2 months ahead of schedule.

This report outlines the process undertaken to prepare the proposed NDMP, the critical elements of the Plan that need to be explicitly understood in order for it to be approved and adopted in Samoa, and the recommended process for adoption of the NDMP.

Yours faithfully



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Revision History

Revision N°	Prepared By	Description	Date
A	D Cunningham	Completion of proposed National Disaster Management Plan for Samoa	15 March 2006

Document Acceptance

Action	Name	Signed	Date
Prepared by	Debbie Cunningham, Kestrel Group Ltd		15 March 2006
Reviewed by	Michele Daly, Kestrel Group Ltd		21 March 2006
Approved by	Graeme Roberts, Beca International		29 March 2006
on behalf of	Beca International Consultants Ltd		

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1 Introduction

1.1 Background

The revision and updating of the National Disaster Management Plan (NDMP) for Samoa is a core component of the disaster management component of SIAM-2, C4.

An updated NDMP is required to reflect the provisions of the *Disaster & Emergency Management Bill 2006*¹ and the best practice principles and structures that have been developed with the Disaster Management Office of Samoa during the period of this project.

Although the initial brief was to revise the existing plan, the proposed NDMP is effectively a new document, as considerable changes were required. Despite the extent of these changes, development of the NDMP has progressed ahead of schedule. This has been due to:

- Timely feedback from DAC
- The committed effort and input of the NDMO
- The progress made with the drafting of the *Disaster & Emergency Management Bill 2006*.

The proposed NDMP has been completed to a stage where it is suitable for final consideration, amendment and endorsement by the Disaster Advisory Committee (DAC). Following DAC endorsement it needs to be approved by the National Disaster Council (NDC).

The submission of this report and attached final draft of the NDMP marks the completion of this component of the project by the consultant team. Any further amendments required due to changes to the legislation or subsequent feedback from DAC (or other groups and organisations) becomes the responsibility of the NDMO. The NDMO is also responsible for the final endorsement and approval process.

1.2 Definitions

The following definitions and abbreviations are used in this report:

DAC	Disaster Advisory Committee
NDC	National Disaster Council
DMO	Disaster Management Office (part of MNREM)
NGO	Non-Governmental Organisation (e.g. Red Cross)
MCDEM	Ministry of Civil Defence & Emergency Management (NZ)
MNREM	Ministry of Natural Resources, Environment and Meteorology

¹ References to the *Disaster & Emergency Management Bill 2006* in this report refer to the 3 March 2006 version.

SIAM-2	Samoa Infrastructure Asset Management Project Phase 2
SOPAC	South Pacific Applied Geoscience Commission
SUNGO	Samoa Umbrella of Non Government Organisations
UNDP	United Nations Development Programme
USP	University of South Pacific
WHO	World Health Organisation

2 Process for NDMP development and approval

2.1 Process for NDMP development

The proposed NDMP has been drafted with the full involvement and feedback of the Disaster Management Office (part of MNREM), and the Disaster Advisory Committee (DAC). Multiple opportunities for feedback have been provided to all DAC agencies, and the feedback received has been assessed and incorporated.

Meetings were also held with critical organisations listed in the NDMP to enhance the understanding of the arrangements proposed in the NDMP.

In addition, drafts of the Plan have been provided to the Ministry of Civil Defence and Emergency Management (New Zealand), as peer reviewers of the SIAM-2 disaster management component, and feedback received.

The NDMP has been developed in parallel with the *Disaster & Emergency Management Bill 2006*. If any changes were to be made to the draft Bill prior to its enactment, this will necessitate changes being made to the NDMP.

2.2 Process for NDMP approval

The formal process for NDMP approval is under the *Disaster & Emergency Management Bill 2006* following its enactment. However, this Act has not yet been passed. Consequently the options are to:

- a) approve the NDMP under the existing legal framework and then again when the legislation is enacted,
- b) wait for enactment of the Bill and then follow the formal approval process under the new Act.

As the content of the NDMP reflects many of the aspects of the new legislation, it is preferable that approval be undertaken after enactment. In addition, as both the DAC and the NDC will then be formally established under the Act, the NDMP approval roles and responsibilities will be more official than under current arrangements.

However, if the enactment of the Bill is likely to take some time, it is recommended that there be some formal adoption of parts or all of the proposed National Plan to ensure elements of the new emergency management structure are in place as soon as possible.

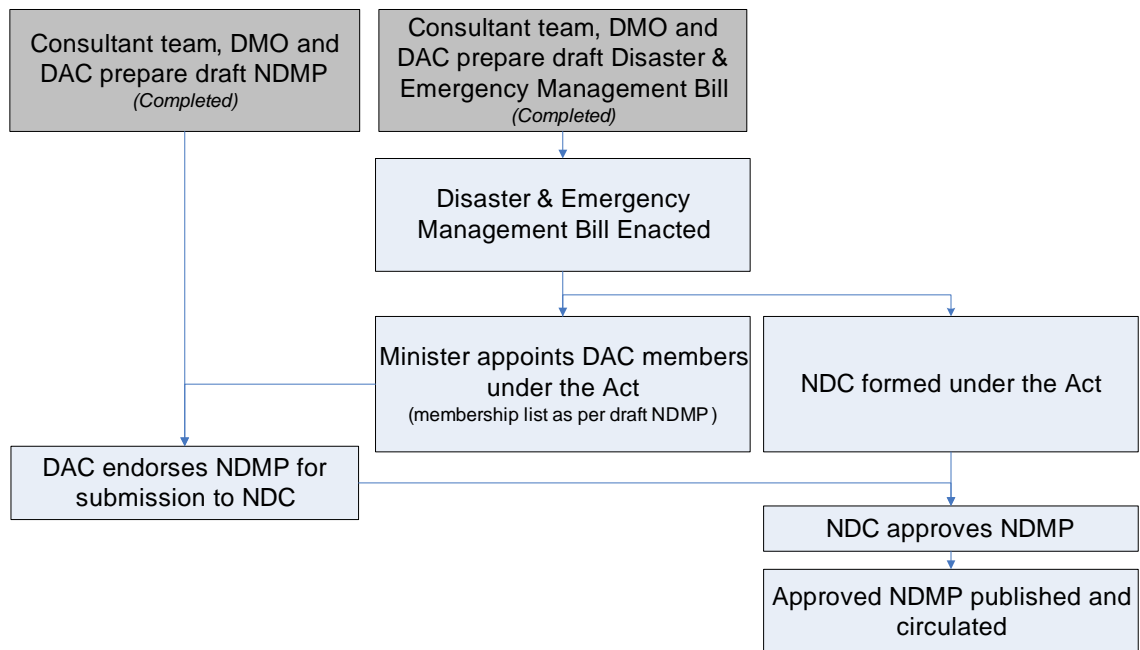
The process for approval under the *Disaster & Emergency Management Bill 2006* (section 15(1)) will be that the proposed NDMP is to be endorsed by the DAC before being provided to the National Disaster Council for approval.

In order to meet the minimum legal requirements of the Act (once enacted) the NDMP must cover each of the items listed in Section 9(3) of the Bill. These are (as at 3 March 2006):

- the objectives of the National Disaster Management Plan;
- a comprehensive risk profile for all parts of Samoa;
- arrangements to be implemented aimed at disaster risk reduction;
- operational arrangements, including matters related to –
 - preparedness arrangements;
 - response arrangements;
 - recovery arrangements;
 - the roles, responsibilities and organisation of government agencies, non-government organisations and district or village committees;
- the procedures for approving and managing international assistance sought or offered in response to any needs arising in Samoa from disasters and emergencies;
- other appropriate financial arrangements to support all aspects of the Plan;
- any other aspect of disaster and emergency management which the National Disaster Council considers will achieve the objects of the Act.

After approval of the NDMP the CEO of MNREM is responsible for ensuring that it is published, that the Minister certifies the publication, and that the approved NDMP is circulated to relevant agencies.

The pathway for NDMP approval is summarised in the diagram below:



3 Critical inclusions in the proposed NDMP

3.1 Critical elements

It is the view of the consultant team that the proposed NDMP meets the legal requirements of the *Disaster & Emergency Management Bill 2006* (refer section 2.2 above).

Should any amendments be made to the Bill prior to enactment, however, this may require changes to the NDMP.

The NDMP is the vehicle through which a number of the responsibilities and delegations of the NDC will be implemented. Therefore the NDC needs to be aware of a number of specific sections included in the proposed NDMP, so that when they approve the NDMP, they are aware that they have also exercised a particular duty or power under the Act. The critical items are outlined below.

The proposed NDMP:

- Delegates to the DAC the ability to approve response agency plans and community plans under Part IV of the proposed legislation, so long as these meet the requirements of the Act and are consistent with the NDMP.

This is considered necessary as there may be a large number of plans prepared under this part (e.g. all response agencies and education institutions) and the quantum of plans for approval is unwieldy for the NDC. This delegation is allowed for in the draft legislation in Section 15(3).

- Delegates to the DAC the ability to make amendments and additions to the NDMP so long as these do not adversely affect the risk profile of Samoa, or alter the responsibility of any agency.

This is considered necessary to allow for minor, inconsequential changes to the plan without the NDC needing to meet and consider the whole Plan again. This delegation is allowed for in the draft legislation in Section 9(2).

- States the location of the National Emergency Operations Centre (NEOC). The designation of the location of the NEOC is a decision of the NDC (Section 8), and therefore if the NDC were to decide that a different location is more appropriate, this would need to be changed in the NDMP.
- States the membership of the NDC and the DAC. The NDC membership can be added to by appointments made by the Prime Minister (Section 5), and the DAC membership is determined by the Minister of Natural Resources Environment & Meteorology (Section 6). If these membership lists are to be altered, this would need to be changed in the NDMP.

- Does not list additional powers for any agency during an emergency. If additional powers are required these will be included in the plan for that particular response agency, and delegated by approval of the response agency plan by the DAC.

3.2 Elements that may require revision in the short term (either before or after NDC approval)

There are a small number of items in the NDMP that are likely to require revision in the short term, depending on the timeframes of implementation of concurrent components of the SIAM-2 project, and on the timeframe of NDMP approval.

Specific items include:

- The NDMP refers to the alternate communications system in place for Disaster Management in Samoa. As the funding and implementation of this communications system are yet to have occurred, parts of this section may need to be removed before NDMP approval, and then reinserted when implementation of the communications system is complete.
- The NDMP refers to a number of hazard specific contingency plans that are not yet complete or haven't been started. These plans support the provisions of NDMP in more detail, but do not form part of the NDMP. When these plans are complete they will need to be referenced as such in the NDMP.
- The NDMP includes lists of NDC and DAC members. These lists cannot, however, be completed until these appointments are made after the enactment of the *Disaster & Emergency Management Bill*.
- The DAC may determine other items that require amendment before they endorse the NDMP for NDC approval.

If necessary, these amendments will be made by the Disaster Management Office, with the support of the DAC. It is envisaged that these items all fit within the delegation of the DAC, as included in the NDMP, to approve minor plan amendments or additions.

4 Immediate next steps

The following actions are now required:

- The responsibility for the ongoing amendment and maintenance of the NDMP is the Disaster Advisory Committee (through the NDMO). Further changes may be required as a result of changes to the draft Bill or other feedback received by the NDMO.
- The DAC must determine the endorsement process they wish to undertake. Depending on the length of time taken to enact the *Disaster & Emergency Management Bill 2006*, this will be either submitting the Plan for approval to the NDC (after enactment of the Bill), or seeking approval of parts of the Plan under the current legislative framework.

