CLIMATE CHANGE ADAPTATION PLAN AND DISASTER RISK MANAGEMENT PLAN FOR THE 15 MOST VULNERABLE COMMUNITIES

Deliverable #11

CONSULTING SERVICES TO CONDUCT HAZARD AND VULNERABILITY ASSESSMENTS AND TO DEVELOP A CLIMATE CHANGE ADAPTATION (CCA) PLAN FOR THE RIO MINHO WATERSHED AND FIFTEEN COMMUNITY CCA PLANS

Submitted: October 31, 2019

Prepared for:
Ministry of Economic Growth and Job Creation
AP&FM for the PPCR Jamaica
16A Half Way Tree Road
Kingston 5, Jamaica, W.I.
Jamaica, West Indies

Prepared by:
Environmental Solutions Ltd.
7 Hillview Avenue
Kingston 10,
Jamaica, W.I

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

This document is an output from the Adaptation Programme and Financing Mechanism (AP&FM) for the Pilot Programme for Climate Resilience (PPCR) Jamaica (JA-L1048/JA-G1002), approved in December 2014. It represents Deliverable #11 of the *Consultancy Services to Conduct Hazard and Vulnerability Assessments and Develop a Climate Change Adaptation (CCA) Plan for The Rio Minho Watershed and Fifteen Community CCA Plans*'.

The report was prepared by Environmental Solutions Limited.

Technical supervision: Dr. Winsome Townsend, Project Manager, Adaptation Programme and Financing Mechanism (AP&FM).

Environmental Solutions Limited would like to thank the project team who worked tirelessly in conducting this study. In particular, special thanks to Annmarie Goulbourne and Theresa Rodriguez-Moodie who were the Lead Authors for this CCA Report. The Team Leader and Climate Change/Disaster Risk Management Expert was Mrs. Eleanor Jones. She was supported by Mrs. Annmarie Goulbourne, Deputy Project Manager and Vulnerability Specialist, Mr. Richard Coutou, Geologist and Environmental Specialist. GIS support was provided by GWP Consultants LLP. The authors of the hazard assessments include Dr. Steve Reed, GIS Expert supported by Mr. Donal Neville, Mr. Michael Cox, Hydraulic Engineer, Mr. Norman Harris, Geotechnical Expert and Professor Simon Mitchell, Geophysicist/Seismic Engineer. The climate analysis was undertaken by Professor Michael Taylor and Mr. Jayaka Campbell.

Environmental Solutions Limited would also like to thank all the persons and government agencies and private organisations as listed below who contributed to the preparation of this assessment in various ways.

1. UWI Earthquake Unit
2. Office of Disaster Preparedness and Emergency Management (ODPEM)
3. National Water Commission (NWC)
4. National Works Agency (NWA)
5. Water Resources Authority (WRA)
6. National Irrigation Commission (NIC)
7. National Environment and Planning Agency (NEPA)
8. Social Development Commission (SDC)
9. Clarendon Municipal Council
10. Clarendon Parish Disaster Committee
11. Clarendon Inter-Agency Committee (CIAN)

ACRONYMS AND ABBREVIATIONS

AP&FM	Adaptation Program and Financing Mechanism
CCA	Climate Change Adaptation
CLSD	Clarendon Local Sustainable Development Plan
CMC	Clarendon Municipal Corporation
CSGM	Climate Studies Group Mona
DRR	Disaster Risk Reduction
ED	Enumeration Districts
IPCC	Intergovernmental Panel on Climate Change
GCM	Global Climate Models
GIS	Geographic Information System
GoJ	Government of Jamaica
LPA	Local Planning Authorities
LRMWMU	Lower Rio Minho Watershed Management Unit
MSJ	Meteorological Service of Jamaica
NLA	National Land Agency
NIC	National Irrigation Commission
NSDMD	National Spatial Data Management Division
NSP	National Spatial Plan
NWC	National Water Commission
ODPEM	Office of Disaster Preparedness and Emergency Management
PPCR	Pilot Program for Climate Resilience
PRECIS	Providing Regional Climate for Impact Studies
RCM	Regional Climate Model
RCP	Representative Concentration Pathways
RMWMU	Rio Minho Watershed Management Unit
RWH	Rainwater Harvesting
SDC	Social Development Commission
STATIN	Statistical Institute of Jamaica
TOR	Terms of Reference
URMWU	Upper Rio Minho Watershed Unit
WRA	Water Resources Authority

GLOSSARY OF TERMS

Adaptation	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities. In natural systems, human intervention may facilitate adjustment to expected climate and its effects.
Climate	Climate in a narrow sense is usually defined as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. The relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.
Climate Change	Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.
Climate Variability	Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).
Drought	A drought occurs when there is an extended period of deficiency in precipitation (relative to what is considered normal), which is then insufficient to meet economic, social and environmental demands.
Flood	An overflow of water from a river, lake or other body of water due to excessive precipitation or other input of water.
Global Climate Models	Climate Models (GCMs) are useful tools for providing future climate information. GCMs are mathematical representations of the physical and dynamical processes in the atmosphere, ocean, cryosphere and land surfaces. Their physical consistency and skill at representing current and past climates make them useful for simulating future climates under differing scenarios of increasing greenhouse gas concentrations. They have relatively coarse resolutions relative to the scale of required information because of the computational requirements to model the entire globe.
Groundwater	Water beneath the surface of the earth which saturates the pores and fractures of sand, gravel, and rock formations.

Hydrologic Balance	It is an equation that can be used to describe the flow of water in and out of a system. A system can be one of several hydrological domains, such as a column of soil or a drainage basin.
Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.
Nonpoint Source Pollution	It is the term used to describe pollution resulting from many diffuse sources, in direct contrast to point source pollution which results from a single source. Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrological modification where tracing pollution back to a single source is difficult.
Point Source Pollution	Point source pollution is any single identifiable source of pollution from which pollutants are discharged such as a pipe or ditch. It is direct source pollutant discharge from a fixed point, and has negligible extent, distinguishing it from other pollution source geometries. Effluent from factories and sewage treatment plants are two common types of point sources.
Rain Water Harvesting	This is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to run off. Its uses include water for garden, water for livestock, water for irrigation, water for domestic use with proper treatment, and indoor heating for houses etc.

CUMBERLAND

1 INTRODUCTION

1.1 Project Background

This Climate Change Adaptation Plan and Disaster Risk Management Plan for Cumberland represents the tenth deliverable under the project '*Consultancy Services to Conduct Hazard and Vulnerability Assessments and Develop a Climate Change Adaptation (CCA) Plan for The Rio Minho Watershed and Fifteen Community CCA Plans*'.

The Project falls under the Adaptation Programme and Financing Mechanism (AP&FM) for the Pilot Programme for Climate Resilience (PPCR) Jamaica (JA-L1048/JA-G1002), approved in December 2014. Overall, the objective of the project is to increase Jamaica's resilience to climate change, through enhancing adaptive capacity across priority sectors.

The Rio Minho Watershed Management Unit (RMWMU) in Clarendon, Jamaica was identified as the focus of this study for several reasons including, its level of degradation, vulnerability to climate change and the associated impacts, as well as vulnerability to seismic activity. In addition, the RMWMU is one of the major ground water producing basins in Jamaica with annual abstraction reaching about 400 million cubic metres (MCM) in one year (Climate Studies Group, 2014).

The primary objective of this consultancy is to reduce the vulnerabilities and mitigate the climate change risks in the RMWMU. However, the project has three specific objectives, namely:

1. To conduct hazard assessments and mapping using 2030, 2050 and 2080 climate change modelling scenarios in the entire Rio Minho Watershed Management Unit (RMWMU), as well as downscaling to all seventy-five communities in the RMWMU.

2. To determine the levels of exposure and vulnerabilities to the hazards in the RMWMU and to develop Risk Profiles of the RMWMU and of fifteen priority communities in the Upper Rio Minho Watershed (URMW) Area.

3. To prepare a climate change adaptation plan for the RMWMU and disaster risk reduction / climate change adaptation (DRR/CCA) plans for fifteen pre-selected priority communities in the URMW Area.

1.2 Purpose

The project has five (5) major tasks with several activities as seen in Figure 1-1. This document represents Task 5, which has been informed by the activities of Task 2, 3 and 4. It presents the Climate Change Adaptation Plan and Disaster Risk Management Plan for Cumberland. The plan must be considered a living document and can be updated by the Cumberland CDRM Committee of the community once the project has been completed.

The overall objective of this plan is to provide a framework for increasing the resilience of the community by reducing underlying risk factors. The Disaster Risk Management (DRM) plan framework developed includes strategic actions for prevention, mitigation, preparedness, response and recovery;

and are all directly related to the levels of hazard exposure, vulnerability and risk indicators identified in the Tasks 2 and 3 of the project.

Figure 1-1: Summary of Project Tasks

The DRM Plan has been developed following the principles of the International Strategy for Disaster Reduction (ISDR), which reflects a major shift from the traditional emphasis on disaster response to disaster reduction, and in effect seeks to promote a "culture of prevention".

It is also developed with the mission and vision of ODPEM, whose mission statement reads: "*The Office of Disaster Preparedness and Emergency Management is committed to leading the process of reducing the impact of disasters on Jamaica through Comprehensive Disaster Management (CDM). The vision is to be a proactive world-class agency building a disaster resilient nation*".

1.2.1 Purpose of the Plan

The purpose of the plan is to provide:

- ✓ The residents with a workable emergency system to minimize loss of life and property to prevent disasters from occurring.
- ✓ A basic outline of shelters, welfare and relief systems as well as some focus on evacuation planning that will make preparation, response and recovery from a disaster more effective.
- ✓ An emergency contact list (See Appendix I: Emergency Contact List) and identification of vulnerable populations living in the community.
- ✓ A basic guideline for the community as to who is responsible for what and who is in charge of critical functions in managing an emergency.
- ✓ Suggested adaptation measures based on the hazard and risk assessments.
- ✓ An overall framework for reducing risks in the community including mitigation and preparedness.

The DRM Plan for the community is developed in accordance with the Disaster Risk Management Act, 2015, which is the current law under which ODPEM operates. The community approach to DRM will follow the provisions of the Parish Disaster Plan. The structure has been outlined in Figure 1-2**Error! Reference source not found.** below.

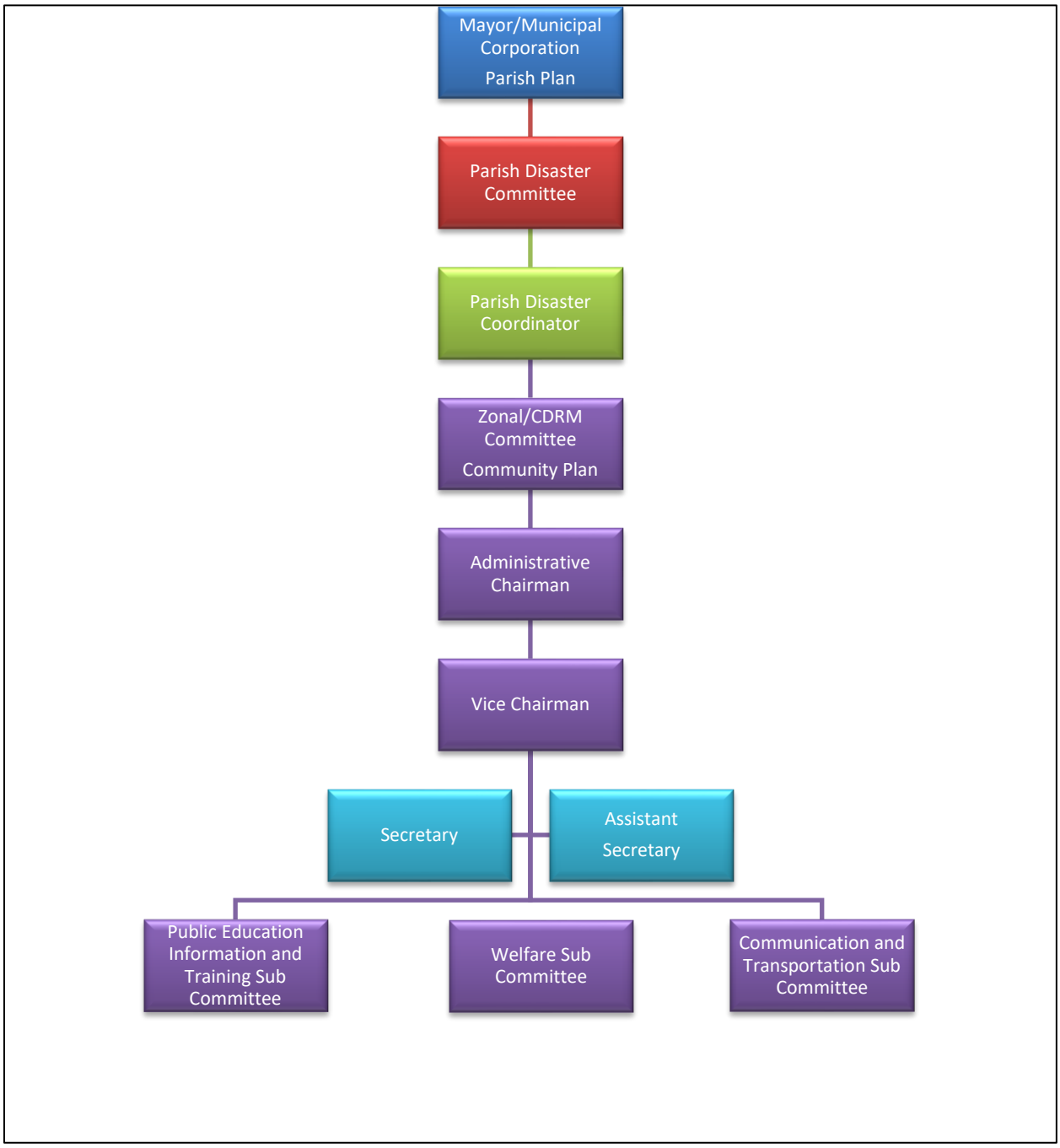

Figure 1-2: Authority of Parish and Community Plans

1.2.2 National Governance Structure

As previously described, Disaster Risk Management in Jamaica is executed at the central government, local government and community levels. Figure 1-3 below illustrates this governance structure.

