

National Emergency Management Agency
Ministry of National Security

NATIONAL FLOOD CONTINGENCY PLAN

March 2003

Prepared by public authorities of the National Disaster Management System

**Equipment & supplies for Public Information Center
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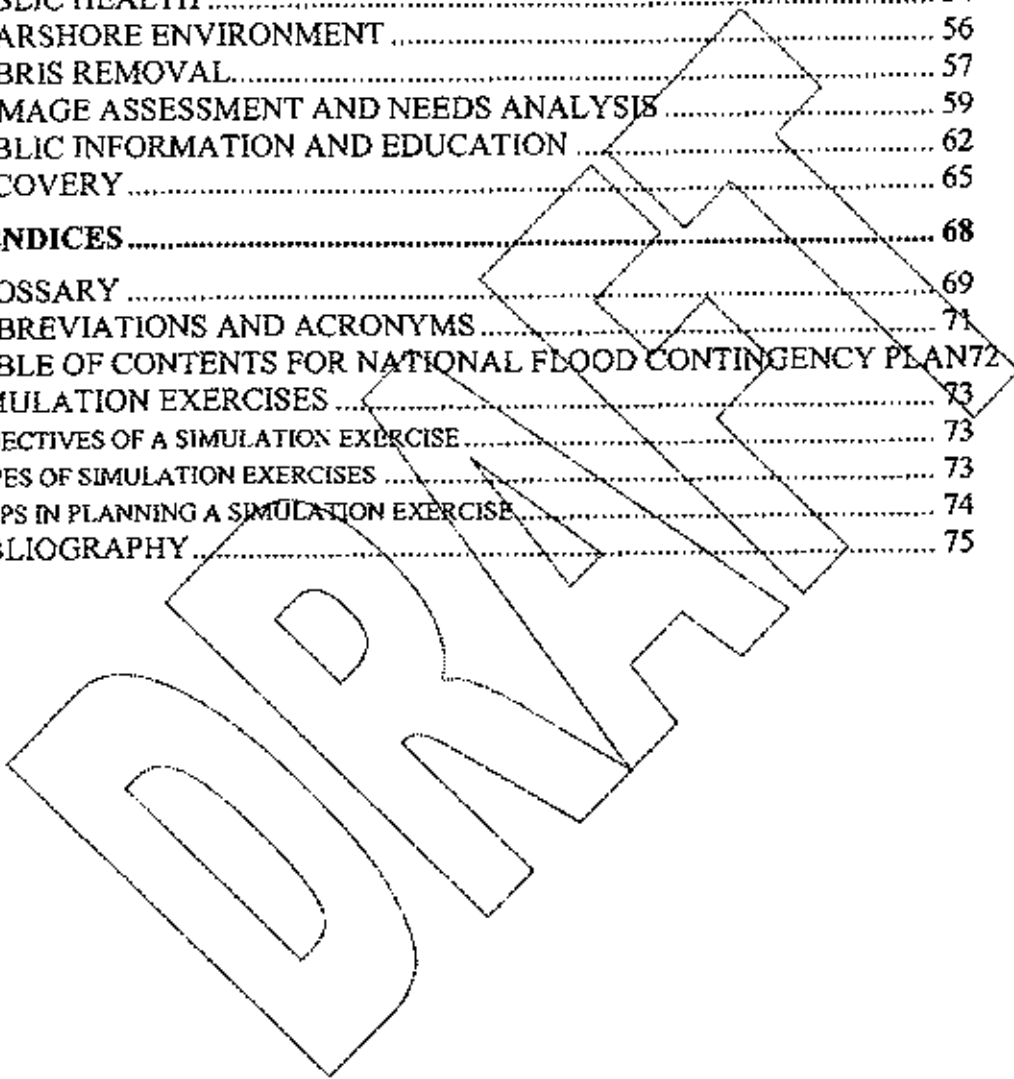
- The following items are required for the Public Information and Education center:

- Separate entrance/exit for the PIEO
- Desks
- Chairs
- Folding tables
- Filing cabinets
- Telephones
- Tape recorders
- Video camera
- TV monitor
- VCR
- Slide/sound carousel
- Computer
- Photocopier
- Whiteboard
- Bulletin board
- Coat rack

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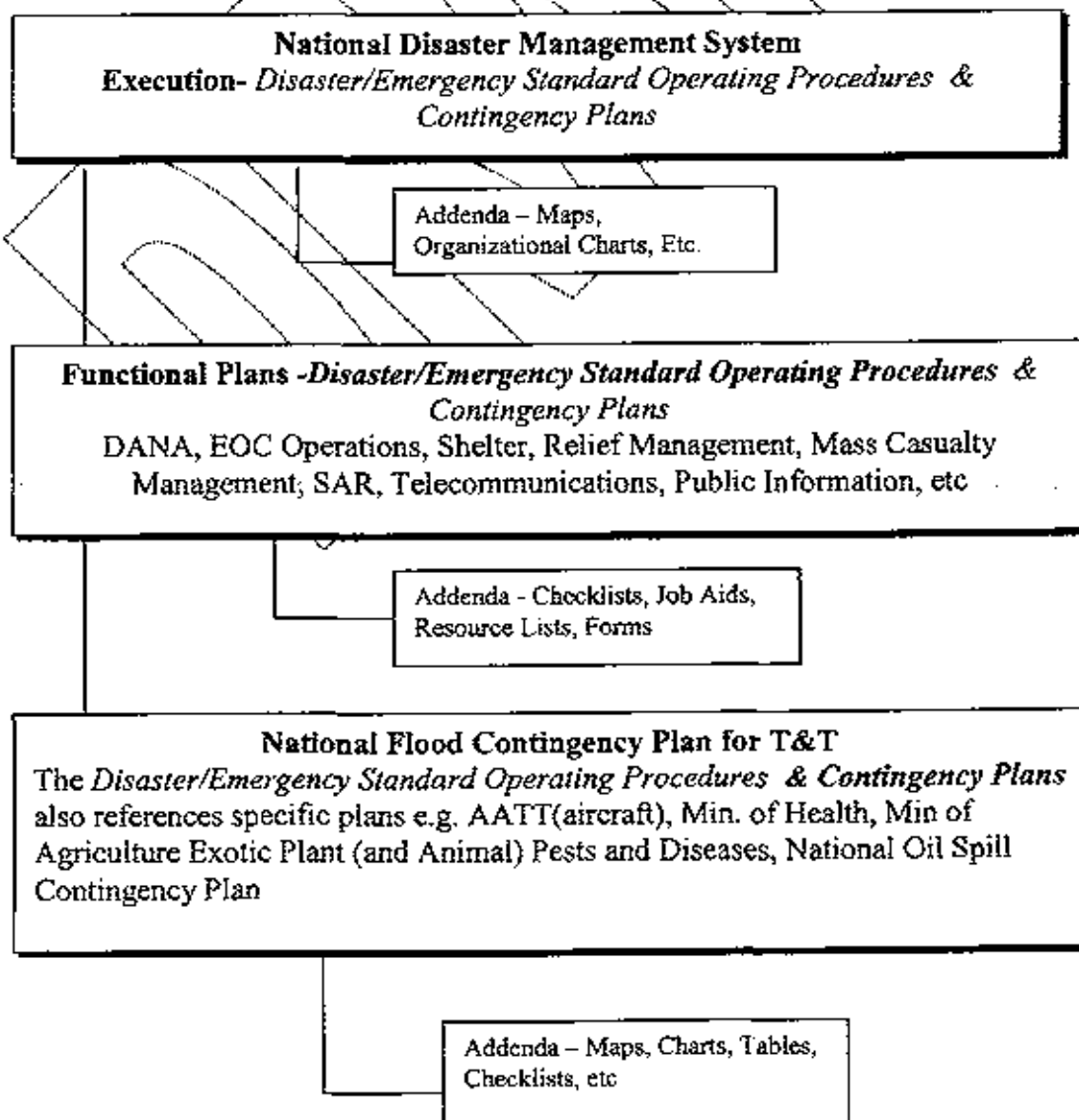


INTRODUCTION

The Constitutional *right of the individual to life liberty security of person and the enjoyment of property* resound within disaster management. However it is the responsibility of the individual, as much as for the State, to be involved in disaster preparedness, mitigation, response and recovery from the hazards to which the country is exposed. Effective disaster management protects the rights of the individual and the material resources of the national community.

The *National Flood Contingency Plan* is one of the hazard-specific contingency plans of the national emergency/disaster management plan, and is to be implemented in that context.

Fig 2: Schematic of composition of the national emergency/disaster management plan



OBJECTIVE AND SCOPE

The *National Flood Contingency Plan* for the Republic of Trinidad and Tobago outlines the national arrangements for managing a flood event within Trinidad and Tobago thereby minimizing casualties and the extent of damage, and expediting the rehabilitation of the affected populace and areas.

AUTHORITY

The National Flood Contingency Plan for the Republic of Trinidad and Tobago is defined within the context of the *Disaster/Emergency Standard Operating Procedures & Contingency Plans* that documents the commitment to national disaster management. It outlines the procedures required for managing a response should a flood event threaten/impact Trinidad and Tobago

This Plan was designed under the guidance of National Emergency Management Agency (NEMA) as a responsibility conferred by Cabinet Minute 1066, May 19, 1988.

Other legislation pertinent to this plan:

The Constitution

Disaster Measures Act (47) of 1978 Ch 16:50

Environmental Management Authority Act 3 of 1995

Fire Service Act 1980 Ch 35:50 and Amendment Act 10 of 1997

Municipal Corporation's Act (21) of 1990

Tobago House of Assembly Act (48) of 1996

(Drainage / Water resource)

Memoranda of Understanding

Considering the need to join efforts and to establish the closest cooperation and mutual assistance in respect of mobilization and coordination as regards the response and recovery from flooding, the National Flood Contingency Plan is hereby established for the provision of assistance within the Republic of Trinidad and Tobago necessary to the carrying out of operations to save lives and protect property.

Consequently, resources derived from various public authorities as well as non-governmental organizations will be utilized to provide a united response within the National Disaster Management System coordinated through the National Emergency Management Agency, Ministry of National Security.

The following public authorities agree to support the overall concept of operations of the plan and carry out their functional responsibilities as assigned. The public authorities also agree to implement individual, local, national and regional plans and exercise activities in order to maintain the effectiveness of this plan.

(An exhaustive list of agencies charged with responsibilities under the National Flood Contingency Plan is to be referenced to complete the list of Signatories to the Plan).

**Director
National Emergency Management Agency**

**Permanent Secretary
Ministry of Works and Transport**

**Commissioner of Police
T&T Police Service**

**Chief Fire Officer
T&T Fire Service**

**Chief of Defence Staff
T&T Defence Force**

**Director
Meteorological Service**

**Chief Administrator
Tobago House of Assembly**

**Permanent Secretary
Ministry of Health**

**Permanent Secretary
Ministry of Local Government**

DRAFT

ASSUMPTIONS

The National Flood Contingency Plan is developed under the following assumptions:

- Governments of the Republic of Trinidad and Tobago will move to implement flood contingency planning inclusive of:
 - provision of financial resources
 - institutional strengthening
 - enactment of legislation and policy
 - implementation of public information and education programmes
- Flood contingency planning will be undertaken in the context of comprehensive disaster management within the country.
- Public authorities will prepare, update and test in-house flood plans, mitigate against flooding, procure necessary equipment and share plans with staff regularly.

