

OFFICE OF DISASTER PREPAREDNESS AND EMERGENCY MANAGEMENT

NATURAL HAZARD MANAGEMENT IN URBAN COASTAL AREAS PROJECT
INTER AMERICAN DEVELOPMENT BANK PROJECT JA-T1019

MODEL COASTAL COMMUNITY RISK MANAGEMENT PLAN

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GLOSSARY OF TERMS

Capacity

A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster.

Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability

Capacity Building

Efforts aimed to develop human skills or societal infrastructures within a community or organization needed to reduce the level of risk.

Climate Change

The climate of a place or region is changed if over an extended period (typically decades or longer) there is a statistically significant change in measurements of either the mean state or variability of the climate for that place or region.

Coastal Community

A community located within 5km of the shoreline.

Coping Capacity

The means by which people or organizations use available resources and abilities to face adverse consequences that could lead to a disaster.

Disaster

A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

Disaster Risk Management

The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

Early Warning

The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response.

Emergency Management

The organization and management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation.

Hazard

A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Hazard Analysis

Identification, studies and monitoring of any hazard to determine its potential, origin, characteristics and behaviour.

Local Authorities - Municipalities, Councils and governance Corporations which are the local governance mechanism at Parish level. The terms are used interchangeably.

Mitigation

Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Preparedness

Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Prevention

Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters.

Recovery

Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.

Relief/Response

The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Resilience

The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures.

Retrofitting

Reinforcement of structures to become more resistant and resilient to the forces of natural hazards.

Risk

The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

Structural/Non-Structural Measures

Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure.

Non-structural measures refer to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts.

Vulnerability

The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

Source: The International Strategy for Disaster Reduction; Terminology:Basic Terms of Disaster Risk Reduction. Internet Resource at <http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm>

ABBREVIATIONS

CBDRM	Community-Based Disaster Risk Management
DRM	Disaster Risk Management
EOC	Emergency Operations Centre
IDB	Inter-American Development Bank
MP	Member of Parliament
NGO	Non-Governmental Organisation
ODPEM	Office of Disaster Preparedness and Emergency Management
PDC	Parish Disaster Coordinator/Committee

I. INTRODUCTION

I.1. BACKGROUND

Jamaica has a long history of impacts from natural hazards. Its position in the North Atlantic Hurricane Belt makes it vulnerable to tropical cyclones with their associated high winds and storm surges as well as rain-induced flooding. Its position along the northern margin of the Caribbean Plate and the presence of large, active faults on land result in the island experiencing earthquakes. Steep slopes and deep soils cause landslides, and intense rainfall frequently causes severe flooding. The present project is conceived against the background of the number of deaths and level of damage caused by natural hazards over the past several decades.

The Office of Disaster Preparedness and Emergency Management (ODPEM) is increasing its focus on disaster risk reduction. In particular, the level of damage to coastal areas and impact on tourism and coastal resources, and by extension the economy, has prompted a disaster risk management intervention spearheaded by the ODPEM, and funded under the Inter-American Development Bank's (IDB) Disaster Risk Management (DRM) Policy which places emphasis on risk reduction. The Government of Jamaica requested assistance from the IDB's Disaster Prevention Fund to address coastal vulnerability issues.

The IDB has committed to a “proactive stance to reduce the toll of disasters in the Region”, incorporating risk reduction and recovery. To this end, the IDB established the Disaster Prevention fund for financing of disaster risk management activities. The Government of Jamaica has received funding for a technical cooperation agreement with the IDB for the project *Natural Hazard Management In Urban Coastal Areas*.

Under the component 'Improving Communities' Resilience' a model coastal communities risk plan was called for.

I.2. COMMUNITY BASED DISASTER RISK MANAGEMENT PLANNING

Globally, the importance of community-based disaster risk management is being recognised more and more. Although the logic of the approach is irrefutable, it has taken some time for the concept to be accepted. The predecessor to CBDRM was simply community preparedness, in which communities were organised to respond in the event of a disaster. As disaster management has evolved from response to disaster preparedness to disaster management to disaster risk management, so has the approach at community level. CBDRM looks to harness community skills in the management of community risk. This is done in cooperation with external organisations which support the efforts. The question could be asked:

Why CBDRM?

The answer is simply:

The community is the first unit affected in a disaster

The community best knows its hazards, vulnerabilities and capacities

The community already has coping mechanisms

The community has the **capacity** to help itself.

Any Community-based risk management approach must take into account the following:

Fitting into national programme

The national disaster risk management programme provides the framework and context for the community programme. There should be a clearly demonstrated link from the community to the national level, and interaction and information exchange should be bidirectional.

Fitting into community governance structure

The community disaster risk management programme should be integrated as much as possible into the community. Existing structures should be used where possible, rather than establishing a new entity.

Involvement of the entire community

A good CBDRM programme will involve the entire community, including those seen as most vulnerable. The old residents can provide valuable historical data on hazards, their frequency, effects and impact, as well as how the community managed these events. Schools can assist with hazard mapping and vulnerability assessments. The community provides the resources for the plan and are also the beneficiaries of the plan.

Be able to function independently of the national system if necessary

The DRM Plan will include a response component. For response the community must be able to manage on its own for three to five days after a major disaster.