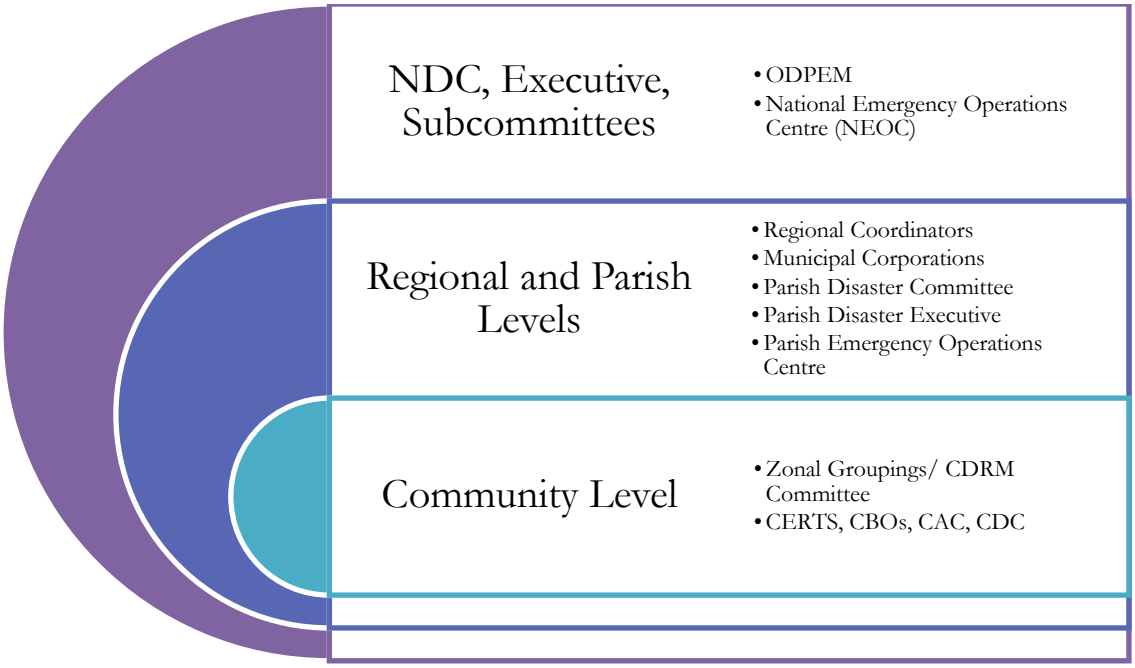

Figure 1-3: Existing National Disaster Management Framework

The ODPEM collaborates with the Municipal Corporations on Disaster Risk Management matters through the Parish Disaster Committee and the Coordinator. At the community level, zonal committees[1] are supported by and work through the District Sub-Committee of the Parish Disaster Committee and are closely integrated with the Parish Emergency Operations Centre (PEOC).

1.2.3 Justification for the Plan

Disasters are felt first at the community level and in many instances the full impact of these events on livelihoods and social systems is neither measured nor recorded. Resilience begins with community members understanding the hazards to which they are exposed and the vulnerabilities of housing, livelihoods, social networks/centres, and critical infrastructure.

In keeping with ODPEM's vision to ultimately build a disaster-resilient nation, the proposed vision for Cumberland is to achieve the institutionalization of a disaster risk management culture through leadership, public education, institutional collaboration and partnerships, reorganization of parish disaster risk management supports and legal instruments.

Based on the Hazard and Risk Assessment undertaken for the watershed several areas, of concerns were identified. These are:

[1] ODPEM has previously promoted the establishment of Zonal Committees as that local/community level body with responsibilities for Disaster Management. CDRM teams are being postulated as a re-visioning of zonal groups in keeping with current Disaster Risk Reduction (DRR) initiatives. Therefore, for all intent and purposes the groups are interchangeable in name and function. Management and reduction of disaster risk being the major difference/improvement.

- Vulnerability of the community and its population (including elderly, young, disabled) to drought, landslides and earthquakes;
- Vulnerability of critical infrastructure;
- Vulnerability of agricultural livelihoods.

The previous experiences and existing level of vulnerability of Cumberland to multiple hazards justifies the preparation of a local area Disaster Risk Management Plan and Climate Change Adaptation Plan. The Plan entails the comprehensive disaster management (CDM) approach whereby all stages of the disaster cycle are provided for.

1.2.4 Components of the Plan

The main components therefore include:

- Prevention and mitigation;
- Preparedness and response;
- Rehabilitation and recovery.

The overall Plan for Cumberland should incorporate sector related plans as illustrated in Figure 1-4. It is recommended that these sector specific plans should be done by the various groups within the community at a later stage.

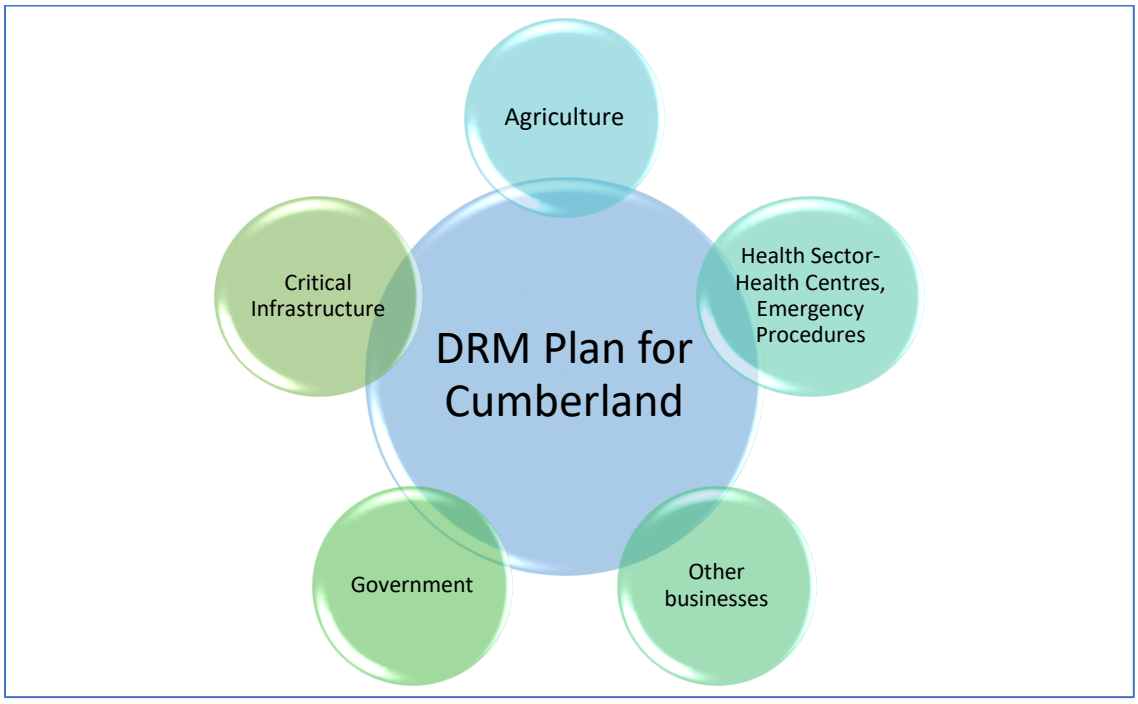

Figure 1-4: Sector related plans linked into the Cumberland Community

1.2.5 Ownership of the Plan

Section 23 of the Disaster Risk Management Act, 2015 suggests that communities set up a Zonal Disaster Committee in order to carry out the requirements of the DRM Plan. The Zonal Disaster Committee/ Community Disaster Risk Management (CDRM) Group is that arm of the community which has taken on

the role of local level advocacy and planning for Disaster Risk Reduction activities at the community level. The CDRM Group should have representation from all districts within the community as well as representatives from the three main economic groups.

All matters relating to prevention, mitigation, preparedness, response and recovery are therefore, the purview of the group. They shall be the team that leads the implementation of Community DRM Plan and links directly with the Parish Disaster Committee and other local level agencies/NGOs regarding disaster management. Other key players include the Clarendon Parish Development Committee, the Clarendon Municipal Corporation, ODPEM, the Social Development Commission (SDC), the utility companies, the Cumberland Community Development Committee and the Cumberland Women's Group.

According to the same Act, the Local Zonal Disaster Committee should include the following duties as adapted from the Act:

1. Provide public education within the community regarding disaster preparedness and emergency response;
2. Liaise with the Clarendon Parish Disaster Committee on matters relating to disaster preparedness and emergency response;
3. Nominate persons to be trained as shelter managers;
4. Prepare a Cumberland Disaster Plan to be incorporated into the Parish Disaster Risk Management Plan.

This Plan fulfills the requirements of item 4 of the above list adapted from the DRM Act, 2015. The composition of the Cumberland CDRM Committee responsible for the activation and implementation of the plan is detailed below. This Committee will be required to meet on an ongoing basis to review plan activities, update when necessary, and conduct training exercises to include simulations deemed necessary. The CDRM Committee will interface with the Clarendon Parish Disaster Coordinator in the execution of the Plan.

Composition of the Cumberland CDRM Committee

The table below outlines the membership of the committee and the roles and responsibility of each member is outlined in Appendix II: Terms of Reference for CDRM Group.

EXECUTIVE TITLES	NAME	TELEPHONE
Chairman/President	TBD	TBD
Vice Chairman/President	TBD	TBD
Secretary	TBD	TBD
Treasurer	TBD	TBD
Assistant Secretary	TBD	TBD
Coordinator – Public Education and Fundraising	TBD	TBD
Coordinator – Vulnerability and Risk Identification	TBD	TBD
Coordinator – Prevention and Mitigation	TBD	TBD
Coordinator - Response and Recovery	TBD	TBD

*The executive membership of the DRM Group may assume that of an existing CBO Structure. The Coordinators outlined above must be made part of any existing structure to be used.

1.2.6 Distribution of the Plan

The Clarendon Municipal Corporation, Cumberland CDRM Committee, the key stakeholders of the Parish Disaster Committee and ODPEM are responsible for the distribution of the Plan.

1.2.7 Target Users

The target users of this plan include:

- Clarendon Municipal Corporation
    - Parish Disaster Coordinator
    - Planners
    - Clarendon Parish Disaster Committee Members (e.g.)
        - Local Government Representatives
        - Red Cross Representative
        - Recording Secretary
        - NGO Representatives
    - Trainers of trainers
    - Trainers
- Parish Development Committee
- Cumberland CDRM Committee

1.2.8 Review and update of the Plan

The responsibility for updating and testing the plan will lie with the Cumberland CDRM Committee. This plan is a living document, as conditions change (new or emerging hazards due to new roads, new houses and residents, etc.) the plan will have to be revised. ODPEM recommends that the period for review and subsequent revision is one year. Therefore, an annual schedule for review will need to be prepared. Special emphasis will be placed on updating the following information:

- The internal resources available in the community;
- Assessment of emergency supplies available to the community's disposal and some focus on storage;
- Updated contact list of heads of the CBOs and critical persons in the Community Emergency Response Team (CERT);
- Re-Election of persons to be part of the CERT;
- Capacity building for shelters in the community and shelter management.

After an extreme event and/ or after simulation exercises, an evaluation of the plan and lessons learnt should inform revisions.

2 COMMUNITY PROFILE

2.1.1 Description of Area

Cumberland is a rural community located in the western parts of the Rio Minho Watershed. The community is situated in Clarendon and borders the parish of Manchester (Figure 2-1). Cumberland is a relatively isolated hillside community that typifies deep rural settlements and is one of nine communities in the Spaldings Development Area. Cumberland has 3 main districts as follows:

1. Top Cumberland
2. Bottom Cumberland
3. Five Mile

Farming was reported as the main livelihood activity within the community; farm sizes are usually less than 5 acres.

Figure 2-1: Location of Cumberland, Clarendon

2.1.2 Socioeconomic overview

The community has a population of 2,812 with an estimated 52% males and 48% females. There are 578 households with an average household size of 3.3. Members of the Cumberland community primarily rely on rainwater harvesting, spring water and trucked water and they have a very good road network.

Other than some cultivation, shops, and small repair type establishments, its main engine of social integration and growth is reported as the Cumberland Primary School. It has an active Community

Development Committee which has identified ambitious projects that it is hoping the Environmental Foundation of Jamaica (EFJ) will help establish. These are mainly to do with water supply and erosion prevention.

Approximately 70% of the community has regular garbage collection at least once a week. Pit latrines are still used by approximately 19% of the total population.

A type 1 Health Centre is located in Cumberland, but it is also plagued with challenges common to other health centres in the parish. The range of health services offered are limited to nurses and some maternal care which is inadequate, opening only 2-3 times a week. There are also management inadequacies with respect to periodic staff shortages.

2.2 Drivers of Risk

2.2.1 Summary Hazard Profile

Cumberland is primarily affected by drought, landslides and some flooding (Figure 2-2 to Figure 2-5). The community is also susceptible to earthquakes although the community has not yet experienced a significant earthquake event.

The traditional cash crops are grown in Cumberland, which suffers from very poor water infrastructure, and this makes farming difficult. Cumberland community members have indicated that rainfall patterns have changes and they can no longer plan around the traditional wet and dry seasons. The community, despite the challenge is still able to secure some markets for the crops that can be produced.

The lack of water resource infrastructure in the community has amplified the impacts of drought in the community as with no rainwater, the many persons who cannot afford trucked water have a tedious journey down hillsides to access water from reliable springs in the community.

There are also incidences of landslides on susceptible slopes that have lost trees. Tree loss within the community have been reported to be as a result of cutting of trees for yam stick, charcoal and wood for occasionally building sheds; there are also reports of idlers setting fires to areas.

Table 2-1: Summary Hazard Profile of Cumberland

HAZARD	EXISTING	PROJECTED
Drought	• Cumberland is heavily reliant on rainwater for domestic and farming purposes. • The community is prone to seasonal drought. Most recently being affected in 2016-2017 and 2019. • The lack of water resources infrastructure amplifies the impact of droughts.	Annual average overall rainfall is expected to decrease over the next century.
Landslides	• Moderate to High susceptibility to landslides. • Landslides have occurred in the community in the past. • Landslides are generally large, old slope failures, which may be over hundreds or thousands of years old. The landslides are characterized by large boulder fields strewn across the steep landscape.	Landslides will continue to pose a challenge based on the geology of the area, especially on slopes that have undergone

HAZARD	EXISTING	PROJECTED
		significant tree loss.
Earthquakes	• The active Rio Minho Fault passes through this area and is capable of producing an earthquake of up to magnitude 6.8. The community is characterized by steep slopes and large landslide deposits adjacent to some of these slopes. They were probably produced by earthquakes before historical records.	The potential fo an earthquake of up to magnitude 6.8 will remain.
Flooding	• Flooding in the community is not directly from the Rio Minho but a spring in the area sometimes cause flooding at the Cumberland Primary School, which is located in the valley close to one of the main springs.	No flooding predicted due to the Rio Minho at this point in the watershed.

