

# CLARENDON

## LOCAL SUSTAINABLE DEVELOPMENT PLAN



**NARDEC**

## FOREWORD

### Message of Endorsement from the Ministry of Local Government and Community Development



The formal presentation of this latest phase of the development planning process for Clarendon is an important moment, with tremendous implications for the future of the parish. Far from being mere words on paper, the Clarendon Local Sustainable Development Plan (CLSDP) represents the consultations made, and the expressed and refined aspirations of the people of Clarendon, as stakeholders in the modern Jamaica that we are committed to creating.

This process has been crafted around the four fundamental components of sustainable development: environmental action, economic prosperity, social well-being and good governance. The planning document provides strategic policies and actions geared toward addressing the multiplicity of planning related issues affecting the parish. Crucially, it incorporates the most relevant previous planning efforts, by integrating the preceding regional and local area plans, strategies and other proposals, thus ensuring its contemporary usefulness as the main instrument to guide and control development locally.

From the time of its official designation as Clarendon in 1866, this parish has come a far way. It is the third largest by way of population in the country, and an important driver of commercial activity in the county of Middlesex. This is consistent with its physical placement along the rapidly emerging economic growth corridor that also involves Manchester and St. Elizabeth, which I expect will substantially expand economic and job-creation opportunities in a way that will rival the tourism-driven north-western corridor of the country.

The implementation of the CLSDP will support critical components of Vision 2030 Jamaica, which include Jamaica's Energy Policy 2009-2030, the Micro, Small and Medium Enterprise (MSME) and Entrepreneurship Policy, and the National Sports Policy.

I have always emphasized that this Administration thrives on and will always be seeking partnership, and in this regard, I must specially recognize the Clarendon Municipal Corporation, the Sugar Transformation Unit, the National Housing Trust, the Social Development Commission, the National Association of Parish Development Committees and the Clarendon Parish Development Committee Benevolent Society. I commend the CLSDP Secretariat for its dedicated and continuing work.

The efforts to this point truly demonstrate the primacy of the processes of Local Government in creating and sustaining national growth and development, and I endorse them wholeheartedly.

**Desmond McKenzie, MP,  
Minister of Local Government and Community Development**

## FOREWORD

Message from His Worship the Mayor Councillor Winston Maragh, OD, J.P.



Over the years, the Clarendon Municipal Corporation has sat at the table for the studies and compilation of several development plans in partnership with chief stakeholders to guide the economic, social and infrastructural improvement of the parish.

Among these development plans were the 1998 South Coast Sustainable Development Plan, the May Pen Area Development Plan and the Highway 2000 Corridor Development plan. But quite unfortunately we have not started implementation of these plans in any meaningful way.

As the trend towards decentralisation and devolution at the level of the local authority continues apace, it is incumbent on all municipal corporations to be able to stand on their own in implementing the requisite infrastructure, policies and programmes to facilitate local economic development.

Critically this plan draws on key aspects of pre-existing development plans, reflecting integration of long-standing ideas and of progressive new ones. The Plan is based on an extensive consultative process with normal citizens and details the possible challenges posed to the implementation of various aspects.

So with this information in hand there is really no reason at all for this plan to fail.

This Clarendon Local Sustainable Development Plan will be implemented starting in the upcoming year because quite frankly there can be no alternate plan of action.

## FOREWORD

### Message from the Minority Leader Councillor Scean Barnswell JP



It is with great pride that the Clarendon Municipal Corporation presents the first Local Sustainable Development Plan for the parish of Clarendon. The Sustainable Development Plan is the Corporation's guide to drive Economic Prosperity and Social Wellbeing, promote Good Governance and foster proactive Environmental Actions.

Our Plan reflects the feedback and opinions of a wide cross-section of stakeholders obtained through extensive consultations with key stakeholder groups including residents, agencies, private sector, civil society organizations and planning experts.

We have etched our parish in the country's plan to be the place of choice to live, work, raise families and do business. The strategies of the Local Sustainable Development Plan are in sync with the action plan of Vision 2030 as we have ensured that our priority areas are aligned with national policies.

The Clarendon Municipal Corporation prides itself in stakeholder involvement both in this planning process and the daily operations of the Corporation. Consequently, we wish to acknowledge, thank as well as congratulate our partners, the Social Development Commission, the Clarendon Parish Development Committee Benevolent Society, the National Association of Parish Development Committees and the National Housing Trust for their dedication to the process. The Sugar Transformation Unit that has been our main funder since the beginning of the process and we are grateful for the financial support you have provided.

Now that we have our Local Sustainable Development Plan in place, I charge all stakeholders of Clarendon to unite around the forward movement of our parish. Partnerships will be key for the implementation and positioning our parish for future investments as we seek to build a thriving Parish with a healthy, educated and creative population that lives in safe and attractive communities.

## FOREWORD

### Message of Endorsement from the Honourable William Shagoury, CD, JP Custos Rotulorum of Clarendon



On August 01, 2011 when I was appointed Custos Rotulorum of this great Parish of Clarendon, I accepted this assignment with intense civic pride; and committed myself to improving the sense of community and a focus on ensuring that citizens are proud to be called Clarendonians.

Throughout the years, as a part of my civic responsibility, I have worked tirelessly with all sectors through the Clarendon Parish Development Committee Benevolent Society (CPDCBS) ensuring that citizens have a voice in the governance of our parish. I am therefore heartened that through strong partnerships we have formulated a parish plan that will enable growth and development within Clarendon.

I am particularly proud of this plan as it makes clear provisions to action the priorities of the people by the people. Additionally, as a businessman I am encouraged by potential for business expansion and income generation opportunities as this will impact positively on job creation.

The participatory planning approach used to develop the plan balances different points of view to safeguard the welfare of the citizens while at the same time guaranteeing that a healthy natural environment exist to support the social, economic and governance structures and processes in Clarendon.

I want to acknowledge the support of the Sugar Transformation Unit, the Clarendon Municipal Corporation, the Local Sustainable Development Plan Project Unit, the Clarendon Parish Development Committee Benevolent Society, Ministries, Departments and Agencies for their continued philanthropy, investment and confidence in fostering sustainable development.

As I salute you, we must remember that a plan is just a blue print that we will have to use to create our desired outcome. It is important for us in Clarendon to remain attentive and continually committed to the timely implementation of this plan. Let's be aggressive as we enter the implementation stage of our Local Sustainable Development Plan while ensuring that we contribute to making Jamaica the place of choice to live, raise families and do business.

Again, I would like to toast the Clarendon Municipal Corporation and commend all the partners involved in this project. Your perseverance to the task of charting the path, for our parish, Clarendon, to become a model for sustainable development in Jamaica, is indeed ground breaking and admirable. Keep up the good work.

## FOREWORD

### Message from Chief Executive Officer of the Clarendon Municipal Corporation



Local governments all around the world today faces increased pressure to address the social, economic and environmental issues facing their citizens. With urbanization increasing globally we have to grapple with issues such as promoting rural development to reduce rural urban migration, improving our amenities and infrastructure to respond to rapid urban growth, protecting our agricultural lands from competing with urban uses and finding the balance between environmental protection and economic development. It is with these in mind that we commissioned the drafting of the Clarendon Local Sustainable Development Plan 2016/2030.

The outcome of the collective, consultative process which has resulted in the development of the Clarendon Local Sustainable Development Plan 2016 – 2030 is truly refreshing as it is intended to translate our vision into tangible changes for the people of Clarendon. This document articulates our response to the issues of governance, economic development, poverty alleviation, job creation, health, urbanisation, climate change, education, safety, social cohesion, and resource sustainability among others.

Clarendon's Vision 2030 is challenging, but, working together; we believe that we can become Jamaica's parish of Excellence. In 2030 the parish of Clarendon will become more energy efficient and strike a balance between various fundamental goals of the quality of life, economic prosperity and shared growth and environmental protection. Furthermore, in the next 15 years, the parish of Clarendon would have made significant practical investment in economic infrastructure in an effort to create opportunities to ensure efficient use of our resources, create well-functioning communities, bridge the social and spatial divide that exists in our parish, ensure social justice, equitable access to services, and improve the quality of life of our residents.

This document represents a bottom up approach to planning and a combination of collaboration and partnership. The visions and recommendations were those of our citizens and stakeholders and should enable the necessary support to make the implementation a success.

The Social Development Commission and the Clarendon Parish Development Committee Benevolent Society which are both mandated to empower and guide community development within the parish played significant roles in anchoring the plan in this regard.

Congratulation to the Project Manager, Ms. Melbourne McPherson, Long-Range Planner Mr. Horane Stewart and the rest of the team for the rigour and dedication with which they attended to the process of developing our parish's first Local Sustainable Development Plan. They have presented, in the end, what I believe to be, a truly comprehensive road-map for the course ahead. The plan when implemented and with the buy-in from all the necessary stakeholders will move Clarendon forward making the parish the place to live, raise families and do business.

**Rowhan Blake**  
**Chief Executive Officer, Clarendon Municipal Corporation**

## FOREWORD

### Message of Endorsement from the Social Development Commission



The Social Development Commission (SDC) congratulates the Clarendon Municipal Corporation for the efforts made to successfully complete the Local Sustainable Development Plan for the Parish of Clarendon.

The Planning process utilized by the Clarendon Municipal Corporation shows a deep recognition of the need for collaboration among stakeholders in the parish and the SDC is pleased to have been included in the partnership for the development of the plan especially as it relates to ensuring that the current realities of Development Areas and Communities are represented. To this end the SDC was able to assist the process by making available Development Area and Community profiles, reflecting not only the conditions of the social and physical infrastructure of the communities but also the human social and economic aspects of the communities, inclusive of their population characteristics and their priority development challenges.

The SDC endorses the Clarendon Local Sustainable Development Plan and sees it as a platform to guide the further development of the parish in a coordinated manner that will truly see the realization of sustainable development and improvement in the quality of life for the residents of the parish.

**Dwayne Vernon, PhD**  
**Executive Director**  
**Social Development Commission**

## FOREWORD

### Message of Endorsement from the National Association of Parish Development Committees



The National Association of Parish Development Committees (NAPDEC) applauds the Clarendon Municipal Corporation and the Clarendon Parish Development Committee Benevolent Society; along with all the other partners who supported the completion of the Clarendon Local Sustainable Development Plan.

NAPDEC's mission is to create an effective, participatory and transparent system of local governance by involving and empowering citizens to contribute fully to the development and management of their parishes and ultimately the nation. Consequently, we are encouraged that through strong partnerships and the use of the participatory approach the citizen and stakeholders have agreed on sound strategies for the future growth and development of the parish of Clarendon.

The Association wants to specially recognize the support of the Sugar Transformation Unit and all Ministries, Departments and Agencies for their unwavering dedication and involvement in developing comprehensive strategies centred on sustainable development.

The Clarendon Local Sustainable Development Plan will stand as a tool to guide the Clarendon Municipal Corporation to manage the orderly growth and development of the parish by identifying areas of improvement, opportunities and the strategies to achieve these goals and objectives. Through this plan we hope that these strategies will be implemented, so that the welfare of the citizens of Clarendon, and the environment will be positively impacted.

As we celebrate this milestone, we implore all stakeholders and partners to implement the Clarendon Local Sustainable Development Plan with the same amount of impetus and enthusiasm with which this plan was written, if not more. All too often we plan but fail to execute.

We salute the Clarendon Parish Development Committee Benevolent Society, the Clarendon Municipal Corporation and all other partners involved in formulating the plan; as we contribute to making Jamaica the place of choice to live, raise families and do business.

**Eurica Douglas, LLB, JP**  
**General Manager NAPDEC**

## FOREWORD

### Message of Endorsement from the Clarendon Parish Development Committee Benevolent Society



The Clarendon Parish Development Committee Benevolent Society is pleased to have partnered with the Clarendon Municipal Corporation in developing a participatory sustainable development plan for the parish. This has been a long journey which has allowed the input of various stakeholders (e.g. government, church, youth, community, and academia) to ensure that the process was inclusive and that there is ownership of the plan by these groups. In the process of developing the plan we focused on what exists in the parish and how we would like to work together to see the parish emerge as the place of choice to live, work, raise families and do business. In recognizing the economic, social and environmental changes taking place locally and internationally we highlighted the need for partnership and ensuring that the drivers of growth were feasible in this context. Focus was also placed on important areas for investment within the parish for which returns would be attractive and where employment would be a major factor.

Clarendon has had a long agricultural history including being home to the major three day annual show at Denbigh. It is important to continue this tradition while exploring ways to modernize agriculture and move towards agro processing and agro tourism. The unexplored rich heritage and natural resources from the caves at Jackson Bay to the Bull head mountain, from the Rio Minho to Milk River mineral spa, from the one of the oldest churches in Jamaica, St. Peter's Anglican Church, at Alley to the home of Claude McKay and everything in between that presents an opportunity for nature and heritage tourism to become a major driver for development in the parish. The plan not only highlights these treasures, it underlines the critical need to ensure that any development taking place must be sustainable and redound to the benefit of the people of Clarendon.

The Clarendon Parish Development Committee Benevolent Society fully supports this plan and will be integral in moving the implementation process forward.

**Ingrid Parchment**  
**Chairman**  
**CPDCBS**

## FOREWORD

### Message of Endorsement from the National Environment and Planning Agency



The National Environment and Planning Agency (NEPA) endorse and congratulate the Clarendon Municipal Corporation and its stakeholders for embarking on this initiative to prepare the Clarendon Local Sustainable Development Plan. This Plan is expected to provide a sustainable development planning model for the many communities within the parish as well as for other communities and Parishes throughout Jamaica.

The guiding principles and objectives within the Plan were guided and are consistent with those outlined in the various international, regional, and national sustainable development instruments, such as the United Nations Development Programme - Sustainable Development Goals (SDGs), Vision 2030 Jamaica - National Development Plan and the draft Clarendon Parish Development Order. It is therefore expected that the plan will be a critical tool in the parish's effort to improve the management of its and its pursuit of sustainable development.

It is commendable that the process was based on a participatory model which saw a wide range of stakeholders, including but not limited to residents, visitors, government agencies, business interests, NGOs, community groups and other institutions collaborating to ensure their vision, goals, and ideas were reflected in the development of the plan.

Once again, congratulations on the timely completion of the plan and we look forward to collaborating with you on the implementation of the projects and programs contained therein as we strive to make Jamaica "the place of choice to live, work, raise families and do business".

**Peter Knight, JP,  
Chief Executive Officer/Government Town Planner  
National Environment and Planning Agency**

## FOREWORD

### Message of Endorsement from the Sugar Transformation Unit



The Sugar Transformation Unit of the Ministry of Industry, Commerce, Agriculture & Fisheries was created to transform the landscape of sugar dependent areas by fulfilling the goals agreed between the Government of Jamaica (GOJ) and the European Union (EU) in the Jamaica Country Strategy for the Adaptation of the Sugar Industry. The opportunity to provide funding to the Clarendon Municipal Corporation towards the development of the Clarendon Sustainable Development Plan was welcomed as it would propel the sustainable development agenda.

Through the provision of Twenty Million Dollars (\$20,000,000.00) in grant funding facilitated through the EU and GOJ partnership, a planning strategy that promotes integration between the local and national planning authorities was developed. The process facilitated community participation, preparation of parish profiles and the convening of Visioning and Priority Setting Workshops that exemplifies the “bottom up” approach to planning. Citizens were empowered to determine a vision for the parish, devise strategies to achieve their vision while addressing the numerous issues and problems that are plaguing the parish. Some of these issues include: inadequate sewage disposal, drainage, squatting, encroachment of residential development unto agricultural land and severely congested roadways. These are issues that span beyond Sugar Dependent borders and if not mitigated will stymie the transformation and resilience that are being promulgated in the Sugar Dependent Areas.

Clarendon is not only the typographical central location for sugar parishes across Jamaica, to some Two Hundred and Forty Five Thousand, One Hundred and Three residents (245,103) as stated by the 2011 population census. Economic growth, although slow, has been progressing annually at a rate of 0.96%. Therefore, investment in the completion of the Sustainable Development Plan as well as the progression in sugar cane industry enhancement activities will serve to propel the growth agenda even further.

It is anticipated that there will be further strengthening of the Clarendon Sustainable Development Plan through continued collaborative efforts of the Clarendon Municipal Corporation, Clarendon Parish Development Committee Benevolent Society, National Association of Parish Development Committees and Social Development Commission and the citizens, to name a few, to realize all outputs forecasted.

The Sugar Transformation Unit/ Ministry of Industry, Commerce, Agriculture and Fisheries endorses any endeavour that drives growth and the improvements to the quality of lives of people, especially those residing in sugar dependent parishes and so is proud to be a partner with the Clarendon Municipal Corporation on this initiative.

**Keleen Young-Grandison**  
**Project Manager**  
**Sugar Transformation Unit**

## FOREWORD

### Message of Endorsement from the National Housing Trust



The National Housing Trust (NHT) congratulates the Clarendon Municipal Corporation, its project team and indeed the entire Clarendon community, on the preparation of the Clarendon Local Sustainable Development Plan (CLSDP) to guide growth and development in the parish.

Such plans are critical if Jamaica is to achieve its vision as a place of choice for people to live, work, raise families and do business. They help to identify the resources within the parish and establish a framework for managing those resources sustainably so that all may benefit. Very importantly, in the development of plans such as this one, people with diverse interest are given the opportunity to present their own viewpoints and, by virtue of their participation, become active stakeholders in the implementation and monitoring of the final plan.

The NHT is pleased to have provided part funding for this project and appreciates the opportunity presented to the Trust to participate in the creation of the plan. Our interest and support stemmed from our belief that proper spatial planning is an important ingredient in the foundation of an orderly, peaceful and wholesome society. Informal settlements, the under-developed rural areas and environmental degradation on the other hand, retard societal progress.

Congratulations to all the stakeholders involved, for the work done so far. The plan is indeed a giant step for the Parish of Clarendon and we look forward to seeing the benefits as the years go by.

**Martin Miller**  
**Acting Managing Director**  
**National Housing Trust**

## LIST OF ACRONYMS AND ABBREVIATIONS

ABIS	Agricultural Business Information System
ADRA	Adventist Development and Relief Agency
ALCOA	Aluminium Company of America
ALPART	Alumina Partners of Jamaica
AMANDA	Application Management and Data Automation
AMJ	ALCOA Minerals of Jamaica
ANPR	Automatic Number Plate Recognition
ASTEP	Alternative Secondary Transition Education Programme
B&B	Bed and Breakfast
BHFR	Bull Head Forest Reserve
BID	Business Improvement District
BIMAC	Bamboo and Indigenous Materials Advisory Committee
BOOT	Build-own-operate-transfer
BOT	Build-operate-transfer
BPIP	Bamboo Products Industry Project
BSJ	Bureau of Standards Jamaica
CAMI	Commercial Advanced Metering Infrastructure
CAP	Community Access Point
CaPRI	Caribbean Policy Research Institute
CARE	Child Assessment and Research in Education
CARICOM	Caribbean Community
CARILED	Caribbean Local Economic Development Project
CASE	College of Agriculture, Science and Education
CBD	Central business district
CBOs	Community Based Organizations
CCA	Climate change adaption
C-CAM	Caribbean Coastal Area Management Foundation
CCCC	Caribbean Community Climate Change Centre
CCJ	Caribbean Court of Justice
CCTV	Closed circuit television
CDA	Child Development Agency
CDC	Community Development Committee
CEDA	Caribbean Export Development Agency
CEPF	Critical Ecosystem Partnership Fund
CGES	Ministry of Culture, Gender, Entertainment and Sport
CIAN	Clarendon Inter-Agency Network
CIDA	Canadian International Development Agency
CJL	Cement Jamaica Limited
CLSDP	Clarendon Local Sustainable Development Plan
CMI	Caribbean Maritime Institute
COMET	Community Empowerment and Transformation
CPC	Clarendon Parish Council
CPDCBS	Clarendon Parish Development Committee Benevolent Society
CPTED	Crime Prevention through Environmental Design
CSA	Climate-Smart Agriculture
CSI	Community Security Initiative
CSJP	Citizen Security and Justice Programme

## LIST OF ACRONYMS AND ABBREVIATIONS



CSSB	Community Safety and Security Branch
CTO	Caribbean Tourism Organization
DA	Development Area
DAC	Development Area Committee
DBJ	Development Bank of Jamaica
DRR	Disaster Risk Reduction
EAT	Easily Achievable Task
ECC	Early Childhood Commission
ECI	Early Childhood Institution
ECLAC	Economic Commission for Latin America and the Caribbean
EFF	Extended Fund Facility
EPS	Expanded polystyrene
ESET	Electricity Sector Enterprise Team
EWI	Energy World International
FAA	Financial Administration and Audit
FAO	Food and Agriculture Organization
FD	Forestry Department
FFP	Food for the Poor
GIS	Geographic Information System
GLHI	Global Logistic Hub Initiative
GOJ	Government of Jamaica
GPS	Global Positioning System
GSAT	Grade Six Achievement Test
HAI	Housing Agency of Jamaica
ICT	Information and Communications Technology
IFM	Integrated Flood Management
IICA	Inter-American Institute for Cooperation on Agriculture
IMF	International Monetary Fund
INBAR	International Network for Bamboo and Rattan
INDECOM	Independent Commission of Investigations
IUCN	International Union for Conservation of Nature
IDB	Inter-American Development Bank
IP	Intellectual Property
IPPs	Independent Power Producers
ISCF	Island Special Constabulary Force
IUC	International University of the Caribbean
IWRM	Integrated water resource management
JAMIS	Jamaica Agricultural Marketing Information System
JAMPRO	Jamaica Promotions Corporation
JAS	Jamaica Agricultural Society
JBDC	Jamaica Business Development Corporation
JBIM	Jamaica Bauxite Institute
JBM	Jamaica Bauxite Mining Limited
JCF	Jamaica Constabulary Force
JDF	Jamaica Defence Force
JET	Jamaica Environment Trust
JFB	Jamaica Fire Brigade

## LIST OF ACRONYMS AND ABBREVIATIONS

JFLL	Jamaica Foundation for Lifelong Learning
JIE	Jamaica Institute of Engineers
JIPO	Jamaica Intellectual Property Office
JIS	Jamaica Information Service
JJSR	Jamaican Justice System Reform Project
JNHT	Jamaica National Heritage Trust
JPs	Justices of the Peace
JPS	Jamaica Public Service Company Limited
JRC	Jamaica Railway Corporation
JTB	Jamaica Tourist Board
JVCP	Jamaica Venture Capital Programme
KMA	Kingston Metropolitan Area
LED	Light Emitting Diode
LEDOs	Local Economic Development Officers ()
LMIP	Labour Market Information Portal
LMIS	Labour Market Information System
LPG	Liquid petroleum gas
LSDP	Local Sustainable Development Plan
MOAF	Ministry of Agriculture and Fisheries
MW	Megawatt
MEGJC	Ministry of Economic Growth and Job Creation
MEYI	Ministry of Education, Youth and Information
MOE	Ministry of Education
MGD	Mines and Geology Division
MICAF	Ministry of Industry, Commerce, Agriculture and Fisheries
MLGCD	Ministry of Local Government and Community Development
MLSS	Ministry of Labour and Social Security
MNS	Ministry of National Security
MOCA	Major Organised Crime and Anti-Corruption Agency
MOH	Ministry of Health
MOJ	Ministry of Justice
MOT	Ministry of Tourism
MRTO	Milk River Tourism Organisation
MSET	Ministry of Science Energy and Technology
MSME	Micro, Small and Medium Enterprise
MTAP	Medium Term Action Plan
MTM	Ministry of Transport and Mining
Mtpy	Metric tonne per year
MTWH	Ministry of Transport Works & Housing
NAPDEC	National Association of Parish Development Committees
NCDA	National Council on Drug Abuse
NCST	National Commission on Science and Technology
NDC	National Disaster Committee
NEOC	National Emergency Operation Center
NEPA	National Environment and Planning Agency
NGO	Non-Government Organisation
NHF	National Health Fund

## LIST OF ACRONYMS AND ABBREVIATIONS

NHT	National Housing Trust
NIA	National Integrity Action
NIC	National Irrigation Commission
NIS	National Insurance Scheme
NLA	National Land Agency
NRCA	Natural Resources Conservation Authority
NRMLFMC	Northern Rio Minho Local Forest Management Committee
NRSC	National Road Safety Council
NSWMA	National Solid Waste Management Authority
NVQ	National Vocational Qualification
NWA	National Works Agency
NWC	National Water Commission
NYS	National Youth Service
OAS	Organization of American States
ODPEM	Office of Disaster Preparedness and Emergency Management
ONR	Office of National Reconstruction
OPM	Office of the Prime Minister
OUR	Office of Utilities Regulation
PASS	Programme for Alternative Student Support
PATH	Programme of Advancement through Health and Education
PBMA	Public Bodies Management and Accountability
PCJ	Petroleum Corporation of Jamaica
PDCs	Parish Development Committees
PIOJ	Planning Institute of Jamaica
PBFMC	Portland Bight Fisheries Management Council
PBPA	Portland Bight Protected Area
PBPAMC	Portland Bight Protected Area Management Committee
PEOC	Parish Emergency Operations Center
PMI	Peace Management Initiative
PostCorp	Postal Corporation of Jamaica Limited
PPVs	Public Passenger Vehicles
PSMP	Public Sector Modernization Project
PTAs	Parents-Teachers Association
RADA	Rural Agricultural Development Authority
RAMI	Residential Advanced Metering Infrastructure
R&D	Research and Development
REP	Rural Electrification Programme
RIVAMP	Risk and Vulnerability Assessment Methodology Project
RJ	Restorative Justice
RWSL	Rural Water Supply Limited
SDC	Social Development Commission
SEZ	Special Economic Zones
SFCA	Special Fishery Conservation Area
SIDs	Special Improvement Districts
SJPC	South Jamaica Power Company Limited
SLB	Students' Loan Bureau
SMU	Squatter Management Unit

## LIST OF ACRONYMS AND ABBREVIATIONS



SPCR	Strategic Programme for Climate Resilience
SPM	Southern Parks and Markets
SRC	Scientific Research Council
SRHA	Southern Regional Health Authority
STATIN	Statistical Institute of Jamaica
STEM	Science, Technology, Engineering, and Mathematics
STU	Sugar Transformation Unit
SWC	Soil and water conservation
SWM	Solid Waste Management
TA	Transport Authority
TAJ	Tax Administration Jamaica
TCL	Trinidad Cement Limited
TCPA	Town and Country Planning Authority
TPDCo	Tourism Product Development Company
UDC	Urban Development Corporation
UNCED	UN Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHabitat	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
USD	United States Dollar
UTech	University of Technology
UWI	University of the West Indies
VIP	Ventilated Improved Pit latrine
VMS	Vessel Monitoring System
WINDALCO	West Indies Alumina Company
WIPO	World Intellectual Property Organization
WRA	Water Resources Authority
WMUs	Watershed Management Units
YEEP	Young Farmers Entrepreneurship Programme

# ACKNOWLEDGEMENT

The Clarendon Local Sustainable Development Plan (CLSDP) is the product of partnerships and collaborations. It could not have been formulated without the generous and invaluable contributions of many individuals and organizations. The Secretariat take this opportunity to thank all immediate partners to the Plan, as well as those individuals and organisations who contributed their resources, time and expertise to the process.

Specifically, the Secretariat thanks: the Management Committee which oversaw the process; the Steering Committee which provided guidance and overall direction to the process; the participants in the sector workshops and the technical strategy validation session who provided technical advice; the agencies and organisations which furnished the Secretariat with data, equipment and other resources; the participants in Visioning Symposium, the Situation Validation and Visioning Workshops and the Strategy Validation Session who provided local knowledge; the individuals who volunteered as facilitators and scribes at each workshop; the entrepreneurs, speakers, and all others who participated in the Clarendon Economic Expo; and the individuals and groups who provided support through social media.

The Secretariat also extends the deepest gratitude to the funders and sponsors of aspects of the Plan thus far. Without the commitment and the generosity of the main funder, the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAFA) , through the Sugar Transformation Unit (STU), the mission to facilitate sustainable development in the parish of Clarendon would not have been possible. Special thanks also to the National Housing Trust (NHT), as well as to the Caribbean Local Economic Development Project (CARILED), the Office of the Prime Minister (OPM), and the local businesses which sponsored the aforementioned exposition.

## THE MAIN PARTNERS



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## EXECUTIVE SUMMARY

Clarendon is the third largest parish in Jamaica in terms of both land space and population size. The parish boasts several different natural resources, as well as some of the best natural and cultural heritage sites in the country. The local economy is heavily dependent on the agriculture and services sectors, with mining, manufacturing and tourism also playing important roles.

Clarendon has been recognised as one of the fastest growing parishes in the island. The parish has witnessed a population influx as well as rapid growth in residential developments over the last few decades. However, most of this growth has been taking place in and around the parish's capital, May Pen. This has led to increased pressure on the urban infrastructure and services. At the same time, the provision of such infrastructure and services has not kept pace with the rate of urban growth, and much of the development has been inconsistent with the Development Order of 1982. As a consequence, the town has developed organically as one of the largest urban centres in Jamaica, and is characterised by a number of related issues, including congestion and poor social and physical infrastructure.

In the past, Government's focus in the parish has been mainly on addressing those issues within May Pen. As a consequence, the peripheral regions have been relatively neglected and May Pen continues to exert an overwhelming influence as the prime urban centre in delivering services in the parish. External areas are therefore characterised by low levels of investments and high levels of unemployment, and residents tend to over exploit natural resources to earn a living or migrate to May Pen in search of job opportunities. Migration into May Pen and the inadequate provision of affordable housing has however led to increased squatting, high levels of unemployment and other social issues like crime and violence. The capital is currently showing early signs of urban blight, while peripheral areas are suffering from underdevelopment.

Nevertheless, a number of strategies have been proposed for the development of the parish and Clarendon has witnessed improvements on several fronts in the last ten years. The plans prepared have generally been done in a piecemeal fashion, with none addressing the issues plaguing the entire parish. However, improvements which include access to potable water, electricity and telecommunications are quite evident within the local area.

Additionally, there are several ongoing projects and initiatives which provide Clarendon with new opportunities. These projects and initiatives include the Global Logistic Hub Initiative (GLHI), Highway 2000, and the development of the south coast of Jamaica as an alternative tourist destination to the north coast of the island. They have the potential to lead to sustained investments, increased employment, economic growth and poverty reduction in the parish, but can also have unintended negative consequences for development which must be properly managed.

In order to wholesomely address the issues facing Clarendon and capitalise on the opportunities available, the CLSDP has been formulated. The CLSDP is a process which seeks to pull together the resources contained within the local space (Clarendon) to achieve sustainability. It seeks to address the current and projected needs of the parish, whilst capitalizing on the opportunities available, without jeopardizing the growth possibilities of future generations. This process is built around the four (4) fundamental components of sustainable development: 1. environmental action, 2. economic prosperity, 3. social well-being and 4. good governance, and will be guided by this document which is referred to as the CLSDP Planning Document. The Plan starts with a clear, acceptable futuristic condition or state called the Vision. This Vision (as well as the remainder of the Plan) was developed using a highly participatory approach, involving various stakeholders including the general public.

## EXECUTIVE SUMMARY

These stakeholders envision Clarendon as “a thriving Parish with a healthy, educated and creative population that lives in safe and attractive communities.” The Vision sees Clarendon undergoing major transformation from being a parish characterised by haphazard development and limited opportunities to one which affords its citizens a high standard of living with adequate access to first class infrastructure and services, including education, health care, and justice.

In order to operationalise this Vision, four (4) goals were developed with each based on one of the pillars of sustainable development. The four goals were further broken down into a number of strategic objectives, which in turn will be pursued through specific policies and actions. These goals are as follows:

1. To build climate change and disaster resilience, provide adequate physical infrastructure, and ensure the sustainable management and use of the parish’s environmental resources.
2. To develop a healthy and educated population, which resides in a safe and secure Parish with adequate access to the necessary social facilities and services.
3. To create a strong diversified economy which is built around agriculture, tourism, and manufacturing.
4. To create a parish where Government operates in a participative, transparent and accountable manner, and rules and regulations are adequately enforced to guide sustainable development.

Goal #1 seeks to address the issues and challenges impacting the natural and built environments, as well as those related to climate change and disaster management. Appropriately, the existing damage to the natural environment in Clarendon, will be reversed to the extent where possibly all future interactions will be carried out in a responsible manner. Land use regulations will play an important role in this regard and it will also be used to minimize the possibility of disasters. At the same time, emergency response will be strengthened and citizens will be encouraged to adapt climate and disaster resilient livelihoods. Besides, adequate physical infrastructure will be provided to support societal advancement.

While the ultimate goal of the Plan is to improve the standard of living for the population, Goal #2 specifically seeks to improve the quality of life for residents. The achievement of this goal will ensure that basic human needs are met and people are able to coexist peacefully in communities and access opportunities for advancement. The health, education level and safety and security of the population are the primary determinants of this state. Hence the goal will be achieved mainly by: supporting good health, which is central to human happiness and also makes an important contribution to economic progress; developing an educated citizenry, which will make informed decisions and also contribute economic prosperity through innovation; and ensuring that vulnerabilities which can risk the health and/ or happiness of the populace are mitigated. Additional social facilities and services which complement these efforts will also be provided.

Goal #3 seeks to address the underperformance of the local economy. The achievement of this goal will lead to a state where Clarendonians generally have the funding necessary to fulfil all their needs and most of their wants. Critical to this is the diversification of the local economy. This will be achieved by improving the business environment and through the promotion of developments in traditional and non-traditional sectors such as mining, tourism, services, manufacturing, nutraceuticals and film. Nevertheless, tourism, manufacturing and agriculture will form the backbone of the local economy.

Goal #4 seeks to address the governance issues in the Parish. It will ensure that development takes place in an equitable, efficient and sustainable manner, and also inspires confidence in the public that the best decisions are being taken for the right reasons. Accordingly, a number of ongoing reforms will be embraced locally.

The implementation of the actions and policies of the CLSDP is the responsibility of a number of different stakeholders, including Government, the private sector, non-profit organisations charity groups, and residents. Funding for implementation will be sought from both traditional and non-traditional avenues.

# INTRODUCTION TO THE PLAN

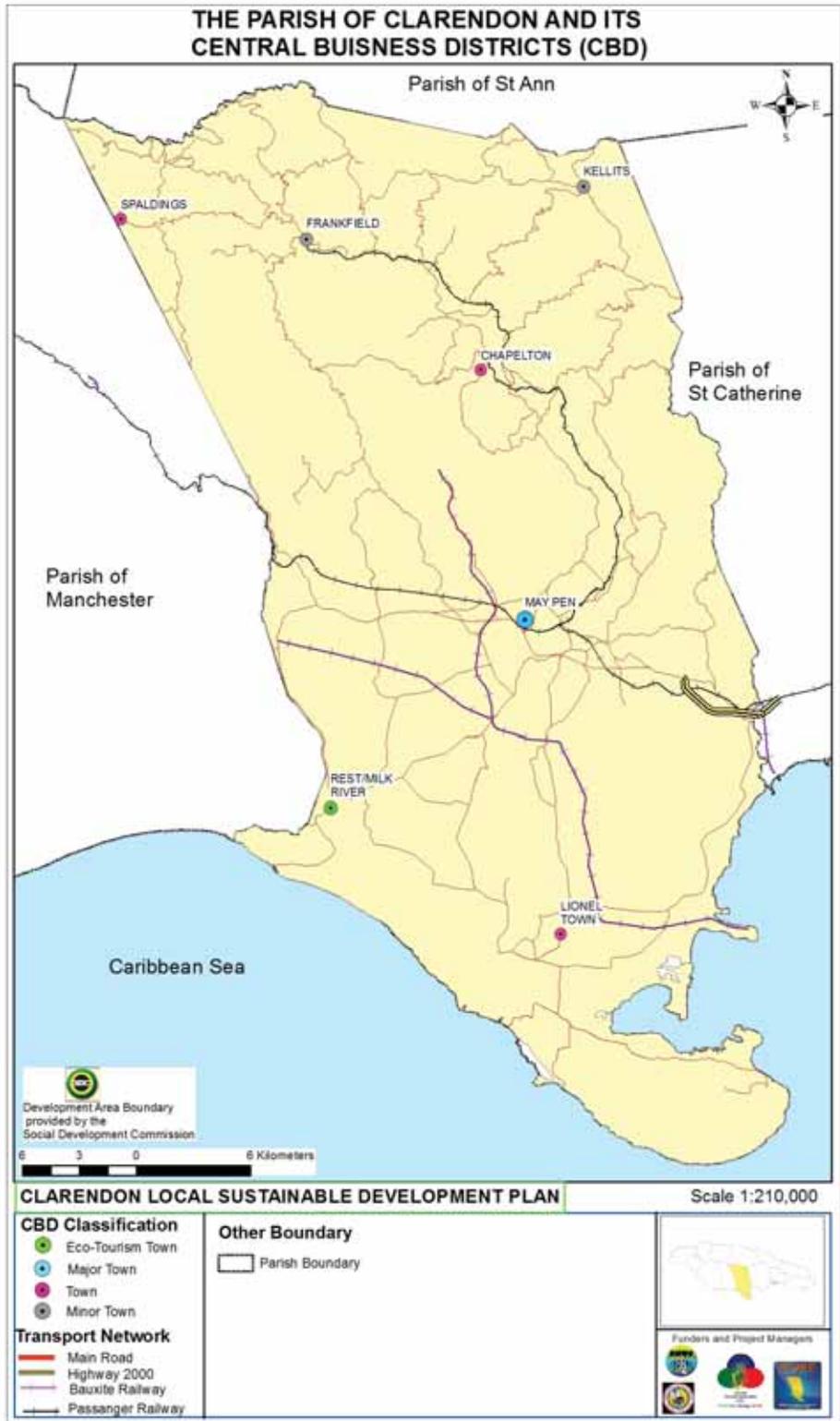
## 1.1. INTRODUCTION TO THE PLAN AREA

### 1.1.1. LOCATION

Clarendon is a parish located on the southern section of Jamaica in the county of Middlesex at latitude 17°44'N and longitude 77°09'W. The parish has a land area of 1,196 square kilometres (km<sup>2</sup>) and is bordered by the parishes of Manchester in the west, Saint Catherine in the east, Saint Ann in the north and the Caribbean Sea in the south (see Appendix 1 for detailed boundary description). It is roughly half way between St Thomas and Westmoreland and is therefore found in the central region of the island.

### 1.1.2. HISTORY AND BACKGROUND

Clarendon was named in honour of the celebrated English Lord Chancellor, Sir Edward Hyde, Earl of Clarendon. The parish was formed from a combination of three parishes: St. Dorothy's, Vere and the old parish of Clarendon. Before the merger, the capital of the old parish was Chapelton. The current capital, May Pen, was established as a plantation settlement by the British between 1660 and 1683 on a crossing point of the Rio Minho River.



## INTRODUCTION TO THE PLAN

Long before the discovery of Jamaica by the Spanish, Clarendon was the site of several established Taino settlements. Archaeological evidence revealed that the natives lived in villages in Portland Ridge, Braziletto Mountain, Round Hill and on the banks of the Rio Minho and Milk River. The Spaniards, who later settled in the area, named the vast grassland plains 'Savannah'. Upon seeing the potential for livestock rearing on the Savannah, pigs, horses and cattle were imported, and three cattle ranches were established. The hinds of pigs, horses and cattle were exported to Spain while the beef and tallow were used locally.

In 1655, almost immediately following the capture of the island from the Spanish, large areas of Clarendon were settled by the English. One of the earliest English settlements was located on the banks of the Rio Minho. That area presently makes up a part of the portion of land called Seven Estates which got its name from the seven original plantations. Several other areas of the parish also continue to boast names which stem from the presence of the English. These areas include Suttons, Pennants and Ballards, which bear the names of original settlers when the hilly sections of the parish were first developed by the English who established sugar estates along the Minho Valley. Prior to the development of these hilly areas, the plains were used for the planting of indigo and cotton. The southern part of the parish was also named Vere, after the daughter of Sir Edward Herbert, Attorney General to Charles I, who was also the wife of Sir Thomas Lynch, the three times Governor of the island.

Records indicate that one of the earliest slave rebellions occurred in 1690 in the parish of Clarendon. Runaway slaves from the Suttons Plantation joined up with some Africans who were earlier freed by the Spanish, to form a formidable group which became known as the Maroons. The Maroons were eventually driven out of the parish.

Clarendon acquired its present boundary after the Act of 1814 divided the parish of Vere into two (2) parts to create the eastern portions of the new parish of Manchester and the present parish of Clarendon. The parish is ranked as the third largest in Jamaica, and is also one of the most populous. It is characterized by alluvial plains, such as the Vere Plains, and sloping mountain ranges, like the Bull Head mountain range. Clarendon is also marked by several rivers, including the Rio Minho River, which runs the length of the parish. The economy is predominantly agricultural, but service industries, mining, manufacturing and the informal sector all play an important role in the development of the parish and, by extension, Jamaica. The parish does face a number of problems including sprawling informal development, congestion, crime and violence, high levels of unemployment, lack of water and improper garbage disposal. However, Clarendon has seen improvements in the last ten years. The improvements are evident in areas such as access to potable water, electricity and telecommunications, as well as in sanitation. While the accomplishments are great, there is still scope for further advancements.

### 1.2. NEED FOR A LOCAL SUSTAINABLE DEVELOPMENT PLAN (LSDP)

Clarendon has an unequivocal need for a LSDP. The Parish is faced with many challenges, including climate change, water availability, crime, unemployment, and a lack of citizens' participation in governance. These issues are either global, regional or national but they all need to be addressed from the local level since they are generally connected to some local factors and their impacts are often felt first at this level. For instance, climate change is a global issue, but actions taken at the local level can help to mitigate its impacts. A number of strategies have been employed to address some of these problems, but there is need for a single framework for measuring the impact of these programs; hence the need for the LSDP.

In addition, there are several ongoing projects and initiatives which provide Clarendon with new opportunities, but may also have unintended negative consequences for the development of the parish. These projects and initiatives include the GLHI, Highway 2000, and the development of Jamaica's south coast as an alternative tourist destination

## INTRODUCTION TO THE PLAN

to the north coast. They have the potential to lead to sustained investments, increased employment, economic growth and poverty reduction in the Parish, but can also make Clarendon susceptible to issues such as crime, increased squatting, environmental degradation and cultural dilution. It therefore means that there is need for a formalized framework to enable capitalisation on the opportunities of these projects and initiatives, and to minimize or properly manage the negative consequences. Hence, the need for a LSDP.

### 1.3. WHAT IS THE CLSDP?

A LSDP in the context of Clarendon is a process which pulls together the resources contained within the local space to achieve sustainability. The CLSDP takes both an integrated and a comprehensive approach to the development of the parish of Clarendon. It seeks to address the current and projected needs of the parish, whilst capitalizing on the opportunities available, without jeopardizing the growth potential of future generations. This process which will be guided by the CLSDP Planning Document, is utilising a results based approach which starts with a clear, acceptable, futuristic condition or state called the Vision. This Vision was developed using the consensus-based approach which is highly participatory, involving various stakeholders including the general public. In order to operationalise this Vision, four (4) goals were developed with each based on one of the pillars of sustainable development. The goals are wide targets, which were narrowed down into a number of objectives. The achievement of these objectives will provide desired results called outcomes, which will lead to the realization of the goals and ultimately the vision. However, in order to move from objectives to results, strategies are required; the strategies developed are made up of recommended policies and actions which must be implemented by the relevant stakeholders to drive the process.

### 1.4. PURPOSE OF THE CLSDP

The CLSDP was conceived with a view to establish the framework for sustainable development in the parish of Clarendon. It envisages the integration and balancing of all aspects of development in order to achieve a high standard of living for all Clarendonians. The Planning Document seeks to provide strategic policies and actions geared towards addressing the myriad of planning related issues affecting the parish, and is therefore prepared as the main instrument to guide and control development.

This Document is also prepared as an amalgamation of previous planning efforts for the parish. It therefore integrates all the preceding regional and local area plans, proposals, strategies, etc. that have been put forward. However, only the approaches that are deemed to be still relevant and applicable are adopted.

### 1.5. THE PLANNING CONTEXT

The preparation of the CLSDP stems from the Government of Jamaica's (GOJ's) Local Government Reform Initiative (See 5.2.2. Local Government Reform, pg.449), which was in response to Agenda 21. Agenda 21 is a product of the UN Conference on Environment and Development (UNCED) which was held in Brazil in 1992. It is a non-binding, voluntarily implemented action plan deemed to be fundamental to achieving sustainable development in the 21st century. A number of countries, including Jamaica, have committed themselves to implementing this initiative. Consequently, Jamaica had to devolve authority for local planning to Local Government, resulting in the decentralization of the planning framework.

This approach represents a "bottom up" solution to planning, which integrates environmental, economic, social and governance issues with a

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2. This document is referred to as the CLSDP Planning Document.

3. These include: the Portland Bight Protected Area Management Plan; the Portland Bight Protected Area Framework Management Plan for 2014-8; the Portland Ridge Biodiversity Management Plan 2013-7; the Portmore to Clarendon Park – Highway 2000 Corridor Development Plan 2004 to 2025; the Local Forest Management Plan: Bull Head Forest Reserve, Jamaica; the South Coast Sustainable Development Master Plan; the Tourism Master Plan for Sustainable Development; the May Pen Development Plan; the May Pen Development Plan; the Development Strategy for May Pen Sub-Regions; the Comprehensive Redevelopment Plan of May Pen; and the Township Status for Longville Park.

## INTRODUCTION TO THE PLAN

holistic view to development. It involves full community participation in the determination of a vision for the parish, as well as the strategies to achieve this vision. The framework is also built on principles such as: partnership, inter-disciplinary decision-making, transparency and accountability.

### 1.6. LEGISLATIVE BASIS FOR THE CLSDP

The Parish Council Act mandated the involvement of the Clarendon Parish Council (CPC) in planning for the development and environmental stewardship of Clarendon. This Act has however been repealed with the passage of the new Local Governance Act, 2016. The Local Governance Act, 2016 empowers the Local Authority to spearhead the formulation of LSDPs and promote or facilitate physical, social and economic development within the local area. The Act also makes provisions to facilitate the participation of businesses, citizens or civil society in consultations associated with the preparation of LSDPs.

### 1.7. THE RELATIONSHIP TO VISION 2030

The CLSDP will support the implementation of Vision 2030 Jamaica, which is the national development plan of the country. The strategies of the CLSDP were developed in accordance with the Action Plan of the Vision 2030, as well as a number of national policies, including Jamaica's Energy Policy 2009-2030, the Micro, Small and Medium Enterprise (MSME) and Entrepreneurship Policy, and the National Sports Policy 2013, which in turn support the implementation of the National Plan. It therefore means that the CLSDP is consistent with, and a part of the overarching vision for Jamaica in achieving developed country status by 2030. Detailed descriptions of the relationship between Vision 2030 and the strategies of the CLSDP are given throughout the main chapters of this Planning Document.

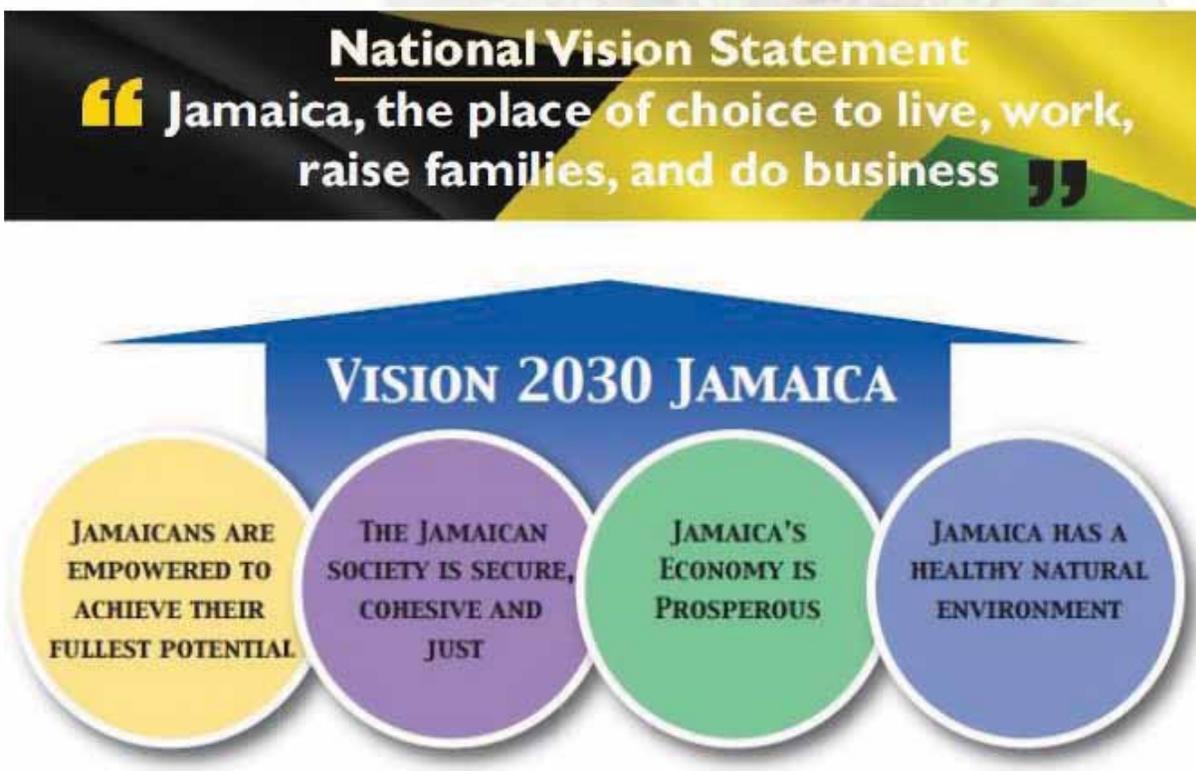


Figure 1: The National Vision and National Goals of Jamaica.

# INTRODUCTION TO THE PLAN

## 1.8. THE CLSDP PLANNING CYCLE

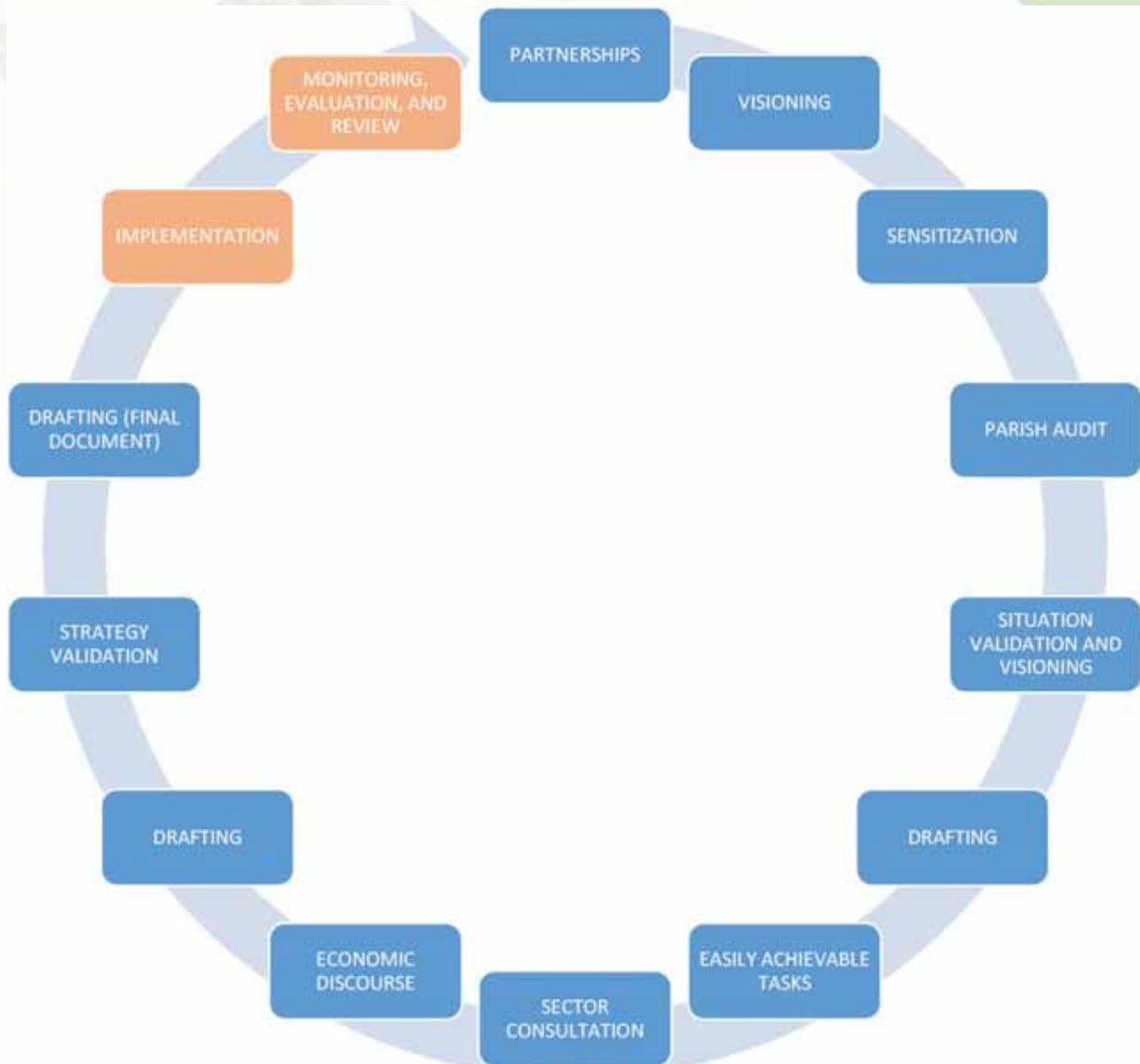


Figure 2: The CLSDP Planning Cycle

The CLSDP planning process was developed locally by tweaking the general process established for use in Jamaica by the National Environment and Planning Agency (NEPA) to fit within the context of Clarendon. It was also informed by the experiences of Manchester and St Elizabeth, which are the only parishes in Jamaica to precede Clarendon in undertaking this new planning process. The process followed the principles of the Local Sustainable Development Planning, and was therefore highly consultative, participatory and transparent.

### 1.8.1 PARTNERSHIPS

The CLSDP planning process began with the formation of a strategic partnership between the CPC, the Social Development Commission (SDC) and the Clarendon Parish Development Committee Benevolent Society (CPDCBS), which resulted in the creation of the CLSDP proposal in 2005. Following the generation of this document of initiation, funding was sought for the effective execution of the project.

4. The process is established in the publication "A Framework for Local Sustainable Development Planning in Jamaica."

## INTRODUCTION TO THE PLAN

However, it was not until 2013 that sufficient funding was secured from the STU of the MICA, representing the realization of another very important partnership. At various other stages in the process thus far, a number of other partnerships have been established with government, businesses, non-government organizations and civil society groups. This represents a trend which is expected to continue throughout the lifespan of the CLSDP.

### 1.8.2. VISIONING

In 2010, the Clarendon Visioning Symposium, which set the tone for CLSDP, was held. It was an undertaking of the Ministry of Local Government, which was aimed at formulating a Vision for the development of the parish as a whole. It was held as part of a 20 year strategy to align the parish within the context of Vision 2030.



Figure 3: Two participants at the Parish Visioning Symposium making a group presentation to the audience.

This symposium was organized around four (4) thematic areas: 1. Infrastructure and the environment; 2. economic development, wealth creation and agriculture; 3. Social Services; and 4. Governance. It allowed the citizens to identify the issues facing the parish under each thematic area and make recommendations for reducing or alleviating their impacts.

### 1.8.3. SENSITIZATION

The Sensitization process commenced at the Clarendon Visioning Symposium in 2010 and continued until the end of the Situation Validation and Visioning Workshops. The process utilized a number of different methodologies, ranging from oral presentations to blogging on the internet. A prominent part of this process was an oral presentation at the Community Development Committee (CDC) conference held on January 15, 2014, at the St. Gabriel's Anglican Church Hall (May Pen) which was broadcast live on a local radio station and featured on the news of at least one local television station.

5. Now the Ministry of Local Government and Community Development (MLGCD)

6. Sensitization is the process through which the populace and other stakeholders were informed of the CLSDP, as well as the different ways in which they can get involved.

## INTRODUCTION TO THE PLAN



Figure 4: A view of the audience and members of the head table at the CDC conference held on January 15, 2014 in May Pen.

### 1.8.4. PARISH AUDIT

The Parish Audit involved the collection of base data and the undertaking of a baseline data analysis or a situational analysis from the data gathered, as well as carrying out a literature review. Data was obtained from both primary and secondary data collection. Primary data collection involved a land use survey, and several focus group and observation surveys. Secondary data was obtained from the archives of agencies including the Statistical Institute of Jamaica (STATIN), the National Land Agency (NLA), the NEPA, the SDC, the Planning Institute of Jamaica (PIOJ), the Water Resources Authority (WRA), the Mines and Geology Division (MGD), and the Forestry Department (FD), as well as from publications, newspaper articles and books. A major part of the secondary datasets was a parish profile which was compiled by the SDC from both primary and secondary data collection. The full dataset contained information related to four thematic areas: social well-being, economic prosperity, environmental action and good governance.



Figure 5: The four thematic areas of the CLSDP.

Subsequent to the profiling of the parish, a Situational Analysis was conducted to establish the current reality. The trends, patterns, irregularities, deviations, etc. were identified and used to explain the past, the present and what is expected to happen in the future. These analyses formed the basis of the Plan as it was used to guide decisions on development priorities and also served as a benchmark to measure progress towards, or away from sustainability. The Parish Audit concluded with a literature review which was aimed at accumulating all the major recommendations that relate to the development of Clarendon. Its purpose was to identify the strategies which have been implemented and those which are outstanding and may still be relevant to the CLSDP. The undertaking of the literature review therefore sought to prevent duplication and the efforts at reinventing the wheel.

## INTRODUCTION TO THE PLAN

### 1.8.5. CONSULTATIONS

The Plan reflects the feedback and opinions of a wide cross-section of the stakeholders obtained through extensive consultations with key stakeholder groups including residents, agencies, private sector, civil society organizations and planning experts. Whilst consultations began at the Parish Visioning Symposium (See 1.8.2. Visioning, pg. 33 ), the main avenues for this purpose were the Situation Validation and Visioning Workshops and the Sector Meetings.

The Situation Validation and Visioning Workshops were a series of eight (8) workshops held across all the Development Areas (DAs) (See 5.1.2.1.3. DACs, pg.448) in the parish . At least 357 residents participated in these workshops which gave the population a chance to update the information gathered from the Parish Visioning Symposium held in 2010, as well as an opportunity to validate the information gathered from other sources. The workshops therefore allowed residents to create the current reality in each DA, and the parish overall.

These workshops also actively engaged local citizens in the formulation of visions for their local areas, as well as the actions to be taken to achieve these visions. Hence, they allowed residents to play an active role in the formulation of the strategies that will shape the future of their parish. The process involved the identification of the strengths, weaknesses, opportunities and threats that are present within the local areas, and that may impact on their development.

Additionally, these workshops set the tone for the conceptualization of Easily Achievable Tasks (EATs) (See 1.8.6. Early Actions, pg. 37) within each DA, by prioritizing and establishing timelines for the strategies identified as critical to achieving the vision of each local area. They also allowed for the highlighting of the perceived levels of difficulty in the implementation of each strategy.



*Figure 6: A scene from the Lionel Town DA's Situation Validation and Visioning Workshop. As shown in the photograph, these workshops allowed participants to break out into small groups based on the groupings of their communities.*

Unlike the Situation Valuation and Visioning Workshops, the sector meetings targeted agencies and other stakeholder organizations and groups. These workshops facilitated agency participation and also served as a source of technical guidance. Some twelve (12) workshops were held with over 50 different organizations/groups participating . Prior to these workshops, the Draft of the Planning Document was sectionalized and circulated to all agencies/organizations/groups with a stake in a particular sector. During the workshop, participants gave their feedback on the section of the draft document perused. Through discussions recommendations for the parish were also given. Where a participant from a particular organization or group was unable to attend, the feedback and recommendations were normally communicated via email.

*7. Two workshops were held for May Pen due to its size. See Appendix for the complete list of workshops.*

## INTRODUCTION TO THE PLAN



Figure 7: A section of the Governance Sector Meeting. From left: Ms. Chanelle Rodriques (CLSDP Secretariat), Mr. Omar Lewis (National Integrity Action (NIA)), Ms. Sherona Campbell (MLGCD), Mr. Clive Edwards (MLGCD), Ms. Doneika Simms (PIO), and Ms. Ingrid Parchment (CPDCBS and C-CAM). The meeting was facilitated by Mr. Edwards.

In addition to the Visioning Symposium, the Situation Validation and Visioning Workshops and the Sector Meetings, a number of other consultation strategies were employed. Primary among these were the Clarendon Economic Expo, which was held under the theme “Creating New Possibilities,” and the Strategy Validation Sessions, which gave all stakeholders a chance to validate the parish development strategy. Four strategy validation sessions were held; 1 with agencies/organizations/groups, 2 with the political directorate and 1 with residents (See Appendix 2 pg. 602).



Figure 8: Former Minister of Local Government and Community Development, the Honourable Noel Arscott, poses for the camera with a few of the participants who displayed their business at the Clarendon Economic Expo.



Figure 9: Over 40 individuals, representing approximately 30 agencies/ organisations/ groups, attended the Strategy Validation Session held at the Jamaica Conference Centre on August 16, 2016.



Figure 10: The Strategy Validation session for residents facilitated full participation.

8. See Appendix for list of Workshops.

9. The Clarendon Economic Expo featured presentations from the likes of Dr. Andre Haughton (lecturer in the Department of Economics at the University of the West Indies (UWI)), Mr Joseph Cox, (Executive Director of the Growth Secretariat at the PIO), Mr. Allan Bernard (Programme Director of COMET II USAID), Ms. Collette Campbell (Executive Chairman of the RESET Caribbean Foundation), Mrs. Winsome Witter (Chairman of the Jamaica Association of Community Cable Operators (JACCO) and Chief Operating Officer of General Satellite Network Company Limited), Mr. Jukie Chin, (founder and Chief Executive Officer of Juici Beef Limited), and Hon. William Shagoury, (businessman, philanthropist and Custos Rotolorum of Clarendon).

## INTRODUCTION TO THE PLAN

Additionally, several consultants were engaged to review the document. These consultants included several Canadian experts, who were supplied by the CARILED. Aspects of the Planning Document were also posted on social media, while the entire draft was made available to the public, which facilitated wide stakeholders' consultations.

### 1.8.6. EARLY ACTIONS

The early actions or EATs are quick win initiatives which have the potential to generate results in a relatively short space of time, and subsequently gain support for the Plan. These initiatives were necessary since it was recognized that the creation of the Planning Document was a time consuming exercise which could result in some stakeholders, particularly residents, losing interest and thereby reducing the initial momentum of the process.

The EATs were conceptualized through a highly participatory and transparent process. Based on the resources available, funding was allocated for one project per DA. The criteria for project selection, which was developed by the CLSDP Secretariat and approved by the Management Committee, was circulated to all the Development Area Committees (DACs) in the parish. This paved the way for internal discussions within the DAs. Subsequently, each DAC, with the assistance of the SDC, created a concept proposal outlining their project idea. This proposal was then taken to the Management Committee for approval. Approval was given when the Committee was satisfied that the project idea was feasible and most or all of the criteria were met. It should also be noted that the CLSDP Secretariat met with all the DAs during the project conceptualization process to ensure that the projects developed were not just ideas of members of the DACs but a consensus among the populace. See Appendix 3 pg. 604 for the list of EATs.



*Figure 11: The Spalding DA chose to undertake an apiculture project which they refer to as "Visionary Bee."*

### 1.8.7. IMPLEMENTATION, MONITORING, EVALUATION AND REVIEW

The strategies of the Planning Document will be implemented based on the priorities identified through the consultations. The progress towards or away from the Vision will be monitored and the Plan will be continuously evaluated and updated as necessary. Chapter 7 establishes the framework for Implementation, Monitoring, Evaluation and Review.

## 1.9. THE PLANNING DOCUMENT

As highlighted earlier, the CLSDP will be guided by this document: the CLSDP Planning Document. The document sets out the parameters of the processes which will ensure that the Vision is achieved.

### 1.9.1. STRUCTURE OF THE DOCUMENT

Like the process, the CLSDP Planning Document is built around the four (4) fundamental components of sustainable development: 1. Environmental Action, 2. Economic Prosperity, 3. Social well-being and 4. Good Governance. Incidentally, the four main chapters of the document are accorded these titles. These chapters, generally follow the same logical sequence of steps:

## INTRODUCTION TO THE PLAN

- Parish Goal and Outcomes
- Current Conditions and Analysis
- Strategic Objectives
- Parish Strategies

Specifically, each of the main chapters first identifies the future desired condition for the particular area of focus, then outlines what is the current situation in the parish, followed by the efforts required to achieve the goals. Finally the chapter lists the policies and actions that must be implemented in order to achieve the desired results.

Additional chapters in the document include: Introduction to the Plan; Local Area Plans; Implementation, Monitoring, Evaluation and Review; and the Appendices.

### 1.9.2. HOW TO USE THIS PLAN

The four core chapters (Chapters 2 through 5) Environmental Action, Economic Prosperity, Social Well-being and Good Governance, provide recommendations for the general sustainable development of the parish of Clarendon. These recommendations, which include policies and actions, are to be considered as a whole despite being presented in sections. It should be noted that some of the policies and actions may be cross listed; that is, they appear under more than one heading.

Chapter 6 (Local Area Plans) provides specific recommendations for the development of each DA. These recommendations must be implemented within the defined geographic area. However, where relevant, the appropriate general development policies and actions of this Plan should also be applied.

The Town and Country Planning (Clarendon) Development Order should be consulted for those recommendations, which involve physical development. The development order is the legal document used to guide land use development in the plan area.

Chapter 7 (Implementation, Monitoring, Evaluation and Review) provides details on how the remaining aspects of the planning cycle are to be executed and how the responsibilities are to be shared. It also sets out the framework through which progress against indicators and targets are to be monitored and evaluated.

Chapter 8 (References) provides details on the sources of data and information used in crafting the strategies of the Plan.

Chapter 9 (Appendices) provides information that is supportive and important to, but is not part of the main text. Most other chapters of this document refers the user to this chapter in order to elaborate on the main text.

# **ENVIRONMENTAL ACTION**



## 2.0 ENVIRONMENTAL ACTION

### INTRODUCTION

Environmental Action is crucial to sustainable development and is therefore a fundamental pillar of the CLSDP. The state of both the natural and built environments, contribute to the economic situation and the overall wellbeing of the parish; the natural environment provides all the components required for survival and wellbeing, while the physical infrastructure provides the foundation on which the local society efficiently functions. Both components of the environment may be severely impacted by climate change and disasters, which are generally driven by the improper use of the environmental resources.

Appropriately, the chapter (or thematic area) is sub-divided into four parts: the Natural Environment, the Built Environment, Disaster Management and Climate Change Adaptation (CCA), and Land Use Management. The sub-chapter on the Built Environment is further subdivided into Transportation, Water, Energy, Waste Management, and Telecommunications. These sub-areas provide recommended policies and actions aimed at achieving Goal #1 of the CLSDP, which is:

“To build climate change and disaster resilience, provide adequate physical infrastructure, and ensure the sustainable management and use of the Parish’s environmental resources.”

The achievement of this goal will see:

- I. The existing damage to the natural environment in the Parish is reversed to the maximum extent possible;
- II. The efficient management of environmental resources;
- III. The parish is disaster and climate resilient.
- IV. Adequate physical infrastructure is provided to support local societal advancement.
- V. The parish has an efficient land use pattern, that integrates with social and economic development and respects the environment.

Each strategy of the CLSDP is aligned with the strategic framework of Vision 2030 Jamaica -National Development Plan. The Environmental Action strategies are aligned with the National Development Plan under the following National Goals and National Outcomes which are shown in the table below.

<b>National Goals</b>	<b>National Outcome</b>
Jamaica’s economy is prosperous	9. Strong Economic Infrastructure
	10. Energy Security and Efficiency
	11. A Technology-Enabled Society
4. Jamaica has a Healthy Natural Environment	13. Sustainable Management and Use of Environmental and Natural Resources
	14. Hazard Risk Reduction and Adaptation to Climate Change
	15. Sustainable Urban and Rural Development

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.1. OVERVIEW

Clarendon's natural environment encompasses all living and non-living things occurring naturally within the boundaries of the parish. It includes the topography, geology, hydrology, soils, climate, biodiversity and all other biological resources and their interactions.



#### 2.1.1.1. TOPOGRAPHY

The topography of Clarendon is characterized by four major physiographic regions: mountains, hills, limestone plateaus and alluvial plains :

- The mountains are situated in much of the northern section of the parish, forming the natural physiographic region which encompasses the Cave and Yankee River areas, as well as the Upper Rio Minho drainage area with all its tributaries. The region is precipitous with knife-edged ridges and steep slopes of approximately 20 degrees gradient. There are also innumerable gorge-like river valleys reaching from the Rio Minho or some other major stream to the edge of the limestone or to a major divide like Main Ridge.
- The hills represent a small area in the north eastern section of the mountains, or the area between Mount Hindmost and Lower Chapelton around the junction of the Rio Minho and Thomas Valleys. This area has a slope range of approximately 30 degrees, and elevations of 150-300 metres.

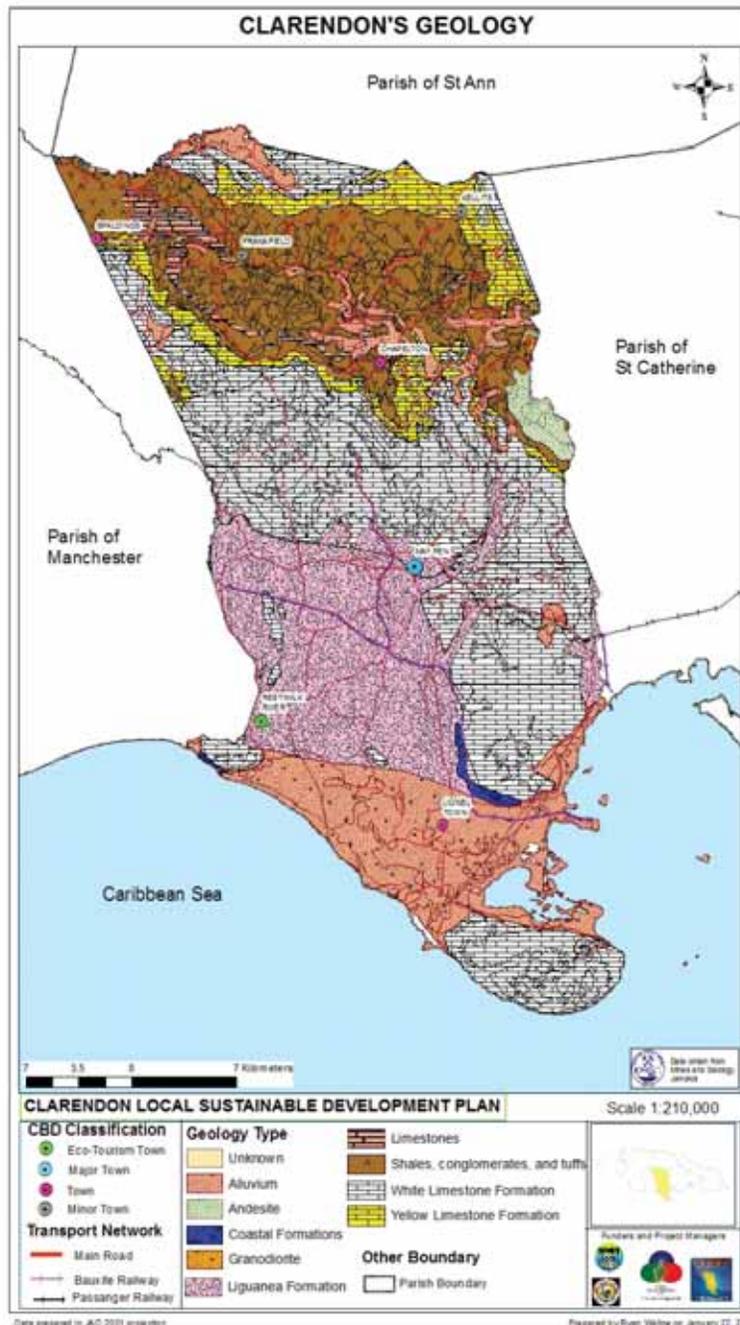
## 2.1 THE NATURAL ENVIRONMENT

- The Plateau forms the highest land formation in the parish reaching 3000 feet on the Manchester border between Banana Ground and Ritchies; and it slopes from there towards the sea at Old Harbour Bay. On the northern edge of the geological window, much of the plateau is gently sloping land, but a greater part of it is typical Cockpit country, especially in the Mocho Mountains and in the Braziletto Hills. In the south-east, the limestone plateau has been split by the Minho Gorge, which drains most of the geological window.
- The plains are comprised primarily of the Vere Plains and the Harris Savanna. The Vere plains is an area of relatively flat land, with slopes that are generally less than 2 degrees. It is incised by both the Milk River and the Rio Minho, and is also affected by the Rhymesbury Gully. The Harris Savanna consists of level tracts interspersed with limestone hills, and is about 50 feet higher than the northern parts of Vere.