In addition, CBDRM interventions must reduce present and future vulnerability, develop plans which are flexible enough to address not only present but future vulnerability through regular re-assessments and updates, and influence development of the community so as to achieve reduction in losses and increase in resilience. Links into the community's environmental management programmes are also essential.

I.3 OUTLINE OF APPROACH

The Model sets out the following steps for development of a community plan:

- a) Identify the Group which will take responsibility for plan development
- b) Identify the leadership and structure for the group
- c) Identify hazards which are a threat to the community
- d) Produce community hazard map
- e) Identify vulnerable elements in the community
- f) Identify community coping mechanisms
- g) Identify community capacities
- h) Identify mitigation options for risk reduction
- I) Develop preparedness and response elements
- j) Develop recovery aspects
- k) Decide on review and update schedule

Note that the model addresses planning from a functional perspective. The activities given can be applied to any hazard. The communities can develop detailed procedures for the specific major hazards which threaten them.

I.4 USE OF MODEL PLAN

This model sets out an *approach* for development of a Community Based Disaster Risk Management Plan. It is intended that the community be given technical support from the Local Authority, ODPEM or other organisations to work through the model in order to develop a plan specific to the particular community. The approach is not that of merely filling out a template. The technical support team or facilitator must ensure that the community understands the concepts behind the different elements of risk management as well as plan development.

The colours in the plan are consistently used. Throughout the plan there are notations in blue designed to highlight important points or aspects of plan development. The facilitator should expand on these notations and

ensure that these points are noted by the community group. Definitions are shown in red. The sections in yellow are tables which can be used directly by the communities as a template for their plans.

I.5 INTEGRATION OF EXISTING METHODOLOGIES

ODPEM has developed methodologies for hazard mapping, vulnerability assessment and damage assessment which the organisation has used for several years. These methods, which have been tried and tested, should be used in application of the model plan for development of community plans.

I.6 FORMAT OF MODEL

A major challenge was deciding on the format for the model plan. The model plan has to meet certain criteria if it is to be successfully applied. The following criteria have been developed by the consultant and discussed with ODPEM .

- a) It cannot be prescriptive – good practice dictates that the communities targetted for intervention should develop their own plans. The model must therefore provide guidance rather than solutions.
- b) It must be applicable to a variety of communities. In discussions with ODPEM it was indicated that the preference is for the model plan to be applicable to **coastal as well as non-coastal communities**.
- c) It has to be able to be adapted by the community using a minimum of resources.
- d) It has to be simple to implement so as to maintain community interest and focus, and it has to be compatible with existing ODPEM approaches.

Great care has been taken to avoid a prescriptive approach to the model plan, which is flexible enough to be used by any community in the development of its plan. The model encourages full community participation. Global experience has shown that the greater the community input and involvement, the better chance of a successful intervention. The accepted good practice approach is for the community to provide its own solutions and approaches for its development as well as its risk management. Because this is a model plan, examples are given. However, these are for guidance only.

Based on the above, a format was developed which sets out actions to be taken by the community in order to develop the plan, with examples where necessary. The model also allows for the communities using the model to be trained by ODPEM as part of plan development.

The model is structured so that the community DRM Plan can be developed in stages over time, starting with any phase which is identified as a priority by the community. In this way the community need not feel pressured to develop the full DRM plan in one or two sittings.

P. PREAMBLE

All plans have a preamble. This preamble is given as an example, which can be adapted by the community.

P.1 NAME OF PLAN

The plan is the 'Model Coastal Community Risk Management Plan' , hereafter called 'the model plan'.

P.2 PURPOSE OF PLAN

The model coastal community risk management plan will provide an approach which coastal and other communities can use to assist themselves in developing their community risk management plans. Application of the model plan should be facilitated by personnel who fully understand the concepts behind disaster risk management and plan development.

P.3 ACTORS

Development of Community Risk Management Plans will require a partnership between several organisations and the communities. Government agencies at both national and parish level, are expected to lend technical support to the communities for plan development. The Parish Disaster Committee is expected to play the lead role in supporting communities in plan development, Implementation of the plans will be the responsibility of the communities. There may also be other organisations within the community, such as Non-Government Organisations, which can be incorporated into planning.

P.4 SCOPE OF PLAN

The Plan will cover Pre and Post-impact aspects of disaster management, viz. prevention, mitigation, preparedness, response and recovery.

P.5 AUTHORITY

The model plan is developed by the Office of Disaster Preparedness and Emergency Management which is the government agency charged with responsibility for management of all hazards which threaten Jamaica. Under the Disaster Preparedness and Emergency Management Act 1993, ODPEM has the responsibility for ensuring development of hazard management plans.

P.6 RESPONSIBILITY

Responsibility for updating the model plan lies with the ODPEM. Responsibility for testing and updating community plans lies with the communities. Plans will be updated once per year and after real events and simulation exercises.

P.7 ASSUMPTIONS

- a) Communities are willing and able to develop their plans
- b) ODPEM will have adequate resources to support Local Authorities in development of community plans
- c) Local Authorities through the Parish Disaster Committees, will have adequate resources to support communities in development and maintaining of plans

P.8 STRUCTURE OF PLAN

The model plan treats pre-impact aspects, mitigation and preparedness first. It then treats post-impact aspects of response and recovery. Examples are given and notations made to enhance the user-friendliness of the model plan.