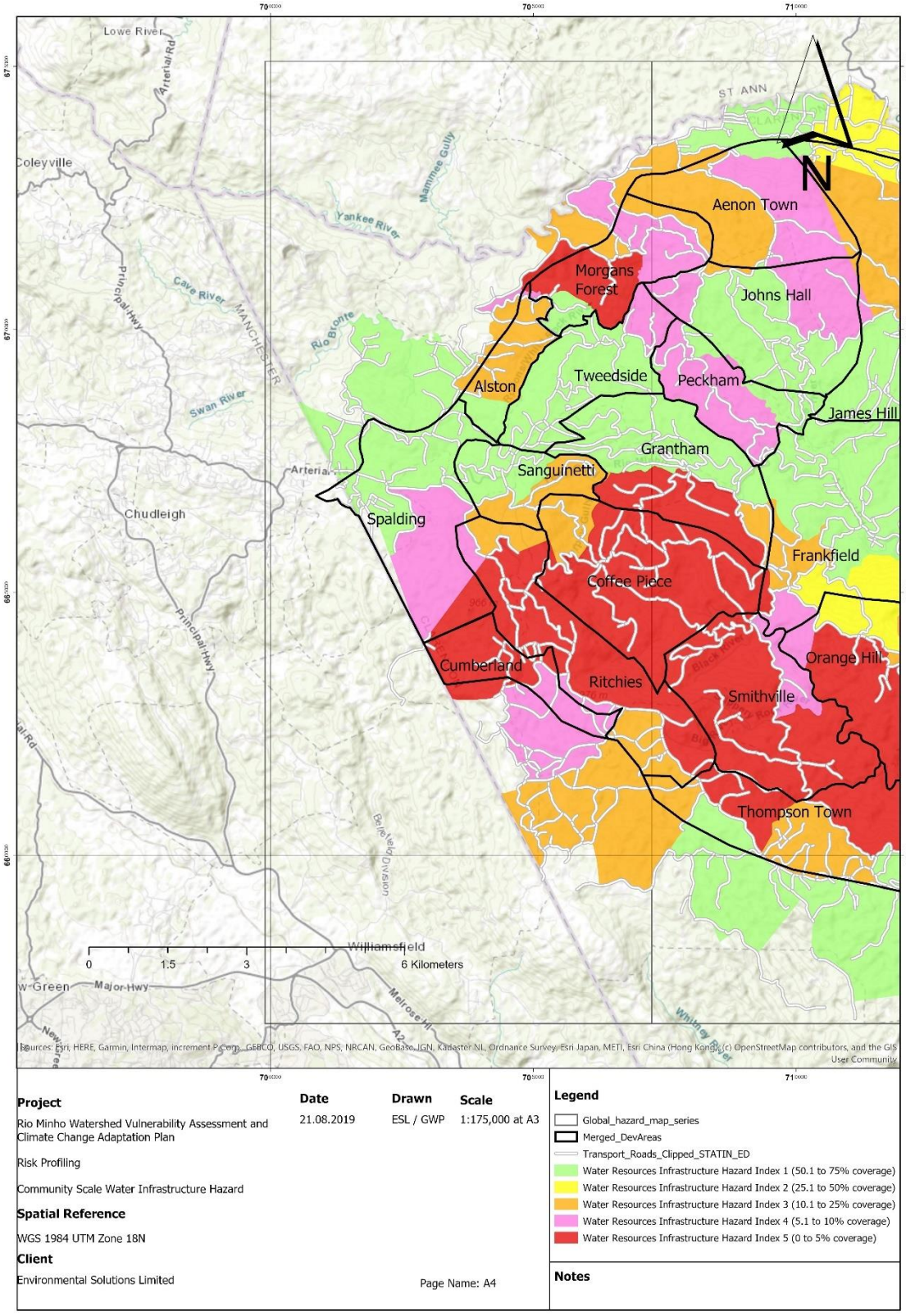

Figure 2-2: Community Scale Water Hazard- Cumberland

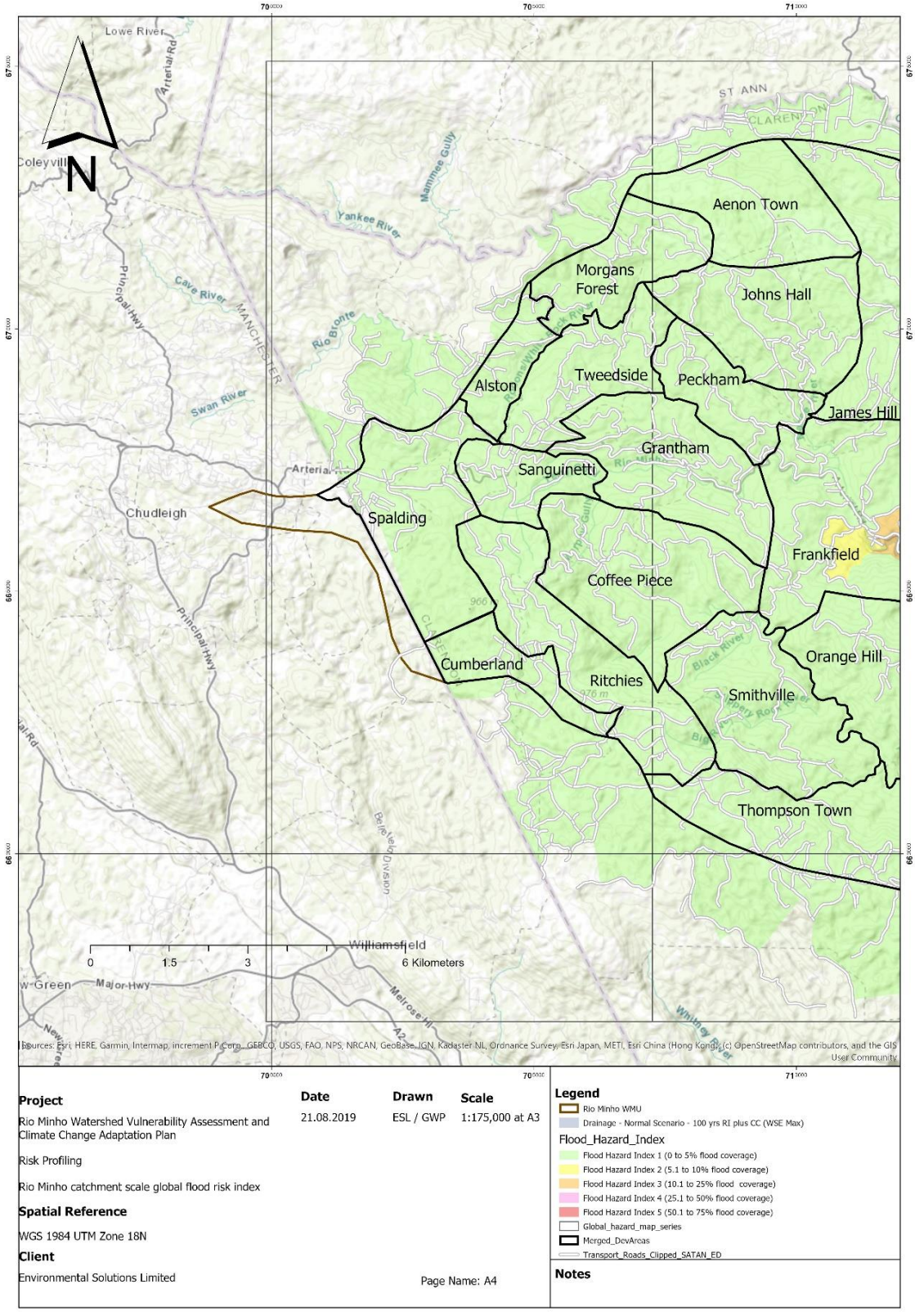

Figure 2-3: Community Scale Flood Hazard- Cumberland

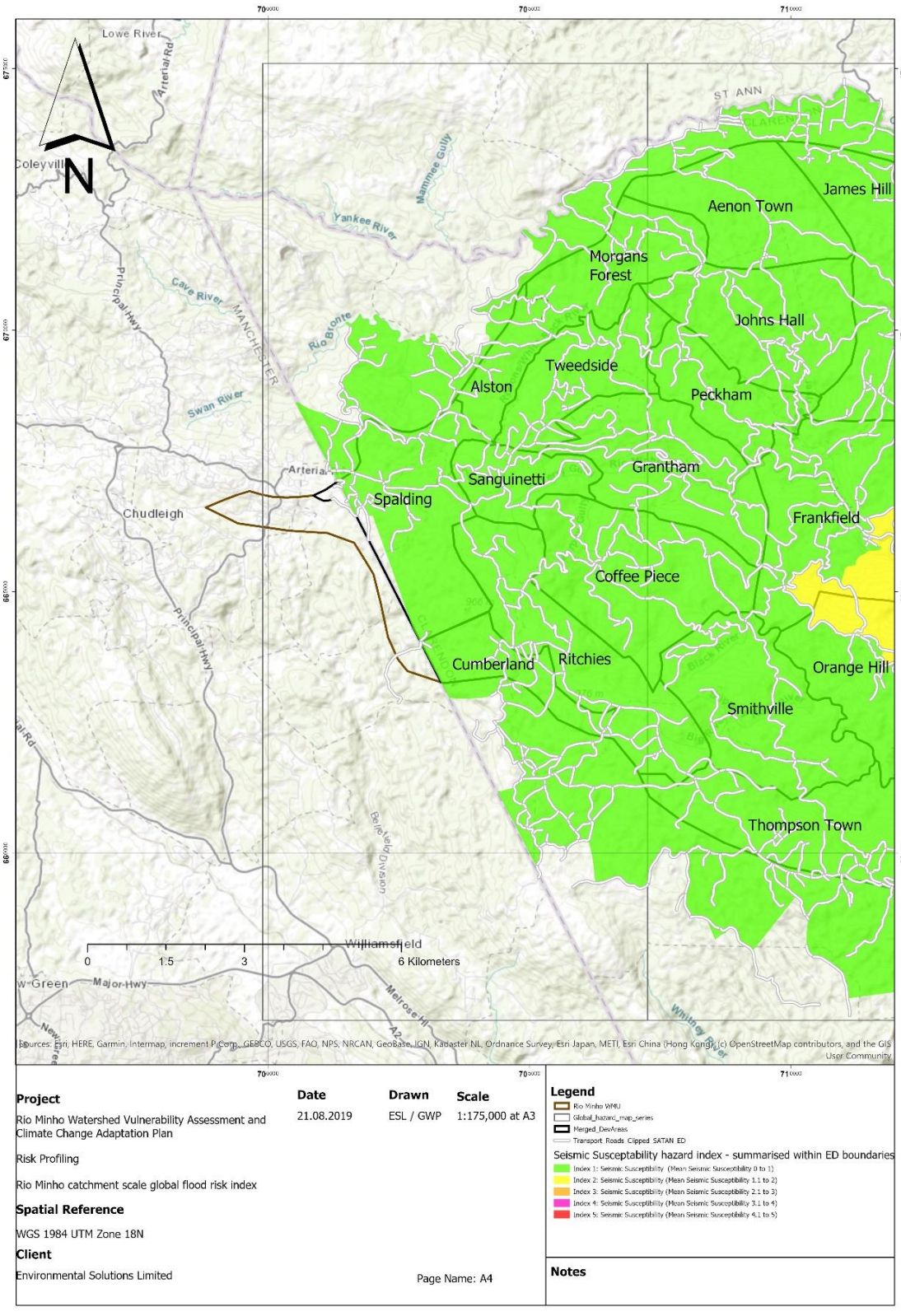

Figure 2-4: Community Scale Seismic Hazard- Cumberland

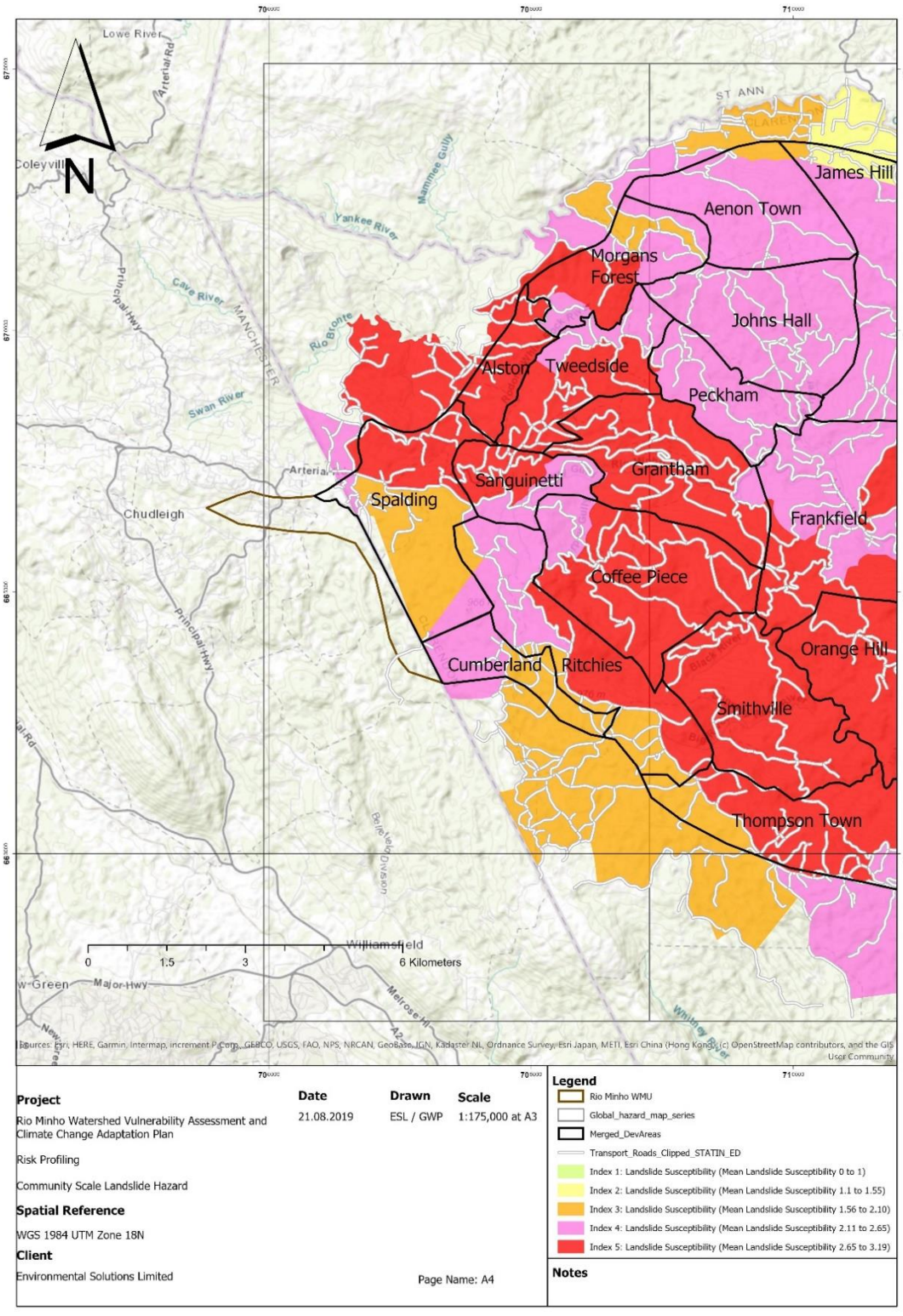

Figure 2-5: Community Scale Landslide Hazard- Cumberland

2.2.1.1 Priority Listings of Hazards

Table 2-2 below outlines the list of priority hazards and summary of the assets it can impact.