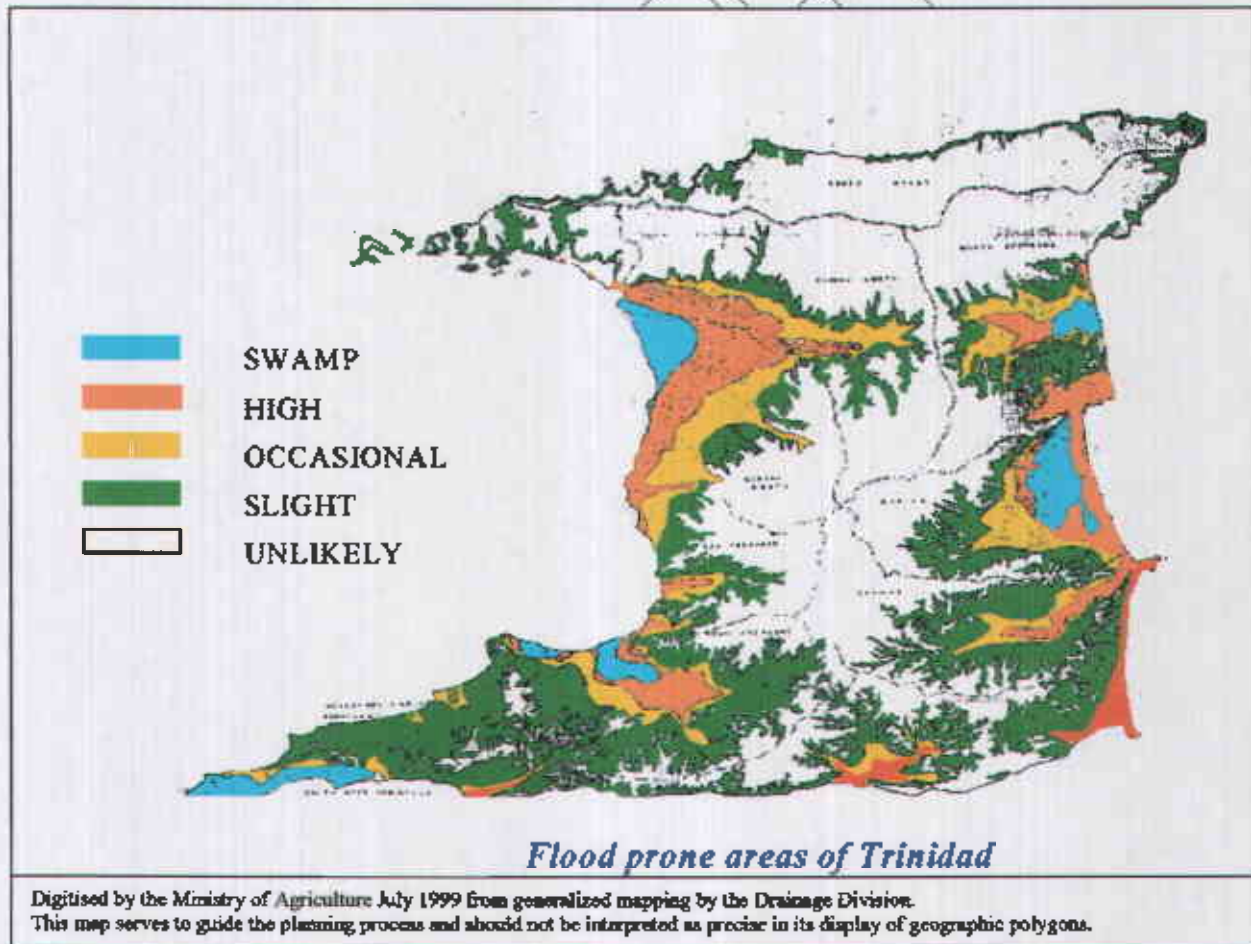
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TRINIDAD AND TOBAGO FLOOD RISK ANALYSIS

Flood Definition

A flood is the inundation of channel and non-channel areas within the catchment area. This would include basin, flash and urban flooding as well as depression inundation.

Flooding defined in this contingency plan also refers to inundation of coastal areas.



Flood Prone Areas Tobago

To be included

Flood Types Area/Impact Identification

<i>Flash Floods</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
	"Dry" Rivers in general		Thunderstorms and ITCZ
	Black River		
	St. Anns	1993	Debris blockage
	Maraval	1993	
	San Juan		
	Cipero		
	Tunapuna	2000 Watts St. 2000 3' deep	Debris blockage
	Natural Courses		Thunderstorms and ITCZ
	St. Joseph		Debris blockage
	Tacarigua	Macya, Tunapuna 1-4' deep	
	Guaracara	Fatality 1997	
	Santa Cruz/San Juan	La Canoe. Flooding affected bridges in the area. Street flooding in Santa Cruz in the vicinity of Bains Avenue, Jagan Ave upper and lower, Bourg Mullatress, and on the street from (2' of water) Saddle Grove to Undercover.	Debris blockage

<i>Riverine (Basin) Flooding</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
Residual water may remain for 2-3 days. In extreme events 3-7 days	Diego Martin	Last Nov 16 1961	ITCZ with thunderstorms Unauthorized removal of embankments
	Caroni & tributaries	Annually esp lower basin 3-6' deep - St. Helena - Frederick Settlement - Kelly Village - Warrenville - Bamboo Settlement - Las Lomas - Caroni Village - Piarco Villages - Uriah butler Highway - south bound lane	
	Couva		
	Caparo	Annually - Caparo 1-5' - Todds Rd, - Ravine Sable, - Palmiste, - Montrose	

National Flood Contingency Plan for Trinidad and Tobago

	N. Oropouche	1-4' - Sangre Grande, Corporation St - Fishing Pond - Vega De Oropouche	Wetland, thunderstorms and ITCZ
	Nariva	2' Manzanilla Stretch Plum Mitan	
	Cipero	Green Acres	
	S. Oropouche	Barrackpore Woodland	Wetland, Thunderstorms & tides
	Icacos	Bonasse & Fullerton	Wetland, Thunderstorms & tides
	Roxborough	1:20yr	

<i>Dam Break</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
No History of dambreak	Arena		
	Hillsborough		
	Hollis		
	Navet		
	Trinity		

<i>Urban flooding</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
	Street flash flooding		Inadequate design for current flow rates. Thunderstorms and ITCZ
	South Quay POS	1/4'	
	Independence Sq		
	Wrightson Rd	East bound lane Woodbrook >2' 2-3' by Fire Station	
	Sackville St		
	Queens Park Savanna	QPS and overflow into Woodbrook	
	Beetham Highway	By Market	
	Western Main Rd	West-bound lane opp American School and at Flyover 1-3'	
	High St	Nov 2002	
	Gulf View San Fernando	Opposite Gulf City Mall	
	Chaguana		Thunderstorms

Flood Types Area/Impact Identification

<i>Coastal/Tidal</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
	Storm surge		
	T'dad E. Coast	Manzanilla stretch 1-3'	Wetland overflow & ITCZ
	T'dad Gulf of Paria	Mosquito creek Waves to 2nd storey Down the islands	Swampland, Thunderstorms & Tides Tropical storm feeder band
	T'bgo north side	Buccoo 30' of limestone cliff eroded	Flora 1953
		Roxborough Argyle Plymouth Turtle Beach Grange Bay Store Bay Pigeon Point	1999 H.Lenny feeder band
	Tsunami KeJ/Earthquakes	Poor historically. KEJ tsunami remote	
<i>Ponding</i>	<i>Area</i>	<i>Impact / Recurrence interval</i>	<i>Cause</i>
	Louis D'Or Settlement	1977 flooding	

Bold are identified as Highly Vulnerable Area

PREPAREDNESS AND MITIGATION

The following section highlights areas for consideration in the preparedness and mitigation stages of flood control and response. No attempt is made to detail the activities noted, as these are technical matters and fall under specific organization and multi-agency operations and plans.

The National Flood Contingency Plan should embrace the principles of *Holistic Water Resource Management* to mitigate against the likelihood of a flood event. Critical to this approach is proper zoning and land-use regulation. Technical agencies will normally articulate levels of acceptable risk and appropriate design criteria.

The various Sub-Plans developed should include mitigation and preparedness that will utilize multiple measures to minimize the likelihood of flooding including:

- Erosion Control & Runoff Reduction Methods

- Land

- Forest conservation and reforestation
 - Preventing/minimizing undesirable land clearing
 - Promoting change in agricultural techniques e.g. tree crops and terracing
 - Slope stabilization as per soil type, slope and as applicable to design standards of the country
 - Regulation of post development flows as per design criteria and drainage requirements

- Coastal

- Beach and wetland preservation e.g. groynes, discharge control, zoning
 - Seawall and dyke construction
 - construction of other near-shore and coastal protection mechanisms
 - monitoring and maintenance of near-shore marine ecosystem health

- Reduce velocity flows

- Land

- Energy dissipators in high velocity streams e.g. detention ponds, hydraulic drops, rip-raps, baffles, chute blocks, et.
 - Retention systems e.g. the construction and maintenance of dams

- Coastal

- Energy dissipators
 - Wetland and reef preservation

- Flood control
 - Maintenance of water courses, sea walls, sluice gates, dams etc.
 - Capacity improvements e.g. paving, widening and alignment of channels
 - Mobile pumps for depressions and low-lying areas
 - Permanent pumps in critical low-lying areas
 - Dykes and embankments

- Other
 - Flood warning systems
 - Public alerting systems
 - Evacuation
 - Relocation of very high risk communities
 - Preparation of Flood Emergency Plans (Sub-Plans) in each agency
 - Development of flood hazard maps
 - Technical
 - Community

By their nature, preparedness and mitigation require a multi-faceted approach that involves many agencies responsible for:

- Meteorological phenomena
- Water resource management
- Town and country planning
- Coastal conservation
- Public Works - maintenance/drainage/highways/sea wall
- Waste management
- Agriculture management
- Forest conservation
- Municipal/Local government

CONCEPT OF OPERATIONS

Initial alert and notification can come from any member of the public (directly or through the private media houses), or any of the agencies that provide technical services (<Met. Service, Drainage/Water Resource Service, Coastal Conservation Service>) associated with water resource and/or flood management.

Following confirmation, the event will either be handled

- As a Level 1 Emergency through the routine activities of the Emergency Services (Police, Fire, Health), and Technical Services (<Met. Service, Drainage/Water Resource Service, Coastal Conservation Service>).
- As a Level 2 (or higher) Emergency, at which time the EOC Call Out cascade is initiated, the National/Regional (Parish/District) Emergency Operation Centre is activated and the various agencies named in the *National Flood Contingency Plan* enter into a coordinated response.

Activation of the EOC initiates the Standard Operating Procedures in functional areas to manage the flood event. These areas are as follows:

- Alert and Notification
- Telecommunications
- Emergency Operation Centre
- Parish/District Committee
- Flood Control
- Evacuation
- Transport
- Search and Rescue
- Security
- Emergency Relief
- Health
- Public Health
- Near-shore Environment
- Debris Removal
- Damage Assessment
- Public Information and Education
- Recovery

A *Matrix of Responsibilities by Agencies* is enclosed below as a guide. Departments/agencies must identify their primary and secondary/responsibilities in keeping with the organisation's legislation/statutes and mandate. Consideration should also be given for roles identified within the *National Emergency Management Plan* and *National Flood Contingency Plan*.

STANDARD OPERATING PROCEDURES

The SOP details the linkage and actions to be taken by agencies which are partners in the *National Flood Contingency Plan*. The following Standard Operating Procedures take into account that the onset times of the types of floods experienced in the region vary from slow to rapid, and that different levels of emergency declaration are possible. Where necessary, the SOPs will indicate any differences in procedure required.