P.9 ADMINISTRATIVE ASPECTS for Community Consideration

Community Organisation

The community must decide how it will organise itself for Disaster Risk Management (DRM); whether an existing group will accept the functions, or whether a new group will be started. The following questions must be answered by the community members:-

Responsibility

Is the Community agreed on the need for a DRM intervention and Plan?

Will the community support a DRM Plan and its implementation?

Which community organisation will take responsibility for DRM?

Will the Community take responsibility for maintaining and updating the plan, hazard analyses and hazard mapping?

Group Structure

What will the DRM Group be called?

Who will lead it?

What will the structure of the DRM Group be?

How often will the group meet?

Resources

How will the community DRM efforts be funded and resources acquired?

Relationship with Government Agencies and other Entities

How will the DRM Group interact with the Local Authority and Parish Disaster Committee?

How will the DRM Group interact with ODPEM and other technical agencies?

How will the DRM Group interact with NGOs, private sector, other community groups?

How will the DRM Group interact with the Councillor and Member of Parliament?

Ownership and Transparency

Where and how will the DRM Group's records be kept?

How will the DRM Group involve *all* community members in DRM

NOTE: ENGAGING THE PRIVATE SECTOR

Businesses operating in the community should be factored into the community plan.

The community should identify a strategy for engaging any private sector entities in the community. One strategy could be inviting the entities to name a representative to the Disaster Risk Management (DRM) Group. Another is to identify a role(s) for the private sector in the Community DRM Plan.

NOTE: ENGAGING ELECTED REPRESENTATIVES

The Councillor and MP have roles to play in community development. The DRM Group should identify the roles of the elected representatives in the DRM plan and engage the support of these persons in the community DRM process and planning.

Community Profile

For the background data and information collection, the Social Development Commission's Community Profiles should be integrated into the analysis. The profiles will provide socio-economic and demographic data which can be supplemented by community knowledge.

Phases of Plan

The plan can be divided into pre-event and post event phases. The pre-event phase comprises prevention, preparedness and mitigation. The post-impact phase comprises response and recovery. Any phase of the plan can be developed at any stage.

Disaster Risk Management (DRM) Teams

The DRM Group will have to choose different teams responsible for various aspects of DRM, i.e. preparedness, mitigation, response and recovery. As the community goes through the process of developing the plan, it should think about which members of the community can best carry out the various activities.

PR. PRE-IMPACT

BACKGROUND DATA AND INFORMATION GATHERING

Note: The development of the community DRM Plan, is supported by information and data which the community and other sources can provide. This information relates to the hazards which threaten the community, vulnerability of the residents and assets, community resources and skills, demographics and coping mechanisms.

PR1. IDENTIFY HAZARDS AND COPING MECHANISMS

A hazard is a dangerous situation or phenomenon that could cause harm or damage to the community.

Hazard analysis is necessary so that the hazards which affect or may affect the community can be identified. Think about what affected the community in the past, and also any threats which the community may face in the future. This calls for research to be done. The students in the community can be involved by having them carry out this research. Possible sources are:

Elderly residents of the community

Elderly residents of neighbouring communities

Local Authorities

ODPEM and Technical Agencies

Groups which have been working in the community over a period of time

Newspaper records

It is also important to know how the community coped with these events in the past. Again, elderly residents would be able to give this information.

A table is compiled summarising the information as below.

HAZARD, YEAR	IMPACT	HOW DID COMMUNITY COPE

PR2. IDENTIFY WHAT HAZARDS MAY AFFECT THE COMMUNITY IN THE FUTURE.

Discuss what hazards may affect the community in the future. These could be from local conditions – a highway being built for example, or from global conditions such as climate change.

HAZARD	POSSIBLE IMPACT
Planned highway will cut across natural drainage channel	Flooding of 12 homes
0.5m sea level rise will flood community's main access road and make storm surge go further inland	Main evacuation route will be cut off. Additional 20 houses likely to be affected by storm surge
Continued coral bleaching	Reduction in fish catch and therefore– income for fisher-folk

PR3. IDENTIFY VULNERABILITY

Vulnerability is the condition or circumstance of the community which makes it susceptible to being damaged by a hazard or disaster.

This could be physical, social, economic or environmental. It is also important to know the value of the elements which may be damaged or destroyed. This is important for recovery planning.

Identify physical vulnerability of the community e.g. roads, bridges, houses, community buildings, communications systems which are vulnerable. Include cultural and historical buildings and/or sites. Be sure to include facilities which are critical to the well-being of the community, such as clinics, shelters and water supply.

HAZARD	VULNERABLE ASSET AND POSSIBLE IMPACT	APPROXIMATE VALUE OF ELEMENT AT RISK
Earthquake	Brick buildings, water tanks could be damaged or collapse	\$5m estimated

PR4. REDUCING VULNERABILITY

Very often, vulnerability can be reduced if certain corrective actions are taken.

Identify what corrective activities are needed to reduce the identified vulnerability in the community

HAZARD	VULNERABLE ASSET	CORRECTIVE ACTIVITIES
Storm surge	Fishing boats	Pull boats above surge levels

PR4.1 Environmental Vulnerability

Identify those aspects of the environment which are vulnerable to hazards and what can be done to correct the situation.