Table 2-2: Priority Listing of Hazards

HAZARD	PROBABILITY OF OCCURRENCE	IMPACT ON COMMUNITY					
		PEOPLE	BUILDINGS	INFRASTRUCTURE	CRITICAL FACILITIES	LIVELIHOODS	TOTAL
Drought	3	**3**	**1**	**1**	**3**	**3**	**14**
Landslides	2	**2**	**2**	**3**	**2**	**2**	**13**
Earthquakes	2	**2**	**2**	**2**	**2**	**2**	**12**
Flooding	1	**1**	**1**	**1**	**1**	**1**	**6**

Key

IMPACT		PROBABILITY OF OCCURRENCE	
High	**3**	Very Likely	**3**
Medium	**2**	Likely	**2**
Low	**1**	Unlikely	**1**
None	**0**		

2.2.2 Summary Adaptive Capacity

The Cumberland community members somewhat cope during the various hazard events, no real adaptation measures can be identified. Specifically, during the drought, persons plant less or avoid planting certain vegetable crops that take a lot of water and tend to attract a lot of pests (e.g. tomatoes, cabbage). Additionally, persons walk to the springs and manually bring water from them up to their farms and water what they can. This is a tedious and tiring process.

Rain is unpredictable and persons can no longer rely on the traditional rainy season patterns, so they just plant and try and hope for the best.

With respect to landslides, persons avoid planting in areas where the soil frequently erodes.

The community does have a very active CBO which has established good linkages with the Social Development Commission and the Parish Disaster Coordinator.

Table 2-3: Adaptive Capacity Analysis

CAPACITY	TYPE OF RESOURCE	TASK
Skills	Farming Retailing Construction	Social intervention to build skills in youth that can be used to earn an income
Knowledge	Limited knowledge in drought tolerant cropping mechanism	Training to build the knowledge of farmers in drought tolerant cropping mechanisms
Networks	Digicel Flow	-
Transportation	Road Network is in good condition Area serviced by Taxis	-

CAPACITY	TYPE OF RESOURCE	TASK
Building/Infrastructures	Cumberland primary School as shelter Old Basic School building not in use	Assess adequacy of the shelter in its current state and identify needs Seek funding to retrofit Old Basic School into a Community Centre
Means of Care	Nurses and a Midwife associated with the Cumberland Health Centre	Improve staffing to meet community demand
Medical Care	Cumberland Type 1 Health Care - limited service, inadequate staffing and resources	Lobby for improvements to the made to the Health Centre facility and to improve the service offered.
Means of Communication	Radio, Television, Cell phone and word of mouth	-
Commercial Enterprises	Several retail shops are located in the community. No large-scale commercial entities exist within the area.	Social interventions can stimulate growth in the community

2.2.3 Summary Vulnerability and Risk Profile

The Cumberland Community can be described as having a high-risk profile (Figure 2-6). It is at medium to high risk from drought and landslides. It is also at risk from earthquakes as well as flooding, however this risk is low. The active Rio Minho Fault passes through this area and is capable of producing an earthquake of up to magnitude 6.8.

The following table presents a summary of findings from key stakeholders in the community as it relates to their perspectives on the hazards. It presents their level of awareness, existing coping mechanisms and suggests preliminary needs and adaptation measures for the community.

Table 2-4: Summary of Vulnerability and Risk in Cumberland

HAZARD	VULNERABLE ASSETS	POSSIBLE IMPACTS	DRM PLANNING NEEDS
Drought	• Population of 2,812 that rely on water for domestic purposes • Crop farming, which is the main livelihood/ income earner for residents	• Lack of potable water for domestic purposes • More hard work by community members to go down steep hillsides to retrieve water from springs; this can also increase the risk of accidents that can occur • Reduction in crop yield • Reduction in disposable income • Increase in poverty and negative social spinoffs • Less persons in farming overtime • Farming becomes	• Springs are always plentiful with water so supporting infrastructure to bring the water to the road would be helpful. • Training on ways to improve cropping practices to adapt to drought conditions. • Current farming does not attract youth to work and there are limited social services within the rural community. Social interventions are needed to open up opportunities for youth empowerment and legal work. The Old Basic School

HAZARD	VULNERABLE ASSETS	POSSIBLE IMPACTS	DRM PLANNING NEEDS
		further unattractive for youth as yield and income prove unfruitful	building is not being used and could be used as a community centre to foster youth activities and skills training to take the boys off the road. • Development of a youth club.
Landslides	• Crops • Road network	• Crops can be lost if landslide occur on an active farm plot • Roads can potentially be blocked by landslides marooning community members.	• Deforestation takes place to facilitate charcoal burning and the provision of yam sticks and so tree planting would be a good intervention. • Training on sustainable wood cutting practices for charcoal.
Earthquake	• Population of 2,812 • All housing • All infrastructure including roads and critical facilities	• Damage to infrastructure • Damage to housing • Death of persons especially vulnerable groups such as the elderly and disabled who cannot readily move and children who do not know how to react in these cases.	• Community sensitization on earthquake risk and what to do in these cases. These sessions would need the presence of a stronger CBO and so the involve the 6 community churches to help build a unified and strong Cumberland Community Development Committee.

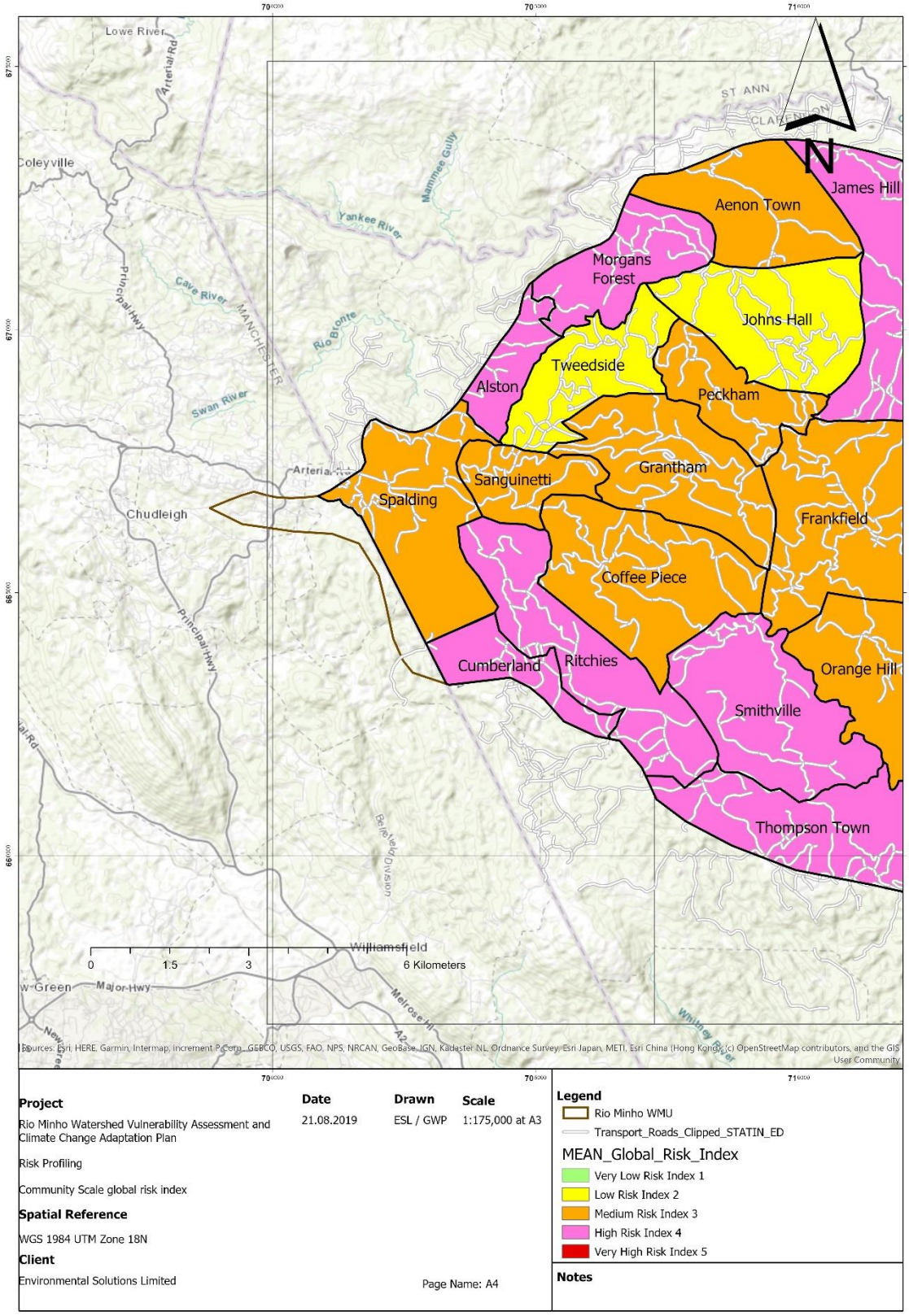

Figure 2-6: Community Scale Global Risk Index- Cumberland

3 PHASES OF DISASTER RISK MANAGEMENT

The Disaster management cycle (Figure 3-1) illustrates the ongoing process by which governments, businesses, and civil society should plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Appropriate actions at all points in the cycle lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters during the next iteration of the cycle.

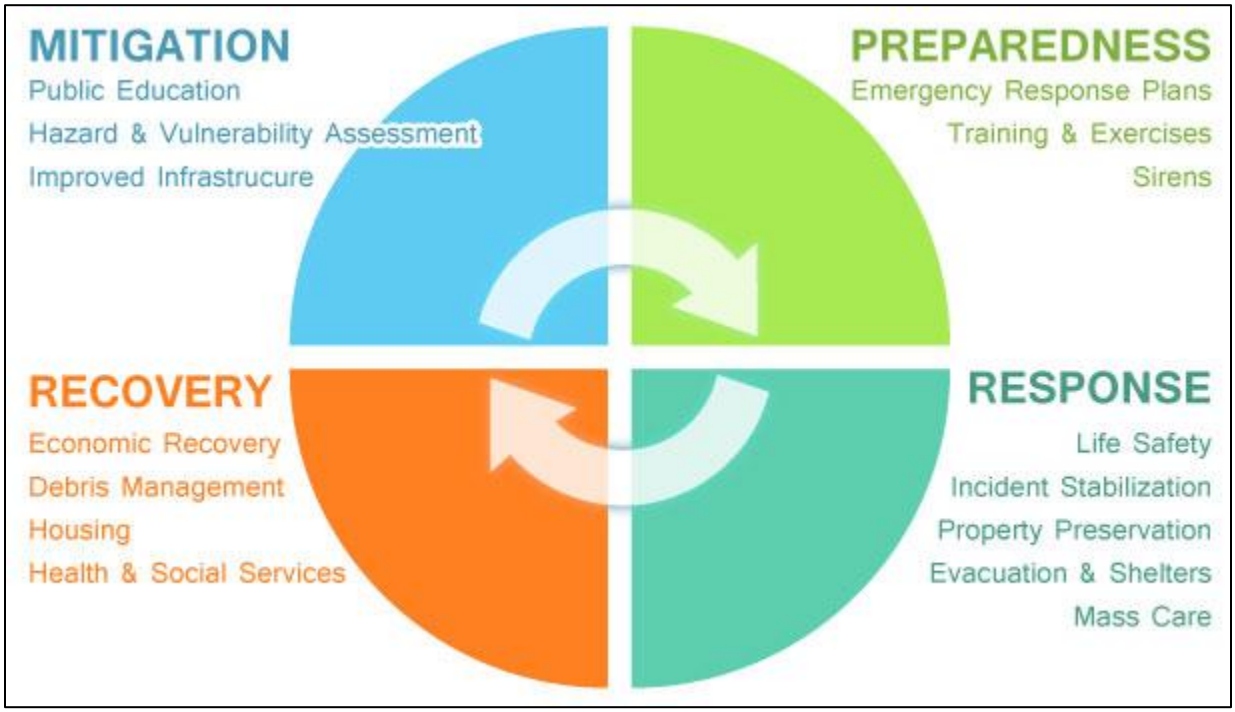

Figure 3-1: The Disaster Risk Management Cycle

3.1.1 Prevention and Mitigation

Prevention of damage and loss is the first step for effective DRM. Measures may be structural or non-structural activities.

3.1.1.1 Goal

To reduce the vulnerability of the community to the negative impacts of climate related hazards through the effective administration of land use, environmental protection measures, public education and community participation.

3.1.1.2 Objective

The main objective associated with this goal is to ensure that future development in the community is not exposed to the same hazards as in the past. Implementation of a mitigation plan is deemed essential to facilitating sustainable development as well as creating an enabling environment for reducing disaster risks.