- Appendix A

Samoa's National Disaster Management Plan

DRAFT as at 21/03/2006

Samoa's National Disaster Management Plan 2006-2009

**Approved by the National Disaster
Council under Part III 9(2) of the
*Disaster & Emergency Management
Act 2006* on:**

[DATE]

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1 Introduction

1.1 Plan Purpose and Legislative Requirement

The purpose of this Plan is to detail disaster risk management arrangements to ensure the sustainable mitigation of, preparedness for, response to and recovery from the impact of hazards.

The development and maintenance of the National Disaster Management Plan (NDMP) is a requirement of the *Emergency and Disaster Management Act 2006* Part III.

1.2 Plan Development & Maintenance

This Plan has been produced and endorsed by the Disaster Advisory Committee (DAC) and approved by the National Disaster Council (NDC) of the Government of Samoa under Part III of the *Disaster & Emergency Management Act 2006*.

This Plan is to be reviewed in a maximum of three years, and also following each disaster in Samoa, as per the requirements of Section 17(2) of the *Disaster & Emergency Management Act 2006*.

Responsibility for the review of the National Disaster Management Plan (NDMP) rests with the Disaster Advisory Committee. The Plan must first receive the approval of the NDC before being published and disseminated to departments and other organizations.

All response agency and community plans approved under Part IV of the *Disaster & Emergency Management Act 2006* are to be considered as incorporated into this Plan.

This National Disaster Management Plan replaces the *National Disaster Management Plan and Emergency Procedures* developed in 2000.

1.2.1 Delegations relevant to NDMP development and maintenance

In accordance with Section 15(3) of the *Disaster & Emergency Management Act 2006*, in approving this NDMP the NDC agrees that all plans prepared under Section 14 of the Act may be approved by the Disaster Advisory Committee under the condition that the plans contain all the necessary inclusions, and are consistent with the NDMP.

In accordance with Section 9(2) of the *Disaster & Emergency Management Act 2006*, in approving this NDMP the NDC agrees that amendments and additions to this Plan may be approved by the Disaster Advisory Committee under the condition that they do not adversely affect the risk profile of Samoa, or alter the responsibility of any agency.

1.3 Plan Context

This Plan is intended to co-ordinate and work in conjunction with programmes, policies, plans and operational response arrangements made by:

- Government Ministries and Agencies which have been allocated disaster management related roles and responsibilities;
- Community Government representatives (Women's Committee and Village Mayors in conjunction with the Ministry of Women, Community and Social Development);
- Non-Government Organizations (NGO) which have been allocated disaster management related tasks;
- Overseas authorities and organizations which are engaged in rendering assistance to the Government of Samoa in times of a disaster situation occurring.

1.4 Relationship with Other Plans & Legislation

This Plan introduces roles, responsibilities and powers that are required of named agencies in addition to any roles, responsibilities and powers they have under other plans or legislation.

This Plan is supported by response agency plans, community plans, hazard specific contingency plans, and standard operating procedures. These are described in detail in Section 6.4.

If any conflict is found to exist, the provisions of this Plan shall take precedence.

1.5 Definitions

The following definitions are included here for ease of reference (refer also to the *Disaster & Emergency Management Act 2006*).

“Agency” means any government organisation, non-government organisation, or lifeline utility with a role in disaster management in Samoa.

“Community plan” means any plan prepared under Section 13 or 14 of the *Disaster & Emergency Management Act 2006*.

“Disaster” means a situation -

- (a) which could result or has resulted in causing widespread human, property or environmental losses throughout Samoa or in any part of Samoa; and
- (b) which will require substantial mobilisation and utilisation of Samoa’s resources or exceed the ability of Samoa to cope using its own resources.

“Disaster management” means all activities undertaken in accordance with the *Disaster & Emergency Management Act 2006* in disaster preparedness and response, and for recovery from disasters.

“Disaster risk management” means all activities undertaken in accordance with the *Disaster & Emergency Management Act 2006* in relation to disaster risk reduction and for preparedness for disasters and response to and recovery from disaster.

“Emergency” means a situation in any part of Samoa

- (a) that arises from any happening, whether natural or otherwise including:
 - (i) any naturally occurring event affecting the whole or any part of Samoa;
 - (ii) any fire caused by any means;
 - (iii) any aspect of the safety of a ship or aircraft in Samoa’s territory;
 - (iv) any outbreak or spread of disease affecting humans, plants or animals which is of such a scale or nature so as to require a response by numerous departments or agencies
 - (v) the supply of water or the quality of water resources in Samoa;

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- (vi) the breakdown of telecommunications in Samoa or between Samoa and other countries;
- (vii) any other event resulting from systems failure, infrastructure failure, deliberate act, or human error; and
- (b) which involves threat or danger to human life or health, or to the environment; and
- (c) which requires response agencies to respond under this Act;

“Environment” includes the physical features of the surroundings of human beings, including the land, water, atmosphere, climate, sound, odours, tastes, the biological features of animals and plants and the social features of aesthetics.

“Hazard” means something that may cause, or contribute substantially to the cause of, a disaster or emergency.

“Lead Agency” means the agency that makes sure a particular response function is achieved. During a national scale response, lead agencies report to DAC located in the NEOC.

“Mitigation” means the application of techniques and tools to reduce the probability and/or consequences of a disaster event. Mitigation is also referred to as **“Disaster Risk Reduction”**.

“National Emergency Operations Centre” means a facility approved to be a disaster coordination centre under section 8(1) of the *Disaster & Emergency Management Act 2006*.

“Preparedness” means any coordinated efforts and processes taken to ensure communities and response agencies know what to do in the event of a disaster, and includes without limitation the development of plans and standard operating procedures, issue of warnings, simulations, training and public education.

“Period of emergency” means the period during which –

- (a) A proclamation of emergency has effect in accordance with Article 105 of the Constitution; or
- (b) The disaster response provisions of the National Disaster Management Plan have been activated under Section 19 of the *Disaster & Emergency Management Act 2006*.

“Recovery” means the medium and long term activities undertaken for physical, social, economic and environmental regeneration after a period of emergency.

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“Response” means actions taken in anticipation of, and immediately after a disaster or emergency to ensure that its effects are minimised and that people affected are given immediate relief and support.

“Response agency” means the agencies referred to in Section 11 of the *Disaster & Emergency Management Act 2006*.

“Response agency plan” means the plans referred to in Section 12 of the *Disaster & Emergency Management Act 2006*.

“Risk” means the likelihood and consequences of a hazard.

“Support Agency” means any agency that carries out tasks to help a lead agency do a specific function during a disaster. Support agencies report to the lead agency

2 Plan Objectives

This National Disaster Management Plan aims to achieve the following objectives:

- To reduce the impact of hazards to Samoa
- To ensure all communities and response agencies are ready to respond to any disaster
- To promptly and effectively respond to disasters in Samoa
- To ensure processes and systems are in place for long term recovery and rebuilding after disasters in Samoa

Methods of achieving these objectives include, but are not limited to:

- Fulfilment of roles and responsibilities outlined in this Plan and the *Disaster & Emergency Management Act 2006*.
- Agreed strategies, activities and programmes
- Response agency plans and activities
- Community based programmes supported by response agencies

Achievement of these objectives is to be monitored by the Disaster Advisory Committee.

3 National Disaster Management Organisation

3.1 Concept and Key elements

The concept of this Plan is based on the effective utilization and co-ordination of Government agencies, NGOs, private industry, communities, international donors and other agencies in support of comprehensive disaster management programmes and arrangements.

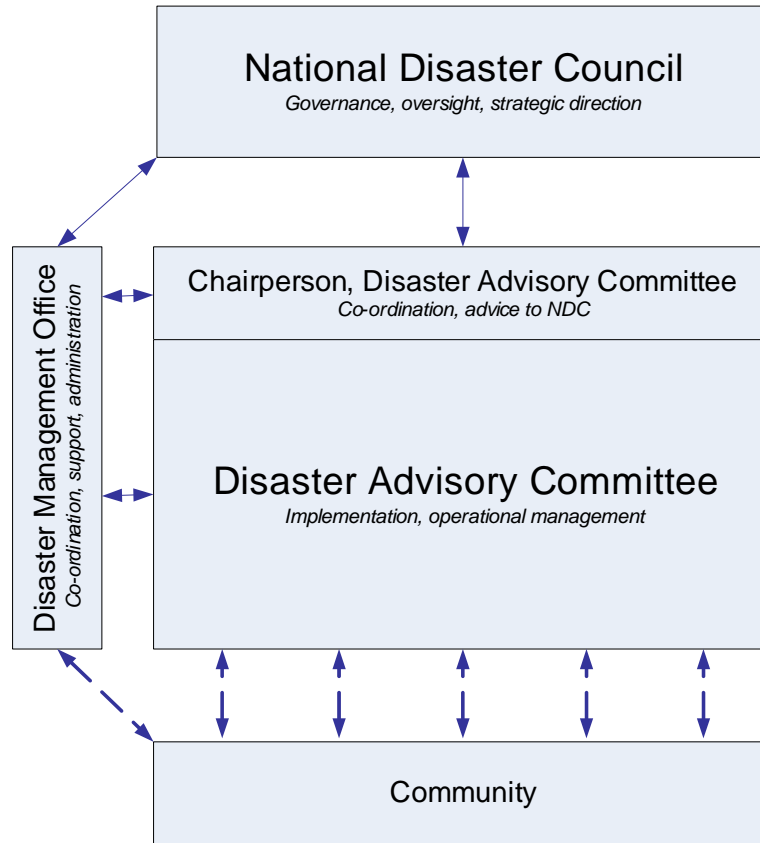
The essential elements provided for by this Plan include:

- An effective overall management structure.
- Clearly defined disaster management roles and responsibilities.
- An effective focal point for the management of programmes.
- Reliable programme support systems (e.g. working groups).
- Effective control and co-ordination systems.
- Effective communications.
- Effective warning, activation and community alerting systems.
- Realistic and effective operational procedures.
- An actively involved and prepared community.

All of these elements are reflected in the contents of this Plan.

3.2 Organisational Structure

The disaster management organisational structure for Samoa is illustrated in the diagram below.



The structure is based on the DMO and Disaster Advisory Committee forming the focal point for co-ordination and implementation of all disaster mitigation, preparedness, response and recovery programmes and activities.

The National Disaster Council is responsible for oversight and approval of all disaster management activities, as advised by the DAC.

Working groups and projects may be established as required to support the NDC or DAC.

During disaster response DAC co-ordinates and manages response activities from the National Emergency Operations Centre and reports to the NDC for direction and decision making as required.

3.3 National Disaster Council

Overall national responsibility for all disaster management related matters rests with the NDC.

The NDC is responsible for reviewing and approving plans, policies and programmes relating to disaster risk reduction (mitigation), preparedness, response and relief/recovery elements. The NDC is responsible for approval of the National Disaster Management Plan (this Plan).

During a disaster response the role of the NDC is to set strategic direction for the DAC, undertake high level strategic decision making including inter-governmental and international relationships and where necessary to advise the Head of State on the need for a proclamation of emergency.

The NDC will meet as often as necessary to fulfil these roles, but will meet in October each year to be briefed on the pre-cyclone season preparations undertaken by DAC.

3.3.1 Membership of the NDC

The NDC is established by Section 5 of the *Disaster & Emergency Management Act 2006*.

The members of the NDC are:

- The Prime Minister, Chairperson
- The Minister of Natural Resources, Environment & Meteorology (as Minister in charge of the Disaster Management function), Deputy Chairperson
- Other Ministers the Prime Minister appoints.