ENVIRONMENTAL VULNERABILITY	CORRECTIVE ACTIVITIES/ACTION	RESOURCES NEEDED
Sewage outflow affecting coral reefs	Repair sewage plant	Responsibility of NWC. to contact NWC.

PR4.2 Social and Economic Vulnerability

Identify the social and economic vulnerability of the community.

This may be unemployment, inadequate housing and sanitation, or it could be that the means of livelihood of the community are not protected from disaster.

Identify Social & Economic Vulnerability

SOCIAL/ECONOMIC VULNERABILITY	CORRECTIVE ACTIVITIES	RESOURCES/ACTION NEEDED
High unemployment	Employment	Training of school-leavers

PR4.3 Identify Health-related Vulnerability

HEALTH RELATED VULNERABILITY	CORRECTIVE ACTIVITIES	RESOURCES/ACTION NEEDED
Stagnant water in drain breeding mosquitoes	Drain to be cleaned	Front-end loader, Truck

PR4.4 Identify any Political Vulnerability

POLITICAL VULNERABILITY	CORRECTIVE ACTIVITIES	RESOURCES/ACTION NEEDED
Community divided along political lines- frequent disputes	Dispute resolution interventions	Community members to be trained

PR5. PRIORITY LISTING OF HAZARDS

Which hazards should be treated in which order?

In order to decide this a ranking will have to be done. The Table below allows decisions to be made on which hazards are to be treated in which order.

In the first column list the hazards which affect the community . In the second, place the probability of occurrence in any given year, Very likely scores 3, Likely, and unlikely 1.

As an example, a hurricane would score 4 as it is very likely to happen in any given year.

In the other columns, record the impact on the community. High level of impact scores 3, medium 2 and low, 1. In the final column, add the scores.

The example below could apply to a coastal community. It is very likely that the community will be affected by hurricanes and therefore by storm surge in any given year. This gives a 3 on the probability of occurrence. Impact on people depends on whether they evacuate, but there is the potential for fatalities so a 3 is given. Only buildings within the surge zone will be affected so 2 is given for impact. Most of the infrastructure is located outside of the surge zone, so impact on infrastructure is low - 1. No critical facilities are within the surge zone. The community depends mostly but not exclusively on fishing for a livelihood, so impact on livelihoods such as loss of nets, fish pots or boats is medium. The same community can experience land flooding, which will occur during the rainy season. However the water level is low, the water does not enter many homes (1), runs off quickly so infrastructure is not seriously affected, and residents can get out within hours of heavy rainfall. No critical facilities or livelihoods are affected, hence 0 is given

In some cases a hazard may not have a wide impact on the community but the impact can be severe. In such a case the community can make the hazard a priority even if its score is low. An example would be traffic which poses a danger to children.

HAZARD	Probability of Occurrence	IMPACT ON COMMUNITY					
		People	Buildings	Infra-structure	Critical Facilities	Livelihoods	TOTAL
Storm Surge	3	3	2	1	0	2	11
Land flooding	2	1	1	1	0	0	5

IMPACT: Probability of Occurrence

High: 3 Very Likely: 3

Medium: 2 Likely 2

Low: 1 Unlikely 1

None: 0

The hazard with the highest total scores are priorities.

PR6. HAZARD MAPPING

The areas which are affected by various hazards can be placed on a map which can be easily seen. ODPEM has been training communities in hazard mapping for several years. This training should be done with the community following the ODPEM methodology.

On a map of the community identify areas which are exposed to various hazards. For example identify areas which are flooded whether from the sea or rivers and gullies, areas in which landslides or rockfalls can or have happened, areas which are dangerous for children. Community resources and important facilities should also be placed on the map so that their vulnerability to the identified hazards can be easily seen.

Note: The facilitator should clearly explain the value and use of a hazard map.

PR7. CAPACITY AND RESOURCE ANALYSIS

The community has resources which can be used to manage the hazards which may threaten it. Identify and list the resources and capacities of the community:

PR7.1 Capacity and Resource Listing

- a) Skills
e.g. carpenters, nurses, teachers, construction workers
- b) Knowledge
e.g. History of community, coping systems , students' knowledge
- c) Networks
Teams, clubs, partnership saving programmes.
- d) Transportation

e) Buildings/structures

f) Means of Care

Day care centres, basic schools, At home care-givers

g) Medical Care

Clinics, Health Centres

h) Means of Communication

I) Commercial Enterprises

j) Human Resources

When deciding on how teams will be put together, match the capacities, skills and resources to the tasks.

Note: Detailed methodologies for Vulnerability and Capacity Assessment can be found in the Social Development Commission's *Problem Prioritisation Tools* .

PR8. PREVENTION

Prevention is the outright avoidance of the impacts of hazards and disasters.

This can be done for some hazards. For example preventing deaths from storm surge can be done by not building homes in areas subject to storm surge, or , if houses are already there, then evacuating residents from those areas before arrival of a hurricane.

Identify and list impacts or any hazard which can be prevented, and what is needed to carry out those actions.

HAZARD &IMPACT	PREVENTIVE ACTION	RESOURCES NEEDED AVAILABILITY INT/EXT
Storm surge, building loss	Do not build in surge zone	Mapping of surge zone
Storm surge, fatalities	Evacuation	Transportation, shelter

PR9. MITIGATION

Mitigation is the lessening or reduction of the impact of a hazard.