Rationale: Due to the importance of the environmental assets of the area it is essential to ensure that development projects will not be implemented in unsuitable locations, nor will be implemented without

reference to the established codes. This is particularly important not just for larger developments but for the housing sector as well. This intervention seeks to identify concrete measures that can be taken to reduce the vulnerability of future developments and lessen the possibility of a major disaster occurring due to poor site selection or construction standards.

The main driver of mitigation activities should be the Clarendon Municipal Corporation (MC) who is tasked with regulating development in Cumberland in accordance with the Parish Development Order. However, the community can play a role in assisting the Clarendon MC with identifying areas unsuitable for development based on vulnerability and hazard history.

Mitigation measures can be classified under two general headings:

- *Structural Measures* are physical in nature and include engineering works. E.g. Drains, canals, etc.
- *Non-Structural Measures* are general land-use planning measures implemented to reduce or prevent the occupation of identified high-risk areas. These may include a) land-use zoning, b) establishing setbacks from coastlines or cliffs and/or c) the provision of financial incentives/disincentives to encourage development in safe locations.

Table 3-1 presents the mitigation action plan which identifies the disaster risk reduction measures and adaptation measures for implementation which will enable the community to become disaster resilient in the long term. The community's Action Plan sets out a prioritized list of activities, timeframe, and responsibility/partners for successful implementation.

Table 3-1: Adaptation, Prevention and Mitigation Plan – Needs, Strategic Actions, Responsibilities

Hazard	Activity	Timeframe	External Support Partners
Drought	Put in place infrastructure to bring the water from Mitchel Hole Spring and other springs in the area to the main road for persons to access water.	Short to medium term	NWA Clarendon Municipal Corporation Member of Parliament Funding Agencies
	Training on drought tolerant cropping mechanisms	Short to medium term	RADA
	Social interventions to open up opportunities for youth empowerment and legal work.	Short to medium term	SDC, Funding Agencies, Clarendon Municipal Corporation

Hazard	Activity	Timeframe	External Support Partners
	Retrofitting of the Old Basic School building as a community centre to foster youth activities and skills training Development of a youth club	Short to medium term Short to medium term	Funding Agencies SDC and Clarendon Municipal Corporation, Spalding Police Station
Landslides	Tree planting on unstable slopes Public Education on sustainable charcoal harvesting measures and other slope stabilization mechanisms	Short to medium term Short to medium term	Forestry Department Forestry Department & RADA
Earthquakes	Public Education on earthquake risk and what to do in such events	On going	ODPEM & Parish Disaster Coordinator

3.1.2 Preparedness and Response

Preparedness and response planning for Cumberland will entail standard operating procedures (SOPs) as well as initiatives specific to the vulnerability profile of the community. Specifically, the plan speaks to recommended tasks to be done before during and after an event outlining lead responders and their associated support/ partners.

The preparedness and response objectives are as follows:

- Provide the major stakeholders within the community with an action plan to prepare for and respond to extreme natural hazard events in order to reduce the dislocation and loss associated with hazards that face the town
- Establish a centralized command and coordination structure for managing any disaster in for Cumberland.
- Adoption of guidelines for the community linkages with the National Emergency Operation Centre (EOC) (located in Kingston) and Parish EOC, which is located in Clarendon, to ensure that relief supplies are accessed as needed.

The preparedness and response phase of DRM requires that activities be undertaken before, during and after an event. These are detailed below. Activities for Cumberland should mirror the provisions of the National Disaster Risk Management Plan for Preparedness and Response.

3.1.2.1 Before

This phase involves all the necessary **pre-onset activities** undertaken over the short or long-term pre-impact period. These include **institutional arrangements** within the Municipal Corporation and in collaboration with Parish Disaster Coordinator, the Regional Disaster Coordinators and ODPEM for:

a. Initial reconnaissance
b. Preparation of situation reports
c. Damage and Needs Assessment (DANA) reports
d. Crisis Communications
e. Humanitarian Response
f. Relief supplies and distribution
g. Urban search and rescue
h. Medical Procedures

Also included in the pre-onset phase are the following general preparedness activities include:

1. Preparation and implementation of public awareness programs designed to sensitize the general public to the dangers posed by the existing vulnerability identified for the community;
2. Development of emergency plans for homes, farmers and small businesses;
3. Preparation of evacuation plans for threatened communities;
4. Shelter identification and preparation;
5. Shelter management training;
6. Establishment of mutual aid agreements for supplies, equipment etc.;
7. Prepositioning and stockpiling of non-perishable essential items that would be required following a disaster;
8. Recruitment and training of volunteers;
9. Conduct simulation exercises with emergency personnel in Standard Operating Procedures (SOPs) for respective arm (e.g. Fire, Police, Coast guard etc.);
10. Development and testing of response mechanisms to ensure that response activities are carried out in an efficient and effective manner when needed (simulation exercises).

The above identifies general preparedness activities. Specific preparedness actions are outlined below.

Preparedness and Initial Response Activities

1. **Develop public education and awareness strategy**. The Strategy seeks to increase awareness, provide the community with current information on protective measures for all threats facing the community and can be fairly simple such as in the template provided below:

Hazard	Public Education Action	Timeline	Responsibility	Resources Needed

2. **Develop Community Monitoring Programme**. The CDRM Group should assign persons with the responsibility of monitoring situations that may affect the community and disseminate information to the CDRM group. Responsibilities should include: Monitoring media announcements for official information, monitoring marine weather forecasts, and liaising with the Parish Disaster Committee, Coordinator and ODPEM etc.

3. **Establish Community Early Warning System**. The community must be alerted to the possibility of a threat or dangerous situation. The CDRM Group will need to identify suitable warning systems to be used by residents e.g. SMS alerts, siren/fog horn, etc. The system will need to include mechanisms for warning special needs residents, including persons with disabilities, elderly, as well as members of the community who may be at school, down at springs, etc.

4. **Prepare Evacuation Plan.** The evacuation plan will be a guide for the community to coordinate their efforts with disseminating early warning to ensure timely and orderly evacuation of the vulnerable areas and persons.

Given the size of the community, it is recommended that sections of the community evacuate during an emergency if recognized that their living situation and resources are inadequate to support an anticipated hazard event such as a hurricane. However, it must be understood that some residents are inclined to take risks based on past experiences and so will not evacuate. The CDRM Group should identify priority areas for evacuation during an emergency. Below is a template for use in this process.

Area for Evacuation	Priority*(low, medium, high)*	Reasons for Evacuating	Assembly Point

In the event that the sections of the community identified above need to be evacuated, the evacuation route to be used should be identified. Community members should proceed to the designated shelters as outlined in the table below. It is not necessary to assemble at an assembly point. Table 3-2 below presents the shelters that serve the Cumberland community.

Table 3-2: Shelter Listing for Cumberland (Extracted from Clarendon Shelter Listing 2019)

ZONES	*NAMES & ADDRESS OF SHELTERS*	*STATUS*	*PRINCIPAL CONTACT #*	*AREAS SERVED*	*SHELTER MANAGER*	*ADDRESS OF SHELTER MANAGER*	*TELEPHONE*	*COMMENTS*
73.	Cumberland Primary Cumberland P.A.	Active	Nemiah Foster 782 – 3042	Cumberland Five Miles Banana Ground	Earnest Denton	Spaldings P.O.	326-7444/ 479-8005	Phone reception is poor
					Sheila Tomlin		845-4897	Located in a vulnerable area
					Damion Brown		393-7418	Shiloh Apostolic church is used as alternative Pastor Hebron

The evacuation procedure for the community is detailed below in Table 3-3.

Table 3-3: Evacuation Procedures

ACTIVITY	RESPONSIBILITY
Evaluate threat and liaise with Clarendon PDC/ODPEM on need for evacuation	TBD
Alert residents on possible evacuation	TBD
Decide on timing	TBD
Ensure special needs population is assisted	TBD
Organize transportation	TBD
Identify route to be used	TBD
Ensure shelter is available	TBD
Start Evacuation	TBD
Check that all areas have been evacuated	TBD
Inform Clarendon PDC	TBD

5. **Assess existing Shelters.** Assist the Disaster Coordinator in conducting the assessment focusing on the condition of the shelter, capacity, adequacy of bathrooms.

6. **Organize Simulations and Drills**. The CDRM will organize with the relevant agencies to conduct drills and simulation exercises for preparedness and response. These exercises will allow for the testing of the disaster plan to show strengths and weakness in the capability of the community to respond during an emergency. Drills should be carried out once per year and a schedule will be maintained indicating type of drill and date of next drill. The CDRM should encourage hotels and other business operators to have their guests/clients participate in the drill.

7. **Set up response and relief base.** The DRM Team will need a location to operate out of. It will serve as an information centre for community members to access information regarding the effect of the disaster; or any other related status update; It is also where the team members will channel their status reports.

The DRM team will forward information to the Parish Emergency Operations Centre (PEOC) through the team leader. The team leader and another designate will be responsible for communicating reliable and accurate public information to the Community. All warnings at the community level should be based on information received from ODPEM and the Meteorological Office of Jamaica. Upon ODPEM's/ the Meteorological Office of Jamaica's announcement of an impending threat to the island, the CDRM

Committee will proceed to activate the Cumberland disaster preparedness and response aspect of this DRM Plan

The Disaster Risk management team will also develop an inventory of affected property and assess damage, and where possible secure the perimeter areas deemed unsafe.

8. Train team members. Team members and/or other designated persons will need to be trained in the following:

- Search and Rescue
- First Aid/Emergency Medical Care
- Initial Damage Assessment
- Distribution of Relief Supplies

It is important for the CDRM Group to establish linkages with other organizations to assist in the delivery of training e.g. the Ministry of Health, and ODPEM

9. **Encourage Continuity Planning**. Businesses and other organizations should be encouraged to identify critical functions, documentation and equipment and personnel. Procedures need to be developed, communicated and implemented to ensure that the respective business/organization can function as early as possible after an extreme event.

1.1.1.1 During

This period is marked by watch (36 hours before the event), warning (24 hours before the event) and strike in the case of hurricanes and storms. Specific activities for each of these phases have been defined by the national plan as it relates to hurricanes. The standard operating procedures (SOPs) as defined before an event should be activated. (See Appendix III: Hurricane Standard Operating Procedures)

Climate triggered events allow for advance warning beginning with the alert phase. Activities in the alert phase usually provide citizens with the first indication of impending danger. This phase is normally initiated at the national level when a notice is issued to the community or country of the impending danger. During the alert phase the community prepares for the upcoming event by a) preparing to evacuate threatened areas, b) storing records and valuable documents, c) stockpiling essential items and d) the activation of warning/monitoring systems. At the local institutional level (Municipal Corporations) plans are activated and personnel briefed on the upcoming event and updated regarding the tasks which may be required of them.

1.1.1.2 After

Actions taken after the event are classified under the general headings of:

- *Emergency Response:* The focus of the response phase is humanitarian assistance through restoration of access and provision of relief measures to save lives, alleviate suffering and reduce economic losses. Cumberland CDRM committee to liaise with Parish Disaster Coordinator to ensure needed supplies are communicated and accessed from the EOC in Clarendon.
- Restoration of basic services to at least minimum level is included in the response phase.

After the Impact

- Cumberland Zonal Committee/ sub-teams should be convened and pre-assigned designated persons for the various areas below should be reporting.
- Tasks and work areas assigned
- Damage and Needs Assessment (DANA) forms distributed
- Initial Reconnaissance and rapid surveillance (aerial and/ windscreen surveys) undertaken
- Preliminary damage assessment reports prepared

Damage Assessment and Needs Analysis

Relief distribution will be guided by the Damage Assessment and Needs Analysis undertaken in keeping with the DANA policy. The first Damage Assessment and Needs Analysis Surveys will be conducted within twelve hours of the event by community residents trained by the ODPEM. Community members can be chosen based on various skillsets or knowledge possessed, also they can be drawn from existing organized groups. These can include persons with extensive knowledge of community history, persons with transportation resources e.g. pick-up trucks, carpenters, electricians, etc.

This survey should provide a preliminary overview of the damage sustained and immediate needs. Thereafter surveys will be conducted at regular intervals as laid out in the Damage and Needs Assessment Plan.

The ODPEM Initial Damage Assessment Procedure is outlined below:

ACTIVITY	RESPONSIBILITY
Send out rapid assessment team	TBD
Check on: ▪ **Roads opened/closed** ▪ **Roads In need of urgent repair to provide access**	TBD
Power: ▪ **Fallen lines, poles transformers** ▪ **Live wires**	TBD
Water and Sewage: ▪ Broken/missing water mains ▪ **Water available** ▪ **Sewage pipes broken/leaking**	TBD
Describe State of: ▪ Community ▪ **Schools** ▪ Churches ▪ Businesses ▪ **Farms**	TBD

Subsequent assessments (two at minimum) will be undertaken in the community within a one-week period. The table below indicates when these assessments should be conducted and who they will be sent to.

Type of Assessment (Buildings, Agriculture, Welfare etc)	Team Leader (Name, Contact)	Agency Report is to be submitted to	Time Frame
Buildings, utilities and infrastructure		Ministry of Labour and Social Security Clarendon Municipal Corporation JPS NWC	Two (2) days after all clear is given
Welfare		Ministry of Labour and Social Security Clarendon Municipal Corporation	Two (2) days after all clear is given
Agriculture		RADA MICAF	Two (2) days after all clear is given

Relief Assistance/Mutual Support

- Memoranda of Understanding shall be entered into with local merchants and hardware stores for the immediate provision of relief items in the immediate aftermath of a disaster, and with trucking operators for the transport of relief material and personnel.
- The CDRM Team shall identify equipment and emergency supplies available in the community for use e.g. weed whackers, tipper trucks, back hoes, etc., and list the items, quantity and the contact person
- Copies of all MOU entered into shall be included as annexes to the plan.
- Relief distribution activities will be carried out under the direction of the MLSS by locally trained personnel familiar with the residents of their neighbourhoods.
- Families sheltering friends or family members evacuated from an endangered area will be entitled to receive food packages to assist in caring for persons being sheltered.