ASSUMPTIONS

This *National Flood Contingency Plan* assumes:

- The existence of a <National Emergency Management Plan> inclusive of procedures governing EOC Operations, Shelters, National and International Relief, Telecommunications, and Recovery, etc.
- All actions taken at the level of the National Emergency Centre (NEOC) by the Operations Group will consider real-time information and situation reports, as well as comprehensive flood threat analysis (hazard, risk and vulnerability analyses).
- All Sub-Plans will be developed in keeping with the principles of comprehensive disaster management, including the concept of varying levels of response to varying levels of (potential) impact and damage.
- All actions taken by participating agencies will be based on their individual agency mandates, statutes governing their operation, as well as their agreement to operate within the *National Flood Contingency Plan* framework (as indicated by the Letter of Agreement and Signatories Page).
- All agencies will develop and maintain individual emergency management plans, procure resources and conduct training in support of same.
- Each Department/Agency/Division Sub-Plan will identify the person(s) to report to the NEOC/REOC and participate in decision-making. These persons shall be included on the official "Call Out" cascade.
- All agencies will establish and maintain adequate systems for communication with the <<National Disaster Office>> (and NEOC/REOC).

MATRIX OF RESPONSIBILITIES BY AGENCY

	NDO	Fire	Police	Met. Service	Water Resource Agency	Public Works	Information Service	Health	Coastal/ Marine Institute	Agriculture	Local/ District Committees	Defence Force	Social welfare/ NGO
Alert, Notification & Warnings	P	S	S	P	P	S	S		S		S		
Telecommunications	P	P	P	P	S	S	S	S	S	S	S	S	S
Public Information & Education	P						P						
Emergency Operations Centre	P	S	S	S		S	S	S	S	S	S	S	S
District Committees	P										P		S
Flood Mgmt & Control				S	S	P			P/S	S	S		
Evacuation	P	P	P				S		S		P	S	S
Emergency Shelters	P										P		S
Transportation	P					S		S	S	S	S	S	S
Search and Rescue	S	P	S			S			S		S	P	
Security			P									S	
Emergency Relief	P										P		P
International Assistance													
Medical Health								P			S		
Public Health								P			P		
Debris Removal						P					P		
Damage Assessment	P	P				P		P	P	P	P		S
Needs Analysis													
Rehab & Recovery	S	S				P		P	P	P	P	S	

P Primary Responsibility S Secondary Responsibility/Support activity

ALERT, WARNING AND NOTIFICATION

This section details the methods, call-out procedures and responsibilities of agencies which provide information regarding the threat of or actual flood events.

Assumption

Department/Agency Emergency Plans will include updated contact lists/directories for staff and any other persons participating in the plan.

The call-out cascade reflects the relationships between the various agencies of the national emergency management system. The notification process will differ based on

- the source of the initial notification/warning:
 - a Technical/Professional Source (information from flood warning systems (automatic river gauges, etc); information from <Meteorological Service/Drainage/Water Resource Service/Coastal Conservation Service>, Police/Fire/Emergency Service officials who may have a special role/responsibility.
 - a Member of the Public – initiated by a person involved witnessing the flood event/experiencing the flood event (in which the report must be confirmed);
- the declaration of emergency level by the <NDC in consultation with Technical Services> and indicated response levels.
 - **Flood Watch:** requires the Technical Services to undertake intense flood monitoring, forecasting and issue of advisories.
 - **Flood Warning:** issued when indications show that water levels will exceed the alert level within 24 hours.
 - **Level 1:** requires day-to-day operations by first response and direct technical services.
 - **Level 2:** requires mobilization of resources from more than the first responders and direct technical services. Parish/district resources and some other national resources are adequate.
 - **Level 3:** requires a national coordinated response and possible external assistance.

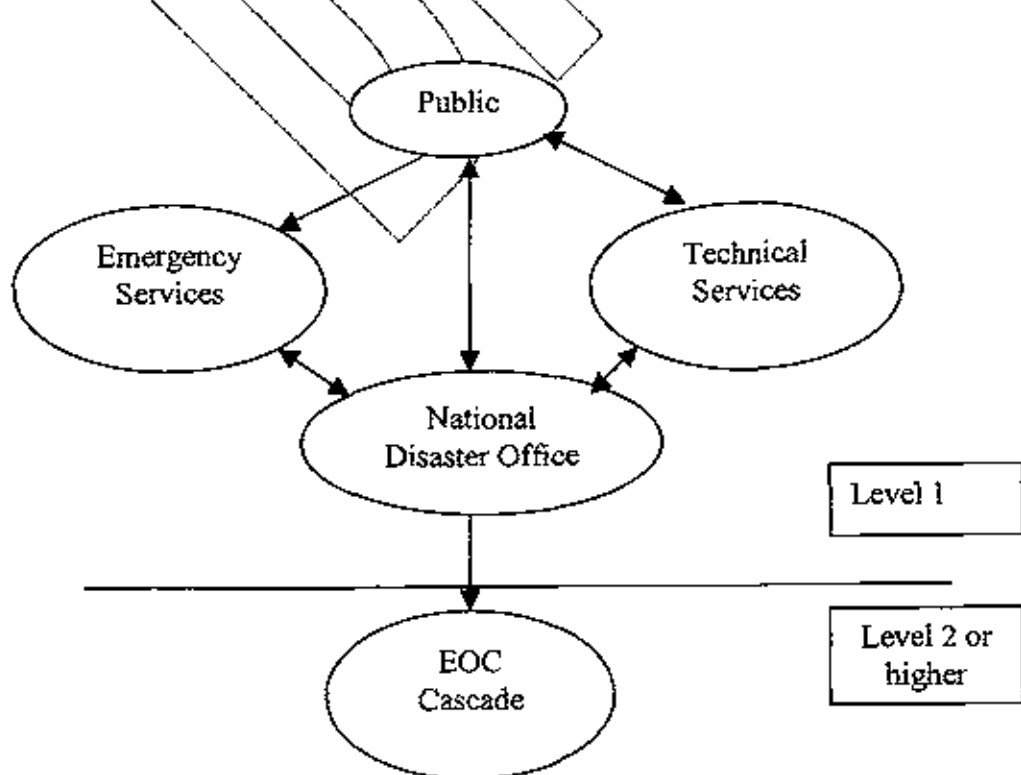
Notification from Public

- Upon receipt of information from an ordinary source, the <<National Disaster Office>> or Technical Services (<Meteorological Service,

Drainage/Water Resource Service, Coastal Conservation Service>) shall contact the Emergency Services immediately.

- Upon confirmation of threat/event, the Emergency Services and Technical Services shall advise the <NDC> as to the extent of (possible) flooding, the need to activate the EOC, and the need for (immediate) evacuation.
- Upon declaration of a Flood Watch, the Technical Services will undertake measuring and monitoring and modeling activities to assess the probability of flooding, and shall so advise the <National Disaster Office>.
- During the period of a Flood Watch, the <Met. Service> will have responsibility for issuing public advisories. The <National Disaster Office> will have responsibility for issuing flood preparedness/precautionary measures to be taken.
- Upon Declaration of a Level 1 Emergency, the Emergency Services on the scene shall manage the event.
- Upon Declaration of a Level 2 Emergency (or higher), the <NDC> shall immediately activate the REOC/NEOC and initiate the Call Out Cascade.

FIG 4: FLOW OF COMMUNICATION WITH NOTIFICATION FROM THE PUBLIC



Notification from Technical/Professional Source

- Upon receipt of information consistent with the threat of flood by any of the Technical Services <Drainage/Water Resource Service, Coastal Conservation Service, Meteorological Service> they shall immediately contact the <National Disaster Coordinator> and shall advise the <NDC> as to the extent of (possible) flooding, the need to activate the EOC, and the need for (immediate) evacuation.
- Upon declaration of a Flood Watch, the Technical Services will implement measuring, monitoring and modeling activities in order to assess the probability of flooding, and will place on stand-by resources for implementing mitigation and response measures.
- During Flood Watch <the Met. Service> will have responsibility for issuing flood advisories, while the <National Disaster Office> will be responsible for issuing flood preparedness/precautionary information.
- Upon declaration of a Level 1 threat/impact, the <NDC> shall immediately contact the Emergency Services.
- Upon Declaration of a Level 1 Emergency, the Emergency Services shall manage the event.
- Upon declaration of a Level 2 threat/impact the <NDC> shall activate the EOC and initiate the EOC Call out Cascade.

FIG 5: NOTIFICATION FROM A TECHNICAL/OFFICIAL SOURCE

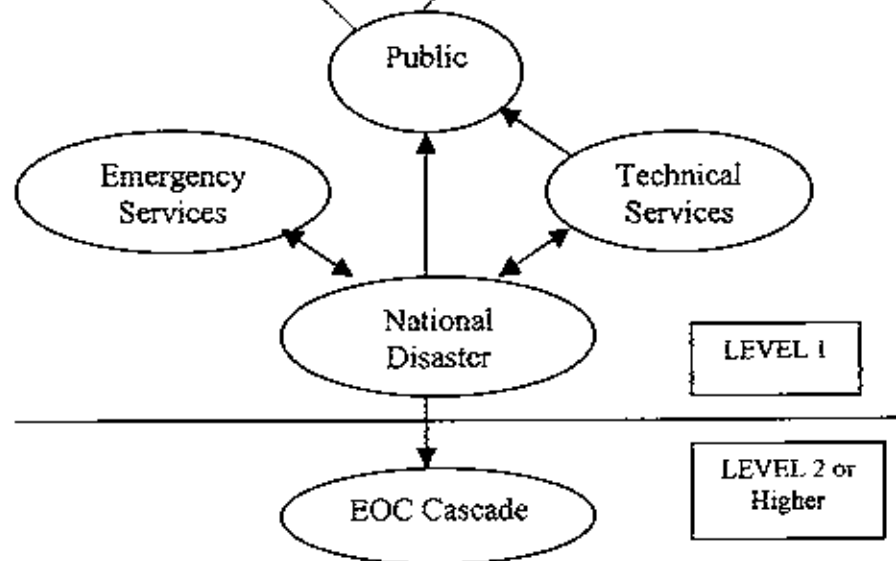
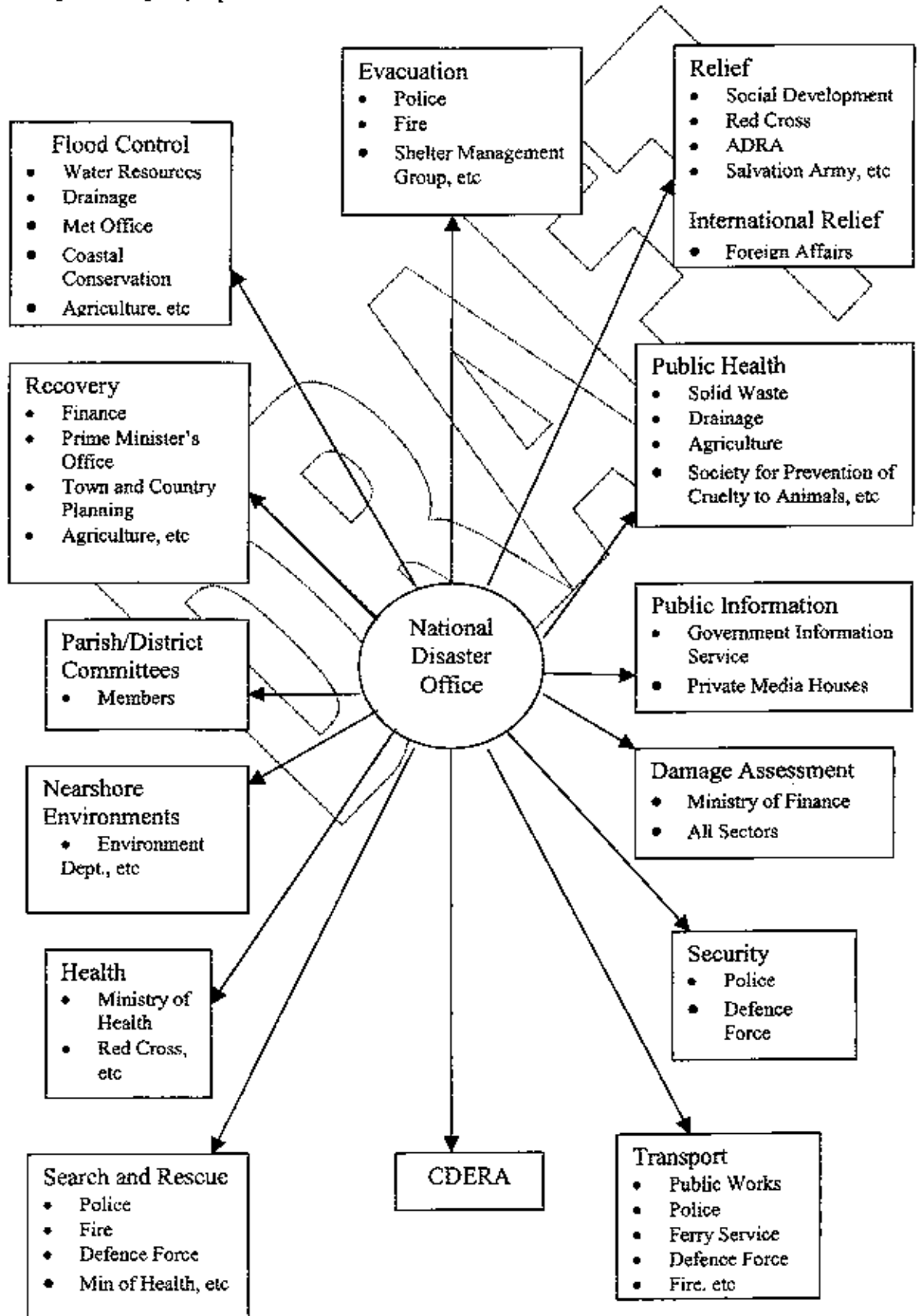