This can be physical or structural, such as building strong structures which resist hazards, building protective structures such as retaining walls or it can be non-structural, such as building codes. Codes and standards ensure that structures can withstand the impact of certain hazards. Other types of mitigation measures could be raising houses on columns to prevent flood waters from entering the houses, or setting houses back from the sea to avoid storm surge.

In order to ensure that future development in the community is not exposed to the same hazards as in the past, the community must decide on how to protect this development. This will be set out in the Mitigation Plan.

Protecting the community can be done by:

- not allowing development in hazardous areas or
- locating development in safer areas or
- constructing buildings to the approved code

Development Approval : Define decision-making process for development permission in the community.

E.g. All Community members should speak with the DRM Group prior to carrying out any development. The Local Authority should inform the community of any applications for development within or close to the community. The DRM mitigation team will advise whether there are proposed restrictions or any concerns for the area in which development is proposed.

Note: This must be discussed with the Local Authority when the plan is being written.

Future Threats

State how the community will keep abreast of future threats and keep its risk assessment current. E.g. Hazard analysis and mapping will be done every year by the mitigation team. The DRM Group should also discuss any proposed developments which could adversely affect the community.

Development activities which cut across or block natural drainage, disturb steep slopes or divert existing waterways have the potential to cause damage to the community. Other potential threats include locations of businesses which will use hazardous materials such as petrol stations and cooking gas storage areas. Such activities should be monitored closely, and the DRM Group should discuss any concerns with the PDC and agencies which are in charge of the development approval process.

The possible effects of climate change should also be discussed, such as, less but more intense rainfall causing high erosion and landslides, longer dry season and higher temperatures.

Note: Integration of Existing Scientific Data

There are many communities for which landslide, flood and storm surge hazard maps have been done. If these maps exist they should be used in conjunction with the community hazard maps to establish Development Zones as below:

The elements of the Mitigation Plan, the Development Plan and the Mitigation Action Plan are set out below.

a) **No Development** : Identify which areas should not be developed because of hazards which threaten the areas

AREA :	REASON FOR NO DEVELOPMENT
Sea-side	Storm surge
Hill-side	Landslides and rockfalls

b) **Zoning** : Identify what types of development will be permitted where in the community

AREA:	TYPE OF DEVELOPMENT WHICH WOULD BE SAFE
Within 40 yards of gully sides	Park, grassy area, cash crops

c) **Special Areas** : Identify any areas in the Community which could be developed or could be made safer if certain mitigation activities were done. These can be undeveloped areas or developed areas. State the type of mitigation action needed, e.g.:

AREA	MITIGATION MEASURES NEEDED
Area between drain and school could be play field	Drain to be deepened and paved
Flooding of homes in Bottom Pond	New houses must be built on columns. Contents of existing homes to be raised on blocks

d) Identify those activities which the community can do itself to reduce the impact of hazards:

HAZARD	ACTIVITY	TIMEFRAME
Blocked drain causing flooding	Clean drain Place garbage in containers	Twice per year Ongoing
Sea level rise and storm surge	Structures built by community to be set back x metres from high water mark	Immediate to long term

e) Identify those activities which need external help to be done

HAZARD	ACTIVITY	AGENCY
Hurricane / earthquake damaging community buildings	Retrofit	Ministry of Education, Works etc.
Coastal development will be at risk from sea level rise	Place all new developments x metres from high tide line	Local Authority/Development Planning Agencies

f) Action Plan For Reducing Community Risk – Mitigation Plan

Develop a list of activities in priority order for reducing the risk faced by the community.

HAZARD AND IMPACT	ACTIVITIES NEEDED	TIME FRAME AND COST	RESPONSIBILITY/PARTNER
Flooding of play field	Pave drain	1 year – estimate needed	Parish Council

Note

Based on the analyses carried out above, the community group can set out the community's plan of action for reducing the risks faced by the community – the Mitigation Plan. The plan will give a prioritised list of activities, time frame, responsibility and cost – the Action Plan. It will also include the Development Plan - those areas which should not be developed or which should be developed after mitigation measures are put in place. This plan must be shared with the Councillour, Member of Parliament (MP), Local Authority, Parish Disaster Committee, ODPEM and NEPA. It is important that they know that the community has done this work and has a plan for development of the community.

g) Training

Training of community members in mitigation measures should be carried out. Skilled community members such as carpenters and masons can be trained in making buildings and structures wind and earthquake resistant. Householders can also be trained so as to be able to supervise the tradeswomen and men. Community members can also be trained in soil conservation methods and other ways to reduce the impact of hazards and development on the environment.

Identify members of the community and the areas in which they should be trained. Research which agencies and organisations provide training, and the cost. The PDC , ODPEM and technical agencies can assist in organising community training.

COMMUNITY MEMBER	AREA OF TRAINING	PROVIDED BY	COST

These persons will be members of the Mitigation Team.

PR10. RISK TRANSFER

This is the process of shifting the financial cost risks from the community to another party so that if there is a disaster the affected community or persons can get some form of compensation. Risk transfer can also share the risk among community members through cooperative mechanisms.

Risk transfer can be formal or informal and can be based within the community or outside the community. An example of a formal risk transfer mechanism is insurance or tax-free loans for recovery. Informal arrangements would include partner schemes or arrangements whereby community members give free labour to help rebuild houses.