The current membership list of the NDC is attached in Appendix 2.

The Chairperson of the DAC will attend meetings of the NDC as representative of the DAC, and liaison between the NDC and DAC.

Other members of the Disaster Advisory Committee may be invited to be in attendance at meetings of the NDC as advisors to the NDC, and should ensure their respective Ministers are fully briefed prior to each meeting of the NDC.

3.3.2 Administration for the NDC

The DMO is responsible for administrative, secretarial and other arrangements for the efficient functioning of the NDC.

3.4 Disaster Advisory Committee

The Disaster Advisory Committee is responsible to the NDC for the identification, implementation and maintenance of disaster management programmes and activities.

The DAC is responsible for developing policy and plans, including the NDMP and supporting documents, for approval of the National Disaster Council.

The DAC is authorised by this Plan to approve response agency and community plans prepared under Part IV of the *Disaster & Emergency Management Act 2006*. If these plans are approved by the DAC they become part of this NDMP.

DAC agencies are responsible for implementation of disaster management policy and plans, including hazard and risk assessment, hazard mitigation, education, public information, warning systems, and training.

3.4.1 Membership of the DAC

The Chairperson of the DAC is the CEO of the Ministry of Natural Resources, Environment and Meteorology as this is the Ministry within which the DMO is located.

The deputy Chairperson of the DAC is as nominated by the DAC.

DAC members include both Government and NGO representation. Core members are those listed as response agencies under the *Emergency and Disaster Management Act 2006*. All other DAC members are associate members.

The current membership list of the DAC is included in Appendix 2.

The DAC may choose at any time to establish working groups to address particular topics or issues.

3.5 Disaster Management Office

The Disaster Management Office (DMO) is responsible for ensuring the ongoing co-ordination, development and implementation of disaster management programmes and activities in Samoa.

The Principal Disaster Management Officer is the secretary of the DAC, and is responsible for overseeing all administration and activities of the DAC and the NDC.

The DMO undertakes the service delivery role for national disaster management, including:

- Leadership for and relationship building across the disaster management sector
- Supporting the development and implementation of plans and policies for mitigation, preparedness, response and recovery (including this Plan)
- Support to DAC agencies in their development of their own plans and procedures
- Set-up, maintenance (including training for staff), and operational co-ordination of the National Emergency Operations Centre (NEOC)
- Planning and co-ordination of DAC simulations and sector training
- Monitoring implementation of disaster management programmes
- Administration of the activities of the DAC and NDC.

3.6 Community

The Village Council and village organisations are responsible for co-ordinating disaster mitigation and preparedness programmes and activities at the community level, and for co-ordinating village response activities for specific threats. This role includes:

- Initiating community response
- Information dissemination
- Shelter management
- Damage assessment
- Relief co-ordination.

It is the role of the Ministry of Women, Community & Social Development to support, monitor and liaise with Village Councils and organisations as they implement disaster management activities, and to keep the DAC informed of the level of village preparedness.

4 Risk Profile

4.1 Profile of Samoa

The natural, social, and built environments of Samoa contribute to the country's vulnerability to disasters, and the ability of the country to effectively manage disasters.

4.1.1 Natural Environment

Samoa is comprised of two large volcanic islands (Upolu and Savai'i) and several smaller islands with a total land area of approximately 2,935 square kilometres. It lies in the southwest Pacific within an exclusive economic zone of 120,000 square kilometres.

Samoa has a tropical climate with a rainy season from October to March, and a dry season from April to September.

Agriculture and fisheries are the nation's primary sources of revenue, followed by tourism.

Climate change, sea-level rise, environmental degradation, pollution, coastal erosion, water quality and resource management are all important environmental issues being managed in Samoa.

4.1.2 Social Environment

The population of Samoa is approximately 170,000. Upolu houses the capital city of Apia, with a population of around 45,000, as well as the Faleolo International Airport and a deep water harbour which is the entry point for international ships. Savai'i has a population of approximately 35,000. Both islands are mountainous and most of the population live in the low lying coastal areas. There are numerous large and small resorts and accommodation complexes located on the two main islands.

Samoa is an independent state with its own Government with the Prime Minister as its leader. It is part of the Commonwealth and has a Head of State. Members of Parliament are democratically elected for a period of 5 years. Samoa also has a traditional system of community leadership whereby Matai play a large role at the national, community and village levels.

Samoa is the official language although English is spoken in most parts of the country, often for business.

The people of Samoa have strong religious ties and Church plays a major role in daily life.

Diets primarily consist of tropical foods of fish, chicken, pig, coconut, taro, yams, vegetables and fruit.

4.1.3 Built Environment

Domestic accommodation for most of rural Samoa is the traditional open fale (with no fixed walls). All buildings must meet government building standards and the National Building Code for Samoa.

Mobile and land-line telecommunications services are provided on the major islands of Samoa.

Electricity supply is primarily maintained by diesel generators, supported by hydroelectric generation. Electricity service covers most of the islands except some remote areas.

Water supply is primarily through natural springs, with the city of Apia serviced by a dam and treatment facility.

Septic tanks are the most common form of effluent removal, with Apia and some larger facilities being serviced by sewage treatment plants.

Fuel and gas are supplied by ship from international markets.

4.2 Hazards and Risks in Samoa

Samoa is exposed to a number of natural and technological hazards. Some of these hazards are seasonal, such as tropical cyclones, floods and droughts. Others are an ever present threat, such as earthquakes, volcanic eruption, tsunamis, epidemics, industrial hazards, and exotic plant or animal diseases.

The emphasis of the disaster management arrangements contained with this Plan is on those hazards that have the potential to create a significant disaster in Samoa, and would most likely require some degree of government coordination to manage.

4.2.1 Risk Assessment

In order to understand the hazards and risks faced by Samoa, a basic risk assessment has been carried out.

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The risk assessment was based on **both** the likelihood of a significant disaster being caused by the hazard, and the consequences of the hazard if it did occur.

The results of the risk analysis are shown in Table 1 below. The risk assessment process is described in more detail in Appendix 3.

Table 1: Highest risk hazards for Samoa

Hazard	Level of Risk
Cyclone ¹	Extreme
Volcanic Eruption	Extreme
Tsunami	Extreme
Urban Fire (Apia)	Extreme
Public health crisis	Extreme
Environmental crisis – invasive species	Extreme
Flood ²	High
Earthquake	High
Landslide	High
Forest Fires	High
Aircraft emergency (airport)	High
Hazchem incident – marine	High
Lifeline Utility Failure – water	Moderate
Agricultural crisis – animal or plant disease	Moderate
Civil emergency - external	Moderate
Lifeline Utility Failure - telecommunications	Low
Lifeline Utility Failure - electricity	Low
Single asset infrastructure failure – building collapse	Low
Single asset infrastructure failure - dam	Low
Drought	Low
Aircraft emergency (other location)	Low
Maritime vessel emergency	Low
Hazchem incident - land	Low
Terrorism	Low
Civil emergency - internal	Low

¹ Includes stormsurge causing coastal inundation; high winds and rain induced landslips

² Inland flooding due to heavy rain

5 Disaster Risk Reduction (Mitigation) Arrangements

Disaster risk reduction programmes aim to reduce the chances of a disaster happening in Samoa, or to reduce the effects of a disaster when it does occur.

Activities can be non-structural or structural in nature, and are designed to prevent or reduce the impact of hazards upon communities.

5.1 General Provisions

Disaster risk reduction is a function that is mainstreamed across all government and non-government agencies. Each agency has a requirement to perform its activities and programmes in a manner which reduce the risk of disasters. In addition, some government agencies have specific roles that require them to undertake mitigation activities, or develop rules or plan for mitigation.

Mitigation activities may be statutory or non-statutory, and are undertaken by various agencies as a requirement of their own governing legislation, or as part of their best practice risk management programmes.

The DAC may also undertake risk reduction programmes or activities in addition to mitigation work being undertaken by individual member organisations, and may advise the NDC on issues relating to risk reduction if required.

The role of the DMO in disaster risk reduction is to assist agencies to identify and implement disaster risk reduction activities and programmes.

5.2 Risk Reduction Activities

A range of the statutory and non-statutory risk reduction activities undertaken in Samoa is described in Table 2.

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Table 2: Disaster Risk Reduction Activities

Agency	Disaster Risk Reduction Activities	Relevant legislative mandates for mitigation
Ministry of Works, Transport and Infrastructure – Planning & Urban Management Authority (PUMA)	<ul style="list-style-type: none"> • Samoa Planning provisions • Sustainable Management Plans • Development Consents. (Localities and designs of new developments are assessed where Development Consent may be subject to Conditions) • Development Plans • Environmental Impact Assessments • Environment Management Plans (identify mitigation measures needed to reduce adverse impacts and any potential risks). • PUMA advice (e.g. to developers on hazard prone areas and possible adverse and long term environmental and social implications). • Monitoring • Enforcement 	Planning and Urban Management Act 2004. EIA guidelines 1998 Code of Environment Practice 2001 Coastal Infrastructure Management Plans for 15 districts. Draft Housing guidelines 2003
Ministry of Works, Transport and Infrastructure – Infrastructure Assets - Building	<ul style="list-style-type: none"> • Building regulations • Risk assessments for construction and maintenance on public assets • Orders in relation to unsafe buildings 	Draft Building Regulations 2003 National Building Code 1992 Ministry of Works Act 2002
Ministry of Works, Transport & Infrastructure - Infrastructure Assets - Roads	<ul style="list-style-type: none"> • Code of Environmental Practice Road Planning, Design, Construction and Maintenance • Design Specifications • Roadworks Specifications (Designing for whole catchment areas) • Project Specific Specifications (General Environmental Management Plans) • Feasibility Studies • Environmental Impact Assessments • Emergency Maintenance Works/Emergency Response • Cyclone Emergency Recovery Projects (Seawall Construction/Reconstruction, Crossing Structures Upgrade, Beach Nourishment and other Coastal Protection Works, Drainage 	Ministry of Works Act 2002 Code of Environmental Practice 2001 Planning and Urban Management Act 2004 EIA Guidelines 1998

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	<p>Upgrade/Installation</p> <ul style="list-style-type: none"> • Sanitation and Drainage Project for Urban Area (for the installation, upgrading and maintenance of drainage in flood prone areas in the urban area) • Damage Assessments of government infrastructure assets • Engineering advice and recommendations to private developments (providing information and promotion of awareness) • Supervision and Monitoring 	
Ministry of Works, Transport and Infrastructure – Maritime, Samoa Port Authority	<ul style="list-style-type: none"> • Requirement for safety equipment to be carried on ships • Seaworthiness Certificates issued by MWTI • Restrictions on vessels entering port during dangerous weather conditions • International shipping safety requirements • Marine pollution restrictions 	<p>Shipping (Small Vessels) Regulations 1998 Marine Pollution Bill 2000 Ports Authorities Act 1998 Shipping Act 1998 Shipping (Maritime Security) regulations 2004</p>
Ministry of Works, Transport and Infrastructure, Samoa Water Authority	<ul style="list-style-type: none"> • Water restrictions and pollution protection 	<p>Water Act 1965</p>
Ministry of Works, Transport and Infrastructure, Samoa Airport Authority	<ul style="list-style-type: none"> • International aircraft and airport safety regulations • Inspections and monitoring • Limited access to airport facilities 	<p>Airport Authority Act 1984 Civil Aviation Act 1998</p>
Ministry of Health	<ul style="list-style-type: none"> • Surveillance of infectious diseases • Vaccination programmes • Isolation, quarantine and disinfection powers • Prevention of people, animals or things from entering Samoa 	<p>Health Ordinance 1959</p>
Ministry of Agriculture and Fisheries	<ul style="list-style-type: none"> • Border controls, inspection, quarantine and surveillance • Advice on resilient crops • Regulated use of pesticides • Pest Control measures • Import restrictions 	<p>Agriculture, Forestry & Fisheries Ordinance 1959 Quarantine (Biosecurity) Bill 2003 Plants Act 1984 USP School of Agriculture Act</p>
Ministry of Natural	<ul style="list-style-type: none"> • Pollution restrictions 	<p>Land Surveys and Environment Act</p>

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Resources, Environment & Meteorology	<ul style="list-style-type: none"> • Restrictions on development, use and trans-boundary movement of living modified organisms • Disposal and monitoring of wastes • Hazard research and mapping 	1989 Biological Diversity Protection Bill 2004 Watershed Protection and Management Regulations 1992
Ministry of Police Prisons and Fire Services	<ul style="list-style-type: none"> • Monitoring terrorism threat levels, surveillance • Fire safety requirements for public places 	Fire Service Act 1994
Various agencies	<ul style="list-style-type: none"> • Limitations on dangerous businesses and substances • Limitations and controls on biological products 	Business Licences Act 1998 Poisons Act Food and Drugs Act
Community/Village Government representatives	<ul style="list-style-type: none"> • Monitor and notify new diseases or pests 	Internal Affairs Act 1995

6 Preparedness Arrangements

6.1 General Provisions

Preparedness arrangements include activities that prepare emergency response agencies and communities to respond to emergency events when they occur.