- The Municipal Corporation and PDC shall reserve the right to dispose of (by sale) unsolicited relief items and to use the proceeds for more beneficial purpose.
- Liaise with ODPEM's national mechanism for handling. Supplies for Cumberland should be accessed from the EOC in Clarendon.
- *Financial and material audit of all relief funds:* A comprehensive financial and material audit will be prepared and submitted to the Parish Disaster Coordinator upon termination of the relief operation.
- If the community acquires its own emergency supplies through donations or other sources, an inventory of these should be maintained. See example of template below.

Items	Quantity	Source (Agency/ Business)	Responsibility
Cots			
Blankets			
Mattresses			
Bottled Water			
Rain Coats			
Etc…			

Based on the initial damage assessments, the following procedures should be followed:

Identify members of community who have:

- ✓ **Received damage**
- ✓ **Need shelter**
- ✓ **Lost means of income**
- ✓ **Need assistance**
- ✓ **Identify members of the community in need of psycho-social support or counseling**

Compile the list and update the PDC and ODPEM (See Appendix IV – Form for the Collection of Names and Contact of Persons in Need or Incurred Damage**)**

Evacuation and Emergency Shelter Management

- *Evacuation of Endangered Areas:* Where an area is deemed to be at risk the local designate from the Cumberland CDRM Committee in consultation with the Parish Disaster Coordinator shall order the evacuation of all areas so identified.

- *Shelter Management:* All schools, churches, community shelters and other buildings used as emergency shelters should be closed and returned to their owners in the same state in which the respective entity was received.

Communications and Reporting

- *Reporting Procedures:* A daily meeting to assess the progress of relief efforts will be held with all agencies actively involved in response, rehabilitation and recovery activities.
- *Media Coordination:* All reports to/from the media should be coordinated by a designated representative on the CDRM Committee.

Table 3-4 presents a recommended Preparedness and Response Action Plan for Cumberland.

Table 3-4: Preparedness and Response Action Plan for Cumberland

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
Crisis and Emergency Communication						
Monitoring of media	Ongoing	x	x	X	Cumberland CDRM Committee	Met Services, ODPEM, JIS
Develop crisis / emergency communication protocol		x			Cumberland CDRM Committee	Clarendon PDC Business Comm. Retail enterprises, farmers
A local early warning system should be instituted to complement national warnings. (See Appendix V: Warning and Alert Systems).		x			CDRM Committee	Clarendon PDC
Develop and disseminate programme to sensitise targeted population on vulnerability profile of the community Develop and implement public awareness programme on preparedness and response procedures and how they relate to the community's vulnerability profile.	Ongoing	x		X	CDRM Committee	Persons trained in mass media, training and audio/visual specialist and others Clarendon Parish Disaster Committee
Develop and implement an awareness programme to inform the Cumberland public on the existence of the CDRM committee and its role and function.	Annually	x			CDRM Committee	Clarendon PDC, ODPEM
Recruit, train and keep engaged cadre of volunteers	Ongoing	x			Cumberland CDRM Committee	ODPEM, Clarendon PDC
Infrastructure						
Identify critical infrastructure / Lifelines– Maintain an inventory of all main roads, drainage canals, ponds and other infrastructures. Inspect these on a regular basis and prepare reports	Ongoing	x			Cumberland CDRM Committee	NWA, Local Contractors
Maintain and repair damaged infrastructure-destroyed bridges or damaged roads delay the delivery of relief supplies	Ongoing	x		X	Public works division within the Clarendon	NWA, Local Contractors Mun. Corp.

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
					Municipal Corporation	
Cleaning maintenance of drains to Cumberland primary School as the only hotspot are for localized flooding in Cumberland	Ongoing	x			Public works division within the Clarendon Municipal Corporation	NWA, Local Contractors Mun. Corp.
Posting of road closed and detour signs	As necessary		x	X	Public works division within the Clarendon Municipal Corporation	NWA, Local Contractors
Evacuation						
Identification of vulnerable population	Ongoing	x			Cumberland CDRM Committee	Cumberland Health Centre Spaldings Hospital.
Traffic control	Ongoing	x	x	X	Spaldings Police Station	Spaldings Police Local Cumberland Taxis
Determination of evacuation routes Determination of access routes to shelters	Ongoing	x			Cumberland CDRM Committee	Spaldings Fire and Spaldings Police Station NWA, Public Works Unit of the Municipal Corporation
Preparation of evacuation plan	Updated yearly	x			Cumberland CDRM Committee	NWA, Spaldings Fire and Spaldings Police Station, Cumberland CDRM Committee,
Activation of evacuation plan	48-24 hours before a storm/hurricane strikes	x			Cumberland CDRM Committee	ODPEM, Spaldings Fire, JDF, Clarendon Municipal Corporation, PDC, Cumberland CDRM Committee

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
Monitoring of evacuation plan	Ongoing	x	x	X	ODPEM	Spaldings Fire, JDF, NWA, Spaldings Police
Security						
Protection for evacuated areas	In an event		x	X	Spaldings Police Station	JDF
Protection in shelters	During and after an event up until the last person seeking shelter leaves.		x	x	Spaldings Police Station	JDF
Transport						
Preparation of transport plan	Updated yearly	x			Cumberland CDRM Committee	Spaldings Fire Spaldings Police Station Local Taxis in Cumberland
Activation of transport plan	48-24 hours before an event strikes	x			Cumberland CDRM Committee	Spaldings Fire Spaldings Police Station Local Taxis in Cumberland
Monitoring of transport plan	Ongoing	x	x	X	Spaldings Police Station	Spaldings Fire Spaldings Police Station Local Taxis in Cumberland
Shelters						
Shelter identification	Yearly updated	x			Cumberland CDRM committee	Shelter Managers, Clarendon PDC
Shelter inspection - vulnerability assessment and preparation Ensuring that emergency shelters are checked on an annual basis and management system is in place;	Annually February to April	x			Clarendon PDC Cumberland CDRM committee	Clarendon Municipal Corporation Cumberland CDRM Committee, Shelter Managers
Ensure that adequate provisions have been made to	Ongoing	x			Clarendon PDC,	Shelter Managers,

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
accommodate local population in shelters.					Clarendon Municipal Corporation Cumberland CDRM committee	Cumberland CDRM committee
Health and Sanitation						
Develop health and emergency procedures for Cumberland	Reviewed annually	x			Trained First Aid Personnel in Cumberland	Cumberland CDRM Committee, MOH
Assess public sanitation of shelters to ensure that they all meet health standards These include number of persons per toilet facility, disposal of garbage and water requirements.	Annually	x	x		Parish Shelter Management Committee of the PDC	MoH Shelter managers, Municipal Corporation
Conducting vector surveillance in impacted areas	Immediately after an event			X	MoH Cumberland CDRM committee	Spaldings Hospital, Cumberland Health Centre
Monitoring of persons with chronic illnesses or who are pregnant	Ongoing		x	X	Trained First Responders in Cumberland	Spaldings Hospital, Cumberland Health Centre
Provide first aid service in shelters.	During an event		x		Trained First Responders in Cumberland	MoH in collaboration with Red Cross
Implement first responder training for Volunteer Corps., Shelter Managers and any other identified group of First responder.	Semi-Annually	x			ODPEM Cumberland CDRM committee	Clarendon PDC
Search and Rescue						
Preparation of Search and Rescue plans for storm /hurricane	Yearly updated	x			Cumberland CDRM committee	Spaldings Fire, JDF PDC in association with ODPEM

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
Activation of Search and Rescue plans – immediately following event	24-48 hours before hurricane/storm		x	X	Cumberland CDRM committee	May Pen Fire, JDF ODPEM
Relief						
Prepare inventory of emergency supplies – Preposition and stockpile non-perishable items that would be required.	Ongoing	x			Cumberland CDRM committee MLSS	SDC Local churches, Service clubs and NGO's, Ministers Fraternity, ADRA
Acquire support equipment such as power packs, power saws and generator units.	As soon as possible	x			Cumberland CDRM Committee	possible support from linkages with the private sector/ local businesses
Preparation of Relief Distribution plan	Yearly updated	x			MLSS	Cumberland CDRM committee
Activation of plan Ensure equitable distribution of relief items.	During an event		x	X	Cumberland CDRM committee	Parish Disaster Coordinator Ministers Fraternity, Local churches, Service clubs and NGO's
Preparation of distribution reports	During and after an event up until the last set of relief supplies are issued.		x	X	MLSS Cumberland	SDC
Develop Resource list of community assistance Update before mid-year	Annually	x			Cumberland CDRM committee MLSS	Clarendon PDC,
Develop assistance agreements with suppliers and the	Reviewed	x			Cumberland	PDC and Parish Disaster

Activities	Estimated Time frame	Before	During	After	Lead Responsibility	Partner/ Support
CDRM Committee	Annually				CDRM Committee	Coordinator, MLSS

1.1.2 Recovery

Recovery Planning has been formally included in Jamaica's recently passed Disaster Risk Management Act, 2015. Ideally, planning for recovery should begin with planning for mitigation and response activities. This allows for establishment of relationship and procedures that can be activated following an event.

Recovery planning is intended to begin during the humanitarian relief phase which takes place as immediate response to a disaster and should continue beyond that until activities return to a sense of normalcy. Recovery efforts should embrace the concept of "building back better" and as such, any reconstruction/rehabilitation efforts required should seek to act as a preventative measure should another disaster/hazard event were to occur. As such, structural as well as non-structural measures may be applicable in different circumstances.

The **post-disaster needs assessment** is therefore the first aspect of recovery planning. It utilises the damage assessment and attempts to identify causes of damage and the requirements for sustainable restoration. Recovery planning focuses on the following clusters/sectors.

- Population, Settlement and Housing
- Agriculture and Livelihoods
- Transportation, Infrastructure and Maintenance
- Water Supply and Sanitation
- Natural Environment (Physical and Biological)

Recovery activities should be coordinated by the PDC through the Cumberland CDRM Committee guided by the national plan. A detailed timeline for recovery efforts should be developed and publicized to prevent public discontent. This broad-based timeframe should be developed by national agencies working in consultation with the Municipal Corporation technical arms and the Cumberland CDRM Committee. A proposed structure for the recovery timeline is presented in Table 3-5.

Table 3-5: Matrix of Recovery Actions and Time Frame

Category	Area / Facility	Recovery Actions	6 hours	12 hours	24 hours	36 hours	>36
Shelter	Cumberland Primary	Analysis of structural failures					x
		Analysis of procedural failures				x	x
		Identification of mitigation measures					x
Security	Spaldings Police Station	Analysis of structural failures					x
		Analysis of procedural failures				x	x
		Identification of mitigation measures					x
Utility	JPS Substation NWC Water Supply	Analysis of structural failures					x
		Analysis of procedural failures				x	x
		Estimated time for complete utilities restoration					x
Transportation	Cumberland Main Road- to Spaldings Cumberland Main Road – to Banana Ground/Williamsfield	Road clearance - (Response/Rehabilitation)		x			
		Re-establishing communication links		x			
		Estimated time for road repairs completion				x	x
Economic Centres	Retail and commerce enterprises Farms	Assessment of structural and operational failure including loss of goods and equipment					x
		Identification of mitigation measures					x
		Revise revenue estimates					x
		Estimated time for repairs to employment centres					x
		Assessment of access to work					x

Category	Area / Facility	Recovery Actions	6 hours	12 hours	24 hours	36 hours	>36
		Prepare economic recovery plan through consultation with affected parties, insurance sector, and GOJ					x
Residential Areas	Residential areas (population and housing stock) impacted by any hazards	Planning for resettlement of population (where necessary)					x
		Review of building code enforcement					x
		Post Disaster Needs Assessment (PDNA) – (Response)		x	x	x	x
Institutional and regulatory framework for DRM	Cumberland CDRM Committee	Determine capacity to carry out anticipated work				x	x
		Preparation of redevelopment plan (where required)					x

4 REFERENCES

Birthwright, A.-T., 2016. *Pathway of Jamaica towards IWRM Approach: Case Study of the Rio Minho Watershed in,* s.l.: s.n.

CIDA, C. I. D. A., 2002. *Jamaica: Trees For Tomorrow Project. Watershed Management Study of the Rio Minho and Martha Brae,* Kingston: Trees for Tomorrow, Project. Forestry Department.

Climate Studies Group, M. (., 2014. *Near-Term Climate Scenarios for Jamaica (Summary for Policymakers).,* Kingston Jamaica.: Planning Institute of Jamaica (PIOJ), .

Limited, E. M. S., 2009. *Development of A National Water Sector Adaptation Strategy to Address Climate Change in Jamaica,* s.l.: Caribbean Community Climate Change Centre.

Northmore, K. A. R. O. E. A. G. D. M. A. J. J. C. J. M. A. P. a. M. S. H., 2000. *Landslide hazard mapping: Jamaica case study,* s.l.: BGS.

5 APPENDICES

5.1 Appendix I: Emergency Contact List

Agency/ Organization/ Representative	**Contact Person**	**Contact Number**
Office of Disaster Preparedness & Emergency Management (ODPEM)	Camille Beckford-Palmer	876-449-8579
Parish Disaster Coordinator	Eleanor Coombs	876-986-2216/2234/2403
Member of Parliament (MP)	Hon. Pearnel Patroe Charles, CD, JP	
National Water Commission	Garwaine Johnson	998-7367/7361-5
Clarendon Municipal Council	Mr. Rowhan Blake	1-876-986-2216/2234/2403
Social Development Commission	Mr. Baldvin. McKenzie	986-2453/902-8484 838-9619/817-5888
Rural Agricultural Development Agency (RADA)	Marvin Lawrence	986-2222/878-1426

5.2 Appendix II: Terms of Reference for CDRM Group

The following information is from the Office of Disaster Preparedness and Emergency Management (ODPEM).

The Community Disaster Risk Management (CDRM) Group is that arm of the community which has taken on the role of local level advocacy and planning for Disaster Risk Reduction activities at the community level. All matters relating to prevention, mitigation, preparedness, response and recovery are therefore, the purview of the group. They shall be the team that leads the implementation of the Community DRM Plan and links directly the Parish Disaster Committee and other local level agencies/NGOs regarding disaster management.

The ODPEM has previously promoted the establishment of Zonal Committees as that local/community level body with responsibilities for Disaster Management. CDRM teams are being postulated as a re-visioning of zonal groups in keeping with current Disaster Risk Reduction (DRR) initiatives. Therefore, for all intent and purposes the groups are interchangeable in name and function. Management and reduction of disaster risk being the major difference/improvement.