Fig 6: Emergency Operation Centre Activation Call Out Cascade



Pre-event

- The <Drainage/Water Resource Service> shall be responsible for installation, maintenance in optimum condition, and monitoring of early warning systems for flooding along water courses.
- <The Coastal Conservation Service> shall be responsible for installation, maintenance in good condition, and monitoring of sea defences.
- The <Meteorological Service> shall be responsible for the installation and maintenance in good condition of equipment for collection and monitoring of hydro-meteorological data, and other weather information impacting on the flood threat.
- All Technical Services shall be responsible for maintaining in good working condition all methods of communication used to transmit warning information to the <National Disaster Office>, and ensure that its staff is able to adequately operate same.
- The <Meteorological Service> in collaboration with the other Technical Services shall be responsible for the provision of all hydro-meteorological information and related bulletins/advisories. <In the event of EOC activation all such advisories shall be transmitted in accordance with the *Public Information Sub-Plan*.
- The <National Disaster Coordinator> shall be responsible for the production and regular revision of contact lists of persons pertinent to the *National Flood Contingency Plan*, the distribution of the contact list (as indicated by the notification protocol), and initiating the Call-out cascade.

During event

- Level 1: The <Meteorological Service in consultation with the other Technical Services> will be responsible for any bulletins and advisories.
- Level 2: Bulletins and advisories will be issued in keeping with the protocols developed in the *Public Information Sub-Plan* and will take into account information from the Technical Services as indicated by situation reports and flood threat analysis.
- The Technical Services shall continue to operate and monitor all equipment so as to provide the EOC with accurate and timely information for situation analysis (inclusive of information to issue "All Clear").

Post event

- All departments should include details of alert and notification in post-event reporting and analysis.

- Where necessary <Meteorological Service in consultation with the other Technical Services> will issue the "All Clear".

DRAFT FLOOD ADVISORY

The <Meteorological Service> wishes to advise the public that <state present and expected situation of the meteorological cause of flooding>.

This is causing/expected to cause flooding <state present and forecasted hydrological situation> in <state areas to be affected>.

Persons in low lying/vulnerable areas of <state areas> should prepare for flood conditions within the next <state time> hours. **Persons in the areas of <state areas> are advised to evacuate the area.**

All persons should monitor their radios for further advisories.

DRAFT FLOOD PREPAREDNESS BROADCAST

The <National Disaster Office> wishes to advise the public of the following flood precautions:

- Contact the <Fire Service (include telephone number)> immediately if you are in any danger.
- Avoid areas that are already flooded. Do not try to cross water courses with flood levels higher than knee deep.
- Turn off gas and electricity, and unplug all electrical appliances.
- Put dangerous liquids, especially combustible ones in a safe place. Ensure that the containers are securely closed.
- Seal important supplies, documents and valuables in watertight containers, and store above flood height.
- The following supplies are recommended:
 - food, drinking water, first aid equipment and prescription medicines
 - buckets cloths, scrubbers, spades, shovels, tools
 - flashlights, transistor radio, batteries
 - covers and blankets
 - wooden planks, nails, sandbags (if available).

- If possible take furniture, etc to upper floors or raise above flood height (eg place on a sturdy table). Anchor objects that are stored outside (water tanks, etc). Drive vehicles to areas that will not be flooded.
- Sand bag exposed openings.
- Heed any instructions to evacuate areas already flooded or where flooding is expected to be severe <include details of collection points, transportation and shelter>.

DRAFT

TELECOMMUNICATIONS

This section summarizes the Telecommunications Standard Operating Procedures specific to flood hazard events. Detailed Telecommunications SOPs should be part of the functional national disaster management plans. Countries without such detailed plans can refer to the *Emergency Telecommunications Manual for CDERA Participating States 2000*.

Assumptions

All key agencies have established systems for communication with the <National Disaster Office> (and NEOC/REOC).

Telecommunications Standard Operating Procedures are detailed in the <National Emergency Management Plan> and include call out cascades at the level of functional and hazard-specific contingency plans.

Terms of Reference

The <Chief Telecommunications Officer> (and the Telecommunications Group) will ensure that adequate telecommunications are available at the EOC and its participating agencies to allow coordinated management of flood event.

Pre-event

- Development and maintenance of a *Telecommunications Flood Contingency Sub-Plan* (consistent with the <National Emergency Management Plan> and related Telecommunication Standard Operating Procedures), to ensure an adequate telecommunications system is in place to service the needs of the EOC and its participants. If such a plan is in place, this group will ensure that it is updated regularly.
- Advise the <NDC> and key agencies regarding the acquisition of telecommunications equipment.
- Liaise with key agencies to facilitate training for telecommunications equipment.
- Conduct simulation exercises to test the *Telecommunications Sub-Plan*, and participate in national simulation exercises, as necessary.

During event

- Oversee the operations of the telecommunications network during flood event to facilitate flow of information between agencies participating in the response.

Post-event

- Prepare final report of the <insert agency/group responsible telecommunication> within <insert time frame>

- Participate in post-event analysis to review the event and update the *Telecommunication Sub-Plan* as indicated.

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EMERGENCY OPERATION CENTRE

This section summarizes the Emergency Operations Centre procedures specific to flood hazard events. Detailed EOC Procedures should be part of the functional disaster management plans. Countries without such detailed plans can refer to CDERA's *Standard Operating Procedure Guidelines for National EOCs* Dec. 1993.

Assumptions

National and Regional Emergency Operations Centres (either dedicated to that purpose or embedded in another agency), have been established for use in response to localized/national crises (at Level 2 or Level 3), and procedures have been developed that govern its preparation and readiness.

Upon declaration of a Level 2 Flood Emergency (or higher), the EOC will be activated. Thereafter all activities shall follow the protocols outlined in the <National Emergency Management Plan> Standard Operating Procedures for EOC Operation, until the EOC is stood down.

National legislation and policy arrangements will dictate the individual with responsibility for coordination of all emergency management activities from onset until "Stand Down", coordinating with EOC staff, and the Operations Group. This plan assumes the <National Disaster Coordinator> to be that individual.

Regardless of national arrangements as to whether all Chiefs/Heads of Department with responsibilities under the Plan (or their designates), will report to the EOC upon its activation, they will retain responsibility for the Sub-Plans under their control.

Arrangements for Parish/District EOCs will mirror what occurs on the national level.

Terms of Reference

The <National Disaster Coordinator> (and the Operations Group) shall be responsible for coordinating activities toward the preservation of life and minimization of damage in a flood event through comprehensive flood management, inclusive of

- The Preparation, administration and execution of the *National Flood Contingency Plan* and related Sub-Plans.
- The acquisition of resources in support of the execution of the *National Flood Contingency Plan*.
- The periodic testing and updating of the *National Flood Contingency Plan* and its Sub-Plans.

- Management of the national response to a flood event, inclusive of the declaration of the crisis level of the event, alert and notification of the general populace, response and recovery procedures.
- The preparation of a post-event report.
- The conduct of post-event analysis that should address (among others):
 - Safety issues arising from response activities
 - Management and coordination issues
 - Information flows
 - Telecommunication issues
 - Effectiveness of plans
 - Logistics – including equipment, use and replenishment of resources and supplies
 - Medical issues – victim treatment and supplies
 - Overall performance by sector/agency.
- Updating of the *National Flood Contingency Plan* and Sub-Plans, as indicated by post event analysis.

After Stand-down

- Preparation of post-event reports by each member of the EOC Operations Group with responsibility for the various Flood Contingency Sub-Plans within <insert time>
- Participation in post-event analysis by all EOC Operations Group members.

PARISH/DISTRICT EMERGENCY COMMITTEES

The following section outlines the activities/procedures of the parish/district committees before, during and after flood events. Parish/District emergency committees provide the essential link between the <National Disaster Office> and Communities.

Terms of Reference

The <Ministry with responsibility for Municipal Authorities> shall facilitate the establishment and administration of Parish/District Emergency Committees which shall prepare the parish/district communities for a flood related emergency, and so minimize the possibility of loss of life and property, and reduce human suffering.

Pre-event

- In collaboration with the <National Disaster Office>, development of a flood contingency plan for the parish/district which takes into account: (community and national) flood early warning systems; alert and notification; communications; evacuation; transport; emergency shelter; welfare and relief; health; medical and public; damage assessment; recovery.
- Participate in risk assessment, preparation and mitigation activities for the parish/district.
- Acquisition and inventory of resources to support the *Parish/District Flood Contingency Plan*.
- Selection and training of persons with specific responsibilities, including REOC operations.
- Participation in disaster planning for community (at both sectoral and national levels).
- Liaison with the <National Disaster Office>.

During event

- Upon receipt of community information regarding the threat/occurrence of flooding, contact the Emergency Services and the <National Disaster Office>.
- Upon declaration of a flood watch, perform observation and reporting activities in keeping with community flood early warning systems.
- Upon receipt of information from the <National Disaster Office> declaring a Level 1 disaster, act as community liaison for the Emergency Services and/or Technical Services as they perform routine response.
- Upon receipt of information from the <National Disaster Office> declaring a Level 2 Emergency (or higher), activate the Parish/District EOC.
- Upon activation of the Parish/District EOC, execute procedures in accordance with SOPs for EOC operation as outlined in the <National Emergency Management Plan>.
- Upon receipt of the order to evacuate from the <National Disaster Office>, all activities regarding evacuation should follow those outlined in the Evacuation SOPs.

- Conduct and report on local damage assessment and facilitate national damage assessment surveys.
- Initiate local rehabilitation and recovery measures where possible. Facilitate national rehabilitation and recovery programmes.

Post-event

Following "Stand-Down",

- Prepare final report for the <Parish/District Emergency Committees> within <insert time period>.
- Participate in post-event analysis and update the *Parish/District Emergency Committee Flood Contingency Plan* as indicated.

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FLOOD MANAGEMENT AND CONTROL

Following on the previous section on Preparedness and Mitigation, *Flood Management and Control* details responsibility areas and the procedures/activities to be carried out before, during and after a flood event.

The <Drainage/Water Resource Service> has responsibility for the installation, maintenance in optimum condition, and monitoring of flood control mechanisms inclusive of sluice gates, dikes, levees, sandbag barriers, installation of pumps, early warning systems for flooding, etc along water courses.