Preparedness activities include public awareness programmes, warning systems, operational plans, training, simulations, and the establishment and maintenance of communications networks and operational facilities.

The Disaster Advisory Committee has overall responsibility for co-ordinating preparedness measures, and keeping the NDC informed of activities undertaken.

The main activity requirements are outlined in the following paragraphs.

6.1.1 National Level

The following are the main requirements which have to be met at national level:

- a) The DAC is to monitor preparedness programmes and activities and advise the NDC as necessary.
- b) All government Ministries and agencies are to maintain their own operating procedures in preparation to fulfil their responsibilities under this Plan.
- c) All members of the Disaster Advisory Committee are to annually confirm their ability to fulfil their responsibilities under this Plan (prior to September of each year). The DAC is then responsible for reporting to the NDC on preparedness for the cyclone season.
- d) The DMO is to ensure the promotion and co-ordination of training and public awareness programmes, and in doing so should endeavour to utilize external support, including opportunities for overseas training assistance.
- e) The DMO is empowered under this Plan to consult with any relevant department or agency, in order to check its state of preparedness.
- f) The NDC may order additional tests of any section of the national emergency management system (by checks, exercise or simulations) if considered necessary.

6.1.2 Community Level

The Village Council and organisations, with the support of the Ministry of Women, Community & Social Development, the DAC and the DMO are to implement disaster preparedness programmes for their village, including:

- Ensuring, as far as possible, that agreed national programmes and activities are being implemented.
- Ensuring that village members know and are aware of warning procedures and what action to take.

6.2 Public Awareness

The DMO, with the support of the Disaster Advisory Committee, is responsible for the co-ordination, development, and implementation of awareness programmes for Samoa.

The primary awareness responsibilities of the DMO with the support of the DAC will include:

- The identification of awareness needs.
- The identification of available resources (channels).
- The identification and analysis of the target audience and the selection of the most appropriate methods for communicating with that audience (e.g. radio, print, TV, signage, brochures etc).
- The development of a Community Disaster Awareness Strategy.
- The development and co-ordination of annual awareness programmes.
- The implementation and on-going review of awareness programmes.

6.3 Warning Systems

For some hazards, there is a period of warning during which the public and response agencies can prepare to respond.

Warnings of developing or impending threats or hazards are issued by official sources in Samoa. These official sources interpret information from external agencies and use this in conjunction with local data to provide a specific warning for Samoa.

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Information contained within a warning will usually be linked to the technical characteristics of the hazard itself, and it will usually be issued in a predetermined format.

The public should always be directed to the official source of warning information rather than to any external or secondary sources.

The official sources of a warning may be different for different hazards, as illustrated in Table 3 below.

Table 3. Official Sources of warning information

Hazard	Official Samoa Source of Warning	Who warning is sent to
Weather related hazards including: <ul style="list-style-type: none"> • Cyclone • Storm surge • High waves • Heavy rain • Strong & gusty wind • Floods • Droughts 	Samoa Meteorological Division "National Forecasting Centre"	Media DMO DAC
Volcanic eruption including: <ul style="list-style-type: none"> • Ash fall 	Samoa Meteorological Division "National Forecasting Centre"	Media DMO DAC
Tsunami	Samoa Meteorological Division "National Forecasting Centre"	Media DMO DAC
Public Health hazards including: <ul style="list-style-type: none"> • Disease • Pandemic • Epidemic 	Ministry of Health	Media DMO DAC
Terrorism	Ministry of Police Prisons & Fire Service Transnational Crime Unit	Media DMO DAC

During a disaster response the DMO will translate the technical warning information into instructions for the public. For more information see Section 7.7.

6.4 Planning

This Plan covers national level response to all hazards that may affect Samoa. A number of supporting plans are required to give effect to this Plan. These plans focus on agency responses and on hazard specific response plans.

6.4.1 Response Agency & Community Plans

Under the *Disaster & Emergency Management Act 2006*, the following organisations are required to develop internal agency response plans for review and approval by DAC:

- Response Agencies (as listed in the Schedule of the *Disaster & Emergency Management Act 2006*)
- Educational institutions

If requested by DAC, other agencies may also be required to prepare plans. These agencies may include hotel and tourist operators, commercial and industrial interests, sectors likely to be affected by disaster, NGOs, villages.

These agency plans cover how each organisation is prepared to respond, their response procedures, interactions with other agencies, and resources available to respond to emergencies.

These plans ensure that each agency is able to deliver any role and responsibility listed in this Plan or in the *Disaster & Emergency Management Act 2006*.

Agencies are to provide copies of their plans to the DAC for approval. A copy of each approved plan is to be provided to the DMO to be kept in the National Emergency Operations Centre.

Timeframes for plan approval are as agreed by the DAC.

6.4.2 National Contingency Plans – Hazard specific

The Disaster Advisory Committee may also choose to require hazard specific contingency plans to be developed to facilitate effective and specialized responses to specific hazards which are likely to affect Samoa and require national level co-ordination.

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Hazard specific contingency plans contain any additional mitigation, preparedness, response or recovery **arrangements that are specific and unique to the hazard** under consideration.

General provisions such as procedures for emergency declaration, and general roles and responsibilities as listed in the NDMP are not repeated in hazard specific plans unless there is a specific unique procedure required for that particular hazard.

When developed, these contingency plans become supporting documents to the NDMP. As supporting documents they do not form part of the NDMP, but should be provided to the DAC for endorsement as being consistent with the NDMP.

The following hazard specific plans have been, or are in the process of being developed:

Table 4: National Contingency plans required

Hazard	Title	Agency Responsible	Status
Cyclone	Tropical Cyclone Operational Response Procedures (2000)	Ministry of Natural Resource, Environment & Meteorology	Draft
Pandemic	Samoa Influenza Pandemic Preparedness Plan (Oct 2005)	Ministry of Health	Draft
Volcanic Eruption		Ministry of Natural Resource, Environment & Meteorology	Not yet drafted
Tsunami		Ministry of Natural Resource, Environment & Meteorology	Not yet drafted
Invasive Species (plant or animal)	Emergency Response Plan for Animal and Plant Pests (Nov 2005)	Ministry of Agriculture and Fisheries	Complete
Fire (major urban, wildfire)		Ministry of Police, Prisons and Fire Services	Not yet drafted
Flood (Apia)		Ministry of Natural Resource, Environment & Meteorology	Not yet drafted

6.4.3 Standard Operating Procedures

Standard operating procedures may be developed by the DMO for a particular disaster management function if required.

Standard operating procedures do not require approval of the DAC, as they are simply a documentation of the processes required to undertake a function agreed by the DAC.

Standard operating procedures are likely to be required for the operations of the NEOC facility and disaster management communications system.

6.5 Training

Each agency is responsible to ensure that their own staff are able to respond to emergencies as per their response agency or community plan.

In addition, the DMO is responsible for the management and co-ordination of any required joint disaster management training activities. These include:

- The identification of training needs, including those identified in operational debriefings.
- The development of a training data base and training programme.
- The assessment of training course viability.
- To support regional and national efforts for the adaptation of training material.
- To ensure staff of the National Emergency Operations Centre are fully trained so that the NEOC is in a state of readiness at all times.

If necessary the DAC may appoint a training support group, with members drawn from organisations (including NGOs) which have a training role or have expertise in training.

6.6 Simulations

An annual simulation programme is to be developed by the DMO and approved by the DAC. This programme may require one or more simulation per year, but at least one simulation each year must focus on the national disaster management structure. Simulations may be table-top or operational.

The simulation programme should ensure that DAC member organisations and the NDC are regularly involved, and that response and recovery to a range of hazards are covered. Simulations may be undertaken for specific target audiences such as sector groups or the NEOC.

7 Response Arrangements

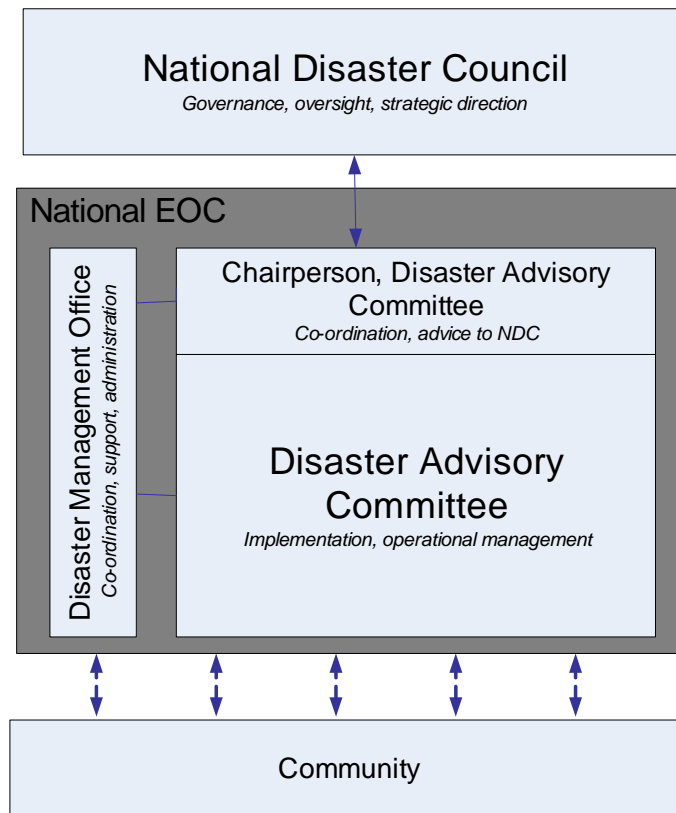
7.1 General Provisions

A national disaster response is required to situations when co-ordination is needed between the agencies involved in responding to a disaster in Samoa. This may be a situation where the Prime Minister orders that these response provisions be activated or a situation where a proclamation of emergency has been made by the Head of State.