### 2.1.1.2. GEOLOGY

The bedrock in Clarendon is highly fractured, as several major and minor faults, including the Rio Minho – Crawle River Fault and the South Coast Fault, crisscross the parish. These fractures serve as lines of weakness in the landscape, and may be associated with weathering or earth movements. The substratum may also be broadly described by three geologic groups; Alluvium, Volcaniclastics, and White and Yellow Limestone<sup>11</sup>.

- Alluvial deposits occupy about one-quarter of the parish and mainly constitute the Vere plains. These are largely fluvial deposits by the Rio Minho and the Milk River systems over several centuries.
- The Volcaniclastics region is made up of igneous, sedimentary and metamorphic rocks, and lies exposed as a geological window in the White and Yellow Limestone formations. It occurs mainly in the upper region of the parish.
- The Yellow and White Limestone formations together cover approximately two-fifths of the parish. The yellow limestone formation lies below the White Limestone and occurs around the inner edge of the geological window. The White Limestone consists of pure hard limestone with occasional soft chalky strata and beds of flint, and is resistant to weathering.



Map 3: The Geology of Clarendon

11. Sources: SDC (2014) and Natural Hazards Atlas of Jamaica

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.1.2.1. CAVES

The vast quantity of limestone found in Clarendon is associated with a number of caves and fissures. The Jackson's Bay Cave which is one of the largest known caves in Jamaica, and which is also very important as a source of biodiversity, is found in the Parish. In addition to this cave system, there are approximately 60 other accessible caves<sup>12</sup> in Clarendon, many of which are located in Portland Ridge and the Braziletto Mountains. Those found in the Portland Ridge area also contain important biodiversity, in addition to historical remains and considerable deposits of bat-guano and cave-phosphates, which are very useful fertilizers<sup>13</sup>. Much of the biodiversity of these caves is however dependent on the bat guano as a primary food source (Town and Country Planning Authority (TCPA), 2012). Therefore the wholesale removal of the bat guano will result in the elimination of not only the bat through repeated disturbance, but the elimination of the species that lives on it (TCPA, 2012).



Figure 12: Inside the Jackson Bay Cave.  
Source: <http://www.afbudsrejsjer24.dk/lande/93/jamaica.aspx>

### 2.1.1.3. HYDROLOGY

The hydrology of Clarendon includes both surface and underground water systems which fall within different hydrological units. A large section of the parish forms part of the Rio Minho Hydrologic Basin, whilst smaller portions form parts of the Rio Cobre and the Dry Harbour Mountain Hydrologic Basins. These basins are essentially geographical areas drained by particular surface water and/or groundwater systems. The boundaries are demarcated so that there is generally no flow from one basin to another. For planning purposes, these basins have been subdivided into Watershed Management Units (WMUs). These WMUs are discrete hydrologic sub-units; the water resources of which can be assessed, developed and managed in a near independent manner from the rest of the basin. The WMUs are further sub-divided into Sub Watershed Management Units based on a similar criterion.



Figure 13: A section of the Rio Minho in Northern Clarendon

12. See Appendix for list of caves. | 13. Source: Jamaica Information Service (2012)

## 2.1 THE NATURAL ENVIRONMENT

Hydrologic Basin	Watershed Management Unit	Sub Watershed Management Unit
Rio Minho	Rio Minho	Upper Rio Minho
		Lower Rio Minho
		Portland Ridge
		Cockpit Springs
		Bowers River
	Milk River	Milk River
Rio Cobre	Rio Cobre	Bowers Gully
		Upper Rio Cobre
Dry Harbour Mountain	Rio Bueno-White River	Rio Bueno

Both the surface and underground drainage in the parish is controlled by the three (3) geological regions: the Volcaniclastics region, the White and Yellow Limestone region, and the Alluvium region. The volcaniclastics region forms aquicludes, where the impermeable rocks promote surface run-off, directing flows to the Rio Minho (Jamaica's longest river) and its tributaries, e.g. the Pindar's River and the Thomas River. In the white and yellow limestone regions, there are only a few intermittent streams, as the drainage is underground and the run-off disappears rapidly into sink holes. This region promotes groundwater storage (in the form of limestone aquifers), which resurfaces as springs when the water table is close to the surface. The alluvial plains or the alluvium region serves as an alluvium aquifer, as the sediments promote water storage. It also promotes surface drainage by the Rhymesbury, St. Ann, Main, Savanna and Hilliards Gullies which all flow south-westerly until they meet near the Milk River on the Western edge of the plains<sup>14</sup>.

### 2.1.1.3.1. THERMAL SPRINGS

The hydrology of Clarendon includes thermal springs, namely the Milk River and the Salt River springs. These springs are located in the southern section of the parish and have noticeable amounts of dissolved substances, as well as water temperatures significantly higher than the mean air temperatures of the surrounding areas. It is believed that these springs are formed by deep circulation of seawater that rises along fissures as a result of convection in the South Coast Fault Zone and mixes with ground water from the limestone aquifers near the ground surface (Burbey, 2000; Jamaican Geographical Society, 1994). The high levels of radioactivity is due to the presence of radon, which is believed to be from an appreciable depth (the Cretaceous and Eocene shales underlying the Eocene limestone or a low-grade economic uranium deposit) (Burbey, 2000).

These springs provide several social and economic benefits to the parish. They are reputed to have therapeutic properties for healing of several ailments, including gout, rheumatism, Sciatica, lumbago, neuralgia, eczema, and kidney and liver troubles (SDC, 2014). The Milk River spring is world reknown and has being rated high on the list of the most radioactive mineral springs in the world. The Milk River Hotel and Spa, which includes bathhouses, has been developed around the spring, and has become one of the most popular tourist destination on the south coast of Jamaica. The Salt River spring runs into a pond which is called the Salt River Spa and is also a famous spot among residents and visitors from home and abroad. The area attracts a number of small scale commercial activities (vending), as several residents make a livelihood for themselves from the location.

<sup>14</sup>. Sources: Ahmad and Lyew-Ayee Jr, 2012; SDC (2014); and the WRA

## 2.1 THE NATURAL ENVIRONMENT

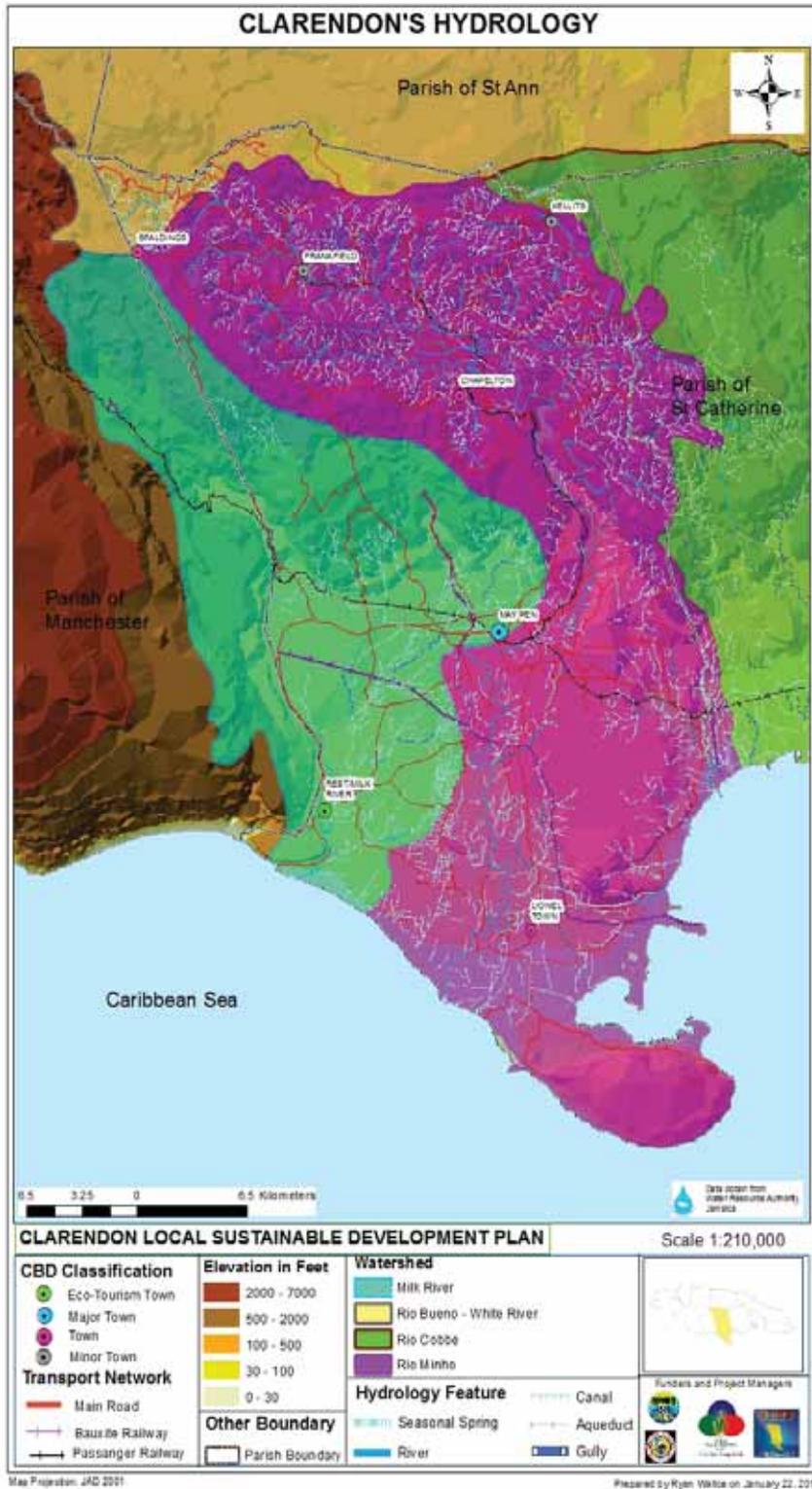


Figure 14: A section of the Salt River Spa.

### 2.1.1.4. SOILS

The characteristics of soils within Clarendon vary as a result of differences in parent materials, exposure to rainfall, slope angles and river deposition. There are over fifty (50) different types of soils within the parish, with each occupying an area of not less than two hectares. These soil types are of approximately nine (9) different textures, ranging from clayey to stony. near independent manner from the rest of the basin. The WMUs are further sub-divided into Sub Watershed Management Units based on a similar criterion.

## 2.1 THE NATURAL ENVIRONMENT

As a result, there are also variations in other soil properties, e.g. colour, permeability and fertility. (SDC, 2014). The soils are very important for a number of reasons, which are mainly based on their ecosystem services. Their most appreciated function locally is arguably their function to support the growth of crops and by extension agriculture<sup>15</sup>. In addition to supporting farming activities, the soils are also essential for maintaining natural and semi-natural<sup>16</sup> vegetation, including the local forests. They also act as a water filter and provide habitats for a number of organisms. Furthermore, locals use the soils as holding facilities for solid waste, filters for wastewater, and foundations for different structures.

### 2.1.1.5. MINERALS

Clarendon is very rich in mineral deposits, with river aggregates (sand and gravel) and limestone being the most abundant. River aggregates are found mostly on the bed and flood plains of the Rio Minho, whilst limestone deposits are scattered all across the parish. Large deposits of bauxite were also found in areas such as Rock, Woodside, Teak Pen, Breadnut Valley and Pleasant Valley, but much of these have been depleted through mining. Small deposits of copper occur in the Upper Clarendon area, mainly in Charing Cross. Traces of gold, clay and marble have been found in Clarendon's upper regions especially along the banks of the Rio Minho.

These minerals are of economic importance to the parish. They are sources of industrial materials which are or have been extracted on a commercial scale. These economically important minerals include bauxite, gold, limestone, copper and river aggregates. Their extraction has contributed to livelihoods, improved the local economy, and the overall development of the parish.



Figure 15: Large tract of land in the Parish has soil which is suitable for cultivation. In this photograph, a farmer drives a bamboo shaft into the ground to provide an anchor for sweet yam vines on his farm in Sanguinetti.

Source: [http://jamaica-gleaner.com/sites/default/files/styles/jg\\_article\\_image/public/article\\_images/2013/10/30/ethelredcampbell20070417c.jpg?itok=F9vZNNlb](http://jamaica-gleaner.com/sites/default/files/styles/jg_article_image/public/article_images/2013/10/30/ethelredcampbell20070417c.jpg?itok=F9vZNNlb)



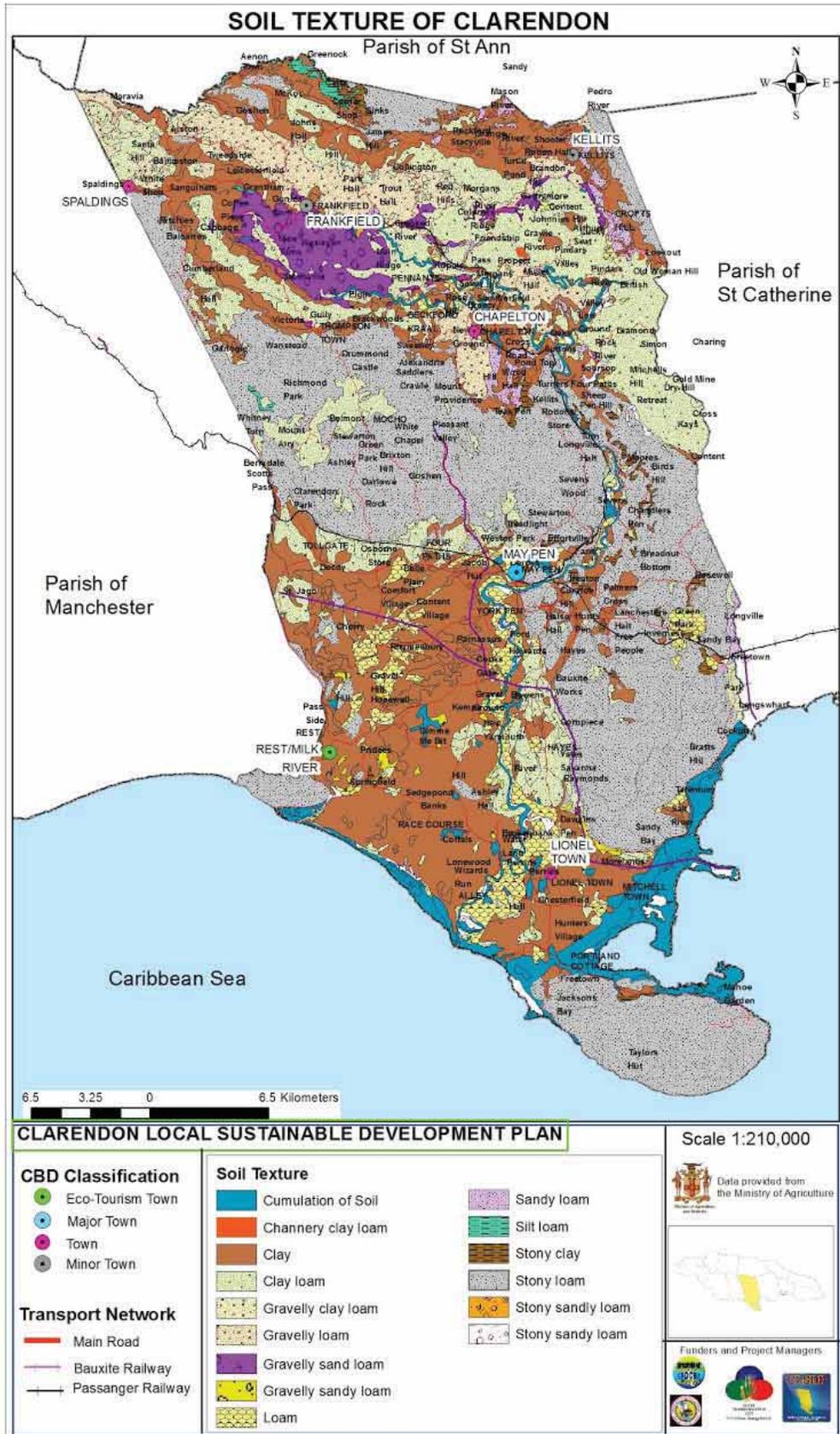
Figure 16: Quarrying in Clarendon.

Source: <https://i.ytimg.com/vi/50fKszYgn54/maxresdefault.jpg>

15. The natural cycles within the soils are the key determinants in ensuring that the soils can provide an adequate physical, chemical, biological and mineralogical medium for crop growth. However, the soils are manageable resources and locals (mainly farmers) have become skilled in managing them so that these natural cycles can be added to as necessary to facilitate adequate soil support and increasing yield to enhance production.

16. Semi-natural vegetation is defined as vegetation not planted by humans but influenced by human actions.

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Map 5: The soils of Clarendon.



## 2.1 THE NATURAL ENVIRONMENT

### 2.1.1.6. CLIMATE

Clarendon's general climatic conditions, reflect the dominant Tropical Marine climate experienced in Jamaica. The island's climate is traditionally marked by two wet and two dry seasons, and is irregularly modified by cold fronts from North America in winter and by tropical disturbances from the Atlantic in summer and autumn. The primary peak rainfall period is usually in October, while the secondary peak is in May. Rainfall is usually at a minimum during the period February to March and in the month of July. This general pattern varies from year to year.

In spite of the aforementioned, a wide variety of micro climates exist in the parish. These range from cool climatic conditions in northern region near the Manchester border, to high temperatures on the Clarendon plains (Conrad Douglas & Associates Ltd, n.d.). The average maximum temperature for the parish is recorded at approximately 29.5o Celsius and the minimum at approximately 17o Celsius. Morning humidity is averaged at approximately 94 percent while about 70 percent is averaged after 1 pm. Climatically, Clarendon is also very dry, recording the lowest 30 year mean rainfall of all parishes in Jamaica for the period 1971-2000 (Ahmad & Lyew-Ayee Jr, 2012). Over the period, the rainfall in the parish was unevenly distributed amongst three (3) notable divisions; the western side of the mountainous area which received an average in excess of 1750 millimetres, the remainder of the inland areas which received an average of 1375-1750 millimetres, and the alluvial plains and low limestone plateau of the Braziletto Hills which received an average of 1000-1375 millimetres of rainfall (SDC, 2014).

### 2.1.1.7. BIODIVERSITY AND ECOSYSTEMS

#### 2.1.1.7.1. SPECIES DIVERSITY

Jamaica has been rated fifth in islands of the world in terms of endemic plants, and there is also a high level of endemism for animals (Ministry of Land and the Environment, NEPA & Natural Resources Conservation Authority (NRCA), 2003). Clarendon is one of the island's richest parishes in terms of biodiversity. The geology, topography, hydrology, soils and microclimates of the parish, which are closely linked to its geographic location, provide support for a variety of living organisms. These organisms, which include flora and fauna that may also be classified as marine, terrestrial, or freshwater species, are scattered across the entire geographic boundary of the parish. However, there are specific areas where there are notably high concentrations of biodiversity that may be termed as local biodiversity hotspots. For example, the Portland Bight Protected Area (PBPA) boasts some four hundred (400) plant species and about twenty (20) animal species. The Mason River Protected Area has approximately four hundred and thirty (430) species of plants and a number of species of animals; the Canoe Valley is home to approximately one hundred and twenty seven (127) species of animals, and the Peckham Woods have been identified as having one of the highest densities of site-specific endemic plants per unit area in Jamaica. (Manchester Parish Council & Manchester Parish Development Committee, 2007; NEPA, 2011; "Portland Bight is 15!", 2014; Sutton, 2014). Some of these species are rare, endemic, endangered, introduced or invasive, and include mammals, birds, reptiles, amphibians, insects, crustaceans, fish and autotrophic and heterotrophic plants.



Figure 17: The Jamaican Laughing Frog is one of the many species found in Clarendon.

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### 2.1.1.7.2. FOREST ECOSYSTEMS

Forests are one of the major land cover types in Clarendon. Areas like Pennants, Portland Ridge, Teak Pen, Bull Head, Peak River, Stephney John's Vale, Peckham, Kemps Hill and the Brazillito Mountains are covered with forests (TCPA, 2012). These forests are of a variety of types which are linked primarily to the microclimates, soils and the physical features of the parish. They include open dry forest, mangrove woodlands, closed broadleaf forests, disturbed broadleaf forests, fields, and bamboo. Despite most of these being secondary forests, they are important ecosystems which perform many essential functions.

One of the primary functions of these forests is the provision of ecological services. The local forest ecosystems are important reservoirs of animal and plant biodiversity, including birds, reptiles and insects. They are also the main repositories for a number of the parish's endemic and endangered species. In addition, the forests play an important function in soil formation. They help to prevent land degradation and desertification by using their roots to anchor and stabilize the soils and their leaves to cause rainfall interception, thereby reducing water and wind erosion which also contribute to water sedimentation. Furthermore, the forests help to maintain the natural hydrology and the nutrient cycle. They allow rain water to soak into the ground, rather than running off, where it is either taken up by tree roots or continues to move down through the soil and into the groundwater system. Similarly, the vegetation takes up nutrients from the soil which are released during mineralization of litter and roots. Moreover, the forests help to regulate atmospheric temperatures through evapo-transpiration and therefore helps to stabilize the climate. They also help to enrich the atmosphere through their air purification function; that is, the local forests sequester carbon dioxide and other greenhouse gases and filter particulate matter (dust, ash, pollen and smoke) from the air, while producing oxygen.

The local forest also provides diverse socioeconomic opportunities, especially in the rural communities. A significant number of residents are directly dependent on the forests for their livelihoods. These forests provide fuel wood, medicinal plants, yam sticks, lumber for construction and furniture, fence-posts, wood for fish pots, and materials for craft items which are all extracted from these ecosystems. The forests essentially contribute directly to the local economy, and to the development of other economic activities such as agriculture, manufacturing and construction in the parish. Additionally, the forests provide intangible benefits to the local society, which are reflected through the positive impact on human health by helping to ensure clean and fresh air, water, etc., and providing an opportunity for recreation in order to improve the physical and mental state of man.

### 2.1.1.7.3. WETLANDS

The topography of Clarendon lends itself to the formation of major wetlands, such as the Salt River Swamps and the Mason River Wetland. These wetlands are lands that are saturated with water for a significant part of the year, and where the water is a dominant factor determining the nature of the soil and the types of plants and animals that live there. They may be placed into two broad categories: coastal wetlands and inland wetlands.

The inland wetlands play a number of important roles in the local environment, including being a habitat for biodiversity, water purification and flood control. The local inland wetlands are some of the most productive ecosystems. They are reservoirs for a number of plant and animal species, including some rare, endangered and endemic species. The intertwining roots, leaves and fibres of the dense plant life remove sediment and pollutants from the slow-moving water which is released into streams and rivers. These wetlands also act as nature's sponges, as the porous soils and plants soak up tremendous amounts of the excess water when rivers and streams overflow. The water then seeps slowly back into the streams to prevent downstream flooding. In times of drought, the wetlands are fed by groundwater which is released into streams to keep them flowing.

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Figure 18: A view of a section of the coastal mangrove wetlands.

Source: <http://ccam.org.jm/gallery/world-wetlands-day-2012/a-view-of-mangroves-along-the-side-of-the-river.jpg/view>

On the coast of Clarendon is approximately forty eight kilometres (48km) of almost unbroken mangrove forest which is the largest stretch of unbroken mangrove forest throughout Jamaica (TCPA, 2012). These mangrove wetlands are part of the Portland Bight Wetlands and Cays Ramsar Site. The dominant species are the red mangroves (*Rhizophora mangle*), the black mangroves (*Avicennia germinans*), the white mangroves (*Laguncularia racemosa*) and the buttonwood mangroves (*Conocarpus erectus*) (Protected Areas Committee, 2012). The role of these coastal ecosystems in preserving biodiversity and maintaining shoreline stability is well established. These mangrove forests are important nesting grounds for birds and act as nurseries for fish as well as a haven for other aquatic creatures such as the endangered manatees and American crocodiles. They also provide important coastal defence from wave action, hurricane/ storm surges and sea level rise. This is in addition to their functions of providing protection against flooding by acting as a sponge, and functioning as a sediment trap. Hence, the coastal wetlands are also a critical part of the parish's natural heritage and are essential in maintaining environmental stability.

### 2.1.1.7.4. FRESHWATER ECOSYSTEMS

Clarendon's freshwater resources include rivers, streams, springs, gullies and ponds, which fall within several hydrological units. These freshwater resources support ecosystems which are of outstanding importance for biodiversity, ecology and the local economy. The ecosystems support several diverse faunal and floral communities and are therefore very important to biodiversity and the parish's natural heritage. They are also very important for delivering sand to replenish the coastal beaches, which in turn supports other ecosystems. Additionally, these ecosystems are critical to sustaining life and overall social well-being, as people are dependent on them for food, water for domestic use, irrigation and industrial purposes, waste disposal (treated effluent), and sand for construction activities.

### 2.1.1.7.5. COASTAL AND MARINE RESOURCES AND ECOSYSTEMS

Clarendon possesses a varied and irregular coastline which gives rise to diverse ecosystems formed by the integration of various coastal features. These ecosystems include coastal wetlands (See 2.1.1.7.3. Wetlands, pg. 49), sandy beaches, cays, coral reefs and seagrass beds.

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### 2.1.1.7.5.1. BEACHES



Figure 19: A section of Farquhar Beach.  
Source: <http://www.panoramio.com/photo/92724857>

Eight (8) beaches have been identified along the coast of Clarendon: Farquars, Jackson Bay, Rocky Point, Welcome, Mitchell Town, Barmouth, Barneswelldale and Beauchamp (TCPA, 2012). These are landforms along the shoreline, which consist of loose particles, including rocks, sand, gravel, shingle, pebbles, and cobblestones. In addition to supporting economic and recreational activities, these beaches provide habitats for several species of flora and fauna and also support some marine life, including that of the endangered sea turtle which use some of these sites as nesting areas. (see Appendix 5 for list of beaches and their uses)

### 2.1.1.7.5.2. CAYS

There are several cays off the coasts of Clarendon. On the Pedro Bank, which extends westward for nearly 160.9 km (100 miles) from a point about 64.36 km (40 miles) southwest of Portland Point, there are four (4) main cays, the largest being the South West Cay which is about 0.80 km (half a mile) in circumference. There are also several cays off Portland Bight: Great Cay, Little Cay and Pigeon Islands. The Portland Bight Cays are mostly sand cays and are a part of the Portland Bight Wetland and Cays Ramsar site. They are of outstanding importance for nesting sea turtles, seabirds and endemic lizards. The surrounding waters, including reefs and sea grass beds, are of importance as fish nurseries. Other cays off the coast of Clarendon are the Bare Bush, Little Half Moon and Big Half Moon Cays.

### 2.1.1.7.5.3. CORAL REEFS

Fringing coral reefs extend almost continuously along the edge of the shelf on the coast of Clarendon (NEPA, 2008). However, the greater part of the shelf is actually devoid of major coral reefs, and the reefs tend to be small, patchy and undeveloped (NEPA, 2008). Nevertheless, these coral reefs are some of the most valuable local ecosystems. They are important as habitats for a complex mixture of fish, invertebrates and algae, and they also help to protect the shoreline, as their rough surfaces and complex structures dissipate some amount of the force of incoming waves. They are also of major social and economic importance to the parish, as fishing is a traditional way of life for many residents living in villages along the coast.

### 2.1.7.5.4. SEAGRASS BEDS

Several coastal areas of Clarendon, such as the coastal peninsula of Rocky Point, are bordered primarily by seagrass beds. These seagrass beds are ecosystems of flowering plants which inhabit the shallow coastal waters. They are very important to the local environment for several reasons. They are highly productive areas and provide critical habitat and food for a number of marine animals, including some juvenile fish and commercially important and endangered species. Seagrass beds also bind shallow water sediments in the coastal waters with their rhizomes and baffles wave and currents with their leafy canopy.

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This traps sediments and allow for stabilization hence sustaining beaches and counteracting erosion. Additionally, seagrass beds contribute to water clarity by removing land based nutrients (phosphorus and nitrogen) which are dissolved in the water column through absorption. This removal of sediments and nutrients helps to create the pollutant free waters required for the survival of coral reefs, as well as the seagrass themselves.

### 2.1.1.7.6. AGRO-ECOSYSTEMS AND BIODIVERSITY

Clarendon is primarily an agricultural parish therefore; there are a number of agro-ecosystems existing within its boundaries. An agro-ecosystem is an ecosystem in which humans have exerted a deliberate selectivity on the composition of the biota; that is, crops and livestock maintained by farmers replaced to a great extent the natural flora and fauna of the sites (Anderson et al, n.d.). It follows that the total biodiversity of these ecosystems include planned biodiversity (crops and livestock) and associated non-economically productive plants (e.g. weeds), animals (eg. pests) and microbes (eg. soil microorganisms). Their composition, diversity, system structures and dynamics are therefore different in many respects from those of the local natural ecosystems. These agro-ecosystems are designed and managed primarily for the purpose of producing goods (mainly food and fiber) for human needs, but they also provide a range of natural ecosystems functions (Anderson et al, n.d.). They support biodiversity, as well as energy flows and biogeochemical cycles within the local environment (Anderson et al, n.d.).

### 2.1.1.8. NATURAL PROTECTED AREAS

The Protected Areas System Master Plan: Jamaica defines a protected area as a clearly defined geographical area of land and or water that is dedicated to and managed for the long term conservation and sustainable use of its ecological systems, biodiversity and/or specific natural, cultural or aesthetic resources. There are fifteen (15) natural protected areas in the parish of Clarendon, which are so designated under several different pieces of legislations and afforded different levels of protection, depending on the management objective. These include Game Reserves, Special Fishery Conservation Areas, Protected Areas, and Forest Reserves.

The protected areas provide a range of ecological functions and are also essential to social wellbeing. They are important for biodiversity conservation and maintaining the health and diversity of local ecosystems. That is, they provide habitats for wildlife, including threatened and endangered species, and also support many natural cycles and ecological processes that are essential for life. Additionally, these protected areas are also repositories of genetic material (plant and animal) that may be the basis of new foods, medicines and other products. Furthermore, they have important educational and recreational value, and also support the livelihoods of a number of residents. Moreover, these protected areas, as managed ecosystems, have a significant role to play in reducing the impacts of climate change on the parish. (The Protected Areas Committee, 2012)

#### 2.1.1.8.1. THE PORTLAND BIGHT PROTECTED AREA (PBPA)

The southern section of the parish falls within the boundary of the PBPA which was declared a protected area in 1999. The PBPA is the largest protected area in Jamaica, and has the characteristic of being one of the most important areas for biodiversity conservation in the Caribbean. It is comprised of important areas of dry limestone forest, limestone caves, mangrove wetlands, coral reefs, and sea grass, which provide habitats for a number of rare, endangered and endemic species<sup>17</sup>.

<sup>17</sup> Source: Caribbean Coastal Area Management Foundation (Website)

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### 2.1.1.8.2. THE MASON RIVER PROTECTED AREA

Mason River, which has been declared a protected area under the NRCA Act and a heritage site under the Jamaica National Heritage Trust (JNHT) Act, has been designated as Jamaica's 4th Wetland of International Importance under the Ramsar Convention on Wetlands. It is significant not only as an inland wetland but also as the only such site so designated in the entire Caribbean. This Ramsar Site has plants that are exotic, indigenous, endemic and even endangered and is the only place in Jamaica where four different types of carnivorous plants can be found. It also boasts a range of animal species including mammals, birds, insects, crustaceans, amphibians and reptiles. (NEPA, 2011).

### 2.1.1.8.3. BULL HEAD FOREST RESERVE (BHFR)

The BHFR is found in the Bull Head Mountain Range which extends from the western section of St. Catherine into the parish of Clarendon. The Reserve covers an area of 220.6 hectares with an elevation of over 930 meters (3051 feet). The source of several springs and tributaries to the Rio Minho river system can be found within its boundaries; it is estimated that some one hundred (100) streams are fed from the drainage systems of the BHFR. As it relates to biodiversity, approximately 90% of the Reserve is covered with Caribbean Pine, while the remaining 10% is covered with broadleaf forest, including Eucalyptus, Santa Maria, Mahogany, Trumpet Trees and Blue Mahoe. The Reserve is also home to several species of animals; mainly birds.

### 2.1.1.8.4. PECKHAM FOREST RESERVE

The Peckham Forest Reserve is approximately 70 hectares of land. Until recently, less than half of the Forest Reserve was botanically explored and there was no assessments of the fauna. However, in 2010, the Critical Ecosystem Partnership Fund (CEPF) identified Peckham Woods as a Key Biodiversity Area in its Ecosystem Profile, because of the reported presence of twenty three (23) trigger species. A subsequent project proposal put forward by the CPDCBS, in partnership with the Life Sciences Department of the University of the West Indies (UWI) was funded by the CEPF, and implemented in 2014-2015. The main objectives of the project were to assess the status of the biodiversity of the Peckham Woods in order to identify the need for future conservation action and suggest the next steps towards achieving them<sup>18</sup>. The results of surveys conducted confirmed the presence of 315 vascular plant species (173 of which were new records), making a total of 490 species of which 35% are endemic to Jamaica. Many of these endemic species occur only at Peckham Woods or in a very limited geographical area. Only 55 of these species have been assessed by the International Union for Conservation of Nature (IUCN) according to their Red List protocols, 48 of which are threatened or near threatened, with 10 being critically endangered or endangered. Some 21 endemic species of birds were also reported, including five globally threatened species, as well as two endemic species of lizards, two endemic species of snakes, and 52 species of butterflies which included 17 (45%) of Jamaica's endemic species and 7 (32%) endemic sub-species. Other species reported include land snails, millipedes, beetles, fireflies and grasshoppers. (Source:)



Figure 20: The Wild Frangipani is one of the species found in the Peckham Woods area.

18. The project boundaries extended well beyond the boundaries of the forest reserve.

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### 2.1.1.8.5. OTHER NATURAL PROTECTED AREAS

The other natural protected areas in the parish are:

- Kellits-Camperdown
- Peace River
- Peak Bay
- Pennants
- Pennants (Douces)
- Stephney John's Vale
- Teak Pen
- Long Island Game Reserve
- West Harbour-Peake Bay Game Reserve
- Alligator Pond/Guts River/Canoe Valley Game Reserve
- Salt Harbour Special Fishery Conservation Area

### 2.1.1.8.6. CANOE VALLEY PROPOSED PROTECTED AREA

The Canoe Valley area is approximately 3000 acres of land which spans across the Clarendon-Manchester parish boundary. The area was selected to become Jamaica's first protected area because of its rich biological diversity but to date, it has still not been declared. The proposed nature reserve is made up of a unique mix of habitats including dry limestone and herbaceous forests, caves, streams, fresh and brackish water wetlands, mangrove swamps, beaches, seagrass beds and coral reefs. The area is home to many rare, endemic and endangered species of animal, including 4 amphibian species, 7 bat species, 23 reptile species and 93 avian species. The area is also rich in Taino artefacts and settlement sites and offers dramatic views and opportunities for extensive hiking trails and boardwalks. (source:)



Figure 21: Canoe Valley is home to the last remaining West Indian Manatee in Jamaican waters.  
Source: <http://kids.nationalgeographic.com/animals/west-indian-manatee/#west-indian-manatee-group.jpg>

### 2.1.1.9. SCENIC NATURAL RESOURCES AND VISTA

Portions of the parish of Clarendon are characterized by scenic vistas including undeveloped hillsides, and open spaces. These viewsheds are formed from scenic natural resources, including forest, hills and waterfalls, which contribute to the identity of the local areas. They are located in both the northern and southern sections of the parish and include places such as James Hill, Rock River and Milk River (TCPA, 2012). James Hill has a rich natural beauty and scenic quality owing to its pine forest and numerous tributaries and waterfalls (TCPA, 2012). The topography of Rock River, which is a generally steep terrain interspersed with hillocks, depressions and valleys may be credited for the scenic vista of the area, particularly in the western section along the Sheep Hill Main Road (TCPA, 2012). The Milk River area also has several points of scenic beauty which are varied in land and seascapes (TCPA, 2012).

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Figure 22: The scenic view from the Bull Head Mountain.  
Source: <http://www.caribvacationsguide.com/trips-and-ideas/exploring-the-bull-head-mountains/>

### 2.1.2. NATURAL ENVIRONMENT ISSUES AND CHALLENGES

Over the past two decades, extensive damage has been done to the natural environment of Clarendon, and today it is still under severe threat. Increasing human populations and decreasing efficiency in the use of the parish's resources are some of the causes that have led to the overexploitation and manipulation the natural environment.

The following subsections create a clear picture of the existing and impending threats, some of which are interrelated.

#### 2.1.2.1. POPULATION GROWTH AND SPRAWLING DEVELOPMENT

It is well documented that the population of Clarendon has been on an upward trend over the past two decades. See 3.1.1.1. Population Size, pg. 238 This growing population has been steadily increasing the amount of land consumed for development, which is evident in the changes in land use patterns overtime. The pattern of land consumption is proving to be detrimental to the environment, as development in the parish is taking place in an ad hoc and sprawling manner (Douglas, 1975; Town Planning Department, 1995). It is occurring on lands which were formerly green space, as well as on lands which are considered to be environmentally sensitive. This is resulting in a reduction in open space, a loss or disruption of natural habitats, and the alteration of natural drainage patterns, as land is being cleared in an indiscriminate manner to accommodate residential, commercial, industrial and other types of developments. This means that, wetlands are being drained and vegetative covering is being removed to accommodate impervious surfaces or hard space.

This phenomenon is having several negative secondary effects on the natural environment. It is causing increasing levels of water pollution, which is resulting in part from increases in impervious surfaces, as such surfaces prevent the infiltration of water into the soil but instead carries it directly into the streams and rivers. This allows the runoff to pick up pollutants from roadways, parking lots, etc. The issue is exacerbated by the loss of wetlands which would normally filter out any water that would otherwise run directly into a water system. Less infiltration and the loss of wetlands also means that the water cycle is being anthropogenically manipulated and aquifers are at risk of being depleted, while the likelihood of flooding is increasing (SEE 2.3.3.1.2. Floods and 2.3.5.11. Degraded Natural Ecosystems, pgs. 182 and 196). Additionally, the loss of green space to development is a factor contributing to deforestation (See 2.1.2.2.2. Deforestation, pg. 56), at the same time the increasing impervious surfaces are altering the micro-climates by creating heat islands, through the retention of the sun's heat.

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### 2.1.2.2. ECONOMIC CHALLENGES

The Situation Validation and Visioning Workshops highlighted the fact that population growth has outpaced economic development in the parish of Clarendon, creating a situation which is negatively impacting on the resources of the natural environment. The slow rate of economic growth coupled with inequality has resulted in a fraction of the population becoming economically challenged. Burdened by the need to survive, some of these economically challenged persons usually overexploit natural resources in order to earn an income (SDC, 2014). This is mainly in the form of overfishing and deforestation.

#### 2.1.2.2.1. OVERFISHING AND IMPROPER PRACTICES

Overfishing, coupled with improper or destructive fishing practices, is threatening the fish biodiversity in the parish. According to the C-CAM (n.d.) and the SDC (2014), the fish stock in the PBPA has been depleted to levels which are almost unacceptable. Burke, Cooper, Waite and Zenny (2011), further added that in recent decades, the aforementioned issues have led to the depletion of high-value species such as snappers and groupers in Jamaican waters, and parrotfish are now the primary species consumed in the country. However, according to the authors, the parrotfish species have also suffered a massive decline in population. This is a serious issue as parrotfish are one of the key herbivores on Jamaica's coral reefs and therefore contribute to controlling the spread of marine algae. Additionally, the species is important for producing sand for local beaches, by breaking off coral which then passes through their digestive tract and becomes sand.

Nonetheless, a number of fisheries-management strategies have been implemented and enforced in order to combat this problem. These strategies include the establishment of the Portland Bight Fisheries Management Council, as well as a Special Fishery Conservation Area (SFCA). See 4.3.4.1. Overfishing Coupled with Improper Fishing Techniques, pg. 390.

#### 2.1.2.2.2. DEFORESTATION

Deforestation has been identified as one of the major environmental problems plaguing Clarendon. This phenomenon is taking place right across the parish, but more so in the upper catchment area of the Rio Minho (Jamaica Strategic Programme for Climate Resilience (SPCR), 2011; SDC, 2014; Town Planning Department, 1995). The felling of trees, including mangroves, for charcoal burning and the selling of posts are economic activities widely practiced in the rural sections of the parish. Additionally, trees are used locally for lumber, the feeding of animals and the making of fish pots, at the same time as they are being cleared for development. However, according to the SDC (2014), there have only been a few conscious efforts to undertake reforestation; one such effort was in the Pleasant Valley area, while another involved the planting of 2000 mangroves along the coast.



Figure 21:

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This destruction of the parish's forest resource, including the wetlands, is resulting in a reduction in biodiversity. The felling of trees is resulting in a loss of habitat for a number of species, some of which are unable to survive outside their natural habitat. In the case of coastal wetlands, it is reducing their capacity to serve as fish nurseries. Deforestation, is also resulting in the instant loss of some plant and animal lives, as they are unable to withstand the impact of falling trees. This situation is very important as several areas within the parish provide habitats for rare, endemic and endangered species.

In addition, deforestation is a factor contributing to the degradation of the St Ann's Gully, as well as the Rio Minho watershed, which has been classified as one of the most severely degraded watersheds in the island (Jamaica SPCR, 2011; Town Planning Department, 1995). The mass removal of the trees is causing even more topsoil to be exposed to agents of erosion; a situation which is exacerbated by the fact that the felling of trees oftentimes results in a loss of roots which bind the soil together. Consequently, the loose topsoil is being washed and blown away easily, further causing landslides to become a chronic problem, especially in the upper Clarendon region (See 2.3.3.2.1. Landslides, pg. 186). According to the Town Planning Department (1995), all small streams draining directly into the Rio Minho have shown evidence of bank steepening and head-ward erosion. Nevertheless, the National Works Agency (NWA) has undertaken some amount of river training works along the Rio Minho. However, the situation is still causing siltation to become a serious issue, as it is impacting on water quality within the Plan area. (SEE 2.2.2.2.6. Watershed Degradation, pg. 110 and 2.2.2.2.5. Pollution, pg. 109)

Deforestation is contributing to climate change. It is diminishing the environment's capacity to counteract air pollution and greenhouse gas emissions. This stems from the fact that trees play a critical role in absorbing greenhouse gases that fuel climate change. Fewer forests therefore means larger amounts of greenhouse gases entering the atmosphere in the parish, and an increase in the speed and severity of climate change. In addition to that, trees contribute to infiltration and are also responsible for extracting groundwater from the soil and returning it to the atmosphere; therefore when trees are cleared, infiltration rates decline and the water isn't released into the atmosphere, causing the balance of the water cycle to be lost. A reduction in rainfall in the parish, which is evidence of climate change, has already been attributed to deforestation (SDC, 2014). This will have implications for the parish's water resources, as well as all those ecological processes dependent upon such resources.

Deforestation is also resulting in an increased level of disaster vulnerability. As highlighted earlier, it is contributing to landslides in the parish, while the erosion of river banks is threatening nearby structures, and the loss of trees is increasing the vulnerability to flooding. (SEE 2.3.3.1.2. Floods and 2.3.5.11. Degraded Natural Ecosystems, pgs. 182 and 196)

### 2.1.2.3. POLLUTION

The delicate ecological balance which exists in Clarendon is being threatened by the presence and continuous introduction of pollutants into the natural environment. Land, air and water are continuously being polluted at an alarming rate. This problem is believed to be stemming from several different sources<sup>20</sup> including: the improper disposal of solid waste; inadequate sewage disposal; the discharge of effluent from the bauxite/alumina industry; the emissions of gases from traffic congestion; the burning of charcoal; and the poor management of garages.

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<sup>20</sup> Pollution is also resulting from other sources, such as improper agricultural techniques, soil erosion from deforestation, and increasing development, which are discussed in other subsections of this chapter.

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### 2.1.2.3.1. IMPROPER SOLID WASTE DISPOSAL

Garbage disposal in accordance with sustainable development principles is a major issue affecting the parish (SDC, 2014; TCPA 2012; Town Planning Department, 1995; University of Technology (UTech), 2007). There is a proliferation of informal dumpsites, which is believed to be linked primarily to the fact that there are weaknesses (See 2.2.4.1.4.1. An Inadequate Formal System, pg. 151) existing in the formal system of solid waste management (SWM) (TCPA, 2012). Garbage, which is generally unsightly and malodourous, is being dumped on roadsides and on vacant lots, as well as in river beds, wetlands, and drainage channels. In addition to that, backyard burning is practiced widely as a means of solid waste disposal in the parish. This is severely threatening the health of the environment, as the continuous contamination of the soil, water and air from this occurrence is slowly reducing the capacity of the environment to function properly. This further places the health of residents at risk.

The 2011 population census<sup>21</sup> revealed that approximately 2.72 percent of the households within the parish dispose of their garbage by dumping. These households are distributed across the entire boundaries, but approximately 67.00 percent of this group is found within the areas classified as rural. While the percentage may be perceived as small, the activity is very significant in light of the severe consequences it generates. Generally, the dumping of garbage creates a nuisance as it is unsightly and produces offensive odours which impact one's ability to breathe. In addition, dumping on land is contaminating the soil through the direct entry of pollutants, as well as through leachate<sup>22</sup> contamination. This can harm plants when they take up the contamination through their roots. If humans eat these plants and animals that have been in contact with such polluted soils, there may be negative implications for their health. Similarly, the waste that end up in water bodies from direct or indirect dumping, including through the percolation of leachate, is negatively changing the chemical composition of the water<sup>23</sup>. This will affect all aquatic ecosystems, which include the fish communities, which are very important sources of revenue in the Plan Area. It can also cause harm to animals that drink from such polluted water sources, as well as to humans who utilize them for various purposes, including domestic use.

In addition to that, approximately 49% of the households in the parish burn their garbage. This is a major cause for concern, not only because this is an illegal activity, but also as a result of the fact that the burning of garbage produces various compounds which are toxic to the environment, including nitrogen oxides, volatile organic compounds, carbon monoxide, and particle pollution. These pollutants have the potential to damage vegetation, contribute to acid rain and cause a number of human health related problems such as respiratory illness, slowed reflexes and even cancer.

### 2.1.2.3.2. INADEQUATE SEWAGE DISPOSAL

A large percentage of the population in Clarendon depends on-site sewage disposal systems, including pit latrines (SEE 2.2.4.1.2.2. High Dependence on On-Site Primary Wastewater Treatment Facilities, pg. 150), which are not equipped with secondary treatment facilities. This is a worrying issue, as much of the parish is made up of large areas of limestone rocks, and fecal pollution may be carried directly through cracks, joints and fissures in these rocks into underground water systems. According to the Canadian International Development Agency (CIDA, 2002), in recent years, the quality of the ground water in the parish has been deteriorating due to pollutants such as human waste. This potentially dangerous threat to the health of the environment is heightened by the fact that much of the parish's water resources are found underground and are accessed through drilling. This therefore means that the health of the residents of the parish is also at risk, as untreated or improperly treated wastewater can spread disease such as hepatitis and amoebic dysentery.

21. Source STATIN. All numerical data within this subsection were obtained from STATIN.

22. Leachate is a very harmful mixture of chemicals that forms as water trickles through waste. | 23. Technically, this is called water pollution.

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In addition to that, a number of areas in the parish are vulnerable to flooding, which may result in the overflow of pit latrines. This poses a serious health risk to residents and the overall health of the natural environment, as water containing excreta heightens the risk of illnesses, such as Gastritis, Diarrhoea and skin and tissue infections. Excretion flow into the natural water bodies may also lead to eutrophication. The latter situation may lead to a decrease in species diversity and the dominant biota may also change.

### 2.1.2.3.3. INDUSTRIAL EFFLUENT DISCHARGE

The processing of the bauxite is an environmental concern, largely linked to its potential to generate effluent. The facility at Hayes releases alumina dust, lime dust, gases and particulates from the calcination of bauxite, which involves the burning of fuel oil (Town Planning Department, 1995). This is despite the application of modern technology in the control measures in place. These pollutants are dispersed in the immediate environs and impact areas within approximately a five mile radius of the plant. Over the past decade, there have been numerous complaints of air pollution from the facility, including odour and dust nuisance. However, the CEO of NEPA, Peter Knight, noted that Jamalco's track record with dust pollution has improved over time (Williams-Raynor, 2011).

Furthermore, the disposal of the tailings from the processing of the bauxite, which form an alkaline mud (red mud), presents a high level of threat to the environment. The original procedure used to dispose of the red mud was to pump it into mined-out ore bodies and dyked valleys (McFarlane, n.d.). However, these "red mud lakes" resulted in the percolation of caustic residues (sodium) into the underground aquifers (McFarlane, n.d.). The current approach is to build sealed ponds whose interiors are lined with clay sealant. There is still some level of concern in the use of this method, and it is believed that sodium levels and PH readings have elevated in domestic water wells in the vicinity of the mud lakes in the parish. However, apart from Jamalco's own internal monitoring, sampling and laboratory analysis are routinely done on wells associated with the company's operations by the WRA, independent water specialists, the National Water Commission (NWC) and the Jamaica Bauxite Institute (JBI), and to date their findings have shown that the local bauxite company is fully compliant with established regulatory requirements (Williams-Raynor, 2011).

The processing of sugarcane by Monymusk and New Yarmouth, and their associated rum distilleries also yield large amounts of wastewater. The organic rich effluent from the fermentation of molasses (dunder) has the potential to produce unpleasant odours and anoxic conditions within water systems, and further reduces the diversity of aquatic biota. At present, the dunder from the distilleries is used for ferti-irrigation, while some of the wastewater from the sugar factories is stored in holding ponds and later used for irrigation via irrigation canals while the remainder is discharged into the environment. The NEPA constantly monitors these activities to ensure that they comply with allowable limits for trade effluent discharge, but there are frequent breaches. According to residents, such breaches generally take place in rainy seasons where holding ponds overflow. Just a few years ago, the Agency had to take the Clarendon Distillery Limited, which has its operations at the Monymusk sugar estate, to court for releasing dunder into the Rio Minho, causing a massive fish kill (Portland Bight Protected Area Management Committee (PBPAMC), 2012).



Figure 23: A number of dead fish in the Rio Minho at Alley district in Clarendon, April 2011.  
Source: <http://old.jamaica-star.com/thestar/20110407/news/news3.html>

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Figure 24: Traffic congestion in the town of Spalding

### 2.1.2.3.4. TRAFFIC CONGESTION

Traffic congestion has become a characteristic of several Clarendon towns, including May Pen and Spalding. This is reducing air quality in the parish, as the burning of gasoline and fossil fuels by vehicles usually results in the emission of greenhouse gases. This situation is exacerbated by the fact that such backups are usually characterized by stop-and-go movement which causes constant acceleration and braking. The end result is the burning of more fuels and the emission of more pollutants in the atmosphere. Already the SDC (2014) is reporting that instances of respiratory illnesses are on the rise due to the deterioration of the quality of air in the urban areas of the parish.

### 2.1.2.3.5. CHARCOAL BURNING



Figure 25: Charcoal burning in Farquhar Beach.  
Source: <http://jamaica-gleaner.com/gleaner/20101020/lead/lead3.html>

The burning of charcoal is done on a wide scale in Clarendon as a means of generating income and satisfying some of the local energy demand. However, the activity is degrading the quality of the environment, as it is resulting in the release of carbon monoxide in the atmosphere. Carbon monoxide is a greenhouse gas capable of mixing with the haemoglobin in blood, ultimately leading to death. This therefore means that charcoal burning is contributing to climate change, as well as putting the health of Clarendonians at risk.

### 2.1.2.3.6. POOR MANAGEMENT OF GARAGES

Garages and service centres carry out a number of operations and processes that have the potential to damage the environment. These include the storage, use and disposal of polluting liquids such as oils, paints, solvents, brake fluids, antifreeze and other coolant additives.

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Despite this, most local garages (both formal and informal) are established without proper drainage and spillage control mechanisms. This situation is made worse by the fact that some recommended practices such as collecting used liquids in separate sealable containers for recycling or disposal, are usually ignored. As a result, garages are often the source of soil contamination and water pollution from leaching and surface runoffs.

### 2.1.2.4. UNSUSTAINABLE MINING AND QUARRYING PRACTICES

The extraction of economic minerals in Clarendon helps to boost the local economy, but in turn scars the landscape and poses a nuisance to local ecological balance (TCPA, 2012). Minerals extracted in the parish include bauxite, gold, limestone and river aggregates (sand and gravel)<sup>24</sup>; the first three of which are extracted through the open cast method. This process requires the removal of the topsoil, including the vegetative covering, resulting in habitat destruction, soil erosion, loss of biodiversity, and water pollution with their inevitable environmental impacts. These issues often lead to secondary issues, including the alteration of the hydrological cycle.

Bauxite mining in the Plan Area has especially been a major contributor to environmental degradation. At present, mined out lands are the main landscape features within the formerly densely forested Mocho Mountains as a result of the aforesaid activity (TCPA, 2012). Large portions of these mined out lands have been reclaimed and are currently being used for agricultural purposes. However, a number of craters have also been left in an unsatisfactory condition, unable to even support wild growth/ vegetation. The water retention capability of the soil in those areas which have been reclaimed has been altered; the enlargement of the surface area after mining and the extraction of much bauxite, render the soils less capable of retaining water. Consequently, water reaches the aquifers more quickly, resulting in only tree crops and pastures being feasible replacements.



Figure 26: One of the many open bauxite pits in the community of Mocho.  
Source: <http://jamaica-gleaner.com/article/lead-stories/20150609/death-trap-30-odd-open-bauxite-pits-mocho-hills>

The extraction of river aggregates, particularly without regulatory approval, also presents a serious challenge to the environment. A number of cases of illegal sand mining, especially in the Rio Minho, have been reported in the parish of Clarendon over the past decade. These illegal mining activities are generally done in an unsustainable manner. That is, these activities are usually undertaken with scant regard for the health of the environment, leading to wanton destruction. In 2009, the MGD had to suspend all quarrying activities along sections of the afore-mentioned river as such activities were outstripping replenishment in some sections, posing a threat to the stability of the river banks and the homes and businesses in the areas (TCPA, 2012).

<sup>24</sup>. Bauxite and Gold are not currently being extracted.

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There is also a potential link between excessive sand mining and beach erosion in the parish; that is, beaches, like Welcome Beach, are suffering from coastal erosion, and while climate change has been identified as a contributing factor, there is the possibility that the excessive mining of sand has reduced the amount available for naturally rebuilding the beaches.

### 2.1.2.5. CLIMATE CHANGE

The meteorological elements that characterize the general conditions of the atmosphere in Clarendon are believed to be changing. According to the residents, the parish, which is generally dry, has been experiencing longer dry spells and shorter but more intense rainy seasons. These conditions are believed to be linked to the phenomenon called climate change.

Climate change is a global issue which is expected to intensify over the next few decades. A major portion of its impact is expected to manifest itself in Jamaica through an increase in climate variability and extreme weather events by 2050. Projections for climate variability include: an increase in temperatures by 0.7 to 1.8 0 C, a decrease in the length of the rainy season by 7-8%, an increase in the length of the dry season by 6-8%, a 20% increase in the frequency of intense rains, a rise in sea levels, and an increase in the frequency of more intense hurricanes (Jamaica SPCR, 2011).

Climate change is already having a negative impact on biodiversity in the parish, which is projected to become progressively more significant in the coming decades. The changes in the statistical properties of the climate system are severely threatening the balance that ensures the survival of species in ecosystems, as the life cycles of many plants and animals are closely linked to the amount of precipitation and other local climatic factors. The forecasted alteration in rainfall patterns is likely to result in the drying of ecosystems, including aquatic ecosystems, leading to the loss of some species and changes in community compositions. It will also contribute to changes in species distribution and ecosystem compositions, changes in the geographical extent of habitats and ecosystems, and the flooding of the nests of various species, resulting in the death of some young individuals. Similarly, a rise in sea level will result in increased inundation of the coastal wetlands and lowlands, leading to a loss of coastal species and communities, increased intrusion of salt water vegetation into freshwater ecosystems, a loss of nesting and feeding habitats particularly for the endangered turtle species and crocodiles, and changes in the structure of coral reefs and shallow water marine communities. Also, higher temperatures will cause changes in the abundance and distribution of some species, the migration of some species to higher altitudes, genetic changes in some species as a result of adaptation to new climatic conditions; changes in reproduction timings of some species (life cycle), changes in the length of growing seasons for plants (including food crops), increased sand temperatures, leading to changes in sex ratios (including a reduction in male turtle production), and an increase in the extinction rate of some species. Higher sea surface temperatures will create conditions that may be suitable for some invasive species to become established in local aquatic ecosystems, and will cause coral bleaching which would lead to the destruction of coral reefs which provide habitats and nurseries for several species, some of which are commercially important. Likewise, altered hurricane intensity will result in a loss of vulnerable species, changes in species competitive interactions and community composition, changes in range of invasive species, increased damage to nests and nesting sites, increased destruction of sensitive habitats (including coral reefs, mangroves and forest) (Webber, n.d.). Together these impacts will have dire consequences for ecological balance.

Climate change will also have negative implications for other aspects of the local environment. It will have serious consequences for the parish's water resources which are currently challenged by increasing demand. This is very important in light of the fact that the Rio Minho Hydrologic Basin is expected to have a water deficit by 2015. In addition to that, a rise in sea levels will likely inundate low lying areas along the coast,

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e.g. parts of Rocky Point and Portland Cottage, resulting in a loss of these low lying coastal lands and a reduction in the land size of the parish (Climate Studies Group, Mona (Jamaica) University of the West Indies, 2013).

A number of local and national programmes, projects and initiatives have been implemented or are currently underway to adapt to the impacts of climate change. These include the mainstreaming of CCA into local and national policies and plans, the Jamaica SPCR, and the CCA and Disaster Risk Reduction (DRR) Project. See 2.3.6.3. CCA Programmes, pg. 198

### 2.1.2.6. IMPROPER AGRICULTURAL TECHNIQUES

Slash and burn is an environmentally damaging agricultural technique used extensively in Clarendon. It is practiced in the preparation of lands for farming, as well as in the harvesting of sugarcane crops. In the former case, areas of forests or woodlands are set on fire and subsequently cleared for planting by manual cutting, whilst in the latter case, the sugarcane is burnt in the field a few days before harvesting to facilitate manual slashing by removing leaves and insects. This technique is quite simple but it releases tons of carbon dioxide in the atmosphere; a situation augmented by deforestation, as trees absorb carbon dioxide which is a greenhouse gas. Therefore this practice is one of the factors contributing to climate change in the parish. It is also having immediate and direct effects on the physical and hydrological properties of the soil, as the release of ash into the soil usually changes the chemical composition. Additionally, the technique usually removes the humus from the soil and affects its fertility.

A number of other unsustainable agricultural practices are also having negative implications for the parish. Soil erosion is resulting from over-cultivation and inadequate soil conservation techniques in hillside farming, which is practiced widely in Upper Clarendon. These practices are causing the soil to lose its structure and cohesion and to become more easily eroded by both wind and water. Erosion by water generally contributes to the siltation of local rivers. Additionally, the use of agricultural chemicals is threatening local water resources. According to the PBPAMC (2012), some local rivers, streams and gullies are somewhat eutrophic due to agricultural runoff from the use of chemicals such as pesticides, herbicides and fertilizers. The groundwater is also under threat since these chemicals may be leached through the soil.

### 2.1.2.1. THE POACHING OF ENDANGERED SPECIES

#### 2.1.2.1.1. THE KILLING OF CROCODILES



*Figure 27: This crocodile was killed and its tail hacked from its body, and left to decompose along the Salt River Main Road in September 2014.*

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Several areas of wetlands in Clarendon, mainly in the PBPA, provide habitats for the endangered American Crocodile. These areas include Milk River and its associated wetlands, Salt River, Jackson Bay, and West Harbour<sup>25</sup>. Despite its status according to the IUCN Red List being vulnerable and the animal being protected under the Wild Life Protection Act, the American crocodile is often injured or killed in the parish. This is usually for one of two reasons:

- 1) Despite the fact that the American Crocodile is one of the shyest of the crocodilian species, who will often shun confrontations unless molested or attacked, the general belief in Jamaica is that crocodiles are dangerous animals which are a continuous threat and should be killed. This general perception is often based solely on the carnivorous appearance of the reptile. Consequently, the animal is often killed or injured once it is encountered by people.  
This issue is heightened by the fact that such confrontations are increasing as a result of human activities. The uncoordinated development in the parish is destroying wading ponds, nesting sites and nurseries for young crocodiles. This is forcing the reptiles to seek out new areas to inhabit, such as storm drains and fish ponds, which is increasing the unwanted instances of human/crocodile confrontations.
- 2) In recent times the consumption of crocodile meat has become an issue in Jamaica, despite stiff penalties and fines of up to \$100,000. In 2013, NEPA received several reports and anecdotal information that crocodiles were being hunted and slaughtered for their meat in nine communities spanning four parishes, along Jamaica's south coast. Three of these communities, Salt River, Lionel Town, and Milk River are in Clarendon. It is believed that the reptilian meat is being sold at eateries in Clarendon, St Elizabeth, Westmoreland, and Kingston and St. Andrew. However, despite follow-up investigations, NEPA has been unable to verify the claims. ("Increased crocodile public education campaign", 2014)

### 2.1.2.7.2. THE POACHING OF TURTLES

In several areas of Clarendon, the meat of the turtle is considered a delicacy, whilst the egg is considered an aphrodisiac (McLymont, 2002). As a result, the illegal harvesting of turtles and their eggs continues to be a major environmental issue. This is despite the fact that Sea Turtles are protected under the Wild Life Protection Act. This is contributing to the extinction of the species, as according to NEPA in a release in 2002, the globally endangered animals are these days found in only about 25 per cent of the historically-known nesting beaches in Jamaica, a few of which are in Clarendon<sup>26</sup> (McLymont, 2002). The situation is therefore threatening to reduce biodiversity and disrupt food webs.



Figure 28:

Source: [http://www.nepa.gov.jm/student/resource-material/pdf/The\\_Ecology\\_and\\_Conservation\\_of\\_Sea\\_Turtle\\_in\\_Jamaica.pdf](http://www.nepa.gov.jm/student/resource-material/pdf/The_Ecology_and_Conservation_of_Sea_Turtle_in_Jamaica.pdf)

26. Namely Louzy Bay, Manatee Bay, Coquar Bay, Peake Bay, Long Pond Beach, Three Sandy Bay, Pigeon Island, Miller Bay, and Beau Champ.

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### 2.1.2.7.3. THE SALE OF THE JAMAICAN PARROT



Figure 29: The Jamaican Yellow Billed Parrot.  
Source: <https://www.flickr.com/photos/jamdowner/2488443606>

According to NEPA, it is alleged that the sale of parrots is taking place in several locations across the parish. These areas include Swansea, Clarendon Park, Aeon Town and Parnanssus. This is despite the fact that the birds are threatened with extinction and are therefore protected under the Wild Life Protection Act 1991, as well as the Endangered Species (Protection, Conservation and Regulation of Trade) Act 2000. These parrots are very important to the natural environment of the parish and Jamaica as a whole; they feed on fruits and disperse the seeds over large areas, contributing to forest regeneration. This function is critical in light of the fact that deforestation is also a major local issue. Additionally, they are important to Jamaica's natural heritage as they are endemic to the island.

### 2.1.2.8. INADEQUATE ENVIRONMENTAL AWARENESS

A fundamental problem in Clarendon, like in the rest of Jamaica, is inadequate environmental awareness at all levels. Sir William Halcrow and Partners Limited (1999) revealed that in some areas of the parish, people are aware of localized environmental issue, but the general conclusion is that Clarendonians are unaware of the potential consequences of their actions on the environment. This lack of awareness is leading to reckless environmental behaviours, which in turn breed more environmental problems, which negatively impacts the quality of life in the parish.

### 2.1.2.9. ENFORCEMENT ISSUES

Enforcement against environmental issues has been quite weak in the parish. This is linked to five (5) fundamental issues:

- I. Outdated laws which do not reflect present day realities;
- II. Low penalties for breaches;
- III. An adequate cadre of technical staff to carry out enforcement;
- IV. An understaffed judicial system to deal with cases expeditiously; and
- V. A lack of political will

## 2.1.5. PARISH STRATEGIES

### 2.1.5.1. STRATEGIC OBJECTIVE #1

**To ensure that environmentally sensitive areas are reserved as natural areas, and development is sensitive to important environmental features of the parish.**

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The integration of environmental planning into land use planning is one of the most critical strategies to achieving the vision of the Plan Area. The haphazard use of land is one the most significant natural environmental issue, and therefore measures will be put in place to ensure that adequate consideration is given to the environment in the development process. Integrated policies, plans and regulations will be used to guide the type, amount, location, timing and cost of development<sup>27</sup> to achieve a responsible balance between the protection of the natural environment and development to support growth and modernization. In essence, efficient land use planning will be used to ensure that environmentally sensitive areas are reserved as natural areas, and development is sensitive and responsive to important environmental features of the parish. See 2.4.3.1.2. Strategic Objective #98B pg. 229

### 2.1.5.2. STRATEGIC OBJECTIVE #2

To support forest restoration and conservation initiatives for the rehabilitation of habitats, the protection of water supplies, and the sustainable contribution to craft and industries.

#### 2.1.5.2.1. STRATEGIC OBJECTIVE #2A

**To undertake reforestation to restore degrade forest and woodlands.**

Forest restoration is critical to the sustainable development of the parish of Clarendon. It is part of the climate change solution, as well as the key to supporting ecosystems and maintaining biodiversity, while ensuring sustainable local socioeconomic development. Efforts in the parish will take a number of forms, which include simply protecting remnant vegetation from fires, cattle, etc. and more active interventions to accelerate natural regeneration, as well as tree planting and/or the sowing of seeds. In the case of tree planting and the sowing of seeds, the species selected will be those that are typical of or, provide a critical ecological function in the target ecosystem, which will reduce the possibility of introducing invasive alien species. Such species may include economic species which yield subsistence or cash-generating products.

### RECOMMENDED POLICIES

- The local Planning Authority in conjunction with the relevant agencies will seek to ensure the restoration of degraded forests which may provide significant natural value.
- The use of non-native species in tree planting initiatives will be strongly discouraged so as to reduce the possibility of introducing invasive species.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Identify and map denuded lands in forest reserves and watersheds which should be targeted for forest restoration.	Short to Medium Term	FD
Create forest restoration programmes in areas of degraded forests which have been identified and mapped.	Short to Medium Term	FD, Northern Rio Minho Local Forest Management Committee (NRMLFMC), C-CAM

27. Cost in this context refers to the negative impacts of a particular development.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide free seedlings for forest restoration efforts	Short to Medium Term	FD
Encourage private groups and individuals to undertake forest restoration projects.	Short to Medium Term	FD, Ministry of Economic Growth and Job Creation (MEGJC)

### 2.1.5.2.2. STRATEGIC OBJECTIVE #2B

#### To establish fuelwood plantations to support the sustainable production of charcoal.

The harvesting of wood for charcoal burning is a major contributor to deforestation and overall environmental degradation within the Clarendon Development Area. However, this activity also helps to meet the energy and economic needs of the parish, and therefore cannot be eliminated in the short to medium term. To this end, there needs to be an innovative approach to ensure a sustainable feedstock of wood for charcoal production which will also eliminate the environmental threats. This will be achieved through the development of fuel-wood plantations.

The development of fuel-wood plantations will involve reforestation initiatives, where indigenous fast-growing trees will be grown to provide a sustainable feed stock for charcoal production. This will be done largely on fallow, arable lands with barren soil, and will therefore provide good opportunities for adding value to a rural area, without competing with agricultural activities. At the same time, they will make an excellent contribution to the preservation of fossil energy sources, and mitigate against charcoal-driven deforestation.

Consideration will be given to the use of bamboo in the establishment of some of these fuel-wood plantations. Bamboos are some of the fastest growing plants in the world, and are also native to Clarendon. At present, they are the only wood that can be legally made into charcoal for export. Furthermore, Jamaica became the 38th Member of the International Network for Bamboo and Rattan (INBAR) on Wednesday March 6th, 2014, and interest in the Jamaican Bamboo, especially from the Chinese, has increased dramatically. This therefore means that charcoal production using bamboo will also be a viable economic activity, as bamboo charcoal may be used to satisfy demands on the local and international market (see Manufacturing Of Bamboo Related Products, pg. 425). It should however be noted that these plantations will have to be carefully sited, away from forest reserves, and properly managed, as bamboos may be classified as an invasive species.

### RECOMMENDED POLICIES

- The relevant authorities will support the development of fuel-wood plantations on areas of ruinate land.
- Bamboo plantations and other fuel-wood plantations will be carefully sited and managed to protect forest reserves from the threat of invasive alien species.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish fuel-wood demonstration plantations on fallow, arable lands with barren soil in appropriate locations of the parish, ensuring that all boundaries are clearly marked to make them easily identifiable by all.	Medium Term	FD, Ministry of Science Energy and Technology (MSET) <sup>28</sup>
Provide free seedlings for the development of fuel-wood plantations.	Medium to Long Term	FD
Encourage locals to develop community fuel-wood plantations by modelling demonstration plots.	Medium to Long Term	FD
Provide technical assistance to those interested in developing fuel-wood plantations.	Medium to Long Term	FD, NEPA

### 2.1.5.3. STRATEGIC OBJECTIVE #3

**To ensure that there is adequate tree cover in urban environments for the purpose of maintaining good air and water qualities, regulating temperatures, and improving aesthetics.**

It is imperative that existing trees and plant communities within local towns and growth centres be protected from developmental activities, and adequate landscaping and urban green spaces be developed. This is necessary to improve air and water quality, reduce the impact of the urban heat islands, reduce urban noise, and improve aesthetics. Additionally, urban trees will help to significantly slow the movement of storm water, which will lower total runoff volume and flooding, and increase infiltration and aquifer recharge rates. Therefore trees and plant communities which are considered to be of special value in terms of amenity, history or rarity, will be placed under tree preservation orders. New developments, including parking lots, will be required to provide adequate landscaping to offset the increase in impervious surfaces, while existing developments, especially large developments, will be encouraged to provide landscaping. The use of native species will be encouraged to enhance conservation and reduce the risk of introducing invasive alien species. Such species may include food plants (See Edible Landscaping, pg. 324) which will foster food security and may also be used to generate revenue for their maintenance. The development of adequate open spaces which utilize trees (both active and passive) will also be pursued in towns and growth centres.

<sup>28</sup> Formerly the Ministry of Science, Technology, Energy and Mining.