Executive Membership

- Chairman
- Vice Chairman
- Secretary
- Treasurer
- Assistant Secretary
- Coordinator – Public Education & Fundraising
- Coordinator – Vulnerability & Risk Identification
- Coordinator – Prevention & Mitigation
- Coordinator – Response & Recovery

The executive membership of the DRM Group may assume that of an existing CBO Structure. The Coordinators outlined above must be made part of any existing structure to be used.

Any existing Community Based Organization (CBO) that is active may be made part of the DRM Group. Where there is no existing CBO, the community should form the executive membership of the DRM Group from reliable individuals with leadership qualities in the community. Individuals who are not members of an existing CBO may be made part of the DRM Group. These individuals may be:

- Assigned/ appointed as coordinators only, where there is an active CBO
- Assigned/ appointed as any part of the executive membership where there is no active CBO

Naming the CDRM Group

The DRM group can assume the name of an existing CBO that will carry out the functions of the group. Where no CBO exists, the name may be decided by the community leadership. The DRM tag should remain to indicate the purpose of the group.

Leadership of the CDRM Group

Leadership of the group may be the same as that of any existing CBO (this includes the already assigned individuals). Where there is no existing group, the persons engaged by the facilitation team who have shown interest should be encouraged to assume responsibilities. The leadership, specifically President and Vice President, should maintain regular dialogue with the Parish Disaster Coordinator for guidance and support.

Frequency of CDRM Meetings

For existing groups, they should include DRM as an agenda item at the regular CBO (E.g. Citizens Association). Special meetings, briefings, and workshop sessions may be called by the executive as is necessary – inviting stakeholders as appropriate. On average, the group should meet every 2 months. However, the consultants recommend that this group meets at minimum on a quarterly basis. This can be increased as necessary, for example prior to the start of the hurricane season.

Funding of CDRM Group and Activities

The group is expected to mobilize support of community stakeholders to provide funding for programmes and activities. Other sources of funding will include:

- Fundraising activities
- Proposal writing to private sector and donor agencies
- Donations or Grants
- Parish Disaster Committee
- ODPEM
- Government entities with specific mandates

Interaction with Local Authorities and the Parish Disaster Committee (PDC)

The President or Vice President of the CDRM group must attend the PDC Meetings, as invited by the Parish Disaster Coordinator. The group must provide the Parish Disaster Coordinator with DRM related information that will support community and parish interventions. The Parish Disaster Coordinator should be invited to attend CDRM Group Meetings on occasions and should be deemed an ex-officio member of the CDRM Group

Interaction with ODPEM and other technical agencies/departments (local or national)

ODPEM:

- ODPEM to provide the CDRM Group with technical advice for the development and review of the CDRM Plan through the Parish Disaster Coordinator.
- ODPEM to provide the community with disaster related information through the Parish Disaster Coordinator
- Any request for assistance or information by the CDRM Group must be channeled through the respective Parish Disaster Coordinator.

Other Technical Agencies

- Any official request or engagement of agencies or departments of government regarding training, disaster related information or programming must be channeled through the Parish Coordinator.
- CDRM Groups may however, formally write to agencies/departments regarding the respective agencies functions or execution of same in relation to the community.

Interaction with Councilors, Members of Parliament and other political representatives

- Political representatives must be seen as a significant resource to the CDRM Groups and Communities.
- Sharing of issues, concerns and needs of the community or CDRM group may be facilitated through representation at the Parish Disaster Committee level.
- Initial engagement of political representatives may also be channelled through the Parish Disaster Coordinator.
- The CDRM group after formal introduction through the Parish Disaster Committee may make direct contact with political representatives regarding issues of the community. It is recommended that formal (written) communication be made as far as possible.

Interaction with Private Sector and other NGOs/CBOs

The CDRM Group should recognize existing private sector organizations and NGOs/CBOs within the community as critical stakeholders. The Parish Disaster Coordinator should be approached to make initial contacts with these groupings on behalf of the CDRM group. The CDRM group may maintain contact (formally and informally), however, it is encouraged that the CDRM group executives discuss with representatives from these groups (private sector, NGOs/CBOs) the possibilities of partnerships (mutual help).

Recording keeping by CDRM Group

- Minutes/notes of all meetings of the group should be formally kept in a safe place.
- Correspondence, financials and other documents regarding the CDRM group or community should be kept in a secure place.
- A copy of the CDRM Plan must be in the possession of the Municipal Corporation. A copy should also be in any dedicated facility used for meeting and planning.
- General documents kept by the group such as minutes, brochures, financial records and other documents should be held by the President, Secretary or any other executive appointed by the group – where a dedicated facility does not exist.

Wider Community Involvement

The CDRM team should constantly engage with the wider community through meetings, forums, brochures, flyers and pamphlets. Views, concerns, and issues of the community regarding disaster matters must be discussed within the group and possible solutions identified. Public education and

awareness should be integral for community involvement. The CDRM Group should establish creative initiatives for garnering community support and involvement.

Roles & Functions of the Executive Membership for DRM

Chairman: Assume similar duties as outlined in existing CBO

Vice Chairman: Assume similar duties as outlined in existing CBO

Secretary: Assume similar duties as outlined in existing CBO

Treasurer: Assume similar duties as outlined in existing CBO

Assistant Secretary: Assume similar duties as outlined in existing CBO

Coordinator – Public Education & Fundraising:

- To develop DRM public education programmes for the schools, churches, and CBOs in the community
- To source and distribute Disaster Preparedness brochures and other education material
- To identify Community DRM Training needs and communicate them to the Parish Disaster Coordinator
- To work with the PDC and other partners in organizing training programmes in the community
- Identify sources of funding for educational and training programmes to be conducted
- Provide the Parish Disaster Coordinator (through the President) with updates and status reports on the effectiveness of training and public education and awareness programmes
- Conduct fundraising initiatives to support community DRM objectives

Coordinator – Vulnerability & Risk Identification:

- Identify and Assess historical hazard impacts
- Conduct research on changing hazard risk trends in the community
- Calculate the probability of occurrence of hazard events
- Develop and maintain list of critical facilities at risk
- Conduct vulnerability and capacity Assessments
- Prepare vulnerability and risk identification reports to be submitted to the Parish Disaster Coordinator
- Provide the Prevention and Mitigation Coordinator with information on vulnerability and risks in the community.
- Evaluate risk assessments, risk management plans, and risk monitoring results as directed and recommend appropriate actions.
- Ongoing, systematic and consistent observation of hazard-related parameters.
- Ensuring that the data can be located and retrieved by users.
- Takes lead in vulnerability assessment tasks.
- Notifying residents of vulnerable areas to disasters via the DRM Group meetings.

- Estimate expected damage in the event of a disaster.
- Identify the vulnerable assets of the community and the associated risks
- Solicit support of key community members for execution of responsibilities; especially elderly and trained professionals.

Coordinator – Prevention & Mitigation:

Duties related to Mitigation

- Assess hazard impacts.
- Identify areas of damage that would require reconstruction to existing codes and regulations.
- Renew and evaluate existing mitigation plans, emergency plans and strategies.
- Organize the development of Prevention and Mitigation Action Plans for implementation with the help of the Parish Disaster Coordinator and larger CDRM.
- Recommend appropriate hazard mitigation measures for reducing the impact of a disaster.
- Review and evaluate existing hazard mitigation plans and other pertinent information, such as, urban renewal, rehabilitation, or master plans.

Duties related to Prevention

- To know the main areas of risk and to take steps to prevent hazard impact/exposure or detect any problems as early as possible.
- To assess training needs and communicate them to the Public Education Coordinator
- To ensure good lines of communication with all coordinators
- Conduct/facilitate community hazard hunts with the help of the Parish Coordinator and CDRM team

Coordinator – Response & Recovery:

- The Response Coordinator has primary responsibility for the coordination and contractual management of the emergency response projects/initiatives.
- Ensure that adequate needs assessments are carried out in accordance with good DRM practice.
- Advice and support where necessary and to monitor the response.
- Recommend relevant and appropriate training where necessary in minimum standards in emergency response.
- Ensure systems are in place for monitoring and evaluating the impact of the disaster.
- Takes lead in damage assessment and disaster recovery tasks.
- Plan and organize disaster recovery activities along with the aid of the Parish Disaster Coordinator
- Report the status of the disaster recovery activity.
- Identifies acceptable recovery time periods.
- Establishes disaster recovery testing methodologies.
- Recommend disaster recovery planning and training activities.

- Provides instructional and informational materials on how to respond during an emergency.
- Develops and maintains SOPs for emergency/disaster response and recovery with the aid of the PDC.
- Plan regular exercises to test community plans
- Monitors the effectiveness of procedures during evacuation drills and revises the procedures as necessary.
- Maintains contact with outside sources participating in reciprocal agreements.
- Ensures that as new equipment, facilities, services, and systems are installed that the disaster response and recovery issues are highlighted and addressed.
- Maintains contact with outside contingency planning professional organizations and local or regional emergency response groups.
- Ensure and recommends establishment of CERTs as appropriate

****

5.3 APPENDIX III: Hurricane Standard Operating Procedures (SOP)

Purpose

The purpose of this Hurricane SOP is to establish the necessary action steps for an effective and safe response to hurricanes that could potentially affect the community of Cumberland. Hurricanes could result in damages to community infrastructure and facilities, loss of life and property, and other incidents with varying severity from minimal to catastrophic; depending on the intensity of the hurricane. The CDRM Group shall work with government organizations, NGOs/CBOs, private sector and other stakeholders to facilitate the safety of community members. It is the intent of this SOP to maintain clearly defined procedures for before, during and after hurricane events. Hurricanes occur primarily during a distinct season that runs from June 1 to November 30.

Objectives

The concepts and procedures in this SOP are set to:

- Facilitate coordination among community members and the CDRM Group in preparing for and responding to hurricanes.
- Ensure a logical and sequenced set of actions for community response.
- Assign specific task to ensure collaboration and execution activities

Threat Assessment

The National Oceanic and Atmospheric Administration (NOAA), provides an annual forecast for the Hurricane Season. Information regarding forecast is communicated through the Meteorological Service of Jamaica (Met Office) and the ODPEM. The annual anticipated threat for the purpose of this plan includes:

- At least one (1) hurricane event or near miss (with significant wind and rain).
- Significant rain events during the period at least one (1) affecting community.

Basic Planning Assumptions

- At least one major Hurricane will probably affect the country/community
- The CDRM Group will remain active and functional
- Community members will be responsive to CDRM Group programmes, initiatives, warning and other information.
- There is commitment and support from agencies and departments of government to assist community.
- Community will utilize their own resources in preparedness and response.
- CDRM Group will train and establish Community Emergency Response Team(s) (CERTs).

Concept of Operations

These SOPs are designed to establish a concept of operations spanning the direction and control of the disaster from an initial monitoring through post-disaster response, recovery, and mitigation. All activities are community driven, with technical assistance provided by agencies, departments, NGOs and private sector as necessary.

Procedures will be categorized into the following phases:

- **Phase 1:** Prevention, Preparedness and Mitigation (January through to 144 hours before impact).
- **Phase 2:** Alert (144 hours up to 72 hours before impact)
- **Phase 3**: Event and Event Response (72 hours before impact through to 120 hours after landfall/All Clear)
- **Phase 4:** Recovery

Key Definitions and Terms

Category One Hurricane

A Category One Hurricane has winds of 74 to 95 mph and is typically characterized by minimal damage. Storm surge is generally 4 to 5 feet above normal.

Category Two Hurricane

A Category Two Hurricane has winds of 96 to 110 mph and is typically characterized by moderate damage. Storm surge is generally 6 to 8 feet above normal.

Category Three Hurricane

A Category Three Hurricane has winds of 111 to 130 mph and is typically characterized by extensive damage. Storm surge is generally 9 to 12 feet above normal.

Category Four Hurricane

A Category Four Hurricane has winds of 131 to 155 mph and is typically characterized by extreme damage. Storm surge is generally 13 to 18 feet above normal.

Category Five Hurricane

A Category Five Hurricane has winds of greater than 155 mph and is typically characterized by *catastrophic damage*. Storm surge is generally greater than 18 feet above normal.

Tropical Storm Watch

A tropical storm watch is issued when tropical storm conditions, including winds from 39 to 73 mph, pose a possible threat to a specified coastal area within 36 to 48 hours.

Tropical Storm Warning

A tropical storm warning is issued when tropical storm conditions, including winds from 39 to 73 mph, are expected in a specified coastal area within 36 hours or less.

Hurricane Watch

A hurricane watch is issued for a specified coastal area for which a hurricane or a hurricane-related hazard is a possible threat within 36 to 48 hours.

Hurricane Warning

A hurricane warning is issued when a hurricane with sustained winds of 74 mph or higher is expected in a specified coastal area in 36 hours or less.

Flash Flood Watch

A flash flood watch means a flash flood is possible in an area and everyone should stay alert.

Flash Flood Warning

A flash flood warning means a flooding has been report and flash flood is imminent and everyone in the area should take immediate action to protect lives and property.

5.4 Appendix III: Hurricane Standard Operating Procedures

Phase 1: Prevention, Mitigation and Preparedness (January through to 5 Days before impact).

Prevention, Mitigation and Preparedness activities as mentioned in these SOPs are specific actions to be taken by respective CDRM Coordinators and their teams (drafted support persons) to ensure proper planning and coordination for hurricane emergency. Coordinators should utilize other information and measures highlighted in the CDRM Plan to as a guide for other actions.