Disaster response may escalate from a small scale event which slowly grows into a national scale disaster, or from an event which quickly affects much of Samoa needing a co-ordinated disaster response from all agencies.

A diagrammatic representation of the national disaster response structure is seen in Figure 2 below.

Figure 2: National disaster and emergency response structure



7.1.1 National Disaster Council

The role of the NDC during disaster response is to provide **strategic** direction and decision making as required. The Prime Minister, as Chairperson of the NDC, is in overall control of the disaster situation.

The **operational** decision making and co-ordination of response activities remains the responsibility of the DAC agencies, operating from the National Emergency Operations Centre, under the co-ordination of the Chairperson of the DAC, and the DMO.

The NDC will receive reports from the DAC and should focus on issues and decisions such as:

- Providing advice to the Head of State about whether a proclamation of emergency is required
- Facilitation of international, and inter-governmental relations and communication
- Setting strategic direction
- Conflict resolution

The NDC will be provided with advice on these issues by the DAC.

7.1.2 Disaster Advisory Committee

National level disaster response activities and operations are co-ordinated by the Disaster Advisory Committee, operating from the National Emergency Operations Centre.

DAC member agencies will be called together at regular intervals at the NEOC to provide activity reports and prepare situation reports for the NDC.

DAC agency representatives are to report to the National EOC regarding progress within their area of responsibility.

For example the DAC representative of MWTI will report on the status of road damage and repairs, the DAC representative of MWCSO will report on information received from affected villages on the damage and needs of the village, and the DAC representative of the MECS will report to the DAC on information they have received from schools in affected areas and the damage and needs of those schools.

DAC agencies may attend meetings of the NDC if invited. The Chairperson of the DAC will attend all meetings of the NDC as the DAC representative and liaison point.

The DMO is responsible for the smooth operations of the National Emergency Operations Centre.

The NEOC is staffed by trained personnel from MNREM, along with personnel from the key response agencies involved in the disaster response. These key response agency personnel may differ depending on the type of event being experienced.

7.1.3 Chairperson, Disaster Advisory Committee

The chairperson of the DAC is responsible for co-ordination of the overall operational response of DAC agencies to a disaster, and for representing the DAC agencies at meetings of the NDC.

This role is likely to involve:

- representing the DAC at meetings of the NDC
- providing situation reports to the NDC
- communicating any decisions made by the NDC back to the DAC agencies
- ensuring NDC decisions are implemented
- acting as spokesperson for the disaster event
- ensuring a process is in place for co-ordination of DAC agency response activities
- ensuring the NEOC is operational.

7.2 Response Agencies to be involved

Not every response agency may need to respond to each type of emergency or disaster. This is because the types of functions to be performed may be quite different. For example a cyclone may require functions such as immediate evacuations, medical treatment and engineering checks of buildings, whereas a maritime shipping incident may involve search and rescue or oil spill clean up functions.

During a national scale disaster all lead agencies report to the DAC located at the National Emergency Operations Centre. Standard reporting formats may be provided.

For smaller events agencies may manage the emergency without the need for national level co-ordination.

Table 5 is a quick guide to the key agencies to be involved in different types of emergencies and disasters.

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Additional agencies are likely to be required as well as those listed, however the major lead and support agencies are indicated in the table.

Table 5: Quick-guide: Key Response Agencies to be involved

Hazard	Key lead agencies	Key support agencies
Cyclone	Ministry of Police, Prisons & Fire Services	MNREM, MWTI, MAF, MWCSO, Red Cross
Volcano	Ministry of Police, Prisons & Fire Services	MNREM
Tsunami	Ministry of Police, Prisons & Fire Services	MNREM, MWTI, MWCSO, Red Cross
Fire (urban)	Ministry of Police, Prisons & Fire Services	
Public health crisis	Ministry of Health	Red Cross
Flood (river)	Ministry of Works Transport & Infrastructure	MNREM, Police, SWA
Landslip	Ministry of Works Transport & Infrastructure	
Stormsurge (including tidal and coastal erosion)	Ministry of Works Transport & Infrastructure	MNREM, Police, MWCSO
Earthquake	Ministry of Police, Prisons & Fire Services	MWTI, MWCSO, Red Cross
Forest Fires	Ministry of Police, Prisons & Fire Services	Red Cross
Aircraft emergency (Airport)	Samoa Airport Authority	MWTI
Hazchem incident – marine	Ministry of Police, Prisons & Fire Services (Maritime),	MWTI (Maritime), MNREM, SPA
Lifeline Utility Failure - electricity	Electric Power Corporation	
Lifeline Utility Failure – water	Samoa Water Authority	
Animal or plant disease	Ministry of Agriculture and Fisheries	MNREM, MOH
Civil emergency (external)	Ministry of Police, Prisons & Fire Services	
Lifeline Utility Failure - telecommunications	SamoaTel	
Major infrastructure failure – building collapse	Ministry of Police, Prisons & Fire Services	
Major infrastructure failure - dam	Electric Power Corporation	Ministry of Works Transport & Infrastructure
Drought	Ministry of Natural Resources, Environment & Meteorology	MAF, SWA
Aircraft emergency (other location)	Ministry of Police, Prisons & Fire Services (Maritime)	SAA, MWTI

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Hazard	Key lead agencies	Key support agencies
Maritime vessel emergency	Ministry of Police, Prisons & Fire Services (Maritime),	SPA, MWTI (Maritime)
Hazchem incident - land	Ministry of Police, Prisons & Fire Services	
Terrorism	Ministry of Police, Prisons & Fire Services	
Civil emergency (internal)	Ministry of Police, Prisons & Fire Services	

7.3 Response Functions

During a disaster there are a lot of different functions to be undertaken. These are achieved by a wide range of agencies.

The agency that makes sure a particular function is achieved is the lead agency for that function. They are responsible for arranging all the support agencies they need to do the job. During a national scale response, lead agencies report to DAC located in the NEOC.

Support agencies carry out tasks to help a lead agency do a specific function during a disaster. Support agencies report to the lead agency.

The functions to be undertaken in emergency situations are described in Table 6, along with the lead and support agencies responsible for undertaking the functions.

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Table 6: Functions required during emergency response and recovery

Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
	Health & Medical				
1	First aid	Red Cross	Provide first aid training and first aid services to injured people	Ministry of Police, Prisons & Fire Services Ministry of Health	Provide first aid services
2	Transport and movement of casualties	Ministry of Health	Co-ordinate ambulance services	Red Cross WHO	Provide ambulance and transport services if available.
3	Medical treatment	Ministry of Health	Co-ordinate health sector response. Ensure hospital and health services are running	Hospitals/ Medical Centres WHO	Provide Hospital and health services
4	Public Health	Ministry of Health	Co-ordinate public health response. Control spread of communicable diseases Provide public health advice	Red Cross Hospitals/ Medical Centres WHO	Assist community based public health activities Provide resources and facilities as requested
5	Management of deceased victims	Ministry of Police, Prisons & Fire Services	Manage the identification, handling, and transportation of deceased victims including personal effects reconciliation, and notifying next of kin.	Health Coroner Funeral directors	Provider personnel, facilities and equipment as requested
6	Mortuary services	Coroner (Ministry of Justice)	Provide mortuary services		
7	Counselling & support	Ministry of Health	Provide psychological support services to those affected by the emergency	Red Cross Aid agencies SUNGO WHO	Assist with Counselling and support as requested.

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
	Search and Rescue				
8	Land search	Ministry of Police, Prisons & Fire Services	Co-ordinate search activities for people missing on land	MWTI (roads)	Co-ordinate road access if required
9	Land rescue (e.g. structural collapse, accidents)	Ministry of Police, Prisons & Fire Services	Co-ordinate rescue of people Provide resources for rescue	Samoa Airport Authority MWTI (buildings) MWTI (roads)	Provide personnel and equipment for rescue (as per Airport emergency plans) Provide building plans and structural advice Provide personnel and equipment; access to contractors
10	Maritime search and rescue (e.g. vessels, aircraft in the sea)	Ministry of Works Transport & Infrastructure - Maritime	Provide "On Scene Commander" Co-ordinate maritime rescue activities	Harbourmaster (Samoa Port Authority) Ministry of Police, Prisons & Fire Services Overseas navy personnel Samoa Airport Authority	Provide personnel and resources (e.g. vessels, communications etc) for rescue
	Evacuation				
11	Evacuation of people	Ministry of Police, Prisons & Fire Services, Village Council/ organisations	Evacuate areas required for public safety	Foreign Government Reps SBC, Media DMO	Assist with evacuation from Samoa of foreign nationals Utilise communications networks to assist with evacuations

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
	Community welfare				
12	Registration of evacuees	Red Cross	Identify and record information about people affected by the emergency	Hospitals, Caritas/CCJD Aid agencies SUNGO Churches Village Council/ organisations	Provide personnel and information as requested
13	Temporary shelter	Red Cross	Establish shelters for evacuees	Caritas/CCJD Aid agencies SUNGO Churches Village Council/ organisations	Provide resources and facilities to support evacuees
14	Emergency food	Red Cross	Provide emergency food supplies to affected people Distribute food in accordance with the National Food and Nutrition Policy (PK(96)76).	Caritas/CCJD Aid agencies SUNGO Churches Village Council/ organisations	Provide support for food provision
15	Emergency clothing	Red Cross	Provide emergency clothing supplies to affected people	Caritas/CCJD Aid agencies SUNGO Churches Village Council/ organisations	Provide support for clothing provision

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
16	Animal Welfare	Animal Protection Society	Provide facilities and supplies to ensure the wellbeing of animals affected by a disaster	MAF (Quarantine) Vets	Provide staff, facilities or services as available
17	Emergency Finances	Ministry for Finance	Co-ordinate the collection, allocation and provision of monetary aid to people affected by a disaster.	Aid Agencies Donors MFAT	Secure monetary aid
	Logistics supply				
18	Incoming resources	Lead Agency / DAC	Co-ordinate and prioritise resources (human and physical) needed to respond to emergency event. Co-ordinate procurement, payment, access, staging , distribution and return of resources if necessary	Red Cross Aid Agencies DMO	Provide personnel and facilities to assist with delivery of resources to response agencies to manage the emergency.
				Foreign Government Representatives	Access resources from home countries available for emergency response
				SQUIP	Facilitate border control services
				SPA, SAA	Provide facilities for incoming resources
	Information management				
19	Public information	Lead Agency / DAC	Provide information to the public regarding the emergency and the actions they should take. Disseminate warnings as provided by alerting	SBC, Radio stations, Media	Disseminate information to the public using communications equipment and personnel

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
20	Enquiries about affected people	Red Cross	and monitoring agencies Appoint spokespeople for the emergency event. Co-ordinate the provision of information to media agencies (local and international) Provide information about affected people using Tracing programme.	All response agencies	Communicate with users of own service as to how the emergency will affect their ability to use the service
				Foreign Government Representatives	Collect and provide information to overseas countries about people affected by the disaster
				Samoa Hotel Association	Collect information from Hotels for provision to foreign government representatives.
21	Communications between response agencies	Lead Agency / DAC	Ensure physical communications systems are in place for agencies to communicate with each other. Establish communications protocols and reporting processes.	All response agencies	Report on progress with emergency functions to the Lead Agency
				Samoa Tel Telecom Samoa Cellular Radio communications providers	Take all effort to restore communications systems. Make available emergency communications systems
Impact assessment					
22	Reconnaissance and needs assessment	Lead Agency / DAC	Co-ordinate reconnaissance of affected areas and disseminate information to response agencies.	Response agencies Utility operators	Provide information on how utility operators have been affected by the emergency.
				Village Council/ organisations	Assess damage to village and report to MWCSO.
				Ministry of WCSO	Collect disaster impact information from villages and report to the DAC