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Figure 30: Edible landscaping.  
Source: <http://monicamroz.com/edible-landscapes>

### RECOMMENDED POLICIES

- The local Planning Authority will seek to make Tree Preservation Orders where necessary to protect all trees and plant communities that are of significant importance to the environment in which they exist.
- Planning permission will not be given for developments likely to result in damage to or loss of trees which are placed under Tree Preservation Orders.
- Planning permission will not be granted for new developments which do not provide a high standard of landscaping, where this is practical.
- Development applications should include landscaping details, which accurately identify planting area, the plant species, their size and densities in each location.
- New developments will be encouraged to design landscaping schemes with nature conservation in mind including the planting of native none invasive species.
- The relevant authorities will support the development of edible landscapes.
- The relevant authorities will seek to develop (or encourage the development of) adequate green spaces within towns and growth centres.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Identify trees and plant communities of amenity or scientific value within the parish, including in growth centres and town centres, and place them under Tree Preservation Orders.	Short to Long Term	CPC
Develop an information database for all trees and plant communities placed under Tree Preservation Orders.	Medium Term	CPC

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Ensure that trees placed under Tree Preservation Orders are marked to make them easily identifiable.	Short to Long Term	CPC
Promote the use of food plants as design features in a landscape.	Short to Long Term	CPC, MICAFA, Rural Agricultural Development Authority (RADA)
Develop suitable green spaces sites within towns and growth centres into green spaces.	Short to Long Term	CPC, Private Sector

### 2.1.5.4. STRATEGIC OBJECTIVE #4

**To ensure that the extraction of minerals proceeds in a sustainable manner, and all relevant stakeholders are engaged in the formulation of strategies for land reclamation practices, in order to achieve the optimal use of quarried or mined out areas.**

Mineral extraction and processing helps to boost the economy of Clarendon although it also scars the natural environment. The environmental impacts are quite substantial and therefore the industry requires a high degree of management and control. This will be achieved through the application of a “green mining initiative.” It will involve the application of best practices, technologies, and mining processes that reduce the environmental impacts associated with such extraction and processing of minerals.

It follows that mining and quarrying operations will need to be appropriately sited, utilize proper techniques and adhere to all mining and quarrying laws during the extraction and transportation of minerals. Such activities will have to obtain the requisite environmental permits and licenses, and the operators within the sector will then be required to comply with codes of practice, guidelines, standards and regulations for the maintenance and improvement of the environment. The relevant authorities will continue to monitor the established regulations with respect to technological advancement, and the activities within the sector will also be effectively monitored to ensure compliance. As a consequence, illegal practices and operations will be eliminated or significantly reduced.

All mined and quarried lands will be returned to the best possible condition for use after mining and quarrying activities are completed. This will be done in the shortest possible time. Such restoration efforts often present difficulties, but once the basic landform has been made suitable, there are several possibilities for future use. These possibilities include agriculture, waste disposal, industry, housing, storage, aquaculture, and recreational facilities. The key will be to avoid contamination of the ground water resources and to ensure conformity with land use proposals. Adequate consultation will also be done with all stakeholders in selecting the best possible use.

Similarly, the processing of minerals will be done in an environmentally sensitive manner. These activities will also require the necessary environmental permits, including the permit to discharge wastewater or tailings into the environment. Continuous monitoring and assessment will be done with respect to technological advancement and to ensure compliance with emission and effluent discharge standards.

## 2.1 THE NATURAL ENVIRONMENT

### RECOMMENDED POLICIES

- Mining and quarrying plans should be developed, submitted and approved by the appropriate authorities, including the CPC, before any operation commences.
- The establishment of illegal and unregulated mines will be strongly resisted; adequate monitoring and enforcement will be undertaken by the relevant authorities in conjunction with community members.
- Mining and quarrying operations will not be supported in areas where the need to work the mineral is not sufficient to justify the environmental impact that is likely to arise.
- The mining sector will be required to comply with all mining and environmental legislation, including the Mining Act, the Ambient Air Quality Regulations and Guidelines, the Natural Resources Conservation Authority Act, the Wild Life Protection Act, and the Beaches Control Act.
- The relevant authorities will continue to monitor the established sector regulations with respect to technological advancement and will make amendments where necessary; amendments to penalties for breaches should consider tying monetary fines to the value of the Jamaican dollar or to some other base to ensure that these legislations do not become quickly outdated.
- Quarries should be located in quarry zones and will not be permitted in any other location except in extenuating circumstances.
- The number of quarries within any location will be limited by the relevant authorities to avoid over exploitation of resources.
- The level of sand and gravel deposited by the Rio Minho will constantly be monitored, especially in dry spells, to ensure that extraction rates are not exceeding replenishment rates; the number of quarrying licenses will be reduced, or all licenses will be suspended where this excess exists.
- All mined out or quarried lands are to be restored to their original state, or to a level which is satisfactory to the local planning authority and the relevant agencies.
- Development proposals involving the reuse of mined or quarried areas will generally be supported, subject to satisfactory environmental impacts, including protection of groundwater resources.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Identify all illegal mines in the parish and serve closure notices.	Medium Term	MGD, Clarendon Police Division
Develop strategic relationships with communities located in areas with the potential for illegal mining as a means of ensuring adequate monitoring.	Medium Term	MGD
Revisit the boundaries of the May Pen Quarry Zone, with the objective of conserving important environmental resources.	Medium Term	MGD

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.5.5. STRATEGIC OBJECTIVE #5

**To reduce agriculture related environmental degradation and encourage long-term conservation measures.**

Agriculture is critical to the development of Clarendon, but improper practices are having a negative impact on the local environment. Stakeholders within the sector, and especially farmers, will therefore be encouraged to adopt more eco-friendly agricultural practices. These practices form part of the wider sustainable agriculture strategy. Not only does this strategy address the environmental concerns, but it will also alleviate some social issues and ensure profitability in farming operations.

Sustainable agriculture is grounded in the principle that farms become and stay environmentally sustainable by creating a landscape that mimics as closely as possible the complexity of healthy ecosystems. Crops require fertile soil and protection from weeds and insect pests in order to produce food fit for human consumption. Sustainable agriculture meets these requirements with sophisticated management practices grounded in the science of agroecology, which views farms as ecosystems made up of interacting elements (soil, water, plants, and animals) that can be modified to solve problems, maximize yields, conserve resources, and save money. To this end, the sustainable agriculture strategy focuses on five (5) fundamental elements: Ecological Pest Management, Conservation Tillage, Nutrient Management, Efficient Water Management, and On-Farm Energy Conservation and Generation which brings together aspects of organic agriculture and integrated farm management.

**Ecological Pest Management** - Ecological Pest Management which is a strategy that uses naturally based controls to establish long term control of pests will be encouraged. This strategy will utilize multiple tactics to keep pest damage below the Economic Injury Level<sup>29</sup> while protecting humans, animals, plants, and the environment (with the environment being primary). The tactics will include planting crop varieties that are resistant to pests, trap crops for insect pests, and using mechanical trapping devices, natural predators (e.g., insects that eat other insects), insect growth regulators, mating disruption substances (pheromones), and if necessary, chemical pesticides. This strategy will therefore reduce the high dependence on chemical pesticides which is a source of soil and water pollution.

**Conservation Tillage** - Soil conservation practices, such as contour tillage, mulch till and no-till, will be encouraged to help prevent soil loss from wind and water erosion. These tillage systems will therefore help to minimise water pollution through sedimentation, and will also help to conserve irrigation water by reducing soil moisture loss. The increased organic matter associated with these systems will further make the soils more effective at storing carbon, and hence assist in countering climate change.



Figure 31: Conventional tillage versus conservation tillage. In the upper photograph, conventional tillage, evidenced by the bare soil between the rows, was used, while in the lower photo strip-tillage was used, where only the seed bed was tilled before planting and the remains of a previous crop are left between the rows.

Source: <http://oregonprogress.oregonstate.edu/spring-1999/good-earth>

29. The Economic Injury Level has been defined as the lowest pest population density that will cause economic damage.

## 2.1 THE NATURAL ENVIRONMENT

**Nutrient Management** - Nutrient management systems which avoid the use of chemical fertilizers without adversely affecting crop productivity will be encouraged. These systems may include the application of organic manures, composts, bio-fertilizers, as well as the growth of leguminous cover crops to build soil fertility, protect water quality from the runoff or leaching of synthetic fertilizer, and reduce purchased fertilizer costs.

**Efficient Water Management** - Water stewardship in the agricultural sector will be encouraged to diminish the effect of poor practices on the quality and availability of freshwater. This strategy will draw together various aspects of environmental water sustainability, while seeking to implement efficient water management techniques and sustainable practices. Specifically, farmers will be encouraged through the provision of appropriate incentives, to develop variable width riparian buffer<sup>30</sup> zones along watercourses. These zones will include native grass or herbaceous filter strips along with deep rooted trees and shrubs, which will serve the primary purpose of preventing sediments, nitrogen, phosphorus, pesticides and other pollutants from the agricultural sector from reaching watercourse. In addition to this, riparian buffer zones will: provide valuable habitats for wildlife, including terrestrial and aquatic species; provide organic matter to watercourses; control temperature in water body through shading; enhance the visual quality and amenity of the landscape; and slow floodwaters, thereby helping to maintain stable banks and protect downstream property. In predominantly pastoral areas, livestock will be restricted by fencing from these zones. Other water management techniques which will be implemented include efficient irrigation systems, rainwater harvesting, grey water recycling and storm water harvesting. See 2.2.2.5.4. Strategic Objective #33, pg.114, 2.2.2.5.6. Strategic Objective #35 pg. 119, and 2.3.9.15.1., Strategic Objective #91A, pg. 214



Figure 32: An example of a riparian buffer zone along a watercourse.  
Source: [https://www.google.com.jm/search?q=riparian+buffer+zone&biw=1600&bih=708&source=lmns&tbn=isch&sa=X&ved=0ahUKEwirq8D3i6vMAhV16CYKHbh6D6IQ\\_AUIBigB#imgrc=dCc5kk-5K1O3WEM%3A](https://www.google.com.jm/search?q=riparian+buffer+zone&biw=1600&bih=708&source=lmns&tbn=isch&sa=X&ved=0ahUKEwirq8D3i6vMAhV16CYKHbh6D6IQ_AUIBigB#imgrc=dCc5kk-5K1O3WEM%3A)

**On-Farm Energy Conservation and Generation** - Farmers will be encouraged to use energy-saving devices, while also learning how to generate their own fuel. Generating their own fuel will mainly involve the development of bio-digesters. These practices will not only make farm operations more profitable, clean and efficient, but will also help reduce the high dependence on foreign oil and reduce greenhouse gas emissions. See 2.3.9.15.1. Strategic Objective #91A, pg. 214 and 2.2.3.6.4. Strategic Objective #46, pg. 138

**Pasture Management** - Poor pasture management was not highlighted as a major issue impacting on or threatening the natural environment of the Plan Area. However, this plan seeks to ensure the growth of the livestock sector.

<sup>30</sup>. Mandatory fixed width riparian buffers will be established along some water courses in non-agricultural areas (growth centres) as a DRR strategy or water conservation, but will also complement those in agricultural areas.

## 2.1 THE NATURAL ENVIRONMENT

Hence appropriate measures will be put in place to ensure that the growth of the sector does not result in an increased level of threat to the natural environment, as poor pasture management can lead to water pollution and soil erosion. Livestock farmers will be educated about proper livestock and pasture management techniques. These techniques include: rotational grazing and preventing grazing on steep slopes, and within riparian buffers and sensitive wildlife areas.

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that adequate considerations are given to environmental sustainability in the development of agricultural initiatives.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Establish a farmers' education awareness programme which highlights how poor agricultural practices negatively affect the environment and threaten the well-being of the population, as well as how environmental sustainability may be achieved through the application of eco-friendly agricultural practices. This programme should ensure that more publicity is given to eco-friendly agricultural practices in different media.</p>	<p>Short to Medium Term</p>	<p>RADA, NEPA, MICAFA</p>
<p>Provide training opportunities for farmers in sustainable agricultural practices, which include, but are not limited to those highlighted above.</p>	<p>Short to Long Term</p>	<p>RADA, MICAFA</p>
<p>Increase the availability of the necessary materials used in sustainable agricultural practices, such as compost, green manures, bio-fertilizer, and bio-pesticide.</p>	<p>Short to Long Term</p>	<p>MICAFA, RADA, Private Sector</p>
<p>Encourage farmers to voluntarily protect and enhance the environment on their farmlands, by providing appropriate incentives, which may include grants, secure markets, etc.</p>	<p>Short to Medium Term</p>	<p>MICAFA, MEGJC</p>

## 2.1 THE NATURAL ENVIRONMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide on-ground assistance to farmers opting to implement eco-friendly agricultural practices.	Short to Long Term	RADA

### 2.1.5.5.1. STRATEGIC OBJECTIVE #5B

**To promote agroforestry practices to reduce agriculture driven deforestation.**

Agroforestry practices that are strategically integrated into individual farm operations and watersheds can significantly benefit the local environment, by reducing deforestation, soil erosion, and water and air pollution. Agroforestry initiatives will therefore be encouraged, especially on slopes zoned for agricultural purposes and on agricultural lands surrounding forest reserves, as an environmental strategy. The integration of trees into agricultural crop and/or pastures, will help to ensure a sustainable source of trees for the production of yam sticks, timber, charcoal, and similar purposes. This will therefore go a far way in reducing agriculture driven deforestation and conserving natural habitats, while simultaneously providing habitats for species that can tolerate a certain level of disturbance. Additionally, agroforestry practices will help to control runoff and soil erosion, thereby reducing the loss of soil material, organic matter and nutrients. Controlling runoff from agricultural operations will also protect water quality and safeguard clean water supplies for fish, wildlife, and people. The trees will filter the surface runoff laden with sediment, nutrient, chemical, and biological contaminants. Furthermore, the tree leaves and branches help to filter and absorb air pollutants such as dust particles, carbon dioxide<sup>31</sup> and moisture droplets. This therefore means, that agroforestry will also help to ameliorate the effects of climate change.



Figure 33: An example of an agroforestry plot.

Source: [https://www.researchgate.net/post/How\\_is\\_the\\_adoption\\_of\\_agroforestry\\_systems\\_in\\_your\\_country\\_What\\_are\\_the\\_barriers\\_and\\_incentives](https://www.researchgate.net/post/How_is_the_adoption_of_agroforestry_systems_in_your_country_What_are_the_barriers_and_incentives)

31. The sequestration of carbon involves the removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, vegetation, or soils) through physical or biological processes. The incorporation of trees or shrubs in agroforestry systems can increase the amount of carbon sequestered compared to a monoculture field of crop plants or pasture. In addition to the significant amount of carbon stored in aboveground biomass, agroforestry systems can also store carbon belowground.

## 2.1 THE NATURAL ENVIRONMENT

There are two (2) precautions that will have to be taken to ensure that this practice does not have any adverse effects. Firstly, the use of native fast growing species will have to be encouraged so as to prevent the introduction of invasive alien species, which can cause environmental and economic damages. This will be even more beneficial to the environment if the species of trees utilized are nitrogen fixing which would reduce the dependence upon chemical fertilizers. Secondly, agroforestry practices on moderately steep slopes may also require additional soil conservation techniques. The integrating of trees into agricultural plots may not be sufficient to control soil erosion.

### RECOMMENDED POLICIES

- Agroforestry will generally be supported on lands zoned for agricultural purposes.
- Agroforestry practices will be supported as part of mined lands reclamation strategies.
- Agroforestry practices will be encouraged in the development of buffer zones for forest reserves.
- The use of non-native or invasive alien species in agroforestry practices will be strongly discouraged by the relevant authorities.
- Where agro-forestry plots exist or are contemplated on moderately steep slopes, additional soil conservation techniques should be utilized so as to minimize soil erosion.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise awareness of the benefits of agroforestry systems to both individual farmers and the parish as a whole.	Short Term	FD, RADA
Establish agroforestry demonstration plots at strategic locations across the parish to provide a guide as to how to integrate trees in farming to provide a mix of revenue streams while improving the environment.	Short to Medium Term	FD, RADA
Provide training opportunities in agroforestry for local farmers	Short to Long Term	FD, RADA
Lobby Central Government to develop a National Agroforestry Policy	Short to Medium Term	MPs, CPC, CPDCBS

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.5.6. STRATEGIC OBJECTIVE #6

**To support fish stock replenishment initiatives for the maintenance of marine biodiversity and the survival of the local fishing industry.**

The establishment of additional SFCAs and the management and enforcement of the existing one at Salt Harbour will be critical to combatting the issue of overfishing and restoring the parish's fisheries which are also threatened by habitat degradation and land-based nonpoint pollution. Preventing fishing in fish-breeding areas will provide the marine species the opportunity to reach full sexual maturity, therefore increasing their egg producing potential and ultimately the fish populations. According to the MICAF (n.d), SFCAs have been scientifically proven to improve fish stocks by 3 to 21 times their original biomass. This will significantly reduce the probability of extinction of any species, and will also ensure the survival of the fishing industry as excess fish will migrate to adjacent areas.

The success of SFCAs depend to a large extent on the presence of coral reefs. However, much of the coral reefs along the coast of Clarendon have been severely damaged and to date, there has been little to no recovery. Hence, it may be necessary to develop artificial reefs in sites selected for the establishment of SFCAs. Artificial reefs are manmade structures that mimic some of the characteristics of a natural reef. Submerged shipwrecks are the most common form of artificial reef around the world, but several companies specialize in the design, manufacture, and deployment of long-lasting artificial reefs that are typically constructed from limestone, steel, and concrete. Other materials used to construct artificial reefs are rocks, cinder blocks, wood and old tyres.

The effective monitoring, surveillance and enforcement of the no fishing zone within SFCAs will also be critical to the success of sanctuaries and the achievement of the overall goal. These activities will serve as deterrents and will also reduce future violations.

### RECOMMENDED POLICIES

- The relevant authorities will maintain the area at the mouth of the Salt River as a fish sanctuary.
- The relevant authorities will support the establishment of new SFCAs in appropriate coastal areas.
- The relevant authorities will support the development of artificial coral reefs in coastal waters. Permission will however be required from the relevant authorities.
- Fishing will not normally be allowed in areas designated as SFCAs; only in special cases will this activity be allowed. Such cases include the removal of invasives and the use of the fish sanctuary for regulated tourism activities.

#### SPECIFIC ACTIONS

#### TIME FRAME

#### RESPONSIBLE AGENCIES/GROUPS

Explore the coast of Clarendon for potential sites to develop into SFCAs.

Short to Medium Term

MICAF, C-CAM,

## 2.1 THE NATURAL ENVIRONMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Clearly mark the boundaries of new and existing SFCAs and erect the necessary additional informational signs.	Short to Medium Term	MICAf, C-CAM,
Explore the feasibility of developing artificial reefs in areas identified for the development of SFCAs.	Medium to Long Term	MICAf, C-CAM, NEPA, UWI
Evaluate the capacity of the management organisations (including the Fisheries Division) to effectively monitor the designated SFCAs.	Medium to Long Term	MICAf
Address any shortcomings in the capacity of the management organisations to effectively carry out their responsibilities.	Medium to Long Term	GOJ

### 2.1.5.7. STRATEGIC OBJECTIVE #7

**To ensure that the unique flora and fauna of the parish are maintained.**

The parish of Clarendon contains species of plants and animals that are rare, exotic, indigenous, and even endemic. Several of these species are also threatened or endangered and therefore require careful management in order to maintain and enhance populations for the protection of natural heritage. These species include the West Indian Manatee, the American Crocodile, and the Sea Turtle. Recovery and management plans will be used to address the creation of nurseries, nesting habitats, sanctuaries and wild breeding areas, from which the species may be transported to other appropriate sites. These efforts will be supported by the effective enforcement of legislations and continued public awareness programmes.

### RECOMMENDED POLICIES

- The relevant authorities will seek to develop species management and recovery plans for all species of plants and animals identified as threatened or endangered.
- Approval will not normally be given for developments which will threaten the range or survival of rare, endemic or endangered species.

## 2.1 THE NATURAL ENVIRONMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a public awareness programme to raise awareness of the status and importance of threatened species in the parish in relation to biodiversity and natural heritage.	Short Term	NEPA, C-CAM, Jamaica Environment Trust (JET)
Develop an inventory of endangered plants and animals in the parish.	Short to Medium Term	NEPA, C-CAM
Develop species management and recovery plans for the species identified on the inventory.	Med-um to Long Term	NEPA, C-CAM
Implement the species management and recovery plans developed	Med-um to Long Term	NEPA, C-CAM, Private Sector;

### 2.1.5.8. STRATEGIC OBJECTIVE #8

**To ensure that all forms of waste are managed in a sustainable manner.**

Inadequate waste management is posing a serious risk to ecosystems and human health, as well as the aesthetics of the Parish, and therefore integrated waste management is a key component of the comprehensive natural environment strategy. This will involve managing all forms of waste, namely solid, liquid (wastewater) and hazardous waste in a safe, effective and efficient manner. Solid and hazardous waste management will focus heavily on reducing the amount of waste generated. The major aspects of this strategy include waste prevention, recycling, composting and sanitary landfilling.

On the other hand, liquid waste management will require that all wastewater generated receive appropriate treatment using approved treatment methods which are dictated in part by adopted effluent guidelines. Limitations will also be set on the types of systems to be used. Particular emphasis is placed on the use of water saving devices which is an approach to sustain the conservation of the water resources and at the same time, reduce the volume of wastewater generated. See 2.2.4.1.9. Parish Strategies, pg. 155

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support all strategic objectives of the Waste Management section of this plan. See pages 155-173	Short to Long Term	MOH

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.5.9. STRATEGIC OBJECTIVE #9

**To promote the use of eco-friendly technologies that conserve environmental resources and reduce the production of waste.**

As part of the strategy to reduce the production of waste, particularly gaseous waste, and to help in the fight against climate change, the use of eco-friendly technologies will be promoted in the Parish. In particular, the use of renewable energy, energy efficient appliances and equipment, and eco electronics will be encouraged in homes, schools and business. These technologies will help to preserve the environment through a reduction in the consumption of fuel which generally results in the production of greenhouse gases. In addition to safeguarding the environment, they will also reduce the cost of electricity. time, reduce the volume of wastewater generated. See 2.2.4.1.9. Parish Strategies, pg. 155

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage stakeholders to support Strategic Objectives #45 and #46 of the Energy section of this Plan. See pgs 134-141	Short to Long Term	MEGJC, JET, NEPA,

### 2.1.5.10. STRATEGIC OBJECTIVE #10

**To reduce air pollution by reducing vehicular congestion within town centres.**

Traffic congestion will be reduced in the Parish to safeguard and improve air quality. A combination of efforts will be utilized to achieve this objective. The major ones include: integrating land use and transportation planning as a strategy to reduce travel demand; enforcing school zoning to also reduce travel; making adequate provision for parking; ensuring that new developments are properly located and designed; and eliminating illegal vending.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic objectives #13, #14, #15, #21 and #24 of the Transportation section of this plan, as well as Strategic Objective #225 of the Informal Sector section. Note that Strategic Objective #13 will redirect you to Strategic Objective #98 pg. 226 of the Land Use Section and #14 will redirect you to #133 pg. 291 of the Education Section. See pgs. 89-91, 94, 99, 440	Short to Long Term	NEPA, MOH

## 2.1 THE NATURAL ENVIRONMENT

### 2.1.5.11. STRATEGIC OBJECTIVE #11

**To increase environmental awareness, including the knowledge of existing regulations and the benefits of compliance, to encourage environmental stewardship.**

An effective environmental awareness programme is vital to addressing many of the natural environmental issues in the Plan Area. Lack of awareness is a major contributing factor to the environmental degradation, and at the same time, the environmental legal framework is challenged by several issues, including a lack of an adequate technical staff to carry out enforcement and an understaffed judicial system to deal with cases expeditiously. An environmental awareness programme, which includes, among other things, information of existing regulations and the benefits of compliance, is therefore necessary to encourage citizens into adopting pro-environmental behaviours and becoming environmental stewards.

This environmental awareness programme will use multiple channels and media to reach the target audience, which is all stakeholders in the parish. Different approaches will be utilized for specific sub-groups, which include schools, religious institutions, civic organizations and businesses. The responsible agencies and groups will collaborate and pool resources to prevent the duplication of efforts, while ensuring that the effort is sustained. Regular assessments of the programme will be made to determine the level of success and to make modifications where necessary.

### RECOMMENDED POLICIES

- The relevant agencies and groups will collaborate to pool resources and to prevent the duplication of efforts in developing a comprehensive environmental education and awareness programme.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Implement an educational programme to increase public awareness of environmental issues, as well as existing environmental regulations and the benefits of compliance, via the electronic and print media, school curricula, and other appropriate methods.	Short to Medium Term	NEPA, CPC, FD, MGD, RADA, JET, Ministry of Education, Youth and Information (MEYI)

### 2.1.5.12. STRATEGIC OBJECTIVE #12

**To ensure consistent enforcement of environmental laws and regulations.**

One of the strategic objectives to achieve the goal of good governance in Clarendon is to improve the capacity of the CPC, including the area of environmental enforcement (See 5.4.2. Strategic Objective #227, pg. 463). An Environmental Enforcement Unit will be established within the CPC, which may be part of the municipal police force. This unit will be responsible for monitoring activities within the parish and bring breaches of environmental regulations to the attention of the relevant authorities, including the NEPA and the FD, where necessary.

## 2.1 THE NATURAL ENVIRONMENT

The efforts of the unit will be complemented by improved monitoring efforts on the part of these environmental authorities. Additionally, the CPC and the authorities will seek to develop a relationship with local communities which will support the reporting of environmental breaches.

Furthermore, the GOJ will be encouraged to amend or repeal outdated legislation and enact new laws where necessary.

### RECOMMENDED POLICIES

- Environmental enforcement will be coordinated amongst all responsible agencies and groups.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the GOJ to amend or repeal outdated legislation and enact new environmental laws where necessary.	Short Term	MPs, CPC, CPDCBS, JET, C-CAM
Establish an Environmental Enforcement Unit within the CPC which will be responsible for monitoring activities within the parish and bringing breaches of environmental regulations to the attention of the relevant authorities.	Medium Term	CPC
Increase environmental monitoring, including through an increase in the number of environmental wardens and officers in the Parish.	Long Term	MGD, CPC
Facilitate working relationships with local communities to support the reporting of environmental breaches.	Short Term	NEPA, FD, MGD

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.1. COMPOSITION OF THE LOCAL TRANSPORT SECTOR

The transport sector in the Clarendon Development Area may be considered to include road, rail, air, maritime and public transportation facilities.

### 2.2.1.2. ROAD TRANSPORTATION

Clarendon comprises an extensive road network linking all regions throughout the parish. This network includes roads of various classes, which fall under the responsibilities of the NWA, the CPC, the MICA, or some private operator. The main urban centres of the parish are connected by Class A and B roads with the rural areas being connected by Class C and other roads. A section of Highway 2000 also traverses the south central section of the parish and provides increased access to the parishes of St. Catherine, and Kingston.



Figure 34: A section of Highway 2000 in Clarendon.  
Source <http://www.jamaicaobserver.com/assets/10357336/highway.jpg>

The existing road network also includes street furniture such as sidewalks, bus stops and requisite signage. Sidewalks are found mainly within urban centres and some established housing developments within the parish. Bus stops are a rarity and are only found on a few arterial roads, including the May Pen to Lionel Town main road. The signage are of different types and serve several important purposes. These signs include directional and road safety signs. They identify streets and districts for the benefit of all but especially visitors and the emergency services; they assist people with choosing a path through the built environment; and they seek to prevent road safety issues.

### 2.2.1.3. ROAD TRANSPORTATION ISSUES AND CHALLENGES

#### 2.2.1.3.1. TRAFFIC CONGESTION



Figure 35: Traffic congestion in May Pen on regular weekday.  
Source: <https://mw2.google.com/mw-panoramio/photos/small/68383185.jpg>

## 2.2.1 THE TRANSPORTATION SECTOR

Most of the major towns in Clarendon, including May Pen and Spalding, are plagued by traffic congestion. The poor circulation of traffic in these towns is attributed to high rates of commuting, inadequate parking facilities, inadequate sidewalks, the commercialization of designated walkways, and the failure of public transporters to use the designated transportation hubs. This congestion issue negatively impacts the parish in several ways. Commuters' general inability to accurately forecast travel time, sometimes results in late arrival for employment, meetings, and school, which further results in loss of business, disciplinary action or other personal loss. The overall situation may also be contributing to the unacceptable economic performance of the parish, as there is a direct link between efficient communication and economic development. Additionally, it is contributing to environmental degradation through the introduction of pollutants into the atmosphere. See 2.1.2.3.4. Traffic Congestion, pg. 60

### 2.2.1.3.2. HIGH COMMUTING RATES

The commuting rate in the Parish is quite high, and is the result of two fundamental issues. Firstly, the sprawling development of the parish has resulted in a high dependence on automobiles, as residents have to access employment and other critical facilities outside the areas in which they live. Secondly, there is a general perception that some schools within the parish, usually at the secondary level, are inferior to others. Parents therefore make every effort to send their children to the schools which are perceived as superior (Development Bank of Jamaica (DBJ), NEPA and PIOJ, 2004). This has resulted in high rate of student commuting and a strain on the transportation system, as often times these schools are not the closest to the places of residence.

### 2.2.1.3.3. RESTRICTED ACCESS TO THE HIGHWAY

Access to Highway 2000 is currently restricted in the Parish. Longville Park is one of the fastest growing housing schemes in Jamaica and is further earmarked for substantial development. This housing scheme is home to mainly professionals who generally go to Old Harbour or Portmore to conduct business instead of May Pen because of the ease of accessing these places, including through the highway. It therefore means that the residents of this housing scheme are not supporting local sustainable development. They themselves have acknowledged the issue, but highlight the fact that it's fairly difficult for them to access May Pen since the highway does not provide on and off ramps to accommodate this.

### 2.2.1.3.4. INADEQUATE PARKING FACILITIES

Provisions for parking, including for public passenger vehicles (PPVs), is woefully inadequate in the parish. The urban centres and rural nodes within the parish have developed without the provision of adequate parking spaces (Douglas, 1975; TCPA 2012). In addition to that, the general consensus among citizens<sup>32</sup> is that most of the designated public transportation facilities are poorly sited, and therefore commuters and public transport operators are not keen on utilizing them. Furthermore, none of the designated bus and taxi parks provide adequate facilities for the end users and as a result, public parking facilities are usually the site of chaos and disorder which leads to the poor utilization of space and insanitary conditions which pose a risk to public health.

### 2.2.1.3.5. SIDEWALKS ISSUES

The sidewalk infrastructure in Clarendon is quite limited. In most areas they are completely absent, while in the other areas they are generally too narrow and are found on any one side of the road. Furthermore, vendors in town centres are illegally erecting makeshift stalls and spreading their goods in an inconsiderate fashion along the sidewalks which is forcing pedestrians to share the roadways with motor vehicles, putting their safety at risk and contributing to traffic congestion through vehicular pedestrian conflicts.

32. Through the Situation Validation and Visioning Workshops.

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.3.6. WAYFINDING DIFFICULTIES

Wayfinding in general terms is the process of getting between two points in the easiest manner. This is proving to be a challenging task in the parish due to two fundamental reasons. Firstly, the number of directional signs present is limited and grossly inadequate. This inadequate number is also unevenly spread across the parish, as urban areas tend to have more signage than the rural areas. It should however be noted that the number of directional signs present in the urban areas is also inadequate. Secondly, some signs are improperly placed. They are partially or fully hidden behind utility poles, trees and other objects and are not clearly visible to the public. As a result, they are ineffective in conveying information which enhances wayfinding.

### 2.2.1.3.7. POOR ROAD CONDITIONS



*Figure 36: A section of the Race Course Main Road which takes you into the community of Banks.*

Large portions of the road infrastructure within Clarendon is in need of improvements, which include road widening, surface restoration, bridge rehabilitation, and the installation of the requisite street furniture. According to the residents, poor construction and maintenance are the main reasons for the current poor road conditions. Their claims have been partially substantiated by research which found that most of the road infrastructure have been developed without the requisite street furniture, including drainage systems, while some road works were employed as temporary solutions to an existing condition, and are therefore done without any consideration to longevity. Apart from the occasional patching and cleaning of storm drains, very little has been done to maintain the Parish's road infrastructure. This compounds the fact that Clarendon is vulnerable to a number of natural hazards, including landslides and flooding. Further research revealed that other issues are contributing to the poor road conditions. These include unlawful protest actions and overloaded vehicles. The research found that residents occasionally exercise their democratic rights by staging protest actions to express their dissatisfaction with a situation or the state of affairs in the parish. Such demonstrations often times involve the blocking of roadways, through the burning of tyres, old vehicles and various other materials. This action however, has negative impacts on the road network, as it burns the tar surface, making the roadways susceptible to potholes. With regards to overloaded vehicles, the practice of trucks traversing the parish with cargo which exceeds the designed weight limits of many roadways has gone unpunished for years. This has been due mainly to the lack of enforcement.

It should be noted however, that a significant amount of road improvement works have been carried out over the past few years. This includes repairs and upgrades to both major and minor roadways. Improved construction standards which encompass the mandatory inclusion of drainage systems have also been implemented.

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.3.8. SHORTAGE OF DESIGNATED BUS STOPS

There is a general shortage of designated bus stops within the plan area. As a result, public transport pick up and let down passengers arbitrarily along the various routes. This can sometimes prove dangerous for other road users, including pedestrians and cyclists, as the roads are generally narrow. Therefore, it is very important that safe and satisfactory facilities be developed.

### 2.2.1.3.9. HIGH NUMBER OF ROAD ACCIDENTS



Figure 37: Police at the scene of a motor vehicle accident on the Bustamante Highway in Clarendon on February 04, 2011 in which four persons, including a baby, died.

Source: [http://www.jamaicaobserver.com/Baby-among-four-killed-in-Clarendon-car-crash\\_8333125](http://www.jamaicaobserver.com/Baby-among-four-killed-in-Clarendon-car-crash_8333125)

The number of road accidents recorded in Clarendon on an annual basis is quite high. From 2000 to 2014, over 3500 road accidents were recorded in the parish (Lyew-Ayee, 2012; Ministry of Transport Works & Housing (MTWH), 2015). Just under 10 percent of these accidents have been fatal, claiming approximately 272 lives, including that of several pedestrians (Lyew-Ayee, 2012; MTWH, 2015). In addition to claiming lives, these accidents have destroyed property (including public property) and are also significantly impacting public health costs. Three roadways in the Parish were identified as among the top 25 crash prone road stretches in Jamaica for the period 2000 to 2010. These roadways are: the Hayes Main Road (Hayes), the Sir Alexander Bustamante Highway (Palmers Cross), and the Major Hwy (Osbourne Store) (Lyew-Ayee, 2012). Direct driver-caused crashes however accounted for the bulk of crashes across the Parish (approximately 85%), while pedestrian/cyclist also contributed to a significant amount.

The relevant authorities, including the National Road Safety Council (NRSC), the Ministry of Transport and Mining (MTM)<sup>33</sup>, the Transport Authority (TA) and the Police are currently seeking to address the issue, mainly at the national level. Just recently (November 2015), a new Road Traffic Act, which is believed will go a far way in reducing road accidents, was passed by the House of Representatives. When passed by the Senate, this Act will among other things, increase traffic penalties for breaches of the road code; make it mandatory for motor vehicle driving instructors to receive training and certification; increase the period for holding a learner's permit with new conditions attached; curtail the use of electronic hand-held devices while driving; and increasing the powers of the Island Traffic Authority. In addition to that, the NRSC continues to carry out public education, while the TA and the police are seeking to strengthen the enforcement of traffic regulation, including an increase in the frequency of spot checks.

33. Formerly the MTWH.

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.4. RAIL TRANSPORTATION

There are several kilometres (km) of railroad across the parish of Clarendon, some of which are publicly owned by the Railway Corporation of Jamaica (JRC). These publicly owned lines form part of a larger network which facilitated passenger and cargo movement between Jamaica's two major towns, Kingston and Montego Bay, as well as between May Pen and Frankfield within the parish. The JRC-owned lines also include rails which supported military needs for World War II between Logan's Junction near May Pen and the former United States (US) Military Air Base at Vernamfield. However, this route was only subsumed by the JRC following its closure in 1956. The May Pen-Frankfield route was also closed in 1974, whilst the Kingston-Montego Bay route was closed in 1992, due to extensive infrastructure damage and increasing operational cost.

The other railways in the parish are privately owned by the bauxite /alumina company, Jamalco. These privately owned lines created a route from an expired bauxite mine in Breadnut Valley to the shipping port at Rocky Point, which was expanded and linked to the JRC's network to facilitate movement between Halse Hall and St Jago in the neighbouring parish of Manchester. Jamalco currently utilizes the network to transport bauxite from St Jago to the alumina refinery plant in Halse Hall; alumina from the refinery plant to the shipping ports at Rocky Point; and caustic soda and fuel oil from the port to the plant refinery.



Figure 38: A section of the railway in May Pen.

Source [http://jamaica-gleaner.com/sites/default/files/styles/jg\\_article\\_image/public/article\\_images/2010/03/21/railway-h20100318ia.jpg?itok=D3pc\\_VZO](http://jamaica-gleaner.com/sites/default/files/styles/jg_article_image/public/article_images/2010/03/21/railway-h20100318ia.jpg?itok=D3pc_VZO)

### 2.2.1.5. RAIL TRANSPORTATION ISSUES AND CHALLENGES

#### 2.2.1.5.1. DIFFICULTIES IN REVITALISING THE PUBLIC RAIL SERVICE

Both Government and the people of Clarendon regard the restoration of the rail service as an important factor in the development of the transport sector. However, this would require extensive remedial work, and the operational cost for the passenger rail service, unless properly streamlined, would be overwhelming for the JRC and the Government on a whole. Attempts to divest the network have so far been unsuccessful; a situation which is believed to be somewhat linked to the agreement made between the Government and TransJamaican Highway Limited not to restart the public rail service at a level where it can compete with Highway 2000 for revenue (DBJ, NEPA and PIOJ, 2004).

#### 2.2.1.6. AIR TRANSPORTATION

Clarendon is home to the Vernamfield aerodrome, which is a former World War II US Military airfield. It was closed in May 1949 due to budgetary cutbacks, and was essentially abandoned with all the structures being removed or torn down.

## 2.2.1 THE TRANSPORTATION SECTOR

The facility has been derelict for a number of decades, with its only use being as an automobile racetrack (Vernamfield), which utilizes some of the old runways and taxiways. However, the site is believed to be in a reasonable state, with significant potential for development.



Figure 39: Drag racing at Vernamfield.  
Source <https://i.ytimg.com/vi/SnsMtxCDx9s/maxresdefault.jpg>

### 2.2.1.7. MARITIME TRANSPORTATION

There is one port existing in the Parish. This is found at Rocky Point and is privately owned and operated by Jamalco. Jamalco utilizes the facility to export Alumina and to import caustic soda and fuel oil.

Another port which operated for 200 years was also found at Salt River in the Parish. This port was used for the export of sugar to the United Kingdom but was closed in 1969 by its management, after a prolonged strike by barge operators. Remnants of the facility, including buildings and the decaying hulks of about a dozen of the barges which ferried bulk sugar to ships anchored in deeper water, are still visible today.

### 2.2.1.8. MARITIME TRANSPORTATION ISSUES AND CHALLENGES

#### 2.2.1.8.1. UNDERUTILIZATION OF THE PORT

The existing port infrastructure is significantly underutilized. The facilities are generally idle in excess of 40% of the time. This therefore means it is not maximizing on revenue and is not contributing as much as it possibly can to the local economy.

### 2.2.1.9. PUBLIC TRANSPORTATION

Public transportation in Clarendon is exclusively by road. It includes travel by route taxis, hackney carriages, stage carriages and contract carriages. The TA<sup>34</sup> is the agency charged with the responsibility for the licensing of these vehicles. At present there are several hundred vehicles operating on a number of routes within the parish. Most of these routes originate in the capital, May Pen.

### 2.2.1.10. PUBLIC TRANSPORTATION ISSUES AND CHALLENGES

#### 2.2.1.10.1. HIGH PUBLIC TRANSPORTATION COSTS

In Clarendon, travelling by public transport usually takes a big bite out of one's budget. This high public transportation cost is resulting from a combination of factors, the most significant of which is spiralling fuel prices.

<sup>34</sup>. The TA is also responsible for the regulating and monitoring of public Transportation in Jamaica.

## 2.2.1 THE TRANSPORTATION SECTOR

PPVs are entirely dependent on expensive and finite fossil fuels, and prices have been rising significantly since the mid-2000s. An almost equal influential factor in public transportation costs is the poor condition of roads. Public transportation cost also has to seek to offset the cost of damages caused to motor vehicles by bad roads.

### 2.2.1.10.2. HIGH LEVELS OF INDISCIPLINE

The local public transportation sector is characterised by mass indiscipline. It is estimated that well over 200 illegal taxi operators are plying their trade in the parish. Some of these taxi drivers are operating without licence and insurance. Others register their vehicles for private use instead of acquiring a PPV licence in an effort to circumvent the cost of the aforementioned. Daily within the sector, frequent safety violations, including reckless and dangerous driving, are observed. This puts the lives of members of the public at risk. For these reasons, there is urgent need for a comprehensive strategy to eliminate indiscipline in the local transportation sector.

### 2.2.1.10.3. INADEQUATE PARKING ARRANGEMENTS

Parking arrangement for PPVs across the Parish is inadequate. The number and capacities of the designated facilities are inadequate, and most are poorly sited and do not provide adequate facilities for the end users (See 2.2.1.3.4. Inadequate Parking Facilities, pg. 84

## 2.2.1.14. PARISH STRATEGIES

### 2.2.1.14.1. ROAD TRANSPORTATION

#### 2.2.1.14.1.1. STRATEGIC OBJECTIVE #13

**To integrate land use and transportation planning as a strategy to reduce travel demand.**

Integrated land use planning will be utilized as a key transportation sector strategy. It will be used to reduce travel demand in the Parish, as high commuting rates is an issue contributing to traffic congestion. The basic principle is that the need to travel will be minimised by fostering the development of a network of relatively self-contained settlements offering a range of housing, employment and social opportunities. These settlements will generally be in the form of growth centres which will seek to provide local services, such as education, shopping and primary health care, etc.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #98A of the Land Use Section of this Plan. See pg. 228	Short to Long Term	MTM, MSET

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.14.1.2. STRATEGIC OBJECTIVE #14

**To develop and enforce school zoning as a strategy to ensure the efficient utilization of classroom spaces, improve attendance rates, improve student learning productivity, and reduce traffic congestion and its associated economic and environmental impacts.**

School zoning is currently a policy initiative of central Government which will be embraced within the Clarendon Development Area. Under this initiative, the MEYI<sup>35</sup> is seeking to place students who sit the annual Grade Six Achievement Test (GSAT) closer to their respective home as of the 2015/2016 academic year. This policy initiative will bring a number of benefits to the parish and will therefore be supported. Such benefits will include a reduction in traffic congestion. See 3.4.4.8. Strategic Objective #133, pg. 290

### 2.2.1.14.1.3. STRATEGIC OBJECTIVE #15

**To make adequate provision for public parking to alleviate circulation issues and to support anticipated development.**

It is essential that provisions for public parking be made within several areas of the parish to alleviate circulation issues and to support anticipated development. This will include both off and on-street parking arrangements. Off-street parking facilities may include parking garages or parking lots which are adequately landscaped.\* The feasibility of charging a fee to use these facilities will be explored. On-street parking will only be permitted where it will not impede the flow of traffic and/ or constitute a safety hazard, and where such parking is allowed, the Local Planning Authority may implement control measures. Such control measures may include the installation of parking meters.

Since a fee may be charged to utilize both on and off-street parking facilities, parking provisions may be used as a measure to control travel demand. It may be used as a measure to encourage the use of public transportation and discourage the use of private passenger vehicles. However, the relevant authority will seek to ensure that fees are not too high so as to discourage individuals from using the local areas to conduct business or for other purposes.

### RECOMMENDED POLICIES

- The local Planning Authority will seek to introduce controlled parking zones where parking problems are particularly serious and are adversely affecting business operations and overall circulation.
- On-street parking will only be permitted outside of residential areas where it will not impede the flow of traffic and/ or constitute a safety hazard.
- The planning authorities will support the development of parking garages where the need arises provided that they conform to the recommended guidelines.
- Where the planning authority thinks it is necessary to protect the amenities of residential areas by means of on street parking controls, parking stickers may be issued to residents in the area.

35. Formerly the Ministry of Education.

## 2.2.1 THE TRANSPORTATION SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop parking facilities to support existing and future public parking needs, particularly within growth centres. The feasibility of charging a fee to use these facilities should be explored.	Short to Long Term	CPC, MTM, Private Sector

### 2.2.1.14.1.4. STRATEGIC OBJECTIVE #16

**To ensure that new developments are properly located and designed with adequate parking to contribute to efficient road layouts and traffic movement.**

The provision of adequate and suitably located parking is essential to ensure the efficient operation of a new development layout. It is necessary to ensure that vehicles are not parked on the carriageway or sidewalk of a road where they may impede vehicular and pedestrian traffic flow resulting in safety hazards. Consequently, new and extended developments, as well as change of uses, will be required to make provisions for adequate parking.

Developers will be required to provide off-street parking facilities. This will take the form of either dedicated spaces for individual use, as in a residential development, or car parks for the general use of visitors, customers, and staff for that development. Off-street parking facilities may be provided within the curtilage of the development or on a suitable lot within the vicinity where the aforementioned is not practical. The Planning Authority will also give due consideration to the dual use of parking areas for development where the uses alternate in terms of time and scale, and a legal agreement is made between the two organisations<sup>36</sup>. Such parking provisions will be required to conform to the minimum standards set out by the Planning Authorities, and also make provisions for the disabled.

### RECOMMENDED POLICIES

- Developers will generally be required to provide parking facilities within the curtilage of the site being developed for new and extended developments, as well as change of uses in accordance with the requirements set out by the planning authorities. Such parking provisions will ensure adequate access for the disabled.
- Where it is not feasible to provide parking to meet the local planning authority's normal requirements on site, the planning authority will consider whether it would be acceptable to have the shortfall made good on an alternative site.
- The Planning Authority will give due consideration to the dual use of parking areas for development where the uses alternate in terms of time and scale; and such uses can be made legally binding.
- All transport centres, parking lots and parking facilities shall be properly landscaped with materials which may be used as a visual medium and shall be maintained in good condition.
- The planning authorities will not approve applications for the development of transportation centres and car parks unless the proposals are accompanied by plans showing the layout and design of adequate lighting and security features.

<sup>36</sup>. For instance, the parking lot of a daytime business may be used by a night club.

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.14.1.5. STRATEGIC OBJECTIVE #17

**To support the expansion and increased use of Highway 2000 to support efficient communication and productivity.**

The Highway 2000 Project seeks to, among other things, provide direct and efficient links between the major economic centres of Jamaica and also serve as a catalyst for economic activity along the corridor. A section of the highway currently traverses the south central section of the parish and this Plan will support its expansion. Hence, development along the proposed expansion corridor will be restricted through land use planning. See 2.4.3.1.2. Strategic Objective #98K, pg. 235

In addition to supporting the expansion of Highway 2000, this Plan will encourage the operators of the highway to determine the feasibility of including more access and exit points on the current infrastructure. While the number of access and exit points have to be limited for safety, functionality and revenue generation, there is a strong case to provide on and off-ramps to allow motorists to enter the highway from Longville Park and travel to May Pen and vice versa. Providing entrance and exit ramps to facilitate efficient travel between May Pen and Longville Park, will support revenue generation, but more importantly, it will encourage residents to support of local businesses and local sustainable development.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #98K of the Land Use Section of this Plan (pg. 235).	Short to Long Term	MTM, NWA
Encourage the operators of the highway to provide on and off-ramps to allow motorists to enter the highway from Longville Park and travel to May Pen and vice versa.	Short Term	CPC, CPDCBS, MTM, Clarendon Chamber of Commerce

### 2.2.1.14.1.6. STRATEGIC OBJECTIVE #18

**To undertake a road improvement programme to support efficient communication and planned economic development activities.**

Since the quality of the road infrastructure plays a significant role in achieving local development and contribute to the overall performance and social functioning of the parish, it is imperative that a planned road improvement programme be established. Under this programme, road improvements will be undertaken through a prioritization process as it is not feasible to improve all the parts of the road network with such a need during the plan period. The highest priority will be given to providing direct and efficient links between the growth centres in the parish, as well as to selected routes which will improve accessibility to planned developments, including in the agricultural, fishing, tourism and logistics industries. Improvement works will include improving some secondary roads to arterial standards, tertiary roads to secondary standards, and bridle paths to tertiary standards. Where possible, common service ducts designed to minimise future traffic movement interruptions will be provided. This will complement the development of Highway 2000 and will help to maximize economic and social benefits.

## 2.2.1 THE TRANSPORTATION SECTOR

### RECOMMENDED POLICIES

- Road improvements will be undertaken through a prioritization process.
- The highest priority will be given to the provision of direct and efficient links between the growth centres in the parish, as well as to selected routes which will improve accessibility to planned developments.
- Where possible, road improvements will include the provision of common service ducts designed to minimise future traffic movement interruptions.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a planned road improvement programme which prioritizes road improvement works.	Short to Long Term	MTM, NWA, CPC, MICAF

#### 2.2.1.14.1.7. STRATEGIC OBJECTIVE #19

**To evaluate the potential for the use of concrete roads as a strategy to reduce the need for road maintenance.**

Lack of or inadequate road maintenance has been identified as a significant issue contributing to the poor state of some of the Parish's roads. Research has shown however that the use of concrete instead of asphalt for road surfaces can reduce the need for maintenance by almost 100 percent. In addition to that, concrete road surfaces have a lifespan of approximately 40 years, while asphalt roadways have a life of approximately 15 years. This therefore means that despite the fact that concrete roads can cost as much as three (3) times the cost of asphalt roads, the long-term cost of using concrete roads is significantly less. In May 2014, a new policy which will see bid documents for future road developments focusing on technical specifications required for the road was promulgated in Jamaica. This new policy paves the way for contractors to place bids for the construction of roads using asphalt or concrete. To this end, this plan is encouraging the evaluation of the potential for using concrete as road surfacing materials in the parish, particularly in areas where the road network is prone to damage.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Evaluate the potential for the use of concrete in road construction in the Parish.	Short to Medium Term	MTM, NWA

#### 2.2.1.14.1.8. STRATEGIC OBJECTIVE #20

**To improve way finding through the installation and proper placement of adequate directional signs.**

It is vital for visitors and locals to be provided with information and guidance to ensure they are able to navigate themselves and find their way through the urban and rural environment. Wayfinding is however proving to be a difficult task in the Plan Area due to the shortage and improper placement of directional signs.

## 2.2.1 THE TRANSPORTATION SECTOR

This situation begs the need for comprehensive programme to address these difficulties. This is particularly important in light of the fact that this Plan is promoting significant tourism development in the Parish.

This programme will focus on several different initiatives in order to achieve the objective. A major part of the programme will involve installing additional directional signs in the Parish to support wayfinding. As part of this strategy, the feasibility of placing gate or lot numbers on all properties within formal communities will be explored. Since communities and community based groups have a role to play in the provision of directional signs, they will be adequately educated. Additionally, damaged directional signs will be repaired and poorly positioned signs will be properly placed.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement a programme to address wayfinding difficulties in the Parish. This programme should seek to: educate communities and community based groups about their role in the installation of directional signs; repair damaged directional signs and reposition signs which are not properly conveying information to the public; ensure the installation of additional directional signs; and explore the feasibility of placing gate or lot numbers on all properties within formal communities.</p>	<p>Short Term</p>	<p>CPC, NWA, MTM</p>

### 2.2.1.14.1.9. STRATEGIC OBJECTIVE #21

**To make adequate provisions for pedestrians to support road safety.**

As part of this Plan, a comprehensive sidewalk programme will be implemented in the Parish. Under this programme sidewalk facilities will be constructed along all local roadways within the growth centres where such infrastructure is lacking and where they may be accommodated. Where sidewalks cannot be accommodated and the need exist the relevant authorities may make alternative arrangements, including the reservation of the entire roadway for pedestrians. Additionally, sidewalk infrastructure will be installed outside of growth centres where the need may be justified. However, roads within these areas will generally provide paved shoulders, which may be converted to sidewalks in the future. Both sidewalks and paved shoulders will be of minimum widths stipulated by the planning authorities. They will also be kept free of obstructions, including utility poles, on-street parking and street vending. Where possible, sidewalks will be complemented with planted verges and be landscaped with local flowering and ornamental shrubs.

Adequate pedestrian crossings will also be provided as part of the strategy to support pedestrian traffic. They will be installed at intersections and at other points on busy roads that would otherwise be too unsafe to cross without assistance due to vehicle numbers, speed or road widths. Additionally, pedestrian crossings will be installed where large numbers of pedestrians are attempting to cross (such as in shopping areas) or where vulnerable road users (such as school children) regularly cross.

## 2.2.1 THE TRANSPORTATION SECTOR

These pedestrian crossings may be signalled, unsignalled or overhead bridges, and will be accompanied by adequate signage to ensure their effectiveness. Where overhead pedestrian crossings are being contemplated, adequate consultations will be done with the proposed users as research has shown that a number of these facilities have been installed across Jamaica but pedestrians continue to cross along the roadways. Rules governing the usage of the pedestrian crossings to ensure safety may also be implemented. Such rules may consider forbidding motorists from proceeding before the last pedestrian has exited the roadway.

Other street furniture to ensure the comfort of pedestrians will also be installed where appropriate and where they may be accommodated. These include street side seats and benches for pedestrians to rest which will be shaded by trees, public toilets and public art. Where public toilets are installed, a fee may be charged to aid the maintenance of the facility.

### RECOMMENDED POLICIES

- Developers of large housing developments will be required to make adequate provisions for sidewalk facilities for the use and safety of pedestrians.
- Sidewalks will be of minimum widths stipulated by the planning authorities and provide access for the disabled.
- Where sidewalks cannot be accommodated and the need exist the relevant authorities may make alternative arrangements, including the reservation of the entire road for pedestrians.
- Roads outside of growth centres will generally be provided with paved shoulders, of minimum widths stipulated by the planning authorities.
- Sidewalks and paved shoulders will be kept free of obstructions, including utility poles, on-street parking and street vending.
- Where utility poles and other structures are obstructing pedestrian traffic along sidewalks, including newly constructed facilities, the relevant authority will encourage their removal.
- Where possible, sidewalks will be complemented with planted verges and be landscaped with local flowering and ornamental shrubs.
- Where overhead pedestrian crossings are being contemplated, adequate consultations will be done with the proposed users.

#### SPECIFIC ACTIONS

#### TIME FRAME

#### RESPONSIBLE AGENCIES/GROUPS

Develop and implement a comprehensive sidewalk programme in the Parish. Under this programme sidewalk facilities should be constructed along all local roadways within the growth centres where such infrastructure is lacking and where they may be accommodated, as well as outside of growth centres where the need may be justified.

Short to Long Term

MTM, CPC, NWA

## 2.2.1 THE TRANSPORTATION SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install pedestrian crossings (signalised, unsignalised or overhead bridges) at intersections and at other points on busy roads that would otherwise be too unsafe to cross without assistance due to vehicle numbers, speed or road widths, as well as where large numbers of pedestrians are attempting to cross and where vulnerable road users (such as school children) regularly cross.	Short to Medium Term	NWA, Private Sector (should seek permission from NWA)
Develop and enforce rules governing the usage of pedestrian crossings to ensure safety. Such rules may consider forbidding motorists from proceeding before the last pedestrian has exited the roadway.	Short to Medium Term	MTM, NWA, NRSC
Install other street furniture, such as tree shaded street side seats and benches for pedestrians to rest, public toilets and public art. Where public toilets are installed, a fee may be charged to aid the maintenance of the facility.	Short to Long Term	CPC

### 2.2.1.14.1.10. STRATEGIC OBJECTIVE #22

#### To reduce road accidents and fatalities in the Parish.

There is a need to significantly reduce the frequency of road accidents in the Parish. This is necessary to save lives and to make substantial savings that can translate into major economic benefits for the local society. This objective will be achieved through a wide range of intervention methods, as road accidents in the Parish are the result of a number of different causes. These interventions may be placed in one of the following categories: legislation; education; engineering; enforcement; or medical.

Both legislative and education interventions will involve the supporting of ongoing initiatives. The former will involve amending the Road Traffic Act, while the latter will involve strengthening the road safety campaign locally. At present the GOJ is seeking to amend the Road Traffic Act to foster more responsible behaviours on the nation's roads on the part of drivers, pedestrians and other road users. These amendments will be supported, and the GOJ will be encouraged to fast tract the process. Similarly, support will be given to the NRSC's public education campaign. Local media, including broadcast media and public and private institutions which produce newsletters, magazines, etc., will be encouraged to support the public education campaign by producing contents from the campaign free of cost or at specialized rates.

## 2.2.1 THE TRANSPORTATION SECTOR

The engineering interventions will focus on the safety of the road infrastructure itself. Crash hotspots in the parish will be analysed to see whether or not changes to the road layout and design may be used to reduce road accidents. The relevant authorities will however seek to ensure that any proposed changes, which may include traffic calming measures, does not cause any significant hindrance to the smooth flow of traffic. In addition to that, adequate speed signs, crash hotspot signs, pedestrian crossings, etc. will be installed to improve the safety of the road infrastructure. Furthermore, where the surface of roadways are deteriorating and may cause accidents, the relevant authorities will ensure that such roadways are addressed.

The enforcement interventions are a critical part of this overall strategy and will involve the effective enforcement of the Road Traffic Act and other road safety regulations. This will include, among other things, increasing police presence on the Parish roads. At the same time officers will seek to change the locations of their spot checks regularly so that motorist are unable to recognise a pattern. Other enforcement methods will include installing Automatic Number Plate Recognition (ANPR) systems to help detect motor vehicles operating without insurance and fitness certificates, which left the scene of an accident, or committed a traffic offence.

Unlike the previously discussed interventions, medical interventions will not seek to reduce road accidents. Rather, such interventions will seek to reduce the number of casualties from these accidents. Therefore it will mainly involve increasing the capacity of the local health sector to respond to road accidents.

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that any proposed changes to layout and design of roadways to reduce road accidents does not cause any significant hindrance to the smooth flow of traffic.
- Police officers will seek to change the locations of their spot checks regularly so that motorist are unable to recognise a pattern.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage government to speedily complete amendments to the Road Traffic Act.	Short Term	MPs, NRSC
Encourage local media, including broadcast media and public and private institutions which produce newsletters, magazines, etc., to support the NRSC's public education campaign by producing contents from the campaign free of cost or at specialized rates.	Short Term	MTM, NRSC
Analyse crash hotspots in the parish to see whether or not changes to the road layout and design may be used to reduce road accidents.	Short to Medium Term	NWA

## 2.2.1 THE TRANSPORTATION SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install adequate speed signs, crash hotspot signs, etc. to improve the safety of the road infrastructure.	Short to Medium Term	NRSC, NWA
Support Strategic Objective #21 of the Transportation section of this Plan (pg. 94)	Short to Long Term	NRSC
Repair road surfaces which are deteriorating to an extent that it may cause accidents.	Short to Long Term	NWA, CPC, MICAFA
Increase the presence of the police on the streets.	Short to Long Term	Clarendon Police Division
Support Strategic Objective #116 of the Safety and Security Section of this Plan. (pg. 268)	Short to Long Term	MTM
Support the Health Sector Strategies of this Plan.	Short to Long Term	MTM

### 2.2.1.14.1.11. STRATEGIC OBJECTIVE #23

#### To undertake public education to eliminate the burning of materials on roads.

As stated earlier, Clarendonians periodically stage unlawful protest actions which involve the cutting down of trees and the burning of tyres and other materials to block roadways. This issue must be alleviated to ensure productivity, reduce environmental damage and to safeguard the road infrastructure, since it generally disrupts the flow of traffic, cause deforestation and air pollution, and also negatively impacts on the road network. A comprehensive education programme is the best strategy to deal with this issue, and therefore it will be utilized. This programme will not merely ask residents to deter from the practice, but will also outline how this action diverts scarce resources away from other productive areas in order to clear roadways and effect repairs where necessary. It will also demonstrate the impacts of air pollution and deforestation in the local context.

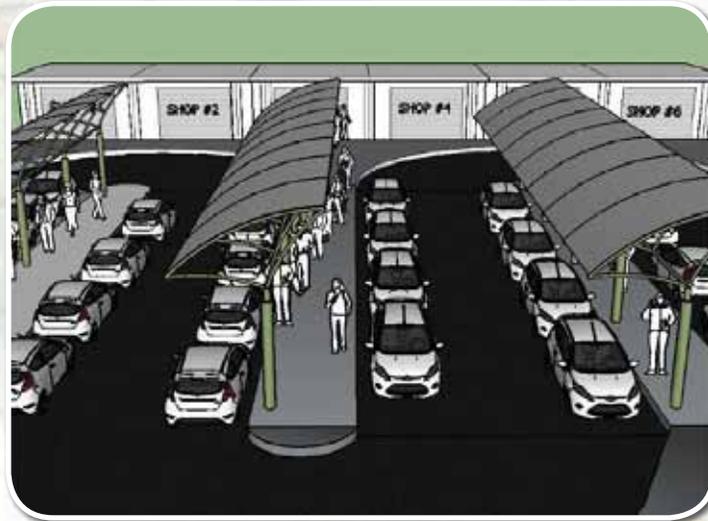
SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a public education campaign locally to educate citizens about the negative effects of burning materials on asphalt road surfaces and to discourage the act. This campaign should address the economic and environmental implications for the Parish.	Short Term	MTM, NWA, Clarendon Police Department, NEPA

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.14.2 PUBLIC TRANSPORTATION

#### 2.2.1.14.2.1 STRATEGIC OBJECTIVE #24

To ensure the provision of adequate and suitably located public transportation centres to support efficient circulation and consumer comfort.



*Figure 40: The authorities will seek to ensure that transportation centres are provided with the amenities necessary for the use and comfort of the commuters*

With this Plan placing an emphasis on public transportation, and inadequate provisions for public transportation currently contributing to circulation issues in local town centres, there is a need to ensure the development new appropriately sited transportation hubs or the upgrading of existing ones. Such undertakings may include the development of multilevel facilities, which may be shared with private parking. These transportation centres will be provided with the amenities necessary for the use and comfort of the commuters, as well as adequate lighting and security. They will also have proper signage, parking bays that are properly structured and marked and make provisions for the disabled. This strategy will help to improve the efficiency of the public transportation system, increase passenger comfort, and reduce traffic congestion and related circulation issues within local town centres.

### RECOMMENDED POLICIES

- The local planning authority will seek to ensure that transportation centres are provided with amenities necessary for the use and comfort of the commuters such as snack counters and toilet facilities and that vending activities are regulated.
- All transport facilities will be required to provide suitable access and facilities for the disabled.
- All transportation centres used by the public should be provided with the necessary public conveniences and amenities.
- The planning authorities will ensure that all transportation centres have proper signage, parking bays that are properly structured and marked.
- All transport centres shall be properly landscaped with materials which may be used as a visual medium and shall be maintained in a good condition.
- The planning authorities will not approve applications for the development of transportation centres unless the proposals are accompanied by plans showing the layout and design of adequate lighting and security features.

## 2.2.1 THE TRANSPORTATION SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop new appropriately sited transportation hubs or the upgrade existing ones as is necessary.	Short to Long Term	MTM, CPC

### 2.2.1.14.2.2. STRATEGIC OBJECTIVE #25

**To ensure the provision of adequate bus stops to support road safety and commuter comfort.**

The arbitrary picking up and letting down of passengers by public transport operators is a major safety concern. It is therefore very important that the relevant authorities make adequate provisions for these activities to improve the efficiency of the public transportation system and to safeguard public safety.

Such provisions will be in the form of designated bus stops. These bus stops will generally have lay-bys and be covered and properly maintained to enhance the general image and use of public transportation. In a similar vein, waiting conditions at existing bus stops will be improved where necessary.



Figure 41: A concept design for bus stops that may be used in Clarendon, particularly within tourism areas.

## RECOMMENDED POLICIES

- The relevant authorities will give first consideration to the installation of covered bus stops. Uncovered bus stops will generally be provided where it is not feasible to provide covered facilities.
- The local planning authority will ensure that main transport routes are provided with lay-bys at bus stop.

## 2.2.1 THE TRANSPORTATION SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install adequate bus stops along routes within the Plan Area, particularly within the growth centres.	Short to Long Term	NWA, CPC, Private Sector
Improve waiting conditions at exiting bus stops through the installation of covering, etc.	Short to Medium Term	NWA, Private Sector

### 2.2.1.14.3. RAIL TRANSPORTATION

#### 2.2.1.14.3.1. STRATEGIC OBJECTIVE #26

**To support the revitalisation of the rail service.**

The Government regards the revitalization of the rail service as an important ingredient in the development of the national transportation system. The aim is to achieve reinstatement of both passenger and freight services. At present, the Government is seeking to divest the network to support this objective, as the cost would be overwhelming for the Government itself. The revitalization of the rail service is strongly supported by locals, and it has the potential to bring significant benefits to the Parish, including an improvement in the efficiency of the transport system in the upper region, which would further provide a boost to the local agricultural sector. This Plan therefore supports initiatives to revitalize the public rail service. Local support will be provided by taking the necessary steps to preserve the existing infrastructure and reservations in the Parish.

In addition to that, this Plan is supporting the development of a heritage railway. A heritage railway is a preserved railroad which is run as a tourist attraction. In other words, it is an old railway line preserved in a state which depicts a certain period in the history of railway systems that is used for tourism purposes. With a tremendous history behind its operation, there is significant scope for the operation of a heritage railway. The railway was actually constructed in 1845, and was the first line opened to traffic outside Europe and North America<sup>37</sup>. The accompanying railway stations which were constructed between 1845 and 1896 are also of historic significance as they demonstrate the application of the Jamaica/Georgian style of architecture. Additionally, the diesel locomotives and coaches owned by the JRC are decades old and are therefore historic relics. This railway service may also put on special events such as the dining trains, where passengers are served three-course dinners on board; the historic trains, where stations are decorated with paraphernalia depicting a particular historical event, and commemorative performances are staged on the platforms; and the music trains, where local artistes and folk groups perform at the stations and on board the train. Such offerings may be complemented by the scenic route, which includes the May Pen old iron bridge.

37. The rail service was established in the United Kingdom in 1825, the US in 1830 and Canada in 1836.

## 2.2.1 THE TRANSPORTATION SECTOR

### RECOMMENDED POLICIES

- The local planning authority will take the necessary steps to preserve the existing rail infrastructure and reservations in conjunction with the relevant agency; development within the railway reservation will not be supported.
- The local planning authority will support the restoration of railway transportation facilities within the local planning area.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Continue efforts to revitalise the public railway service.	Short to Long Term	MTM
Develop a heritage railway system linking the parish with other parishes in Jamaica.	Short to Long Term	MTM, JRC, Private Sector

### 2.2.1.14.4. AIR TRANSPORTATION

#### 2.2.1.14.4.1. STRATEGIC OBJECTIVE #27

**To support the development of a local air transport sector.**

Under this Plan, a viable local air transport sector will be developed. The abandoned Vernamfield aerodrome is earmarked for significant development as part of the GLHI, which is supported by this Plan. The implementation of this planned development will position Vernamfield as Jamaica's fourth international airport, handling mainly cargo traffic. With adequate land space available, this airport can facilitate a runway of up to 14,000 feet in length, thereby enabling the handling of some of the world's largest cargo aircrafts. In addition to that, this Plan is promoting the development of a domestic airport to service the local tourism industry and the business community. This airport will serve primarily as a link between the Parish and the international airports, including those on north coast, which is the tourism capital of Jamaica. This will complement Highway 2000 and will also support government's policy to develop a multi modal transportation system.

### RECOMMENDED POLICIES

- Lands adjoining the existing aerodrome will be reserved where necessary for the expansion of the facility.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage investment in the Vernamfield aerodrome.	Short to Long Term	MTM
Explore the feasibility of developing a domestic airport to service the local tourism industry and the business community.	Medium to Long Term	Private Sector

## 2.2.1 THE TRANSPORTATION SECTOR

### 2.2.1.14.5. MARITIME TRANSPORTATION

#### 2.2.1.14.5.1. STRATEGIC OBJECTIVE #28

To encourage the shared use of the existing port facilities to maximise on the infrastructure and minimise the need for new developments.

The existing port is currently underutilized. However, with the planned development of the Parish, there is all likelihood that proposals for new port developments will be put forward. Nevertheless, there is the possibility that the proposed activities for new ports may be accommodated at the existing facility. Therefore, initiatives to introduce shared use of the existing port facility will be encouraged. Proposals for new port uses will therefore be required to demonstrate that shared use of the existing facility is not a practicable option. Where the shared use of the existing port is planned, this may require upgrading or expansion works on the facility. Adequate consideration will also be given to the environment in such developments. This overall strategy will help to maximise on the use of the existing infrastructure and preserve the natural environment.

#### RECOMMENDED POLICIES

- Lands adjoining the existing port will be reserved where possible for the expansion of these facilities.
- Proposals for new ports will be required to demonstrate that shared use of the existing facility is not a practicable option.
- The local authority in conjunction with the relevant agencies will facilitate development proposals to improve the existing port facility to modern standards and technologies as the need arises.
- Adequate consideration will be given to the environment in expansion, upgrading or development of new port facilities. Developments which will likely have an adverse impact will be resisted.

#### 2.2.1.14.5.2. STRATEGIC OBJECTIVE #29

To establish small craft facilities to support the development of the tourism sector.

The tourism sector strategy of this plan is promoting recreational boating as a part of the Parish's overall tourism product. This will require the development of the requisite facilities to support this activity. Therefore the development of facilities for small craft will be supported in appropriate locations in order to support recreational and tourist boating in the Parish. Such facilities will provide water taxi and tourist boat services, linking cays within the PBPA and the Mainland, as well as linking Clarendon with other tourism destinations on the South Coast such as Treasure Beach, Alligator Pond and Port Royal.

#### RECOMMENDED POLICIES

- The relevant authorities will support the development of facilities for small craft in appropriate locations in order to support recreational and tourist boating.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop facilities for small craft to support recreational and tourist boating.	Short to Long Term	MTM

## 2.2.2. WATER

### 2.2.2.1. OVERVIEW

#### 2.2.2.1.1. WATER SUPPLY

There are three basic water resources in the parish of Clarendon: surface water, ground water and direct rainwater. The surface and groundwater resources are dependent on the hydrostratigraphy<sup>38</sup> (See 2.1.1.3. Hydrology, pg. 42) of the parish, as well as the pattern of rainfall. Surface water is exploited from rivers and streams, while groundwater is abstracted from wells and springs, and rainwater is obtained by harvesting.

The parish's principal source of water is that of groundwater. There are 12 significant surface water sources in the parish, including Peace River, Pindars River, Rio Minho, and Pedro River, but only Peace River is considered to be a reliable source (Rural Water Supply Development Strategy, 2015). The general seasonal character of these main rivers, which is linked to the seasonal pattern of rainfall, combined with the high agricultural water demand, creates a heavy reliance on the groundwater resources. According to data obtained from the WRA, there are 428 wells in the parish. Of this number, 133 were listed as abandoned, destroyed or damaged. These wells are located mainly in the Southern Clarendon area and are owned by public and private entities. Groundwater is also obtained from the parish's 109 springs, of which 30 have been improved by the CPC through entombment (Rural Water Supply Development Strategy, 2015). These sources of water are supplemented by rainwater harvesting, which includes through 16 community catchment (Rural Water Supply Development Strategy, 2015). These catchment tanks have been placed in the elevated inland areas of the Parish, where supply from rivers and springs is lacking. Together these sources of water are mainly used for domestic, industrial and irrigational purposes.

#### 2.2.2.1.1.1. DOMESTIC WATER SUPPLY

The 2011 Population and Housing Census report revealed that domestic water sources in the Plan Area vary among public sources, private sources, springs or rivers, trucked water and other sources. Public sources provide 66.65 percent (51245 households) of the total 76 881 households in the parish with water, while private sources served 16.50 percent. The chart below provides the complete breakdown of the different water sources of domestic water within the parish.

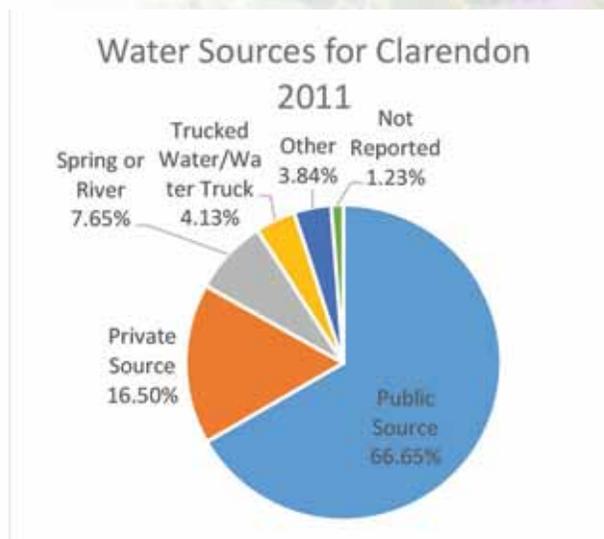


Chart 1: Water Sources for Clarendon. Created from STATIN (2011) data.