The <Coastal Conservation Service> has specific responsibility for the installation, maintenance and monitoring of all sea defence mechanisms inclusive of sea walls, dykes,

Pre-event

- Following the conduct of hazard and vulnerability analyses, design of drainage and sea defence systems for the 1 in 100 year flood event as appropriate.
- Develop and implement a preventive maintenance system to maintain water-courses, dams, dykes, sea walls and sluice gates, etc; and to clean drains, gullies, culverts, sinkholes and gutters, etc to prevent damming effects.
- Acquire and inventory resources in support of the preventive maintenance systems for flood management and sea defence.
- Develop, implement and maintain a system for flood monitoring - automatic flood monitoring equipment as well as community monitoring programmes.
- Develop and maintain a plan to institute flood control measures during a flood event. Should such a plan exist, ensure that it is updated regularly.
- Acquire and inventory resources in support of the flood control measures to be instituted.
- Alert <NDO> upon receipt of information indicating threat/occurrence of flooding.
- Train staff to conduct damage assessment and needs analysis.
- Ensure that drainage and coastal defence systems are developed and regulated in accordance with approved national drainage and planning criteria.

During event

Upon declaration of a Level 2 Emergency (or higher),

- Activate plan to institute flood control measures - call out staff, access resources, assemble and deploy response teams.
- Institute flood control measures with regard to drainage and sea defence systems

(including sandbagging; channel diversion; sluice gate monitoring; debris clearing; flood fighting levee repair; pump activation, etc.

- Provide and display real-time data to the EOC.
- Participate in decision making in the EOC.
- Conduct sectoral damage assessment to estimate damage to drainage and sea defence systems - dams, sea walls, dykes, sluice gates, gullies, culverts, sinkholes, gutters etc.

Post event

- Prepare final report for the <insert agency/group responsible flood control> within <insert time frame>.
- Execute the Debris Removal Sub-Plan to clear water courses.
- Liaise with Recovery Group to provide information regarding damage and mitigation.
- Participate in post-event analysis and institute repairs and/or further mitigation measures as indicated.
- Update flood hazard and vulnerability data as appropriate.

EVACUATION

Evacuation is the organized withdrawal or removal from a place/an area as a protective measure. The section discusses the issues to be considered in an evacuation of threatened or affected areas. It continues to provide and outline *Flood Evacuation Sub-plan*. The latter includes responsibility areas as well as specific organization procedures and activities to be carried out before, during and after a flood event.

Flood prone areas to be evacuated are identified from the threat analysis. In particular, **highly vulnerable areas** need to be discussed with respect to depth/type of flooding, demographics, mobility, nearest shelters, evacuation routes and security considerations. There are three types of evacuation:

- **Precautionary or pre-impact:**
Possible when there is a warning period. This is moving people as a precautionary measure. Evacuation contingency plans are prepared when the risk is assessed.
- **Response/post-impact:**
The movement of people when there has been no warning. People are moved during the impact or as part of the rescue or rehabilitation effort.
- **Combination:**
The evacuation of persons from vulnerable areas when the precautionary evacuation has not been completed before impact is felt.

The issue of whether **legislation** allows for persons to be involuntarily evacuated from threatened/affected areas must be clarified at the outset, stated clearly in the Evacuation Plan, and made known to first responders and the public.

In the absence of legislation or the suspension of civil liberties, persons are within their rights to remain in the high-risk area. Public awareness programmes can help improve risk perception and promote a positive reaction. State liability considerations -for duty personnel and the lives and property of the evacuees- must factor into the decision making process.

The **decision to evacuate** should take into consideration the safety of the evacuation process itself and whether other risks will be introduced through evacuation. Consideration must be given to evacuees with disabilities and illnesses, as well as those persons who do not understand English.

Based on the various government departments and agencies that must play a part in effective evacuation, it is anticipated that the Flood Evacuation Sub-Plan will only be activated in concert with **EOC activation**.

Security of evacuated area. Security cover should be provided as long as doing so does not endanger the lives of police/security personnel.

Shelter. Some evacuees may make their own arrangements for transportation and accommodation. However, the plan must cater to those unable to assist themselves in these areas. The national plan for Shelters takes effect, managed by the recognized coordinating group. The evacuation advisory should include:

- Assembly points and times of transportation
- Nearest shelters
- Recommended items evacuees should pack
- Prohibitions e.g. weapons, alcohol, animals, etc.

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FLOOD EVACUATION SUB-PLAN

The objective of this sub-plan is to ensure the safe and timely evacuation of persons from areas highly vulnerable to flooding before and during the hazard.

The <insert technical agency/task group> shall have responsibility for the evacuation process in the event of a flood.

Terms of Reference

- Preparation of an evacuation plan for areas identified by the Flood Risk Analysis as being highly vulnerable.
- Identification and inventory of resources to facilitate the *Evacuation Sub-Plan* (inclusive of operators (and relief operators) for equipment, their training, welfare arrangements, fuel acquisition, equipment maintenance).
- Arrange for the acquisition and release of the necessary resources identified
- Effect evacuation of vulnerable/affected persons as identified by <insert agency/group responsible evacuation>
- Monitor the evacuation area and status of the evacuees
- Participate in post-event reporting and analysis.

Activation

The *Flood Evacuation Sub-Plan* shall be activated by the <National Disaster Coordinator> following consultation with <insert technical services responsible for advising on Highly Vulnerable Areas associated with current event>

The <insert technical services responsible for advising on Highly Vulnerable Areas associated with current event> shall:

Pre-event

- Ensure technical resources and personnel are available to facilitate flood early warning and forecasting.
- Work with the <insert agency/group responsible evacuation> to prepare and maintain the *Flood Evacuation Sub Plan*
- Advise the <National Disaster Coordinator> and <insert agency/group responsible evacuation> of impending flood event and the need for evacuation of identified areas
- Issue Flood Warning to the population (see Advisory, Warnings and Notifications Section)

During event

- Monitor and continuously analyse the hydro-meteorological phenomena
- Keep the <National Disaster Coordinator>, <insert agency/group responsible evacuation> and evacuees continuously updated

Post-event

- For severe events, issue the all clear
- Prepare and submit technical report to the <National Disaster Coordinator> for severe weather events

The <National Disaster Coordinator> shall:

Pre-event

- Work with the <insert agency/group responsible evacuation> to prepare and maintain the *Flood Evacuation Sub-Plan*
- Ensure supporting *National Functional Plans* e.g. *Communication; E.O.C.; Shelters; Relief and Transportation* are maintained and effective.
- Activate the *Flood Evacuation Sub-Plan*

During event

- Coordinate the activities related to the <National Emergency Management Plan> in support of the *Flood Evacuation Sub-Plan*
- Prepare and distribute *Situation Reports*

Post event

- Coordinate the rehabilitation of the affected flood areas
- Stand-down the <National Emergency Management Plan> and *Flood Contingency Sub-Plan* activities as these arise
- Collect technical reports and prepare final report

The <insert agency/group responsible evacuation> shall:

Pre-event

- Convene a group of professionals from those departments likely to contribute to the evacuation effort and develop/maintain a *Flood Evacuation Sub-Plan* for inclusion in the *National Flood Contingency Plan*.
- Conduct simulation exercises to test *Flood Evacuation Sub-Plan*, and participate in national simulation exercises as requested.
- Identification and inventory of resources to facilitate the *Flood Evacuation Sub-Plan* (inclusive of operators (and relief operators) for equipment, their training, welfare arrangements, fuel acquisition, equipment maintenance).
- Commence periodic public education campaigns regarding measures to be implemented in the event of flooding.
- Alert emergency and other services/agencies of the advisory to evacuate and arrangements made therein.
- Effect the safe and timely evacuation of persons in areas identified
 - Collect persons from assembly points and transport to offloading points.
 - Maintain evacuee records for tracing purposes through liaison with Social Welfare Department/Red Cross Society.

- Participate in NEOC decision-making.

During the Event

- Monitor the evacuation area and status of the evacuees. Submit Situation Report to the <National Disaster Coordinator> <as requested/timing>
- Where necessary, continue to effect the safe and timely evacuation of persons in areas identified

Post event

- Monitor, and assist where necessary, the return/rehabilitation of the evacuated community
- Convene post event analysis meeting of agencies, contributing to the evacuation effort to review the event and update the *Flood Evacuation Sub-Plan*
- Prepare final report for the <National Disaster Coordinator> within <insert>

Police Service

Pre-event

- Work with the <insert agency/group responsible evacuation> to prepare and maintain the *Flood Evacuation Sub Plan*
- In collaboration with the <insert agency/group responsible evacuation>, develop *Traffic Control and Security Sub-Plans* control of traffic related to the evacuation of highly vulnerable areas.
- Roll down *Flood Evacuation Sub Plan* to personnel in divisions and stations
- Assist in traffic control and law enforcement/maintenance of peace in support of the evacuation effort
 - Traverse the identified area ensuring residents are aware of the advisory (attached 1)
 - Establish police at exit checkpoints
 - Where necessary collect evacuation information (attached 2)

During event

- Assist in traffic control and law enforcement/maintenance of peace in support of the evacuation effort
 - Ensure the safety of property in the evacuated area from crime
- Provide situation reports to the <insert agency/group responsible evacuation> as per <insert>

Post event

- Assist in traffic control and law enforcement/maintenance of peace in support of the restoration effort
- Participate in the post event analysis of the <insert agency/group responsible evacuation>

Fire Service

Pre-event

- Work with the <insert agency/group responsible evacuation> to prepare and maintain the *Flood Evacuation Sub Plan*
- Roll down *Flood Evacuation Sub Plan* to personnel in divisions and stations
- In collaboration with the <insert agency/positions responsible evacuation>, develop search and rescue (SAR) procedures related to the evacuation of affected areas.
- Ensure the necessary resources, personnel and skills are available to support this initiative

During event

- Liaise with the Police and <insert agency/positions responsible evacuation> to provide SAR and evacuation services for residents within the affected area.
- Provide situation reports to the <insert agency/group responsible evacuation> as per <insert>
- Assist affected community in rehabilitation and recovery
- Participate in the post event analysis and update Evacuation Sub-Plan as indicated

Defence Force

- Provide support to the flood evacuation effort under *Aid to Civil Power or Aid to Civil Authorities* as requested

The Emergency Shelter Management Group shall

- Develop/maintain and implement the *National Shelter Management Plan* in support of the *Flood Evacuation Sub-Plan*

The Emergency Relief Management Group shall

- Develop/maintain and implement the National Emergency Relief Management Plan in support of the Flood Evacuation Sub-Plan

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Attach I

(Police) EVACUATION RECORD OF PERSONS INFORMED

STREET/ROAD NAME

HOUSE NUMBER POLE NUMBER	Occupant Informed (Tick if Yes)	Transport Required (Tick if Yes)	Other Details

List those properties where there was no reply and where a repeat visit is necessary.

Nos:

Signed
NAME/RANK/SERIAL NO.

Attach 2

Evacuee information

Please fill in the following details about people who live in your household and give the information to a Police Officer/station as you leave the area.

ADDRESS

Household information

Surname(s)	First Names

TEMPORARY DESTINATION

.....
.....

TEL. NO.

Date of evacuation

Date of return:

Time of evacuation

TRANSPORTATION

Transportation need areas and service providers are identified in this section. General standard operating procedures are given for the lead agency as well as support services. The procedures are arranged before, during and after the hazard occurrence.

Transportation is severely hampered by flood events. There is the aquatic environment, secondary flood hazard disruptions such as landslides or erosion of coastal and inland roads, loss of bridges etc.