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
				Ministry of ECS	Collect disaster impact information from schools and report to the DAC.
				Aid agencies, SUNGO	Provide overseas teams for impact assessment if required and requested.
23	Building Safety Evaluations	Ministry of Works Transport and Infrastructure - Buildings	Co-ordinate assessment of damaged structures to determine if they can be fixed or not. Co-ordinate assessment of structures to ensure they are safe to be re-occupied	Consulting Engineers	Carry out engineering assessments of damaged structures.
24	Building health assessment	Ministry of Health	Co-ordinate assessment of structures to ensure they are will not cause health problems if they are re-occupied	WHO	Support public health assessments as required.
25	Utility Services impacts	Utility operators	Determine damage to utility services and take action to restore services as soon as possible		
26	Access impacts - roads	Ministry of Works Transport and Infrastructure - Roads	Determine damage to road networks and restore roads and transportation networks as soon as possible	Ministry of Police, Prisons & Fire Services	Manage disruption to traffic flows caused by access disruptions
27	Access restoration - air	Samoa Airport Authority	Determine damage to air transport networks and restore airport facilities and services as soon as possible		
28	Access restoration - Marine	Ministry of Works Transport and Infrastructure - Maritime	Determine damage to marine transportation networks and ensure facilities and services are restored as soon as possible to allow marine transport to resume	SPA	Restore facilities and services as soon as possible

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Ref	Response Functions	Lead Agency	Role	Support Agencies	Role
29	Environmental impact	Ministry of Natural Resources Environment & Meteorology	Determine impacts to the environment including air, coastal, land and water resources.	MWTI –Maritime SPA	Respond to contain and clean up oil pollution in waterways

7.4 Proclamation of a state of emergency

The Constitution provides for the proclamation of an emergency to be made by the Head of State acting in his discretion.

Proclamation of an emergency may remain in force for a period of up to thirty days. The proclamation has to be laid before the Legislative Assembly as soon as practicable.

The proclamation empowers the Head of State to make Emergency Orders, as appear to him to be necessary or expedient, to secure the public safety and essential supplies and services, and generally to safeguard the interests and maintain the welfare of the community/country.

The Prime Minister may provide advice to the Head of State of the merits, or otherwise, of a proclamation of a state of emergency.

The Prime Minister may also activate the response provisions of this Plan in situations where the Head of State is not available, a proclamation of emergency is not required, or when immediate actions are required. The activation of the response provisions of this Plan by the Prime Minister lasts for 48 hours, and may be extended at the end of that time if necessary.

7.5 Emergency Powers

Any powers conferred on any response agency by their own legislation remain in place during a period of disaster or proclaimed emergency.

Under the *Disaster & Emergency Management Act 2006* the Commissioner of Police may direct police officers to exercise specific powers including:

- Direct people at risk or putting others at risk
- Take steps to ensure compliance with directions
- Use reasonable force to remove a person to safety
- Take steps to protect property
- Require people to leave, or refrain from entering an area where there is a risk to human life or health
- Do anything authorised by this Plan

If any other powers are conferred on a particular agency, these are included in their response agency plan. Approval of that plan by the DAC enables those powers to come into force during any period of emergency.

7.6 National Emergency Operations Centre

The National Emergency Operations (NEOC) is the nominated central co-ordination centre for all national scale disasters which may occur.

Major functions performed within the NEOC during national disaster situations include:

- a) Hosting meetings of the DAC
- b) The gathering, collation and dissemination of information.
- c) Gathering information on activities being undertaken by Disaster Advisory Committee member organisations.
- d) The co-ordination of operational action including the deployment of personnel, tasking of organisations and individuals, and receipt and distribution of relief supplies.
- e) Issuing directions as directed by the National Disaster Council.
- f) Gathering information from affected districts and villages.
- g) Preparing situation reports for the National Disaster Council.
- h) The operation of disaster communications networks for management of the disaster.

The NEOC is located as follows in Table 7.

Table 7: Location of National Emergency Operations Centre

Primary Location			
MNREM Office Matautu	Beach Street	Phone:	23701/23702/32742
		Fax:	23176
		Radio call sign and channel:	TBA
Alternate Location			
Police Surveillance Headquarters	Beach Street Behind Fire Station	Phone:	22222
		Fax:	20848
		Radio call sign and channel:	TBA

The decision to relocate the NEOC is made by the Chairperson of the DAC on advice of the DMO. Additional alternate facilities may be required if the disaster situation means both the primary and alternate NEOC location are unavailable.

7.6.1 Process for activation of the NEOC

Response to a disaster will be undertaken in three stages, as follows:

- Stage 1: Standby
- Stage 2: Action
- Stage 3: Stand-down

This escalation process will avoid over-response, and will serve as a guide for organisations with a role in emergency response as to when they should undertake response activities and implement their own agency response plans.

Stage 1: Standby

Standby comes into effect when it has been established that a hazard exists, or threatens to affect all or part of the country.

The DMO will notify all Disaster Advisory Committee member organizations of the hazard, and place them on standby so they are ready to begin operations or actions immediately if they are called upon.

The DMO will also inform the NDC that organisations have been placed on standby.

During this stage all organisations should check their personnel and facilities are ready for emergency response.

Stage 2: Action

This stage comes into effect when the threat or impact is imminent or has already occurred (with no warning).

The National Emergency Operations Centre will operate and DAC members will undertake emergency response as per their agency response plans.

The NDC will be notified that the NEOC is operating, and reports will be provided to the NDC, on behalf of DAC agencies by the Chairperson of the DAC.

Stage 3: Stand-Down

The NDC is responsible for determining when stand-down from a disaster response should occur. This decision is to be made after consultation with the DAC.

A staged stand-down may be necessary with organisations with limited involvement in the operations being stood down in the first instance.

Following stand-down of emergency response the NEOC will close.

Emergency operations then move into the recovery phase. Recovery actions will continue for a significant period of time after emergency response. Recovery activities are described in section 6.4.

7.6.2 National Disaster Management Communications System

The primary communications system used for disaster management in Samoa is the conventional communications systems consisting of:

- Telephone
- Fax
- Email
- Personal Delivery/Representation at meetings
- Satellite phones

These communications systems are used to communicate with key disaster management agencies during a disaster response.

[NOTE: The remainder of this section may need to be removed for NDMP approval and reinserted following implementation of the communications system]

An alternate communications system is also necessary for communication between key emergency management agencies in times when conventional communications systems (such as phone, fax and email) are not operational.

An alternate communications system allows key agencies to continue operations from their own locations, while still communicating with the NEOC.

The alternate communications system for emergency management agencies in Samoa consists of VHF radio links to the main offices of the organisations listed in Table 8 below:

Table 8: Location and call sign of stations on the National Disaster Management Communications Network.

Location	Radio Callsign
National Emergency Operations Centre (MNREM Office at Matautu)	TBA
MNREM Meteorology Division	TBA
Ministry of Police Prisons and Fire Service (NCC)	TBA
Ministry of Works Transport and Infrastructure	TBA
FMFMII National Hospital (Moto'otua)	TBA
Samoa Broadcasting Corporation	TBA
Samoa Red Cross Society	TBA
SamoaTel	TBA
Electric Power Corporation	TBA
Office of Prime Minister and Cabinet	TBA

Additional mobile units are available in the vehicles of the DMO, and a portable unit held by the DMO.

The DMO is responsible for ensuring alternate communications systems are available and operational at all times.

Satellite phones are held by many DAC agencies. Where necessary the DMO may request the use of a satellite phone to supplement these systems, or if these systems have failed.

7.7 Public information and community alerting

Technical warnings are only one of the pieces of information that the public need to know during a disaster. The public also need to be advised on how to respond, and on the response activities that are being undertaken to assist them. Public information systems should therefore complement the technical warning system in place (refer to section 6.3).

The DMO is responsible for ensuring public information about the event is disseminated to media outlets and the community, in addition to technical warnings distributed by official sources. This may be achieved by the DMO preparing messages, or by co-ordinating the release of information from lead agencies involved in the disaster response.

Public messages will provide information such as:

- Advice on what to do to prepare for, or respond to, the emergency
- Instructions for specific members of the public to follow (e.g. if evacuations required from a particular area)
- Updates on areas affected by the emergency
- Updates on what response activities are being undertaken to assist affected areas
- Where to go to give or receive assistance
- What is predicted to happen (e.g. is the situation getting better or worse, and what are the major issues likely to arise next)
- Who to contact as the official source of technical warning information

Public information messages should be distributed at regular intervals, independent of the timing of the release of technical warning messages.

7.7.1 Official event spokesperson

An official spokesperson is to be appointed for each event.

It is recommended that this be the **Chairperson of the DAC** unless alternate arrangements are made at the time of the emergency.

The role of the official spokesperson is to provide information about the overall response to the event and the combined efforts of all response agencies to the media and community.

In addition, technical experts from the lead agency may also provide detailed information about particular aspects of the hazard being experienced, e.g. Ministry of Health during a public health emergency.

7.7.2 Methods of public information dissemination

National radio and television are important communication links with the community, in particular those on outer islands or remote areas.

Every effort will be made to utilise **all** available television and radio links during a disaster.

However, in order to ensure essential messages reach the largest possible audiences, those networks with the largest coverage and audiences will be given preference over smaller providers, and the public may be advised to listen to a particular media outlet for updated information.

Methods of communications that will be given highest priority are shown in bold in Table 9 below:

Table 9: Media outlets to be provided with information during a disaster (if possible)

Media	Outlet name
Radio	SBC 540AM (89.1FM) , 98.1FM, 88.5FM, 101.1FM, 86.1FM
Television	SBC 1 , Cable TV, LAU TV
Print	Samoa Observer , Savali, Newslite, Tapu Magazine

If it is necessary, and telephone contact is available, direct contact may be made with a village representative if specific actions are required of that village. This role is undertaken through the networks of the Ministry of Women, Community & Social Development.

Each district and village is also responsible for disseminating public information to their communities through any of their own networks that are available.

7.7.3 Media Responsibilities

Media organisations should give priority to broadcasting public information from official sources.

In order to ensure consistent, accurate and relevant information is being broadcast, the NEOC will monitor media channels and provide regular updates to media organisations.

7.8 Impact Assessment

Impact assessment is required to ascertain the level and type of impact a disaster has had on communities, and the relief and recovery needs of those communities.

Impact assessment will be overseen by the DAC, with the Ministry of Women, Community and Social Development providing the lead role in liaising with Village Pulenu'u. If necessary the DAC may form Disaster Assessment Teams comprising DAC agency representatives. Response agencies are required to carry out impact assessment for the networks they are responsible for.

The following types of impact assessment may be undertaken:

1. Aerial Surveillance:

The aim of aerial surveillance is to identify the extent of damage and those areas worst affected by the emergency. The information gathered will be used to identify the need for a state of emergency to be declared, and also to allocate priorities for emergency response action to specific areas or islands.

Any aerial surveillance activities are to be co-ordinated through the DAC so that the information gathered can be disseminated to all relevant response agencies.

All information collected during aerial surveillance should be provided to the DAC agencies. This includes surveillance information obtained by the Samoa Red Cross under their government agreed mandate.

2. Initial Assessment:

Initial assessment is undertaken immediately following a hazard impact or emergency situation to determine the immediate relief requirements.