38. Type of rocks; aquifers or aquicludes.

## 2.2.2. WATER

The major sources of domestic water are public sources which include the NWC, the CPC and the NIC. As highlighted on the chart above, these agencies provide water to 66.65% per cent of the total households in the parish (STATIN, 2011). This represents a significant improvement over 2001 when the level of coverage was 45% (NWC, 2011). Of the 66.65% per cent with access to public sources of water, 54.86 percent, 24.59, 17.40 percent and 3.16 percent, have water piped into the dwelling, piped into the yard, standpipe access and catchment access respectively (STATIN, 2011). See chart 2 below.

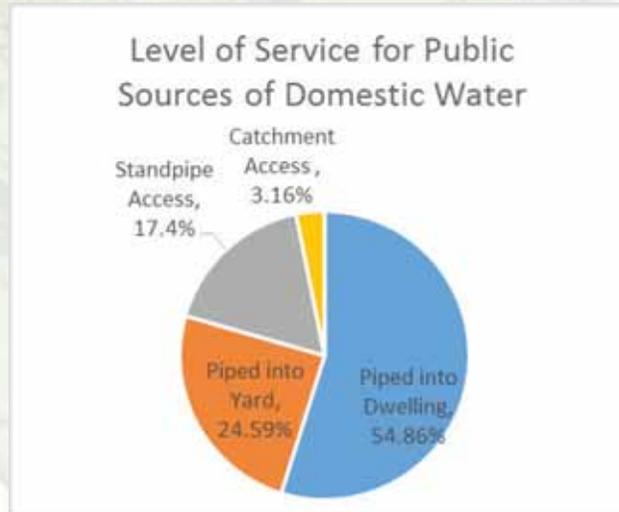


Chart 2: Level of Service for Public Sources of Domestic Water. Created from STATIN (2011) data.

The NWC produces some 420 million gallons of water per month from a network of 44 sources, which include well sources in the parish, water from river and spring sources which feed into water treatment plants (NWC, 2011). The principal source is that of groundwater, which makes up 93% of the total water production and distribution (NWC, 2011). The majority of the 32 production wells are located in the central and southern sections of the parish, with a few entombments supplying the northern section. The other 7% of water which is obtained from surface sources is from 10 springs and 2 rivers (NWC, 2011).

The CPC maintains 30 entombed springs in the parish. These springs provide local communities with access to water. Apart from maintaining the spring entombments, the Parish Council is not involved in supplying water to the public. (Rural Water Supply Development Strategy, 2015).



Figure 42: The Barnett Spring at Peckham Pass is one of the entombed springs in the Parish.

## 2.2.2. WATER

Despite the fact that the primary responsibility of the NIC is to provide water for agricultural and irrigation uses, the agency is engaged in the supplying of domestic water locally. The NIC sells water to the NWC, and also supplies potable water from its network to several local communities, including Clarendon Park and Vernamfield.

The private sources of domestic water in the parish, include individuals, companies and large farms such as Jamalco and New Yarmouth Sugar Estate. These entities provide domestic water to 16.50 percent of the households in the parish (STATIN, 2011). This provides a significant supplement to the water obtained from public sources. These private sources of water are supplied through catchments (69.68) and by piping into dwelling (30.32 percent) (STATIN, 2011).

### 2.2.2.1.1.2. IRRIGATION WATER SUPPLY

The local agriculture sector is the major consumer of water in the parish. The demand for irrigation water is quite high due to low rainfall and extensive areas of irrigable agricultural lands, especially in the southern section of the Parish (Caribbean Community Climate Change Centre (CCCCC); World Bank and WRA, 2008). According to the U.S. Southern Command (2001), agricultural water demands in the Rio Minho Basin are about 89 percent of the total demands in the basin.

Irrigation water, whilst also obtained from surface sources, is mainly supplied by wells owned by large farms. Data from the WRA showed that of the 428 wells in the parish, at least 181 were developed for irrigation purposes. The majority of these irrigation wells (97) are owned by the Sugar Company of Jamaica. In fact, it can be said that the Sugar Industry is the main consumer of water in the sector, as at least 164 of the wells are owned by entities involved in sugar production. The NIC also provides a valuable source of irrigation water. The organization owns 28 wells in the parish, and provides irrigation to over 4,500 ha of land on the Clarendon Plains<sup>39</sup>. Its system consists of irrigation canals and irrigation pipelines, located in the south-western section of the parish, just above the Gravel Hill System.



Figure 43: A section of the NIC's system in Clarendon.  
Source: <http://www.jamaicaobserver.com/assets/10418989/010.jpg>

### 2.2.2.1.1.3. INDUSTRIAL WATER SUPPLY

Water for industrial purposes is mainly obtained from private sources. Most industrial enterprises, including Jamalco, Monymusk Sugar Estates, and the New Yarmouth Sugar Estates provide their own independent water supply services. They rely mainly on the groundwater resources to meet their demand.

<sup>39</sup>. Data from the NIC, the Water Task Force (2009) and the WRA.

## 2.2.2. WATER

### 2.2.2.1.1.4. UTILITY SERVICE AREAS AND NON-UTILITY SERVICE AREAS

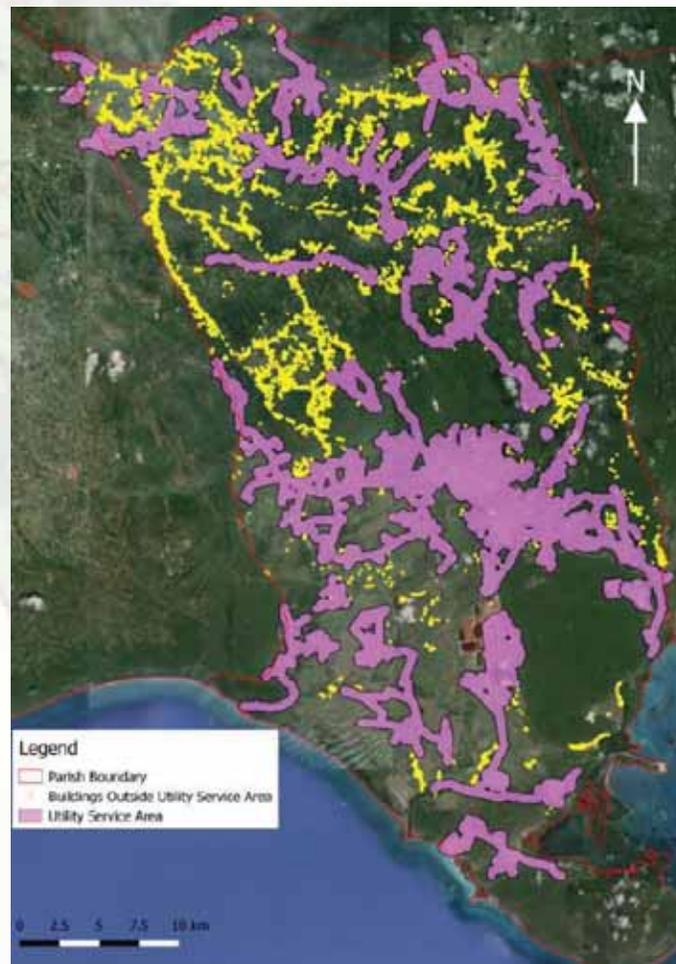


Figure 44: Utility Service Areas and Non-Utility Service Areas in Clarendon. Note: The yellow dots that represent buildings are enlarged to be easily seen on the map. Source: Rural Water Supply Development Strategy.

Of Clarendon's population of 245,103 persons, 86 percent live in Utility Service Areas (35 percent in urban area<sup>40</sup> and 51 percent in Rural Area) and 14 percent live in Non-Utility Service Areas<sup>41</sup> (Rural Water Supply Development Strategy, 2015). As indicated by the table below, the level of service in Utility Service Areas and Non-Utility Service Areas vary in the Plan Area. All the urban population have access to piped water, while 51 percent of rural residents in Utility Service Areas have piped water supply. Seventy-eight percent of rural residents in Non-Utility Service Areas use improved water sources<sup>42</sup> (31 percent use public standpipe, 40 percent rainwater harvesting systems, and 7 percent trucked water). However, 22 percent of residents in Non-Utility Service Areas in Clarendon do not have access to improved water sources (13 percent depend on river/lake/spring/pond, 1 percent on bottled water, and 8 percent on well/other/not stated).

40. All the urban population is located within utility service areas.

41. A Utility Service Area is defined as the area in which water supplied by pipe, from a utility, is expected to be the most economical way of meeting service standards. Outside the utility service area (the Non-Utility Service Area) other ways of providing water service are expected to be more economical.

42. Improved water sources includes Private Pipe, Public Standpipe, RWH and Trucked Water; Unimproved Water Source includes River/Lake/Spring/Pond, Bottled Water and Well/Other/Not Stated.

## 2.2.2. WATER

	Population	Private Pipe	Public Standpipe	RWH	Truck	River/Lake/Spring/Pond	Bottled	Well/Other/Not Stated
	#	%	%	%	%	%	%	%
Total Pop	245,103	61	12	16	3	5	0.3	3
Urban Pop	85,861	100	0	0	0	0	0.0	0
Rural Pop	159,242	40	18	24	4	8	0.5	5
Rural Pop USA	125,188	51	15	20	4	6	0.4	4
Rural Pop NUSA	34,054	0	31	40	7	13	0.8	8

Source: Rural Water Supply Development Strategy (2015)

### 2.2.2.2. ISSUES AND CHALLENGES

#### 2.2.2.2.1. DROUGHT

Like the rest of Jamaica, Clarendon usually experiences a dry season during the months of December to April, with a high possibility of drought from February to March. During this dry period, output from the surface water sources may fall by as much as 70%, resulting in a deterioration in water service to communities served by these systems (SDC, 2014). This problem is aggravated by the increased use of potable water for irrigating farm lands during such times (SDC, 2014). In addition to that, drought in the parish usually results in groundwater abstraction exceeding natural recharge, which can impact on the position of the freshwater-saline water interface and lead to saline intrusion in coastal aquifers (CCCCC; World Bank and WRA, 2008).

#### 2.2.2.2.2. CLIMATE CHANGE

It is widely recognised that climate change will impact upon the local water sector. The impacts will vary and will likely include saline intrusion, a reduction in water availability, and an increased cost to treat water for consumption purposes (CCA and DRR Project, n.d.). Under climate change, the projected increase in the length of the dry season will lead to less annual rainfall, which will in turn lead to less water available for communities supplied by spring or river sources. At the same time, the projected increase in the frequency of very intense rains will increase the amount of dirt and debris (turbidity) in surface water sources. This will mean additional work and costs to treat water for daily use. In addition to all that, this anticipated more intense but less frequent rainfall, will cause more water to simply run off the surface of the land and less to be available to replenish groundwater sources. Similarly, decreased rainfall and increased temperatures on a long term annual basis, will reduce potential groundwater recharge. This means that less water will be available and coastal aquifers will be placed under severe stress, as sea levels are also projected to rise. The raised sea levels will encourage the inland movement of the freshwater-saline water interface with respect to the existing wells, while at the same time, reduced recharge will reduce freshwater flows to the coast that are needed to maintain the equilibrium position. This means that water quality will be compromised through saline intrusion. Furthermore, climate change will lead to stronger hurricanes which will increase the threat to the local water infrastructure (pumps, wells, etc.) and increase the cost of recovery after such events.

#### 2.2.2.2.3. DOMESTIC WATER SUPPLY DEFICIT

According to the NCW (2011), the current demand for water from its system is not being met. There is a domestic water supply deficit of approximately 2.26 million gallons per day. With the population of the parish projected to increase to approximately 261 137 by 2030, without any technical improvements to the system, this deficit is projected to increase to approximately 4.98 million gallons per day (NWC, 2011).

## 2.2.2. WATER

Additionally, as highlighted earlier, the NWC's network is the primary source of domestic water in the parish but, the reliability of service to those who are served by this network is estimated to average 12 hours per day (NWC, 2011). This issue is believed to be linked to the high percentage of non-revenue water, which is estimated at 74%, with technical losses accounting for 54% of this figure (NWC, 2011). The technical losses may be attributed to the fact that the water supply network throughout the parish is aged and inefficient, leading to leakages and related technical problems (NWC, 2011). The other losses may result in part from the high incidence of water theft in the parish, as well as storage overflows (NWC, 2011).

This unacceptable level of non-revenue water has had an adverse impact on the financial performance of the NWC, and on the level of service provided to the people of the parish (NWC, 2011). The situation is exacerbated by the fact that revenue collection for the parish is very low (NWC, 2011). As a result, the National Water Commission is operating at a loss, and is often unable to find the funds required to undertake timely improvement, expansion and maintenance to its operations.

Nevertheless, the Commission has plans to undertake a number of water supply improvement works in the parish to address supply deficiencies and to improve overall operational efficiencies. The planned works will focus mainly on reducing the high levels of technical losses.

### 2.2.2.2.4. SALINE INTRUSION

Over-pumping from limestone and alluvial aquifers in the lower reaches of the Milk River and Rio Minho Basins has caused saltwater intrusion from the Caribbean Sea (U.S. Southern Command, 2001). This is believed to be the reason behind the abandonment of several wells in the southern section of the parish (Howard and Mullings, n.d.). According to the WRA (2005), it has resulted from the pre-1961 lack of control on groundwater abstraction. The extraction of freshwater from these aquifers at a rate much higher than the recharge rate has caused salt water which is hydraulically connected to the wells, to flow into the aquifers. The contaminated water has high amounts of sodium, calcium, chloride and bicarbonate, whose concentrations are believed to increase with depth (U.S. Southern Command, 2001). Studies have indicated that the reduction in abstraction brought on by the high energy cost of pumping coupled with the above average rainfall over the period 2003-2005, has led to an improvement in water quality (WRA, 2005). Yet, through the Situation Validation and Visioning Workshops, the residents of the Milk River Development Area voiced their frustration at being served salty domestic water through their taps.

Nevertheless, the MEGJC<sup>43</sup> in partnership with the PIOJ has an ongoing national aquifer recharge programme. This programme forms part of Jamaica's SPCR. Just recently (July 18, 2014), an official contract signing ceremony for a billion dollar artificial groundwater recharge system to be constructed, in the Innswood area of neighbouring St. Catherine, was held.

### 2.2.2.2.5. POLLUTION

Water pollution in the Plan Area is resulting from several sources. However, there are four (4) main ones. These are:

- I. Inadequate Domestic Sewage Treatment and Disposal- Inadequately treated domestic sewage is a threat to the parish's water resources. Both the surface and underground water are at the risk of being seriously polluted from human waste. This is believed to be stemming from the heavy dependence on on-site sewage disposal systems, including pit latrines, which are not equipped with secondary treatment facilities, as well as the geology of the Parish. See 2.1.2.3.2. Inadequate Sewage Disposal, pg. 58

43. Formerly the Ministry of Water, Land, Environment and Climate Change

## 2.2.2. WATER

II. Inappropriate use of agricultural chemicals- The inappropriate use of agro-chemicals is contaminating the local water resources (CIDA, 2002). According to the PBPAMC (2012) some local rivers, streams and gullies are somewhat eutrophic due to agricultural runoff from the use of chemicals such as pesticides, herbicides and fertilizers. The groundwater is also under threat since these chemicals may be leached through the soil.

The WRA will be seeking to collaborate with the Pesticide Control Authority (PCA) on the Caribbean Agro-Chemical Management Project (CAMP) that will attempt to describe the fate of agrochemicals in the land-water interface.

III. Soil Erosion - Deforestation, over-cultivation and inadequate soil conservation techniques in hillside farming, are resulting in increasing levels of soil erosions in some river basins, including the Rio Minho watershed. This is as a result of increasing exposure to wind and rain which are agents of erosion. The soil lost from the latter agent, often ends up in drainage channels which causes an increase in siltation. This increasing level of siltation is impacting negatively on the design life of surface water treatment facilities and also increasing the cost of treating water for consumption purposes. This siltation issue was highlighted through the Situation Validation and Visioning Workshops as one of the most significant problems in the Kellits DA.

IV. Industrial Effluent- Untreated or inadequately treated wastewater from industrial enterprises often ends up in the freshwater bodies. This is particularly from the sugar factories and their associated rum distilleries. Tailings from the bauxite/ alumina industry is also a potential threat to the water resources. See 2.1.2.3.3. Industrial Effluent Discharge. pg. 59

The other sources of water pollution identified in the parish include the improper management of pastures and livestock which is believed to be leaching nitrates in the ground water and inadequate solid and hazardous waste management which is contaminating both surface and groundwater.

### 2.2.2.2.6. WATERSHED DEGRADATION

Watershed degradation is threatening to reduce both the quantity and quality of freshwater available in Clarendon. The upper areas of the main watersheds (Rio Minho Watershed Management Unit and the Milk River Watershed Management Unit) are characterised by landslides and slope failures due to the presence of steep slopes and thin or erosive soils. These natural conditions of instability are aggravated by a number of human activities, including improper agricultural practices, such as over-cultivation of steep slopes, illegal quarrying, deforestation, informal developments and bushfires. These issues are resulting in the heavy siltation of rivers, reduced water quality, increased surface runoff, increased flooding, reduced storage and availability of water, and a number of other watershed related issues.

The Rio Minho Watershed is currently regarded as one of four (4) severely degraded watersheds<sup>44</sup> in Jamaica. Based on this state of degradation, in addition to increasing water demands from population growth and agricultural activities, it was projected that the Rio Minho Watershed should have had a water supply deficit by the year 2015.

### 2.2.2.2.7. LIMITED CONSERVATION AND USE OF ALTERNATIVE SOURCES OF WATER

The local freshwater resources are severely challenged to the extent where there is expected to be a water supply deficit within the Rio Minho Hydrologic Basin. This is a situation which underscores the need to develop alternative sources of water and to conserve the parish's freshwater resources. Despite this, there continues to be a heavy reliance on freshwater and limited application of conservation measures.

<sup>44</sup> The others are the Wag Water in St Mary, Yallahs River in St Thomas and Hope River in St Andrew.

## 2.2.2. WATER

The freshwater, particularly groundwater, is abstracted for all uses in the parish, including domestic, irrigational and industrial use, some of which can be satisfied with other sources of water. In a similar vein, the use of municipal water for non-potable use is an issue; the utility companies usually incur a significant cost to treat and distribute water, large portions of which are used for secondary or non-potable uses such as flushing toilets, washing cars and irrigating lands. Added to this, is the fact that the local water infrastructure is characterised by technical issues, including leakages, which result in the wastage of freshwater. Furthermore, the application of water conservation technologies and practices within the parish is quite limited, and standpipes and flat rate systems have been identified as major sources of water abuse. At the Water Sector Meeting, a representative of one of the utility companies described these systems as “licences to waste water”.

### 2.2.2.2.8. UNCOORDINATED DEVELOPMENT

The provision of potable water to all Clarendonians is a complex and costly undertaking, particularly for the NWC. Population growth coupled with growing, unplanned developments in various pockets across the parish, means that portable water infrastructure continuously has to play catch up with service demands. The challenge presented by this situation is amplified by the fact that much of these settlements are developing in areas relatively far away from the available water sources, including Non-Utility Service Areas. As such, distribution systems have to be developed over rugged and wooded terrain, saddling the utility companies with very high infrastructural cost and electricity bills, as electrical equipment is used to pump water to hilly areas.

### 2.2.2.2.9. VANDALISM, TAMPERING AND THEFT OF WATER INFRASTRUCTURE

Through the Situation Validation and Visioning Workshops, residents alleged that in some instances, water issues within some sections of the Plan area is as a result of vandalism, tampering or theft of the local water infrastructure. They claim that unscrupulous individuals periodically damage water tanks and catchment areas, resulting in low water pressure or complete loss of water supply. They also asserted that in other instances, people tamper with the system to divert the water from one district to another. This latter issue stems from the fact that potable water is a scarce resource in some of these communities, resulting in access only on specified days. Additionally, thieves periodically remove parts of the water infrastructure, including pumps, pipes and valves, in the parish, resulting in disruption in water supply. Just recently (March 2014), a water pump was removed from the NWC pump station in Crofts Hill (The Gleaner, 2014).

### 2.2.2.2.10. TRESPASSING ON THE WORKS OF THE UTILITY COMPANIES

Trespassing on the works of the utility companies, particularly the NWC, is also a major issue in the parish. This is despite it being a criminal offence under law. Trespassing in the parish includes making illegal connections, meter bypassing, and meter tampering. Meter tampering thrives particularly within informal settlements due to the fact that the utility companies do not have the human resources to effectively police the local water infrastructure. These activities have been identified as issues contributing to the high levels of non-revenue water in the parish. Added to this issue is the fact that most of the illegal connections are characterised by improper plumbing, which increases water loss. Trespassing not only robs the agencies of much needed revenue to maintain and expand their services but also reduces the amount of water available to supply paying customers.

### 2.2.2.2.11. HIGH RATES OF DELINQUENCY ON WATER BILLS

Both the NWC and the NIC are suffering from high levels of delinquency on water bill payments. Their operations and maintenance cost should be met from charges paid by the users of their systems, but high levels of delinquency means that the agencies’ abilities to provide efficient levels of services to the residents are severely challenged.

## 2.2.2. WATER

According to the NWC (2011), in the past, numerous attempts have been made to collect on long-standing arrears. These attempts included disconnections, amnesties, write-offs, payment arrangements, public education and persuasion, police operations, among other initiatives. However, according to the agency, most of these efforts have proven futile. At the Water Sector Meeting, it was unanimously agreed that in some cases, residents are willing to pay their bills but their ability to pay is an issue. However, it was also agreed that in other cases, residents have the ability to pay but the culture of non-payment is a concern.

### 2.2.2.5. PARISH STRATEGIES

#### 2.2.2.5.1. STRATEGIC OBJECTIVE #30

**To encourage the concentration of growth and development particularly within utility service areas to ensure access to piped water supplies and to minimize the cost of providing the utility.**

Growth and development will be concentrated through the establishment of growth centres to ensure access to basic water services for all. This is to stem the issue of uncoordinated development which is posing a threat to the provision of services to all residents and also increasing the cost of providing the utility. This will involve limiting growth and the expansion of development within Non-Utility Service Areas and encourage the concentration of developments within Utility Service Areas. It will be achieved through the enforcement of land use policies, including those stipulated in the Clarendon Parish Development Order. Such policies will see urban development concentrated within eight (8) growth centres. This will reduce the need to expand the water infrastructure over extended rugged terrains. See 2.4.3.1.1. Strategic Objective #98A, pg. 228

#### 2.2.2.5.2. STRATEGIC OBJECTIVE #31

**To reduce the high percentage of non-revenue water through system upgrades and maintenance in order to make more water available to customers and to conserve the parish's scarce water resources.**

A significant portion of Clarendon's water woes will be eliminated with upgrading and maintenance works to existing public supply systems. According to the NWC (2011), technical water losses currently accounts for approximately 54% of the total water produced by its systems in the parish, and therefore improving the efficiency of these systems should make more water available to customers. Similar benefits may be obtained from other public supply systems, including the NIC's. System upgrades and maintenance works will include identifying and repairing leaks in the shortest possible times, replacing aged pipelines to minimise leakages, conducting pressure adjustments where necessary to prevent breakage, repairing malfunctioning valves, and other related activities. In some cases, these activities will require residents to make timely reports to the responsible agencies, and the water utility companies will be required to coordinate their response efforts with other parties, such as the NWA, to prevent conflicts. This overall strategy will reduce the high percentage of non-revenue water through technical losses and also improve the reliability of service to the existing customers. It should further reduce the costs incurred by the utility companies.

### RECOMMENDED POLICIES

- The water utility companies will cooperate and coordinate with the relevant authorities in the development of initiatives to improve and maintain the public water supply network.
- The water utility companies will seek to repair all leaks/broken pipelines within the shortest possible time in order to conserve the water resources.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Undertake water supply improvement and maintenance works in the parish where necessary to address supply deficiencies and to improve overall operational efficiencies.	Short to Long Term	NWC, NIC, CPC
Develop an efficient network for reporting of leakages. This network may incorporate reporting by texting, calling, emailing, and website reporting. It may also be in the form of a leaks hotline.	Short Term	NWC, CPC
Encourage the public to report all leaks to the responsible agencies, within the shortest possible time.	Short Term	NWC, CPC, CDCs
Encourage residents to repair leaks on private properties within the shortest possible time.	Short Term	NWC, CPC, CDCs

### 2.2.2.5.3 STRATEGIC OBJECTIVE #32

**To expand the services of the NWC in Utility Service Areas to increase access to reliable, safe, and affordable piped water.**

In unison with the GOJ's policy that everyone in Utility Service Areas will have reliable, safe, and affordable water piped to their residences by 2020, this plan promotes an expansion in the NWC's network to reach all rural residents in Utility Service Areas. About 49 percent of rural residents within these areas do not have access to piped water supply on their properties and many of these residents will be reached by the planned expansions in the NWC parish plan. However, the agency will also need to develop additional plans for further extensions. The agency will also be required to coordinate with other agencies, such as the NWA, to prevent conflicts.

### RECOMMENDED POLICIES

- The NWC will cooperate and coordinate with the relevant authorities in developing and undertaking service extension works.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Expand the piped water supply system to reach all rural residents in Utility Service Areas.	Short to Long Term	NWC, CPC

## 2.2.2. WATER

### 2.2.2.5.4. STRATEGIC OBJECTIVE #33

**To encourage the use of alternative sources of water in order to conserve the parish's limited supply of freshwater and to increase access to improved water supplies.**

Alternative sources of water will be used to satisfy some of the increasing demand and reduce the pressure on the freshwater resources. The freshwater resources are severely challenged by climate change, as well as increasing demand from population growth and agricultural activities. With the local population continuing to increase and this plan promoting major growth in the agriculture sector, the strain on the water resources will become even greater. Therefore water recycling and rainwater harvesting, which are two sustainable alternatives, will be promoted.

#### 2.2.2.5.4.1. STRATEGIC OBJECTIVE #33A

**To promote the use of recycled water as an alternative source of water.**

Water recycling, which is the use of treated or untreated wastewater, can be used to satisfy much of the parish's water demands. It has been proven to be effective and successful in creating a new and reliable water supply, while reducing wastewater discharge, pollution and energy required for pumping piped water, and not compromising public health. Water recycling will therefore be promoted for non-potable uses, including agricultural and land scape irrigation, industrial processes, toilet flushing, vehicle washing and replenishing a ground water basin. This will involve the reuse of grey water on site, and the reuse of municipal waste water from central treatment systems. The level of treatment recommended will be based on the use intended. That is, in uses where there is a greater chance of human exposure to the water, more treatment will be required. This programme will however require a public education programme as there may be opposition from some quarters.

### RECOMMENDED POLICIES

- The use of recycled water for irrigation purposes within the local agriculture sector will be strongly encouraged.
- The NIC will explore the feasibility of using greywater as one of its sources.
- New and existing developments having large landscaped grounds, golf courses, etc. will be encouraged to make provision for the use of recycled water to irrigate these areas.
- The use of recycled grey water for secondary uses in buildings will be encouraged and provision should be made for this in development proposals.
- The relevant authorities will seek to upgrade existing sewage treatment plants to provide highly treated recycled water where feasible.
- The relevant authorities will encourage wastewater treatment system designs which will provide highly treated recycled water in development proposals.
- The use of recycled water in the car washing industry will be strongly encouraged.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Implement an educational programme to promote water recycling and water reclamation. This program should highlight all the potential benefits of the schemes, and also reduce doubts about health impacts.	Short term	MEGJC, WRA, CPC

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install water recycling systems at public facilities such as schools, libraries and community centres to serve as demonstration facilities.	Short to Medium Term	GOJ
Provide technical guidance to the public in the development of water recycling systems. This should include the level of treatment recommended based on the use intended.	Short to Long Term	CPC, WRA
Provide training in water recycling. Colleges and vocational training institutions should also be encouraged to develop water recycling courses for students in disciplines such as natural resources, environmental sciences, architecture and engineering.	Short to Long Term	Colleges and Training Institutions
Prepare planners and building officers at the CPC to assess building applications which make provisions for water recycling initiatives.	Short Term	MLGCD, CPC
Encourage government to develop a water recycling policy.	Short Term	WRA, CPC, MPs,

### 2.2.2.5.4.2. STRATEGIC OBJECTIVE #33B

#### To promote rainwater harvesting as a supplementary source of water.

Like water recycling, rainwater harvesting will be encouraged as a supplementary source of water in the parish. Rainwater harvesting is a simple and low cost water supply technique which involves the capturing of rainwater from surfaces on which rain has fallen (including the ground) and the subsequent storing of this water for later use. It is currently being promoted by the GOJ and its use will be encouraged locally for both potable and non-potable uses including domestic, agricultural, industrial and environmental purposes. In order to maximise on its potential, the GOJ will be encouraged to fast track the rainwater harvesting policy and make it mandatory for all developments<sup>45</sup>, including those which are connected to public supply systems, to make provisions for rainwater harvesting. In addition, several water deficient areas in non-utility service areas will be encouraged to use rainwater harvesting as their primary source of domestic water. Water catchments will also be developed or rehabilitated to serve some rural communities and farmers will be encouraged to capture and store surface runoff for use in the agricultural sector. Both active and passive rainwater harvesting<sup>46</sup> will be promoted in the parish. However, the relevant authorities will ensure that rainwater harvesting is done on a balanced basis as rainwater is also the source of water for rivers and groundwater.

<sup>45</sup>. Developments in this case include residential, commercial, institutional, agricultural, and industrial facilities.

<sup>46</sup>. Active rainwater harvesting refers to systems that actively collect, filter, store and reuse water, while passive rainwater harvesting incorporates no mechanical methods of collecting, cleaning and storing rainwater. The intent with passive rainwater harvesting is to create areas to contain waters until they can naturally be absorbed into the land.

## 2.2.2. WATER

Rainwater harvesting will provide a number of significant economic, social and environmental benefits to the Plan Area. It will reduce the reliance on the existing public supply systems (including for non-potable uses), which will improve reliability and may also lessen the need to increase the water storage infrastructure. This will in turn reduce the demand on the groundwater resources, thus limiting the possibility of depletion. In addition to that, collecting and using harvested rainwater will decrease the size of customers' water bills. Moreover, rainwater harvesting will help to reduce flooding in low lying areas, and soil erosion and sedimentation of surface water sources within the parish. It should however be noted that rainwater harvesting facilities may require relatively large storage capacities in light of the fact that Clarendon generally receives rainfall lower than the national average.



Figure 45: A rainwater harvesting system on a warehouse facility.  
Source: [http://www.conserve-energy-future.com/Advantages\\_Disadvantages\\_Rainwater\\_Harvesting.php](http://www.conserve-energy-future.com/Advantages_Disadvantages_Rainwater_Harvesting.php)



Figure 46: Earth ponds are low cost rainwater harvesting systems which may be utilised in the Parish, particularly within the agriculture sector.  
Source: <http://www.kenyarainwater.org/rain/index.php/2015-05-06-10-29-18/photo-gallery>

### RECOMMENDED POLICIES

- Rainwater harvesting may be promoted as the primary source of domestic water in water deficient areas outside of Utility Service Areas.
- New and existing developments, including those which are served with a piped domestic water supply system will be encouraged to make provisions for rainwater harvesting.
- The use of harvested rainwater for irrigation purposes, including agricultural irrigation, will be strongly encouraged.
- The development of catchments for the provision of water (including irrigation water) to rural and remote areas will be supported, provided that there will be no adverse environmental impact.
- The development of catchments and other large rainwater harvesting facilities will require permission from the relevant authorities.
- The relevant authorities will ensure that rainwater harvesting in the parish is balanced to prevent implications of inadequate flows for river and groundwater systems.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the GOJ to fast track the rainwater harvesting policy.	Short Term	MPs, CPC, CPDCBS, WRA
Develop a rainwater harvesting manual to be utilised in the parish.	Short Term	CPC, WRA
Use both formal and informal educational strategies to promote rainwater harvesting. Formal education should involve classroom teaching in schools, colleges and other educational institutions, starting at the early childhood level, while informal education should include discussions with citizens and local groups, as well as at seminars and community events.	Short to Medium Term	Educational Institutions, MEG-JC, MICAFA, MEYI, WRA, CPC
Provide training in rainwater harvesting. Colleges and vocational training institutions should also develop rainwater harvesting courses for students in disciplines such as natural resources, environmental sciences, architecture and engineering.	Short to Long Term	Colleges and Training Institutions
Make materials for the development of rainwater harvesting systems more readily available.	Short to Long Term	Private Sector, GOJ
Support the creation of irrigation channels parallel to agricultural property boundaries and roadways to store surface runoff to be utilised for irrigation purposes.	Short to Long Term	NIC, MEGJC
Identify, reserve and establish specific lands in strategic locations across the Parish for use as water catchment and reservoir facilities.	Short to Long Term	Short to Medium Term
Construct rainwater catchments and rehabilitate existing systems which are out of use to provide adequate irrigation water.	Short to Long Term	CPC, Rural Water Supply Limited (RWSL)

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage bankers and other mortgage lenders to provide loans for the installation of rainwater harvesting systems on homes and businesses.	Short to Medium Term	GOJ
Install rainwater harvesting systems at public facilities such as schools, libraries, clinics and community centres to serve as demonstration facilities.	Short to Medium Term	GOJ

### 2.2.2.5.5. STRATEGIC OBJECTIVE #34

**To rationalize the use of standpipes in order to conserve water and improve access to potable water.**



Figure 47: An electronic swipe card stand pipe.  
Source: <https://vicwater.org.au/>

Rationalizing the use of standpipes within the Plan Area is very important to conserving the parish's scarce water resources and improving access to potable water. It is believed that standpipes in Clarendon contribute to the wastage of water, with many being located more than 100 metres from the homes of a number of users. This contradicts the GOJ's policy. It is therefore necessary to reduce the use of standpipes by expanding the public water supply network where possible (that is, in rural utility service areas) and increase the use of alternative sources of water, particularly rainwater harvesting. These activities will therefore be supported and the authorities will carry out an audit of standpipes in the parish to determine whether they are needed and are being used for the correct purposes. Where the findings suggest that there is no longer a need because there is access to water, such standpipes will be removed. In situations where individual access to water is absent and standpipes are being systematically abused, high priority will be given to the development of community water systems with individual access or the promotion of individual rainwater harvesting. However, in cases where it is found that standpipes are essential, the relevant authorities will seek to develop systems which limit the amount of water available through metering. Against this background, social programs will be developed to ensure that poor households and vulnerable groups can afford the cost of the basic water services.

## 2.2.2. WATER

### RECOMMENDED POLICIES

- The use of water from standpipes for non-domestic purposes will be strongly resisted.
- The use of standpipes will be a last resort in areas where there is access to water.
- High priority will be given to the development of community water systems with individual access or the promotion of individual rainwater harvesting in areas where standpipes are being systematically abused.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #32 and #33 of this document. See pgs. 113 - 118	Short to Long Term	NWC, CPC, MLGCD, MEGJC, RWSL
Carry out an audit of standpipes in the parish to determine whether they are needed and are being used for the correct purposes.	Short to Medium Term	CPC, RWSL
With consultation, remove standpipes from areas where there is access to water and encourage those served by these standpipes to get connected to the public supply systems.	Medium Term	CPC, RWSL
Develop social programs to ensure that poor households and vulnerable groups can afford the cost of the basic water services.	Short to Long Term	CPC, NWC, RWSL, Ministry of Labour and Social Security (MLSS)
Introduce metered standpipes, including smartcard-accessed standpipes, where there is a need for the service.	Medium to Long Term	CPC, RWSL

#### 2.2.2.5.6. STRATEGIC OBJECTIVE #35

**To reduce water consumption patterns as a means of conserving the parish's limited freshwater resources.**

Water conservation is an integral part of the strategy to manage the parish's limited freshwater resources. With the parish experiencing increasing water demands, conservation is necessary to adjust current water use/consumption patterns to maximise on the existing water supplies. This will be achieved through changes in behaviour, the issuing of fines for wastage, and the use of sustainable technologies. An extensive education and outreach program will be developed, and adequate incentives will be provided for the installation of water-efficient fixtures in homes, businesses, etc.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Launch an extensive education program to encourage water conservation in homes, schools, government entities, businesses, etc. This program should highlight the water supply issues being faced in the parish, those issues which are projected to impact on the parish in light of climate change, and the benefits to be derived.</p>	<p>Short Term</p>	<p>WRA, CPC, NEPA, NIC, NWC, MEGJC, C-CAM, JET</p>
<p>Introduce fines for wasteful activities such as using a hose without a shut-off nozzle to wash a car, overflowing tanks and abusing standpipes. This may be achieved through a ticketing system.</p>	<p>Short Term</p>	<p>MEGJC, CPC</p>
<p>Provide appropriate incentives for the installation of water-efficient fixtures, such as water saving aerators and low flush toilets, in homes and businesses.</p>	<p>Short to Medium Term</p>	<p>MEGJC</p>

### 2.2.2.5.7. STRATEGIC OBJECTIVE #36

**To reverse the impacts of saline intrusion through artificial aquifer recharge programmes and to manage the groundwater resources in a sustainable manner.**

Artificial aquifer recharge is very critical to improving water quality and ensuring an adequate and sustainable water supply in the parish. It is essential for the reversal of the effects of saline intrusion in the freshwater aquifers on the Clarendon Plains, and for storing excess water during wet periods to make abstraction more sustainable, especially during dry seasons. It follows that the aquifer recharge programme of the MEGJC and the PIOJ will be strongly supported in the parish. The use of both treated greywater and harvested rainwater will be supported for such initiatives. This will be supported by a public education programme as ignorance related to the use of greywater may be met with opposition. The relevant authorities will also continue to monitor groundwater abstraction rates to ensure that the aquifers are not overexploited.

### RECOMMENDED POLICIES

- The relevant authorities will continue to monitor groundwater levels, particularly during long dry spells, to ensure that abstraction rates do not exceed that of replenishment.
- The use of groundwater management methods such as the development of vegetative swales and dry creek beds will be strongly encouraged.
- The relevant authorities will support the use of adequately treated wastewater and harvested rainwater for artificial aquifer recharge.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an aquifer recharge programme for the parish of Clarendon. This programme should be used to address the issues of saline intrusion and incorporates aquifer storage and recovery to ensure sustainability of the groundwater resources.	Short to Long Term	MEGJC
Educate the public about using treated grey water for aquifer recharge.	Short to Medium Term	MEGJC, Ministry of Health (MOH), NEPA, WRA, Clarendon Health Department
Encourage the use of dry creek beds in landscaping efforts.	Short Term	ODPEM, CPC

### 2.2.2.5.8. STRATEGIC OBJECTIVE #37

#### To promote the storage of water to improve drought resiliency.

In order to improve drought resiliency, there is a need to make adequate amounts of water available at times when it would not naturally be. Whilst this plan is promoting a number of strategies, including rainwater harvesting, water recycling and water conservation, which are aimed at sustainably managing the local water resources, these practices by themselves will not adequately achieve this objective and mitigate against the impacts of droughts within the parish. Hence, storage interventions will be promoted as a complementary approach to these methods. See 2.3.9.11. Strategic Objective #87, pg. 208

### 2.2.2.5.9. STRATEGIC OBJECTIVE #38

#### To improve water accountability through improved metering and theft reduction.

Accounting for water is essential to ensuring that the water resources are being managed in a sustainable way and utility companies are operating efficiently. This is best achieved when the use of water from public systems is metered and the incidences of theft are minimised. Metering will help to identify losses due to leakages and theft and also provides the foundation on which to build an equitable rate structure to ensure adequate revenue to operate the system. To this end, the metering of all pipes attached to public supply systems will be supported. This includes those which are flat rates, as well as standpipes. Additionally, old inefficient meters will be replaced by new and more efficient ones. Activities aimed at ridding the parish of illegal connections and minimizing persistent theft of water will also be intensified. These activities will involve identifying illegal connections and working with law enforcement to remove such connections and providing incentives to encourage residents to report illegal connections.

### RECOMMENDED POLICIES

- The utility companies will seek to increase monitoring efforts in order to minimize persistent theft of water through illegal connections and reconnections.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install meters on all pipes attached to public supply systems.	Short to Long Term	NWC, CPC, NIC
Replace all old inaccurate meters with new and more efficient ones.	Short to Medium Term	NWC, NIC
Provide appropriate incentives to encourage residents to report illegal connections. Such incentives may include the provision of free service for a limited period. This may however require a limit to the amount of “free water” that is supplied to beneficiaries.	Short Term	NWC, NIC, MEGJC, CPC
Work with law enforcement to identify and remove illegal connections to public water supply systems.	Short Term	NWC, NIC
Encourage the police to treat water theft as a serious crime.	Short Term	NWC, NIC, Ministry of National Security (MNS)

### 2.2.2.5.10. STRATEGIC OBJECTIVE #39

**To improve billing and reduce delinquency in order to ensure the financial sustainability of the utility service providers.**

The improved consistent billing of customers is critical for ensuring the financial sustainability of the NWC and for achieving cost recovery, in light of the fact that the agency is seeking to expand its services and improve efficiency. Therefore, in communities such as Curatoe Hill where residents do not pay for the utility service, the NWC will seek to develop a suitable rate structure. Social programs will be developed to ensure that poor households and vulnerable groups can afford the cost of basic water services. Additionally, the agency will explore the feasibility of both phasing out flat rates where such systems exist, and implementing smartcard-accessed standpipes. Such programmes will however require adequate consultations and the support of the political directorate.

At the same time, activities aimed at reducing delinquency, which is robbing the utility providers of much needed revenues, will be intensified. These activities will involve raising public awareness of the cost of providing water and encouraging the NWC to enforce its right to sell goods or assets of a delinquent customer in order to recover outstanding balances.

### RECOMMENDED POLICIES

- The NWC will seek to enforce its right to sell any goods or asset of a delinquent customer in order to recover outstanding balances.
- The relevant stakeholders will support the phasing out of flat rates where feasible.

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise public awareness of the cost incurred by the utility providers to treat water and to maintain the infrastructure.	Short Term	MEGJC, NWC, NIC, CPC
Sensitise the public about NWC's right to sell any goods or asset of a delinquent customer in order to recover outstanding balances and its intentions to enforce such rights.	Short Term	NWC, MEGJC
Develop social programs to ensure that poor households and vulnerable groups can afford the cost of basic water services.	Short to Medium Term	NWC, CPC, MLSS, MEGJC, Private Sector, JSIF, Benevolent Societies

### 2.2.2.5.11. STRATEGIC OBJECTIVE #40

**To prevent vandalism and theft of water infrastructure to prevent supply disruptions and economic cost to the utility service providers.**

Vandalism and theft must be reduced in order for the utility companies to provide an efficient level of service and also to ensure their financial viability. Anti-theft and anti-vandal activities will be implemented in the parish as part of the water sector strategy. The approach includes encouraging neighbourhood watch groups to take the lead in preventing vandalism and theft, and installing fencing (including high voltage electric fencing) and surveillance cameras to protect critical sections of the local water infrastructure.

### RECOMMENDED POLICIES

- The relevant authorities will support the installation of high voltage electric fencing to protect critical sections of the local water infrastructure, provided that the appropriate design is utilised and adequate warning signs are in place.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage neighbourhood watch groups to take the initiative to reduce/prevent the vandalism of and theft of the local water infrastructure.	Short Term	Clarendon Police Division, NWC, NIC, CPC
Install fencing, including high voltage electric fencing to protect critical parts of the local water infrastructure that may be subject to theft.	Short to Long Term	NWC, NIC, CPC

## 2.2.2. WATER

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install surveillance cameras on properties where critical parts of the local water infrastructure that may be subject to theft exist.	Short to Long Term	NWC, NIC, CPC
Install anti-theft water devices where practical.	Short to Long Term	NWC, NIC, CPC

### 2.2.2.5.12. STRATEGIC OBJECTIVE #41

**To undertake integrated watershed management to reduce water pollution and watershed degradation.**

Water pollution and the overall degradation of watersheds in the parish underscores a need to improve planning and coordination within watersheds. This will be achieved through an integrated approach to watershed management. In this context, Integrated Watershed Management refers to the application of principles and methods for the rational and integrated use of the natural resources of the watershed, aimed at achieving optimal and sustained production of those resources with minimum damage to the environment. It simultaneously considers all elements of the natural and socio-economic systems. That is, drainage basins, surface water, ground water, upstream and downstream activities; land use and land practices, economic activity and social development; governance and institutional capacity. This approach will be fostered mainly through the implementation of the Natural Environment Strategy, the Waste Management Strategy, and the Land Use Strategy of the CLSDP.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the Strategic Objectives of the Natural Environment, Waste Management and Land Use sections of this plan. See pgs. 65-82, 155-173, 226-235	Short to Long Term	NWC, WRA, CPC, RWSL, MLGCD

### 2.2.2.5.13. STRATEGIC OBJECTIVE #42

**To investigate the potential for water utility companies to generate their own source of energy.**

The water utility companies generally obtain their source of energy from electricity sold by the Jamaica Public Service Company Limited (JPS). The cost of electricity obtained from the JPS is generally high, accounting for as much as 97 percent of the cost of producing water (The Gleaner, 2014). There may be scope for lowering this cost by using alternative sources of energy. Therefore the water utility companies will seek to explore the feasibility of generating their own electricity from renewable sources.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of generating electricity from alternative sources of energy to be used in producing water.	Short to Medium Term	NWC, NIC

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.1. THE IMPORTANCE OF ENERGY TO LOCAL SUSTAINABLE DEVELOPMENT

The availability of energy contributes to comfortable living and is necessary for business and other activities. Energy is an essential input in all production processes, and is fundamental to the provision of social services that contribute to the well-being of urban and rural populations. The modes by which energy is produced, distributed and consumed also have wide-ranging implications for the long-term sustainability of the environment.

### 2.2.3.2. THE LOCAL ENERGY NEEDS AND SUPPLIES

The local energy sector may be broadly considered to include imported petroleum (crude oil) and refined petroleum products, electricity supply, renewable energy and other energy sources. The parish of Clarendon, like the rest of Jamaica, is highly dependent on imported crude oil. The provision of reliable and sustained energy is primarily the responsibility of the JPS<sup>48</sup>, which is an integrated electric utility company and the sole distributor of electricity in Jamaica. The Company is engaged in the generation, transmission and distribution of electricity, and also purchases power from five Independent Power Producers (IPPs), including the local bauxite/ alumina company Jamalco. The electric utility company owns and operates: 4 power stations, 9 hydroelectric plants, 1 windfarm, 46 substations and approximately 14,000 kilometres of distribution and transmission lines across Jamaica. The 4 power stations, which utilize crude oil for electricity generation, are the main sources of the JPS. None of these power generation units is located in Clarendon, but several of the substations are found in the parish. Users of the company's service include households, commercial and industrial enterprises, and streetlight accounts. Other major energy needs are satisfied mainly by petroleum, refined petroleum products, wood, charcoal, and renewables, such as solar power.

### 2.2.3.2.1. HOUSEHOLD ENERGY

#### 2.2.3.2.1.1. SOURCE OF LIGHTING

Total Households	Source of Lighting			
	Electricity	Kerosene	Other	Not Reported
76881	68882	6024	681	1294

Source: STATIN (2011)

The table above shows the results of the 2011 population and housing census. The census revealed that electricity was the major source of lighting for households in Clarendon. Some 68 882 or approximately 89.6% percent of the 76 881 households within the parish have access to the commodity. This figure is below the national average which stands at approximately 91% percent, and also well below the national target of 100 percent access. The census also revealed that kerosene was the second most dominant source of lighting at 7.8% percent. Other sources, not specifically identified, are used by 681 households, while 1294 households did not report a source.

48. The JPS operates under an electricity licence, with approval from the Office of Utilities Regulation (OUR). The OUR is an independent regulatory agency with responsibility for the electricity sector.

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.2.1.2. SOURCE OF FUEL FOR COOKING

Type of Fuel Used for Cooking	Number of Households
LPG	49547
Electric	292
Wood	10832
Charcoal	14317
Kerosene	44
Other	58
No Cooking Done	1062
Not Reported	729
<b>TOTAL</b>	<b>76881</b>

Source: STATIN (2011)

The table above shows the sources of fuel for cooking by households in the parish. Of the total number of households, 64.4 percent or 49 547 use liquid petroleum gas (LPG) for cooking; 18.6 percent or 14 317 use charcoal; 14.1 percent or 10 832 use wood; 0.4 percent or 292 use electricity; and 0.08 percent use other sources of fuel for the said purpose.

### 2.2.3.2.2. STREET LIGHTING

The presence of streetlights promotes safety and security in both urban and rural areas and increases the quality of life by artificially extending the hours in which activities that require light can take place. It is therefore a very important resource, whose provision in Clarendon is a function of the MLGCD, through the CPC. Funding for this service is generated mainly through property tax. At present, there are several hundred streetlights, including solar streetlights and traditional sodium lamps, installed across the parish. Access to this infrastructure varies across urban and rural areas. The JPS is responsible for the maintenance and repair of these streetlights. Defective lights are reported to the CPC, which collates the data and sends it to the electric utility company. The JPS is then responsible for executing the repairs in accordance with the Streetlight Protocol agreed with the MLGCD.

### 2.2.3.2.3. OTHER MAJOR ENERGY NEEDS

In addition to households, the local productive sector, especially the transportation and bauxite/alumina sectors, are major consumers of energy. Energy used in the transportation sector includes energy consumed in moving people and goods by road, rail, and water. This energy is mainly in the form of petroleum, including gasoline and diesel oil, which are the most expensive fuels. The parish is highly dependent on automobile transportation which means that the consumption rates of these fuels are quite high. Similarly, the bauxite/alumina sector is energy intensive. The Jamalco processing plant in Halse Hall which is believed to be the most energy-efficient Jamaican plant uses about 1.7 barrels of oil to produce a tonne of alumina. With the facility producing in the region of one million metric tonnes of alumina per year, the energy consumption level may also be viewed as unsustainable.

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.3. THE LOCAL ENERGY SECTOR ISSUES AND CHALLENGES

#### 2.2.3.3.1. HEAVY RELIANCE ON CRUDE OIL

Clarendon is heavily dependent on imported oil for its energy needs. Petroleum or crude oil is the chief source of energy for all local energy requirements, including lighting, cooking, heating, cooling and transport. This renders the parish vulnerable to disruptions in its energy supply as well as to increases in the price of oil, such as the one that took place from 2002 to 2012 when the average annual spot peak price of crude oil on the international market increased by 420 percent from USD 25 per barrel to USD 105. This is due to the fact that both the prices and supply of crude oil are tied to several complex factors at the global level, and geopolitical instability can create surges and depressions. In addition to that, the price of petroleum is projected to remain relatively high into 2030 (see Chart below), which will have serious implications for poverty reduction and business competitiveness in the parish, as well as for Jamaica's inflation rate and balance of payments. Furthermore, crude oil is a non-renewable resource and the demand especially from developing countries like China and India is increasing continuously at a rapid rate which means that supplies are dwindling and will eventually become exhausted. Moreover, their use produces large amounts of carbon dioxide and other greenhouse gases and therefore contributes to climate change.

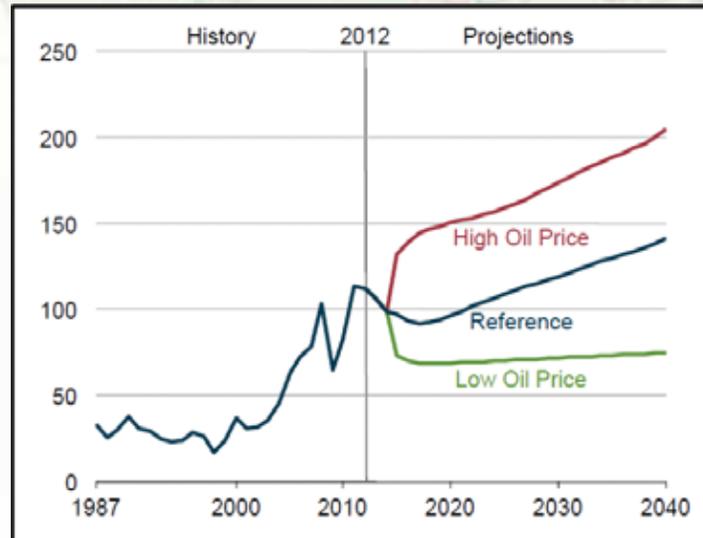


Chart 3: Past and projected oil prices. Source: U.S. Energy Information (2014)

However, there are ongoing programs in place to address these issues. The GOJ recently announced its decision to hedge against a sharp increase in the price of petroleum on the world market. This involves the raising of 6.4 billion dollars through the imposition of a \$7 per litre tax on petrol to assist in paying for a hedging contract. In addition to that, the Government started an energy policy approach in 2004, focussing on the fuel diversification and renewable energies, among other things. This led to the development of the National Energy Policy 2009-2030. Energy security is also an integral part of the strategy to achieve economic prosperity, as set out by Vision 2030 which has become Government Policy. The implementation of both the National Energy Policy 2009-2030 and Vision 2030 is seeing the Government making a concerted push to reduce the use of oil through the use of more renewable energy. There are plans for WRB Energy to develop a photovoltaic power station at Content Village in Clarendon, which will sell electricity directly to the JPS. This is one of three projects<sup>49</sup> that will produce 115 megawatt (MW) of renewable energy to Jamaica. Furthermore, the NEPA has developed air quality standards to address the issue of air pollution.

49. Recently (February 2011) ground was broken for the construction of 36.3 MW wind farm at Malvern, St Elizabeth and the Wigton III, a 24MW expansion plant, part of the Petroleum Corporation of Jamaica (PCJ) Wigton wind farm, was also launched.

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.3.2. INCREASING DEMANDS AND HIGH CONSUMPTION RATES

The local energy demand is growing and is projected to continue growing over the next few decades. The population of the parish has been increasing which inevitably means that the demand for energy is growing, as every additional person requires an additional amount of energy. In addition to that, economic expansion and improvements in standards of living also fuel local energy demands. With the parish's population growth projected to continue into 2030, and this plan seeking to boost economic development and per capita income, the demand for energy may exceed the current supply. This therefore means that there is a need to conserve the available resources and increase the current supply of energy in the parish to reduce the deficit between current supply and projected demand.

Added to this issue however, is the fact that the parish is very inefficient in its use of energy; the local bauxite/alumina industry and the transportation sector are energy intensive, the public electricity system is inefficient, and there is little enhancement through retrofits and capital improvements in the economic sectors. Furthermore, households continue to utilize cheap energy intensive appliances and equipment due to ignorance. They also often disregard simple practices such as turning lights off when not in use. Together, these factors are resulting in very high energy consumption rates. There is some amount of intervention, mainly at the national level. Energy conservation and efficiency are integral parts of the National Energy Policy 2009-2030 and the Energy section of Vision 2030. The National Energy Conservation and Efficiency Policy, which is a sub-sector policy of the National Energy Policy 2009 – 2030, was also developed in 2010. A number of programmes and initiatives have been implemented at the national level under these policies and plan, as well as before their development. The table below shows several of these major programmes and initiatives. Additionally, the OUR's Generation Expansion Plan 2010 has recognised that there is a need to increase electricity generation in order to satisfy future demands. The document concludes that unless new generation capacity is introduced to cover the emerging gap between electricity demand and supply, the Jamaican electricity sector will be under severe pressure in the coming years, with unfavourable consequences for the overall economy. This plan gave rise to the 360 MW power plant which the JPS was initially granted the right to build, own, and operate. However, the process have been constantly plagued by delays. See 2.2.3.3.3. High Electricity Cost, pg. 129

Programme	Financed by	Period	Main Priorities	Achievements
Project for Energy Conservation and Efficiency in the Public Sector	Inter-American Development Bank (IDB) and GOJ	2010-2011	To evaluate energy conservation in the public sector and develop plans to implement corrective measures.	Assessment of energy costs and patterns are in progress.
Programme of Environmental Management in Hospitals and Schools	United Nations Development Programme (UNDP) and GOJ	2006	To "kick-start" energy conservation activities in the public sector, particularly hospitals and schools.	Energy audits showed potential annual savings of about USD 1.8 million at investment costs of roughly USD 3.6 million.
Household compact fluorescent lamp (CFL), Distribution Programme	Republic of Cuba and GOJ	2006-2007	Providing "state-led" intervention in energy efficiency measures at the household level	Estimated load reduction in 80 MW of demand or 48,500 MW of electricity, as well as large-scale acceptance of the product and its benefits by the general public.
Jamaica Demand Side Management Programme, JDSMP	World Bank/ GEF and GOJ	1994-1998	Demonstrating a broad-based utility demand side management (DSM) programme	Reduction of the electric load by almost 1.7MW and electricity savings of approximately 5,350MW per year.

Source: Binger (2011)

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.3.3. HIGH ELECTRICITY COST

The price of electricity is arguably the largest energy related issue within the Plan Area. It is being lamented by both residential and commercial customers of the JPS in the parish, with the former alluding to its impact on disposable income and the latter viewing it as prohibitive to growth and competitiveness and doing business overall. According to Environmental Solutions Limited (>>>>), the cost of electricity in Jamaica is relatively high compared to the cost in key competing jurisdictions, including the Caribbean. The average electricity price paid by Jamaican residential customers in 2013 was roughly J\$38 (US\$0.35) per kilowatt-hour (kWh), ranking amongst the highest in the world (Caribbean Policy Research Institute (CaPRI), 2014).

The main factors driving high electricity prices in Jamaica are fuel choices, fuel prices, fuel conversion inefficiencies and high distribution losses (Jamaica Productivity Centre, 2010). About 93% of Jamaica's power is generated from imported crude oil which is one of the most expensive fuels, when compared to alternatives such as coal and natural gas (CaPRI, 2014). In addition to that, the price of crude oil has generally been on an upward trend over the last two decades, and projections are for the price to remain high into 2030 (see graph above). Crude oil prices moved from US\$14.38 per barrel in 1998 to US\$79.36 per barrel in 2009 and US\$104.10 in 2013. Correspondingly, the average rate charged by the JPSCo for electricity increased from J\$4.06 per KWh in 1998 to J\$21.44 per KWh in 2009 and J\$38 in 2013<sup>50</sup>. Furthermore, the steam generating units are the foundation units of the JPS generating system, and are often referred to as the base load units (Binger, 2011). These units are fairly old and are characterised by extremely low generation efficiency of around 29 percent (see the table below) (Binger, 2011). Effectively, approximately 71 % of the expensive imported oil is released as heat, resulting in a significant economic loss and increasing air polluting emissions (Environmental Solutions Limited, (>>>>)). Moreover, the transmission and distribution network in Jamaica is characterised by line losses of up to 23 percent (Binger, 2011). This is attributed in part to technical losses due to load increases as well as in non-technical losses, primarily theft, which are estimated to be approximately 10 percent of the energy supplied by the JPS (Binger, 2011). This places pressure on an already inefficient generation system and makes the existing grid very inefficient (Binger, 2011).

**Age Distribution of Electricity Generation Plants**

Age	Operator	Capacity/ MW	Percentage
Less than 5 years	JPS	184.7	28.1
5-15 years	JPS	220.5	25.4
16-30 years	JPS	64	7.4
Older than 30 years	JPS	355.4	39.1

Source: Binger (2011)

Major attempts to bring cheaper electricity to consumers have been constantly plagued by delays. In 2011, the JPS was granted the right to build, own, and operate a 360 MW combined cycle plant which would have replaced 292 MW of older generating plants. This new plant was expected to be between 40 and 50% more efficient than the old plant which it was to replace (CaPRI, 2014).

50. It should be noted that since 2015, the price of crude oil has declined dramatically to record low levels, and as a consequence the price of electricity in Jamaica has also witnessed a significant decline. However, world oil prices are projected to rebound.

## 2.2.3. THE ENERGY SECTOR

However, the efforts of the electric utility company were thwarted after the JPS and the project company, South Jamaica Power Company Limited (SJPC) missed three deadlines to provide certain critical information to the regulator, the OUR. The project was recently revived and Azurest-Cambridge won the bid to construct the plant. However the company failed to pay its bid bond for the project and was later disqualified. Energy World International (EWI), a company whose inclusion among the list of four bidders was shrouded in controversy, was then named by the OUR as the preferred bidder. However, on May 5, 2014, the GOJ revoked the licence offered to EWI on the basis that the company failed to post an agreed US\$36.855 million performance bond. Shortly afterwards, the establishment of the Electricity Sector Enterprise Team (ESET) to oversee the project was announced. The team has revealed that the anticipated 30 per cent reduction in electricity costs will now be achieved through the implementation of, not one, but several projects, beginning in 2015. The projects, to include new base load generating plants constructed by several entities, including the JPS, Jamalco and Alumina Partners of Jamaica (ALPART), are expected to all be in place by 2018. The JPS has proposed to convert, by 2015, the Bogue Power Station in Montego Bay, St James, to burn gas and replace the existing 292- MW heavy fuel oil power plants at Old Harbour in St Catherine and Hunts Bay in St Andrew with a 190MW gas turbine plant, fuelled with liquid natural gas; ALPART has proposed the development of a new 140MW gas facility in 2017 which utilizes ethane; and Jamalco has proposed to develop a 50 MW coal fired co-generation facility (The Gleaner, 2014). The ESET confirmed in February 2015 that it has signed off on the proposals of the JPS and ALPART, but is still in negotiations with Jamalco (Nationwide 90FM – Jamaica, 2015).

### 2.2.3.3.4. HIGH RATES OF ELECTRICITY THEFT

The theft of electricity is another major energy related issue within the Plan Area. Non-technical system losses in the parish, which is caused mainly by electricity theft, reached approximately 40 percent in 2014 (JPS, 2015). This is abnormally high, as non-technical losses in Jamaica, which are also very high by regional standards, averages approximately 13 percent. Statistics released by the JPS further revealed that the parish of Clarendon is joint third with St James in terms of the percentage of electricity lost to theft in Jamaica; that is 8% (Campbell, 2014). The incidences of electricity theft in the parish, are believed to be mainly in the form of meter tampering, line taps and illegal connections. A JPS commissioned study revealed that there are three major factors influencing electricity theft: poverty, violence and the actual cost for light bills (The Gleaner, 2009).

The high rates of electricity theft in Clarendon is having a number of negative implications. These include lost earnings for the JPS which is lowering profits and further causing a shortage of funds for investment in power system improvements (Hall, 2013). It is also increasing the cost of electricity for customers, as the costs incurred by the JPS from electricity theft are factored into electricity bills since technical losses are lower than the system loss target set by the OUR (CAPRI, 2014). Added to this issue is the fact that the JPS says on average, illegal consumers use three times the amount of electricity used by paying customers as there is no reason to conserve. Furthermore, the JPS often claims that their distribution network experiences low voltages as a result of illegal connections. This overloading of the system has the potential to cause electrical fires and can also damage appliances and equipment. Furthermore, electricity theft is causing safety related issues for residents of the parish, as according to the Squatter Management Unit (SMU) (2008) from casual observations, it would appear that a large number of illegal connections in informal settlements within the parish are carelessly undertaken and pose a perennial threat to settlers, who are being exposed to the risk of electrocution.

Over the last few years, the JPS has been aggressively seeking to reduce the rate of electricity theft right across the island. Efforts thus far by the electric utility company include:

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- the development of an e-mail hotline, stoptheft@jpsco.com, to report electricity theft, which is been used as a source of intelligence in the fight against electricity thieves;
- partnering with the police to carry out operations to remove illegal connections and arrest perpetrators;
- partnering with Crime Stop Jamaica to pay rewards of up to \$100,000 for reports that lead to the successful discovery of illegal connections, the recovery of lost revenue and / or the arrest of persons responsible for the theft;
- the regularisation of connections and the use of the Residential Advanced Metering Infrastructure (RAMI) and the Commercial Advanced Metering Infrastructure (CAMI);
- the development of social intervention programmes to increase the ability to pay bills; and
- partnering with the GOJ to establish a Committee, chaired by Junior Energy Minister, Julian Robinson, to address the problem of electricity theft.

The light and power company is currently partnering with the World Bank, and the US-based entity, Impact Lab, to develop a digital application to detect electricity theft, which it expects to launch by the end of the first quarter of 2015. It is also undertaking a pilot programme for prepaid electricity and also intensifying its campaign for stiffer penalties<sup>51</sup> for persons found guilty of illegally abstracting electricity. Nonetheless, the JPS is reporting that electricity theft in Clarendon is trending down. Speaking at the official launch of the Rocky Point Regularisation Programme on March 13, 2015, Vice President of Community Renewal and Energy Solutions at the JPS, Keith Garvey, told the audience that since 2014, when the company began intervention measures across the parish, non-technical losses, due primarily to theft, have fallen from 40 per cent to 33 per cent (JPS, 2015).

### 2.2.3.3.5. FREQUENT AND UNSCHEDULED POWER OUTAGES

According to the SDC (2014), electricity service in the parish of Clarendon is gravely marred by frequent and unscheduled power outages. This issue is usually linked to a number of different factors including bad/severe weather conditions, infrastructural problems and criminal activities; the last of which generally involves the theft of oil and cables from JPS' power plants or substations. This problem not only has the potential to damage electrical appliances, but can also lower productivity, as electricity is an important input in almost all local productive processes.

The company recently (February 2015) announced that its customers can expect reduced power outages and shorter outage times, as the company has invested J\$65-million to improve its service reliability (Jamaica Observer, 2015). This investment involves the implementation of the distribution automation technology which allows faults on distribution main lines to be isolated, while the power is routed around troubled spots, thereby minimising service disruptions to customers. The company also believes that this will improve the response to reports of faults from 70 minutes and more to approximately five minutes for those circuits that have the technology (Jamaica Observer, 2015). The technology encompasses automatic switches, 41 of which have been installed within 8 parishes, including Clarendon.

### 2.2.3.3.6. VULNERABILITY OF ELECTRICITY INFRASTRUCTURE TO NATURAL HAZARDS

Like the rest of Jamaica, Clarendon's power or electricity infrastructure is predominantly erected on land. This makes it vulnerable to damages from natural events, particularly hurricanes and tropical storms, as the parish is vulnerable to destructive weather events. See 2.3.3.1. Hydro-Meteorological Hazards, pg. 181 In the past, hurricanes and tropical storms have had disastrous impacts on the generation, transmission and distribution network of the JPS. The high winds and heavy rainfall associated with these weather systems, as well as landslides induced by prolonged rainfall, have displaced or damaged power plants, power lines, transmission lines and transformers.

51. Minister of Science, Technology, Energy and Mining, Hon. Phillip Paulwell, announced in 2014 that the Government is moving to impose tougher penalties for persons found guilty of electricity theft, as the new electricity legislation which will place greater emphasis on discouraging persons from stealing electricity was slated to be promulgated in the said year.

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This has cost the light and power company millions of US dollars to repair the damaged infrastructure after such events<sup>52</sup>. It has also inflicted heavy socioeconomic costs on other stakeholders of the parish, as power outages sometime lasted for weeks, resulting in the spoilage of refrigerated goods and completely shutting down production at some businesses. It has also caused disruptions in the use of critical infrastructure such as the road and telecommunication networks, and the water supply systems. There is a need to develop a stable electricity infrastructure in the parish; one that can withstand the impacts of natural hazards.

### 2.2.3.3.7. UNCOORDINATED DEVELOPMENT

There are several rural areas within Clarendon that are still without access to electricity. These areas are generally isolated and are the result of uncoordinated development. They have low housing densities and require the development of infrastructure over rugged and wooded terrains. These conditions serve as disincentives for the development of the requisite infrastructure, as the cost would be overwhelming for JPS and the low densities mean that returns would also be very low. Hence, it wouldn't be financially viable for the JPS to extend the national grid to these local areas.

This is an issue however which is being addressed by the Rural Electrification Programme (REP) Limited. The REP Limited was incorporated as an Executing agency of the government in 1975 with the specific mandate to expand the reach of electricity supply to rural areas, where the provision of such services would not be economically viable for commercial providers of electricity. The REP constructs electrical distribution poles and lines in un-electrified areas and provides house wiring assistance through a loan programme to householders<sup>53</sup>. Since its inception, several districts in Clarendon have benefited from this programme. These districts include Krall/Peckham, Gravel Lane, Havana Heights and Maxwell Street. Nevertheless, there is a need to ensure that the establishment of new settlements with similar characteristics is limited.

The uncoordinated development in the Parish is also leading to inefficient energy consumption within the transportation sector. It is resulting in high levels of travel demand which stems from the fact that most residents have to access essential services outside their local areas. This further contributes to air pollution.

### 2.2.3.3.8. INADEQUATE MAINTENANCE OF STREET LIGHTS

According to the former Minister of Local Government and Community Development, Mr. Noel Arcsott, the archaic system for monitoring, repairing and replacing damaged streetlights is ineffective, as many streetlights across Jamaica are now defective (Reynolds-Baker, 2014). This holds true for the parish of Clarendon, as for extended periods, a number of streetlights have been observed or reported to be out of service or in a state of disrepair. Some bulbs have blown whilst others are missing, and the shades of some are broken, missing or badly discoloured. This has led to poor lighting in the areas where the inadequacies exist. In addition, the sensor on some streetlights frequently malfunctions and results in day burning which increases the costs or bill for the service.

### 2.2.3.3.9. VANDALISM OF STREETLIGHTS

It is alleged that vandals have been damaging streetlights and thereby interfering with lighting in the Plan Area. A number of theories have been put forward by residents in an attempt to explain such actions. These include the senseless acts of some residents (generally young men), as well as the need to reduce lighting to foster criminal activities. Regardless of the reasons behind this issue, it is costing the Government and is also negatively impacting on safety and productivity.

*52. In June 2007, the OUR granted JPS permission to recover a percentage of the costs associated with damages caused by Hurricane Ivan in 2004, and a percentage of the total amount was charged to customers over a two-year period (2007 – 2009).*

*53. Through a Revolving Fund, the REP also offers house wiring assistance to householders in electrified areas. The mandate of the Agency was also expanded in 2003 to include the Urban Electrification Regularization Programme, aimed at minimizing unauthorised connection in urban communities.*

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### 2.2.3.3.10. HEAVY RELIANCE ON WOOD AND CHARCOAL

As highlighted earlier, 18.6 percent or 14 317 of the households within Clarendon use charcoal as their source of fuel for cooking, while 14.1 per cent or 10 832 use wood for the same purpose. This effectively means that 32.7 percent of the local population depends on the local forest resources to satisfy their energy needs. This is creating a heavy strain on the local forest resources, and further leading to deforestation and watershed degradation particularly within Northern Clarendon, as only a few conscious efforts have been made to replant trees in the parish. In addition to that, the burning of charcoal is resulting in the release of carbon monoxide in the atmosphere. Carbon monoxide is a greenhouse gas capable of mixing with the haemoglobin in blood, ultimately leading to death. This therefore means that charcoal burning is contributing to climate change, as well as putting the health of Clarendonians at risk.

### 2.2.3.6. PARISH STRATEGIES

#### 2.2.3.6.1. STRATEGIC OBJECTIVE #43

**To encourage the concentration of growth and development particularly within areas close to the national electricity grid to ensure access to electricity and to minimize the cost of providing the utility.**

The establishment of growth centres in Clarendon is a vital part of the process to ensure access to electricity for all. The designation of growth centres will limit population growth within isolated areas and encourage the concentration of developments within areas close to the national grid. This will be achieved through the enforcement of land use policies, including those stipulated in the Clarendon Parish Development Order. Such policies will see urban development concentrated within eight (8) growth centres. This will reduce the need to expand the national grid over long rugged terrains. It will also reduce the strain on the REP. See 2.4.3.1.1. Strategic Objective #98A, pg. 228

#### 2.2.3.6.2. STRATEGIC OBJECTIVE #44

**To ensure that all rural areas have access to electricity and street lighting in order to support productivity and social well-being.**

The provision of electricity to all Clarendonians will continue to pose a significant challenge. There are several remote or isolated rural areas in the parish which are also sparsely populated and to which it wouldn't be feasible for the JPS to extend the national electricity grid. As such, this plan recommends the expansion of the REP in the parish. It also strongly recommends the use of small decentralised renewable energy systems within some of these areas, as extension of the national grid by the REP will still not be feasible. This will serve to minimize the cost associated with the development of infrastructure over long difficult terrains, in addition to providing the general benefits of using renewable energy.