Identify risk transfer options available to the community:

Informal:

Formal:

There may be other schemes available such as assistance from the Fisheries Division of Government. Identify who will research these schemes and report back to the group:

State which risk transfer options are feasible and how the community can organise them.

b) Mitigation Group Leaders

Based on the activities which need to be carried out for mitigation, decide who will lead the Mitigation Group.

Names of Mitigation Team Leaders :

Note: Engaging the Public Sector for Risk Management

Mitigation and risk reduction efforts will require support from the government representatives and agencies in the parish. The community will need to actively engage the public sector. Identify a strategy for engaging the MP, Parish Council, Parish Disaster Committee, ODPEM and other agencies on how the community wishes to reduce present and future vulnerability and risk of the community and manage future development based on the analyses and the Mitigation Plan. Identify which members of the community will be part of the team to work with the agencies:-

PR11. PREPAREDNESS AND INITIAL RESPONSE TO EVENTS WITH WARNING

Preparedness encompasses knowledge and capacity to anticipate, respond to and effectively recover from the impacts of current or likely hazard events or conditions.

This includes being aware of the danger which is approaching and warning the community as well as ensuring that all the necessary measures can be taken to protect life and property.

Preparedness encompasses the knowledge and capacities developed in order to anticipate, respond to and recover from the impact of a hazard. This includes development of plans, stockpiling of resources, training and monitoring and forecasting and warning among others.

The community may or may not be able to stockpile food and other relief items. Residents must be encouraged to always keep their own emergency supplies. Special arrangements can be put in place with the Parish Disaster Committee for the most vulnerable persons in the community who are unable to provide for themselves.

Other aspects of preparedness which will need input of resources include acquisition of first aid kits, search and rescue equipment and personal equipment for volunteers. The DRM Group will have to discuss with the Parish Disaster Committee how these resources will be acquired.

a) Training

It will be necessary for community members to be trained in various aspects of preparedness and response. The Parish Disaster Committee will organise training in areas such as:

Forecasting and Monitoring
Search and Rescue

First Aid
 Damage Assessment
 Shelter Management
 Radio Communications
 EOC Management
 Incident Command Systems

b) Identify community members for training. These persons will be members of the Preparedness and Response Team (PRT), and will be responsible for all preparedness and response activities.

COMMUNITY MEMBER	TRAINING ACTIVITY	PROVIDED BY	TIME FRAME

c) Public Awareness and Education

There will be need for a public awareness programme for the community. This will ensure that the community receives current information on protective measures for all threats facing the community.

Decide which members of the community will liaise with ODPEM and other agencies to research hazards and protective measures and pass them to the community. Students and teachers would be ideal for this activity.

The public awareness information should include:

- Precautionary measures for hurricanes
- Precautionary measures for earthquakes
- Precautionary measures for floods
- Precautionary measures for fires
- Precautionary measures Public and environmental health
- Household hazardous materials safety
- Development of Family Disaster Plans – very important for the DRM Group volunteers who will be involved in response and recovery operations.

Note: Brochures can be obtained from ODPEM for distribution to community members, schools etc.

Public Education

In order to improve ownership of the DRM programme by the community, the DRM Group should make residents aware of the importance of DRM to the community and the DRM plans being developed. It should try to engage all or as many residents as possible in the programme and planning.

d) Contact List

Develop a contact list of all community contacts such as:

- DRM Group Leaders and Members
- Response Team Leaders
- Police Station
- Fire Station
- Hospital or clinic
- Trained First Aider

Shelter Manager
 Parish Disaster Coordinator
 School
 ODPEM
 Businesses
 Transportation owners
 Technical agencies in Parish
 Non-Governmental Organisations
 Any other useful contacts e.g. local radio stations, newspapers

Make up contact list and state who will be responsible for updating it.

Contact List : Last Updated May 15 2009

NAME	SKILL/ORGANISATION	ADDRESS	HOME NUMBER CELL NUMBER

e) Monitoring

State which members of the community are responsible for monitoring:

SITUATION	RESPONSIBILITY
Hazards or dangerous situations in the community	
Listening to the radio for official information	
Monitoring marine weather forecasts	
Liaising with the Parish Disaster Committee and Coordinator and ODPEM	
Other	

Note: Any threats or dangerous situations to the community should be immediately reported to the Parish Disaster Committee.

f) Warning

The community must be alerted to the possibility of a threat or dangerous situation. Identify any traditional community warning systems which are used and decide how they can be included in the Plan.

HAZARD	TRADITIONAL WARNING	RESPONSIBILITY for Alerting DRM Team

State who has Lead responsibility for warning:

Indicate what will be used to send out the warning for which groups, e.g.:

Radio	Response Teams
Cell Phone	DRM Group, School, Clinic, fisher folk at sea
Word of mouth	Special needs persons
Loudspeaker, Church Bell, Abeng	Community

State who will do what steps for warning:

ACTIVITY	RESPONSIBILITY	MEANS
Warn the special needs residents :	John Che , Patrick See, Angela Dee	Cell phone, visit
Old and sick Persons List names		
Persons with Disabilities List names		
Mothers with babies and young children List names		
The School		
Members of the community who are at sea, List names:		
Evacuation zones residents		
Rest of community		
Update ODPEM		
Update PDC		

g) Evacuation

From your hazard mapping, identify those areas which should be evacuated and the safest routes for evacuation.