This assessment involves gathering information from Village Pulenu'u, Government, NGO and Red Cross officials located in affected villages.

Key information which should be gathered during this stage includes:

- Loss of life and injuries.
- Brief summary of damage and needs.
- Shelter requirements.
- Water and electricity situation, and the problems which may be associated with the loss of one or both.
- Immediate medical or health problems.

A standard format may be provided to carry out initial assessments.

The Ministry of Women, Community & Social Development are responsible for collecting and collating information from Village Pulenu'u.

3. Detailed Assessment:

Detailed impact assessments should be implemented within two to four weeks of the hazard impact or disaster situation.

Detailed assessments aim to provide the Government with a more detailed damage and needs assessment in respect to infrastructure, agriculture, education, health and other long term issues which may have an adverse impact on social and economic environments.

Detailed assessments will be required when recovery programmes are being established to address the damage and needs that are still outstanding. They may be carried out by Disaster Assessment Teams comprising DAC agencies, or by the agency responsible for the aspect of assessment being considered (e.g. health or agriculture impacts).

The detailed assessments will form the basis of any longer term recovery programmes that will require ongoing funding.

8 Recovery Arrangements

8.1 General provisions

The DAC is responsible for establishing appropriate structures to monitor and co-ordinate disaster recovery. They will continue to report to the NDC as required for strategic direction, and implement any directions of the NDC.

Recovery may extend over a long period (sometimes years). Recovery involves:

- Physical reconstruction and restoration (short and long term), including personal and community infrastructure
- Social recovery (e.g. physical or psychological services, welfare provision such as food or housing)
- Economic recovery and financial provision for recovery activities
- Environmental recovery

The specific recovery activities to be undertaken will be determined by the DAC based on impact assessments carried out during emergency response. The required activities will be recommended to the NDC for approval.

The role of the NDC is to approve and support the recovery programme being implemented by the DAC agencies. This may be achieved through existing government channels including the Aid Co-ordination Committee or by the establishment of special committees or sections within government if the situation is complex.

The role of the DMO during recovery is to provide advice and support to the DAC and any additional recovery committees established by the NDC.

In addition, the DMO will monitor continuity of the recovery effort, and make recommendations on building risk reduction activities into recovery activities to mitigate the effects of future disasters.

8.2 Transition from Response to Recovery

Recovery begins when any proclamation of emergency is lifted or when the operational response role of the NDC, DAC and NEOC is complete.

Preparation for recovery activities should begin during the emergency response phase.

The National Emergency Operations Centre will be stood down, but the facilities may continue to be used for recovery management personnel if required.

8.3 Debrief and Reporting

Following each national scale disaster it is essential that information is collected to learn from the situation and to enhance future disaster responses.

8.3.1 Debriefs

Operational debriefings should be conducted as soon as possible after the event. These should be addressed in two stages:

1. Intra-agency (within each agency) debriefing
Each agency should review their own operational procedures and response plans, and to allow staff to submit their views on the operation.
2. Inter-agency debriefing
All agencies that actively participated in the operation should be called together to identify lessons learned and enhancements required for future disaster responses.

The aim of the debrief sessions is to accurately record and understand what activities occurred during the emergency response, to record which activities worked well, and which would need to be enhanced for future operations.

8.3.2 Implementation of debrief recommendations

The DMO in consultation with the DAC is to review the findings of the debriefings and consider amendments or action to improve the disaster management arrangements. Such action may relate to:

- Amendments to plans and procedures, including the NDMP.
- Restructuring of the disaster organization.
- Amending organizational roles and responsibilities.
- Identifying and conducting training activities.
- Arranging and promoting public awareness and education within communities.
- Warning, including origin(s), transmission and receipt, processing, dissemination, action taken (by Government and community).
- Functioning of the NEOC.
- Emergency feeding, shelter and welfare arrangements.
- International assistance arrangements.
- Functioning of control and co-ordination.
- Assessment of public education, information and awareness.

Recommendations of the DAC are to be forwarded to the NDC for consideration and direction.

9 International assistance for response or recovery

International assistance arrangements relevant to this Plan will normally fall into one or other of the following categories:

- a) Direct participation in response operations. For example, use of specialist aircraft or personnel (e.g. United Nations Disaster Assessment and Co-ordination (UNDAC) teams)
- b) Provision of urgent relief supplies: For example, provision of emergency food and medical supplies; provision of tents for temporary shelter.

Longer term assistance programmes, though they may be related to immediate response operations in some ways, are managed by the Aid Co-ordination Committee.

9.1 Process to request international assistance

Requests for international assistance can only be submitted to aid agencies and donors on the direction of the National Disaster Council and when it has become clear that the situation at hand is beyond the capabilities of the existing national resources.

The DAC is to collate the requests of DAC agencies for presentation to the NDC, and to advise the NDC on the need for international assistance and the availability of that assistance if it has been offered.

After a formal request for assistance has been approved by NDC, the Aid Co-ordination Committee will be responsible for liaising directly with international aid agencies and donors to determine the type, quantity and distribution of assistance required. For example if an UNDAC team is required the UNDP Resident Representative is to be contacted.

When aid has arrived, the Aid Co-ordination Committee will be accountable to the aid agencies/donors for ensuring that all relief assistance is distributed in accordance with the guidelines governing the provision of such assistance, and for the preparation of a report on expenditure/distribution of assistance provided by each donor.

The actual distribution of aid to communities for functions such as shelter, food and clothing is to be co-ordinated by the DAC, in accordance with the findings of the detailed needs assessments that were carried out.

9.2 Arrival of international aid

The Aid Co-ordination committee is responsible for providing information on donors' assistance to Customs and Agriculture & Fisheries personnel to facilitate the necessary arrangements for clearance of all donors assistance being provided for disaster relief purposes. This information is to include details on the type, quantity, source and means of transportation, arrival point, and estimated time of arrival of such assistance

Goods purchased locally with disaster relief funding are to be exempt of duty.

10 Government Financial Support for response or recovery

10.1 Expenditure Management

There is no designated emergency fund available to cover expenditure during times of emergency. Each agency is therefore expected to cover the costs of their own emergency response activities. However, the NDC may allocate funds for emergency purposes from other areas of operational spending on the advice of the Minister of Finance.

If such a fund is established, allocation of the fund is at the sole discretion of the NDC. In order to be considered for emergency funding all expenditure committed for emergency response must have been approved by the agency CEO, or if directed by the NEOC then have been approved by the Chairperson of the DAC. Accounts that have not received prior approval for expenditure will be returned to the agency that has incurred the costs.

This procedure will ensure that the available funds are being committed to those requirements which are considered high priority, and avoid unnecessary expenditure on items which may already be available from other resources.

10.2 Principles for Government Support

The NDC may determine any policies and principles necessary in order to allocate emergency funding or supplies to response agencies, or the community. This is relevant for both government funding and international aid.

The DAC, or individual DAC agencies may provide advice in development of these policies and principles.

The following principles for allocation of funding for food, shelter and transportation support should be considered.

10.2.1 Food relief

Consideration should be given to making food relief a priority to a particular area if:

- Recommended by the Ministry of Women, Community and Social Development or the Ministry of Agriculture and Fisheries.
- Severe damage has occurred to greater than 60% of all crops and gardens.
- The community does not have access to alternative supplies or markets.

- The community does not have the financial capacity to assist itself.

All food relief is to be distributed in accordance with the Samoa Red Cross National Food and Nutrition Policy (PK(96)76).

10.2.2 Shelter

Consideration should be given to making the allocation of tarpaulins a priority for:

- Government buildings,
- hospitals,
- churches & major community buildings
- lifeline utility facilities
- private homes when no alternative facility is available (e.g. church or community building or family arrangement)

10.2.3 Transportation support

Where communities have endeavoured to obtain their own assistance, the NDC may consider assistance to cover transport and other costs associated with the delivery of food supplies from external sources and/or markets.

Appendix 1: Glossary of Abbreviations

Abbreviation	Full text
CEO	Chief Executive Officer
DAC	Disaster Advisory Committee
EIA	Environmental Impact Assessment
MAF	Ministry of Agriculture and Fisheries
MESC	Ministry of Education, Sports & Culture
MFAT	Ministry of Foreign Affairs and Trade
MNREM	Ministry of Natural Resources, Environment and Meteorology
MPPF	Ministry of Police, Prisons and Fire Service
MWCSD	Ministry of Women, Community and Social Development
MWTI	Ministry of Works, Transport and Infrastructure
NDC	National Disaster Council
DMO	Disaster Management Office (part of MNREM)
NDMP	National Disaster Management Plan
NEOC	National Emergency Operations Centre
NGO	Non-Governmental Organisation
PUMA	Planning and Urban Management Agency (part of MWTI)
SAA	Samoa Airport Authority
SOPAC	South Pacific Applied Geo-science Commission
SPA	Samoa Ports Authority
SUNGO	Samoa Umbrella of Non Government Organisations
SWA	Samoa Water Authority
UNDAC	United Nations Disaster Assessment and Co-ordination
UNDP	United Nations Development Programme
WHO	World Health Organisation

Appendix 2: Committee Membership lists

National Disaster Council Members

Organisation	Representative
Ministry of Prime Minister & Cabinet	Prime Minister, Chairperson
Ministry of Natural Resources Environment & Meteorology	Minister, Deputy Chairperson
[Add here others appointed by PM]	Minister

Disaster Advisory Committee members

Core members (Response Agencies as listed in Act)	Representative
Electric Power Corporation	CEO (or nominated representative)
Ministry of Agriculture & Fisheries	CEO (or nominated representative)
Ministry of Communication & Information Technology	CEO (or nominated representative)
Ministry of Education, Sports & Culture	CEO (or nominated representative)
Ministry of Finance	CEO (or nominated representative)
Ministry of Foreign Affairs & Trade	CEO (or nominated representative)
Ministry of Health	CEO (or nominated representative)
Ministry of Natural Resources, Environment & Meteorology	CEO (Chairperson of DAC) Disaster Management Officer
Ministry of Police, Prisons & Fire Services	Police Commissioner (or nominated representative) Chief Fire Officer (or nominated representative)
Ministry of Prime Minister & Cabinet	CEO (or nominated representative)
Ministry for Revenue	CEO (or nominated representative)
Ministry of Women, Community & Social Development	CEO (or nominated representative)
Ministry of Works, Transport & Infrastructure	CEO (or nominated representatives) comprising: Maritime Infrastructure Assets – Building Infrastructure Assets – Roads PUMA Civil Aviation Energy
Origin Energy Samoa	CEO (or nominated representative)
Samoa Airport Authority	CEO (or nominated representative)
Samoa Broadcasting Corporation	CEO (or nominated representative)
Samoa Ports Authority	CEO (or nominated representative)
Samoa Red Cross Society	Secretary General (or nominated representative)
Samoa Shipping Corporation	CEO (or nominated representative)
Samoa Water Authority	CEO (or nominated representative)
SamoaTel	CEO (or nominated representative)
Telecom Samoa Cellular	CEO (or nominated representative)
Associate Members	Representative
Australian High Commission	Nominated representative
CARITAS Oceania Samoa/ CCJD	Nominated representative
Chinese Embassy	Nominated representative
Foreign Aid Office	Nominated representative
Head Office – European Union	Nominated representative
Japan International Co-operation Agency	Nominated representative
New Zealand High Commission	Nominated representative
Office of the Attorney General	Nominated representative
Samoa Hotel Association	Nominated representative
Samoa Polytechnic	Nominated representative
Secretariat for the Pacific Regional Environment	Nominated representative

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Programme	
Samoa Umbrella for Non Government Organisations	Nominated representative
United Nations Educational Science and Cultural Organisation	Nominated representative
United Nations Development Programme	Nominated representative
United States of America Embassy	Nominated representative
US Peace Corps Samoa	Nominated representative
World Health Organisation	Nominated representative
World Meteorological Organisation	Nominated representative

Appendix 3: Samoa Register of Hazards and Risks

Samoa is exposed to a number of hazards, some of which are seasonal, such as tropical cyclones, floods and droughts, whilst other present an ever present threat, such as earthquakes, volcanic eruption, tsunamis, epidemics, industrial hazards, and exotic plant diseases.