Similarly, the provisions of adequate street lighting to some areas by the local authority will not be feasible due to their dispersed settlement patterns. An alternative approach which includes several innovative strategies will therefore be utilized. These strategies include encouraging local groups to seek funding from non-traditional sources for the installation of solar street lights, and encouraging rural residents and business owners to place lighting at their gates to support the efforts of the local planning authority in areas lacking streetlights, and where it may not be feasible to install these lights. In the latter case, the use of Light Emitting Diode (LED) lighting will be strongly encouraged as they are one of the most energy efficient lighting available, while in the former case appropriate security measures will be put in place to minimise the potential for theft and vandalism.

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### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure universal access to electricity within the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of developing and implementing of off-grid rural electrification programs in specific areas of the parish by using solar or wind energy. This will be most important for isolated areas that lack utility power lines, and in which it would be a costly venture to develop the requisite infrastructure.	Short to Long Term	REP Limited, JPS
Encourage rural residents to invest in solar electricity where possible to reduce the need for a centralised system.	Short Term	MSET, REP
Encourage local groups to seek funding from non-traditional sources for the installation of solar street lights. The installation of solar streetlights should be accompanied by adequate anti-theft or anti-vandalism measures, which may include attaching closed circuit television (CCTV) cameras.	Short Term	CPC, MLGCD
Encourage rural residents and business owners to place lighting at their gates to support the efforts of the local planning authority in areas lacking streetlights, and where it may not be feasible to install the infrastructure.	Short Term	CPC

#### 2.2.3.6.3. STRATEGIC OBJECTIVE #45

**To promote energy efficiency and conservation in order to reduce the local energy demand and its associated costs and to promote positive environmental values within the Parish.**

A combination of energy efficiency and energy conservation is a critical part of the local sustainable development strategy. It is necessary to reduce the local energy demand and its associated costs, to promote positive environmental values within the Clarendon Development Area, and to ensure that an adequate supply of non-renewable energy is available for the future. This plan therefore promotes energy efficiency and conservation through several different programmes and initiatives, ranging from technological

## 2.2.3. THE ENERGY SECTOR

applications to good consumption patterns. Public sector entities will be encouraged to lead from the front in developing and implementing energy efficiency measures.

Energy efficiency will be encouraged in the parish through the design, siting, orientation, and layout of new buildings, and the retrofitting of existing structures. These are factors which play a key role in regulating the temperature and illumination of a building, and will therefore be considered in the strategy to reduce local energy demands<sup>54</sup>. The relevant authorities will also be encouraged to fast track the new National Building Code for Jamaica, as well as the Building Act, which will make energy efficiency in buildings enforceable. Additional activities, such as the provision of training, which support this strategy will also be undertaken in the parish.

Both energy efficiency and energy conservation will be encouraged locally through best practices. Energy efficiency in this context will involve encouraging locals, including household and businesses, to use more energy efficient technologies in their operations, while energy conservation will involve encouraging the use of less energy through behavioural changes. Some of these techniques will be quite simple and will be able to be implemented immediately, while others will require careful planning and may have high initial costs<sup>55</sup>.

### RECOMMENDED POLICIES

- The relevant authorities will support the establishment of the new National Building Code.
- The relevant authorities will support the passage of the Building Act.
- The local planning authority will give consideration to energy efficiency in assessing the design of development applications especially as it relates to the use of natural lighting and conservation techniques.
- Public sector entities will seek to lead from the front in developing and implementing energy efficiency measures.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage Government to fast track the new National Building Code, as well as the passage of the Building Act.	Short Term	CPC, MPs
Continuously conduct current and best practices research in order to identify international best practices which may be incorporated in local energy efficiency and conservation strategies.	Short to Long Term	MSET

54. The proper placement of windows and skylights as well as the use of architectural features that reflect light into a building can reduce the need for artificial lighting. Similarly, topography, which can determine wind patterns, energy efficient landscaping, appropriate building materials, energy efficient roof designs, open layouts, and properly placed windows can be utilized to provide a cooling effect and to direct flow of wind, which will minimize energy usage for artificial cooling. Furthermore, energy consumption may be minimised with the installation of energy efficient electrical fixtures and equipment.

55. These usually have the highest gains in the long run.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop an education awareness programme to educate the local population about energy efficient building designs and encourage their application.</p>	<p>Short Term</p>	<p>MSET, CPC</p>
<p>Provide education and technical training for technicians, including draughtsmen, in energy efficient building designs.</p>	<p>Short to Long Term</p>	<p>Universities and Training Institutions</p>
<p>Support and assist in the establishment of Energy Service Companies that derive their income by generating energy savings for their clients.</p>	<p>Short to Medium Term</p>	<p>GOJ, Private Sector</p>
<p>Encourage and support the introduction of building envelope measures such as window tinting, and window and door sealing that reduce the heat gain of the buildings; roof insulation, and other measures, such as automatic door closers, occupancy sensors and programmable thermostats, that reduce energy losses or improve efficiency within buildings.</p>	<p>Short Term</p>	<p>MSET, CPC</p>
<p>Encourage financial institutions and other possible funding agencies to develop a programme to provide loans and grants for energy retrofitting initiatives for homes and businesses. A green revolving fund for local businesses wishing to improve energy efficiency may also be establish. This may coincide with the fund to be established for alternative energy system developments by businesses. See 4.1.5.8. Strategic Objective #164, pg. 352</p>	<p>Short Term</p>	<p>GOJ, MSET, Clarendon Chamber of Commerce</p>

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop an incentive program for energy efficient building designs within the Plan Area. This incentive may include reduced property taxes, reduced development application fees, and an express development approval time.</p>	<p>Short to Medium Term</p>	<p>CPC, MSET</p>
<p>Train staff at the CPC to handle building inspections and development applications which are centred on energy efficiency.</p>	<p>Short Term</p>	<p>CPC, MSET</p>
<p>Provide access to clear and consistent information on energy efficient products, including appliances and equipment.</p>	<p>Short to Long Term</p>	<p>MSET, Private Sector</p>
<p>Create forums to showcase and promote the use of energy efficient technologies.</p>	<p>Short to Long Term</p>	<p>Private Sector, MSET</p>
<p>Develop and implement programmes to influence market behaviours towards the purchase of energy-efficient appliances, equipment, and other products and services.</p>	<p>Short Term</p>	<p>MSET</p>
<p>Ensure an adequate supply of energy efficient products, goods and services. This may include the provision of incentives for the importation of such products, as well as the establishment of networks and partnerships with Government, the private sector and academia to promote the development of energy efficient technologies.</p>	<p>Short to Long Term</p>	<p>GOJ, Private Sector, Tertiary Institutions</p>
<p>Encourage dealers to provide an incentive for the purchase of energy efficient appliances, equipment, etc., as opposed to their non-energy efficient counterparts.</p>	<p>Short to Medium Term</p>	<p>MSET</p>

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Create a local public education program outlining ways to save energy at home, at school or in the workplace through behavioural changes.	Short Term	MSET, CPC, JPS
Support the creation and use of energy conservation toolkits for all local schools.	Short to Medium Term	MSET
Promote the use of light sensors for public restrooms, parking lots, recreational spaces and other public facilities, as a means of reducing unnecessary usage.	Short Term	MSET, CPC

### 2.2.3.6.4. STRATEGIC OBJECTIVE #46

**To promote the use of renewable energy sources in order to reduce the heavy dependence on imported crude oil, as well as its associated costs, and to ensure local energy security.**

The Energy Sector Plan of Vision 2030 as well as the National Energy Policy 2009-2030 recognize that more of Jamaica's energy requirements will have to be produced from renewable sources. This is in order to reduce the heavy dependence on imported crude oil, as well as its associated cost and environmental impacts, and to ensure national energy security. An important aspect of the development of the local energy sector will therefore be the development of renewable energy sources from local resources. The exploitation of these sources will alleviate several of the issues plaguing the local energy sector, as well as other local sectors including the environment, and will therefore provide a number of benefits to Clarendon. To this end, consideration will be given to the protection of optimal areas for such energy generation from sterilization and to development proposals for renewable energy. The GOJ will also be encouraged to explore the feasibility of implementing net metering, whilst the awareness of net billing which is already implemented will be increased. A green revolving fund will also be established for local businesses wishing to develop renewable energy systems.

The use of solar energy will be highly promoted. Solar power is currently the most utilized source of renewable energy in Clarendon, but its use is generally on an individual basis and in most instances as a supplementary energy source. However, it has been applied to the generation of commercial electricity around the world, with the largest plant being a 392 MW facility located in California. With the NHT providing loans to customers who seek to purchase solar water systems and solar panels, and the parish generally recording low levels of rainfall, there is considerable scope for increasing the application of solar energy at both the individual and commercial levels. The increased use of solar energy will therefore be promoted, including through policy implementation. This includes the use of both decentralised and centralised solar photovoltaic systems which supply individual and the national grid.

Similarly, there is significant potential for wind energy generation in the parish and its application will be encouraged. Wind energy is currently seen as one of the most promising renewable energy sources in Jamaica, as the distributed nature of the wind resource means that generators can be placed close to demand centres, cutting transmission losses.

## 2.2.3. THE ENERGY SECTOR

The modular nature of wind farms and the speed of their construction also give planning flexibility. Furthermore, agriculture and grazing uses can continue within farm sites, and therefore wind farm leases can be seen as a supplement to agricultural incomes. A study conducted by the PCJ in 2013 revealed that Kemps Hill could yield more than 5.3 million kWh per year (Jamaica Observer, 2013). Several other areas, including coastal areas of the parish and the hilly northern expanses, may also be suitable to develop additional facilities to expand the generation capacity. Nevertheless, where the use of wind energy is promoted, the wind regime at the potential site will be intensely studied.

Biomass and biofuel systems also have particular relevance to Clarendon due to the potential exploitation of agro-industrial waste. There is likely to be scope for better use of bagasse at the local sugar factories to improve electricity production and provide excess power to the national grid. In the late 1980s, a study was completed on the feasibility of installing and operating a steam-electric power cogenerating facility adjacent to the Monymusk Sugar Factory. This cogeneration unit was to supply the factory with electricity and process steam, while one hundred and forty-five million kWh per year of surplus electricity was to be sold to the JPS at a projected price of US\$0.075/kWh; based on augmenting 25% of the bagasse and cane trash fuel with fuel oil, to ensure maximum plant utilisation (Office of Energy- U.S. Agency for International Development, 1989). This plan did not materialise, but the potential may still be tapped into. Just recently (2014) Pan Caribbean Sugar Company Limited, owners of the Monymusk Sugar Factory, expressed its intention to burn bagasse to produce energy to reduce its electricity cost and supply 20 MW of power to the national grid. This initiative will be strongly supported and the other local sugar factory will also be encouraged to explore the feasibility of doing a similar operation. The high dependence on agriculture in the plan area also makes the application of biodigesters<sup>56</sup> an attractive energy option. The Scientific Research Council (SRC) currently provides variants of the biodigester systems which are used to treat organic farm waste, as well as dispose of wastewater. These systems have the potential to produce a host of benefits for farmers in Clarendon, and to the environment of the parish as a whole.



Figure 48: A biodigester under construction.  
Source: <http://www.thebiooasis.com/biodigester/>

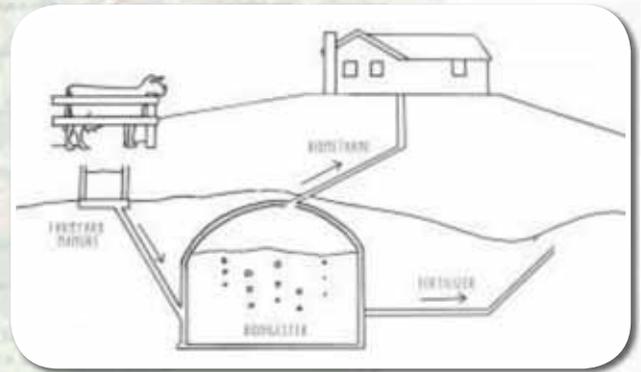


Figure 49: The basic principles of a biodigester.  
Source: [http://www.newsletter.fondationairliquide.com/en/pilot-biogas-project-for-senegalese-farmers/biodigester\\_eng\\_small/](http://www.newsletter.fondationairliquide.com/en/pilot-biogas-project-for-senegalese-farmers/biodigester_eng_small/)

## RECOMMENDED POLICIES

- Planning permission will generally be required for alternative energy developments.
- An Environmental Impact Assessment may be required for the development of an alternative energy generation plant.

56. A biodigester is an anaerobic tank (oxygen-free), which digests organic material biologically, generating water which may be used for irrigation, organic fertilizer and biogas which is a fuel.

## 2.2.3. THE ENERGY SECTOR

### RECOMMENDED POLICIES

- Planning permission will normally be granted for alternative energy sources (including the use of new and emerging technologies) provided that the development, including any ancillary buildings and facilities, will not cause serious harm to the ecology of the area or disturbance to any receiving or transmitting system in the area.
- Renewable energy developments connected to the national grid will be safeguarded from development which would conflict with their operations.
- All Government organizations within the parish will implement feasible alternative energy systems as a means of reducing the burden placed on the national grid and also to reduce operational cost.
- Where it is necessary to have heated water, the planning authority will require that buildings be designed so that they can make use of solar heaters.
- All alternative energy developments will be sited and designed in such a way that it protects the local landscape and visual amenity of the environment.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Engage in continuous research and studies to identify new environmentally friendly and renewable sources of energy which may bring added benefits to the parish of Clarendon.	Short Term	MSET, Private Sector, PCJ
Develop and implement an education awareness programme to sensitize locals about the benefits of using renewable sources of energy. This programme should target home, building and business owners, and should also encourage investment in these initiatives.	Short Term	MSET, JPS, Private Sector. PCJ
Establish a Green Revolving Fund for local businesses wishing to develop renewable energy systems, including solar, wind and biofuel systems in the parish.	Short to Medium Term	Clarendon Chamber of Commerce
Encourage private investors to buy into the production of alternative energy to provide an adequate supply of clean energy to meet current and future local energy demands.	Short Term	MSET

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase the awareness of net billing.	Short Term	JPS, MSET
Explore the feasibility of implementing net metering.	Short Term	JPS, MSET
Increase awareness of the loans provided by the NHT for households to develop solar energy systems.	Short Term	MSET, NHT
Promote the use of solar powered lighting for public parks and parking lots.	Short Term	CPC
Encourage the NHT and other lending institutions to provide special loans for residential wind energy systems, as well as biofuel (biodigesters) developments.	Short Term	GOJ, MSET
Encourage and support adequate research into the development of biofuels.	Short to Long Term	MSET
Encourage private investors to engage in the development of biofuel as an alternative to petroleum-based fuel.	Short to Medium Term	MSET
Engage in dialogue with the local sugar factories to evaluate the potential for using bagasse to generate electricity for the national grid.	Short to Medium Term	MSET, OUR
Increase awareness of biodigesters and encourage locals, especially farmers, to invest in these systems.	Short Term	SRC
Develop and implement a training programme to educate local biogas technicians on the proper installation, maintenance and repair of biogas systems. This will help in job creation.	Short Term	SRC

## 2.2.3. THE ENERGY SECTOR

### 2.2.3.6.5. STRATEGIC OBJECTIVE #47

**To support sustainable charcoal production to reduce environmental degradation and ensure a sustainable source of energy.**

Charcoal burning contributes to pollution, deforestation and overall environmental degradation within the Clarendon Development Area. However, it also helps to meet the energy and economic needs of the parish, and therefore its use cannot be eliminated in the short to medium term. To this end, there needs to be an innovative approach to charcoal production which will eliminate the environmental threats. This will be achieved through the development of fuel-wood plantations and the use of eco-friendly charcoal kilns. See 2.1.5.2.2. Strategic Objective #2B, pg. 67

### 2.2.3.6.6. STRATEGIC OBJECTIVE #48

**To support the use of coal as part of the strategies to diversify the local energy source and to reduce the cost of energy.**

As part of the strategy to reduce the cost of energy, adequate consideration will be given to the use of coal<sup>57</sup>. Coal is touted as the cheapest source of energy in the world. However, its use has often been contentious as it is believed to be the most polluting of all fossil fuels and possibly the largest single source of global warming pollution in the world. Several proposals involving the use of coal in Jamaica, including Jamalco's 50 MW co-generation facility, is already receiving opposition from some quarters. Nonetheless, adequate assessments of proposals involving the use of coal will be undertaken with the implementation of this Plan. Both Vision 2030 and the National Energy Policy 2009-2030 supports the use of coal in Jamaica, as part of the energy source diversification strategy. Additionally, Winston Hay, a former Director General of the OUR, pointed out that over the past few decades, a number of studies have been conducted independently by the JPS, OUR, NEPA and at least three (3) reputable overseas consultants to determine the most economic fuel to be used for local power generation and its effect on the environment. All have concluded that coal would be the most economic fuel, providing relatively low-cost electricity to consumers without violating the established environmental standards (Hay, 2014). Mr Hay has also been quoted as saying that NEPA has said that a modern coal-burning plant would have less adverse environmental impact than the crude oil we are now burning (Luton, 2014). Despite this, coal fired energy plants will be required to comply with air quality standards set out by NEPA, and a public-education campaign aimed at demystifying the arguments around the use of coal as an environmentally acceptable source of energy will be implemented.

## RECOMMENDED POLICIES

- Adequate consideration will be given proposals for the development of coal fired energy plants in the parish.
- Any approved coal fired energy plant will be required to comply with air quality standards set out by NEPA, as well as other environmental regulations and any conditions which may be stipulated on the license granted

57. Coal is a combustible, sedimentary, organic rock, which is composed mainly of carbon, hydrogen and oxygen. It is formed from vegetation, which has been consolidated between other rock strata and altered by the combined effects of pressure and heat over millions of years.

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a public-education campaign aimed at demystifying the arguments around the use of coal as an environmentally acceptable source of energy.	Short Term	NEPA,
Support feasible investments in coal energy generation.	Short to Long Term	NEPA,

### 2.2.3.6.7. STRATEGIC OBJECTIVE #49

To develop and implement a streetlight replacement programme in order to reduce the Parish's energy bill and increase efficiency within the public sector.



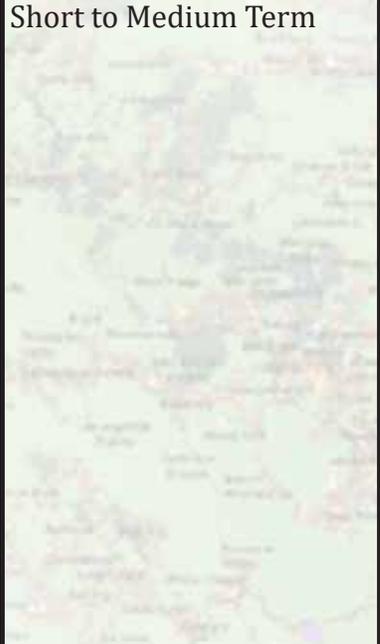
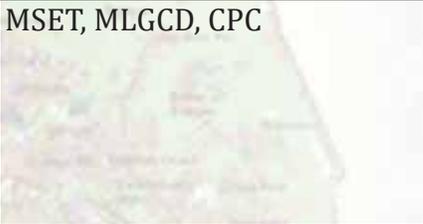
Figure 50: Sodium Street lighting vs LED Street lighting.  
Source: <http://ledfactor.com.ua/category/led-osveshchenie-ulichnoe>

The replacement of the conventional street lighting system is essential in reducing the parish's energy bill. As at April 2015, the MLGCD owed the JPS approximately \$254 million for streetlights within Clarendon (The Gleaner 2015). Replacing these streetlights with the LED technology can provide energy savings of between 40 and 80 percent (Leotek Electronics USA Corp, n.d.). Consequently, this can result in maintenance savings of 50-75 percent, as well as improved night-time visibility and safety through better colour rendering, more uniform lighting distributions and the elimination of many dark areas between poles (Leotek Electronics USA Corp, n.d.). Similarly, converting the conventional streetlights to solar powered street lights which may or may not include LEDs can provide energy savings of up to 100 percent. Utilising LED will also result in the final two aforementioned benefits. However, experience has shown that utilising solar powered street lighting will require appropriate security measures to minimise the potential for theft and vandalism. Nevertheless, both approaches, as well as others which utilize new technologies to provide similar benefits, will be supported in the parish. This strategy will support Government's Energy Efficiency and Conservation Programme, which seeks to increase energy efficiency within the public sector, and will require coordination and cooperation between several agencies and organisations, including the MLGCD and The JPS.

### RECOMMENDED POLICIES

- The relevant authorities will coordinate and cooperate with each other to replace conventional streetlights with LEDs, solar powered streetlights which may also include LEDs, or any other lighting which may bring significant energy savings to the parish.

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement a streetlight replacement programme which seeks to replace conventional streetlights with LEDs or solar powered streetlights which may also include LEDs. This programme should include the provision of adequate security measures for solar powered streetlights. The feasibility of attaching cameras to such lights should be explored in order to minimise the potential for theft and vandalism. This may be coordinated with safety and security authorities and groups as it may be considered as part of the crime fighting strategy.</p>	<p>Short to Medium Term</p> 	<p>MSET, MLGCD, CPC, MNS</p> 
<p>Continue to carry out adequate research in order to identify cost-effective new technologies which have the potential to bring significant energy savings from streetlights.</p>	<p>Short to Medium Term</p> 	<p>MSET, MLGCD, CPC</p> 
<p>Continue to carry out adequate research in order to identify cost-effective new technologies which have the potential to bring significant energy savings from streetlights.</p>	<p>Short to Medium Term</p> 	<p>MSET, MLGCD, CPC</p> 

### 2.2.3.6.8. STRATEGIC OBJECTIVE #50

**To develop and implement a comprehensive programme for the maintenance and repair of all streetlights within the parish.**

Street lighting is very important to assist drivers and pedestrians in navigating in the dark, and also as a crime prevention measure. Efficient maintenance and repair is therefore critical in the Plan Area to achieve these benefits. With the former Minister of Local Government and Community Development, Mr. Noel Arscott, describing the present system for monitoring, repairing and replacing damaged streetlights as ineffective, an alternative strategy will be developed. This new approach will incorporate the application of modern technology which will improve efficiency and also reduce cost to the Local Government in the long run. It also involves the periodic undertaking of streetlight audits and the strengthening of the relationship between the JPS and the local authority. The residents will continue to be key elements in the whole maintenance programme.

## 2.2.3. THE ENERGY SECTOR

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that all malfunctioning or damaged streetlights are repaired in the specified time in the quality standard.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an efficient network for reporting malfunctioning or damaged streetlights. This network should incorporate reporting by texting, calling, emailing, and website reporting.	Short Term	CPC
Encourage residents to report all malfunctioning or damaged streetlights and poles as soon as they are noticed. The information necessary in each report should be relayed to the populace.	Short Term	CPC
Encourage Neighbourhood Watch groups to take the initiative to prevent the vandalism of streetlights.	Short Term	CPC
Evaluate the relationship between JPS and the local authority to identify weaknesses as it relate to the maintenance of streetlights and to make adjustments where necessary.	Short Term	MLGCD, CPC, JPS

#### 2.2.3.6.9. STRATEGIC OBJECTIVE #51

**To ensure a reduction in electricity theft in order to reduce electricity rates for legitimate consumers and increase the profits of the JPS.**

The downward trend in electricity theft in Clarendon must be accelerated. A number of strategies geared towards achieving this objective will therefore be implemented. These strategies include preventative and treatment measures which range from applying technological solutions to developing social intervention programmes. The preventative measures that will be employed include several diverse strategies. The Government will be encouraged to fast track the new electricity legislation, which will place greater emphasis on discouraging persons from stealing electricity, by increasing the penalty for electricity theft. High support will also be given to the introduction of prepaid electricity within the parish, which will give consumers the opportunity to use what they can pay for and also offers flexibility in payment arrangements. In areas where illegal connections are prevalent or where there may be difficulties in disconnecting service due to security issues, the JPS will be encouraged to fully utilize its RAMI and or CAMI systems. The Government will be encouraged to assist some of the low income communities with accessing solar energy in order to move away from the JPS's petroleum-based electric power.

## 2.2.3. THE ENERGY SECTOR

At the same time, the electric utility company, the Government and the private sector will be encouraged to continue to develop social intervention programmes within these communities. These programmes seek to increase the ability of the residents to pay bills and also stimulate behavioural changes to break the culture of non-payment.

The treatment measures that will be employed will focus primarily on the detection of theft. Hence the use of new technologies, including software technologies, by the JPS will be supported. The JPS should however be able to demonstrate that such technologies are accurate. The electric utility company will also be encouraged to continue providing incentives to encourage residents to report illegal connections. The possibility of providing free electricity for a specified period of time as an incentive should be explored. Nevertheless, the JPS will still be encouraged to carry out routine monitoring exercises in conjunction with law enforcement in order to identify illegal connections, remove them and arrest perpetrators.

### RECOMMENDED POLICIES

- The relevant authorities will seek to develop the new electricity legislation to provide greater penalties for theft.
- The use of new technologies to prevent or detect electricity theft will generally be supported, provided that the JPS can demonstrate the accuracy of these technologies.
- The relevant authority will ensure that all anti-theft strategies employed by the JPS are monitored and their implementation does not result in unfair treatment to legitimate customers.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage Government to speedily develop the new electricity legislation.	Short Term	JPS
Launch a public awareness programme which seeks to educate the local population about prepaid electricity.	Short to Medium Term	JPS, MSET
Implement the RAMI system in all local communities where wire throw ups are prevalent, or where the JPS may have difficulties in disconnecting a supply, due to security related issues.	Short to Long Term	JPS
Develop and implement a programme to assist the most economically challenged communities which are characterised by electricity theft to access solar energy in order to move away from the JPS's petroleum-based electric power.	Short to Long Term	REP Limited, GOJ

## 2.2.3. THE ENERGY SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop social intervention programmes within low income communities where electricity theft is prevalent in order to increase the ability of the residents to pay bills, and also stimulate behavioural changes to break the culture of non-payment.	Short Term	JPS, REP Limited, MLSS
Provide appropriate incentives to encourage residents to report illegal connections. The possibility of providing free electricity for a specified period of time as an incentive should be explored.	Short to Long Term	JPS
Carry out routine monitoring exercises in order to identify illegal connections, remove them and arrest perpetrators.	Short to Long Term	JPS, Clarendon Police Division
Actively monitor all anti electricity theft strategies employed by the JPS to ensure that these strategies do not result in unfair treatment to legitimate customers.	Short to Long Term	OUR

### 2.2.3.6.10. STRATEGIC OBJECTIVE #52

**To reduce fuel consumption within the local transportation sector through travel demand management strategies and the application of new technologies.**

With this Energy Sector Plan of the CLSDP aggressively seeking to reduce the consumption of imported crude oil in the parish, the local transportation sector is an area of high priority. A comprehensive energy-efficiency strategy will be implemented within the sector which focusses on four areas: managing growth; reducing traffic congestion; encouraging investment in bio fuels; and adopting new innovations in automobile technologies. Managing the growth of the local transportation sector will involve implementing flexi-work hours and tele-commuting and establishing land use which seeks to minimise the need to travel. Reducing traffic congestion will involve encouraging carpooling, as well as the use of non-motorised transport, promoting park and ride and supporting the development of the public transportation sector to reduce the need for individual travel. Encouraging investment in biofuels will include supporting research and development (R&D) initiatives; and adopting new innovations in automobile technologies will involve increasing awareness of fuel efficient vehicles, such as hybrid vehicles<sup>58</sup>, and supporting the use of new technologies such as the H2-Flex hydrogen hybrid kit<sup>59</sup> where feasible.

58. The hybrid vehicle is a cross between a gasoline-powered vehicle and an electric vehicle. It combines the benefits of gasoline engines and electric motors, and can be configured to obtain different objectives, including an improved fuel economy. The two main features of hybrid vehicles is their abilities to recover energy and store it in the battery, and to alternate power source. A hybrid vehicle usually captures some of the energy lost through braking and store it in the battery to use later. It can also automatically shuts off the engine when the vehicle comes to a stop and restarts it when the accelerator is pressed, due to the presence of the electric motor and batteries as an alternate power source. This prevents the wasting of energy from idling.

## 2.2.3. THE ENERGY SECTOR

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage and support energy conservation and efficiency within the local transportation sector.
- The relevant authorities will support the individual use of new technologies which results in energy savings for the local transportation sector.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #13 (pg. 89), #14 (pg. 90) and #24 (pg. 99) of the Transportation section of this plan.	Short to Long Term	MSET
Research and develop alternative fuels (biofuels) for the transportation sector. See also 2.2.3.6.4. Strategic Objective #46, pg. 138	Short to Long Term	PCJ
Increase awareness of fuel efficient vehicles, including hybrid vehicles, and encourage prospective buyers to purchase such vehicles.	Short to Medium Term	MSET, Private Sector
Encourage the importation of more fuel-efficient vehicles.	Short to Medium Term	MSET
Facilitate the use of more fuel-efficient vehicles in the local transportation sector. This may include the provision of adequate infrastructure for transition to alternative energy vehicles.	Short to Long Term	Private Sector

#### 2.2.3.6.11. STRATEGIC OBJECTIVE #53:

##### To enhance the resiliency of the energy infrastructure.

The continuous provision of services by critical infrastructure, including during and after disaster events, is essential to the health, safety, security and economic well-being of the local population. It is therefore necessary to enhance the resiliency of the energy infrastructure. This objective will be achieved by undertaking vulnerability assessments of the infrastructure, prioritizing the risks identified from the vulnerability assessments, and implementing plans to make the infrastructure more resilient. Additionally, all new parts of the infrastructure will be sited in such a way that they avoid or minimise hazard exposure. See 2.3.9.19. Strategic Objective #95, pg. 220.

59. The H2-Flex hydrogen hybrid kit is a new technology which has been developed against the backdrop of rising oil prices and increased environmental awareness. It is a device or equipment which turns water, under any condition, into 100% pure hydrogen, eliminating or reducing the need for expensive and environmentally unfriendly petrol. In addition to water, this system only requires a fairly cheap aluminium cartridge, which is mixed with the water and some electrolytes by a mechanically controlled separator, generating huge amounts of hydrogen gas. This gas will power a 2000-lb car up to 300 miles without gasoline and once the gas has finished the H2-Flex will notify users via smart phone to replace water and cartridge. Nevertheless, the bigger the vehicle, the less miles it will go. It should be noted that the CLSDP is not specifically promoting the use of this technology but merely raising awareness of it and similar technologies. Adequate individual research is required before adoption.

## **2.2.4. WASTE MANAGEMENT**

### **2.2.4.1. WASTE MANAGEMENT IN CLARENDON**

The parish of Clarendon produces all types of wastes, including wastewater, solid waste, hazardous waste and ship generated waste.

#### **2.2.4.1.1. WASTEWATER AND SANITATION**

##### **2.2.4.1.1.1. DOMESTIC WASTEWATER TREATMENT**

Domestic wastewater is generated in the parish from household activities, and from commercial and business processes. It is mainly treated and disposed of on-site, as there is no central sewage disposal system in the Plan Area. There are currently over 15 community sewerage systems serving the relatively new subdivisions in the parish, in addition to several systems that treat wastewater from small groups of businesses or institutions (See Appendix 6 for List). The community sewerage systems are generally operated by the NWC and include Aerated Lagoons, Oxidation Ditch and Waste Stabilization Ponds. According to the SDC (2014), only approximately 34 percent of households in the parish have access to these sewage treatment facilities with most of them operating at full capacity and are therefore unable to accommodate additional wastewater flows. With STATIN's 2011 Population and Housing Census revealing that 54.5 percent of the households in the parish utilize water closets, it therefore means that approximately 20.5 percent of the households in the parish have flush toilets linked to private on-site treatment facilities. The primary on-site sewage disposal method utilizes pit latrines, which serve 38.5 percent of households.

According to the SDC (2014), the current situation in the parish represents a vast improvement in sanitary facilities, as the 1991 population and census revealed that Clarendon had a pit latrine usage of 74.4% representing 36,609 households. It is believed that updated requirements for new housing developments as well as an improvement in water supply in the parish has led to this change. The situation may further improve with the planned development of the May Pen Central Sewage System by the NWC.

##### **2.2.4.1.1.2. INDUSTRIAL WASTEWATER TREATMENT**

There are several sources of industrial wastewater, but the most significant amounts are produced through the processing of bauxite and sugarcane. A large quantity of liquid waste is generated daily through the processing of bauxite by Jamalco at Hayes. Most of this wastewater is re-circulated into the processing plant. That waste which leaves the plant, is collected in a red mud disposal lake which is lined with clay. The clay sealant is used to prevent leakages into the ground water system. Constant monitoring using deep wells is carried out to determine the extent of seepage effect on adjacent aquifers. The sugar cane processing, carried out at Monymusk and New Yarmouth, and their associated rum distilleries, yields large amounts of wastewater. This includes dunder, which is the organic rich effluent from the fermentation of molasses. It has the potential to produce unpleasant odours and anoxic conditions within water systems, and further reduce the diversity of aquatic biota. The dunder from the distilleries is currently used for ferti-irrigation, while some amount of the wastewater generated by the factories is stored in holding ponds for irrigation purposes while the remainder is discharged into the environment.

## 2.2.4. WASTE MANAGEMENT



Figure 51: Jamalco's red mud lake.

Source: [http://www.nepa.gov/jm/eias/Clarendon/Jamalco/StepInDyke/Step-in-Dyke%20EIA%20Report\(Final\).pdf](http://www.nepa.gov/jm/eias/Clarendon/Jamalco/StepInDyke/Step-in-Dyke%20EIA%20Report(Final).pdf)

### 2.2.4.1.2. WASTEWATER ISSUES AND CHALLENGES

#### 2.2.4.1.2.1. INEFFICIENT PUBLIC SEWAGE TREATMENT FACILITIES

As earlier noted, the NWC operates several small wastewater treatment facilities within the Plan Area. Many of these plants are malfunctioning and ineffective in providing the required level of wastewater treatment. Some treatment facilities were not designed to meet the current effluent standards stipulated by the NEPA. Instead, these sewage treatment plants were designed to meet the old MOH effluent standards for wastewater discharge. These facilities were designed with specific, limited useful lifetime and have long outlived their design life. To effectively meet the new standards, it is imperative that NWC makes significant investments in the upgrading or replacement of those out-dated plants. Of note is the fact that, the Agency is constrained by chronic inadequate revenue collection.

#### 2.2.4.1.2.2. HIGH DEPENDENCE ON ON-SITE PRIMARY WASTEWATER TREATMENT FACILITIES

As highlighted earlier, a significant percentage of the local population uses on-site sewage disposal systems, including pit latrines which are primary treatment facilities. This issue is worrying, due to the fact that much of the parish is made up of large areas of limestone rocks, which facilitate faecal pollution carried directly through cracks, joints and fissures into the underground water systems. According to CIDA (2002), in recent years, the quality of the ground water in the parish has been deteriorating due to pollutants like human waste. In addition, a number of areas in the parish are vulnerable to flooding, which may result in the overflow of pit latrines. One can conclude that both surface and underground water in the parish is under threat from improperly treated domestic wastewater. In addition, the health of the residents is also at risk, as untreated or improperly treated wastewater can spread disease or heighten the risk of illnesses like gastritis, diarrhoea, hepatitis, amoebic dysentery and skin and tissue infections. This situation may also negatively impact the natural environment, as it may cause eutrophication in natural water bodies, leading to a decrease in species diversity and changes in the dominant biota.

#### 2.2.4.1.2.3. SPRAWLING DEVELOPMENT

Central sewerage systems are generally very expensive to develop. This issue is accentuated in Clarendon by the characteristic sprawling development, especially in the rural factions of the parish. The dispersed pattern of development will result in extensive and expensive piping infrastructure to facilitate connection to a sewage system. The financial returns from low density areas would not make it feasible to undertake such infrastructural development in most of these areas. This factor also contributes to the high dependence on on-site sewage treatment systems.

## 2.2.4. WASTE MANAGEMENT

### 2.2.4.1.2.4. BREACHES OF EFFLUENT DISCHARGE STANDARDS

The NEPA consistently monitors the activities of the industries in the parish to ensure compliance with allowable limits for trade effluent discharge. However, there are frequent breaches by the sugar factories and their associated rum distilleries as untreated or inadequately treated wastewater from these facilities often end up in the freshwater bodies. Just a few years ago, the NEPA had to take the Clarendon Distilleries Limited, which has operations at the Monymusk Sugar Estate, to court for releasing dunder into the Rio Minho (...).

### 2.2.4.1.3. SOLID WASTE MANAGEMENT (SWM)

SWM in Clarendon and the rest of Jamaica is currently the responsibility of the National Solid Waste Management Authority (NSWMA). The agency is mandated to manage the island's domestic solid waste, whilst simultaneously regulating the recycling, storage, transportation, treatment and disposal of all other types of solid waste<sup>60</sup>. In order to effectively carry out its mandate, the Agency divided the island into four (4) wastesheds, with each having its own regional office. The parish of Clarendon falls within the Southern Wasteshed, and therefore the agency executes its functions locally through its Southern Parks and Markets (SPM) regional office.

The SWM system utilized by the NSWMA in Jamaica, including Clarendon, is made up of five essential elements: generation, storage, collection, transportation and disposal. Solid waste is generated in the parish from a number of sources including residential, commercial, industrial and institutional facilities. The waste generated is usually stored in a myriad of different types of containers to facilitate collection; a process often referred to as containerization. Subsequently it is collected by the NSWMA, or by private contractors, and transported to the Martin's Hill disposal site in Manchester, where it is disposed of through landfilling by the NSWMA, which has exclusive rights to carry out this activity.

Waste Generation and Characterization studies carried out by the NSWMA in 2009 for the Retirement, North-eastern & Southern Wastesheds, revealed that Clarendon had the second lowest per capita waste generation rate of 0.33 kg. Compostibles, plastic and paper are the predominant fractions of the waste generated, while Wood/Board and Electronic Waste are some of the smallest fractions. This is directly linked to local consumption patterns and methods of packaging.

### 2.2.4.1.4. SWM ISSUES AND CHALLENGES

#### 2.2.4.1.4.1. AN INADEQUATE FORMAL SYSTEM

The formal system of SWM in the Parish is characterised by a number of weaknesses. This results from the current inadequate capacity of the NSWMA, and by extension the SPM. In efficient and effective management of the volume and composition of waste being generated results. SWM in Jamaica is funded primarily through property taxes, and currently the compliance rate in Jamaica is about 42%; a worrying situation which is augmented by the fact that revenue collected for property taxes are not used for SWM alone, but also for the provision of other local government services. Consequently, there is always a shortfall between required expenditure and budgetary provision.

This low budgetary support or financial capacity on the part of the NSWMA leads to a number of other issues related to adequate technology, equipment, and personnel. . The agency is unable to modernize its operation through the most appropriate technologies available, due to its financial deficiency. This situation is made worse by the fact that the NSWMA is at times unable to properly maintain the limited tools and equipment available to work with.

<sup>60</sup>. The NSWMA is only responsible for the collection of domestic waste, but the agency also offers collection services for commercial waste through contractual agreements. Collection services are also offered by a number of private contractors to both the aforementioned sources.

## 2.2.4. WASTE MANAGEMENT

Additionally, the Authority is burdened by the dual and conflicting role it has to play as collector and regulator. Consequently, there is inadequate collection, transportation and disposal.

### 2.2.4.1.4.2. ALTERNATIVE METHODS OF DISPOSAL

As stated earlier, solid waste disposal in Jamaica is exclusively the responsibility of the NSWMA. However, as highlighted in the table below, the 2011 population census revealed that at least 52.8% percent of households in Clarendon are utilizing alternatives to the formal system of SWM. This is due to the fact that the formal system of SWM in Clarendon is perceived as “useless” by the majority of local citizens (SDC, 2014). Despite the fact that the SPM has a collection schedule for formal and informal communities/settlements, residents claim that garbage collection is done irregularly in most communities, whilst there is a total lack of service in some areas (SDC, 2014). Claims of huge backlogs of garbage which are generally unsightly and malodorous, posing a serious threat to public health are made. Due to the irregular collection of garbage, residents are never certain when the garbage truck will visit the residences. Often scavenging animals cause unsightly heaps of scattered garbage. The situation therefore forces them to find alternate means to dispose their waste.

Consultations with the NSWMA through the Waste Management Sector Meeting revealed that the Authority generally adheres to its collection schedule in the Parish. According to the Regional Manager of the SPM, Mr Richard Sadhi, containerisation and storage may actually be the more problematic issue. He explained that individuals and developers routinely ignore standards, guidelines and codes of practice set out by the Development and Investment Manual which seeks to ensure ease of handling and also safeguard public health as these regulations are not legislated. He further explained that these individuals and developers utilize a variety of containers, resulting in their having to deal with issues such as scattering by scavenging animals.

The primary alternative method of waste disposal utilized is burning. As shown in the table below, the STATIN’s 2011 Population and Housing Census revealed that 49 percent of the households in the parish burn their garbage. This is despite the fact that the burning of garbage without permission from the Local Authority (the CPC) is illegal under the Country Fires Act 1942. Burning has also been highlighted as a major cause of bush fires within the parish. Other alternative methods employed include dumping (2.7%) and burying (0.7). All these methods, including burning, appear to be simple and convenient, but they are environmentally damaging, resulting in air, water and land pollution.

Total Households	Method of Garbage Disposal										
	Public Collection		Private Collection	Burn	Bury	Dumping				Other Methods	Not Reported
	Regular	Irregular				Sea/River/Pond/Gully	In Own Yard	At Municipal Site	Other		
76881	27893	7492	168	37669	550	251	1264	146	432	15	901
Percentage	36.3	9.7	0.2	49.0	0.7	0.3	1.6	0.2	0.6	0.1	1.2

Source: STATIN 2011

## 2.2.4. WASTE MANAGEMENT

### 2.2.4.1.4.3. ABSENCE OF AN INTEGRATED WASTE MANAGEMENT POLICY

Currently, there is no comprehensive or integrated mechanism or policy for the management of solid waste in Clarendon specifically, or Jamaica generally. As a consequence, such wastes are generated in an unsustainable manner which places a severe strain on the resource-deficient SWM system. Waste diversion programs like recycling and composting are very limited or absent. This situation is exacerbated by the fact that waste separation is not legislated, and as such, most hazardous waste is deposited in the normal waste stream.

### 2.2.4.1.4.4. LITTERING

According to the NSWMA (n.d.) “littering entails throwing solid waste in any public place and includes any refuse, rubbish, bottles, glass, debris, dirt, rubble, ballast, stones, noxious or contained substances, or any other matter likely to deface, make untidy, obstruct or cause a nuisance in a public place.” Based on this definition, littering is arguably one of the most widespread waste management issues in the parish, particularly within the capital, May Pen. According to the Custos of Clarendon, the Honourable William Shagoury, the constant littering of the May Pen town centre has resulted in the parish’s capital becoming unpleasant for persons doing business there (Samuels, 2015). In June 2015, members of the May Pen business community raised concerns that there was a growing rodent infestation issue within May Pen. This was primarily attributed to littering.



Figure 52: A drain in May Pen littered with garbage.  
Source: [http://66.132.220.41/sites/default/files/styles/jg\\_article\\_image/public/media/article\\_images/2015/06/16/MayPenForumBB20150603NG.jpg?itok=XS70fxHw](http://66.132.220.41/sites/default/files/styles/jg_article_image/public/media/article_images/2015/06/16/MayPenForumBB20150603NG.jpg?itok=XS70fxHw)

The issue of littering is prevalent despite Clarendon having what was described at the Waste Management Sector meeting, “as one of the most aggressive anti-litter programmes in Jamaica.” The programme involves a ticketing system which is used to levy a fixed penalty, which must be paid within a specified period, on persons found littering. Failure to pay the penalty within the given period results in the issuance of a summons to appear before a Resident Magistrate. According to the Commercial Services Department of the CPC, the Municipal Officers of the Council have been aggressive in the issuing of tickets to offenders. Compliance with payment is estimated to be at approximately 90% percent. However, this system has not been able to fully stem the issue.

## 2.2.4. WASTE MANAGEMENT

Based on data collected from the Situation Validation and Visioning Workshops, residents of the parish generally believe that the issue of littering is linked to behavioural problems, as well as inadequate amounts of garbage bins in public spaces. However, Mayor of May Pen, Cllr Scean Barnswell, noted that the issue within the capital, May Pen, is primarily linked to informal businesses that operate at nights (Samuels, 2015). He stated that vendors from all parts of Jamaica usually flock the town following the closure of normal business operations and after the team from the NSWMA has carried out its routine clean-up of the area (Samuels, 2015). He further stated that these vendors usually leave their waste wherever they do business, resulting in an accumulation overnight (Samuels, 2015). The Honourable William Shagoury, added that some formal businesses are emptying their garbage on the streets at nights contributing to the situation (Samuels, 2015).

In addition to that, the former Minister of Local Government and Community Development, Noel Arscott, has described the fines for littering under the National Solid Waste Management Act as miniscule (Jamaica Observer, 2013). The small fines do not compare favourably with charges in other jurisdictions and are not deterrents to those who litter. As a consequence, the MLGCD is reviewing the anti-litter law with a view to strengthening the penalties for breaches (Jamaica Observer, 2013).

### 2.2.4.1.5. HAZARDOUS, MEDICAL AND SHIP GENERATED WASTE MANAGEMENT

#### 2.2.4.1.5.1. HAZARDOUS WASTE

The management of hazardous wastes includes the storage, use, transportation and disposal. There is no legislation specific to hazardous waste management in Jamaica, but the process is regulated by the NEPA. Guidelines established by the NEPA for hazardous waste management are established under several Acts, including: the Natural Resources Conservation Authority Act; the Wild Life Protection Act; the Beach Control Act; the Watersheds Protection Act; the Town and Country Planning Act; the Land Development and Utilisation Act; and the Ozone Layer Protection Act.

Comprehensive data on the actual quantities and types of hazardous wastes being produced in the parish of Clarendon is lacking. However, Waste Generation and Characterization studies carried out by the NSWMA in 2009 revealed that hazardous waste has one of the smallest generation rates. It is generated in the parish from several sources including industrial, agricultural, residential, commercial and medical facilities. Such waste includes paints, pesticides, drugs, batteries, bandages, heavy metals other refuse that have properties that make them dangerous or potentially harmful to human health or the environment. Special precautionary steps need to be taken prior to disposal to ensure that any potential threat to public health is eliminated.

#### 2.2.4.1.5.2. MEDICAL WASTE

Medical waste management (from generation to safe treatment and disposal) is the responsibility of the person in charge of the healthcare facility. Healthcare facilities must ensure that systems are in place for proper management of medical waste. Such systems must be in compliance with the policies, regulations, codes of practice and guidelines stipulated by the MOH, as well as the requirements of the NSWMA and the NEPA. Managers and owners of medical facilities have the option to choose the technology to be employed for treatment of their medical waste. However, the main technology employed by both public and private medical institutions in the parish is incineration. The May Pen Hospital has the main incinerator in the parish. The public health centres and other hospitals in the parish generally store their medical waste and later transfer it to the May Pen facility under special conditions. Private facilities generally have special arrangements with the May Pen hospital for the incineration of their waste. The frequency of incineration is dependent mainly on the volume of waste generated.

## **2.2.4. WASTE MANAGEMENT**

Comprehensive data on the actual quantities and types of medical waste being produced in the parish is lacking. However the Manual for Investment and Development indicates that generation rates in Jamaica is approximately 0.24-1kg/bed/day for hospitals and 12kg/day for clinics. Residues from the incinerators are transported with municipal garbage to be landfilled. Such arrangements forms part of the Southern Regional Health Authority medical waste treatment and collection system.

### **2.2.4.1.5.3. SHIP GENERATED WASTE**

No data was obtained for ship generated waste in the parish.

### **2.2.4.1.6. HAZARDOUS WASTE MANAGEMENT ISSUES AND CHALLENGES**

#### **2.2.4.1.6.1. THE ABSENCE OF RELIABLE DATA**

A successful waste management system hinges on accurate and reliable data in order for waste managers, planners and policy makers to make informed decisions. However, data on hazardous, medical and ship generated wastes is almost absent for Clarendon. This makes it difficult to create a comprehensive waste management strategy for the parish and to accurately project the true cost to manage the waste.

#### **2.2.4.1.6.2. RAPID ADVANCEMENT IN TECHNOLOGY**

Rapid changes in technology is driving the demand for technology-based products and at the same time increasing the rate of obsolescence of existing technology. This is increasing the generation of hazardous waste as electronic waste falls under this category due to the presence of toxic chemicals such as mercury. With this Plan seeking to improve the socio-economic status of the parish and bridge the digital divide in the local area, the amount of hazardous waste generated is expected to rise sharply.

#### **2.2.4.1.6.3. IMPROPER TREATMENT AND DISPOSAL**

Currently, there are no established procedures for the disposal of hazardous waste in Jamaica. This situation is exacerbated by the fact that waste separation is not legislated, and as such, most hazardous waste, particularly from households, is deposited in the normal waste stream. This is increasing the risks to the environment and human health and safety. Nevertheless, the NEPA is in the process of developing a National Hazardous Waste Management Policy.

#### **2.2.4.1.6.4. GOVERNMENT FREE HEALTHCARE POLICY**

Government free healthcare policy is believed to have increased the amount of medical waste generated due to the increased influx of people to public healthcare facilities. This can become a major challenge with population increase for local healthcare facilities.

### **2.2.4.1.9. PARISH STRATEGIES**

#### **2.2.4.1.9.1. STRATEGIC OBJECTIVE #54**

**To raise awareness of the potential environmental and health impact of primary sewage treatment to ensure compliance and support for future programmes which seek to reduce the use of primary treatment facilities and to also encourage the voluntary upgrading of such systems.**

## 2.2.4. WASTE MANAGEMENT

Raising awareness of the potential environmental and health impacts of using primary sewage treatment facilities, particularly within densely populated and environmentally sensitive areas, such as coastal areas, is necessary within the Plan Area. A high percentage of the local population is dependent on primary sewage treatment facilities. This Plan is promoting a reduction in the use of such facilities through the development of central treatment facilities, and additional capacities within facilities being developed for new housing schemes. According to the TCPA (2012), consultations with the Health and Environmental Ministries imply that the dialogue being pursued is aimed at having Jamaicans reduce/eliminate primary sewage disposal techniques in preference for secondary treatment and disposal methods. Raising awareness will assist compliance and support for these programmes and encourage the voluntary upgrading of primary sewage treatment systems to at least the secondary level.

### RECOMMENDED POLICIES

- All agencies with institutional responsibilities in the management of wastewater will coordinate and cooperate in the development and implementation of the public education programme.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a comprehensive public education programme which seeks to raise awareness, of the potential environmental and health impacts of primary sewage treatment particularly amongst households .	Short Term	WRA, MOH, NEPA

### 2.2.4.1.9.2. STRATEGIC OBJECTIVE #55

**To upgrade or replace inefficient existing waste treatment plants in order to meet the current effluent standards that have been stipulated by the NEPA.**

In order to meet the current effluent standards stipulated by the NEPA, several of the existing community treatment plants will need to be replaced or upgraded. Some of these plants are located within the boundaries of designated growth centres for which this Plan proposes the development of central sewerage systems. Such developments will therefore lead to the retirement of a few of these plants. However, those which are not within the geographical location of the trunk main and catchment areas of the central sewerage system will be rehabilitated. Rehabilitation works, as well as the design of new plants, will give consideration to the potential reuse of the outgoing effluent for irrigation purposes.

### RECOMMENDED POLICIES

- The planning authorities will seek to encourage the replacement or rehabilitation of all sewerage systems that are operating below the current NEPA effluent standards.
- The relevant authorities will support the development of central sewerage systems, provided that there will be no adverse social or environmental impact.
- The rehabilitation of existing sewage treatment plants, and the design of new plants, will give consideration to the potential reuse of the outgoing effluent for irrigation purposes.

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Prioritise the replacement or rehabilitation of the existing sewage treatment systems which are operating below the current effluent standards stipulated by the NEPA.	Short to Long Term	NWC

### 2.2.4.1.9.3. STRATEGIC OBJECTIVE #56

#### **To reduce the use of on-site sewage systems in order to safeguard environmental and public health.**

It is imperative that the heavy dependence on onsite sewage treatment facilities be reduced. The effectiveness of these facilities depend on factors including, the effluent load per unit land area, which is directly linked to population density. With the population of Clarendon increasing rapidly over the last few decades and studies done by the CIDA (2002) revealing that human waste is contributing to a deterioration in the quality of groundwater in the parish, there is clear evidence to suggest that there is an over reliance on on-site treatment facilities. This plan is proposing the establishment of designated growth centres, for which substantial new housing allocations are also proposed. This will add pressure to the situation and further highlight the critical need for more centralized wastewater treatment.

Reducing the dependence on onsite treatment facilities will involve developing central sewerage systems, and community treatment plants. A major sewerage system is already proposed for the May Pen area. High priority will be given to the development of this facility since May Pen is one of the largest urban centres in Jamaica, and increased development is also proposed for this region. Whilst the ideal is to develop central sewerage treatment plants for all growth centres within the parish, this is not feasible within the foreseeable future. Consideration will however be given to the reservation of lands for this purpose, and community sewerage treatment plants will be used to reduce the high dependence on onsite treatment systems in the absence of a central system. Where possible, additional wastewater treatment capacity will be provided when developing facilities for new housing schemes in order to provide for the progressive extension of coverage to existing non-sewered areas. On the introduction of central sewerage systems or the provision of additional treatment capacity in association with new housing schemes, all developments in proximity to the sewerage infrastructure will be required to connect to such system. Where parts of the catchment areas are informal, the implementation will take place on a phased basis, in conjunction with wider settlement upgrading programmes.

All central and community wastewater treatment systems will be designed in accordance with the detailed guidelines and regulations of the relevant agencies. These systems will be planned according to the type and scale of development, anticipated population density, soil conditions, topography, rainfall, proximity to the sea, potential impacts on groundwater sources, and other environmental factors. The potential for reuse of the outgoing effluent for irrigation will also be evaluated and integrated treatment/irrigation systems will be implemented where appropriate.

## 2.2.4. WASTE MANAGEMENT

### RECOMMENDED POLICIES

- On the introduction of central sewerage systems or the provision of additional treatment capacity in association with new housing schemes, all developments in proximity to the sewerage infrastructure will be required to connect to such system.
- Wherever central or community wastewater treatment systems are being planned, the potential for reuse of the outgoing effluent for irrigation will be evaluated and integrated treatment/irrigation systems will be implemented where feasible.
- Approval will not be given for any change of use application for areas reserved for the development of central sewage systems unless suitable alternative areas have been identified.
- All central and community sewage treatment systems will be designed in accordance with the detailed guidelines and regulations of the relevant agencies; these systems will be planned according to the type and scale of development, anticipated population density, soil conditions, topography, rainfall, proximity to the sea, potential impacts on groundwater sources, and other environmental factors.
- Permission will not be granted for any new development or extensions to existing development within a sewered area unless they are being connected to the central sewerage system.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Prioritise the development of central sewerage systems for all growth centres within the Parish.	Short to Long Term	NWC, MEGJC
Provide appropriate incentives for developers of new housing schemes to provide additional wastewater treatment capacity for the progressive extension of coverage to existing non-sewered areas.	Short to Long Term	NWC, CPC

#### 2.2.4.1.9.4. STRATEGIC OBJECTIVE #57

**To support suitable alternatives to central and community sewerage systems in areas where it is not feasible to develop these facilities.**

Despite the fact that this Plan is strongly promoting a reduction in onsite sewerage treatment facilities, the use of alternatives to central and community sewerage systems will be supported in some areas of the parish. In areas with a scattered settlement pattern and other areas where it is not feasible to develop central wastewater treatment system, households will be required to discharge their sewage through one of the environmentally acceptable methods approved by the local authority. The chosen method will take into consideration the type of building, lot size, soil characteristics, sources of ground water and topographical conditions existing in the area. There will also be concerted efforts to have sewage treated to a tertiary level in the areas of aquifers, faults and/or major rivers, tributaries, springs and other surface water features and to at least a secondary level for areas of Basal Aquiclude.

## 2.2.4. WASTE MANAGEMENT

### RECOMMENDED POLICIES

- In areas where it is not feasible to develop central or community wastewater treatment systems, households will be required to discharge of their sewage through one of the methods approved by the local authority.
- Due consideration will be given to the type of building, lot size, soil characteristics, sources of ground water and topographical conditions in designing onsite sewage treatment systems.
- Tertiary level sewage treatment will be recommended in the areas of aquifers, faults and/or major rivers, tributaries, springs and other surface water features, while secondary level will be recommended for areas of Basal Aquiclude.

#### 2.2.4.1.9.5. STRATEGIC OBJECTIVE #58

**To support suitable alternatives to water closets, particularly within water deficient areas.**

There are several local areas which are severely challenged in accessing water, not just for potable use, but for all purposes. While this plan is promoting a number of strategies aimed at ensuring adequate access to water, the use of flush toilets within some of these areas, particularly the isolated non-utility service areas, may still pose a challenge. As such, the use of composting toilets<sup>62</sup> will be strongly recommended, but the minimum acceptable standard of a Ventilated Improved Pit latrine (VIP)<sup>63</sup> will also be supported within these areas. The former will also be supported within all areas of the parish that are not connected to a central sewerage system. These sewage treatment options use little or no water and are ideal alternatives to flush toilets. They will conserve water in water deficient areas whilst ensuring minimum environmental and health threats. The relevant authorities will make recommendations for the use of the compost from the composting toilet in order to safeguard public health and prevent potential public outcries.



Figure 53: An example of a composting toilet.  
Source: [http://www.bioilet.com/store/images/medium/10\\_MED.jpg](http://www.bioilet.com/store/images/medium/10_MED.jpg)

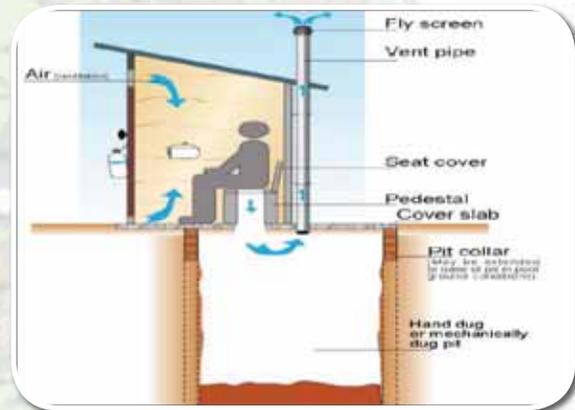


Figure 54: The design of a VIP.  
Source: <http://www.thevossfoundation.org/assets/VIP-latrine.png>

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage the use of composting toilets in rural areas that are challenged in accessing water.
- The use of composting toilets will be supported in all areas of the parish that are not connected to a central sewerage system.
- Compost from composting toilets will only be used for the purposes stipulated by the relevant authorities.
- The relevant authorities will support the use of VIP in rural areas that are challenged in accessing water.

62. A composting toilet is a type of dry toilet that uses a predominantly aerobic processing system to treat human excreta, by composting or managed aerobic decomposition.

63. The VIP is a type of pit latrine that offers improved sanitation by eliminating flies and smell through air circulation.

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Ensure the availability of composting toilets.	Short to Long Term	Private Sector
Develop recommendations for the use of compost from composting toilets in the parish; strong consideration should be given to its use in landscaping and forest restoration initiatives.	Short Term	MOH, MICAFA,

### 2.2.4.1.9.6. STRATEGIC OBJECTIVE #59

**To increase the penalty for breaching effluent discharge standards and undertake adequate monitoring in order to ensure compliance with such standards.**

Ensuring compliance with the established effluent regulations is pivotal to safeguarding public and environmental health, as well as the livelihood of some residents. In the past there have been frequent breaches in effluent discharge standards despite the NEPA monitoring such activities. In order to ensure compliance, the penalty for breaches will be increased and adequate monitoring and enforcement will be undertaken. In increasing the penalty for breaches, the relevant authorities should explore the feasibility of having offenders compensate all individuals who have been negatively affected by the breach. Agencies and organisations responsible for monitoring will also be encouraged to forge strategic relationships with local communities in areas where there is the potential for a breach as a way of ensuring adequate monitoring.

### RECOMMENDED POLICIES

- The relevant authorities will seek to increase the penalty for breaching effluent discharge standards.
- The relevant authorities will explore the feasibility of having parties guilty of breaching effluent discharge standards compensate all individuals who have been negatively affected by the breach.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase monitoring efforts in order to ensure compliance with effluent discharge standards.	Short to Long Term	NEPA, WRA
Develop strategic relationships with local communities in areas where there is the potential for a breach of the effluent discharge regulations as a way of enlisting locals to assist monitoring efforts.	Short to Long Term	NEPA

## 2.2.4. WASTE MANAGEMENT

### 2.2.4.1.9.7. STRATEGIC OBJECTIVE #60

#### To establish the framework for integrated SWM.

As part of the local SWM strategy, this plan promotes the development of an integrated national policy and regulatory framework for the management of solid waste. The current approach to SWM is arguably disorganised, haphazard and under-resourced, which is resulting in a number of social and environmental issues that beg the need for SWM to be a national priority. The development of an integrated national SWM policy and an accompanying regulatory framework will not only reflect Government's commitment to making SWM a national priority but will also provide an organised, logical set of steps to tackle the priority.

It follows that the relevant authorities will be encouraged to develop an integrated national policy and regulatory framework for the management of solid waste. The policy should be harmonized with other policies, and should also outline the responsibilities of all stakeholders in the SWM process, including generators, management organisations (including private companies and the CPC), and the regulators. This policy should also deal with all types of solid wastes and include all phases of the SWM process, whilst reflecting the waste management hierarchy. This policy should be accompanied by the necessary legal instruments to ensure the effective implementation.

### RECOMMENDED POLICIES

- An integrated approach will be utilized in the development of the comprehensive national SWM policy.
- The comprehensive national SWM policy will be harmonized with other policies to prevent waste generation.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the development of a comprehensive national policy and regulatory framework for the integrated management of solid waste. This policy should: outline the responsibilities of all stakeholders in the SWM process; deal with all types of solid wastes; include all phases of the SWM process; and reflect the waste management hierarchy.	Short Term	CPC, CPDCBS, Clarendon Chamber of Commerce

### 2.2.4.1.9.8. STRATEGIC OBJECTIVE #61

#### To promote public awareness of integrated SWM in order to gain support for its implementation in the parish.

Both short and long term measures that will impact on the local population will have to be implemented in order to achieve sustainability in the management of solid waste in the parish of Clarendon. Educating the public about the overall waste management strategy will be critical to a successful program. . The application of traditional marketing techniques may not be effective in promoting the necessary behavioural changes, and therefore community based marketing tools will be utilized in the local SWM campaign. This campaign will promote source reduction, sorting, composting, recycling, enforcement, and the other appropriate strategies which ensure the integrated and sustainable management of solid waste.

## 2.2.4. WASTE MANAGEMENT

### RECOMMENDED POLICIES

- SWM will take place through an integrated approach.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a comprehensive SWM campaign which promotes source reduction, sorting, composting, recycling, enforcement, and the other appropriate SWM strategies. This campaign should utilize community based marketing tools and methods to ensure effectiveness.	Short Term	NSWMA, CPC, JET,

#### 2.2.4.1.9.9. STRATEGIC OBJECTIVE #62

**To promote source reduction in order to reduce the volume of waste generated in the parish.**

Source reduction is the key to solving Clarendon's growing SWM problem. Reducing waste before it is generated is the most effective way to reduce the pressure on the limited resources of the NSWMA. Additionally, it will conserve resources, reduce disposal costs, reduce pollution, and teach good practices in conservation and prevention. For these reasons, source reduction will be the highest priority method for addressing the local SWM issues. It will include a wide range of activities and initiatives as discussed below.

##### 2.2.4.1.9.9.1 STRATEGIC OBJECTIVE #62A

**To reduce the use of paper by creating a paperless parish.**

Paper comprises a significant portion of the waste generated locally. Reducing the amount of paper used will be a significant step towards the sustainable management of solid waste. This ideal will depend largely on the development and implementation of paperless organizations. These are businesses or institutional environments where the use of paper is eliminated or greatly reduced. This will be done by converting documents and other papers into digital form. Going paperless will help the environment, save money, boost productivity, save space, make documentation and information sharing easier, and keep personal information more secure. The feasibility of tying this strategy to the local destination branding strategy will be explored.

### RECOMMENDED POLICIES

- The creation of paperless organisations will be encouraged and supported.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage all institutions and businesses, including schools, to develop and implement a paperless strategy.	Short to Medium Term	GOJ

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of ensuring that local organisations and institutions committed to the Clarendon Destination Brand are also committed to reducing the use of paper.	Short to Medium Term	CPC, MSET, NSWMA
Provide technical support for developing paperless organisations in the parish.	Short to Long Term	MSET, Universities, Private Sector
Support Strategic Objective #72 (pg. 175) of the Telecommunications section of this plan.	Short to Long Term	MEGJC, NSWMA, CPC
Support Strategic Objective 136 (pg. 295) of the education section of this plan	Short to Long Term	MEGJC, NSWMA, CPC
Support strategic Objective #171 (pg. 356) of the General Economy section of this plan.	Short to Long Term	MEGJC, NSWMA, CPC

### 2.2.4.1.9.9.2. STRATEGIC OBJECTIVE #62B

#### To introduce an environmental levy on plastic bags.

Source reduction initiatives in the parish will also focus on reducing the use of plastic bags. Plastic bags are a visible and persistent component of litter pollution in all local settings and therefore has the potential to undermine efforts to develop a clean and green parish. The introduction of an environmental levy on the use of plastic bags offers an appropriate solution towards reducing its consumption and thereby reducing the consequential environmental problem of litter. This has been successfully implemented in a number of countries including Hong Kong and Ireland. The relevant authorities will therefore explore the feasibility of imposing a tax on the use of plastic bags which is passed directly to consumers. The introduction of this tax will seek to change consumers' behaviour to reduce the presence of plastic bags in the landscape, and to increase public awareness of littering'. Revenues from the tax should be used to further optimise the SWM system.

#### RECOMMENDED POLICIES

- The relevant authorities will explore the feasibility of imposing a tax on the use of plastic bags which is passed directly to consumers.
- Revenues generated from an environmental levy on plastic bags must be used to further optimise the SWM system.

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement a pilot programme which introduces a levy on the use of plastic bags. This pilot may be implemented within the entire parish or within one or more of the major towns. This programme should be fully implemented based on the success of the pilot.</p>	<p>Short to Medium Term</p>	<p>CPC</p>

### 2.2.4.1.9.9.3. STRATEGIC OBJECTIVE #62C

#### To encourage other miscellaneous voluntary source reduction initiatives.

As part of the source reduction strategy, households, businesses, institutions, non-profit organizations, and government agencies will be encouraged to voluntarily reduce waste generation, through the buying and manufacturing of products which generate less waste, or waste that may be reused, composted or recycled. All businesses and institutions committed to the Clarendon Destination Brand will be required to make a commitment to this initiative. In addition to reducing the pressure on the limited resources of the NSWMA, this will help to foster environmental responsibility.

#### RECOMMENDED POLICIES

- All local businesses, organisations and institutions committed to the Clarendon Destination Brand will be required to commit to voluntarily reducing waste generation, through the buying and manufacturing of products which generate less waste, or waste that may be re-used, composted or recycled.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement a comprehensive and aggressive public awareness programme to promote source reduction within local households. This programme, should among other things, highlight simple source reduction strategies such as:</p> <ul style="list-style-type: none"> <li>• Buying products in bulk to reduce packaging.</li> <li>• Purchasing more durable, reusable, refillable or returnable products etc.</li> </ul>	<p>Short Term</p>	<p>NSWMA, JET, CPC</p>

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage local manufacturers to explore the practice of green design (the manufacturing of goods that either generate less waste or waste which is less costly to recycle)	Short to Long Term	JET, GOJ
Encourage all vendors to provide environmentally friendly shopping bags.	Short Term	JET, CPC, NSWMA, GOJ, NEPA
Encourage all food establishments to replace Styrofoam containers with eco-friendly containers.	Short Term	JET, CPC, NSWMA, GOJ, NEPA

### 2.2.4.1.9.10. STRATEGIC OBJECTIVE #63

**To promote the sorting of solid waste at the household level in order to recover recyclables and compostables and to support the efficient management of the waste stream.**

The effectiveness of the overall SWM strategy relies heavily on the effective sorting of the waste generated. Separating the different elements found in waste, will be essential for the recovery of the compostable and the recyclables, which minimizes the amount of material sent to landfills. This will take place at the household level in defined categories. Failure to sort the waste will result in the imposition of appropriate penalties.

### RECOMMENDED POLICIES

- Solid waste generated should be separated at the source in defined categories deemed appropriate by the Authority.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide support to households in obtaining adequate storage containers for the sorting of waste. The possibility of using recycled tyres should be explored.	Short to Medium Term	NSWMA, CPC
Develop appropriate penalties for those who fail to sort the waste at the source.	Short Term	NSWMA, MLGCD, GOJ

### 2.2.4.1.9.11. STRATEGIC OBJECTIVE #64

To regulate the storage of solid waste in order to ensure ease of handling and to safeguard public health.

The regulation of solid waste storage facilities will be promoted since it can bring a number of important benefits to the management of the parish's waste stream.

## 2.2.4. WASTE MANAGEMENT

Whilst many residents are claiming that infrequent garbage collection is forcing them to use alternative methods of waste disposal, containerisation and storage may actually be the more problematic issue. Hence Government will be encouraged to amend the National Solid Waste Management Authority Act to legislate specific standards for storage facilities. These standards will relate to size, siting, design, covering, etc. of both private and public solid waste storage facilities. This will ensure ease of handling for the NSWMA and will also minimize the incidences of the scattering of waste by scavenging animals.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the GOJ to amend the National Solid Waste Management Authority Act to provide specific standards for storage facilities. Amendments to the Act should also include penalties for not using the recommended containers.	Short Term	NSWMA
Increase awareness of the specific standards for the storage of solid waste.	Short Term	NSWMA, CPC

### 2.2.4.1.9.12. STRATEGIC OBJECTIVE #65

**To promote the composting of organic waste as a strategy to reduce the waste stream and to generate income.**

Compostables continuously account for the largest percentage of the solid waste generated. This is generally in excess of 50 percent of the total composition, and therefore composting<sup>64</sup> will be used to significantly reduce the waste stream. While this is an environmentally friendly option for the disposal of organic solid waste, it can also be viewed as an economic prospect for the Clarendon Development Area. The parish is highly dependent on farming as an economic activity, and compost is a key ingredient in organic farming. Furthermore, the visioning situation validation and workshops highlighted the fact that the price of chemical fertilizers is a major obstacle to the development of the agricultural sector. Research has shown that there is a global trend towards healthier eating choices, including organically produced food. To this end, cheap, locally produced compost may be a suitable alternative and a catalyst to agricultural development. Additionally, the compost produced may be used in gardening, landscaping, and horticulture, which is also part of the overall strategy for the sustainable development of the parish.

### RECOMMENDED POLICIES

- The composting of organic waste, especially in rural areas, will be promoted.
- All public markets should provide composting sites for organic waste on a daily basis. Compost from local markets may be used in public landscaping projects or to generate revenue for the Local Authority.
- Composting facilities should be properly screened and sited to minimize disturbance to nearby properties or land uses.

<sup>64</sup> Composting is the controlled decomposition of organic waste, producing compost.

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Create and launch an education campaign promoting on-site composting.	Short Term	RADA
Provide technical guidance in the development of composting facilities.	Short to Long Term	RADA
Promote composting as a viable economic activity.	Short Term	MICAF, RADA
Encourage farmers to use cheap, locally produced compost, as opposed to expensive chemical fertilizers.	Short Term	MICAF, RADA
Encourage the development of small business for the packaging and sale of compost. These businesses may need to collaborate with the NSWMA in the collection of the organic waste.	Short to Long Term	MICAF, RADA

### 2.2.4.1.9.13. STRATEGIC OBJECTIVE #66

**To promote recycling as a strategy to reduce the waste stream to a manageable level, and to generate income whilst safeguarding environmental health.**

The parish of Clarendon generates tonnes of recyclable solid waste on an annual basis. This waste includes cardboard, paper, plastic, glass, rubber and metal which end up in a landfill/dump or in parts of the natural environment. Recycling these waste will therefore reduce environmental damage, reduce the strain on the existing landfill facilities, and further reduce the waste stream to manageable levels for the overburdened NSWMA. It will also generate revenue and create employment for a few persons.