Disaster management functions will require ground, aquatic and aerial transportation to:

- protect lives and property,
 - Effect evacuation,
 - Effect SAR and monitor inundated areas
 - Effect flood control works
 - Effect public health activities
 - Effect security activities
- undertake damage assessment and needs analysis,
- provide relief
- mobilize rehabilitation and recovery resources.
 - Transportation route/ports of entry clearance and rehabilitation
 - Housing stock rehabilitation and recovery

Since there is often no one agency in possession of all the transportation resources the following services would need to work together to formulate a *Transportation Sub-Plan* for flood emergencies.

- Public Works
- Police
- Coast Guard/Defence Force
- Fire Service
- National/Private Ferry service
- National Bus Service
- Helicopter
- Fixed wing aircraft
- Mini-van/maxi-taxi associations
- Fisher-folk/yacht/powerboat/charter services

TRANSPORTATION SUB-PLAN

The objective of this sub-plan is to ensure the availability of necessary transportation resources before, during and after a flood emergency/disaster.

Responsibility

The < insert agency/task group> shall have responsibility for transportation arrangements in the event of a flood.

Terms of Reference

- Develop/maintain an effective *Transportation Sub-Plan* for flood emergencies
- Identify and inventory resources to facilitate the implementation of the *Transportation Sub-Plan* for flood emergencies
- Identify in advance costs and funding to support mobilization of transport where necessary
- Secure where necessary *Memoranda of Understanding* with private sector agencies.
- Arrange for the release of resources identified and effect transportation requirements identified at the level of the National Emergency Operations Centre
- Participate in the After Action Report and analysis
- Update the *Transportation Sub-Plan*

Activation

The <National Disaster Coordinator>, in consultation with the functional task groups for flood emergencies, shall activate the *Transportation Sub-Plan*.

The <insert agency/group responsible transportation> shall:

Pre-event

- Convene a group of professionals to develop/maintain a *Transportation Sub-Plan* for inclusion in the *National Flood Contingency Plan*.
- Conduct simulation exercises to test *Transportation Evacuation Sub-Plan*, and participate in national simulation exercises as requested.
- Identification and inventory of resources to facilitate the *Flood Evacuation Sub-Plan* (inclusive of operators (and relief operators) for equipment, their training, welfare arrangements, fuel acquisition, equipment maintenance).
- Maintain lines of communication with transport services.
- Identify in advance costs and funding to support mobilization of transport where necessary.
- Effect transportation requirements identified at the level of the NEOC.
- Participate in NEOC decision-making.

During event

- Call-out / stand-by and stand-down transportation resources as necessary.
- Participate in NEOC decision-making.

- Submit situation reports as per <insert>.
- Where contracted directly, maintain log/costs for services incurring costs.

Post-event

- Ensure timely payment of charged transportation services and resolution of MOU issues arising.
- Convene after action report meeting of agencies, contributing to the transportation effort to review the event and update the *Transportation Sub-Plan*.
- Prepare final report for the <National Disaster Coordinator> within <insert>.

The <Public Works> shall:

- Police
- Coast Guard/Defence Force
- Fire Service
- National/Private Ferry service
- National Bus Service
- Helicopter
- Fixed wing aircraft
- Mini-van/maxi-taxi associations
- Fisher-folk/yacht/powerboat/charter services

Pre-event

- Work with the <insert agency/group responsible transportation> to prepare/maintain an effective *Transportation Sub-Plan*.
- Identify, inventory and maintain transportation resources for flood emergency activities.
- Train vessel/aircraft operators for flood impact/severe weather conditions.
- Roll down *Flood Evacuation Sub Plan* to personnel in <insert divisions and stations>.
- Participate in simulation exercises to ensure readiness.

During event

- Call-out / stand-by and stand-down transportation resources as necessary.
- Participate in <insert agency/group responsible transportation> decision-making.
- Submit situation reports as per <insert>.
- Where contracted directly, maintain log/costs for services incurring costs.

Post-event

- Prepare final report for the <insert agency/group responsible transportation> within <insert>.

Participate in after-action report meeting of agencies, to review the event and update the *Transportation Sub-Plan*.

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SEARCH AND RESCUE

This section identifies the agencies involved in search and rescue activities. General standard operating procedures to be taken before, during and after flood hazard events are listed below. Technical procedures are left to the professional agencies. Detailed search and rescue procedures should be part of the functional plans of the lead agencies. Countries without such detailed plans can refer to CDERA's *National Land Search and Rescue Plan (Model)* August 2002.

Assumption

The <Fire Department/Coast Guard/Police Marine Branch> have SOPs that have been taken into consideration in the preparation of the <National Emergency Management Plan>.

The above departments exist in a state of readiness at all times.

Terms of Reference

The <Fire Department/Coast Guard/Police Marine Branch> has responsibility for the preservation of life through execution of search and rescue operations. The activities associated with Search and Rescue should be executed in accordance with the *National Search and Rescue Functional Plan* of the <National Emergency Management Plan>.

The Defence Force shall provide assistance, as requested and in keeping with legislation governing its actions in endeavours that are civil in scope.

Pre-event

- The <Fire Department/Coast Guard/Police Marine Branch> shall familiarize itself with its specific responsibilities under the National Flood Contingency Plan.
- Development and maintenance of a Flood Search and Rescue Sub-Plan.
- The <Fire Department/Coast Guard/Police Marine Branch> shall acquire resources and training to fulfill its responsibilities under the National Flood Contingency Plan to include:
 - Coastal, River and Flood Rescue operations: handling submerged vehicles, victims trapped in homes, dammed water, irrigation canals, flood control canals
 - Land/mudslide Rescue
 - Swift Water Operations: Personal Flotation Devices, throw-line bag deployment, hose inflation systems
 - Boat Based Operations
 - Basic Water Safety and Water Survival

During event

- Upon declaration of a Level 1 emergency, carry out routine response operations to the event.
- Upon declaration of a Level 2 emergency (or higher), the <Fire Department/Coast Guard/Police Marine Branch> shall fulfill its responsibilities for Search and Rescue, in accordance with the *National Search and Rescue Plan*. These shall include:
 - General area assessment
 - Surface assessment: sweep search of affected areas; transport of walking wounded to triage areas, removal of casualties in non-difficult situations, location and mapping of casualties requiring extrication.
 - Surface Search and Rescue: rescue of survivors
 - Systematic Search and Rescue: rescue of survivors; recovery of the dead; recovery of critical items of equipment.

Post-event

- Prepare final report for the <insert agency/group responsible search and rescue> within <insert>.
- Participate in after-action report meeting of agencies, to review the event and update the *Flood Search and Rescue Sub-Plan*.

SECURITY

The Security section summarises the activities to be fulfilled prior, during and after a flood event. No attempt is made to detail the associated standard operating procedures of the Police and Defence Force as it is assumed these are already well documented by the services.

Assumption

The Police Service internal SOPs have been taken into consideration in the preparation of the <National Emergency Management Plan>.

The Police Service exists in a state of readiness at all times.

Terms of Reference

The Police Service has responsibility for the preservation of the peace, detection of crime and other infractions of the law, the apprehension and bringing before justice persons found committing any offence.

The Defence Force shall provide assistance, as requested and in keeping with legislation governing its actions in endeavours that are civil in scope.

Pre-event

- The Police Service shall familiarize itself with its specific responsibilities under the National Flood Contingency Plan.
- The Police Service shall acquire resources and training to fulfil its role and responsibilities under the National Flood Contingency Plan.

During event

- Upon declaration of a Level 1 Emergency, the Police Service will conduct routine response as outlined in its internal SOPs.
- Upon declaration of a Level 2 emergency or higher, the Police Service shall operate in accordance with SOPs outlined in the <National Emergency Management Plan>. This will include
 - Control of traffic.
 - Crowd control.
 - General security.
 - Provision of security for evacuated areas,
 - Provision of security at emergency shelters
 - Provision of security at the critical facilities including the EOC.

Post-event

- Prepare final report for the <insert agency/group responsible security> within <insert>
- Participate in after-action report meeting of agencies, to review the event and update the *Security for Flood Events Sub-Plan*.

EMERGENCY RELIEF

This section summarizes the emergency relief needs and terms of reference specific to flood hazard events. A national emergency relief policy and procedures should be part of the functional disaster management plans. Countries without such detailed plans can refer to CDERA's *Guidelines for the Establishment of a National Relief Policy and Donations Management Policy BM99/12.2*.

The provision of relief should be executed in accordance with the <National Emergency Management Plan>.

Relief Needs

A flood event will entail a relief response in which provision of the following items are usually indicated:

- General needs
 - Crisis counseling
- Short term needs:
 - Clean water
 - Emergency Shelter
 - Food
 - Bedding
 - Sludge clearing
 - Restoration of potable water conditions in cisterns
 - Debris removal and cleaning supplies
 - Cess pit/soak away cleaning
- Long term needs:
 - School supply replacement
 - Domicile repair/replacement (and associated issues of long-term sheltering)
 - Financial aid (eg agricultural sector; fisheries sector; home-based self employed)

Terms of Reference

The <Social Welfare Department> (and the Welfare & Relief Group) have responsibility for

- Preparation and maintenance of a Flood Contingency Sub-Plan for Welfare and Relief (as part of the <National Emergency Management Plan>) for inclusion in the *National Flood Contingency Plan*.
- Identification and maintenance an active list of welfare resources to facilitate implementation of the *Welfare and Relief Sub-Plan*.

- Arrangements for the release of the resources identified. (In many cases the case where buildings and/or equipment are the property of the private sector, this may require memoranda of understanding with owner/operators.)
- Provision input to NEOC decision-making.
- Participation in post-event reporting and analysis.
- Updating of the National Emergency Shelter Policy and the *Flood Contingency Emergency Shelter Sub-Plan* as indicated by post-event analysis.

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INTERNATIONAL ASSISTANCE

Terms of Reference

The <Ministry of Foreign Affairs> (and the International Assistance Group) shall be responsible for the coordination of International Assistance.

All activities for International Assistance shall be governed by the <National Emergency Management Plan>.

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MEDICAL HEALTH

This medical health section highlights the terms of reference, task and activities specific to flood hazard events. The Sub-Plan has impact on the Emergency Shelters section of the Evacuation Sub-Plan and this should be reflected in the composition of the Medical Health Group. This Sub-Plan is likely to be affected by the arrangements of the Transportation Sub-Plan and this should be reflected in the composition of the Medical Health Group.

Assumption

- The existence of a Comprehensive Health Sector Disaster Management Plan that includes a Mass Casualty Management Plan. The latter should itself include a contingency plan dealing with effects of land/mudslides as a secondary hazard caused by flooding.

Terms of Reference

The < Ministry/Department responsible for Medical Health > (and the Medical Health Group) has specific responsibility for

- Medical health care
- Provision of first aid at emergency shelters
- Mass casualty management
- Fatality management
- Monitoring pre and post disaster medical health

And shall

- Prepare a *Medical Health Flood Contingency Sub-Plan* (as a part of the National Health Disaster Management Plan) for inclusion in the National Flood Contingency Plan. This Sub-Plan should include arrangements for the operation of clinics for patient care, operation of a field hospital (if necessary), and transport for medical staff, patients and equipment, as required.
- Identify medical health care facilities vulnerable to flooding
- Acquire and inventory of resources to support the **Medical Health Flood Contingency Sub-Plan**.
- Effect Medical Health response activities as indicated at the level of the NEOC.
- Participate in post-event reporting and analysis.
- Update the *Medical Health Flood Contingency Sub-Plan* as indicated by post-event analysis.

Pre-event

- Convene a group of medical health providers (inclusive of volunteer and private sector interests) and develop a *Medical Health Flood Contingency Sub-Plan* to be included in the *National Flood Contingency Plan*. Should

such a plan already exist, this group shall take actions to update and maintain the plan.

- In furtherance of the *Medical Health Sub-Plan* acquire and maintain an inventory of supplies and equipment for deployment and use in response to a flood event.
- Conduct simulation exercises to test *Medical Health Flood Event Contingency Sub-Plan*, as well as the *Mass Casualty Sub-Plan for Flood Events*, and participate in national simulation exercises as indicated.