Whilst it may be appropriate to list all possible hazards, the emphasis of the disaster management arrangements contained with this Plan is those hazards that have the potential to create a significant emergency in Samoa, and would most likely require some degree of government coordination to manage.

A risk analysis process was undertaken whereby for each hazard, a Maximum Credible Event (MCE) has been identified. These are events which are credible in terms of the magnitude of the consequences and likelihood of occurrence. They are useful to help provide context and understanding of the sorts of events that must be managed, and are also useful for risk assessment purposes.

A qualitative risk assessment approach based on the Australian New Zealand Risk Management Standard 4360 (AS/NZS 4360:1999) has been used as the basis of a preliminary risk assessment.

Each MCE has been assigned a likelihood and consequence rating (refer Tables 2 and 3 for more detail). Together, the likelihood and consequence rating translate to a certain level of risk (Extreme, High, Medium or Low).

The Extreme and High level risks are those that should be the focus of emergency management programmes, including hazard information and monitoring, risk reduction initiatives public awareness and contingency planning.

The level of information upon which this assessment was based varied considerably from hazard to hazard.

Table 1: Hazards that have the potential to create a significant emergency situation in Samoa grouped by assessed level of risk.

Hazard	Likelihood	Consequence	Level of Risk	Maximum Credible Event (MCE)
Cyclone ³	A	4/5	E	Category 5 Tropical Cyclone with winds gusting to more than 100mph. Destructive storm surge and high surf increasing to 24 feet affects the western and northern coastal areas of Savaii and northern coastal area of Upolu. Very destructive storm surges of 15 to 20 feet will affect most of the northern coastal areas of Upolu and southwest coast areas of Savaii and Upolu. Subsistence crops destroyed, severe property damage and unprotected coastal infrastructure destroyed. Many injuries and some loss of life. Power and telecommunications disrupted for several days possibly weeks. Potential for further deaths due to disease. Estimated damage over US\$130 million.
Volcanic Eruption	C	4	E	Explosive eruption on the east-west or north rift zones on Savai'i within the next 50 – 100 years. It is more likely that areas on the northern half of Savai'i will be more vulnerable to the consequent effects. Damage will be greatest on adjacent flora and fauna, infrastructure and lifelines, tourism, subsistence agriculture and fisheries, and general property damage. The airport will be closed for prolonged periods (due to ash). No loss of life anticipated. Some villages may have to be permanently relocated.
Tsunami	C	4	E	A tsunami with a mean run-up of between 7 and 9 metres has a return period of between 50 and 100 years based on a probability analysis of historical records. Significant damage to unprotected coastal areas will occur. Subsistence crop loss and damage to coastal infrastructure. Fishing industry affected. Significant property damage. Loss of life would be expected for both tsunami generated some distance away (e.g. Chile-Peru region) despite warning of approximately 13 hours, and more significantly for tsunami generated in the region (e.g. Tonga-Kermadec trench) as warning periods will be much shorter.
Urban Fires	C	4	E	Large fire in Apia town area, particularly near the markets. The buildings are all attached/close together with no fire protection, or water supply. Fast moving fire would destroy properties quickly and would be difficult to get under control. Many potential fire sources are present in this area (cooking oils etc). Major economic impact with many injuries and potentially also loss of lives.
Public health crisis	C/D	5	E	Outbreak of <i>Avian Influenza</i> with 2 confirmed cases quickly spreading to affect half of the population, with possibly one third of the population (approx. 55,000) dead within 3 weeks (estimated life of virus). Significant economic impact (reduced workforce), and loss of tourism for a long period. Cost of treatment, funerals, life insurance and NPF payouts crippling for the economy. Destruction of all poultry will be required. Similar effects to 1918 flu epidemic.
Environmental crisis – invasive	A	4	E	<i>Red Imported Fire Ants</i> are discovered. The ant has a painful bite and makes outdoor living difficult.

³ Includes stormsurge causing coastal inundation; high winds and rain induced landslips

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Hazard	Likelihood	Consequence	Level of Risk	Maximum Credible Event (MCE)
species				This impacts on tourism and affects Samoa's outdoor lifestyle. Small animals are also affected and susceptible infrastructure is at risk. Eradication is difficult and very expensive, as they are usually found after becoming established. An eradication campaign in Queensland (Australia) has cost AUS\$75M over 7 years.
Flood ⁴	B/C	3	H	Prolonged heavy rainfall in and around Apia, affects roads, blocks drains, flash flooding in locations with the potential to cause a small number of deaths, crops affected. Most effects short lived.
Earthquake	C	3/4	H	A Richter magnitude 8.5+ earthquake with an epicentre some 200km southwest of Samoa. This event is likely to generate peak ground accelerations of 0.1 to 0.2g and correspond with a local felt intensity of Modified Mercalli (MM) VII to VIII. An event this size is likely to cause landsliding and damage to unreinforced buildings. A small localised tsunami may be generated (as it was for the 1917 event of similar size and epicentre). No major infrastructure damage or loss of life is anticipated. Crops not affected (cf. tsunami or cyclone).
Landslides	B	2	H	Landslides in Samoa are usually caused by heavy rainfall. Earthquakes can also trigger landslides. Landslide hazard zones have been mapped for the whole of Samoa. Instability of soil has also been mapped for the whole of Samoa. If landslides occur, it is highly likely that major damages to infrastructure such as roads, water pipes, electricity, and communication can occur. They are unlikely to cause fatalities as most unstable areas are away from human settlements. There is a lot of quarrying activities which may cause soil instability in the future.
Forest Fires	C	3	H	Large scrub fire threatening one or more villages. Unlikely to cause fatalities as it won't be that fast moving due to fuels being normally fairly moist. Loss of crops likely. Few structures affected. Fire service resources used to protect villages but no capability to fight fire in rural areas. Potential for it to get out of control, particularly on Savai'i.
Aircraft emergency (airport)	D	4	H	A full 747 aircraft (approx. 400 passengers) crashes on approach to the airport. Many injuries and deaths of both locals and tourists on board. Airport is closed for 1 week. Major impact on the economy due to airport being out of action and tourism is affected.
Hazchem incident – marine	C	3/4	H	Incident involving underwater fuel pipe offshore, either an explosion or discharge of fuel by tanker trying to unload product. Large volumes of fuel could be potentially discharged (4000 metric tonnes) causing major environmental problems and affecting the fishing industry.
Lifeline Utility Failure – water	D	3/4	M	Water supply in the city out for more than two days due to a burst main at the start of the system. Most government and private corporations cannot function without water and would have to shut down as there is limited water storage. Many industries (construction, bottling plant) also cannot operate without water. Public health consequences (sanitation); economic consequences for businesses and government. There are many spring that could be utilised as alternate water sources.
Agricultural crisis – animal or plant disease	D	3	M	Taro beetle causing <i>Taro Leaf Blight</i> which seriously affects Samoa's staple crop (taro). Domestic food supply at risk as well as exports. Eradication is difficult and very expensive.

⁴ Inland flooding due to heavy rain

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Hazard	Likelihood	Consequence	Level of Risk	Maximum Credible Event (MCE)
plant disease				
Civil emergency - external	E	3/4	M	Invasion or aggressive take-over. Economic consequences; injuries and possible deaths. Extremely unlikely although consequences would be significant.
Lifeline Utility Failure - telecommunications	D	2	L	3 days no landline telecommunications (major substation failure). Other means of communication available (HF; satellite phone).
Lifeline Utility Failure - electricity	D	2	L	3 days no power in Apia. Apia affected (hospital; govt. services); villages ok.
Major infrastructure failure – building collapse	E	3	L	One of Apia's multi-storied buildings collapses (earthquake or bomb). Immediate area devastated and building collapses. Adjacent buildings also affected. Situation is quickly contained. Some injuries, possible deaths.
Major infrastructure failure - dam	D	2	L	A breach in the face of Afalilo dam (hydro dam) caused by an earthquake. Three villages are located downstream of the dam (in Fagaloa Bay) and would be badly affected. Power supply would be seriously interrupted to those villages relying on power from the dam. An alternative power supply would have to be sourced for the medium long term as the dam is repaired.
Drought	E	2/3	L	A prolonged drought causes the dryout of intakes in rural areas. A lack of adequate water trucks means water supply to these areas is limited initially. Private contractors' water trucks are used at significant cost. Crops fail and there are significant economic losses. The environmental impact is high as streams dry up, compounded by needing to take water from them to augment town supply. Villages suffer as there is limited water storage. There are many springs that could be utilised and alternate water sources.
Aircraft emergency (other location)	D	2/3	L	A medium passenger aircraft (25 passengers) crashes into hills south of airport. No survivors. Recovery efforts difficult. Mortuary facilities stretched.
Maritime vessel emergency	D/E	2	L	A cruise ship moored at the Port is on fire. 1000 people have to be evacuated and temporarily housed. Situation is quickly contained. No security issues.
Hazchem incident - land	D	2	L	Explosion of underground tanks – destruction up to 5 mile radius suggested. Low probability due to safety measures in place. Additional risk as is adjacent to fuel storage tanks.
Terrorism	E	3	L	Bomb goes off in one of Apia's government buildings. Immediate area devastated and building collapses. Situation is quickly contained. Some injuries, possible deaths.
Civil emergency - internal	E	2	L	Political stability makes large riots and other major internal unrest unlikely.

Table 2: Likelihood and Consequence Parameters used in Assessing the Level of Risk (adapted from AS/NZS 4360:1999)

"Likelihood"	<p>A = Almost certain - is expected to occur</p> <p>B = Likely - will probably occur</p> <p>C = Possible - might occur at some stage</p> <p>D = Unlikely - could occur at some stage</p> <p>E = Rare - may occur only in exceptional circumstances</p>
"Consequence (Impact)"	<p>1 = Insignificant - no injuries, little damage, low financial loss</p> <p>2 = Minor - medical treatment required, possible deaths, minor building and infrastructure damage, minimal or moderate local financial loss</p> <p>3 = Moderate - medical treatment required, possible deaths, moderate building and infrastructure damage, high financial loss</p> <p>4 = Major - extensive injuries, number of deaths, high level of building and infrastructure damage, major financial loss</p> <p>5 = Catastrophic – massive injuries & deaths, displaced people, wholesale building and infrastructure damage, huge financial loss</p>

Table 3: Qualitative Risk Analysis Matrix – Level of Risk (Table E3 of AS/NZS 4360:1999)

		Consequence				
Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic	
	1	2	3	4	5	
A (almost certain)	H	H	E	E	E	
B (likely)	M	H	H	E	E	
C (moderate)	L	M	H	E	E	
D (unlikely)	L	L	M	H	E	
E (rare)	L	L	M	H	H	

- E*: extreme risk; immediate action required
- H*: high risk; senior management attention needed
- M*: moderate risk; management responsibility must be specified
- L*: low risk; manage by routine procedures