Recycling programmes will be promoted in communities, businesses, schools and other institutions within the parish. These programmes will place emphasis on the recycling of plastic waste, although the recycling of other waste will also be encouraged and supported. There are several ongoing programmes, including public and private sector led programmes such as Recycle Now Jamaica and the scrap metal trade, which operate inside and outside of the parish and may be strengthened or expanded locally. Awareness of such programmes will be increased and support will be given to individuals, communities, businesses, schools and other institutions wishing to participate. This support will include the facilitation of direct links, as well as the provision of recycling bins<sup>65</sup> (including community bins) and collection services. Additionally, the relevant authorities will support the development of recycling depots and recycling transfer stations within the parish. The local planning authority will also seek to ensure that provision is made for recycling facilities in new developments to facilitate the recycling of solid waste.

<sup>65</sup>. See also Strategy # 4 above.

## 2.2.4. WASTE MANAGEMENT



Figure 55: Recycled tyres.

Sources: <https://s-media-cache-ak0.pinimg.com/736x/7b/a6/dc/7ba6dc77a1dd44b34bfc04e3916f8189.jpg> and <http://assets.inhabitat.com/wp-content/blogs.dir/1/files/2012/08/Andries-Botha-Recycled-Tyres-Elephant-The-Hague-2.jpg>

### RECOMMENDED POLICIES

- All public sector institutions will develop and implement recycling programmes.
- The relevant authorities will support the development of recycling depots and recycling transfer stations within the parish, provided that they are appropriately sited.
- The local planning authority will seek to ensure that provision is made for recycling facilities in new developments to facilitate the recycling of solid waste.

### SPECIFIC ACTIONS

Increase awareness of recycling programmes and initiatives such as Recycle Now Jamaica, in which local citizens, communities, businesses, schools and other institutions can participate. Awareness programmes should be very detailed and include information such as the names, addresses, contact numbers and opening hours of organisations that accept recycled waste. The awareness programmes should also clearly highlight the potential for income generation.

### TIME FRAME

Short Term

### RESPONSIBLE AGENCIES/GROUPS

NSWMA, CPC, JET

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide support to individuals, communities, businesses, and schools and other institutions voluntarily wishing to participate in recycling programmes. Support should include the facilitation of direct links, as well as the provision of recycling bins (including community bins) and collection services.	Short to Medium Term	NSWMA, Private Sector, JET

### 2.2.4.1.9.14. STRATEGIC OBJECTIVE #67

**To ensure a reduction in littering and illegal dumping to safeguard public and environmental health.**

Littering, which is arguably one of the most difficult SWM issues to tackle, as well as illegal dumping, will be dealt with through the provision of adequate bins in public spaces and proper enforcement in the Plan area. Clarendonians are generally of the view that inadequate numbers of garbage disposal bins in public spaces is a contributing factor to littering, therefore, the relevant authorities will seek to ensure that adequate bins are provided. Consideration will be given to sorting in the provision of bins in public spaces. With regard to enforcement, the CPC's anti-litter ticketing system will be enforced right across the parish and the relevant authorities will seek to partner with Neighbourhood Watch groups to monitor illegal dumping. At the same time, the Government will be encouraged to speedily amend the National Solid Waste Management Act to increase the penalty for littering.

### RECOMMENDED POLICIES

- A zero tolerance approach will be taken to littering and illegal dumping in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Place adequate numbers of bins at strategic locations within public spaces within the parish. Consideration should be given to sorting in the provision of these bins. The use of recycled tires as bins should be explored.	Short Term	CPC, NSWMA, Private Sector
Encourage the Government to speedily amend the National Solid Waste Management Act to increase the penalty for littering	Short Term	CPC, MPs,
Enforce the anti-litter ticketing system across the entire parish.	Short Term	CPC

## 2.2.4. WASTE MANAGEMENT

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Forge partnerships with Neighbourhood Watch groups to monitor illegal dumping in the parish.	Short Term	CPC, NSWMA

### 2.2.4.1.9.15. STRATEGIC OBJECTIVE #68

**To improve the efficiency of the transportation phase of the SWM system by developing a landfill or a waste transfer station.**

The development of a landfill or a waste transfer station within Clarendon is integral to efficiently manage the parish's solid waste. According to the PIOJ (2007) the transportation phase of the waste management process, is one of the most inefficient, and this is partly due to the long distances over which trucks have to haul the waste. Developing a landfill in a central location of the parish will significantly reduce this hauling distance to more economic levels for the NSWMA, while the establishment of a transfer station will facilitate the combining of the loads of several individual waste collection trucks into a single load for a larger vehicle. Both developments could also lead to improved levels of garbage collection within the parish. Hence this Plan supports the development of a landfill, including a privately operated facility, or a waste transfer station within the Plan Area.

In the planning phase for either development, adequate consideration will be given to potential environmental and social impacts. The landfill or the waste transfer station will be sited in such a way that there is no detrimental impact on environmentally sensitive areas and it or its related activities are not a nuisance to adjoining land uses. Particular attention will be given to avoiding the pollution of the local water resources, including the groundwater. The mismanagement of these facilities which may result in the formation of a dump will also be strongly resisted. It follows that the developer will be required to provide a management plan to the local authority as part of the development approval process. In the case of a private landfill development, the Government will utilize a highly consultative process in the development of the framework for managing the facility.

Adequate plans will also be put in place to maximise the use of lands and minimize any adverse environmental impacts following the closure of a landfill. These plans will involve the restoration of the land into an appropriate use which is compatible with the adjoining land uses, and does not end up posing a threat to human health. Such uses may include: recreational use, greenspace, industrial use and utility sites.

### RECOMMENDED POLICIES

- The relevant authorities will support the development of a waste transfer station or a landfill, including a privately operated facility, in the parish.
- Solid waste should be disposed of in designated landfill sites.
- The landfill or waste transfer station will be sited so that there is no detrimental effect on surface or underground water resources and pollution of other resources is prevented.
- The landfill or waste transfer station will be sited such that there is no negative social impacts on the local population.
- The developer of a waste transfer station or landfill will be required to provide a management plan to the local authority as part of the development approval process.

## 2.2.4. WASTE MANAGEMENT

### RECOMMENDED POLICIES

- There should be an acceptable scheme of restoration with the planning authorities to make landfill sites suitable for an agreed use after they have reached their capacity.
- In the case of a private landfill development, the Government will utilize a highly consultative process in the development of the framework for managing the facility.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a landfill or a waste transfer station within the parish.	Medium to Long Term	GOJ, NSWMA, Private Sector

#### 2.2.4.1.9.16. STRATEGIC OBJECTIVE #69

##### To support suitable alternatives to landfilling in the parish.

There is a growing range of established and new technologies, which offer alternatives to landfills, and may also recover value from the waste. These technologies include incineration, gasification, and pyrolysis. Whilst this Plan is promoting landfilling<sup>66</sup> as the means of solid waste disposal in the parish, it does not object to the application of other technologies. The relevant authorities will support the use of alternatives to landfills, provided that there will be no adverse social or environmental impact. Interested developers will however be encouraged to carry their own feasibility studies.

### RECOMMENDED POLICIES

- The relevant authorities will support the use of alternatives to landfilling, provided that there will be no adverse social or environmental impact.

#### 2.2.4.1.9.17. STRATEGIC OBJECTIVE #70

##### To ensure adequate provisions are made for the management of hazardous waste.

Ensuring adequate provisions are made for the management of hazardous waste is an essential part of the parish's waste management strategy. With this plan seeking to improve the socio-economic status of the Parish and bridge the digital divide in the local area, the amount of hazardous waste generated will increase. This situation has the potential to negatively impact human and environmental health since there is currently no comprehensive or integrated statutory framework covering the management of hazardous waste in Jamaica. This situation therefore underscores a need to implement a strategy to ensure that hazardous waste is properly managed within the parish. The hazardous waste management strategy for the parish will focus primarily on progressively reducing and ultimately eliminating the adverse effects of hazardous waste on the local environment. This objective will be met by improving waste management practices within the parish through a number of initiatives which mainly relate to policy implementation. All institutions using, storing or generating hazardous materials, substances or equipment will be required to have hazardous waste determinations conducted to ascertain the amount of hazardous waste generated, or stored on site in order to ensure adequate data and information to inform future hazardous waste management policies. Emphasis will also be placed on reducing, reusing, recycling and the recovery of hazardous waste, and adequate information on waste which are classified as hazardous will be provided to prevent such waste from ending up in the normal waste stream.

66. Landfills can also recover value from waste through the capture of landfill gas, but this will not be actively promoted since composting will be.

## 2.2.4. WASTE MANAGEMENT

Additionally, the relevant authorities will be encouraged to expeditiously develop a national hazardous waste management policy which will be supported locally. Adequate monitoring will also be undertaken to ensure compliance with all the established guidelines and regulations.

### RECOMMENDED POLICIES

- Hazardous waste management in the parish will utilize the following waste management hierarchy:
  - Reduce;
  - Reuse;
  - Recycle;
  - Recover; and
  - Residual management.
- The planning authority will give special attention to the creation of special hazardous waste disposal sites where and when necessary for the safe disposal of hazardous materials.
- Development involving processes likely to give rise to the generation of hazardous wastes will only be permitted where the Planning Authority is satisfied that:
  - There are no practicable or reasonable alternative to the process proposed.
  - All reasonable measures and procedures have been adopted to minimize the generation of waste
  - Waste will be treated, stabilized or neutralized on site as far as practicable
  - Appropriate measures for safe transport, handling, and disposal can be implemented and enforced.
- Institutions using, storing or generating hazardous materials, substances or equipment will be required to have a hazardous waste determination conducted to ascertain the amount of hazardous waste generated, or stored on site, in order to ensure adequate data and information to inform future hazardous waste management policies.
- The relevant authorities will seek to ensure that hazardous waste is not disposed of in the normal waste stream.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a hazardous waste management policy.	Short Term	NEPA, MOH, NSWMA, MEGJC
Provide adequate information on waste which are classified as hazardous.	Short Term	NEPA, MOH, NSWMA
Undertake adequate monitoring to ensure compliance with guidelines and regulations set out for the management of hazardous waste.	Short to Long Term	NEPA

## 2.2.4. WASTE MANAGEMENT

### 2.2.4.1.9.18. STRATEGIC OBJECTIVE #71

**To ensure adequate provisions are made for the management of ship generated and medical wastes.**

Ship generated and medical wastes need to be managed and disposed of properly. Under this Plan, the relevant authorities will ensure special provisions are made for the management of such wastes. These provisions will protect the environment, ensure compliance with national polies and regulations which govern waste management, and also protect the local population from the risks associated with inappropriate handling, treatment and disposal.

Among the specific actions is the provision of waste reception facilities at local ports. According to the International Convention on the Prevention of Pollution from Ships (MARPOL 73/78), home ports must provide port reception facilities to treat and dispose of ship generated wastes. With this plan promoting increased maritime activities in the parish, it means that consideration will be given to the provision of adequate port reception facilities to treat and dispose of these wastes.

Additionally, attention will be given to the creation of medical waste disposal sites where and when necessary for the safe disposal of such waste. In such cases, first consideration will be given to the establishment of state-of-the-art non-incineration automated medical waste plants.

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that adequate provisions are made for the management of ship generated and medical wastes.
- The relevant authorities will carry out adequate monitoring to ensure full compliance with waste management regulations.
- The relevant authorities will seek to enforce all regulations related to the management of ship generated and medical.
- The planning authority will give special attention to the creation of medical waste disposal sites where and when necessary for the safe disposal of such waste. In such cases, first consideration will be given to the establishment of state-of-the-art non-incineration automated medical waste plants.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Carry out a needs assessments at the local port in order to set out the waste management requirements each.	Medium Term	NEPA, NSWMA, Port Authority of Jamaica, operators of Private Ports
Ensure waste management requirements for each port, as highlighted by the needs assessments, are met.	Medium Term	NEPA, NSWMA, Port Authority of Jamaica, operators of Private Ports

## **2.2.5. THE TELECOMMUNICATIONS SECTOR**

### **2.2.5.1. BACKGROUND AND OVERVIEW OF THE TELECOMMUNICATIONS SECTOR**

The telecommunications industry may be considered to include telephone, cable and internet. Prior to 1999, this industry in Jamaica (including Clarendon) was dominated by one service provider, who enjoyed a monopoly on telephone services. However, in 1999 the GOJ in an effort to develop a competitive and vibrant telecommunications industry and to move Jamaica towards a knowledge-based connected society, embarked on a liberalization program. The liberalization was carried out on a phased basis and was completed in the year 2003. (Golding, Tennant & Virtue, n.d.).

Since the liberalization program commenced, there has been an explosion in the number of telecommunications licences granted in Jamaica; the industry has experienced among the highest levels of expansion and investment in the country's economy. The growth in the industry has supported the use of new methods of transmitting voice, data and video, which stems from the growth in the ICT industry over the past two decades. In addition to that, the introduction of broadband has greatly increased the speed, quantity and quality of data-transfer, and has also reduced access rates. This therefore means that the benefit of the sector to the economic industry has significantly increased. (Golding et al, n.d.).

Currently, Digicel and FLOW are the main partners in the supply of telecommunication services to the parish of Clarendon. These companies, together with local cable providers such as General Satellite and Combine Cable, provide telephone, cable and internet access to most areas of the parish. According to the SDC (2014), 98.8% of the households have access to telephone service; 75.3% via cellular phones, 4.3% through landlines, and 13.3% having a combination. At the time of the survey, the internet was accessible by only 6.9% of households, but this number is believed to be increasing rapidly.

### **2.2.5.2. ISSUES AND CHALLENGES WITHIN TELECOMMUNICATIONS SECTOR**

#### **2.2.5.2.1. INEQUITABLE ACCESS**

Clarendon is facing a situation of digital divide due mainly to a development gap in the parish's telecommunications infrastructure. Several rural areas of the parish are without access to telecommunications services, particularly landline and internet services, which is due mainly to the reluctance of telecommunications network operators to invest in the rural infrastructure. This reluctance is stemming from the fact that investment in the telecommunications infrastructure in these areas will be far less profitable than in the areas currently serviced, and may not even provide a reasonable rate of return for an investor.

In addition, a number of families in the parish are excluded from device ownership because of their economic standing. That is, most computing devices are relatively expensive and are therefore unaffordable to the poor. This is also contributing to the digital divide, as device ownership is critical to supporting ICT literacy and personal productivity. It is necessary to increase device ownership in the parish.

#### **2.2.5.2.2. VULNERABILITY OF THE INFRASTRUCTURE TO NATURAL HAZARD EVENTS**

Much of Clarendon's telecommunications infrastructure is erected on land. This makes it quite susceptible to damages from natural events, particularly hurricanes and tropical storms, as the parish is vulnerable to these weather events. See 2.3.3.1. Hydro-Meteorological Hazards, pg. 181. In the past, hurricanes and tropical storms have had disastrous impacts on the telecommunications network in the parish. The high winds and heavy rainfall associated with these systems, as well as landslides induced by the rainfall, have displaced or damaged poles, transmission lines and other equipment, costing the operators millions of US dollars to repair/replace. It has also inflicted heavy socioeconomic cost on other stakeholders of the parish, as telecommunications is identified as a critical service, and service disruptions sometime lasted for several weeks.

## 2.2.5. THE TELECOMMUNICATIONS SECTOR

It follows therefore that there is a need to increase the resilience of the telecommunications infrastructure to natural hazards.

### 2.2.5.2.3. VISUAL POLLUTION

The growth of the telecommunications sector in the parish has given rise to the erection of cellular base stations, the laying of cables, and the installation of other telecommunication apparatus and devices such as antennae and satellite dishes for both domestic and commercial use. Often times, these equipment or devices are very tall and prominent, and are usually located where they are a visible feature of the landscape. This is threatening the visual quality of some local areas and is emphasizing a need for their regulation.

### 2.2.5.5. PARISH STRATEGIES

#### 2.2.5.5.1. STRATEGIC OBJECTIVE #72

**To support the extension of wired and wireless networks to encompass the entire geographical and demographical spread of the parish.**

Telecommunications is becoming more and more important for full participation in socioeconomic development at all levels. It is therefore critical that access to the telecommunication infrastructure be increased in rural areas, by expanding the infrastructure, to support sustainable development. The expansion of the infrastructure is required particularly to support the education sector and the planned development of the tourism and logistics industries. It is necessary for bridging the digital divide in the local education system as several rural schools in the parish are severely lacking access to ICT. With the MSET<sup>67</sup> and the MOEYI implementing a “tablets in schools programme,” and this Plan promoting the increased use of telecommunications technology in schools, the expansion of the telecommunications infrastructure into rural areas will be critical to ensuring the same quality of education for all. In addition, several rural areas of the parish have been earmarked for significant tourism development, and access to ICT will be critical to capitalise on the growing trend towards international internet marketing and booking. Internet access at these locations will also be key for the convenience of tourists. Similarly, ICT will be a critical component of the logistics industry, as it is a prerequisite of efficient supply chain management. Other sectors, including the services sectors are also set to gain significantly.

Nevertheless the relevant authorities will seek to ensure that there is no adverse social and environmental impact from the expansion of the infrastructure. Adequate consultations will be undertaken with all stakeholders and planning permission will be required where appropriate.

### RECOMMENDED POLICIES

- The Planning Authorities will support the expansion of telecommunications infrastructure, including the installation of associated apparatuses, equipment, and devices, provided that there will be no adverse social or environmental impact, and the land to be developed meets the necessary guidelines for the structures proposed.
- Pre-application consultation and discussion will be undertaken between the operator, the planning authorities and all other stakeholders and interested parties before planning permission is granted.
- Operators shall submit statements indicating compliance with World Health Organization’s guidelines for non-ionizing radiation protection with each application before it will be considered by the planning authority.

67. Formerly the Ministry of Science, Technology, Energy and Mining.

## 2.2.5. THE TELECOMMUNICATIONS SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Expand the ICT infrastructure to cover the entire parish.	Short to Long Term	Utility Companies

### 2.2.5.5.2. STRATEGIC OBJECTIVE #73

**To increase access to the internet by promoting public and private access.**

Access to internet is crucial for connecting people to the information and skills they need in this increasingly digital environment. Internet penetration is however quite low in the parish of Clarendon. A key strategy of this Plan is to facilitate an increase in access to the internet. In order to achieve this objective, both public and private internet access will be promoted. Under this strategy, the deployment of Community Access Points (CAPs) in the parish will be expanded. Public and private sector partnerships will also be encouraged to establish internet connectivity in publicly accessible spaces. Additionally, the Government will explore the feasibility of providing broadband subsidies to poor and low income families, to enable easier access to internet services.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Expand the deployment of CAPs within publicly accessible spaces	Short to Long Term	MSET
Encourage public and private sector partnerships to establish internet connectivity in publicly accessible spaces	Short Term	MSET, CPC
Explore the feasibility of providing broadband subsidies to poor and low income families.	Short to Medium Term	GOJ

### 2.2.5.5.3. STRATEGIC OBJECTIVE #74

**To increase device ownership to bridge the digital divide gap and to support ICT literacy and personal productivity.**

In order to bridge the digital divide and support ICT literacy and personal productivity, there is need to increase device ownership, particularly amongst the poor. The poor is excluded from device ownership due to their economic standing and therefore this strategy will focus on the provision of low cost and free devices to this sector of the population. This will include the combined efforts of both the public and private sectors. Under this strategy, a programme will be developed which accepts charitable and corporate donations of computing devices and professionally refurbish them and make them available for low income families. In addition to that, the relevant authorities will support the importation and sale of low cost computing devices, including used devices. Furthermore, public sector and private sector entities will seek to provide donations of computing devices to low income families where possible.

## 2.2.5. THE TELECOMMUNICATIONS SECTOR

### RECOMMENDED POLICIES

- The relevant authorities will support the importation and sale of low cost computing devices, including used devices, provided that they satisfy the necessary standards.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a programme where charitable and corporate donations of computer hardware are accepted and professionally refurbished and made available for low income families.	Short Term	CPDCBS
Import and sell low cost computing devices.	Short to Long Term	Private Sector
Make donations of computing devices to low income families.	Short to Long Term	Private Sector, Public Sector Agencies

#### 2.2.5.5.4. STRATEGIC OBJECTIVE #75

**To enhance the resiliency of the telecommunications infrastructure to ensure the continuous provision of services.**

The continuous provision of services by critical infrastructure, including during and after disaster events, is essential to the health, safety, security and economic well-being of the local population. It is therefore necessary to enhance the resiliency of the telecommunications infrastructure. This objective will be achieved by: 1. undertaking vulnerability assessments of the infrastructure, 2. prioritizing the risks identified from the vulnerability assessments, and 3. implementing plans to make the infrastructure more resilient. Additionally, all new parts of the infrastructure will be sited in such a way that they avoid or minimise hazard exposure. See 2.3.9.19. Strategic Objective #95, pg. 220

#### 2.2.5.5.5. STRATEGIC OBJECTIVE #76

**To protect the character and visual amenity of the environment.**

Growth in the ICT sector has given rise to the erection and installation of several types of apparatuses and devices which are threatening the visual quality of some areas in the parish. With this Plan promoting further growth, the issue will become more apparent, underscoring a need for control of erecting these devices. Consequently, policies will be put in place to regulate their use. These policies will focus primarily on the size, design and location of the telecommunications facilities, apparatuses and devices.



Figure 56: Cell towers disguised as trees. Such designs may help to protect the visual environment in the Plan Area.

Sources: [http://i01.i.alimg.com/img/pb/526/481/651/651481526\\_645.JPG](http://i01.i.alimg.com/img/pb/526/481/651/651481526_645.JPG), [http://archive.castlepinesconnection.com/pages/news/2011/qtr2/cpc/monoPine2\\_03-22-11\\_16\\_1col.jpg](http://archive.castlepinesconnection.com/pages/news/2011/qtr2/cpc/monoPine2_03-22-11_16_1col.jpg) and <https://s-media-cache-ak0.pinimg.com/236x/ce/d0/86/ced086c0f80dbadbef9d7d75eab8cd8a.jpg>

## 2.2.5. THE TELECOMMUNICATIONS SECTOR

### RECOMMENDED POLICIES

- The Planning Authorities will ensure that the erection or laying of telecommunications equipment will not result in unnecessary proliferation. Consideration will be given to the possibility of sharing existing equipment such as masts, as well as replacing one with another for joint use or erecting one suitable for joint use.
- Where possible the proposed development should be designed so that it blends into the environment and minimizes the visual impact. Different solutions, types of material and colours should be utilized where possible.
- Telecommunication requirements should be considered at an early stage in new developments as the installation of visually intrusive equipment at a later date may not be permitted.
- The siting and design of telecommunications facilities, equipment and apparatus will at all times be such that they do not have a severe impact on the character and visual amenity of the environment.
- Proposals for the erection of commercial antennae within the curtilage of industrial or commercial premises will be considered taking into account the scale of the equipment in relation to its surroundings and the existence of similar equipment in the vicinity of the site. Under normal circumstances, the size should not exceed 1.8m in diameter.
- The erection of antennae on business premises will not normally be permitted where the proposal is such that it is visible from public areas or from the habitable room window of a dwelling which overlooks the site.
- Planning permission will be required for the installation of satellite dishes with a diameter greater than 70 cm in residential developments.
- Where planning permission is required for the erection of an antenna on any residential dwelling, the application will be considered in terms of:
  - any existing antenna on the building;
  - the size which should not be greater than 1.8m in diameter; and
  - the visual effect on occupiers of adjacent land.
- Satellite dishes should, wherever possible, be located at the rear of a building or premises or on lower roofs and should be as unobtrusive as possible.
- Telecommunication devices will not normally be allowed on sites of historic, architectural or archaeological significance or on buildings within conservation areas. Consideration will be given to siting these on adjoining buildings or where they will least jeopardize the character and appearance of the site or heritage building.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.1. THE DISASTER MANAGEMENT FRAMEWORK

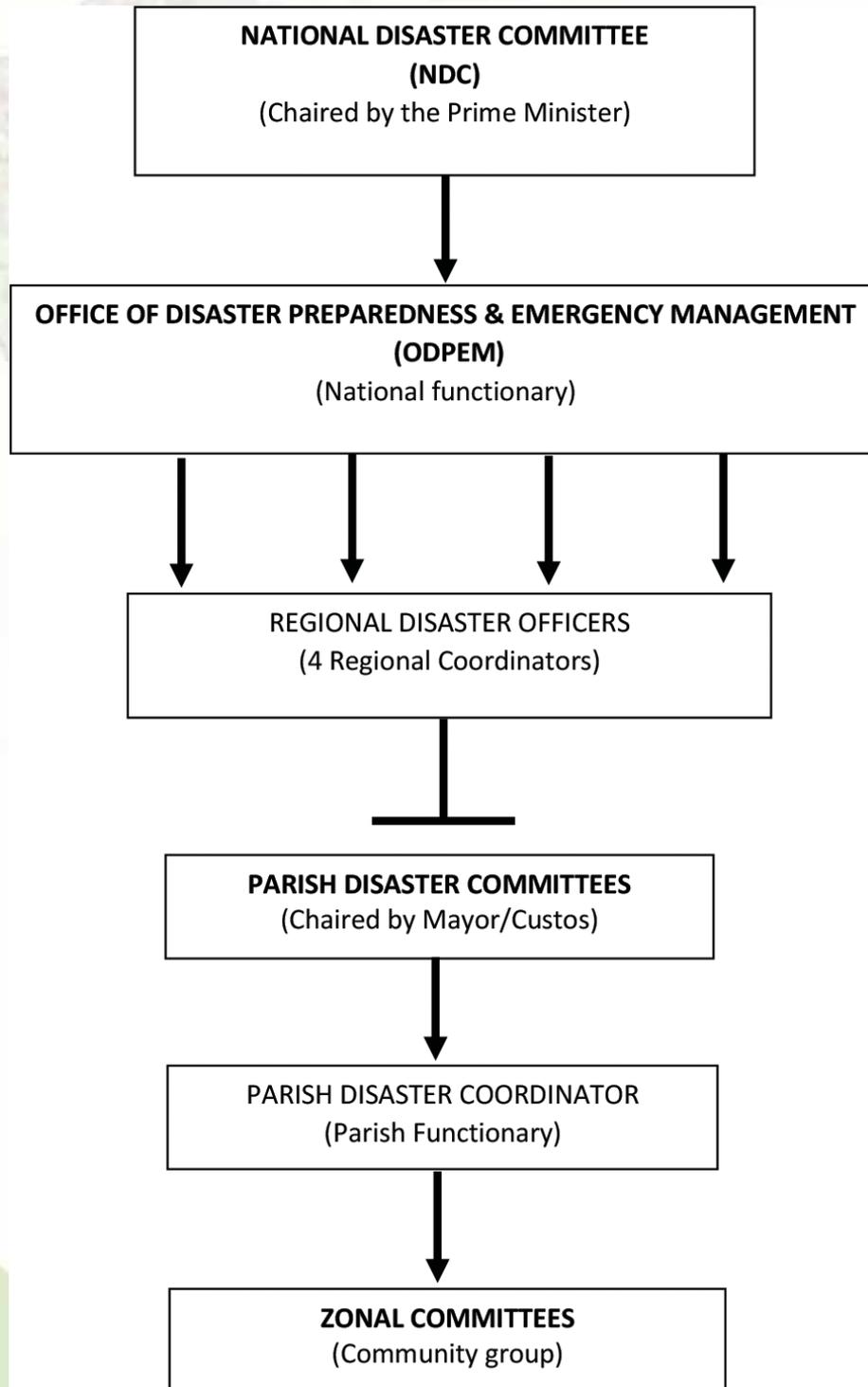


Figure 57: The Disaster Management Framework in Clarendon.  
Source: Clarendon Disaster Management Plan (n.d.).

Disaster Management encompasses all aspects of planning for and responding to disasters, including the before, during, and after disaster activities. In Clarendon, it is coordinated from the national level, as well as at the parish and community levels. At the national level, the disaster management programme is managed by the NDC and its six sub-committees<sup>68</sup>. The NDC is the senior disaster planning body in Jamaica, and is chaired by the Prime Minister who is also the overall manager of the nation's preparedness, mitigation, recovery and rehabilitation efforts.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

The ODPEM is the main body within the NDC and is responsible for coordinating the management of the various types of disasters that affect the nation. Several agencies, including all government ministries, all utility companies, international donor agencies and search and rescue organizations are also members of the NDC, and they work alongside the ODPEM to fulfil its mandate.

At the parish level, the ODPEM works through the Clarendon Parish Disaster Committee which operates out of the CPC office. This committee is chaired jointly by the Custos of the parish and the Mayor of May Pen, with the Mayor being the working member of the committee. The parish also has a Disaster Coordinator who is responsible for coordinating all the activities geared towards preparedness, prevention, mitigation and response. Other members of the committee include councillors and key representatives<sup>69</sup> of the parish council system. The role of this committee is to respond at the parish level whenever there is a disaster, and also to forge links with the response agencies, community groups and community-based organizations. It further has the responsibility of formulating its own plan to deal with local emergencies in keeping with the guidelines set out by the ODPEM.

Disaster management at the community level takes place through the zoning programme which is coordinated by the National Zonal Committee and led in the parish by the Red Cross (even though this responsibility lies with the Adventist Development and Relief Agency (ADRA)). This programme works by dividing the island into clusters of communities called zones, which are further subdivided into focal points. Each zone is monitored by a Zone Chairman who gives information on disasters or potential disasters to the Parish Disaster Committee, and is also responsible for identifying resource personnel and other resources needed by communities. This chairman is usually supported by a Zonal Committee, but at present, there are only a few active committees within the parish. These are, Thompson Town, Milk River, and Kellits. In the event of a disaster, the zones are the first group to render assistance. The focal points operate on a smaller level to the zone and work along with the Zone Chairman. Personnel at focal points are also responsible for identifying and ensuring the availability of resources and support personnel. They will also pass on information to zones regarding the state or level of disaster within their community.

### 2.3.2. PARISH EMERGENCY RESPONSE

The primary disaster response agencies<sup>70</sup> in the parish are the Fire Brigade, Police, Health Department, NWA and Roads & Works Department of the CPC as well as the utility companies. These agencies/ groups are primarily concerned with macro matters of damage assessment of infrastructure, restoration of services to the affected population, the preservation of law and order and the protection of life and property. Each of these agencies is expected to have its own Disaster Plan, a copy of which should be left with the Parish Disaster Coordinator, who will activate this Plan as circumstances warrant. These first responders are supported by the Poor Relief Department, the MLSS, the Red Cross, the Salvation Army, the SDC, the JIS, the ADRA, the Zone and Community Disaster Committees, the Shelter Management Team, and other private sector organizations that have pledged to serve. The Parish Emergency Operations Center (PEOC) is the hub of operations for coordinating the parish's emergency response. It is located<sup>71</sup> at the main office of the CPC and is the area where decision makers from the key response agencies come together to pool thoughts, ideas and answers to the emergency needs of the various local communities in the event of an emergency or a disaster. Each of these agencies is required to assign at least one senior representative to the PEOC who is authorized to take decisions regarding an emergency within the parish.

68. The six sub-committees are: Administration, Finance and the Public Service Committee, Damage Assessment, Recovery and Rehabilitation Sub-Committee, Emergency Operations, Communications and Transport Sub-Committee, Public Information and Education Sub-Committee, Welfare/Shelter and Relief Clearance Sub-Committee and the Health Planning Sub-Committee.

69. Poor Relief, Roads and Works, Representatives from the Jamaica Fire Brigade (JFB) and the Jamaica Constabulary Force (JCF), Representatives from government ministries, Agencies represented at the parish level such as the MLSS, the Jamaica Information Service (JIS), Representatives from utility companies and voluntary organizations. See Appendix for complete list.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

The PEOC may be activated partially or fully depending on the scale of the incident. Partial activation means, only some of the members are called out, while full activation means all the members are called out. The PEOC is activated when there is an incident, emergency or disaster situation which requires coordination, such as a large fire, drought, hurricane, health emergency or earthquake. It should be noted that the PEOC is required to coordinate emergency operations with those of the National Emergency Operation Center (NEOC) which is run by the ODPEM to coordinate national response.

### 2.3.3. NATURAL HAZARDS AND DISASTERS

#### 2.3.3.1. HYDRO-METEOROLOGICAL HAZARDS

##### 2.3.3.1.1. TROPICAL CYCLONES

The geographic location of Jamaica (at 18N and 77W, which is within the North Atlantic hurricane belt) makes all parishes of the island susceptible to tropical weather systems such as tropical depressions, tropical storms and hurricanes. The risk of these natural hazards is heightened during the Atlantic hurricane season, which runs from June through to November each year. During this period, warm sea surface temperatures promote the development of lower atmospheric circulations which form such tropical weather systems. These systems are usually associated with high winds and heavy precipitation which often generates flooding, landslides, and storm surges as secondary hazards. It follows therefore that vulnerability is accumulated from these multiple hazards.

Since 1940, over 30 hurricanes and tropical systems have passed within 200 km of Jamaica. Of the 34 systems to have passed from 1940 to 2008, approximately two-thirds have approached the country from the south, as depicted on the figure above, which gives a clear picture of Clarendon's vulnerability.

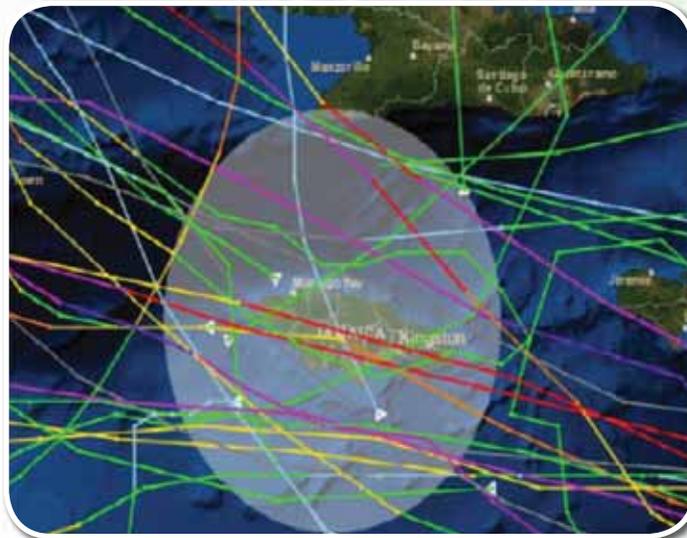


Figure 58: Hurricane and storms passing near (within 200 km) of Jamaica 1940-2008. Source: UWI (2013)

Furthermore, maps presented by Ahmad and Lyew-Ayee Jr (2012), show that the centre of at least eight tropical cyclones have impacted on the parish of Clarendon since 1851. The extent to which these systems impacted on the parish varied as a result of the size, intensity and path of the systems. In addition to that, the levels of impact across the parish varied as a result of several local factors, including topography. Given the parish's small size, these local factors are often negligible in the event of a major cyclone. To this end, construction type was and is an important factor in determining vulnerability to damage during a tropical cyclone event in the parish.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

It is projected that climate change will manifest itself through an increase in climate variability and extreme weather events, including an increase in the frequency of more intense hurricanes. Despite the total number of systems remaining constant, there is already some evidence of an increase in the frequency of intense tropical cyclones affecting Jamaica, as shown on the figures below, though the extent to which this increase is attributable to climate change is still the subject of research (UWI, 2013). It therefore means that climate change will amplify the risk of hurricane related disasters in the parish.

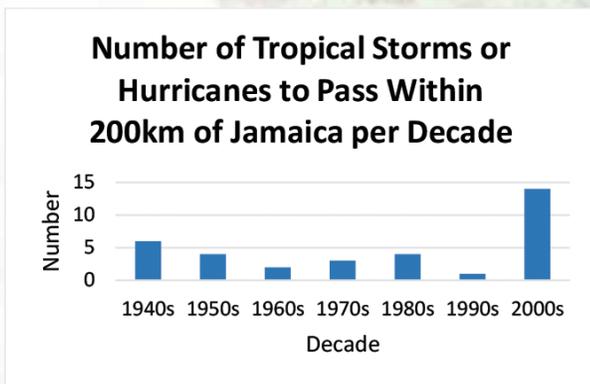


Chart 4: The Number of Tropical Storms or Hurricanes to Pass Within 200km of Jamaica per Decade. Data for the 2000s only include up to 2008. Source: UWI (2013).

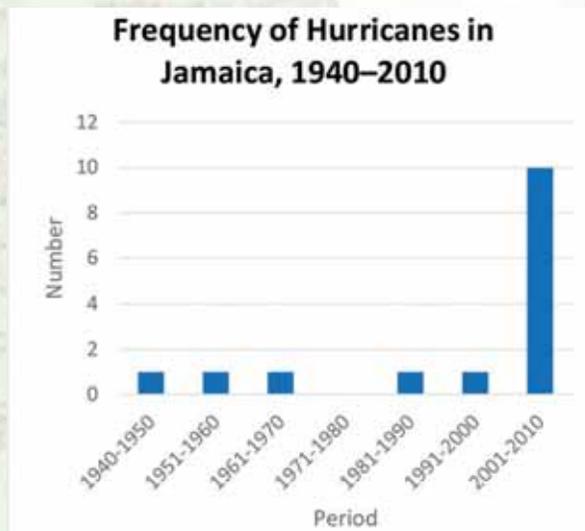


Chart 5: The Frequency of Hurricanes in Jamaica, 1940-2010. Source: PPCR (2010).

### 2.3.3.1.2. FLOODS

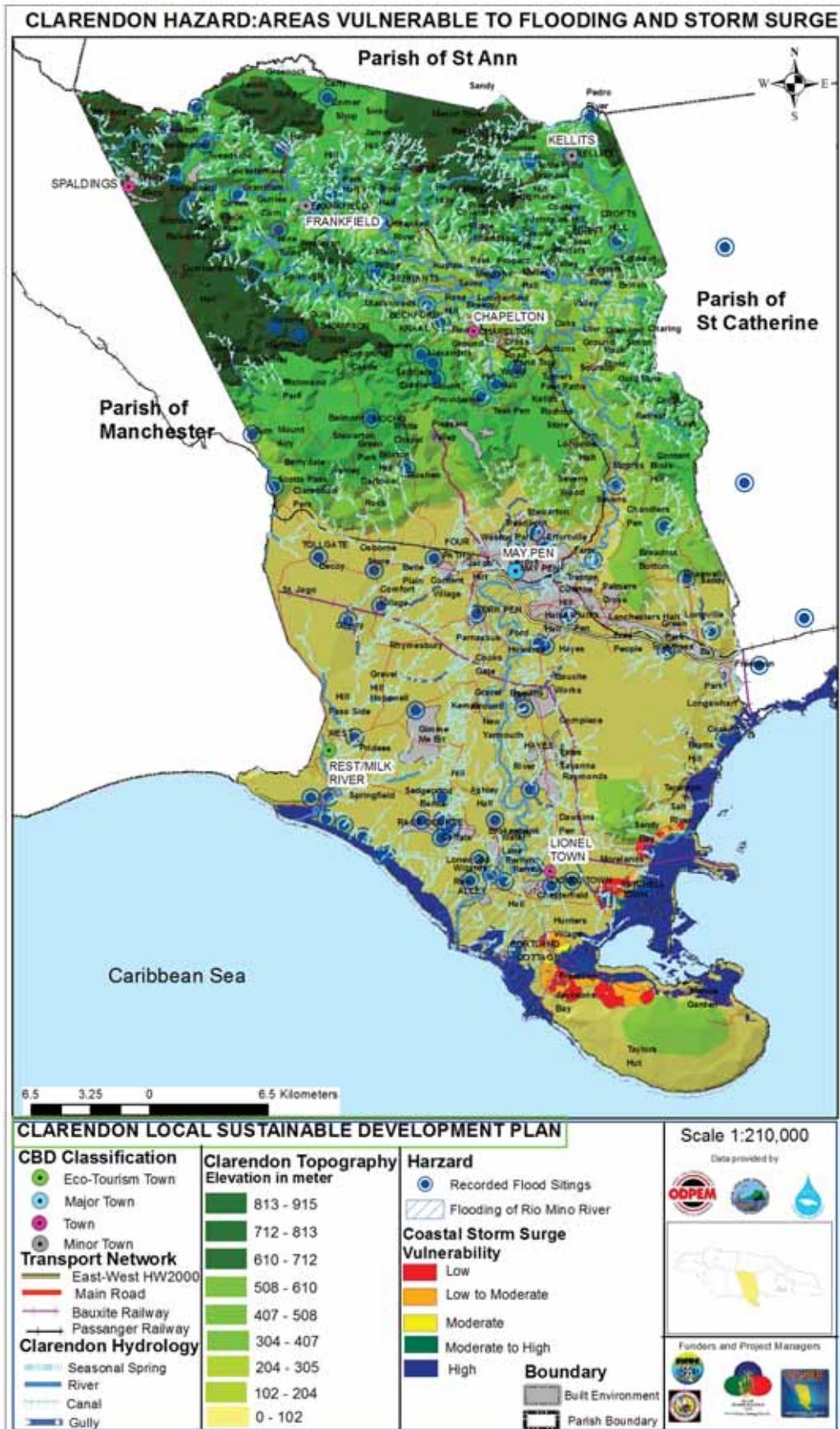


Figure 59: A church in Swansea flooded from heavy rains associated with Tropical storm Nicole.

Source: <http://www.jamaicaobserver.com/assets/5148388/Clarendon.jpg>

A flood is a natural hazard which occurs when water overflows or inundates land that is usually dry, threatening lives and property in the process. It usually results from intense rainfall, associated with tropical cyclones, cold fronts and other similar weather systems, or from storm surges associated with tropical cyclones or tsunamis. According to data compiled from the Clarendon Parish Disaster Plan (n.d.) and the ODPEM (n.d.), there are 78 communities or areas in Clarendon which are prone to flooding (See Appendix 8). They include both inland and coastal areas, which is a reflection of the variable ways in which the phenomenon occurs. The flooding of these areas generally involve flooding or damage to the transportation infrastructure which leads to access challenges, including for emergency purposes.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION



Map 7

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.3.1.2.1. COASTAL FLOODING

Coastal flooding is a natural hazard which results from storm surges associated with tropical storms and hurricanes, or tsunamis caused by earthquakes. The extent to which this natural hazard impacts on an area is a function of the inland elevation which flood waters penetrate, and is controlled by the topography of the coastal land exposed to the flooding. In this regard, low lying areas along the coast of Clarendon, e.g. Rocky Point and Portland Cottage which have elevations of zero to ten metres above sea level, are particularly vulnerable to coastal flooding. The risk of storm surge related coastal flooding in the parish is much higher than that related to tsunamis. According to Wiggins-Grandison (n.d.) while it is true that nature is unpredictable and all low-lying coastal areas are vulnerable to the threat posed by tsunamis, based on the history and the existing knowledge of plate motions and potential sources in the region, the threat of a large tsunami affecting Jamaica is relatively low. On the other hand, storm surge models prepared in 2010 by Smith Warner International and the PIOJ have placed the local community of Portland Cottage within the 1:25 year storm surge boundary<sup>72</sup> (Briefing for the Acting Prime Minister Peter Phillips and Minister of Local Government and Community Development Hon. Noel Arscot, 2012). Similarly, the UWI (2013) outlined that Portland Cottage is particularly vulnerable to storm surge based on its physical characteristics (sub-tropical dry forest, mangroves and swamps) and proximity to the coast. Other coastal areas of the parish are also vulnerable to storm surges. The briefing for the Acting Prime Minister Peter Phillips and Minister of Local Government and Community Development Hon. Noel Arscot (2012) also noted that a system which generates waves from directly south means that areas other than Portland Cottage could be impacted, but to a lesser extent. Likewise, the UWI (2013) noted that previous studies suggest that hurricanes which track south of Jamaica but in close proximity to its coastline can cause storm surges greater than 1m in height along a fairly long stretch of the parish's coast. This situation is heightened by the fact that approximately two-thirds (2/3) of all storms which pass within 200 km of Jamaica track south of the island<sup>73</sup> and climate change models are projecting an increase in the frequency of intense tropical cyclones.

In recent times, the communities of Portland Cottage and Rocky Point have been devastated by coastal flooding as a result of storm surges. The fishing communities were impacted during the passage of hurricane Ivan in 2004, and again in 2007 during hurricane Dean. As shown by the table below, surge height was estimated to reach a maximum of 3 metres in Portland Cottage during the passage of Hurricane Dean. In both events, over 80 percent of the structures within the communities experienced damage to some degree. Six lives were also lost in Portland Cottage during hurricane Ivan; the only casualties in the parish of Clarendon (Economic Commission for Latin America and the Caribbean (ECLAC), PIOJ & UNDP, 2004).

Extent of storm surges caused by Hurricane Dean.

<b>Location</b>	<b>Maximum Surge Height (m)</b>	<b>Run-Up Distance (m)</b>
Portland Cottage	3	1000
Rocky Point	1/4	20

Source: UWI (2013)

The incidences of coastal flooding in the parish are largely natural, but human influences on the environment are exacerbating the impacts. The ECLAC, the PIOJ and the UNDP (2004) outlined that the low lying settlement of Portland Cottage in the salt marsh is a classic example of the consequences of the inappropriate siting of settlements. The vulnerability of the settlement to coastal flooding is believed to be stemming from the fact that the settlement has been developed on a marginal site.

<sup>72</sup>. Surge heights in the 25 year boundary could be up to 2.9m. | <sup>73</sup>. See Tropical Cyclones above.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

Similarly, the ODPEM explained in a media release in 2011 that damage done to the mangrove coastline in Rocky Point as a result of the passage of hurricanes Dean and Ivan was compounded by the harvesting of mangroves for animal feed, sticks, lumber and charcoal.<sup>74</sup> Consequently, the capacity of the mangroves to protect the shoreline was significantly reduced.

### 2.3.3.1.2.2. INLAND FLOODING

A number of areas in Clarendon are highly susceptible to inland flooding (See Appendix), which is mainly riverine flooding associated with the Rio Minho and Milk River systems. The parish recorded over 150 such incidents between 1834 and 2008, which is the fourth highest number for all parishes in Jamaica (Ahmad and Lyew-Ayee Jr, 2012). Inland flooding is a natural phenomenon, but its impacts on the parish are being exacerbated by several anthropogenic factors, namely urbanization, deforestation, and pollution.

Urbanization is arguably the most significant factor contributing to inland flooding issues in the parish. According to Ahmad and Lyew-Ayee Jr (2012), many urban developments in the parish exacerbate the flooding problem by not taking into account surface drainage issues. A number of these developments have taken place on marginal sites (more specifically, on flood plains) or have obstructed natural drainage patterns. In addition to that, the continuous increase in impervious surfaces from this phenomenon is reducing the amount of rainfall interception, as well as the amount of water being infiltrated into the soil. This is increasing the volume of surface runoff; a situation exacerbated by the fact that impervious surfaces, including artificial drainage channels, also accelerate the movement of water. The end result is that there is an increased risk of flooding, including from the overflow of rivers, which is also worsened by the fact that floodplains are the sites of urban developments.

In addition, as highlighted earlier, deforestation is a major issue in the entire parish, but more so in the upper catchment of the Rio Minho. This removal of vegetation means that the natural barrier to surface runoff is being destroyed, as trees normally intercept rainfall and hold a portion of the water on their leaves and barks, and also allow water to percolate into the soil rather than rush off carrying particulate matter with it. Additionally, tree roots hold the soil in place, reducing the movement of sediment that can shrink river channels downstream. To this end, the deforestation in the Rio Minho catchment area is heightening the risk of flooding, as it is resulting in the rapid movement of rain water over land and into the Rio Minho and its tributaries, causing erosion in the process, which shrinks the river channels downstream and fills up the rivers more quickly; often causing an overflow.

To a lesser extent, inland flooding in the parish is also as a result of improper garbage disposal. This is mainly in the form of littering within some of the towns. Waste materials, including plastic bottles and plastic bags are often disposed of in the streets, resulting in them reaching drainage channels. At times, the build-up is sufficient to block these channels and divert storm water onto roadways during heavy rains.

### 2.3.3.1.3. DROUGHTS

The parish of Clarendon is particularly vulnerable to drought hazard as a result of several national and local factors. From a national standpoint, Jamaica lies within the tropics and so is dependent on more than one rainy season. A deficiency in any one of these seasons, which may be caused by El Nino or climate change, can therefore produce a damaging drought. At the local level, Clarendon is arguably the driest parish in Jamaica. This is by virtue of the fact that the parish recorded the lowest 30 year mean rainfall in Jamaica for the period 1971 to 2000 (Ahmad and Lyew-Ayee Jr, 2012). The parish is positioned in the orographic rain shadow of the Blue Mountains, and thus receive much less precipitation than the windward side of the island. Additionally, climate change is believed to be manifesting itself locally through an increase in climate variability

74. Source: <http://go-jamaica.com/pressrelease/item.php?id=141>

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

and extreme weather events, including droughts. Projections for climate variability include a decrease in the length of the rainy season by 7-8% and an increase in the length of the dry season by 6-8% (PPCR, 2011). This will increase the likelihood of droughts occurring in the parish.

The parish's increasing population and heavy reliance on agriculture, coupled with unsustainable practices, such as deforestation, pollution and the use of inadequate and inefficient water storage and delivery systems are already threatening water security. The Rio Minho hydrologic basin is projected have an annual water deficit of 161 million cubic metres by 2015; the largest of any hydrologic basin in Jamaica. Such conditions will only serve to amplify drought conditions (PPCR, 2011).

Over the years, the parish has witnessed its fair share of droughts, which include normal to extreme events. The year 2014 was particularly extreme as the parish experienced a drought for more than six months. Areas within Northern Clarendon, such as Frankfield, Crooked River, Trout Hall and Rock River are usually the hardest hit. This is due to the fact that the northern section of the parish relies primarily on surface water sources, and during the dry season output from the surface water sources may fall by as much as 70% (SDC, 2014).

### 2.3.3.2. GEOLOGICAL HAZARDS

#### 2.3.3.2.1. LANDSLIDES

Landslides are gravity-induced natural erosional processes, through which hill-slopes evolve and are triggered by both earthquakes and rainfall. In other words, it is a collapse of a mass of earth or rock from a mountain or cliff. In Jamaica, landslides generally occur in upland areas with steep slopes and relatively weak bedrock (Ahmad and Lyew-Ayee Jr, 2012). This holds true for the parish of Clarendon, as the aforementioned natural hazard is a chronic problem in the northern section of the parish (see table below) which has some similar characteristics. Such is the situation that Ahmad and Lyew-Ayee Jr (2012) demarcate this upper section of the parish as an area requiring the highest level of engineering effort, and recommend that development should be avoided in this area. They also stated that improvement in drainage, slope vegetation, and other landslide control mechanisms are required in this area to minimize the impact of the hazard.

The prevalence of this issue in Upper Clarendon is linked to two primary issues. This section of the parish has deeply weathered volcanoclastic sediments, volcanic rocks and limestone which form the Central Inlier (Ahmad and Lyew-Ayee Jr, 2012). The characteristics of such landforms usually make them highly vulnerable to landslides. In addition to that, deforestation, cultivation and construction activities are destabilizing the already fragile slopes (SDC, 2014). The last two activities are also increasing the level of disaster risk, as property and lives are being placed in the hazard vulnerable zone.

List of Areas Prone to Landslides		
• Kellits	• James Hill	• Spaulding
• Crofts Hill	• Frankfield	• Ritches
• Aenon Town	• Silent Hill	• Thompson Town to Chapelton

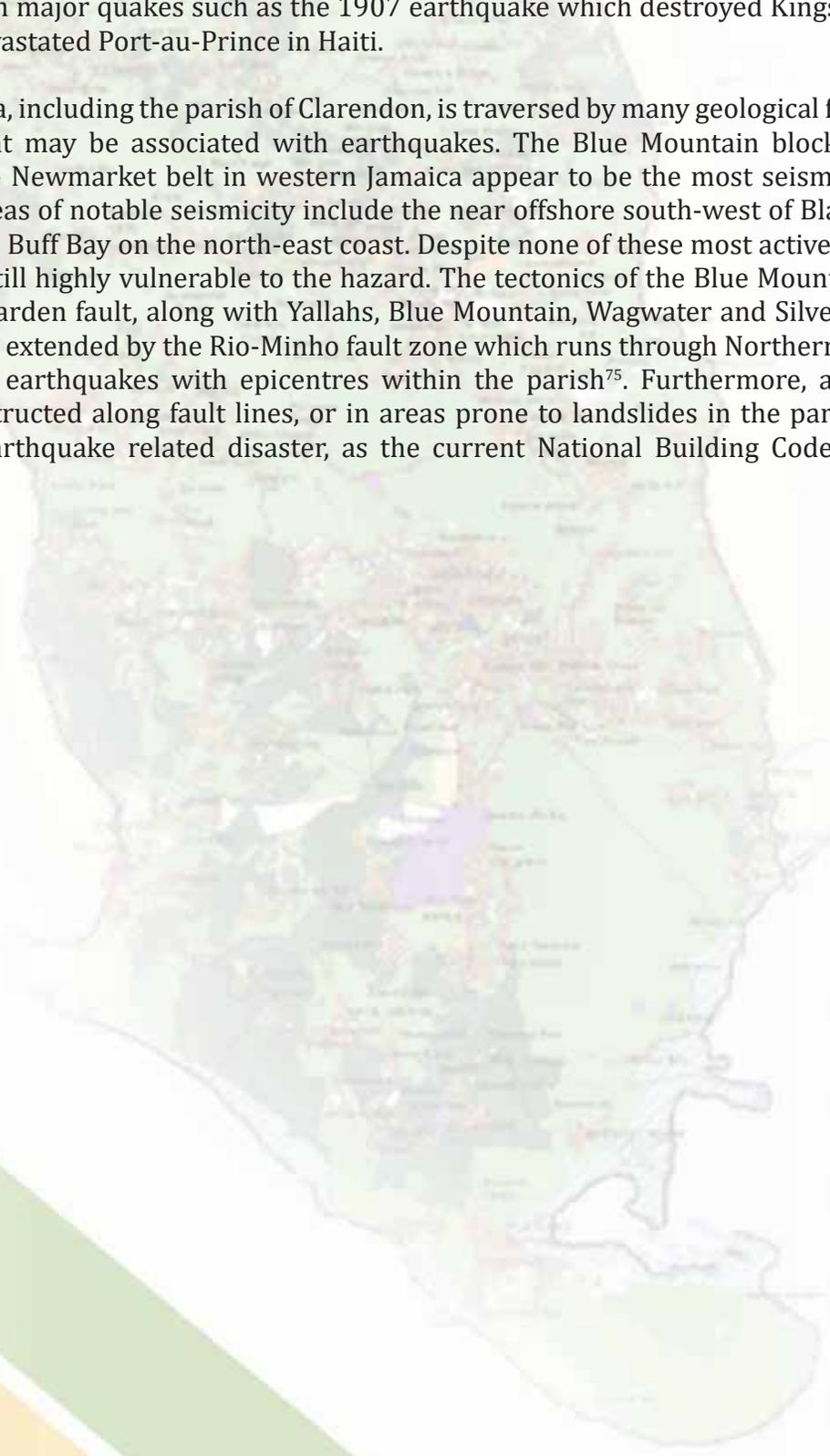
Source: Clarendon Parish Disaster Plan

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.3.2.2. EARTHQUAKE

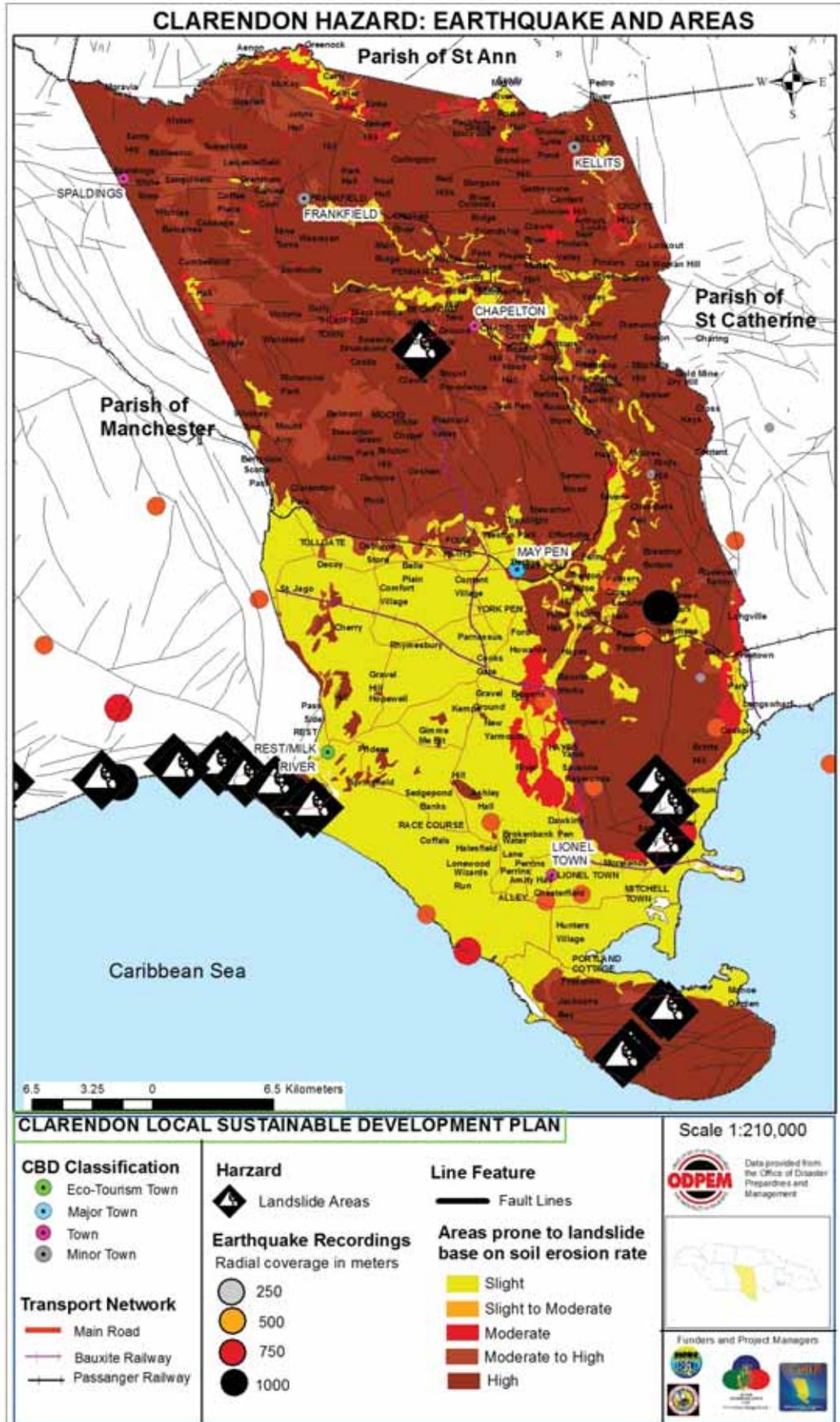
At latitude 17°44'N and longitude 77°09'W, Clarendon is a part of Jamaica which lies on the northern edge of the Caribbean Plate, near the boundary with the American Plate. This is an area with a relatively active tectonic history, which sees approximately 200 earthquakes occurring annually in and around the island. Most of these earthquakes are minor, having magnitudes of less than 4.0 on the Richter Scale. However, the region is also associated with major quakes such as the 1907 earthquake which destroyed Kingston, as well as the 2010 quake which devastated Port-au-Prince in Haiti.

In addition to all that, Jamaica, including the parish of Clarendon, is traversed by many geological faults, which are lines of weaknesses that may be associated with earthquakes. The Blue Mountain block in eastern Jamaica and the Montpelier- Newmarket belt in western Jamaica appear to be the most seismically active areas of the island. Other areas of notable seismicity include the near offshore south-west of Black River on the south coast, and offshore Buff Bay on the north-east coast. Despite none of these most active areas being in Clarendon, the parish is still highly vulnerable to the hazard. The tectonics of the Blue Mountain block is controlled by the Plantain Garden fault, along with Yallahs, Blue Mountain, Wagwater and Silver Hill faults. This Plantain Garden Fault is extended by the Rio-Minho fault zone which runs through Northern Clarendon. This fault usually produces earthquakes with epicentres within the parish<sup>75</sup>. Furthermore, a number of settlements have been constructed along fault lines, or in areas prone to landslides in the parish, thereby increasing the risk of an earthquake related disaster, as the current National Building Code is severely outdated.



<sup>75</sup>. Based on consultation with the Earthquake Unit.

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## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.3.3. BIOLOGICAL HAZARDS

#### 2.3.3.3.1. DISEASE EPIDEMICS

Natural hazards such as tropical cyclones, flooding, drought, earthquakes and landslides, as well as climate change, globalization, and weaknesses in the local health sector have the potential to create favourable conditions for the spread of disease. In the past, disease outbreaks in Clarendon often lacked the sudden onset aspect of other disasters, but they presented an equally significant threat to the population. The Chikungunya epidemic of 2014 demonstrates how such outbreaks can quickly become a public health emergency. Health officials reported that there was wide scale panic in the parish as a growing number of residents were turning up at health centres with symptoms of the Chikungunya virus (Gleaner, 2014). To make matters worse, nurses and doctors were also believed to be contracting it (Gleaner, 2014). At least four (4) persons in the parish died from the virus, while thousands of others were affected. Similarly, in 2005, four (4) persons were confirmed dead from leptospirosis in Clarendon, and the Clarendon Health Department in collaboration with the other relevant authorities had to act hastily in order to prevent a major outbreak (Foster, 2005). This was also the case in the year 2008 (RJR News, 2008).

#### 2.3.3.3.2. PEST AND DISEASE INFESTATION

The local agricultural sector is quite vulnerable to pest and disease infestation. The advent of globalisation and increased trade liberalisation have freed up international borders making it easier for Jamaica (including Clarendon) to engage in trade with other countries right across the world. With the increase in trade comes the increased threat of pests being transmitted into the parish from another country. In addition to that, as climate variables continue to change, local conditions will become increasingly favourable for pest and disease infestation. In the recent past, the local agricultural sector was subjected to several incidents of pest infestation. In the 2011 to 2012 period, the local coffee industry was subject to the berry borer pest infestation, which dealt the sector a significant blow. Local agricultural production is at risk of pest and disease infestation which can cause severe food shortages and social and economic disasters.



*Figure 60: The berry borer pest wreaked havoc on the local coffee industry in the 2011 to 2012 period.*

### 2.3.4. HUMAN-INDUCED HAZARDS AND DISASTERS

#### 2.3.4.1. BUSHFIRES

As established earlier, Clarendon is climatically a dry parish with warm temperatures all year round. The condition is usually aggravated during the dry season which sometimes extends beyond the established period, causing large areas of vegetation, including farmlands, to become very dry. This increases the vulnerability to bushfires.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION



Figure 61: Smoke from a bushfire engulfs the Bustamante Highway.  
Source: <http://www.jamaicaobserver.com/news/DANGER--Bush-fire-engulfs-Bustamante-Highway-in-smoke>

Over the years, the rural sections of the parish have witnessed a considerable number of bushfires. From January 2013 to June 2014, the Clarendon Fire Department received 1314 calls relating to bushfires in the parish<sup>76</sup>. Of this number, 847 were received in the year 2013, while the remaining 467 were received in the first half of 2014. The number of calls recorded, vary over the 18 month period, peaking at 210 in January 2013, but the general pattern coincides with that of the dry season. In 2013, 699 or 82.5% per cent of the calls were received from January to April and in December. In 2014, the number of calls remained consistently high, due to the fact that the entire country experienced drought conditions over that period.

These bushfires are generally the result of careless management of fires in dry areas, but at times they are also deliberately set. According to the Clarendon Fire Department, a significant number of bushfires are caused by small farmers who utilize the slash and burn method in farming, while a large number is also caused by the burning of garbage. These fires often spread beyond the areas intended, destroying large sections of vegetation, including agricultural lands, other valuable properties in the path. The Fire Department also revealed that a significant number of these bushfires are deliberately set by locals. It is theorised by the Department that in some cases the rationale is to see the fire brigade in action.

### 2.3.4.2. OTHER FIRES



Figure 62: This remains of a house in Portland Cottage that was razed by fire earlier this month.  
Source: [http://jamaica-star.com/sites/default/files/styles/460px/public/media/article\\_images/2016/04/05/Rockypointfire-A20160404SS.jpg?itok=Y1jx8MaI](http://jamaica-star.com/sites/default/files/styles/460px/public/media/article_images/2016/04/05/Rockypointfire-A20160404SS.jpg?itok=Y1jx8MaI)

Fires are among one of the more threatening hazards to which the parish of Clarendon is prone. They may be the result of several issues, including carelessness, arson, and the secondary effects of other hazards, like storms, droughts, and transportation and industrial accidents. They may be fuelled by a number of different materials, including paper, lumber, plastics, gasoline, kerosene and energized electrical equipment, and

<sup>76</sup>. Data received from the Fire Department

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only require a few minutes to cause mass destruction.

From January 2013 to June 2014, the Clarendon Fire Department received 172 calls relating to fires (excluding bush fires)<sup>77</sup>. This was inclusive of 126, 33 and 13 calls related to house fires, building fires and motor vehicle fires respectively. This represents an average of approximately 15 fires per month. These fires which are the results of both arson and accidents, have been associated with several deaths, tremendous loss of housing leading to dislocation of families, and devastating economic consequences. Some effects may have been reduced with better emergency response.

### 2.3.4.3. INDUSTRIAL ACCIDENTS

The local industrial sector, particularly the mining industry, has the potential to be a major source of anthropogenic hazards. This is because the local industries employ many different processes involving a wide range of raw materials, intermediates, waste products and final products. The potential exists for a wide variety of industrial accidents including factory explosions and fires, the release of toxic substances, and equipment or structure collapse.

Clarendon has been fortunate in having very few industrial accidents. In October 2005, at the Jamalco processing plant, one (1) man died from injuries he received after chemicals from a tank accidentally spilled on him causing severe burns (Jamaica Observer, 2005). Eight (8) other employees were also injured in that incident but they were all treated and released from the company's medical facility (Jamaica Observer, 2005). In another incident in 2011, an investigation revealed that tonnes of highly toxic sodium cyanide from the inactive AUSJAM gold mining plant in Pennants contaminated water at the site, resulting in the death of a cow (Serju, 2011). Several other anecdotal incidents have been reported in the parish, including the discharge of trade effluent in rivers, resulting in fish kills.

### 2.3.4.4. TRANSPORTATION ACCIDENTS

Transportation of people and goods including hazardous materials in the parish of Clarendon is currently served by road, rail, and sea. While in general most trips end without incident, there are times when journeys are cut short by accidents ranging from minor to serious. Nonetheless, there has been no documented transportation accident within the parish which has caused a significant enough number of deaths, injuries and/or damage to the environment to be called a disaster. The potential still exists for serious transportation accidents within the parish which may result in disastrous consequences.

The likelihood of a transportation disaster in the parish is particularly high within the road transportation sector. The parish of Clarendon has recorded a total of 2804 road accidents from 2000 to 2010; 204 of which have been fatal (Lyew-Ayee, 2012). In addition to that, chemicals, including flammable and hazardous materials are being transported on the roadway alongside other vehicles and pedestrians. This poses the risk of explosions, fires, blast fragments and other hazards affecting other motorists, bystanders and the environment, if an incident was to happen. Just recently (June 2014) a West Indies Alumina Company (WINDALCO) contracted truck, carrying 35 tonnes of alumina hydrate, overturned in the Salt River, and while there was no reported spillage, a release of the chemical contents could have adversely affected aquatic life and caused an environmental disaster (NEPA, 2014).

<sup>77</sup>. Data received from the Fire Department

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Figure 63: The overturned truck, before it was removed from the river.  
Source: <http://rjrnews.com/local/spilled-alumina-hydrate-removed-from-salt-river>

### 2.3.5. ISSUES AND CHALLENGES

#### 2.3.5.1. COSTS OF DISASTERS



Figure 64: Some of the destruction left by hurricane Ivan in the community of Portland Cottage IN 2004.

Source: [http://www.pioj.gov.jm/Portals/0/Sustainable\\_Development/Hurricane%20Ivan.pdf](http://www.pioj.gov.jm/Portals/0/Sustainable_Development/Hurricane%20Ivan.pdf)

Over the years, natural and manmade disasters have inflicted heavy socioeconomic and environmental cost on the Plan Area, and represent a potentially significant obstacle to local sustainable growth and development. In particular, floods, droughts, tropical cyclones, landslides and bush fires have claimed a number of lives and have caused significant damage to the local transportation infrastructure, housing stock, water supply systems, electricity grid, telecommunication network, agriculture sector, watersheds and ecosystems. Notwithstanding the fact that all other costs are generally high, the economic impacts are usually overwhelming. There is no comprehensive statistics available, but fiscal budgets are normally burdened by the need to increase expenditure for rehabilitation and reconstruction projects to recover from the direct damages in post disaster periods. In addition, there are usually secondary impacts which may have resulted from direct damage to the inputs used in production, to infrastructure, or from reconstruction and rehabilitation pulling resources away from other sectors. Disasters in the parish have significant implications for public finance, and can disrupt both the local economy and, in severe cases, the national economy.

#### 2.3.5.2. WEAKNESSES IN THE LOCAL DISASTER MANAGEMENT FRAMEWORK

There are weaknesses existing in the local disaster management framework. These weaknesses stem mainly from three (3) main issues. Firstly, the Clarendon Parish Disaster Management Plan, which is the overall guide for disaster management in the parish, is severely out-dated. It therefore means that this Plan does not necessarily reflect changing conditions and priorities, including management responsibilities.

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At the Disaster Management Sector Meeting, it was evident that the roles and responsibilities of all stakeholders are not clearly understood. At this meeting, it was revealed that the ADRA is the agency mandated to coordinate the zoning programme at the parish level, but the function is actually being undertaken by the Red Cross. It was also revealed that a number of stakeholders in local disaster management appear to be unsure of their responsibilities outside of providing assistance during times of hurricanes and/or flooding. Secondly, the disaster management framework at the community level is almost absent. Only a few zonal committees are active despite the central function that communities have in disaster management; active community participation is necessary since the adverse effects of disasters are usually suffered at the community level. Thirdly, there is insufficient coordination between land use planning and disaster management in the parish. This is despite the fact that there is a general recognition that land use planning is a key pillar of DRR. Whilst the ODPEM is responsible for the receipt and assessment of subdivision applications made through the NEPA, the agency does not assess building approval applications which usually make up the larger percentage of all applications received by the CPC. These issues together serve to weaken the local disaster management framework. (Ministry's Proposal for Disaster Coordinator)

### 2.3.5.3. LOOPHOLES IN THE LAW

There are several existing laws which have the potential to undermine the Local Authority's development approval processes and by extension, efforts to improve disaster resiliency. These laws include the Housing Act 1969 which allows the Housing Minister and agencies like the NHT, the Urban Development Corporation (UDC), the Housing Agency of Jamaica (HAJ) and even some charity organisations such as Food for the Poor to bypass the Parish Council's planning and building approval processes. This has the potential to not just undermine work of the CPC and the other relevant authorities but to increase disaster risk, as adequate consideration may not be given to hazard mitigation in the design and construction of such developments.

There is sufficient basis to suggest that the existence of these laws has already contributed to disasters within the parish. According to the former Mayor of May Pen, Councillor Milton Brown, several agencies and charity organisations, with permission under the Housing Act, have built houses in sections of Clarendon, including Rocky Point, Portland Cottage, Cock Pit and Mitchell Town, which have experienced severe damage and several deaths during Hurricane Ivan, and are experiencing severe hardship in the recovery period (Simpson, 2004). At the Governance Sector Meeting, more specific reference was made to the case of the hurricane relief housing schemes in Rocky Point and Portland Cottage. These two housing schemes were built by the Office of National Reconstruction (ONR) for residents of the aforementioned communities who were displaced by hurricane Ivan in 2004. However, a few months after these houses were occupied, most of them were destroyed by hurricane Dean in 2007, creating a need for hurricane relief for the hurricane relief housing (Espeut, 2007). This situation is believed to have stemmed from the fact that much of the work was done without the necessary environmental permits (Espeut, 2007). At May Pen Situation Validation and Visioning Workshop, similar reference was also made to the then controversial Kennedy Grove Housing development.