In the case of a slow onset situation where precautionary evacuation takes place

- Upon activation of the *Medical Health Sub-Plan* deploy personnel, equipment and supplies to provide first aid at emergency shelters upon their activation.
- Stand-by other staff, sites and equipment as detailed in the plan.
- Provide input into NEOC decision-making.
- Effect medical care response as per the *Medical Health Sub-Plan* as indicated at the level of the NEOC.

In the case of a slow onset flood event where land/mudslides are indicated as likely

- Stand-by personnel and equipment for mass casualty response and fatality management (to a level in keeping with potential indicated by situation reporting and previously conducted flood threat analysis).
- Provide input into NEOC decision-making.
- Activate *Mass Casualty Plan* and initiate *Fatality Management* procedures as necessary.

During an event/Following rapid onset flooding/Following a rapid onset land/mudslide

- Effect medical care and carry out other activities as indicated by the *Medical Health Flood Contingency Sub-Plan*.
- Activate *Mass Casualty Management Plan* if and as necessary.
- Initiate *Fatality Management* procedures if and as necessary.

Post Event

- Stand-down personnel
- Prepare final report for the <insert agency/group responsible Health> within <insert time frame>.
- Conduct health monitoring programmes for flood affected population.
- Participate in after-action report meeting of agencies, to review the event and update the *Medical Health Flood Contingency Sub-Plan*.

PUBLIC HEALTH

This section identifies the stakeholders, terms of reference and tasks to be carried out before, during and after a flood event. It is assumed that public health statutes, standards, regulations and procedures are established.

The activities to be carried out to safeguard the public health after a flood event will involve more than one agency. While the <Chief Public Health Officer> will have final responsibility, the following agencies (among others) are expected to work together to develop the *Public Health Sub-Plan*.

- Public Health Department
- Solid Waste Department
- Veterinary Division, Agriculture
- Livestock Division, Agriculture
- Sewerage Department
- Drainage/Water Resources Service
- Society for the Prevention of Cruelty to Animals

Terms of Reference

The <Ministry of Health> (and the Public Health Group) shall be responsible for

- Preparation of a *Public Health Flood Contingency Sub-Plan* that addresses specifically the areas of communicable diseases, environmental sanitation, water safety, vector control and dead animal removal.
- Acquisition and inventory of resources to support the *Public Health Flood Contingency Sub-Plan*.
- Effect procedures of the *Public Health Sub-Plan* as indicated at the level of the NEOC.
- Participate in post-event reporting and analysis.
- Update the *Public Health Flood Contingency Sub-Plan* as indicated by post-event analysis.

Pre-event

- Convene a group of public health providers (inclusive of volunteer and private sector interests) and develop a *Public Health Flood Contingency Sub-Plan* to be included in the National Flood Contingency Plan. Should such a plan already exist, this group shall take actions to update and maintain the plan.
- In furtherance of the *Public Health Sub-Plan* acquire and maintain an inventory of supplies and equipment for deployment and use in response to a flood event.
- Conduct simulation exercises to test *Public Health Flood Event Contingency Sub-Plan*, and participate in national simulation exercises as indicated.

During event

- Participate in NEOC decision making.
- In keeping with information received and decisions taken at the level of the NEOC, implement the *Public Health Sub-Plan* as relates to
 - Water: Establishment of a temporary or emergency water source - distribution by tank trucks, provision of water bags/containers from centers, distribution of water purification chemicals.
 - Sewage disposal: Parts and equipment for damaged system rehabilitation; provision of alternative methods of sewage disposal – portable toilets, sewage trucks.
 - Solid waste disposal: Liaison with Debris Removal Sub-Group indicated.
 - Dead animal disposal: Liaison with Debris Removal Sub-Group indicated.
 - Vector control: Spraying and fogging for mosquitoes and eradication of breeding spaces; control of other vermin and strays.
 - Damage assessment: Conduct damage assessment with respect to public health issues and report findings to damage assessment group.

Post-event

- Stand-down personnel
- Prepare final report for the <insert agency/group responsible public health> within <insert>
- Participate in after-action report meeting of agencies, to review the event and update the *Public Health Flood Contingency Sub-Plan*.

NEARSHORE ENVIRONMENT

The following addresses the environmental management issues of the nearshore environment, particularly the impact of floods on sensitive ecosystems. The <Agency with responsibility for Environment> shall be responsible for flood management activities related to sensitive nearshore environments (coral reefs, seagrass beds, and wetland areas).

Pre-event

- Implement programmes to monitor near-shore environment health.
- (Liaise with other agencies to) institute programmes to improve nearshore environment health:
 - conservation of mangrove communities;
 - restriction of coral reef blasting and/or mining;
 - restriction of sand mining;
 - reduction of sediment intrusion into rivers;
 - channel clearing through debris removal
 - watershed management
 - discontinuance/reduction of sand mining
- Liaise with relevant agencies to implement a comprehensive coastal management policy inclusive of zoning, development restrictions and enforcement of setback regulations, and beach preservation.
- Educate the public on the importance of nearshore environments as well as the impacts of both human activity and flooding.

During event

- Liaise with agencies involved in flood control to minimize negative impacts on sensitive nearshore environments.
- Liaise with Emergency Services in the event of hazardous material spill response activities.

Post event

- Participate in debris and hazardous material clearing activities.
- Conduct damage assessment and needs analysis of impacted areas.
- Institute replenishment/recultivation/reforestation programmes as necessary.
- Prepare final report for the <insert agency/group responsible nearshore environment> within <insert>
- Participate in after-action report meeting of agencies
- Update flood management related activities as indicated by post event analysis.

DEBRIS REMOVAL

Debris removal outlines the actions for effectively planning for and expediting clean-up after a major flood. The *Debris Removal Sub Plan*, the *Damage Assessment and Needs Analysis Sub-Plan*, as well as the *Transportation Sub Plan* have common interests, and so mutual representation is indicated in Sub-Plan development.

Terms of Reference

The <Department with responsibility for Public Works> (and the Debris Removal Group) will

- Prepare, maintain and effect a *Debris Removal Flood Contingency Sub-Plan* for inclusion in the National Flood Contingency Plan.
- Acquire and maintain resources in support of the *Debris Removal Sub-Plan*.

The Defence Force shall provide assistance, as requested and in keeping with legislation governing its actions in endeavours that are civil in scope.

Pre-event

- Convene a group of sector stakeholders (disaster management representative, government departments with debris removal equipment, private sector interests with debris removal equipment) and considering flood threat analysis reports and available "best practice" information, develop a *Debris Removal Sub-Plan* to be included in the *National Flood Contingency Plan*. Should such a plan already exist, this group shall take actions to update and maintain the plan.
- Identify in advance costs and funding to support debris removal where necessary.
- Identify and train equipment operators to respond to flood events, including environmental concerns.
- Conduct simulation exercises for debris removal teams, and participate in national simulation exercises as indicated.

During event

Upon receipt of notification to activate *Debris Removal Sub-Plan*.

- "Call-out" or "Stand-by" debris removal teams as indicated by the *Debris Removal Sub-Plan*.
- Provide input to NEOC decision-making.
- Coordinate and effect debris removal after the flood event as indicated by the decisions taken at the level of the NEOC.
- Where contracted directly, maintain log/costs for services incurring costs.

Post event

- Stand-down transportation teams.
- Ensure timely payment of charged debris removal services, and resolution of any memoranda of agreement issues arising.
- Prepare final report for the <insert agency/group responsible debris removal> within <insert>
- Participate in after-action report meeting of agencies, to review the event and update the *Debris Removal Flood Contingency Sub-Plan*.

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DAMAGE ASSESSMENT AND NEEDS ANALYSIS

Damage assessment and needs analysis (DANA) is the preparation of specific quantified estimates of physical and economic damage resulting from an event, along with the identification of needs generated by the impact. The section defines the stages, assumptions and operating procedures prior to, during and after a flood. Countries may wish to refer to the *Initial Damage Assessment* course re-developed by USAID in 2001 for details of the process.

Damage assessment and needs analysis is conducted in three stages, namely:

Initial Situation Assessment

- Conducted within first 8 hours after event.
- Provides general overview information on casualties, displacement of populations, and damage to lifelines and critical facilities for use in response and determining the need for, and extent of further assessments.

Initial Damage Assessment

- Carried out within the first 48 hours of an event.
- Provides further information about the level and extent of damage by sector.
- Provides information used to prioritize needs, detail assistance required, and gives an initial estimate of the cost of damages to the country.

Detailed Sector Assessment

- Carried out during the period following first 48 hours after the disaster and can last several weeks.
- Carried out by persons with detailed technical knowledge of each specific sector being assessed.
- Used to determine
 - the overall economic impact of a disaster
 - the recovery and rehabilitation needs of each sector
 - types of long term assistance required
 - mitigation actions required to minimize damage from future events.

Assumption

These SOPs assume that damage assessment and needs analysis (DANA) will be conducted by to obtain sector specific information eg. - housing, health, agriculture, tourism, etc.

DANA assessments will be carried out by technical experts that provide detailed sector-specific information for the purposes of planning and funding of rehabilitation and reconstruction in each sector.

The resources and activities of the *Transportation Sub Plan* may impact the *Damage Assessment and Needs Analysis (DANA) Sub-Plan*, so mutual representation from these groups is indicated regarding development of respective Sub-Plans.

Terms of Reference

The <Ministry/Department of Finance> (and the DANA Group) has responsibility for

- Development and maintenance of a *DANA Flood Contingency Sub-Plan* for inclusion in the *National Flood Contingency Plan*. Such Sub-Plan to take into account that each key agency/sector will need to conduct damage assessment.
- Organization of damage assessment surveys in three stages:
 - Initial situation assessment within 8 hours of the event;
 - Initial DANA within 48 hours
 - Detailed Sector Assessment that may last weeks.
- Provision of DANA information (to determine the number of deaths, number and extent of casualties, damage to property - public and private building stock, agriculture - crops and livestock, roads, bridges, ports, critical facilities - water, electricity, drainage, sewerage, drainage).
- Participation in post-event reporting and analysis.

Pre event

- Convene a group of technical professionals (from those sectors indicated by flood threat analysis as likely to sustain damage during a flood event - disaster management representative, housing, roads, bridges, agriculture, private sector representative, etc) and, considering flood threat analysis reports and available "best practice" information, develop a *Damage Assessment and Needs Analysis Flood Contingency Sub Plan* to be included in the *National Flood Contingency Plan*. Should such a plan already exist, this group shall take actions to update and maintain the plan.
- Develop a methodology for information collection and reporting.
- Develop and reproduce standardized DANA reporting forms.
- Identify and orient personnel from various sectors re: the *DANA Sub-Plan*.
- Ensure that all sectors identify and train persons to conduct DANA.
- Conduct simulation exercises for DANA teams, and participate in national simulation exercises as indicated.

During/Post Event

Upon activation of the *DANA Sub-Plan* by the NEOC the <Ministry of Finance> shall

- Stand-by DANA teams as indicated.
- Deploy DANA teams as indicated.
- Conduct (as necessary) Initial Situation Assessment, Initial DANA or Detailed Sector Assessment, and convey reports to NEOC. Such reporting will involve
 - the scope of floods (using maps where possible);
 - the type of flooding being experienced (slow/flash);
 - water levels;
 - estimated duration of flooding;
 - likelihood of river/channel overflow;
 - protective measures indicated (evacuation, shelter, flood management)
 - number of fatalities/casualties;
 - housing damage;
 - isolated communities;
 - infrastructure damage (especially roads, bridges, critical facilities),
 - damage to agriculture and livestock.
- Prepare as required, project documents for rehabilitation and recovery.