All residents withinof the coast should evacuate

All residents within of the river should evacuate

All residents withinof the gully should evacuate

Identify other possible areas from which residents should or may need to evacuate and why, e.g.:

AREA	REASON FOR EVACUATING
Within x yards of gas station	Hazardous materials release/fire/explosion

Note: The DRM Group should liaise with owners/operators of hazardous materials installations and discuss the facility's plans for emergencies. The community should be given a copy of the plan so that it can be familiar with the procedures.

- Identify who will be in charge of organising evacuation and who will help.
- Identify areas which can be used as assembly points for various types of evacuation
- Identify Assembly Point Coordinators
- Identify who will assist special needs persons with evacuation .
- Identify any transportation available in the community and how this will be accessed.
- Identify other transportation resources
- Identify the longest time which will be needed for the least mobile resident to safely get to shelter. Use this as the minimum evacuation time.

Procedures

ACTIVITY	RESPONSIBILITY
Evaluate threat or liaise with PDC/ODPEM on need for evacuation	
Alert residents on possible evacuation	
Decide on timing	
Ensure special needs populations assisted	
Organise transportation	
Identify route to be used	
Ensure shelter available	
Register all persons who are evacuating and their destination	
Start evacuation	
Check that all areas safely evacuated	
Inform Parish Disaster Committee	

Note: The Community Plan should be adjusted appropriately for rapid onset events.

h) Shelter

Official Emergency Shelter

- Identify who will be responsible for liaising with official emergency shelter manager.
- Identify who will assist.
- Identify nearest official emergency shelter(s) to community
- Identify safest route(s) to shelter
- State any dangerous situations on the route

Community Shelter

- Identify and list any buildings within the community which can be used as shelters.
- In what conditions can these be used? *e.g. after a flood or hurricane but not before.*

- State how these buildings would be accessed:
- Identify persons to work as shelter managers and wardens:

i) Preparedness Action Plan

The community should develop and Action Plan which sets out the preparedness activities to be done for a planning cycle – e.g. one year.

ACTIVITY	RESPONSIBILITY	TIMEFRAME
Clean all drains	Local Authority/Community	Every January, May
Train team members	DRM Leadership	Every January to March
Replenish first aid, SAR kits	DRM Leadership	Every January, May as needed
Make arrangements for access to relief supplies	DRM Leadership/Parish Disaster Coordinator/Local Authority	Every May 1st
Start hurricane awareness	Public Education Team	03/01/09

PR13 . MUTUAL AID AGREEMENTS

Agreements to give and receive help can be made with the leadership of nearby communities or their DRM Groups. Help can be for response – search and rescue, transportation, shelter; or can be for recovery – labour and skills for reconstruction, for example. Agreements can also be made with businesses and other organisations.

Mutual Aid Agreements can also be used to manage common hazards, or hazards caused by a community. For example, if solid waste from one community blocks the natural run-off channels and causes flooding in another community, management of the solid waste to prevent flooding could be included in a mutual aid agreement between both communities. Communities can also join together to approach the authorities for action on hazards.

PR 14. SIMULATION EXERCISES AND DRILLS

These are also part of preparedness training. The group leadership should decide on a schedule for exercises and drills, and ensure the various aspects of the plan are updated based on these exercises and drills.

Simulation Exercises and Drill Schedule

Type of Exercise/Drill	Number per year	Date of next	Who will organise
Earthquake	2	01/13/10	Mitigation Team
Hurricane	1	06/06/09	CDRM Group leaders

PO. POST-IMPACT

PO1. ASSESSMENT

During and immediately after an event or disaster, the leadership of the DRM Group will monitor official sources as well as any information from community members and adjoining communities. An initial assessment of conditions can be made if adequate information is available. This assessment will allow the team in charge of response to make initial plans such as where to send search and rescue teams, which roads may be open, which community members need immediate help, what assistance can be expected from neighbouring communities or external sources.

PO2. RESPONSE AND RELIEF

After the event DRM Group members meet at..... which is the Command Centre.

State who from the Preparedness and Response Team will be in charge of the Response : (2 names)

These persons will communicate with Parish Disaster Coordinator and provide reports.

Procedures

ACTIVITY	RESPONSIBILITY	SHORT REPORT
Send out Search and Rescue and First Aid Team to check on :		
Elderly Persons with Disabilities Single mothers Damaged buildings and houses for occupants Persons stranded by floodwater		
Check for :		
Deaths Injuries Persons in need of emergency assistance:		
Check if any members of community thought to be missing at sea		
Call for any external assistance necessary		
Update PDC, ODPEM		
Update Community		

PO3. INITIAL DAMAGE ASSESSMENT

ACTIVITY	RESPONSIBILITY	Report Received
Send out Rapid Damage Assessment Team.		
Check on :		
Roads : Open Closed: In need of urgent repair to provide access:		
Power : Fallen lines, poles, transformers; Any dangerous situations e.g. live wires, raw sewage, leaking gas etc.		
Water lines: Broken, missing sections Water available?		
Describe state of : ➤ Community Centre ➤ School ➤ Clinic ➤ Churches ➤ Shops, other businesses ➤ Means of livelihood ➤ Boats, fishing gear ➤ Sea walls and sea defences, mangroves Other		

The Response Leaders should provide a damage report to the Parish Disaster Committee.