Consultations with the Local Authority however suggest that the extent to which the power under these laws is being exercised has been greatly reduced. Agencies and organizations are generally more compliant with the procedures and guidelines set out by the Local Authority. Nevertheless, the presence of the provision under these laws means that there is the potential for a reversal in the situation.

### 2.3.5.4. INCREASING DISASTER RISK DUE TO WEAKNESSES IN DEVELOPMENT CONTROL

The Situation Validation and Visioning workshops revealed that a significant number of residents are of the view that there are weaknesses in the existing development control system which exacerbates natural disaster risks, mainly related to flooding.

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The residents explained that a number of approved developments have taken place in the parish and flooding has occurred in areas which were historically not prone to such occurrences. Whilst acknowledging that such cases may be situations in which developers build other than what was approved, the citizens have placed the blame squarely on the Local Authority who is also responsible for monitoring such activities. Additionally, the residents asserted that the CPC has been unable to stem the growth of informal settlements within the parish which also increases disaster risk. They explain that these settlements generally disregard safety standards set out by the relevant authorities and are vulnerable to the impacts of hazards. Similar sentiments are shared by experts within the field of Disaster Management. Ahmad and Lyew-Ayee Jr (2012) jointly stated that many urban developments in Clarendon exacerbate the flooding problem by not taking into account surface drainage issues. Likewise, Melissa Colquhoun, Policy Analyst in the MTM noted that construction practices in informal communities such as Portland Cottage are generally poor thereby increasing disaster risk.

To this end, natural disasters, particularly flooding, may be getting more expensive due to increasing developments without the necessary geotechnical studies and environmental impact assessment, as well as poor construction practices.

### 2.3.5.5. OUTDATED NATIONAL BUILDING CODE

Appropriate building codes are amongst the first lines of defence against damage from natural hazards, and help to safeguard public safety. A Building Code is a set of regulations governing the design, construction, alteration and maintenance of structures, which is based on the accumulated knowledge of scientists, engineers and building experts, and which can be used to produce structures that are fit for a particular purpose. It seeks to ensure that lives are protected, physical damage is limited, and structures critical to human welfare such as hospitals and shelters remain operational.

A Building Code must be updated regularly to include new technological developments as well as new information after a disaster. However, the current National Building Code is over 107 years old and too outdated to apply to modern construction. Nevertheless, the GOJ has recognised this issue and significant work has been done on a new National Building Code. Before this new National Building Code can become law, the Building Act must be passed. This legislation has been before Parliament for several years.

### 2.3.5.6. ABSENCE OF APPROPRIATE LAND USE REGULATIONS

The absence of appropriate land use regulations is a major issue within the Plan Area. The Clarendon Development Order of 1982 which is the legal instruments for controlling land use in the parish has long outlived its usefulness, while the new Development Order currently being prepared by the NEPA has not yet being promulgated. As a result, developments are taking place in the parish in an ad hoc manner. This includes all types of developments on marginal sites and in disaster prone areas. As highlighted earlier, the ECLAC, the PIOJ and the UNDP (2004) outlined that the informal settlement of Portland Cottage is a classic example of the consequences of the inappropriate siting of settlements and the need for well-informed zoning. The absence of legal underpinning for the establishment of no build zones also means that the CPC has no power to prohibit construction on these marginal sites and in these disaster-prone areas. Hence the absence of appropriate land use regulations, indirectly contributes to increasing disaster risk.

### 2.3.5.7. POVERTY

There appears to be an inextricable link between poverty and disaster vulnerability within the Plan Area. Based on consultations with residents, poverty has resulted in a number of informal constructions in the parish, which gives little or no consideration to disaster vulnerability, including in areas such as Rocky Point and Portland Cottage. Many of these informal developments are located on marginal or environmentally

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lands and are constructed using inferior materials and questionable construction designs. They also disregard most safety standards set out by the relevant authorities for building approval. The underlying fact is that the poor have limited disposable income to spend on housing and household goods. Hence they are forced to develop informally since they are unable to afford the costs associated with formal construction activities. In addition to that, poverty is also leading to environmental degradation which exacerbates disaster risk. For instance, mangroves in Rocky Point which provide coastal defence against storm surges, hurricanes, tropical storms, etc. have been overexploited for animal feed, sticks, lumber and charcoal<sup>78</sup>. It therefore means that the poor are generally highly vulnerable to disasters, since they have limited capacity for avoiding losses. There is sufficient evidence to suggest that disasters are contributing to poverty in the parish by causing reversals in progress made to improve individual's socioeconomic status or reduce overall poverty. Hence poverty and disasters are operating in a cycle in the parish.

### 2.3.5.8. INADEQUATE LEVELS OF PUBLIC AWARENESS/ EDUCATION

Whilst the ODPEM, the Clarendon Fire Department, the Parish Disaster Committee and the other relevant authorities and stakeholders may be lauded for their role in increasing disaster management and CCA awareness amongst the local public, it is evident that the overall level is still an issue. To substantiate this claim, the case of bushfires in the parish may be used. As highlighted earlier, investigations carried out by the Clarendon Fire Department has led to the belief that in a number of instances bushfires are started in the parish by individuals who wish to see the fire brigade in action. This is clearly the result of inadequate awareness of the negative consequences of this on local emergency response.

### 2.3.5.9. CLIMATE CHANGE

The parish of Clarendon is extremely vulnerable to the impacts of climate change. Clarendon is a part of Jamaica which is a small island developing state, which is recognised as among the most vulnerable to the phenomenon due to its size, geographic location and the fragility of its ecosystems. While there is no detailed modelling available for the parish, preliminary research suggests that Clarendon is likely to see an increase in the intensity and frequency of climate-related natural hazards, such as hurricanes, droughts and floods, as well as an average sea level rise of 2 -3mm per year (Projects Planning and Monitoring Branch, 2010). Compounding this issue is the fragility of the local ecosystems and coastal zones, as well as the high dependence on agriculture related livelihoods. Since small island developing states are responsible for less than one percent<sup>79</sup> of greenhouse gas emissions which fuel climate change, there is very little Clarendon can do to prevent the phenomenon. It therefore means that adaptation is the parish's best option.

Whilst all areas of the parish are highly vulnerable to the impacts of climate change, the coastal communities are at the forefront. The communities of Rocky Point and Portland Cottage have elevations of zero to ten metres above sea level and are particularly vulnerable to coastal flooding from storm surges which are associated with hurricanes and tropical storms, in addition to inundation and land subsidence from sea level rise. Furthermore, they are highly vulnerable to tropical cyclones, since most of the systems to have passed within close proximity to Jamaica have approached the island from the south. Hence, coastal communities of the parish require special attention.

### 2.3.5.10. INADEQUATE SOLID WASTE MANAGEMENT

Inadequate SWM has been identified as an issue which is contributing to the risk of disasters in the parish. Solid waste, which is generally unsightly and malodourous, is being dumped on roadsides and on vacant lots, in river beds, wetlands, and drainage channels. These waste, which are sources of biological agents which may transmit disease, have the potential to cause pest infestation and are also block drainage channels

78. Source: <http://go-jamaica.com/pressrelease/item.php?id=141> 79. Source: <http://www.unep.org/wed/SIDS/island-stories/#.VZFcEMJFCM9>

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and pollute local ecosystems. The issue of scavenging animals is also of concern. Inadequate SWM is contributing to the risk of flooding and disease outbreaks, and the degradation of local ecosystems which play an important role in disaster management.

### 2.3.5.11. DEGRADED NATURAL ECOSYSTEMS

Clarendon's ecosystems are being impacted by anthropogenic factors such as deforestation, pollution, and coastal developments, and natural factors like storm events and droughts which are increasing in frequency and intensity with climate change. The continued degradation of these ecosystems, primarily by human-induced activities, is reducing their capacity to absorb shocks and perturbations while maintaining their functions. For example, poor farming practices and deforestation on hillsides have reduced the ability of the forests to reduce landslides, flooding and sedimentation within Northern Clarendon. Similarly, the overexploitation of mangroves in Rocky Point for animal feed, sticks, lumber and charcoal have reduced their ability to provide coastal protection against storm surges. In short, the degradation of ecosystems due to both human-induced and natural factors has reduced their ability to provide adequate ecosystems function in disaster management.

### 2.3.5.12. ABSENCE OF A MANDATORY EVACUATION SYSTEM

Prior to, during or after an emergency or disaster event, authorities monitoring the situation occasionally recognise an imminent threat to life within a particular area, due to impending conditions associated with the event, as well as the level of vulnerability within the area. Under such circumstances, evacuation advisories or orders are usually issued. Nonetheless, many individuals when advised to evacuate refuse to do so, as such advisories are voluntary. In some cases they are of the view that the impact of the event is not going to be significant enough to warrant leaving their homes, while in other cases they have serious reservations about leaving their properties unsecured. Whatever the case, they usually place their own lives at risk, as well as that of potential emergency response teams.

In 2004, upon the approach of hurricane Ivan, residents of several local communities, including Portland Cottage, ignored the pleas of the ODPEM and other authorities to evacuate. Following the storm, it was confirmed that six (6) lives were lost in Portland Cottage; the only casualties in the parish of Clarendon (ECLAC, PIOJ & UNDP, 2004).

### 2.3.5.13. VULNERABILITY OF THE CRITICAL INFRASTRUCTURE

The vulnerability of the parish's critical infrastructure to multiple hazards is an area of significant concern. The continuous provision of services by the critical infrastructure is essential to the health, safety, security and economic well-being of the local population. However, in the past, such infrastructure which include sewage collection and treatment systems, the electricity supply system, water supply systems, roads, shelters, health care facilities, the fire departments and other basic infrastructure and services, have been damaged or disrupted by various hazard events. Research has shown that the entire road, electricity, telecommunications and water infrastructure of the parish have been highly susceptible to damages from natural hazards, particularly floods and hurricanes. Similarly, the May Pen Hospital was damaged by hurricane Ivan in 2004 and again by hurricane Dean in 2007. The Chapelton Hospital was also made inaccessible due to water, debris and fallen trees which blocked the road leading to the hospital following the passage of Hurricane Wilma in 2005. These situations can result in catastrophic loss of life, adverse economic effects and significant harm to public confidence, as the continued operation of these infrastructure and services, including during extreme events, is vital to minimising the impact of disasters on the parish.

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### 2.3.5.14. UNDER RESOURCED FIRE SERVICE

Based on consultations with residents of the parish, through the Situation Validation and Visioning Workshops, fire response in Clarendon is often less than desirable. According to the residents, the impacts of several fires to have taken place in the parish could have been reduced with an improved level of service on the part of the Fire Department. This claim has not been refuted by the Clarendon Fire Department, but a representative of the Brigade explained at the Disaster Management Sector Meeting that the Department is severely challenged and is doing its best under the current situation. His claims were supported by research which has shown that the Fire Department is grossly underfunded and is suffering from a lack of resources, including human resources and fire trucks. As a result, assistance in battling large fires has to be sought periodically from outside of the parish. In addition to that, the department is often challenged with accessing water, including through fire hydrants. Furthermore, road and traffic conditions are factors which frequently hamper response times. This therefore means that the risk of a fire related disaster is quite high.

### 2.3.5.15. WEAKNESSES IN THE HEALTHCARE SYSTEM

There are weaknesses in the local healthcare system which may be seriously exposed by large scale health emergencies in the parish. According to the SDC (2014), a number of households in the parish are experiencing various obstacles in accessing all the health services available locally. These difficulties mainly relate to the cost of accessing services within the private sector and the waiting period for accessing treatment within the public system (SDC, 2014). In addition to that, the local healthcare system may not have the capacity and resources to deal with large scale public health emergencies, including infectious disease outbreaks. The May Pen hospital which is the main hospital in the parish is periodically overwhelmed by large volumes of patients which result in the disruption of operations. In addition to that, there is no quarantine facility within the parish to stem the spread of infectious disease. The number of ambulances available is significantly limited. It therefore means that large scale public health emergencies may end in disasters as the local healthcare system may not be able to respond effectively.

## 2.3.6. ONGOING PROGRAMMES

### 2.3.6.1. NATURAL HAZARDS PROGRAMME

According to the PIOJ (2012), there are few options to reduce the occurrence and intensity of most natural hazards. Jamaica, including Clarendon, therefore continues to place emphasis on the implementation of various activities, projects and programmes that would reduce or prevent the incidence of disasters. Most of these initiatives are geared towards supporting citizens' ability to resist hazard impacts, by reducing human vulnerability, and by building their capacity to anticipate, cope with, resist and recover from hazard impacts. They include:

- The revision of the ODPEM Act to address issues such as no build zones; special area precautionary planning; evacuation planning; and the role of civil servants in disaster risk management;
- The implementation of the Building Disaster Resilient Communities Project which focuses particularly on building and strengthening sustainable partnerships in disaster mitigation and emergency response at community, parish and national levels;
- The development of the Vulnerability Ranking Methodology by ODPEM which reveals high risk communities with the aid of hazard maps;
- The development of a Disaster Emergency Plan for each Child care institution;
- The development of a strategy for Jamaica, based on the recommendations of the pilot for the Risk and Vulnerability Assessment Methodology Project (RIVAMP), which is intended to produce a methodology to incorporate the role of ecosystems in reducing risk and vulnerability associated with natural hazards and particularly with the impending threats of climate change; and
- The preparation of the draft Town and Country Planning (Clarendon) Provisional Development Order, 2012, which among other things addresses the issue of haphazard land use.

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### 2.3.6.2. HUMAN-INDUCED HAZARDS AND DISASTERS PROGRAMMES

Ongoing programmes to address the issues of manmade disasters mainly relate to public education. The MLGCD was also seeking to enforce the Country Fires Act and the Public Health (Nuisance) Regulations, which prohibit open burning without permission, as a means of reducing the occurrence of bush fires.

### 2.3.6.3. CCA PROGRAMMES

A number of local and national programmes, projects and initiatives have been implemented or are currently underway to adapt to the impacts of climate change. These include:

- The undertaking of climate change vulnerability assessments;
- The development of a climate change policy framework and action plans;
- The creation of several climate change sector plans (agriculture, fisheries and forestry sectors);
- The implementation of projects such as the Jamaica SPCR, and the CCA and DRR Project; and
- The undertaking of capacity building exercises.

## 2.3.9. PARISH STRATEGIES

### 2.3.9.1. STRATEGIC OBJECTIVE #77

**To strengthen the mechanism for local disaster management.**

There is a need to strengthen the mechanism for disaster management in Clarendon. This will be done primarily through the updating of the Parish’s Disaster Management Plan. The document will be updated to reflect current conditions and also to clearly outline the roles and responsibilities of each stakeholder. The updating of this Plan will take place through a highly participatory process which will ensure the support of all stakeholders in its implementation. It will compliment Community Disaster Management Plans which will set the framework for management at the community level (see 2.3.9.2. Strategic Objective #78, pg.199). The plan will be routinely reviewed since the local environment is becoming increasingly dynamic. Other actions for strengthening the disaster management framework will include supporting the MLGCD’s proposal to incorporate the Disaster Coordinator into the Planning Department of the Parish Council. This will ensure greater coordination between land use management and disaster management efforts which are integral in the successful implementation of this Plan. As part of the Disaster Management Strategy, this Plan is promoting a number of tactics including enforcing building codes and developing risk sensitive land use patterns which are directly related to the responsibilities of the Planning Department. Incorporating the Disaster Coordinator into the Planning Department will ensure greater coordination in the implementation of the overall strategy.

### RECOMMENDED POLICIES

- The updating and review of the Clarendon Parish Disaster Management Plan will take place through a highly participatory process.
- The Clarendon Parish Disaster Management Plan will be routinely reviewed and updated.
- The relevant stakeholders will support the MLGCD’s proposal to incorporate the Disaster Coordinator into the Planning Department of the Parish Council.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Update the Clarendon Parish Disaster Management Plan.	Short Term	CPC

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### 2.3.9.2. STRATEGIC OBJECTIVE #78

**To build local community resilience in order to reduce long disaster recovery periods.**

Following a disaster, emergency interventions and resources may be inadequate and/ or delayed which makes it imperative for local communities to develop some level of self-sufficiency to reduce long recovery periods. The concept of community resilience is being supported internationally and nationally as possibly the most practical mechanism through which all communities can strengthen their ability to rebound from adversity even in the absence of immediate and formalized governmental assistance. This approach will therefore be promoted in the parish in all communities as part of the Disaster Management Strategy. The relevant stakeholders will seek to cooperate and coordinate in implementing measures aimed at ensuring the sustained ability of local communities to utilize available resources to respond to, withstand, and recover from adverse situations. Consequently, local communities will not only become more prepared to help prevent or minimize the loss or damage to life, property, and the environment, but they will also have the capacity to quickly return citizens to work, reopen businesses, and restore other essential services needed for a full and timely social and economic recovery following a disaster.

Building community resilience in the parish, will encompass individual preparedness as well as the establishment of supportive social structures in communities to assist them in withstanding and recovering from disasters. Through this strategy, community awareness of hazards and disaster risk will be raised, while an understanding of the levels of vulnerabilities within local communities will be promoted. In addition, the structure for disaster management at the community level will be strengthened and all local communities will be supported in developing community disaster management plans which focus on utilizing local resources, including human resources, to reduce long recovery periods. Similarly, individuals will be encouraged to develop their own household and business disaster management plans, which will be facilitated by giving support to the building of disaster related self-efficacy. Additional resources and appropriate training will also be provided to assist communities and volunteer members to provide the first line of response in their communities during disasters.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise critical awareness of hazards and disaster risks amongst local communities.	Short Term	CPC, ODPEM, JFB
Promote an understanding of hazards and communities' vulnerabilities.	Short Term	CPC, ODPEM
Educate the general public about the structure for disaster management in the parish.	Short Term	CPC, ODPEM
Ensure the reactivation of all dormant zonal committees and the creation of such committees in zones where they haven't existed.	Short to Medium Term	CPC, ODPEM

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Strengthen the structure of zonal committees; the direct roles and responsibilities should be clearly established.</p>	<p>Short to Medium Term</p>	<p>CPC, ODPEM</p>
<p>Facilitate the development of Community Disaster Management Plans. These Plans should complement the Parish Disaster Management Plan and contain:</p> <ul style="list-style-type: none"> <li>• Named members of the community, complete with contact details who will respond to an event.</li> <li>• Details of management structure, and roles and responsibilities of the community response team</li> <li>• Hazard maps</li> <li>• Details on response arrangements</li> <li>• A list of available local resources (e.g. equipment and expertise)</li> <li>• Etc.</li> </ul>	<p>Short to Long Term</p>	<p>CPC, ODPEM</p>
<p>Assist local communities in obtaining additional resources that will assist in the implementation of their Community Disaster Management Plan.</p>	<p>Short to Long Term</p>	<p>CPC, ODPEM, Private Sector</p>
<p>Provide appropriate training to community members in order to build the capacities of local communities. This should involve a coordinated training programme for voluntary participants to enable them to provide the first line of response in their communities during disasters.</p>	<p>Short to Long Term</p>	<p>ODPEM, JFB</p>
<p>Help to build self-efficacy within local communities in order to help all individuals identify what they can personally do to reduce their own risk and be prepared to respond. This should also involve the development of positive outcome expectancy<sup>80</sup>.</p>	<p>Short Term</p>	<p>ODPEM, CPC</p>

80. This is the belief by a person that preparing will enable them to deal with any future hazard effects, and any actions they undertake will contribute to the quality of everyday life.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage families and households to develop their individual disaster management plans.	Short Term	CPC, ODPEM
Encourage local businesses to develop business continuity plans.	Short Term	CPC, ODPEM

### 2.3.9.3. STRATEGIC OBJECTIVE #79

**To reduce hazard exposure and vulnerability by integrating disaster risk management into spatial planning.**

Reducing exposure and vulnerability to hazards through spatial planning is critical to disaster management strategy in the parish. Spatial planning presents a tool to mitigate disaster risks by promoting sustainable land use and development practices. It utilizes an understanding of the processes that shape disaster vulnerability to create risk sensitive land use patterns. It will therefore provide an opportunity for proactive risk reduction within the Plan Area through location-based and/or structural approaches, which include zoning proposals and building regulations.

A multi-hazards approach will be used since the parish is vulnerable to several types of hazards. This approach will involve the implementation of policies and actions which focus primarily on: restricting future development in hazard prone areas, particularly those with a history of disaster occurrences; classifying different land use setting for disaster prone areas; regulating land use or zoning plans with legally binding status; and promoting hazard modification through soft engineering methods.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #98G of the Land Use Section of this Document (pg. 232)	Short to Long Term	ODPEM, CPC, NEPA
Encourage Government to fast track the No-Build Zone Legislation.	Short Term	ODPEM, CPC, MPs
Educate the public about the risk (to life, property and the overall society) of building in hazard prone areas.	Short Term	ODPEM, CPC
Promulgate the Clarendon Development Order.	Short Term	NEPA, CPC, GOJ

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.9.4. STRATEGIC OBJECTIVE #80

**To relocate highly vulnerable residences in order to reduce hazard exposure and prevent the possibility of a reoccurring need for significant disaster relief aid from the State.**

There is an urgent need to relocate several residences, including entire communities, within the parish. These residences are located within disaster prone areas which make them highly exposed to various types of hazards and vulnerable to disasters. The socioeconomic level of many of the occupants of these areas makes them require almost 100% aid from the State for reconstruction purposes following a disaster. This is unsustainable and therefore an urgent relocation strategy will be developed and implemented<sup>81</sup>.

Whilst this relocation strategy will be highly consultative, there are several rigid guidelines that will be adopted. Priority will be given to those residences which are identified as most vulnerable, and to which damage would affect the most vulnerable within the local society, children, the elderly and the disabled. No consideration will be given to any newly constructed dwellings within communities earmarked for relocation. Lands within growth centres will be given first consideration for relocation purposes, but infill development within rural settlement nodes will also be supported. These guidelines will serve to eliminate bias, ensure that unscrupulous individuals do not take advantage of the programme, and foster orderly development.

### RECOMMENDED POLICIES

- Relocation exercises within the parish will utilize a highly consultative approach.
- Priority will be given to those residences which are identified as most vulnerable, and to which damage would affect children, the elderly and the disabled.
- The relevant authorities will seek to relocate residences within areas identified as highly vulnerable to disasters.
- No consideration will be given to the relocation of newly constructed developments within a community earmarked for relocation.
- The use of lands within growth centres will be given first consideration for relocation activities.
- Infill developments within rural settlement nodes will also be supported for relocation purposes.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Identify residences situated within highly vulnerable areas within the parish.	Short Term	ODPEM, CPC
Develop a relocation strategy which gives priority to the most vulnerable.	Short to Long Term	ODPEM, CPC, MEGJC

<sup>81</sup>. This strategy may be tied to the relocation of residences for large development purposes; eg: Gimmie-mi-bit.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.9.5. STRATEGIC OBJECTIVE #81

**To adopt ecosystem-based DRR as part of the local disaster management and CCA strategy.**

Ecosystem-based DRR is one of the most cost effective, practical and eco-friendly approaches to DRR and will therefore be adopted in the parish. Ecosystem-based DRR is the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development. Well-managed ecosystems, including forests and wetlands, act as natural infrastructure, reducing the physical exposure to several hazards. Trees and forests reduce landslide risk, as their roots reinforce soil layers and form buttresses against soil movement. They also reduce soil saturation levels, through interception, evaporation and transpiration, further reducing the disaster risk. Additionally, trees and forests reduce the risk of floods by increasing infiltration of rainfall, and delaying peak floodwater flows<sup>82</sup>. Furthermore, they reduce the damage caused by drought, as they provide shade and protect the land by holding rainwater in the ground effectively causing leaves to be dried up by the sun.

Likewise, wetlands play important roles in DRR. Generally, inland wetlands store water and release it slowly, reducing the speed and volume of runoff after heavy rainfall; therefore limiting the risk of flooding. Similarly, coastal wetlands serve as storm surge protectors when hurricanes or tropical storms come ashore as they reduce the speed and height of waves and floodwaters. Forested wetlands and other features of the coastal landscape also provide a potentially sustainable buffer from wind generated by tropical storms and hurricanes.

Well-managed ecosystems also reduce disaster risk by reducing socio-economic vulnerability to hazard impacts. They sustain human livelihoods and provide essential goods like food, fibre, medicines and construction materials, which are equally important for strengthening human security and resilience against disasters. For instance, mangroves provide coastal hazard protection, but are also very important for local livelihoods, as they support fishing activities.

Local ecosystems will be conserved, restored and sustainably managed, to reduce disaster risk. This will be achieved through the implementation of strategies from the Natural Environment Section of this Plan.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support all Strategic Objectives of the Natural Environment section of this Plan. (pgs. 65-82)	Short to Long Term	ODPEM, CPC, Private Sector

### 2.3.9.6. STRATEGIC OBJECTIVE #82

**To ensure the effective enforcement of building codes and regulations in order to improve the capacity to withstand hazard impacts.**

One of the most crucial steps to reducing disaster risk within the Plan Area will be ensuring compliance with building codes. Under this strategy, the strengthening of the existing building infrastructure will be encouraged and all new building developments will be designed in accordance with building regulations. This will be achieved through legislation, and the introduction of appropriate policies. With regard to legislation, Government will be encouraged to fast track the new National Building Code which will replace the current 107-year-old legal code. Government will also be encouraged to fast track the Building Act which will make this new Building Code become law. Through policy introduction, all new buildings and existing structures which are being modified or extended will be required to have building plans.

<sup>81</sup>. Except when soil are fully saturated.

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Where breaches in building regulations exist, the Local Authority will seek to ensure compliance where practical. Awareness will be built around both polices and legislation which relate to this strategy and adequate monitoring will be undertaken to ensure compliance.

### RECOMMENDED POLICIES

- The Government will ensure the speedy enactment of the Building Act.
- Construction and development activities without the necessary approvals will be strongly resisted in the parish.
- All new buildings and existing structures which are being modified or extended will be required to have building plans.
- Where there are breaches in building regulations, including by buildings constructed prior to the introduction of such regulation, the Local Authority will seek to ensure compliance where practical.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage central Government to fast track the National Building Act and the new National Building Code.	Short Term	CPC, MPs, ODPEM
Educate the local population about the importance of complying with building regulations and increase awareness of and local access to the new National Building Code, the National Building Act, and the Hillside Development Manual.	Short Term	CPC, ODPEM, MEGJC
Implement a limited period amnesty for developers who have undertaken or are undertaking construction projects without the requisite approvals.	Short Term	CPC
Undertake adequate monitoring to eliminate the informal development practices.	Short to Long Term	CPC

### 2.3.9.7. STRATEGIC OBJECTIVE #83

**To reduce disaster vulnerability through the introduction of poverty reduction initiatives.**

Poverty is a major factor increasing disaster risk in the Plan Area by reducing the coping capacity of a number of households and communities. Poverty must be reduced to support disaster risk management in the parish. The Poverty Reduction Strategy will be focused primarily on capacity building programmes. Capacity building will include the provision of livelihood skills training and the provision of financial and technical support in the start-up of small economic support projects. See 3.1.3.2. Strategic Objective #101, pg. 245

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### RECOMMENDED POLICIES

- The relevant stakeholders will support poverty reduction as part of the Disaster Management Strategy.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #101 of the Population and Social Security section of this document. See pg. 245	Short to Long Term	CPC, ODPEM, Private Sector

#### 2.3.9.8. STRATEGIC OBJECTIVE #84

##### To encourage participation in insurance schemes.

Encouraging participation in insurance schemes is an essential component of the overall disaster management strategy for Clarendon. Homes, businesses and other properties within the parish are exposed to different kinds of disaster risks, which involve the possibility of losses. In addition to that, recovery after disaster events within the parish is usually heavily dependent on Government assistance. Participation in insurance schemes may however transfer the risk to insurance companies and ensure safety and security against losses. Insurance is a tool which protects against unintentional damage or destruction to property or its contents, which may be caused by fire, storms, hurricanes, floods and similar threats. It is not a device to prevent the event from happening or causing damage but a tool to protect individuals against the loss through compensation. An awareness programme will therefore be designed and implemented to encourage participation in insurance schemes as a means of ensuring safety and security against loss related to particular events.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a campaign to encourage house, business, and other property owners to get insurance against disaster related damage.	Short Term	ODPEM, CPC, MLGCD

#### 2.3.9.9. STRATEGIC OBJECTIVE #85

##### To support mandatory evacuation as a strategy in disaster risk management in the Parish.

Evacuation advisories or orders issued by the authorities prior to, during or after an emergency or disaster event are often ignored by individuals. However, there are many instances when the obligations of Government to preserve life and public safety outweigh individuals' liberty to stay. The safety of emergency responders who may be called on to rescue those who have refused to obey an evacuation order may be at risk, and there may be a strong probability that impending conditions will severely limit the ability to provide emergency response within the particular area. Additionally, the cost associated with dealing with casualties and treating injuries after the threat has passed may be quite high. This situation therefore begs the need for the introduction of mandatory evacuations.

Mandatory evacuation will require the enactment of legislation and adequate planning at the local level. Currently there is no law which allows for mandatory evacuation, but provisions are being made under the

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

new Disaster Risk Management Bill which is before the Parliament. Government will therefore be encouraged to fast track the enactment process for this Bill. Subsequent to the passing of the Bill into law, locals will be sensitized and the relevant stakeholders will develop a Mandatory Evacuation Plan for the parish. This plan will, among other things, identify: “especially vulnerable areas” which may be required to evacuate during emergency situations; the technologies and systems for disseminating evacuation warnings; the roles and responsibilities of all stakeholders in the process; and evacuation routes and shelters. The creation of this Plan will involve high levels of community participation to ensure awareness and support. Following its completion, it will be periodically tested and evaluated.

### RECOMMENDED POLICIES

- The Government will seek to ensure the speedy enactment of the new Disaster Risk Management Bill.
- Mandatory evacuations will be supported as part of the Disaster Risk Management Strategy within the parish.
- A participatory process will be employed in the development of a Mandatory Evacuation Plan for the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage Government to fast track the enactment of the new Disaster Risk Management Bill.	Short Term	ODPEM, CPC
Sensitize locals about mandatory evacuations.	Short Term	ODPEM, CPC
Develop a Mandatory Evacuation Plan for the parish. This Plan should, among other things, identify: “especially vulnerable areas” which may be required to evacuate during emergency situations; the technologies and systems for disseminating evacuation warnings; the roles and responsibilities of all stakeholders in the process; and evacuation routes and shelters.	Medium Term	ODPEM, CPC, Clarendon Police Division
Conduct routine tests, simulation exercises and evaluation of the Parish’s Mandatory Evacuation Plan	Medium to Long Term	ODPEM, CPC

#### 2.3.9.10. STRATEGIC OBJECTIVE #86

**To promote an integrated approach to flood management to maximise the benefits of flooding whilst minimising the costs.**

The traditional approach to flood management in the parish has been rather reactive and focussed on reducing exposure to flooding and susceptibility to flood damage, mainly through the collection of

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

in drainage channels which convey the water to rivers or the sea. This approach however is generally expensive and executed in isolation with little or no consideration of the environmental and the socio-economic effects. It is also proving to be inefficient as flooding is a perennial problem in a number of local communities and is constantly inflicting heavy and unsustainable socio-economic costs on both residents and the Government. This situation underscores a need to employ a new approach which is cost effective in light of the fact that resources are scarce.

Integrated Flood Management (IFM) is emerging as the most efficacious and cost-effective approaches to managing floods. It is a process which promotes an integrated, rather than a fragmented, approach to flood management. IFM recognises that flood management has two different parts; one relating to water management and the other relating to disaster management. It integrates land and water resources development in a river basin, within the context of integrated water resource management (IWRM), in order to maximise the net benefits from the use of floodplains, whilst minimizing the loss of life from flooding.

While this concept may be an ideal which is not adoptable in its entirety in the Plan Area, aspects of it will be supported and utilized in flood management in the parish. Flood management in the parish will generally employ a highly participatory approach, which integrates land use planning. Strategies or a combination of strategies which include structural and non-structural measures which seek to reduce flooding, reduce susceptibility to damage, mitigate the impacts of flooding, or preserve the natural resources of floodplains will be selected based on the appropriateness to particular situations. The selected strategies will also guard against measures that create new hazards or shift the problem in time and space. They will also give adequate consideration to the management of the water cycle as a whole. The table below provides a list of some of the strategies that will be employed.

Strategy	Options	Strategy	Options
1) Reducing flooding	<ul style="list-style-type: none"> <li>• Undertaking channel improvements</li> <li>• Harvesting stormwater for irrigation purposes, particularly within the dry season.</li> <li>• Harvesting stormwater for artificial aquifer recharge purposes.</li> <li>• Encouraging individual rainwater harvesting.</li> <li>• Encouraging the use of bio-retention cells and permeable pavements</li> <li>• Constructing vegetated swales and infiltration trenches.</li> <li>• Constructing dikes and levees</li> </ul>	3) Mitigating the impacts of flooding	<ul style="list-style-type: none"> <li>• Developing flood forecasting and warning systems</li> <li>• Cleaning existing drains, including blocked sinkholes</li> <li>• Encouraging flood insurance</li> <li>• Supporting post-flood recovery efforts</li> <li>• Providing adequate information and education</li> </ul>
2) Reducing susceptibility to damage	<ul style="list-style-type: none"> <li>• Introducing floodplain regulations (see 2.3.9.6. Strategic Objective #82, pg.203)</li> <li>• Encouraging retrofitting to include flood proofing.</li> <li>• Relocating highly vulnerable structures.</li> </ul>		

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Figure 65: A flood proof housing design that may be adopted in the Parish.

### RECOMMENDED POLICIES

- The relevant authorities will seek to adopt the principles of IFM management within the parish to the maximum extent possible.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise awareness of IFM amongst the general public and key decision makers, including the political directorate.	Short Term	WRA, ODPEM

### 2.3.9.11. STRATEGIC OBJECTIVE #87

#### To promote the storage of water to improve drought resiliency.

In order to improve drought resiliency, there is a need to make water available in adequate quantities at times when it would not naturally be. Whilst this Plan is promoting a number of strategies, including rainwater harvesting, recycling of water and water conservation, which are aimed at sustainably managing the local water resources, these practices by themselves will not adequately achieve this objective and mitigate against the impacts of droughts within the parish. Hence, storage interventions will be promoted as a complementary approach to these methods.

Water storage will include collecting and storing water during periods when rainfall and surface water flows are high (See also 2.3.9.10. Strategic Objective #86, pg. 206). There is a wide range of possible options, including surface and sub-surface storage options. These include: large dams, natural wetlands, enhanced soil moisture, groundwater aquifers, ponds and small tanks. The principal storage options that will be promoted are groundwater aquifers, small tanks and enhanced soil moisture. The groundwater storage options will be promoted primarily within Lower Central and Southern Clarendon since this section of the parish is heavily dependent on groundwater. It will include aquifer recharge initiatives, including through artificial methods. This option will provide the added benefit of little or no evaporation. In the remainder of the parish, the Upper Central and Northern Clarendon Area, the use of small tanks will be promoted, since this area is primarily dependent on surface water. This option will also be supported in other sections of the parish for all uses.

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The relevant authorities will however ensure that water from streams, rivers, wetlands, etc. and public water systems are not diverted into tanks to the extent that there are adverse environmental impacts or negative implications for public water systems. The other water storage option, enhanced soil moisture, will be promoted across the entire parish within the agriculture sector. Enhanced soil moisture as a water storage option will include the promotion of practices like: conservation tillage; mulching, (including plastic mulching); enhancing soil organic matter, creating wind barriers, shade cover or vegetative soil cover; and various other types of soil and water conservation (SWC) measures. Since the effectiveness of different measures will depend a lot on soil characteristics and particularly on water holding capacity, technical support will be provided.

### RECOMMENDED POLICIES

- The relevant authorities will support aquifer recharge as part of the drought management strategy.
- All new subdivision developments 10 lots and over shall be required to reserve a suitable lot for the storage of water for domestic purposes with firefighting capabilities.
- All new developments within the Upper Central and Northern Clarendon will be required to make provision for water storage.
- The use of water storage tanks should not result in any adverse environmental impact, or any negative implications on public water systems. A limit will be imposed on the size of water tanks.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #36 of the Water section of this document. See pg. 120	Short to Long Term	PIOJ, NWC, MEGJC, ODPEM
Ensure the availability of water storage tanks and water pumps.	Short to Long Term	Private Sector
Provide capacity building programmes in SWC measures.	Short Term	RADA
Encourage farmers to adopt SWC measures.	Short Term	RADA

#### 2.3.9.12. STRATEGIC OBJECTIVE #88

##### To implement preventative measures to reduce the occurrence of bush fire.

Over the years, the rural sections of the parish have witnessed a considerable number of bushfires and climate change is likely to exacerbate the current risks. Preventative strategies will have to be employed since bush fires have the potential to cause extensive loss of life, property, and resources. The overall approach to bushfire prevention will be focussed on lessening the possibility of a fire occurring and minimising the spread in such events. The Country Fires Act will be amended and enforced to deter individuals from starting illegal open fires. Its enforcement will involve the joint patrolling of high risk areas by the coordinated efforts of all relevant authorities. Neighbourhood Watch Groups will also be involved in joint surveillance. Weather related information will also guide the decision of the Local Authority into whether permission to start a fire if given.

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The use of fire retardant methods, such as the creation of fire breaks and the use of fire resistant plants for landscaping purposes, will also be encouraged and supported.



Figure 66: An example of a firebreak in a pine forest.  
Source: <http://www.geograph.org.uk/photo/177055>

### RECOMMENDED POLICIES

- Forest fire prevention will be promoted as an integral part of sustainable forest management.
- The relevant authorities will seek to amend the Country Fires Act to increase the penalty for starting illegal fires.
- The relevant authorities will seek to enforce the Country Fires Act
- Permission will not normally be given under the Country Fires Act for starting a fire in the dry season.
- The relevant authorities will support the creation of firebreaks in forest reserves and forest management areas as a fire suppression strategy.
- All reforested areas in bushfire prone areas should be laid out with firebreaks which are at least 20 ft. wide at appropriate intervals to slow or stop the progress of wildfires.

#### SPECIFIC ACTIONS

#### TIME FRAME

#### RESPONSIBLE AGENCIES/GROUPS

Intensify the local education campaign for bushfire prevention. This campaign should, among other things, raise awareness of the Country Fires Act and discourage the practice of intentionally starting bushfires to see the fire brigade in action.

Short Term

CPC, ODPEM, JFB

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Continue to monitor temperatures, rainfall patterns, winds and other weather related activities. Provide adequate information to the Local Authority to assist in guiding its decision when processing applications for start-ups of fires.	Short to Long Term	Meteorological Service of Jamaica
Encourage the creation of firebreaks between adjoining farming properties.	Short Term	CPC, ODPEM, JFB
Encourage owners of real estate located along forest fringes and agricultural properties to create fire breaks	Short Term	CPC, ODPEM, JFB, FD
Train residents who reside on forest fringes or the edge of agricultural properties how to create fire breaks as fire suppression methods in the event of bush fires.	Short to Medium Term	JFB, FD
Map bushfire prone areas to support risk management initiatives.	Short to Medium Term	CPC, ODPEM, JFB
Carry out joint patrolling of bushfire prone areas.	Short to Medium Term	CPC, FD
Explore the feasibility of increasing the number of forest rangers locally in order to carry out adequate monitoring and patrols of forested areas to prevent illegal activities, including the starting of fires.	Medium Term	FD
Forge partnerships with Neighbourhood Watch groups to ensure adequate surveillance in order to prevent the starting of illegal fires.	Short to Medium Term	CPC
Encourage the use of fire resistant plants for landscaping purposes on properties along forest fringes.	Short Term	CPC, ODPEM, JFB, FD
Train farmers to use alternatives to the slash and burn technique.	Medium Term	MICAFA, RADA

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### 2.3.9.13. STRATEGIC OBJECTIVE #89

**To promote fire safety and sustainability within buildings in order to prevent the loss of life and reduce damage in the event of a fire.**

The frequency and impact of building fires, including house fires, within the parish, highlight the need for fire safety and sustainability within buildings. This strategy will involve the integration of safety and sustainability within building designs, and the development of fire safety plans. In processing all new building applications or proposals for change of use, the Local Planning Authority will take into consideration the need for appropriate provisions to meet the requirements of the Fire Department. Owners and operators of homes, businesses and institutions, will also be encouraged to install smoke alarms, water sprinkler systems, fire extinguishers, fire-resistant doors and walls, proper fire escapes, and other fire safety devices. Adequate opportunities to develop operational techniques when using fire equipment such as fire extinguishers will also be provided. In addition, families will be encouraged to develop fire safety plans, while it will be mandatory for all businesses, institutions, and general buildings accommodating 15 or more persons at any particular time, to develop a Fire Safety Plan which is approved by the Fire Brigade.

#### RECOMMENDED POLICIES

- In processing new building applications or proposals for change of use, the Local Planning Authority will take into consideration the need for appropriate provisions to meet the requirements of the Fire Department.
- All businesses, institutions, and general buildings accommodating 15 or more persons at any particular time shall be required to develop a Fire Safety Plan, which is approved by the Fire Brigade.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Organise and implement a proactive public education campaign on fire safety, targeting groups including students, business owners and homeowners to highlight the importance of, and encourage the practicing of fire safety in the home, school and business place. This programme should, encourage/mandate owners and operators of business and homes to install smoke alarms, water sprinkler systems, fire extinguishers, fire resistant doors and walls, and proper fire escapes. Families to be encouraged to develop fire safety plans and provide opportunities for the development of operational techniques when using fire equipment including fire extinguishers.</p>	<p>Short Term</p>	<p>JFB, CPC, ODPEM</p>

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### 2.3.9.14. STRATEGIC OBJECTIVE #90

**To reduce the risk of disease epidemics through the implementation of individual and collective measures which reduce exposure to biological agents.**

Managing the risk of disease infestation and epidemic in the parish will focus on the development and implementation of effective primary prevention measures. Biological hazards, including diseases, are transmitted by biological agents which include viruses, bacteria, fungi, parasitic worms and some plants. The most effective way of preventing disease epidemics in the parish is to reduce or eliminate exposure to biological agents, including the elimination of the source.

This will be achieved through the implementation of individual and collective measures. These measures include the promotion of proper hygiene and sanitation practices, physical fitness, maintaining healthy eating habits; management of stray animals, increasing public health inspection; and rigorously enforcing the Public Health Act. The health sector will also be improved to increase its capacity to effectively manage the threat of communicable or infectious disease epidemics.

#### RECOMMENDED POLICIES

- The relevant authorities will rigorously enforce the Public Health Act.
- The relevant authorities will seek to encourage a proactive approach to public cleansing.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase awareness of the Public Health Act.	Short Term	Clarendon Health Department, NSWMA, CPC
Continue to provide immunization programmes in the parish, particularly in remote areas.	Short to Long Term	Clarendon Health Department
Promote proper hygiene and sanitation practices in the home, school, workplace, etc.	Short Term	Clarendon Health Department
Promote physical fitness and healthy eating habits in order to reduce the personal risk of contracting disease.	Short Term	Clarendon Health Department
Support all Strategic Objectives of the waste management section of this Plan. See pgs. 155- 173	Short to Long Term	Clarendon Health Department
Include spitting in public places in the anti-litter ticketing system.	Short Term	CPC
Increase monitoring and inspection to ensure the maintenance of sanitary conditions in the parish.	Short to Long Term	Clarendon Health Department

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Review the existing laws in order to strengthen the legislative framework for the control and welfare of stray animals in Jamaica.	Medium Term	GOJ
Promote responsible pet ownership and livestock and animal management within the parish.	Short Term	Clarendon Health Department, RADA, Private Sector
Establish population control programmes for stray animals in the parish, particularly within town centres and tourist areas.	Short to Long Term	Private Sector
Support all Strategic Objectives of the Health section of this Plan. See pgs. 306 - 313	Short to Long Term	

### 2.3.9.15. STRATEGIC OBJECTIVE #91

**To build resilient livelihoods by introducing appropriate programmes and encouraging the application of suitable practices.**

The need to build livelihood resilience in the parish is absolute. Several local productive sectors, including agriculture and fisheries, are very sensitive to disasters and the adverse effects of climate change. The impacts and potential impacts of these phenomena on these local sectors are of much concern since they make up an estimated two-thirds (2/3) of the local economy. Therefore, it is imperative for the parish to diversify its economy by promoting adaptation measures that increase resilience in the named sectors. Building livelihood resilience will involve the promotion of climate smart agriculture, and climate resilient fisheries.

#### 2.3.9.15.1. STRATEGIC OBJECTIVE #91A

**To promote climate smart agriculture (CSA).**

It is critical that CSA be embraced within the Plan Area. Climatic conditions are becoming increasingly variable, and the intensity of their effects is projected to get stronger. With the local agriculture sector recognised as one of the most vulnerable sectors to climate change, it is essential to encourage practices which will ensure that agriculture continues to contribute to local food security and income generation. CSA<sup>83</sup>, which is an approach to managing cropland, livestock, and forests, will therefore be promoted.

The focus of climate smart agriculture within the parish will be on: sustainably increasing agricultural productivity, to support equitable increases in farm incomes, food security and development; adapting and building resilience of agricultural and food security systems to climate change at multiple levels; and reducing greenhouse gas emissions from agriculture (including crops, livestock and fisheries). This will involve the concerted and coordinated involvement and action of all stakeholders on a long term perspective. It will include the promotion and adoption of practices as those which are listed in the table below. Adequate technical guidance will be provided, as well as appropriate incentives which will encourage adoption.

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Disaster Resilient and Climate Smart Agricultural practices	
Crop Production	Livestock Production
<ul style="list-style-type: none"> <li>• Crop diversification</li> <li>• Appropriate crop selection (drought/saline/flood tolerant)</li> <li>• Intercropping</li> <li>• Crop breeding</li> <li>• Conservation agriculture</li> <li>• Adjustment of cropping calendars</li> <li>• Sustainable seed systems</li> <li>• Terracing</li> <li>• Post-harvest management (storage, food drying, food processing)</li> <li>• Livelihoods diversification</li> <li>• Crop insurance</li> <li>• Integrated pest management</li> <li>• Urban gardening</li> <li>• Mulching, including plastic mulching</li> </ul>	<ul style="list-style-type: none"> <li>• Proofing of storage facilities</li> <li>• Livestock shelters</li> <li>• Strategic animal fodder reserves</li> <li>• Fodder conservation</li> <li>• Resilient animal breeding</li> <li>• Vaccination to reduce or prevent the spread of animal disease</li> <li>• Grazing and pasture resource management</li> <li>• Strengthening pest management systems to cope with threats</li> <li>• Biosecurity in animal production systems</li> <li>• Agroforestry systems</li> </ul>
Water Management	Energy
<ul style="list-style-type: none"> <li>• Drip irrigation</li> <li>• Rainwater harvesting</li> <li>• Water Storage</li> </ul>	<ul style="list-style-type: none"> <li>• Biodigester</li> </ul>



Figure 67: Plastic mulching helps to suppress weeds and conserve water in crop production, as well as landscaping.  
Source: [http://www.harvesttotable.com/2009/02/how\\_to\\_grow\\_lettuce/lettuce-in-plastic-mulch/](http://www.harvesttotable.com/2009/02/how_to_grow_lettuce/lettuce-in-plastic-mulch/)

### RECOMMENDED POLICIES

- The relevant authorities will actively promote climate-smart agriculture within the parish.
- The relevant authorities will ensure that climate-smart agriculture is incorporated in the school's agriculture curriculum.

83. CSA is an integrated approach which uses a combination of technologies and practices to meet food security goals while adapting to, and mitigating, climate change. In practice, it means having access to agricultural technologies such as crop varieties and livestock breeds that are more adapted to a changing climate, improved water management techniques to use water more efficiently, and practicing agro-forestry, crop rotation, mulching, intercropping, integrated crop-livestock management, and improved grazing to help conserve water and carbon in the soil. CSA also focuses on better weather forecasting, early warning systems, and insurance to help farmers reduce risk. Using available technologies and practices, CSA can increase agricultural productivity, adapt to climate change, reduce greenhouse emissions from agriculture, and strengthen resilience in smallholder farming systems and livelihoods.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop climate change resilient crop varieties and systems that are tolerant of flooding, drought and salinity, and based on indigenous and other varieties suited to the needs of resource poor farmers, fisheries and livestock systems to ensure local and national food security. See also Strategic Objective #181 of the Agriculture Sector Plan (pg. 373).	Short to Long Term	SRC, Private Sector
Continue to develop livestock breeds which are tolerant to the local climate.	Short to Long Term	RADA, MICAF, Jamaica Cattle Breeders Society, Bodles Research Station
Increase access to goods, products, tools, equipment, etc. which are essential to climate smart agriculture.	Short to Long Term	Private Sector
Provide training opportunities for farmers in climate-smart agriculture, which include but are not limited to the practices highlighted in the table above.	Short to Medium Term	RADA
Establish demonstration plots that illustrate best practice in climate-smart agriculture at strategic locations in the parish.	Short to Medium Term	RADA, MICAF
Incentivise climate smart agriculture.	Medium to Long Term	MICAF
Support Strategic Objective #5 of the Natural Environment Section of this Plan (pg. 72)	Short to Long Term	ODPEM
Support the establishment of crop insurance systems	Medium Term	Private Sector
Educate farmers on the importance of crop insurance in the context of climate change and encourage participation.	Short to Med-ium Term	RADA

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### 2.3.9.15.2. STRATEGIC OBJECTIVE #91B

#### To promote resilient fisheries.

Improving disaster resilience and climate adaptation within the local fishing industry is critical to ensuring the continuous contribution of the sector's rural economic development, and food security. Fishers and fish farmers are faced with a number of risks, which are associated with natural and manmade hazards, but particularly from tropical cyclones. These risks which include loss of lives, assets, food source, and employment or income-earning opportunities, will be aggravated with climate change. It is therefore vital that interventions aimed at reducing the risk associated with specific types of hazards and enhancing climate change resilience, be made so as to prevent or reduce the possibility of disasters or permanent displacements within the industry. Such interventions will include the development of early warning systems, the promotion of good practices for securing boats, engines and other fishing gear/equipment, and encouraging the provision of fisheries insurance, enforcing building codes and ordinances for the development of fisheries infrastructure, and sustainably managing the local fisheries.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote awareness of the proper technique for securing boats, engines and other fishing gear/ equipment on the beach in the event of a storm or hurricane. Alternative storage options may also be provided.	Short Term	C-CAM, Fisheries Division, ODPEM
Support Strategic Objective 196 of the Fisheries section of this Plan (pg. 400).	Short to Long Term	Fisheries Division, ODPEM, MICAFA
Support Strategic Objective #82 of this Plan, pg. 203.	Short to Long Term	ODPEM
Support the establishment of fisheries, including aquaculture, insurance systems.	Medium to Long Term	MICAFA, C-CAM, Fisheries Division, ODPEM. Private Sector
Educate fishers and fish farmers on the importance of insurance in the context of climate change and encourage participation.	Medium Term	MICAFA, C-CAM, Fisheries Division, ODPEM.
Support Strategic Objectives #192 (pg. 394), #193 (394) and #199 (404) of the Fisheries Section of this Plan. Note briefly: Strategy #199 will redirect you to strategies #1, 2, 3, 4, 5, 8, 10, 11 and 12 of the Natural Environment section of this plan.	Short to Long Term	MICAFA, RADA,

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement aquaculture biosecurity measures to reduce or prevent the spread of fish disease.	Short to Long Term	MICAF, RADA, Private Sector
Promote genetic improvements in specific species for higher resistance to the impacts of climate change, such as increased temperatures.	Short to Long Term	SRC, MICAF, RADA, Private Sector;

### 2.3.9.16. STRATEGIC OBJECTIVE #92

#### To implement proactive measures to reduce the risk of technological disasters.

The nature of the risk posed by industrial hazards is such that these hazards require a comprehensive range of hazard-specific mitigation actions. Generally, little or no warning precedes incidents involving industrial hazards and the effects of these events can span several years. In addition, such hazards are expected to increase with the proposed spread in industrialization in the parish under this Plan. Accordingly, specific mitigation actions will be developed and implemented for the management of industrial hazards in the Plan Area.

The management of industrial hazards will take place through a proactive approach. This approach will involve the appropriate siting of industries, the establishment, maintenance, monitoring and enforcement of safety standards, public awareness and the dissemination of knowledge. As highlighted under Strategy #3 above, industries will be sited away from population centres to reduce the possibility of industrial accidents that could result in disaster. In addition to that, the existing safety standards for industries will be periodically reviewed in response to the rapid rate of technological advancement. Similarly, the system for monitoring and enforcement will be strengthened with increasing developments within the industrial sector. This process will include the mapping of all industries and sites which store or use chemicals and other hazardous materials. Adequate information on these sites will also be collected and disseminated to the public upon request. The public will also be sensitized on how information will be communicated and actions that must be taken in the event of a potential industrial disaster. Additionally, industrial enterprises will be required to develop Internal Safety Plans and ensure that all employees and visitors comply with the established safety guidelines and regulations.

### RECOMMENDED POLICIES

- All industries will comply with safety standards and regulations which are established by the relevant authorities.
- The relevant authorities will periodically review existing safety standards and regulations which seek to prevent industrial disasters in order to ensure that advancements in technology are taken into consideration.
- All industrial enterprises will develop Internal Safety Plans and ensure that all employees and visitors comply with the safety guidelines and regulations set out under such plans.
- Industrial enterprises will regularly evaluate their Safety Plans.
- All chemicals and other hazardous materials in storage should be labelled to ensure rapid identification of any released substance.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #79 of this Plan. See pg. 201	Short to Long Term	CPC, ODPEM, NEPA
Strengthen the monitoring and enforcement of safety standards and regulations which seek to prevent industrial disasters. This process should involve mapping of all sites and facilities that utilize or store any form of hazardous material.	Short to Medium Term	MLSS
Collect adequate information on all sites of potential technological disasters and disseminate such information to the public upon request	Short to Medium Term	MLSS, CPC
Ensure the public is aware of how it will be notified and the actions that must be taken in the event of a potential technological disaster.	Short Term	CPC, ODPEM
Encourage all industries to develop Safety Management Plans and ensure that all employees and visitors comply with established safety guidelines and regulations.	Short Term	MLSS, ODPEM

### 2.3.9.17. STRATEGIC OBJECTIVE #93

**To implement proactive measures to reduce the risk of transportation accidents in the parish.**

The risk of a transportation related disaster stems mainly from the number of road crashes being recorded in the parish. These accidents are mainly the result of carelessness and irresponsible driving behaviours and practices. Hence the management of transportation hazards will focus primarily on fostering responsible behaviours on the parish's roads. This will include the continuation of public education programmes, legislative amendments and adequate enforcement by the authority. See 2.2.1.14.1.10. Strategic Objective #22, pg. 96

### 2.3.9.18. STRATEGIC OBJECTIVE #94

**To coordinate awareness building programmes to prevent the duplication of efforts and the wastage of resource.**

Coordination is necessary in building disaster management and CCA awareness in the Plan Area. Whilst public awareness is ongoing, efforts are currently split amongst a number of different stakeholders. This fragmented approach has the potential to cause duplication of efforts and the mass wastage of scarce resources.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

Therefore, public awareness efforts will be coordinated amongst all stakeholders in a single programme. This programme will include, among other things, information on related policies and laws, and will seek to encourage locals to adopt proactive disaster risk management and CCA strategies.

This awareness programme will use multiple channels and media to reach the target audience, which includes all stakeholders in the parish. Different approaches will be utilized for specific sub-groups, which include the political directorate, schools, religious institutions, civic organizations and businesses. As highlighted above, the responsible agencies and groups will collaborate to pool resources and to prevent the duplication of efforts, while ensuring a sustained effort. Regular assessments of the programme will be made to determine the level of success and to make modifications where necessary.

### RECOMMENDED POLICIES

- The relevant agencies and groups will collaborate to pool resources and to prevent the duplication of efforts in developing a comprehensive disaster management and CCA awareness programme.
- The comprehensive disaster management and CCA awareness programme will be regularly assessed to determine the level of success and to make modifications where necessary.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Coordinate all existing disaster management and climate change awareness programmes. This comprehensive programme should increase public awareness of disaster management and climate change issues, as well as related policies and laws, and be implemented via the electronic and print media, school curricula, social media, and other appropriate methods.</p>	<p>Short Term</p>	<p>ODPEM, CPC, MLGCD, MEGJC, NEPA, MICAFA,</p>

### 2.3.9.19. STRATEGIC OBJECTIVE #95

**To enhance the resiliency of the critical infrastructure and facilities, in order to ensure the provision of quality services during and after major events.**

It is necessary to enhance the resiliency of the critical infrastructure and facilities within the Plan Area to avoid disruption in and ensure the provision of quality services during and immediately after disaster events. In order to achieve this objective, a series of actions will be undertaken while a few new policies will be adopted. Firstly, vulnerability assessments of such infrastructure and facilities will be conducted to determine the level of vulnerability to extreme events. Secondly, the risks identified from the assessments will be prioritized, after which plans to make these infrastructure and facilities resilient will be developed and implemented. It should be noted that the relevant authorities will seek to ensure that all critical facilities, including existing structures, are in compliance with the New National Building Code when it is promulgated and all new critical facilities and infrastructure are appropriately sited that they avoid or minimise hazard exposure.

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that all critical facilities are in compliance with the new National Building Code when it is promulgated.
- New critical facilities and infrastructure will be sited such that they avoid or minimise hazard exposure.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Conduct vulnerability assessment of critical infrastructure/ facilities to determine vulnerability to extreme weather	Short to Medium Term	ODPEM
Assess and prioritize risks identified from the vulnerability assessments.	Medium Term	ODPEM
Implement plans to make critical infrastructure/ facilities resilient. This should include the development of business continuity plans for all critical facilities.	Medium to Long Term	GOJ, ODPEM

#### 2.3.9.20. STRATEGIC OBJECTIVE #96

**To modernise the Fire Department, in order to ensure efficient service response, in the event of a fire or other emergency in the parish.**

A critical part of the disaster management strategy is the modernisation of the fire services. The role of the fire services is crucial in any emergency; it is not only employed for firefighting but also for rescue operations in the event of other emergencies. Given its current capacity, the Clarendon Fire Department will be severely challenged in providing an acceptable level of service to the parish with the proposed developments under this Plan. The situation will be worsened by climate change which will increase the frequency of intense hydro meteorological events and weather extremes. This Plan therefore proposes the modernisation of the fire services to ensure efficiency in emergency response.

A wide range of actions will be undertaken in order to modernise the fire services. Both the May Pen and Frankfield Fire Departments will be upgraded, while the possibility of developing another fire station in the parish will be explored. The upgrading of the existing departments will involve the provision of adequate resources, including fire trucks and personnel. New fire hydrants will also be erected, while the non-functioning ones will be rehabilitated. See 3.3.5.12. Strategic Objective #123, 3.3.5.13. Strategic Objective #124, and 3.3.5.14. Strategic Objective #125 (pgs. 275-278)

#### 2.3.9.21. STRATEGIC OBJECTIVE #97

**To improve the preparedness and response of the local healthcare system, in order to deal quickly and decisively with large scale public health events.**

An integral part of the disaster management and CCA strategy is improving the preparedness and response of the local healthcare system. The planning process to achieve this objective will be strategic,

## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

and involves the mainstreaming of disaster management and climate change concerns in health sector plans and policies. A multi-hazard approach will be taken, which will include planning for natural disasters, including floods, hurricanes, earthquakes, disease outbreaks (including infectious disease), etc., as well as man-made events, whether intentional or unintentional, e.g. fires, chemical spills, etc. Early warning systems will be developed for certain illnesses, and the critical issue of preparing for unexpected increase in numbers of patients will be addressed through approaches such as expanding the internal capacity of facilities, establishing alternate patient care sites and systems, supplementing staff through the use of credentialed volunteers, building caches of medical supplies, etc. Adequate resources, including ambulances and protective gears and equipment, to respond to health emergencies in the parish will also be provided. The relevant authorities will further explore the feasibility of developing at least one quarantine facility at a local hospital to contain the spread of infectious disease in the case of an event. The public will also be educated about the impacts of climate change on human health and their responsibilities in preventing health related disasters.

### RECOMMENDED POLICIES

- The relevant authorities will seek to fully integrate climate change concerns into all existing and new health policies and plans.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Educate health professionals on the predicted impacts of climate change on the health sector and appropriate adaptation strategies.	Short to Medium Term	MOH
Develop and implement sustainable public awareness and education programmes relating to the impacts of climate change on human health.	Short Term	Clarendon Health Department, MOH
Support the development of proactive early warning systems for illnesses such as dengue which will be impacted by climate change.	Short to Long Term	MOH
Ensure that local hospitals and healthcare centres are adequately prepared for unexpected increase in number of patients through approaches such as expanding internal facility capacity, establishing alternate patient care sites and systems, supplementing staff though the use of credentialed volunteers, building caches of medical supplies, etc.	Short to Long Term	MOH

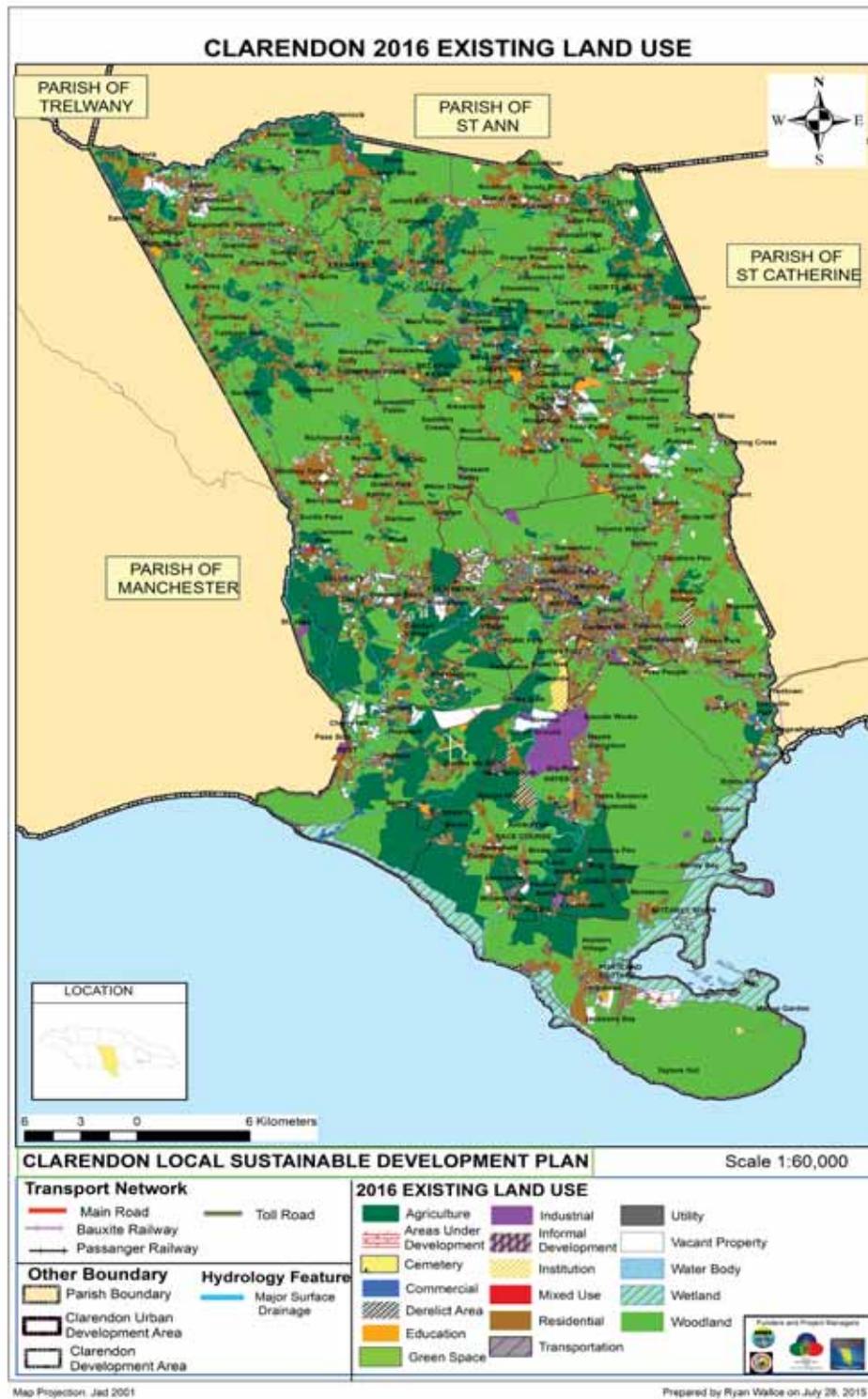
## 2.3. DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of developing at least one quarantine facility at a local hospital as a proactive measure to stem the spread of any infectious disease.	Long Term	MOH
Provide adequate resources, including ambulances and protective gears and equipment, to respond to health emergencies in the parish.	Short to Long Term	MOH, Private Sector
Support the Strategic Objectives of the Health Section of this document.	Short to Long Term	MOH, Private Sector



## 2.4. LAND USE

### 2.4.1. EXISTING LAND USE/ LAND COVER



Map 8:

The existing pattern of land use/land cover in Clarendon, as shown on the simplified map above may be best described as haphazard. It is made up predominantly of woodlands and agricultural lands, which are interspersed with pockets of built up areas. Woodlands are the most dominant land use/ land cover, occupying 55.21(%) percent of the lands within the parish, as shown on the chart below. It covers most of the northern and south eastern sections of the parish, with small patches occurring in the south western region. Agriculture represents the second largest land use, covering 18.44(%) percent of the parish's land.

## 2.4. LAND USE

Land Use	Percentage of Land Occupied
Woodland	55.21
Agriculture	18.44
Residential	13.78
Vacant Property	5.6
Wetland	3.26
Industrial	1.06
Institution	0.53
Commercial	0.49
Derelict Area	0.43
Education	0.39
Areas Under Development	0.23
Green Space	0.2
Utility	0.16
Informal Development	0.14
Mixed Use	0.05
Cemetery	0.02
Water Body	0.01
Transportation	0.01

### 2.4.2. LAND USE ISSUES AND CHALLENGES

#### 2.4.2.1. LACK OF AN UP-TO-DATE LAND USE POLICY

The parish of Clarendon lacks an up-to-date land use policy. The Clarendon Parish Development Order was confirmed in 1982 which renders it outdated and inapplicable in guiding the parish's development. This is leading to the sub-optimal use of the land resources, which is evidenced by the haphazard land use pattern and issues such as land use conflicts, traffic congestion and environmental degradation.

Competing interests in the development of land in the parish and the absence of an up to date policy, means that land is being utilized in an indiscriminate manner. Limited agricultural lands and environmentally sensitive areas are being cleared to accommodate housing developments and other activities, including mining. Vacant plots of varying sizes are being left within the boundaries of established settlements. The uncontrolled outward expansion of built up areas in the parish means that development is taking place in a sprawling manner. This is creating a heavy dependence on automobiles which is further contributing to traffic congestion within the town centres, which have generally been developed without the allocation of adequate lands for parking. Additionally, the haphazard use of land has created many land use conflicts, as incompatible uses are being located in proximity to each other. For instance, residential uses are located adjacent to industrial uses, which means that residents have to contend with noise, dust and odour nuisances.

#### 2.4.2.2 WEAK ENFORCEMENT OF LAND USE POLICIES AND REGULATION

Research has shown that many of the existing land use issues in the parish have resulted from a history of weak enforcement of development control. A study conducted by Douglas (1975) revealed that development in the parish was taking place outside of the Development Order Area stipulated by the 1965 Development Order, and as such very little control existed outside the area.

## 2.4. LAND USE

The study also revealed that development control had broken down even within the Development Order Area. A study of the existing land use pattern has revealed similar findings; development in the parish has not conformed to the 1982 Clarendon Parish Development Order. Urban development has taken place outside the areas stipulated, despite lands being available within such boundaries. Additionally, the parish is subject to high levels of squatting, which reflect weak enforcement of development control. This weak enforcement issue is believed to be a consequence of weaknesses in the institutional capacities of the responsible agencies. These weaknesses mainly relate to human resources.

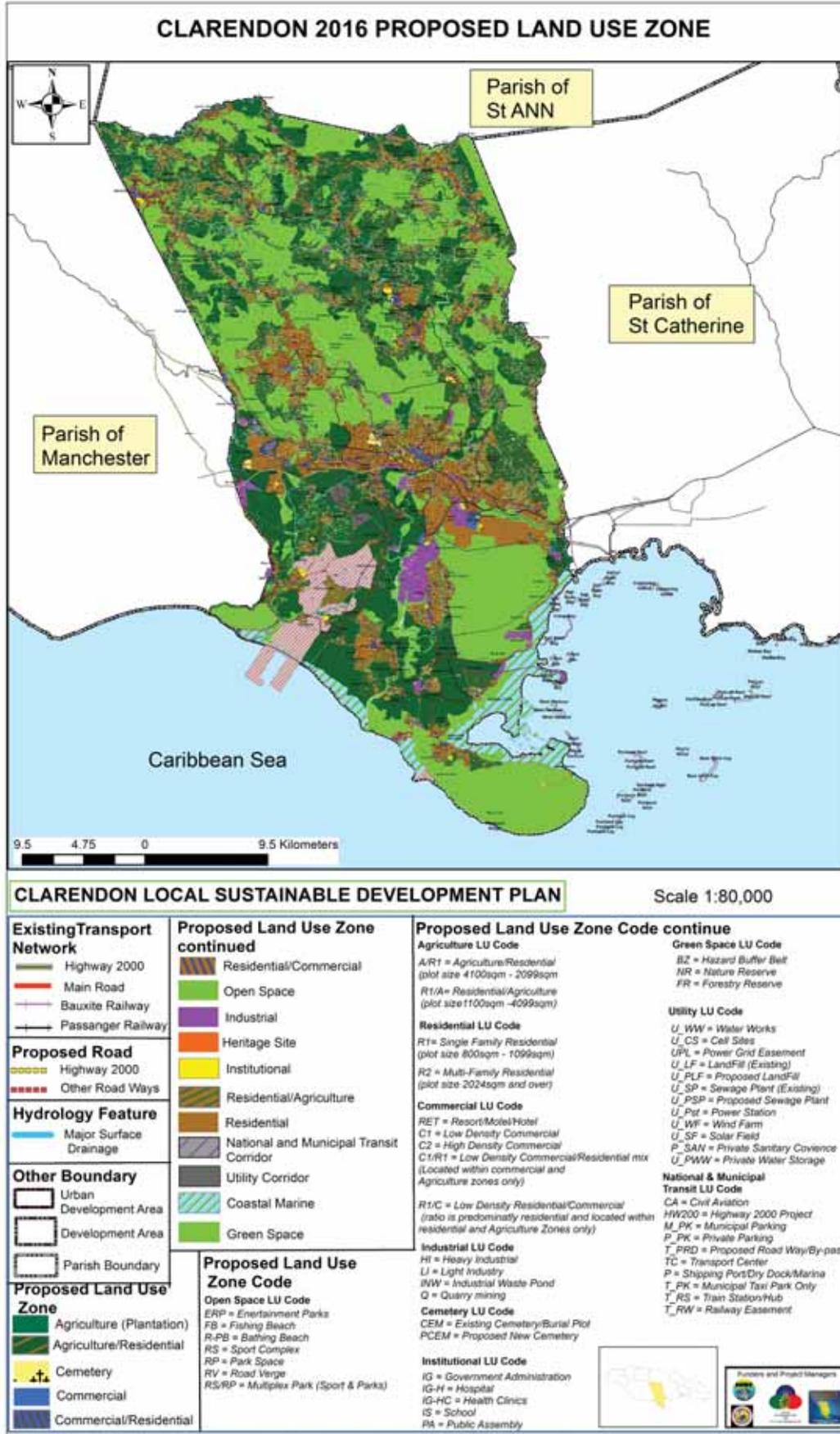
### 2.4.3. PARISH STRATEGIES

#### 2.4.3.1. STRATEGIC OBJECTIVE #98

**To undertake land use planning and regulate the use of land in an attempt to avoid land use conflicts and ensure the efficient utilization of the parish's land resources.**

Land use planning and management will be used to order and regulate the parish's land use in an efficient and ethical way which minimises land use conflicts. The main instrument for achieving this objective will be the implementation of zoning proposals. These proposals are the result of a systematic assessment of the physical, social and economic factors at play in the parish, with the aim of encouraging and assisting land users in selecting options that increase their productivity. They are sustainable and meet the needs of society. These zoning proposals also seek to achieve several sub-objectives which include: 1. concentrating growth and development, 2. ensuring sustainable and productive use of the parish's agricultural land resources, and 3. protecting environmentally sensitive areas.