Post Event

- Stand down damage assessment teams as indicated.
- Prepare final report for the <insert agency/group responsible damage assessment> within <insert>
- Participate in after-action report meeting of agencies, to review the event and update the *Damage Assessment Flood Contingency Sub-Plan*.
- Provide information to Recovery Group as necessary to facilitate implementation of Recovery Sub Plan and mitigation measures.

It is expected that the Damage Assessment Group is likely to be one of the last to be stood down in light of the need for flooding to subside so that accurate assessment and reporting may be effected.

PUBLIC INFORMATION AND EDUCATION

This section addresses the issues of public information and education. It includes the terms of reference and standard operating procedures during the threat, occurrence and post flood event stages. Sample messages are also included as a guide.

Many losses during floods can be prevented if residents of flood prone communities develop and implement emergency plans to protect life and property. These plans should include arrangements for family safety, steps to secure personal possessions, property and sources of income from flood damage, and arrangements if evacuation from the area becomes necessary.

Each participating state has access to best public practice information and this should be incorporated into public information for flood preparedness programmes for the general public.

While all members of the Civil Service are accountable to the public, the issue of which persons are authorized to speak to the press should be clarified. Any special considerations should be specifically stated in this Sub-Plan.

Terms of Reference

The <Ministry/Department responsible for Public Information> (and the Public Information Group) has responsibility for

- Preparation of a *Public Information Flood Contingency Sub-Plan* (inclusive of generic press releases to be used during an event) for inclusion in the *National Flood Contingency Plan*.
- Preparation and publication of information for all phases of the flood hazard to include community based flood early warning systems and disaster plans, the actions to take in preparation for and during a flood; evacuation routes; location of emergency shelters.
- Alerting the population of impending/occurring flood and the appropriate precautionary/response actions to be taken. The timing of these alerts will follow the protocol of the alerting authority.
- Conduct of press briefings.
- Participation in post-event reporting and analysis.
- Updating of *Public Information Sub-Plan* as indicated by post-event analysis.

Pre-event

- Convene a group of public information stakeholders (disaster management representative, public and private media houses, etc) and develop a *Public Information Sub Plan* to be included in the *National Flood Contingency Plan*. Should such a plan already exist, this group shall take actions to update and maintain the plan.

- Commence and continue public education campaigns re flood event preparedness and response.
- Conduct simulation exercises to test *Public Information Flood Event Contingency*, and participate in national simulation exercises as indicated.

Notification

Recognizing that often the press is alerted by members of the public

- Upon receipt of information from the public re flooding of any type, communicate the information immediately to the Emergency Services as well as the <National Disaster Office> and await further instructions re *National Flood Contingency Plan* activation.

During event

Upon declaration/notification/confirmation of Level 2 Emergency or higher

- Activate *Public Information Sub Plan*
- Provide input to NEOC decision-making.
- In collaboration with <Met. Service/Drainage/Water Resource Services>, periodically broadcast appropriate warnings/safety information to affected populace for the duration of the event.
- In keeping with decisions taken at the level of the <NEOC>, arrange and conduct media briefings.

Post event

- Broadcast post-event flood precaution information.
- Upon receipt of instructions to do so from the NEOC, "Stand Down" the Public Information Group".
- Prepare final report for the <insert agency/group responsible public information > within <insert>
- Participate in after-action report meeting of agencies, to review the event and update the *Public Information and Education Flood Contingency Sub-Plan*.

It is anticipated that the public information group will be one of the last to be stood down as their role in disseminating information will post date actual subsidence of flood waters in affected areas.

Generic Press Release 1

At <insert time> flooding threatened/occurred in <area of country>.

The <name of agency> wishes to inform the public of the following measures being taken <list measures>.

The public is asked to <list any required actions suggested>

For further information related to flooding in <area of country>, please contact/tune to <indicate source of further information>.

Generic Press Release 2

The <National Disaster Office> wishes to advise the public that following flooding in <name areas>, persons in those areas should take the following precautions:

Do not use open flames to investigate buildings as gas and fuel lines may have been damaged. Use flashlights.

Do not touch leads of live electrical equipment in wet areas. Dry them and examine thoroughly before using them again.

Report broken utility lines to the appropriate authorities.

Take care when walking in water as dangerous objects may be hidden from view. Also stairwells and floors may be slippery.

<Include any information that may be supplied by the Public Health Group eg.>
If necessary, seek medical assistance at the nearest hospital or medical center.

Do not use food that has come into contact with flood waters.

Boil drinking water for at least 5 minutes before drinking.

In case of emergency <list telephone contacts>.

RECOVERY

The flood recovery section is a sub-set of the national plan. This section therefore summarises the terms of reference and essential elements of the Recovery Sub-Plan. The latter should be part of the National Emergency Management Plan. Countries without such a sub-plan may wish to refer to CDERA's *Model Disaster Recovery Plan 2000*.

Any Recovery Plan provides a basis for planned and coordinated actions to return to the pre-event state of the provision of services and the availability of goods which support normal life. This must be done through the stimulation of local initiatives to respond to the effects and impacts of a disaster, and the development of plans and strategies to enhance the process of long-term rehabilitation.

Inherent in the Recovery Plan must be mitigation planning, the enhancement of capacity for dealing with floods in the future and the reduction of vulnerability to floods in the future.

The Recovery Plan must be informed by accurate reports of damage to all sectors.

Assumption

The activities in the flood recovery effort are governed by the Recovery Sub-Plan of the <National Emergency Management Plan>. This in itself is directed by government policy regarding the various sectors as outlined in the <National Physical Development Plan> and any <Medium Term Development Plan> for the country.

Terms of Reference

The <Ministry of Finance> (and the Recovery Group) shall have responsibility for

- Prioritization of recovery action requirements.
- Formulating and implementing projects to effect recovery.
- Promotion of effective coordinated actions of all agencies in the recovery process.
- Promotion of timely decision-making and the implementation of such decisions.
- Reduction, and where possible, the elimination of duplication of effort and waste of resources.
- Provide oversight for recovery projects in various sectors.

Elements of the Recovery Sub-Plan

The following elements must be included in the *Flood Recovery Sub-Plan*:

- Administration and Coordination
- Budgeting – Estimation of Damage; Estimation of repair, replacement, rehabilitation costs
- Finance and project management – sources of funding; loans applications; grant application, donation management

- Rehabilitation of Infrastructure, Services, Housing, Economic sectors
- Mitigation standards during reconstruction
- Temporary and permanent relocation of communities

Activation

The Recovery Sub-Plan will be activated upon declaration of some Level 2 Emergencies and all or higher.

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APPENDICES

GLOSSARY

Comprehensive Disaster Management

Comprehensive Disaster Management is a concept which seeks to incorporate management of all hazards, at all phases of the continuum, by all segments of the civil society, inclusive of the public and private sectors, non-governmental and service organizations, urban and rural communities and the general population living in disaster-prone areas.

Contingency Planning

A plan for possible situations that may occur. Commonly called a "What if...?" Plan.

Emergency Services

These are those agencies/departments that provide first response to an emergency, usually Fire Service, Police Service, Health Service.

Flooding

A flood is the inundation of channel and non-channel areas within the catchment area. This would include basin and flash flooding as well as depression inundation. Flooding defined in this model also refers to inundation of coastal areas by storm surge and unusually high tides.

Functional Plan

Part of the National Emergency Management Plan that addresses an emergency event by functional area eg. Shelters, Telecommunications, Search and Rescue, etc.

Highly Vulnerable Areas

Highly vulnerable areas (HVAs) are zones where there are elements which are highly susceptible to suffering, severe, large scale damage, caused by one or more natural or anthropogenic phenomena and that require special attention in the sphere of cooperation among partners

Holistic Water Resource Management A multi faceted approach that considers all those factors that may impact on water resource management.

Parish/District Emergency Committees Committees that carry out emergency management functions on the level of parish/districts. (This may be one of a set of community development/management functions undertaken).

Standard Operating Procedures (SOPs) These provide the means to carry out emergency management and responsibilities in a timely manner. They help to ensure that personnel follow validated procedures and also serve as training tools and reference documents.

Sub-Plan Functional area plans to be executed in support of the National Flood Contingency Plan.

Technical Services Those departments/agencies that provide technical information to inform national emergency management plans. In the case of the National Flood Contingency Plan, these technical services include the Meteorological Service, Drainage/Water Resource Management, and Coastal Conservation.

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ABBREVIATIONS AND ACRONYMS

DANA	Damage Assessment and Needs Analysis
NDC	National Disaster Coordinator
NDO	National Disaster Office
NEMATT	National Emergency Management of Trinidad and Tobago
NEMO	National Emergency Management Organization of St. Lucia
NEOC	National Emergency Operations Centre
ODPEM	Office of Disaster Preparedness and Emergency Management, Jamaica
REOC	Regional Emergency Operations Centre
UNEP	United Nations Environment Programme

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SIMULATION EXERCISES¹

This is the method by which the agencies, personnel and equipment involved in a specific emergency management plan are tested under the imaginary impact of a hazard.

Objectives of a simulation exercise

- To accustom and familiarize functional groups/individuals under the plan with the duties and activities to be executed in case of a real emergency.
- To test the effectiveness of functional groups/individual responses.
- To allow functional groups/individuals to become more familiar with associated plans and procedures.
- To evaluate the performance of functional groups/individuals, the plan itself, and equipment used.
- To improve the plan and procedures.
- To determine training needs or change of personnel.
- To determine equipment and materials needed.
- To be better prepared in case of a real emergency.

Simulation exercises must come as the last step in the planning cycle, as they can only be executed after all the previous disaster management activities have been carried out – risk assessment, operations planning, implementation of prevention and preparedness activities, etc.

Types of simulation exercises

• Simulation exercise may be classified by the mobilization of resources:

- **Table top exercises:** This tests the plan at the level of functional group leaders. The theater of operations is a closed room and communications are done verbally. Activities to be done are described by each functional group leader.
- **Drills:** These test a single emergency response function and focus on a single or relatively limited portion of the overall response system, in order to evaluate and improve it. They involve actual field response.
- **Field simulation exercises:** The participants here include the functional group members. The theatre of operations is that where the hazard would strike in a real emergency. Emergency Operation Centres (EOCs) are activated where necessary. Communications are carried out by the means specified in the plan and procedures.

¹ Adapted from CDERA Advanced Disaster Management Training Course: Training the Trainers in Basic Disaster Management. December, 1996

- Simulation exercises may be classified **by their warning**
 - **With previous warning** in which the date and hour of the drill is announced previously (at least) to functional group leaders.
 - **Without warning** in which only the planning committee is aware of the exact timing of the exercise. Notification is given to functional group leaders that the simulation exercise is taking place right away.
- Simulation exercises may be classified by the **number of functional groups or procedures tested.**
 - **Partial**, which will involve only a specific functional group with one or some procedures.
 - **Global** which will involve all functional groups and all procedures.

Steps in planning a simulation exercise

Planning a simulation exercise depends upon the scope. Most drills can be planned in less than a month because these activities often form part of day-to-day tasks. Table top exercises can take up to two months to plan, while field exercises can be planned in at least 120 days (4 months).

All simulation exercises should form part of a structured Simulation Exercise Programme. Exercises with previous warning should be conducted first. Similarly, satisfactory completion of partial exercises should precede global ones. Night simulation exercises should be included in the programme.

1. Review and update the emergency plan and procedures to be tested.
2. Establish the goal, scope and objectives of the simulation exercise.
3. With a core group, script a disaster scenario for the exercise – unknown to the functional group/individuals being tested.
4. Functional groups/individuals should receive refresher training in the workings of the plan (roll down).
5. Identify logistics, budget, source of funds, etc for the exercise.
6. Functional groups/individuals should hold drills prior to the exercise (if previous warning is given).
7. Core group develops Table-top exercise.
8. Host Table-top simulation exercise.
9. Review Table-top simulation exercise.
10. Finalize preparation for field exercise.
11. Host field exercise.

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