PO4. RESPONSE ACTION PLAN

Based on the initial assessments, identify priorities for response in the Response Action Plan.

Note: The community should be able to carry out some basic initial response activities such as removing debris, placing temporary covering on roofs of special needs persons etc. State which community members will assist with these activities:

RESPONSE ACTIONS IN ORDER OF PRIORITY	RESPONSIBILITY	TIMEFRAME
Clear debris from road to clinic	Response team	Three days

Prepare report for PDC, ODPEM along with Response Action Plan.

Note: Damage Assessment

There is a standard damage assessment method which was developed for use by communities. The Community Damage Assessment Team will be trained in this method by ODPEM as a part of the preparedness phase of planning.

PO5. RELIEF ASSISTANCE

ACTIVITY	RESPONSIBILITY
Identify members of community who have:	
Received damage	
Need shelter	
Lost means of income	
Need assistance	
Identify members of community in need of psycho-social support or counselling	
Compile list and update PDC, ODPEM	

The information on community needs should be passed to the Parish Disaster Committee. Identify which members of the community will be responsible for liaising with and assisting government agencies on relief assistance:

PO6. RECOVERY

Recovery is the restoration and improvement where appropriate of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Recovery should be seen as an opportunity to reduce the vulnerability and increase the resilience of the community. This means that opportunities for including elements of the community's risk reduction plan must be recognised and taken. For example, if roofs have to be replaced, the new roofs should be hip roofs and should be

attached to the walls by J bolts or other approved means. Hurricane straps should be installed, and the roof sheeting should be securely fastened with screws.

Retrofitting buildings for earthquake resistance can also be done. In such a case, qualified engineers should provide technical advice and supervision.

Note: Retrofitting is the reinforcing or upgrading of existing structures to make them more resistant to the damaging effects of hazards.

The initial damage and needs assessment done by the community will guide relief and response efforts. For recovery, a more detailed assessment will be done by the national agencies. The Community DRM Group should liaise with the national agencies and present them with a damage and needs assessment report, with pictures where possible.

a) Recovery Plan

The Community DRM Group should put together the community recovery plan.

The Community Recovery Plan should be completed within eight – twelve weeks of impact. A recovery monitoring group should be identified and will need to meet regularly to keep track of recovery efforts and to liaise with parish and national agencies. The value of having made these agencies aware of the community's risk reduction plan will be proven, as the agencies will already be familiar with mitigation actions previously identified by the community.

The list of recovery activities which need to be undertaken should be prioritised by the community. Responsibility for the activity should be assigned. If the activity is to be done by a national or parish agency, community members should be identified to liaise and work with those agencies. A time-frame should be established and an approximate cost identified for each activity.

This should be done for the various aspects of recovery such as:

- Physical facilities – public buildings, housing
- Structural mitigation elements - retaining walls
- Coastal Defence systems, e.g. replanting mangroves, repairing sea walls
- Public health systems (water, sewerage, vector control)
- Drainage systems
- Income earning systems for self employed persons
- Commerce and business
- Economic support for special needs population
- Mental health support, Counselling

Example, Recovery Action Plan

ACTIVITY	PRIORITY	RESPONSIBILITY	TIMEFRAME	COST
Repair community water tank	1	National Water Commission Mary Brown to liaise	Two weeks	\$25,000.00
Repair and retrofit basic school roof (hip roof, install hurricane straps, install shutters)	2	Ministry of Education Tom Jones to liaise	Two months	Estimate needed
Replace fishing nets and boats lost in storm. Net openings must be minimum at least 1.5in. in diameter	3	Owners Relief team to assist with claims to Fisheries Dept.	Two weeks	\$40,000 total
Partner draws to be adjusted to assist persons with losses	6	Partner group	One month	\$5,000 available

The Community Recovery Plan should be shared with the Local Authority, Parish Disaster Committee, ODPEM and elected representatives. ODPEM and the PDC should assist the community in coordinating their recovery efforts with national recovery efforts. For example, before reconstruction of infrastructure and public buildings takes place, a meeting between the Community Disaster Risk Management Group and the government agencies should be convened at which the community's recovery priorities as set out in their recovery plan are taken into account. **At the same time the community mitigation plan is checked for mitigation actions which were identified and which can be implemented as part of the recovery programme.**

New Construction

Any new construction being done must conform to building codes and planning laws. The community mitigation group should monitor this aspect.

PO7. REVIEW PLAN

The Disaster Risk Management plan should be reviewed after every major event or disaster and updated. Mitigation activities which were completed should be noted in the updating of the plan, as should any gains made in increasing resilience.

PO8. RECOGNITION OF VOLUNTEERS

The community should plan to recognise its members who have worked well.

PO9. APPENDICES

The appendices will contain specifics of the plan as well as supporting information. Included in the Appendices should be:

Community specific procedures for major threats identified by the hazard and vulnerability analysis, such as hurricanes and earthquakes

Resource lists

Skills list

Community DRM Teams

Special needs residents list
Contact list
Assignment of equipment to team members
Schedule of changes made to plan recording change made and date.