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Continue to support and promote public information and awareness programmes.	CDRT Coordinator – Public Education & Fundraising	TBD
2. Sensitize special needs population	CDRT Coordinator – Public Education & Fundraising	TBD
3. Organize how special needs population will be evacuated and transportation required.	Coordinator - Preparedness	TBD
4. Put arrangements in place to have vehicles to be used in evacuation fuelled with petrol	Coordinator - Preparedness	TBD
5. Send a reminder/update to the Fire Brigade of the evacuation route for the community. Do a walk through if possible	Coordinator - Preparedness	TBD
6. Sensitization of persons in the community without vehicles of assembly area for transportation to more safe location.	CDRT Coordinator – Public Education & Fundraising	TBD
7. Identify areas in the community where high potential for infrastructure/property damages.	CDRT Coordinator – Public	TBD

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
	Education & Fundraising	
8. Ensure DRM teams are aware of all high-risk locations in the community.	Coordinator – Vulnerability & Risk Identification	TBD
9. Prepare areas for sheltering persons in need	CDRT Coordinator - Preparedness	TBD
10. Re-engage community volunteers to provide assistance in shelters and other areas. Consult with PDC for facilitating training or refresher courses.	Coordinator - Preparedness	TBD
11. Ensure new developments are assessed and relevant measures put in place to safeguard community.	Coordinator – Prevention & Mitigation	TBD
12. Organize mitigation and prevent projects and work days with technical guidance from relevant agencies (with the help of the PDC)	CDRT Coordinator – Prevention & Mitigation	TBD

Phase 2: Alert (5 Days up to 72 hours before impact)

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Meet and assess the community's state of preparedness for a hurricane 2. Advise community to listen to all weather advisories	DRM Team *CDRT*	*TBD*
• PDC that community DRM teams are activated • Other CBOs	*Coordinator - Preparedness*	*TBD*

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
• Shelter Managers • Response personnel		
1. Pre-check and activate SOPs 2. Alert all trained community first aiders and search and rescue personnel. 3. Have first-aid kits prepared	*Coordinator - Preparedness*	*TBD*
Personal for families: • Make sure your family goes over the family disaster plan. • Make plans for protecting your house, especially the roof, windows and doors. • Have flashlight and extra batteries • Have portable battery-operated radio and extra batteries • Ensure provisions are put in place for emergency food and water.	*Coordinator – Preparedness* *Coordinator Response &* *Recovery*	*TBD*
Protecting the community: • Trim dead or weak branches from trees • Clear all drains that will cause flooding	*Coordinator – Mitigation and* *Prevention* *Coordinator - Preparedness* *CDRT*	*TBD*
Listen to all weather advisories and information from ODPEM, MET office, and communicate with PDC.	*DRM Team President/Coordinator –* *Preparedness*	*TBD*

Phase 3: Event and Event Response (72 hours before impact through to 5 Days after landfall/All Clear)

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
DRM Team Advise the Community to listen to all weather advisories and remain alert	*Coordinator – Preparedness* *CDRT/Parish Council*	*TBD*
Continue to listen to all weather advisories and reports	*Coordinator – Preparedness* *CDRT/Community*	*TBD*

A. HURRICANE WATCH - *48 Hours before Impact*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Personal preparation food supplies 2. Securing official documents 3. Securing home and get rid of all thing around the yard that can be missile in a hurricane 4. Check on neighbours that may need help	*CDRT* *Coordinator Response & Recovery*	*TBD*
Ensure the Elderly and Physical challenged are notified and assisted to prepare for event.	*CDRT* *Coordinator Response & Recovery*	

B. HURRICANE WARNING - ***36 Hours before impact***

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Activate and brief all community teams and volunteers 2. Test the systems of communication within the community. 3. If cell phones are to be used ensure credit is bought	*Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
4. Ensure phones can be charged		
1. Activate volunteers to be on standby to assist with damage assessment. Conduct briefing of these volunteers	*Coordinator - Response & Recovery*	*TBD*
1. Activate and prepare emergency shelters 2. Deploy relief and welfare volunteers to emergency shelters	*Coordinator - Response & Recovery* *CDRT*	*TBD*
2. Ensure contacts are made with the PDC and other stakeholders for assessment of shelter facilities if necessary.	*Coordinator - Response & Recovery*	*TBD*
3. Contact PDC and prepare to Initiate evacuation procedures for the community	*Coordinator - Response & Recovery*	*TBD*
1. Re-check arrangements and MOUs with private bus owners and other volunteers in the community. 2. Pre-position the following resources to areas which will potentially be cut off: • Food stocks/welfare items • Communications equipment • Manpower • Power saws 3. Refuel vehicles	*Coordinator – Preparedness/ Coordinator - Response & Recovery*	*TBD*
1. Encourage residents to activate family plans 2. Pre-position resources (List these resources): • equipment, ropes, etc. • Food stocks/welfare items • Communications equipment	*Coordinator – Preparedness/ Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
• Manpower		

C. 24 Hours before impact

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Notify PDC of activation of evacuation plan 2. Consult PDC on all matters relating to the activation of any or all evacuation systems.	*Coordinator - Response & Recovery*	*TBD*
Activate and test local communications links and report to PDC.	*CDRT* *Coordinator - Response & Recovery*	*TBD*
Brief community of activation of evacuation and persons to be evacuated: • Review evacuation routes and gather your disaster supply kit in case you are instructed to evacuate. • Communicate assembly points and deploy marshals. • Make contact with shelter managers to receive evacuees. • Inform PDC of actions to be taken • All electricity and gas supplies should be shut-down when closing businesses or evacuating homes • Ensure the Elderly and Physically challenged to be evacuated • Ensure registration of all evacuated • Check that all needing assistance are safely evacuated.	*CDRT* *Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
• Monitor radio for hurricane warnings and public information via news releases through ODPEM and Met office • Monitor Radios for precautionary tips together with packaged information of the activities of responding agencies.		
Alert community Initial Damage Assessment Team(s).	*Coordinator - Response & Recovery*	*TBD*
Confirm lines of credit with merchants to enable easy access to relief supplies after the disaster	*Coordinator - Response & Recovery* *Parish Manager -MLSS/ Secretary/Manager -Municipal Corporation*	*TBD*

D. 16 Hours before Impact to Landfall

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Maintain contact with PEOC 2. Advise PEOC of weather conditions and state of preparedness 3. Confirm arrival and status of evacuees in shelters 4. Check in with standby teams and community response personnel	*CDRM TEAM – President/V.P* *Coordinator - Response & Recovery*	*TBD*

5. Maintain contact with PEOC 6. Advise PEOC of weather conditions and state of preparedness 7. Confirm arrival and status of evacuees in shelters 8. Check in with standby teams and community response personnel		

E. THE BLOW

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
Monitor and report events as far as possible.	*CDRM Team – President/V.P.*	*TBD*
Maintain contact with PEOC, Shelters and response personnel.	*Coordinator - Response & Recovery*	*TBD*

F. AFTERMATH (IMMEDIATELY following the blow to 5 Days after all clear)

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
1. Check with PDC for persons to return home but only after authorities say it is safe to do so. Keep tuned to your local radio or TV station for recovery information. Confirm All Clear	*Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Deploy community damage survey teams or assessors 2. Deploy community response teams to check on vulnerable (elderly and physically challenged) and critical facilities. 3. Check for deaths, injuries and persons needing emergency assistance 4. Conduct first aid and search and rescue operations as necessary 5. Notify PEOC of critical/emergency cases 6. Provide PEOC with status report	*Coordinator - Response & Recovery* *CDRT* *Municipal Corporation (Poor Relief)* *MLSS*	*TBD*

F. (a) Up to 48 Hours after All Clear

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
Provide initial damage survey and needs of the community	*CDRT* *Coordinator - Response & Recovery*	*TBD*
1. Provide ground reconnaissance intelligence to the PDC. 2. Assist the Fire Brigade and NWA with road clearing, and search and rescue activities through the PEOC. 3. Assist with the establishment and staffing of registration centres.	*CDRT* *Coordinator - Response & Recovery*	*TBD*
Beware of downed or loose power lines. Report them immediately to the JPS, Police or Fire Department. Advise community members to enter their	*CDRT* *Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
homes with caution: • Open windows and doors to ventilate or dry your home. Do not use candles or open flames in doors. Use a flashlight to inspect for damage. • Check for gas leaks. If they smell gas or hear a blowing or hissing noise, quickly leave the building and leave the doors open. Call the gas company. • Look for electrical system damage. If they see sparks or frayed wires, turn off electricity at the main fuse box. • If they have to step in water to reach the electric box, call an electrician for advice.		
1. Check for sewage and water-line damage. 2. If you suspect there is such damage, call the NWC and or PDC. 3. Advise community not to drink or prepare food with tap water until notified it is safe to do so.	*Coordinator - Response & Recovery* *CDRT*	*TBD*

F. (b) 48 Hours to 5 Days After All Clear

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
Constantly advise the community: • To conserve water and food • To stay living at their homes if it is safe to do so	*Coordinator - Response & Recovery* *CDRT*	*TBD*

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
• To take particular care with hygiene and sanitary practices • Of measures being taken with respect to provision of food and water and restoration of public utilities		
1. Coordinate requests for and offers of assistance through the PEOC. 2. Coordinate reconnaissance and damage assessment teams through the PEOC 3. Ascertain the early requirements for Government assistance in re-establishing the community.	*Coordinator - Response & Recovery* *CDRT*	*TBD*
Coordinate the establishment, staffing and management of emergency shelters for sustained use in community. Encourage persons affected to stay with friends or family as first options.	*CDRT* *Coordinator - Response & Recovery*	*TBD*
Coordinate requests, receipt and distribution of food, clothing and water supplies through the PEOC	*Coordinator - Response & Recovery*	*TBD*
1. Assist with the distribution of supplies 2. Assist with the tracing of missing persons 3. Assist with needs assessments 4. Assist in the provision of welfare information to persons affected.	*CDRT* *Coordinator - Response & Recovery*	*TBD*

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
5. Begin to effect minor repairs to critical facilities and clear road-ways and drains		
Continue to provide feedback and assistance to the community through the PDC and PEOC.	*Coordinator - Response & Recovery*	*TBD*

Phase 4: Recovery

ACTIVITIES	POSITION	RESPONSIBLE PERSON(S)
1. Mobilize Community members to assist each other with rehabilitation and reconstruction activities. 2. Encourage community members to rebuild bearing in mind mitigation measures (build back better). 3. Mobilize and conduct repairs to critical facilities and infrastructure (Schools, clinic, water supplies and others)	*CDRT*	*TBD*
1. Update PDC on recovery activities by external agencies/departments/organizations. 2. Monitor progress and ensure deficiencies are reported.	*TBD*	*TBD*
Mobilize CDRMG to seek assist. from NGOs (e.g. Red Cross, Food for the Poor, ADRA and Others) to assist in community recovery initiatives.	*TBD*	*TBD*
Identify and share Lessons Learnt to enhance future preparedness and response activities:	*CDRT*	*TBD*

ACTIVITIES	**POSITION**	**RESPONSIBLE PERSON(S)**
• Challenges in responding to incidents • Which systems were overburdened? • What resources were lacking (human and physical)? • How did the community cope? • What areas of the SOPs need to be reconsidered?		
Revise SOPs as necessary	*CDRT*	*TBD*

5.5 Appendix IV – Form for the Collection of Names and Contact of Persons in Need or Incurred Damage

NAMES	CONTACT #	YES/NO				
		RECEIVED DAMAGE	NEED SHELTER	LOST MEANS OF INCOME	NEED ASSISTANCE	IN NEED OF PSYCHO-SOCIAL SUPPORT OR COUNSELING

5.6 Appendix V: Warning and Alert Systems

Advisories and Warnings

The Meteorological Officer at and the Office of Disaster Preparedness and Emergency Management will issue statements concerning the approach of hurricanes and storms. The statements will contain the following weather words as appropriate.

Bulletin: issued when a significant weather system is detected in the area.

Advisory: issued at regular intervals when a tropical storm or hurricane is first detected in the area—keep listening.

Watch: issued when the hurricane continues its advance and hurricane conditions are a real possibility; it does not mean that they are imminent.

Warning: issued when once it is established that hurricane conditions are expected within 24 hours.

Tropical Depression: a Tropical System with a circulation but with winds of less than 39 mph (34 knots).

Tropical Storm: a Tropical System with a circulation and winds from 39-73 mph

Hurricane: an intense Tropical System with maximum sustained winds greater than 74 mph (64 knots).

Eye: the relatively calm area near the centre around which the strongest winds blow. As the eye passes, light winds rapidly give way to very severe winds from the opposite direction.

Storm Surge: the rise of water (as high as 10 to 20 feet) above sea level brought on by the strong winds and low pressure in the storm centre.

Warning System

1) The main source for weather reports and updates will be the National Meteorological Service and the national **Emergency Operations Centre.**

Types of Warnings

The types of warnings issued relevant to Cumberland are:

1. Flood
2. Flash flood
3. Gale
4. Storm (or whole gale)
5. Hurricane watch
6. Hurricane warnings

Flood Warning: A flood warning is issued **w**hen flooding is expected in low lying and other flood prone areas. This warning is not necessarily associated with Depressions, Storms or Hurricanes

Flash Flood Warning: A flash flood warning is issued when sudden very heavy rainfall is expected to occur within a short period of time. As with the flood warning, this is not necessarily as associated with Depressions, Storms or Hurricanes.

Gale Warning: When winds of 39 to 54 miles per hour (34—47 knots) are expected to affect the island within 24 hours, a gale warning is added to the advisory message. A gale warning may be issued when only the fringe effects of the hurricane are expected to be felt.

Storm Warning: When winds of 55 to 73 miles per hour (48—63 knots) are expected to affect the island within 24 hours, a storm warning is added to the advisory message.

Hurricane Watch: A hurricane watch will be added to the advisory message when there is a threat of hurricane conditions affecting the island within 24—36 hours. A hurricane watch means that hurricane conditions are a real possibility: it does not mean they are imminent.

Hurricane Warnings: The Hurricane Watch will be upgraded to a Hurricane Warning when hurricane conditions are expected to affect the island within 24 hours. Hurricanes conditions include winds of 74 miles per hour (64 knots) or more, and/or dangerously high tides and waves.

The community should adopt various forms of communication including radio, print, town crier etc. to send out crucial messages to locals.

Cumberland Community Early Warning System

Cumberland does not possess a formal early warning system in the community. The community thus seeks to utilize a combination of methods for communicating.

The following persons will be responsible for monitoring and warning during these events.

Hazard	**Traditional Warning**	**Responsibility (Identify Names from Cumberland CDRM Committee)**
Flood	Monitor water level at ponds and along known flood routes Word of Mouth, Telephone	
Hurricane	Radio and TV advisories from ODPEM/Met Office Word of Mouth, Telephone	

The following persons will be responsible to give warning signals to alert the vulnerable groups and other persons in the community.

Activity	**Responsibility (Identify Names from Cumberland CDRM Committee)**	**Means**
Old and sick persons		Word of Mouth, Telephone, House Visit
Mothers with babies and young children		Word of Mouth, Telephone, House Visit
Schools		Word of Mouth, Telephone, House Visit
Community in General		Loud Speaker
Update Parish Disaster Coordinator and ODPEM		Telephone, email