# 2.4. LAND USE



## 2.4. LAND USE

### 2.4.3.1.1. STRATEGIC OBJECTIVE #98A

**To encourage the concentration of growth and development within specific areas of the parish to reduce unsustainable land consumption patterns, maximise on scarce financial resources, and safeguard the environment.**

A major objective of this zoning proposal is to encourage the concentration of growth and development within the Parish. Growth and development will generally be facilitated within specific areas with defined spatial boundaries. This is necessary to limit development within isolated areas which would require the expansion of the municipal infrastructure over wide areas. This would not be feasible in all areas and may not be cost effective in others. Concentrating growth and development is important, as it will allow new developments to benefit from existing public amenities and infrastructure, reduce the need to expand the infrastructure, minimise infrastructure maintenance costs, and reduce travel demand and its associated social, economic and environmental impacts.

Future urban growth will be directed to designated growth centres within the parish. Designated growth centres are areas of concentrated activity, which include a mix of uses and public amenities, and benefit from access to existing municipal infrastructure. These areas usually have a clearly delineated boundary and a core that is similar in form and function to a traditional downtown. By designating growth centres, the parish will be able to accommodate anticipated growth in a planned manner within set boundaries, and also maintain a clear edge between urban and rural areas.

Eleven (11) areas in the parish have been designated growth centres. These areas are Chapelton, Frankfield, May Pen, Spalding, Lionel Town, Tollgate/Osbourne Store, Hayes, Kellits, Longville Park, Mocho and Vernamfield. These areas have been so designated based on their characteristics, development trends and future plans. Urban growth, which include large housing developments will be accommodated within these areas. In addition to residential developments, these growth centres will incorporate and integrate areas for civic, commercial, industrial and recreational uses.

In addition to the designated growth centres, a number of rural settlement nodes will also be established. These include Rock River, Racecourse, Crofts Hill, Aenon Town, Hill, Brandon Hill and Turners. The rural settlement nodes are established areas of rural settlements, often relatively dispersed in form, which are expected to accommodate limited growth through the Plan period. The general policy approach in rural settlement areas is to resist large land releases for new developments but to accommodate individual dwellings and other small developments within the existing small settlements and on parcels of land which have been previously developed.

### RECOMMENDED POLICIES

- Growth centres and rural settlement nodes will support a range of land use types/ activities which foster the development of relatively self-contained settlements.
- The planning authorities will seek to protect land outside the defined built up areas (growth centres and rural settlement nodes) from irreversible and unnecessary development and will ensure that permission for development in these areas is kept to a minimum.

## 2.4. LAND USE

### 2.4.3.1.2. STRATEGIC OBJECTIVE #98B

**To ensure that environmentally sensitive areas are reserved as natural areas, and development is sensitive to important environmental features of the parish.**

The survival and well-being of Clarendonians depends to a large extent on the health of the natural environment. However, the parish suffers from much environmental degradation as the promise of economic prosperity and survival has placed the natural systems at risk of being irreparably damaged. This situation is detracting from the gains of sustainable development and may worsen the standard of living of the poor who are directly dependent on natural resources. It is very important that land management policies and practices be enforced so as to protect and conserve the important features of the natural environment.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to designate eco-sensitive areas as protected areas.
- The planning authorities will ensure that areas zoned as Green Space on the land use proposal map are reserved as natural areas and greenbelt preserves for wild life and recreation.
- The Planning authorities will normally permit low impact eco-tourism developments which will not cause significant environmental damage within the areas zoned as Green Space.
- Developments within environmentally sensitive areas will generally require an Environmental Impact Assessment.
- Planning permission will not be given for any form of development which will result in the degradation of habitat for endemic or endangered species of flora and fauna.
- Development that would result in the excessive removal of trees within areas zoned as green space will not be allowed by the planning authorities.
- The local planning authority will not encourage any development along the coastline; consideration will however be given to the establishment of small marinas, accommodations and ports which will not be detrimental to the coastal ecosystems.
- The planning authorities will normally refuse planning permission for any development within proximity of conservation areas that will have a detrimental effect on such areas.
- Planning permission will not be given for developments which will adversely affect the flow or quality of fresh water resources.
- The local planning authority will impose conditions requiring the protection of existing habitats and established plant communities during the development process and their preservation and enhancement where necessary after.

### 2.4.3.1.3. STRATEGIC OBJECTIVE #98C

**To prevent development from causing any increased marine and coastal contamination and degradation which would adversely affect the local fishing industry.**

Unplanned and unmanaged coastal developments are having negative impacts on the marine resources, including water pollution and the loss of coastal vegetation, which can have devastating consequences for the local fishing industry. Proper planning and the enforcement of environmental standards will therefore be used to prevent any increased marine and coastal contamination and degradation. More specifically, coastal setbacks will be established, density standards will be developed and developments that will result in the loss of mangroves, seagrass beds, coral reefs, sea turtle nesting sites, fish spawning and nursery areas and other marine and coastal resources will be resisted.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- Setbacks from high watermark for coastal developments shall be pursuant to the stipulations of the Planning Authorities.
- Developments that will result in the loss of mangroves, seagrass beds, coral reefs, sea turtle nesting sites, fish spawning and nursery areas and other marine and coastal resources will be strongly resisted.
- Resort development within any coastal area of the Parish shall be of the villa type and shall not exceed a density of 50 h.r.h. with buildings not exceeding two storeys in height at street level.
- Residential development in any area along the coast shall be of low density which will not exceed 50 h.r.h.

#### 2.4.3.1.4. STRATEGIC OBJECTIVE #98D

##### **To ensure sustainable and productive use of the parish's agricultural land resources.**

Agriculture continues to play an important role in the economic development of the Parish. Its viability is predicated on the availability of fertile soil which is a finite resource. Therefore, it is important that lands of high agricultural value be protected and rationalized to safeguard the economy of the Parish. This will involve resisting development pressures which may reduce their productiveness and/or result in the conversion of good quality agricultural lands to non-agricultural uses. Additionally, cultivation is not the only viable agricultural activity that will be promoted, and therefore the conversion of poor quality agricultural lands to other uses will not normally be supported. Furthermore, lands of significant agricultural value will be protected and safeguarded from sterilization and fragmentation which may lower productivity.

### RECOMMENDED POLICIES

- There will be a presumption against development which will diminishes the amount of lands zoned for agricultural purposes on the land use proposal map.
- Agricultural lands on the land use proposal map includes the classes Agriculture and Agriculture/Residential.
- Lands zoned as Agriculture will generally support large scale plantations, while those zoned as Agriculture/Residential will accommodate a mix of agriculture and residential use at a ratio of 60:40 respectively.
- The ratio of agriculture to residential use on a property zoned as Agriculture/Residential may be varied, but the residential use should not exceed 40 percent.
- Planning permission will be given for residential development on lands zoned as Agriculture on the land use proposal map subject to the building being occupied in connection with agriculture and there will be no further subdivision of the land for residential purposes.
- The Planning Authorities will seek to ensure that good agricultural lands (classes I to III) are used only for intensive cultivation.
- Agricultural activities such as poultry and pig rearing which do not depend on the quality of the soil will normally be supported by the Planning Authority on poor quality agricultural land.
- The Planning Authorities will normally support the establishment of agro industries on poor agricultural lands, provided that they will not compromise the character of the area, or impact adversely on the environment.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- Dwellings of a temporary nature for special agricultural workers outside existing settlements and in particular location and agricultural buildings where it is of a type and size appropriate to its purpose may be allowed on good agricultural land in extenuating circumstances only.
- Development (including greenhouses) associated with horticulture and intensive agricultural production not dependent on the quality of the soil will not be permitted if it will jeopardize the long term availability of agricultural land in Classes I, II or III, or where it is accommodated near to housing.
- Development essential for agricultural production outside the urban fence will normally be permitted provided that there is no conflict with other important rural area resources and no adverse impact on the appearance of the surrounding area.
- Recreation, light industrial use, educational and tourist related businesses will be supported within redundant farm buildings, provided that such change would not in any way be detrimental to the character of the rural area.
- Development will not be allowed by the Planning Authority on poor agricultural land if it will in anyway jeopardize the existence of good agricultural land elsewhere.

#### 2.4.3.1.5. STRATEGIC OBJECTIVE #98E

##### **To increase employment opportunities and economic activities in particular areas through the identification and allocation of lands for commercial and industrial purposes.**

There is a need to widen and diversify the economic base of the parish to create jobs, reduce unemployment and ensure easy access to commercial services. Opportunities are available in the areas of manufacturing and commerce which will be exploited with the implementation of this Plan. Lands will be identified and allocated for commercial and industrial use.

### RECOMMENDED POLICIES

- Commercial lands on the land use proposal map include the classes Commercial and Commercial/Residential
- Lands zoned as Commercial/Residential will accommodate a mix of commercial and residential use at a ratio of 60:40 respectively.
- The ratio of commercial to residential use on a property zoned as Commercial/Residential may be varied, but the residential use should not exceed 40 percent.
- Proposals for change of use from commercial or industrial, particularly to non-economic uses, will not normally be supported by the planning authorities.

#### 2.4.3.1.6. STRATEGIC OBJECTIVE #98F

##### **To allocate sufficient land for housing to accommodate long term demographic trends.**

Several factors such as changing household size, age distribution, and income have created a great demand for new housing units in Clarendon over the years. This housing demand is exceeding the current supply, causing a deficit in the provision. In addition to that, a significant portion of the population is excluded from the formal housing market due to the price of units being delivered and their inability to secure a loan. Accordingly, the provision of land to meet the requirements of a range of housing types in different locations will be used as one of the main strategies to ensure that the local housing demand is satisfied.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- Residential lands on the land use proposal map include the classes Residential, Residential/Agriculture and Residential/Commercial.
- Large scale housing developments will be accommodated within growth centres, and permission for such developments will not be given outside these areas.
- In Growth Centres housing development will be allowed in accordance with land use and density proposals, and any other criteria which have been developed for these areas.
- Medium and small scale single family housing development only will be allowed in the confines of rural settlement nodes.
- Only individual, single family dwellings will normally be allowed outside of growth centres and rural settlement nodes.
- In rural settlement nodes, housing developments will be allowed in accordance with land use and density proposals, and any other criteria which have been developed for these areas.
- Development applications will not normally be supported by the local planning authority in areas where there is a deficiency in amenities and utilities.
- In exceptional circumstances planning permission may be granted for proposals to satisfy a local requirement where housing development would not have otherwise been permitted.
- Housing developments in growth centres and rural settlement nodes should incorporate a mix of housing types and sizes appropriate to the needs of the locality, particularly where the development is on a large scale.

#### 2.4.3.1.7. STRATEGIC OBJECTIVE #98G

##### **To reduce hazard exposure and vulnerability through land use planning.**

Risk sensitive land use patterns will be used to reduce hazard exposure and vulnerability in the parish. Clarendon is vulnerable to several types of hazards, including hurricanes, flooding, landslides, earthquakes and drought, and therefore a multi-hazard approach will be utilized. This approach will involve the implementation of policies and actions which focus primarily on: restricting future development in hazard prone areas, particularly those with a history of disaster occurrences; classifying different land use setting for disaster prone areas; regulating land use or zoning plans with legally binding status; and promoting hazard modification through soft engineering methods.

### RECOMMENDED POLICIES

- The Government will seek to fast track the No-Build Zone Legislation.
- Buffer zones of minimum appropriate distances, measured horizontally, will be implemented along coastal areas vulnerable to disasters, as well as along river floodplains.
- Buffer zones, which have been established for disaster management purposes, will be converted into no-build zones following the enactment of the No-Build Zone Legislation.
- No development will be allowed on land that is steep and unstable, vulnerable to erosion, slippage, and subsidence; flooding or other natural hazards unless satisfactory engineering works are submitted and approved by the local planning authority.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- The local Planning Authority will not support development within areas where fault lines exist, unless satisfactory engineering works are submitted; these areas should generally be reserved for forestry development.
- All industrial developments and sites containing chemicals and other hazardous materials will be sited away from population centres.
- When considering proposals for new developments which involve the possibility of any form of hazards (not only those to which the development area is prone), the local planning authority will take account of their location in relation to other developments.

#### 2.4.3.1.8. STRATEGIC OBJECTIVE #98H

**To guard lands of significant mineral wealth from sterilization and development which would render the mineral incapable of being extracted.**

Mineral bearing lands within the parish are finite resources. It is therefore very important that lands of significant mineral wealth be protected to support the sustainability of the mining industry. These lands will be protected from sterilization, as well as developments which would render them incapable of extraction. This will be achieved through the establishment of a mineral bearing land management bank and the implementation of the appropriate policies.

### RECOMMENDED POLICIES

- The sequential use of mineral bearing lands will normally be permitted, but the extraction of the mineral will be given priority over all other uses.
- Physical development of a permanent or capital intensive nature which will prevent the extraction of a mineral will not be given permission on mineral bearing lands.
- Where lands adjacent to mineral bearing lands have been zoned for residential or other incompatible uses, the local planning authority may withhold the granting of permission for development on such lands until the mineral deposit in the area has been depleted.

#### 2.4.3.1.9. STRATEGIC OBJECTIVE #98I

**To ensure the allocation of an adequate amount of land to satisfactorily meet the need for the provision of social facilities and amenities the parish.**

The residents require access to certain basic social facilities and amenities in order to enjoy a balanced healthy lifestyle and improve their standard of living. Such facilities include educational institutions, post offices, libraries, health services, cemeteries, community centres, and recreational/open spaces among others. The parish has most of these social facilities, but they are inadequate and inefficient in serving the residents, due particularly to population increase. Accordingly, lands has been identified and allocated to support the expansion of some facilities and the development of new ones. These lands are zoned as open spaces, institutions and cemeteries. These land will be protected from other development pressures and provision will be made for the reservation of lands within housing developments for such facilities and amenities.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- Permission will not normally be given for development which will result in the loss of lands reserved for social facilities and amenities on the land use proposal map, unless a suitable alternative site has been identified.
- In all new housing developments, land is to be provided for social facilities and amenities needed for the residents.
- The land required to be set aside to meet community needs in residential subdivision should not be pieces left as unsuitable for housing development but land of appropriate dimensions, shape slope and location.
- In reserving land for open space in large subdivisions, the local Planning Authority will give consideration to the provision of larger parcels on which playfields can be located rather than several small ones which can only be used for passive recreational purposes. A mixture of both may be acceptable, depending on the circumstances.

#### 2.4.3.1.10. STRATEGIC OBJECTIVE #98J

##### **To preserve sites and buildings of historic, archaeological or architectural significance.**

The conservation and/ or preservation of the Clarendon's cultural heritage sites and buildings is vital to preserving history, fostering local pride and providing economic opportunities. Therefore sites and buildings of historic, archaeological or architectural significance will be protected from development pressures. This will be achieved through the implementation of policies aimed at ensuring that development is sensitive to the important historic, architectural and archaeological features of the parish.

### RECOMMENDED POLICIES

- The local Planning Authority will seek to preserve and conserve buildings and sites of architectural and historic importance.
- The design and character of a new building should, as far as possible, be in keeping with the scale and character of the existing heritage buildings around them.
- In considering applications for development on or within 91 meters of sites of archaeological significance, the local planning authority will refer them to the JNHT for comments and advice.
- Permission will not be given for any development within the vicinity of any monuments listed by the National Heritage Trust without approval from the JNHT.
- The Planning Authority will normally refuse planning permission for development which would damage or destroy the setting of ancient monuments, historic landscape and important archaeological sites.
- In the redevelopment of a site, any building which can be used should be retained rather than a new one being constructed in its stead.
- Planning permission involving the loss of a building or feature of archaeological or historic interest will not be granted unless reasonable opportunity for recording its characteristics is provided before demolition begins.
- The demolition of buildings with archaeological or historic features will only be allowed if no practical alternative exists.
- Before granting permission for the demolition of any building, or the development of any site with historic or archaeological buildings, the planning authority may require the developer to provide information regarding the importance of the site and the impact of the development.

## 2.4. LAND USE

### RECOMMENDED POLICIES

- Conversion of buildings of historic and architectural importance into tourist accommodations, especially in rural areas where this would contribute to the conservation of the building will be supported.

#### 2.4.3.1.11. STRATEGIC OBJECTIVE #98K

**To establish, preserve and protect the reservation of lands necessary for new transportation infrastructure and other utilities.**

The provision of utilities and an improvement in transport efficiency is necessary to support social and economic development in the Parish. With population growth and modernization, the Parish will require sewerage infrastructure, water infrastructure, electricity infrastructure, among others, to ensure a comfortable and acceptable standard of living. In a similar vein, there will be a need to expand the transportation infrastructure to ensure efficiency in the movement of people and goods to support socioeconomic development. This will involve road widening and road construction, the reestablishment of the railway, and the establishment of an airport and port. Appropriately, lands will be reserved for these purposes.

### RECOMMENDED POLICIES

- The local Planning Authority will support the restoration of railway transportation facilities within the local planning area by taking the necessary steps to preserve the existing infrastructure and reservations in conjunction with the relevant agency.
- The local Planning Authority will not support any development within the railway reservation.
- The local Planning Authority will ensure that lands are allocated for road reservation and no permission will be given for development within these areas.

#### 2.4.3.1.2. STRATEGIC OBJECTIVE #99

Compliance with the recommended land management policies is critical to achieving the local vision. Hence the planning authorities will seek to enforce the policies of this Plan, as well as the Development Order to the maximum extent necessary. Reference will be made to these documents in the processing of all development application. Adequate monitoring will also be undertaken to ensure compliance. Where breaches take place, the authorities will seek to ensure compliance within the shortest possible time.

### RECOMMENDED POLICIES

- Reference will be made to the land use policies of this Plan, as well as the Clarendon Parish Development Order in the processing of all development application.
- Where breaches take place, the authorities will seek to ensure compliance within the shortest possible time.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Undertake adequate monitoring to ensure compliance.	Short to Long Term	CPC

# SOCIAL WELL-BEING



### 3.0. SOCIAL WELL-BEING

## INTRODUCTION

Social wellbeing is at the heart of the CLSDP since the ultimate objective of the Plan is to improve the quality of life of the local population. This Chapter focuses on Population, Social Security, Housing, Safety and Security, Education, Health, Cultural Heritage, and Other Social Amenities. The strategic objectives, and the recommended policies and actions seek to achieve Goal #2, which is:

**To develop a healthy and educated population, which resides in a safe and secure Parish with adequate access to the necessary social facilities and services.**

The concept of social well-being in the context of Clarendon is an end state in which:

- I. Basic human needs are met; and
- II. People are able to coexist peacefully in communities with opportunities for advancement.

The health, levels of education and safety and security of the population are the primary determinants of this state. Hence the goal will be achieved mainly by: supporting good health, which is central to human happiness and also makes an important contribution to economic progress<sup>84</sup> ; developing an educated citizenry, which will make informed decisions and also contribute economic prosperity through innovation; and ensuring that vulnerabilities which can risk the health and/ or happiness of the populace are mitigated. Additional social facilities and services which complement these efforts will also be provided.

Each strategy is aligned with the strategic framework of Vision 2030 Jamaica -National Development Plan. The Social Well-Being strategies are aligned with the National Development Plan under the following National Goal and National Outcomes which are shown in the table below.

<b>National Goals</b>	<b>National Outcome</b>
1. Jamaicans are empowered to achieve their fullest potential	1. A Healthy and Stable Population
	2. World-Class Education and Training
	3. Effective Social Protection
	4. Authentic and Transformational Culture
2. The Jamaican society is secure, cohesive and just	5. Security and Safety
	6. Effective Governance

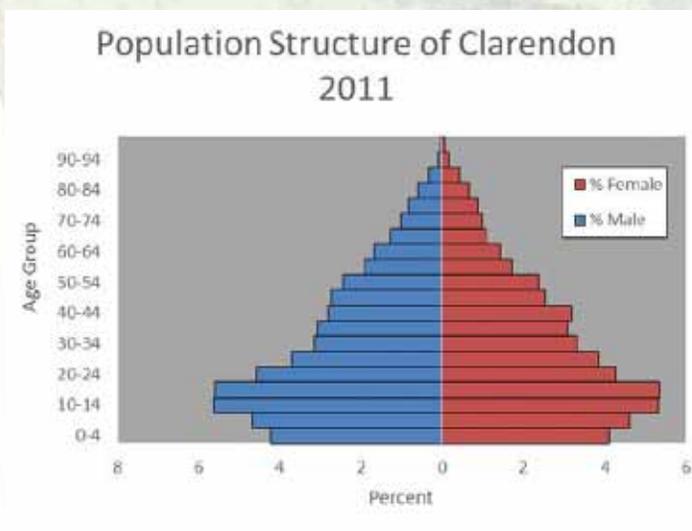
<sup>84</sup>. Footnote: healthy populations live longer and are more productive.

## 3.1. POPULATION AND SOCIAL SECURITY

### 3.1.1. POPULATION

#### 3.1.1.1. POPULATION SIZE

Clarendon is ranked as the third (3rd) largest parish in Jamaica, in terms of its population. According to the Population and Housing Census of 2011, the parish had a population of two hundred and forty-five thousand and fifty six (245 056)<sup>85</sup> persons . This figure represents an increase of 8032 individuals or a percentage change of 3.38, at a growth rate of 0.34 from 2001. This growth rate is approximately equal to the national rate for the same period which stood at 0.36 percent. Based on this growth rate, the population of Clarendon is projected to increase to 249 189 in 2016; 253 392 in 2021; 257 666 in 2026; and 261 137 in 2030.



#### 3.1.1.2. POPULATION STRUCTURE

The figure above shows the population structure of the Clarendon Development Area. It shows that the gender distribution is almost balanced with 50.5% males and 49.5% females, or a sex ratio<sup>86</sup> of 102.0. This sex ratio, which is similar to that which was obtained from the 2001 population and housing census, represents a reverse of the national figures of 50.5% females and 49.5% males.

As was the case in 2001, there is a fairly equal overall distribution between the sexes in the different age cohorts. However, the number of males slightly outstrips the number of females in 11 out of the 20 age groups. The largest difference between the two sexes, 919, is seen in the 40-44 age group, which is led by females. It should also be noted that the number of females exceeded the number of males in all age groups above the 70-74 group, which indicates that females have a higher life expectancy than males.

Further analysis of the population of the parish reveals a fairly youthful one. The censuses of 2001 and 2011 showed that the population under 15 years old, has been declining, but still represents approximately a third of the population of the parish. In 2001, 35.2 percent of the population was under the age of 15 years, while in 2011, 28.6 percent fell within the same cohort. In contrast, the population over 64 years of age recorded a slight increase with 8.47 percent of the total falling in this cohort, up from 8.2% in 2001. The change within the working age group<sup>87</sup> was also positive moving from 56.5 percent in 2001 to 62.9 percent in 2011. This change has resulted in a decline in the age dependency ratio<sup>88</sup> for the population from 77:100 in 2001 to 59:100 in 2011.

85. The population enumerated on the street is excluded. Total population including those enumerated on the street is 245 103 persons.

86. Sex ratio is the number of males per 100 females.

87. This working age population is almost balanced with regards to the percentage of males (50.5) versus females (49.5).

88. The age dependency ratio represents the combined ratios of the child population and the aged population to the economically productive population. The age dependency ratio is an indicator of the economic burden that the productive population must bear. It should however be noted that some persons in the dependent population are producers while persons in the productive ages are economically dependent.

## 3.1. POPULATION AND SOCIAL SECURITY

### 3.1.1.3. POPULATION DISTRIBUTION

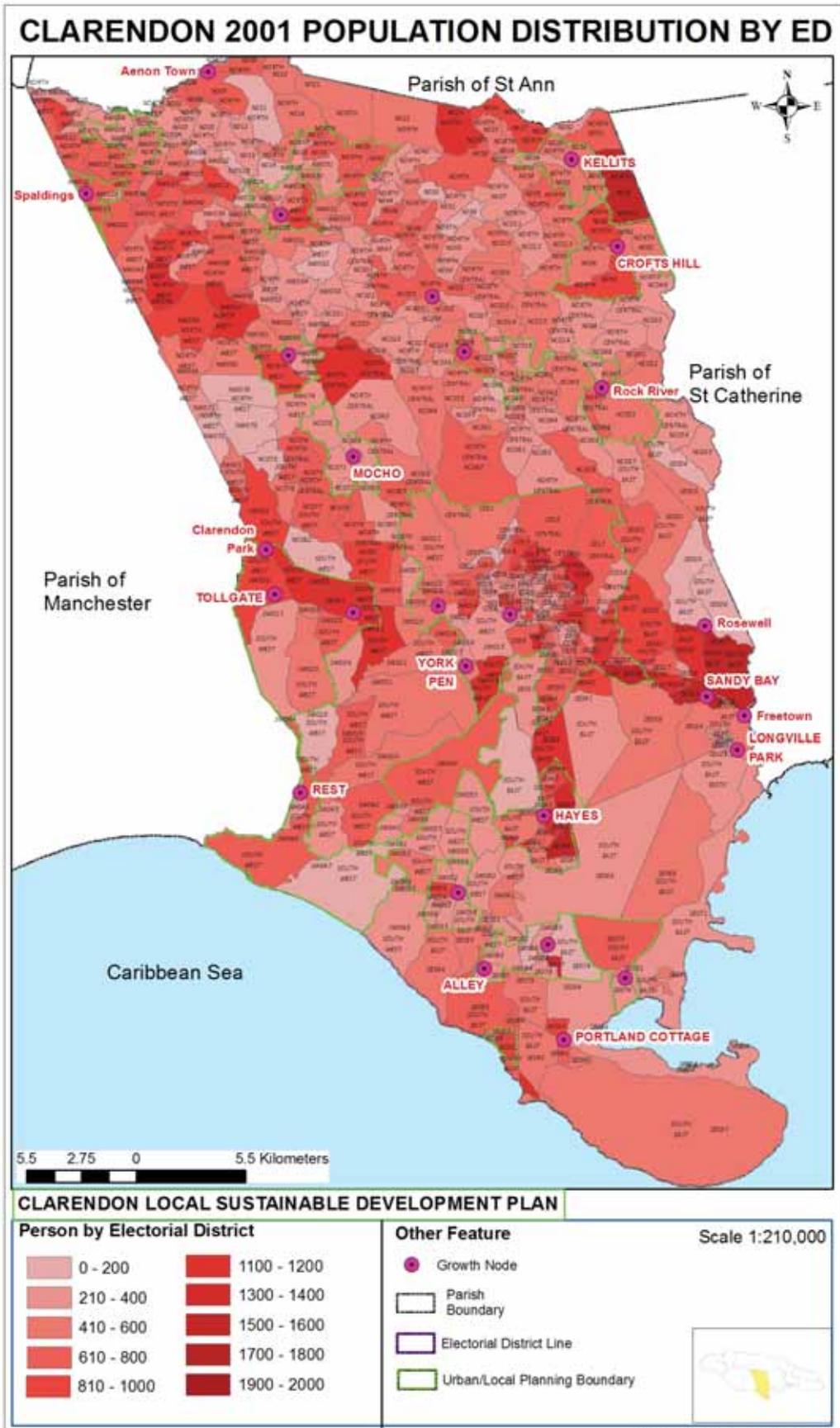
Special Areas	Population 2011	Population 2001	Population Change
May Pen	61547	57334	4213
Chapelton	4363	4556	-193
Frankfield	3508	3625	-117
Spalding	2147	2645	-498
Lionel Town	3608	3568	40
Alston	2049	1666	383
Aenon Town	1374	1808	-434
James Hill	1404	1770	-366
Kellits	2105	2422	-317
Crofts Hill	3117	3202	-85
Rock River	1786	1831	-45

Special Areas	Population 2011	Population 2001	Population Change
Mocho	1530	1788	-258
Toll Gate	2800	3087	-287
Osbourne Store	3581	2954	627
York Town	1623	2076	-453
Hayes	10639	10098	541
Kemps Hill	573	1132	-559
Gimme-Me-Bit	883	1076	-193
Milk River	1566	842	724
Race Course	2959	3168	-209
Mitchell Town	1452	1749	-297
Rocky Point	2473		
Rural	125658		

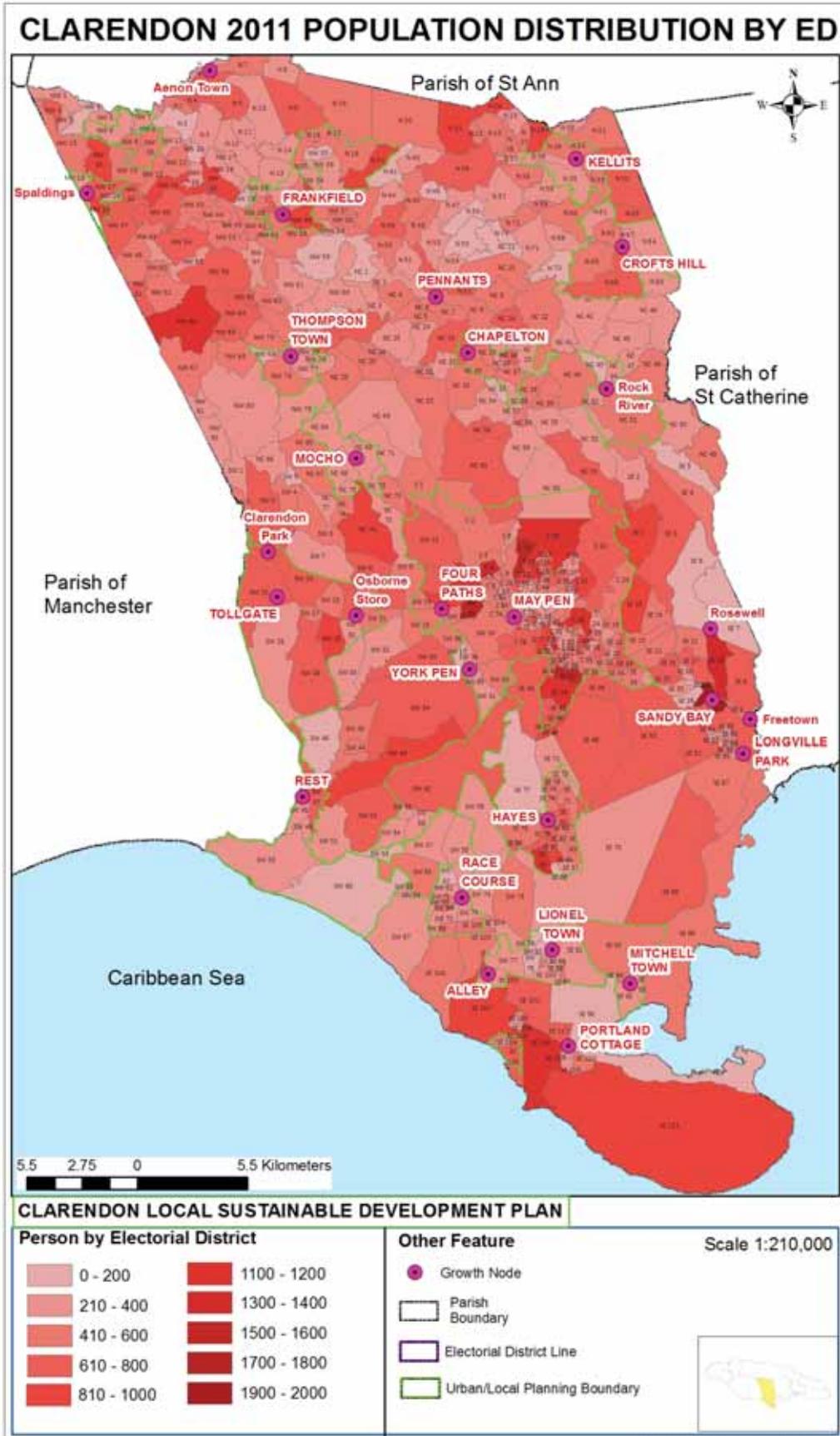
Source: STATIN (2001) and STATIN (2011)

The data in the table above revealed that the population declined in most of the special areas highlighted. These reductions are mainly attributed to intra-parish migration. Those special areas which recorded population increases were generally subjects of major housing developments in the intercensal period. These housing developments include Longville Park Phases 2 and 3, and the Mineral Heights housing development (state others). Together, the new housing developments provided over 3, 000 housing solutions which primarily targeted Clarendonians. Hence, these new developments were significant factors contributing to intra-parish migration. It should be noted that it is not possible to accurately project future populations for these special areas since migration is a major factor which determines these populations, and such data is not available at this level.

# 3.1. POPULATION AND SOCIAL SECURITY



# 3.1. POPULATION AND SOCIAL SECURITY



Prepared by Ryan Wallace on October 30, 2015

## 3.1. POPULATION AND SOCIAL SECURITY

### 3.1.1.4. URBAN VS RURAL POPULATION

A population is typically characterised as urban or rural for statistical and planning purposes. A place is considered urban if it has a population of 2,000 or more and provides a number of amenities and facilities which indicate a modern standard of living, while all other areas are classified as rural. Based on this distinction, there are six urban areas in the parish of Clarendon. These are: May Pen, Frankfield, Lionel Town, Chapelton, Spalding, and Hayes. The largest of these urban areas is the capital, May Pen, which has a population of 61547.

The population of Clarendon is predominantly rural. The 2011 Population and Housing Census revealed that 65.0% of the parish is living in rural areas. This figure is down by 4.7% when compared to the 2001 statistics, which is an indication that the urban population is increasing or urbanization is taking place. This positive rate of urbanization may be attributed to, among other things, the emergence of rural settlements (Spalding and Hayes) as urban centres.

### 3.1.1.5. POPULATION DENSITY

As expected, the population density of Clarendon has been increasing steadily with the increasing population. In 2001, the population density was approximately 2.07 persons per hectare. This density increased to 2.14 persons per hectare in 2011, and is projected to increase to 2.22 persons per hectare in 2021 and 2.29 persons per hectare in 2030. It should however be noted that the population density varies across the parish.

### 3.1.1.6. POPULATION ISSUES CHALLENGES

#### 3.1.1.6.1. BRAIN DRAIN

Most rural areas in Clarendon experience a substantial rate of emigration of qualified and technically skilled labour through intra parish migration, while the parish as a whole experiences the same through internal and external migration. Research has shown that the causes of this situation at both the local and the parish levels are the same. Neither the local areas, nor the parish as a whole, have the platform and/or the capacity to provide employment for its entire qualified and skilled workforce. As a result, some persons migrate to other local areas, parishes, or countries where employment is more readily available. There is also the situation where some individuals pursue particular academic qualifications, or acquire skills that exceed the local needs. Migration usually results. Additionally, a portion of the qualified and skilled workforce may just chose to migrate to areas where the economic, geographic or professional environment is more favourable.

## 3.1.2. SOCIAL SECURITY

### 3.1.2.1 THE SYSTEM OF SOCIAL PROTECTION

Until fairly recently, the social protection system in Jamaica was fragmented among three main cash transfer programmes (Food Stamp, Poor Relief and Public Assistance) and many other smaller programmes that do not reach the poor in an efficient manner. However, since 2000, the GOJ has embarked on the reform of the system which is aimed at protecting the vulnerable, whilst ensuring that programmes are cost-effective and efficient. The reform effort has been relatively successful in consolidating existing programmes, improving benefits, and widening the scope and reach of social assistance. At present, social safety nets accessible to Clarendonians include the Programme of Advancement through Health and Education (PATH), the Poor Relief Programme, School Feeding Programme, Rehabilitation Grant Programme, Jamaica Drugs for the Elderly, the National Health Fund (NHF), and the National Insurance Scheme (NIS). These programmes are administered by the MLSS, the MOH, the MEYI and the MLGCD.

According to the SDC (2014), data from the MLSS showed that over 20 000 families in Clarendon are benefiting from social security programmes<sup>89</sup>.

<sup>89</sup>. NIS Pension, PATH and Poor Relief/PAD Pension.

## **3.1. POPULATION AND SOCIAL SECURITY**

The main beneficiaries of these programmes are children 0–17 years, the elderly, persons with disabilities, pregnant and lactating women, and the destitute.

### **3.1.2.2. THE POOR RELIEF DEPARTMENT**

The Poor Relief Department of the CPC has responsibilities to assist the destitute and alleviate poverty within the parish. Persons assisted by the Department are mainly those who are in a state of destitution and are at the same time unable to work and earn their means of subsistence due to mental or physical causes. The department provides non-institutional as well as institutional care for adults and children. In non-institutional care, clients may be on the registered roll as wards of the state, or they may be destitute persons receiving temporary assistance only. In institutional care, clients are wards of the state and receive total care in the Clarendon Infirmary.

The Poor Relief Department is supervised and monitored by the Board of Supervision, (for the relief of the poor in Jamaica). It is a statutory body operating under the portfolio of the MLGCD, which was established under the Poor Relief Act. The main functions of the Board are characterized as supervisory, advisory, regulatory, auditory, training, appellate, inquiry, rules formulation (for Poor Relief Administration), and sites and plan approval (for Infirmary buildings).

### **3.1.2.3 HOMELESSNESS**

In 2000 the Board of Supervision was mandated to provide oversight for homelessness in Jamaica. This gave rise to the formulation of the Committee for the Homeless, to develop and facilitate the implementation of Policies and Programmes for the homeless and to support the work of existing facilities. Subsequently, a draft strategic plan to end chronic homelessness was written and circulated to stakeholders for comments. The MLGD has also made commitments on developing a Policy on homelessness in Jamaica, to provide a framework which addresses the management of the homeless in Jamaica, and clearly defines the roles and responsibilities of stakeholders.

In addition to that, the Clarendon Parish Homeless Committee has been developed as a committee of the Clarendon Poor Relief Department. This committee has the responsibility for developing strategies and measures to address homelessness in the parish. Among programmes currently coordinated by the Committee are the street people feeding programme which takes place on Tuesdays.

At present, an unconfirmed estimate of approximately 60 homeless persons are roaming the streets of the local towns. Many of these homeless persons are the elderly and the mentally or physically disabled, who have been virtually abandoned by their families. However, other homeless persons include deportees, drug addicts, HIV/AIDS positive people, the unemployed poor and victims of man-made or natural disasters (SOURCE:.

### **3.1.2.4. SOCIAL SECURITY ISSUES AND CHALLENGES**

#### **3.1.2.4.1. LOW LEVEL OF PARTICIPATION IN the NIS**

Social insurance mitigates risks. A large percentage of persons, many of them self-employed or in the informal employment sector, are not participating in the NIS, which is the minimum guaranteed pension available. Given the propensity of these persons to fall into poverty, it is imperative that the coverage be expanded.

## 3.1. POPULATION AND SOCIAL SECURITY

### 3.1.2.4.2 CONSTANTLY HIGH LEVELS OF POVERTY

Year	Prevalence in Clarendon (%)	Prevalence in Jamaica (%)
1992	42.2	35.2
1998	13.3	15.9
2002	27.2	19.7
2008	15.0	12.3
2012	19.3	19.9

**Source: PIOJ (two Jamaica survey of living conditions) and PIOJ (2007).**

The table above shows that the prevalence of poverty<sup>90</sup> in Clarendon was 19.3 percent in 2012 compared with 42.2 percent in 1992. This represents an overall decline of 22.9 percent over the period. However, the table further shows that the levels of poverty fluctuated over the period, and was at its lowest in 1998 at 13.3 percent and its highest in 1992. Poverty levels in Clarendon also fluctuated above and below the national levels, and in 2012 Clarendon was the sixth poorest parish in Jamaica.

There is no recent poverty maps available for the Parish, but trends over the years have shown that poverty is consistently highest in the rural areas, with pockets within the urban boundaries. Some of the areas identified as having unfulfilled primary needs include Rocky Point, Longwood, Sections of May Pen, Grantham, Morgan's Forest, Coxswain, Colonel's Ridge, Cockpit, Moores, Chatteau and Palmers Cross.

According to the (>>>>), since 1989, analyses of the data collected on household consumption (which is used to estimate the prevalence of poverty) have been taking place. These assessments reveal that the cyclical nature of poverty among households leads to similarity between causes and effects of poverty over time. In addition, many of the factors impacting poverty have an inter-generational dynamic that re-creates the manifestations of poverty where they are not curtailed. These factors include:

- i. low educational attainment levels
- ii. low income earning capability
- iii. inability to access basic social services
- iv. lack of economic opportunities leading to underemployment, unemployment and low wage employment
- v. poor rural development impacting the opportunities and livelihoods of rural households
- vi. high levels of risk from exposure to natural hazards and poor environmental practices.

### 3.1.2.4.3 LACK OF PROPER REHABILITATION AND REINTEGRATION PROGRAMMES AND FACILITIES FOR THE HOMELESS

At present, there is no proper rehabilitation and reintegration facility or programme in the parish to help homeless persons. This is a major issue in light of the fact that a portion of the parish's homeless is made up of the mentally ill and drug addicts, some of whom are committing acts which endanger the lives of themselves, as well as others. As a result of the absence of the said programmes and facilities, it is often very difficult for these individuals to recover from these problems and to be reintegrated into mainstream society. The street usually becomes a permanent home, contributing to poor aesthetics in the process.

The Clarendon Homeless Committee is currently in the process of setting up a drop-in centre for the parish's homeless. This facility will be situated within an old ward at the site of the Clarendon Infirmary. This ward has been reclaimed and renovated with assistance from volunteers from the CPC, the JFB, the NSWMA, the British Royal Navy, and the Jamaica Defence Force (JDF).

90. The PIOJ uses a consumption-based approach to measuring poverty, constructing a consumption-based poverty line as the threshold for determining the poor and the non-poor.

## 3.1. POPULATION AND SOCIAL SECURITY

A board was recently appointed to manage the affairs of the facility, which includes making recommendations for staffing, sourcing funding and the administration of resources. When completed, the facility will be used to provide a place for homeless persons to get a bath, change their clothes, have a warm meal, and to be seen by a doctor where they will be assessed and treated or placed in a rehabilitation system.

### 3.1.3. PARISH STRATEGIES

#### 3.1.3.1. STRATEGIC OBJECTIVE #100

**To balance urban and rural development, by creating sustainable urban centres and vibrant and diversified rural areas.**

Urbanization and brain drain in rural areas highlights the need for a balanced approach. Internal migration from rural areas is increasing the strain on the urban infrastructure and services of the parish and this situation will continue as long as the urbanization persists. Significant planning efforts will be geared towards maintaining or improving the quality of life within urban centres, and also making the rural areas attractive to those living there, as a means of discouraging migration into urban centres. Both urban centres and rural areas are extremely important for the functions they provide; therefore the rural-urban linkage development approach will be administered. Moreover, the larger portion of the population lives in the rural areas and hence such areas will not be neglected.

Planning efforts will also identify rural areas which are emerging as urban centres. This will allow for a proactive approach to planning which, will result in the provision of adequate physical infrastructure and services in a coordinated manner. It will therefore eliminate the traditional local development pattern which usually sees infrastructure and services playing catch-up in the development process.

### RECOMMENDED POLICIES

- A balanced approach will be taken to urban and rural development in the parish.
- The local planning authority will seek to identify rural areas which are emerging as urban centres and encourage the provision of adequate infrastructure and services in a coordinated manner.

#### 3.1.3.2. STRATEGIC OBJECTIVE #101

**To expand opportunities for the poor to engage in sustainable livelihoods.**

Unemployment and underemployment are two factors which lie at the core of poverty. For the local poor, labour is often the only asset they can use to improve their well-being. The creation of productive employment opportunities is essential for achieving poverty reduction and sustainable economic and social development. It is crucial to provide decent jobs that both secure income and empowerment for the poor.

In order to achieve this objective, significant focus will be given to investing in labour-intensive industries which can absorb high concentrations of the working poor, encouraging a shift in the structure of employment to higher productivity occupations and sectors, and upgrading job quality in the informal economy. In addition, there will also be a focus on providing poor people with the necessary skills and assets that will enable them to compete for jobs that may evolve from expansion in employment opportunities.

## 3.1. POPULATION AND SOCIAL SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage investment in labour intensive industries such as agriculture, tourism, recycling and mining.	Short to Long Term	MEGJC, Clarendon Chamber of Commerce,
Encourage a shift in the structure of employment to higher productivity occupations and sectors. For instance, encourage farmers or those involved in agriculture to also invest in agro processing.	Short to Long Term	GOJ, CPC
Launch education and training programmes to provide poor people with the necessary skills and assets that will enable them to take full advantage of employment opportunities.	Short to Long Term	Education and Training Institutions
Provide assistance to facilitate the upgrading of the informal sector.	Short to Long Term	CPC, SDC, MEGJC, Private Sector
Provide special incubators for new business start-ups by individuals/ communities classified as poor.	Short to Long Term	CPC, SDC, MEGJC, Private Sector

### 3.1.3.3. STRATEGIC OBJECTIVE #102

#### To promote greater participation in pension schemes.

Participation in social insurance and pension schemes is very important. It allows individuals to transfer a fraction of their income earned during earning years to a corresponding period when earning income is lower or non-existent. This helps to mitigate the risk of falling into poverty and also reduces the burden on government for the provision of social security programmes. Since a large percentage of the employed in Clarendon is not taking part in these schemes, an educational programme to increase participation will be launched in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Create a comprehensive education programme to encourage more locals, particularly within the private and informal sectors, to participate in the NIS and/ or other social insurance and pension schemes.	Short Term	SCD, CPC, MLSS

## 3.1. POPULATION AND SOCIAL SECURITY

### 3.1.3.4. STRATEGIC OBJECTIVE #103

**To explore the feasibility of providing unemployment insurance.**

Unemployment is a major factor contributing to poverty in the parish. It is necessary to explore the feasibility of providing unemployment insurance, as this will help persons build resilience against periods of shock associated with unemployment, thereby mitigating the risk of falling into poverty.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of providing unemployment insurance.	Medium Term	MLSS, Insurance Companies

### 3.1.3.5. STRATEGIC OBJECTIVE #104

**To encourage families to take greater responsibility for taking care of their vulnerable relatives.**

A key part of the social security strategy involves encouraging families to take more responsibility for the care of their vulnerable relatives. This is necessary to reduce homelessness and the pressure on the Government to provide social security. Families will be encouraged to support their disabled, mentally and physically ill, and elderly relatives.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage families to take more responsibility for the care of their vulnerable relatives. This may include enforcement under the Maintenance Act.	Short Term	SCD, CPC, MLSS

### 3.1.3.6 STRATEGIC OBJECTIVE #105

**To furnish and equip the Clarendon Drop-In Centre.**

The furnishing and equipping of the Clarendon Drop in Centre is essential to ensuring that homeless individuals recover from the issues contributing to their state and be reintegrated into society. It is also critical for improving the safety and attractiveness of local town centres. Therefore, this Plan is supporting the speedy furnishing and equipping of the facility. This will require the support of the private sector.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage private sector support in furnishing and equipping the Clarendon Drop-In Centre.	Short Term	CPC

## 3.2. HOUSING

### 3.2.1. THE EXISTING HOUSING STOCK

The Population and Housing census of 2011 revealed that there were 69,182 dwelling units in the parish of Clarendon, serving a total of 76881 households. This housing figure is up from 62,843 within a decade, representing an increase of 6339 or 10.1 percent in housing structures. The number of households has also increased from 64,668 to 76881, or by 18.9 percent over the ten year period. However, the average household size for the parish declined from 3.7 in 2001 to 3.2 in 2011. Nevertheless, Clarendon continues to boast one of the highest average household size in Jamaica, as highlighted on the table below.

PARISH	2011		2001	
	Households	Average Number of Persons per Household	Households	Average Number of Persons per Household
Kingston	29,518	3.0	28,199	3.4
St Andrew	192,109	3.0	164,513	3.4
St Thomas	32,118	2.9	28,211	3.2
Portland	27,606	3.0	23,917	3.4
St Mary	36,530	3.1	32,166	3.5
St Ann	53,654	3.2	45,380	3.7
Trelawny	25,207	3.0	21,732	3.4
St James	60,335	3.0	49,741	3.5
Hanover	23,753	2.9	20,283	3.3
Westmoreland	50,363	2.9	42,028	3.3
St Elizabeth	49,388	3.0	41,687	3.5
Manchester	60,402	3.1	51,424	3.6
Clarendon	76,881	3.2	64,668	3.7
St Catherine	163,215	3.2	134,377	3.6
<b>Total</b>	<b>881,078</b>	<b>3.1</b>	<b>748,326</b>	<b>3.5</b>

The quality of housing in the parish is mixed, ranging from opulent, multi-story mansions to zinc and board shacks, and also varies tremendously from community to community. Ironically, some of the best and some of the worst quality housing units are concentrated in and around the urban centre of May Pen. As shown by the tables below, detached housing units are the most dominant type of housing in the parish, and concrete and block are the preferred building materials.

Area	Total Housing Units	Type of Housing Unit						Not Reported	
		Separate House Detached	Attached Unit	Part of Commercial Building	Improvised Unit	Other Type			
CLARENDON	69182	66173	1441	496	600	40	432		
MAY PEN	16657	15285	990	106	137	16	123		
Area	Total Housing Units	Material of Outer Walls							Not Reported
		Concrete and Blocks	Stone and Brick	Nog	Wood	Wood and Concrete	Wood and Brick	Other	
CLARENDON	69182	55306	112	611	7812	4258	136	402	545
MAY PEN	16657	13877	23	53	1610	830	14	120	130

### 3.2.2. THE PROVISION OF HOUSING

Housing in the parish is supplied by both government and private housing developers. The NHT is the primary provider of government housing; the Trust has established several housing schemes, and has made available a number of service lots to address the high level of housing demand in the parish.

## 3.2. HOUSING

Since its inception in 1977, it has provided over 6,000 housing solutions in the parish (SDC, 2014). The May Pen DA alone captured over 70 percent of this figure with the largest developments being in Longville Park and Mineral Heights (SDC, 2014). Housing solutions in the parish have also been provided by Food for the Poor, the HAJ, private developers and individuals on a personal basis.

### 3.2.3. ISSUES AND CHALLENGES

#### 3.2.3.1. HOUSING DEMAND OUTSTRIPPING SUPPLY

There is evidence to suggest that the existing housing demand in Clarendon is exceeding the supply. The overwhelming response to the Longville Park, Mineral Heights and Pridee Housing Schemes in recent years suggests that the demand is increasing steadily and is not being met i.e. the demands exceeds the supply. Additionally, the results of a NHT's Housing Demand Survey in 2009, showed that there were approximately 9,160 persons in the local market who could afford their desired housing option based on NHT's criteria (SDC, 2014). This number of demanded units was significantly higher than the 6339 units which were provided between the 2001 and 2011 population and housing censuses; a situation representing a massive deficit in the supply. Furthermore, housing solutions are also highly desired by a significant portion of those who are essentially excluded from the formal housing market due to low or no incomes. This demand is not an effective demand as a result of their inability to afford the costs of solutions.

As shown by the table below, the NHT has plans to provide 1380 housing solutions in the parish in the near future. Based on applications received by the Local Authority, a number of private developers, including individuals have plans to deliver several hundred housing solutions, including service lots to the market. However, this will not satisfy the high demand. The local population is projected to continue increasing up to 2030, and therefore the provision of adequate shelter is expected to become an even greater challenge. Moreover, the completion of Highway 2000 has facilitated greater commuting from communities outside of the corporate area consequently, it is anticipated that the demand for housing in the parish will increase even further as persons opt to leave the congestion of the city. According to the SDC (2014) the main types of housing solutions in demand are stand-alone 2 and 3 bedrooms, 3 bedroom town houses, stand-alone studios and service lots, which are projected to be the trend for the next few years.

<b>Name of Development</b>	<b>Number of Solutions</b>	<b>Projected Start Date</b>
Longville 3A	38	October 2015
Sevens 1	150	February 2016
Sheckles 1	56	March 2016
Longville 2A	85	March 2016
Monymusk 2	351	June 2016
Perrins Compound	500	April 2016
Jacksonville	200	April 2016

NHT (n.d.)

## 3.2. HOUSING

### 3.2.3.2. LACK OF AFFORDABLE HOUSING

The local housing sector is faced with the challenge of a lack of affordable housing. Housing Demand Surveys conducted by the NHT across Jamaica in November 2004 showed a need for housing developments to take place at the lower end of the market (SDC, 2014). However, due to the high costs of land and building materials, most units being delivered in the housing market are within a middle income price range. Unfortunately, within the lower segment of the market, a significant percentage of the persons are not eligible for an NHT loan, or a loan from any other financial institution. This issue effectively excludes a significant portion of the population from the formal housing market. These households therefore tend to meet their shelter needs through the use of their own savings, sweat equity, and remittances. In many instances, squatting and informal developments result.

It should be noted however that the provision of affordable housing is a policy initiative of the GoJ. Consequently, there are a number of initiatives in place to improve housing affordability. The NHT currently has a Home Grant Programme which is accessible to low income earners, and the Trust also periodically provides loans to low income earners at subsidized rates. A number of Clarendonians have benefited from such programmes. These include 168 low income earners, who received subsidised rates for their units, and 165 residents who received home grants to help purchase solutions in the Longville Park phase 3 developments. Lands in several areas of the parish have also been allocated for the provision of affordable housing. These areas include Sevens, Monymusk, Jacksonville, and Perrins. Additionally, the Jamaica Institute of Engineers (JIE) is currently evaluating several alternative building materials with the objective of making housing solutions in Jamaica more affordable. These materials include expanded polystyrene (EPS) and timber.

### 3.2.3.3. SQUATTING

Squatting may be loosely defined as the illegal or unauthorized occupation of land or housing. This issue in Clarendon may be attributed to the deficit in the housing supply and the fairly high rental rates for decent accommodations which have left the economically challenged with little or no choice but to illegally occupy private or public property (SDC, 2014). It has also been aggravated by rural /urban migration, political support, the availability of idle lands, and inadequate enforcement of planning regulations. Consequently, over the years, several squatter settlements<sup>91</sup> have developed in the parish.

In 2012, the SMU identified seventy-six (76) potential squatter settlements within the Clarendon Parish Development Area, up from fifty-six (56) in 2008 (SDC, 2014) See Appendix 9 Many of these informal settlements are not discreet sites but are extensions to or located within formal communities. Most were developed prior to the 1990s and are situated on Government owned lands, which were formerly of good agricultural capability, or on sites considered to be marginal. The most recent incidences of squatting in the parish are however occurring along a corridor which provides easy access to transportation and to the location of jobs in the major urban centre (SMU, 2008). It follows that squatting is increasingly taking place along the rail tracks owned by the JRC and on lands along the irrigation canals (SMU, 2008).

<sup>91</sup> A squatter settlement may be defined as a residential area which has developed without legal claims to the land and permission from the concerned authorities to build; as a result of their illegal status, infrastructure and services are usually inadequate.

## 3.2. HOUSING

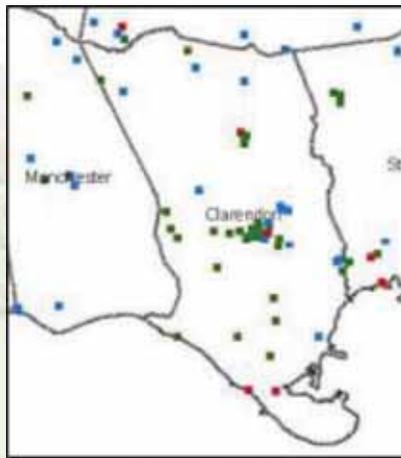


Figure 68: The distribution of squatter settlements in Clarendon. The green points represents those on arable lands, the blue represents those in vulnerable areas, and the red represents those for which no data was obtained. Source: SMU (2008).

Generally, these squatter settlements are characterized by inadequate infrastructural and service development. The layouts are haphazard with narrow paths and limited vehicular access. Almost all the dwelling units are detached with majority being built with wooden planks and utilize pit latrines for sanitation. The SMU (2008) outlined that the unplanned nature of these squatter settlements gives rise to: environmental degradation, public health issues, increased exposure to natural and man-made hazards, and provides a haven for criminal activities. Nevertheless, some of these settlements are well developed with access to piped water, electricity and other social amenities and physical infrastructure.

In addition to the aforementioned issues associated with squatting, uncertain tenure reduces potential property tax revenues to the local authority (the CPC) and the Government. This in turn impacts negatively on the provision of a number of essential services, as Property Tax is used to provide street lighting, garbage collection and fund other local government functions. Increased populations including those in squatter settlements, place more pressure on the Local Authority to provide these needed basic services/amenities.

The Government is however seeking to address the issue at the national level through a number of programmes. These programmes seek to increase the security of tenure and/ or address the socio-economic conditions prevailing within informal settlements. The Housing Ministry is seeking to develop a squatter policy which will guide the development of informal communities across the country. In addition to that, the Government has an ongoing Land Acquisition and Divestment Programme, through which the acquisition of private properties which are subject to squatting are pursued under the Local Improvements (Community Amenities) Act and divested to the occupiers. Several residents in the parish have benefited from this programme including those in the community of Effortville. The Government also recently (August 2015) launched the National Land Titling Programme which seeks to provide security of tenure for approximately 46,000 Jamaicans. In Decemberr 2014, 40 land titles were handed over to residents of Clarendon under this programme. The recipients of the land titles were from the Havannah Heights, Halse Hall, Glenmuir, Raymond's Dam, Pridees, Ebony Park, Trout Hall and Curatoe Hill communities. The launch of the National Land Titling Programme followed other ongoing land ownership initiatives being implemented by the Government including the LAMP programme and the Ministry of Agriculture and Fisheries' Barracks Relocation Programme, which is making titles available to sugar workers. The Government is also partnering with the United Nations Human Settlements Programme (UNHabitat) through the Participatory Slum Upgrading Programme (PSUP) to address the issue of informal settlements. The PSUP is designed to address urban development strategies and slum upgrading and prevention at local, national and regional, as well as global levels.

## 3.2. HOUSING

The programme is currently in its second phase and May Pen is one of three urban centres participating in the programme. Other ongoing programmes and initiatives include the Squatter Upgrading Programme, which involves infrastructural work to develop and regularise existing informal settlements, the undertaking of a squatter census<sup>92</sup> to provide accurate demographics on squatting.

### 3.2.4. PARISH STRATEGIES

#### 3.2.4.1. STRATEGIC OBJECTIVE #106

**To allocate sufficient land to accommodate long term demographic trends.**

The housing needs of Clarendon will be met partly through the provision of land. Due to continuing population increase, land space will be required to accommodate additional housing demand. The population is projected to reach approximately 261,137 persons by the year 2030, and therefore there will be a demand of approximately 17 864 dwelling units over the period, using an average household size of 3.0. There will likely be a surge in this demand by as much as 300% with the planned socio-economic development of the parish, as well as the need to relocate or replace some of the existing housing stock. By using a minimum lot size of 0.1 hectares for single family houses, it therefore means that approximately 5 329 hectares of land will be needed for housing solutions. See 2.4.3.1.2. Strategic Objective #98F pg. 231

#### 4.2.4.2. STRATEGIC OBJECTIVE #107

**To promote the use of alternative building materials to make housing solutions more affordable.**

As part of the strategy to make housing solutions more affordable in Clarendon, this Plan is promoting the use of cheap, climatically appropriate, alternative building materials. As highlighted earlier, the JIE is evaluating several alternative building materials with the objective of making housing solutions in Jamaica more affordable. These materials include expanded EPS and timber. The use of EPS, which is an insulated form of the widely used packaging material, polystyrene, is being explored aggressively in neighbouring Trinidad and Tobago, while timber is widely used in the USA, and in Jamaica. With these countries just as vulnerable to hurricanes as Jamaica, and both EPS and timber construction solutions having a concrete component which helps to make them resistant to hurricane-force winds, this Plan will actively encourage a speedy investigation into their potential use locally.



Figure 69: A finished housing unit made from EPS.  
Source: <http://thearepa.com/amazing-styrofoam-house-for-country-house/>



Figure 70: An EPS housing unit under construction.  
Source: <http://sherrysthebackcountry.ca/?p=2271>

In addition to that, this Plan is encouraging an evaluation into the potential for using local bamboo as an alternative building material. Bamboo is currently utilized in a number of places around the world, including China, Japan and South America, to build low cost eco-friendly housing.

92. A pilot squatter census was conducted in Clarendon in February 2015 and is intended to guide the approach in other Parishes.

## 3.2. HOUSING

It is currently being touted in Jamaica as the possible solution to the Country's affordable housing needs. At the 2014 annual Denbigh Agricultural Show, a 260 square foot bamboo-framed house was one of the main attractions. It has received positive feedback from locals and has also gained international attention. Under this Plan, the potential for using bamboo will be actively explored.

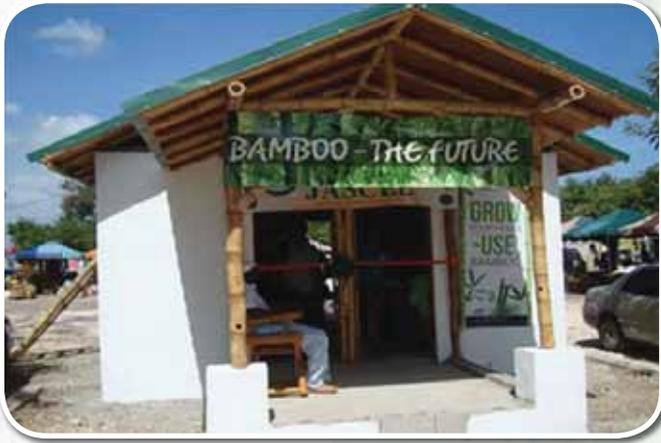


Figure 71: This 260 square foot bamboo-framed house was one of the main attractions at the 2014 Denbigh Agricultural Show.  
Source: <http://www.jamaicaobserver.com/news/Jamaican-bamboo-house-gets-plaudits-from-NBC>



Figure 72: A housing unit constructed from plastic bottles. Could plastic bottle housing be the solution to Clarendon's low income housing needs?  
Source: <http://www.instructables.com/id/New-Innovation-in-Construction-using-Waste-Plastic/>



Figure 73: A plastic bottle housing unit under construction.  
Source: <http://www.ru-screw.com/end-homelessness-using-plastic/>

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Evaluate the potential for using alternative building materials as a strategy to make housing solutions more affordable in Clarendon. This investigation may include pilot projects.	Short to Long Term	JIE, MEGJC
Develop and implement an education programme to remove/reduce any stigma attached to alternative building materials.	Short Term	JIE, MEGJC, NHT, CPC

## 3.2. HOUSING

### 3.2.4.3. STRATEGIC OBJECTIVE #108

**To encourage the provision of mixed-income developments in order to satisfy the demand for low income housing.**

In order to satisfy the demand for low income housing in the Plan Area, mixed income developments will be encouraged. Generally, a mixed income housing development includes diverse types of housing units for a people with a range of income levels, including low income. Such developments may include mostly housing units that are priced based on the dominant housing market rates with only a few units priced for lower-income residents, or it may not include any market-rate units and be built exclusively for low to moderate income residents. It should be noted however that this Plan will not normally support the development of settlements exclusively for low income individuals. This has been found to have the potential to concentrate poverty which may lead to other social issues including high levels of crime. Such communities may also be subjected to neglect by the authorities.

Since developers may be reluctant to provide housing within the low income bracket, incentive programs will be developed. These incentives program will include, but will not be limited to, one or more of the following:

- Density bonuses within the urban growth area;
- Height and bulk bonuses;
- Fee waivers or exemptions;
- Parking reductions; or
- Expedited permitting.

#### RECOMMENDED POLICIES

- Support will not normally be given to the development of settlements exclusively for low income individuals.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an incentive programme to encourage developers to provide mixed income housing developments. Incentives will include, but should not be limited to, one or more of the following: <ul style="list-style-type: none"> <li>• Density bonuses within the urban growth area;</li> <li>• Height and bulk bonuses;</li> <li>• Fee waivers or exemptions;</li> <li>• Parking reductions; or</li> <li>• Expedited permitting.</li> </ul>	Short to Medium Term	CPC, MEGJC

### 3.2.4.4. STRATEGIC OBJECTIVE #109

**To regularise selected informal settlements based on socio-economic and environmental considerations.**

A selective programme of upgrading for informal housing settlements will be pursued. It is recognised that many of these settlements are meeting genuine housing needs, in locations where people wish to live. The relevant authorities will therefore review each informal settlement and decide which can be sanctioned and therefore be upgraded.

## 3.2. HOUSING

Upgrading will be done with due consideration to the relevant socio-economic and environmental factors. On this basis, a number of informal settlement upgrading requirements have already been identified. These include Rectory Lands. Their upgrading needs vary and may include the provision of land titles and/ or the development of infrastructure.

### RECOMMENDED POLICIES

- Consideration will be given to the following in the upgrading of informal settlements:
  - The cost of servicing the land
  - The environmental impacts of developing the land
  - The degree of exposure to natural hazards and disasters
  - Socio-cultural links to the land (that is, the extent to which existing inhabitants have established a stable community based on sustainable local resource use)
  - The compatibility with the proposed land use zonings

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a selective programme of upgrading for informal housing settlements in the parish.	Short to Medium Term	MEGJC, CPC

#### 3.2.4.5. STRATEGIC OBJECTIVE #110

**To relocate informal settlements which are located in disaster prone areas or on prime real estate lands which will be required for future development projects.**

As a key strategy of the housing sector, this Plan is promoting the relocation of several informal settlements in the parish. A number of informal settlements are located within disaster prone areas which makes them highly exposed to various types of hazards and vulnerable to disasters. The socio-economic level of many of the occupants of these residences makes them require almost 100% aid from the State for reconstruction purposes following a disaster. This is unsustainable and therefore their urgent relocation is necessary. In addition to that, a few squatter settlements are located on prime real estate lands which will be required for largescale development projects which may be of national importance<sup>93</sup>.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #80 of the Disaster Management and Climate Change Adaptation section of this Plan. See pg. 202	Short to Long Term	MEGJC, CPC
Relocate informal settlements situated on prime lands which will be required for development projects. These settlements include Ghetto in May Pen. See Relocation of informal settlement (pg. 545).	Short to Long Term	MEGJC, CPC

93. For example, the squatter settlement of Gimme-mi-bit will not be compatible with the development of Vernamfield.

## 3.2. HOUSING

### 3.2.4.6. STRATEGIC OBJECTIVE #111

Manage the spread of informal settlements in the Parish through the implementation of appropriate development control measures.

Informal developments, including squatting, is illegal and therefore this Plan will be adopting a zero tolerance approach to same. The local authority will seek to ensure that all new developments are subject to approval, while existing informal developments are formalised.

In order to be successful, this strategy will require adequate monitoring and the implementation of preventative measures to curtail the growth in informal settlements. This will take place primarily through public-private partnerships, involving the Local Authority and individuals. The Local Authority will seek to undertake adequate monitoring and will also develop relationships with existing informal communities to ensure that growth and expansion of these communities do not take place. Additionally, private landowners will be encouraged to implement effective measures to prevent informal settlers from occupying their lands. Such measures may include: the construction of fences around properties; placing 'no trespassing' signs along properties; hiring a caretaker to monitor the property; and leasing or selling the unused land. Government will be encouraged to enact legislation, to make squatting a criminal offence.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #82 of the Disaster Management and CCA Section of this Plan (pg. 203).	Short to Long Term	CPC
Develop relationships with existing informal communities to ensure that growth and expansion of these communities do not take place	Short to Medium Term	CPC
Encourage private landowners to implement effective measures to prevent informal settlers from occupying their lands. Such measures may include: the construction of fences around properties; placing 'no trespassing' signs along properties; hiring a caretaker to monitor the property; and leasing or selling the unused land.	Short Term	CPC
Encourage Government to enact legislation to make squatting a criminal offence.	Short Term	CPC

## 4.3. SAFETY AND SECURITY



### 3.3.1. SECURITY

#### 3.3.1.1. OVERVIEW

The MNS exercises overall responsibility for security and defence of Jamaica through the national forces. The country's national forces consist of the JDF which provides military services and the JCF which provides general policing. General policing within the Clarendon Development Area is administered from the 12 police stations in the parish. These facilities are located in May Pen, Chapelton, Crofts Hill, Four Paths, Frankfield, Hayes, Lionel Town, Milk River, Mocho, Rock River, Exeter and Longville Park. Longville Park is however a temporary post which is to be upgraded soon.

## 4.3. SAFETY AND SECURITY

Additionally, policing services are provided by the Spalding police station which is located just across the parish boundary in the neighbouring parish of Manchester. Over 500 officers are deployed to these stations, with over 300 available on a daily basis. This represents a ratio of approximately 800 citizens to 1 police officer<sup>94</sup>.

Additionally, safety and security services are administered by forty-five (45) Neighbourhood Watch groups in the parish, 15 of which are located in the May Pen area. Among the communities with active Neighbourhood Watches are Glenmuir Heights, Mineral Heights, Sandy Bay, Four Paths and New Bowens.



Figure 74: The Lionel Town Police Station

### 3.3.1.2. SECURITY ISSUES AND CHALLENGES

#### 3.3.1.2.1. CONSTANTLY HIGH RATES OF SERIOUS CRIMES

Based on statistics from the SDC (2014) and consultations with the Clarendon Police Division, the incidence of major crimes, which include robbery, break-ins, rape, carnal abuse, murder and shootings, have remained very high in Clarendon over the past decade. In 2004, the parish accounted for 853 major crimes, which dipped slightly to 748 in 2005. In 2007, 2008, 2009, 2011, 2012, 2013 and 2014, the parish recorded figures of 635, 825, 1020, 691, 741, 792 and 578 respectively. Robberies, break-ins and murders were constantly the most frequently occurring major crimes.

The May Pen DA is a major crime hotspot. A total of 69 homicides were recorded within its boundaries in 2006; a figure which increased by 3 to 72 in 2007, and then jumped by 25 to 97 in 2008. In 2011 and 2012 combined, 71.4% of all major crimes committed in the parish were within this region. Of this figure, crime for Urban May Pen alone accounted for 63.2% or 437 of major crimes committed in the parish in 2011 and just about 63.4% or 470 of major crimes committed in the parish in 2012.

Stakeholders, including residents and the police in the parish, have identified several social issues contributing to the high levels of crime. Chief among these is unemployment. According to residents, lack of access to employment gives people more time to commit crime, and also coerce some individuals into such activities as a means of survival. Their claims were supported by the utterances of the former head of the Clarendon Police Division, Senior Superintendent Michael Bailey, who was quoted by the Gleaner (2013) saying that an upsurge in crime in Clarendon is always expected with a downturn in the economic activities. Other social issues identified as contributing to crime in the parish are poverty, a lack of education and poor parenting.

94. Based on an interview on December 2, 2015 with Eric Wiggins- Division Intelligence Manager

### 4.3. SAFETY AND SECURITY

A number of programmes and initiatives have been implemented to address the high crime rate, both from the national and local levels. Some of these programmes and initiatives are listed in Table.....below.

Programme/ Initiative	Brief Description	Status	Communities
Community Empowerment and Transformation (COMET)	The COMET project seeks to reduce crime and violence and improve the quality of life in high-crime communities of Jamaica.	Ongoing	Curatoe Hill
Community Security Initiative (CSI)	The CSI is a multi-stakeholder programme which seeks to stem the scourge of criminality by improving social services in a number of the island's poorer communities that are breeding grounds for criminals.	Merged with CSJP	Chapelton, May Pen
Citizen Security and Justice Programme (CSJP)	The CSJP seeks to enhance citizen security and justice in fifty (50) volatile and vulnerable communities across eight parishes, including Clarendon through social intervention and crime reduction.	Ongoing	Curatoe Hill (Canaan Heights)
National Restorative Justice programme	Restorative Justice (RJ) is a process whereby all the parties with a stake in a particular offence come together to resolve collectively how to deal with the aftermath of the offence		Curatoe Hill (Canaan Heights), Effortville
Community Policing	The community policing programme seeks to improve police-community relations and reduce crime through the use of partnerships and problem-solving techniques, to proactively address the immediate conditions that give rise to public safety issues	Ongoing	Curatoe Hill (Canaan Heights), Mineral Heights, Mount Clair
Unite for Change	Unite for Change is a national movement and public awareness campaign aimed at empowering each citizen to take back Jamaica from the clutches of criminal elements.	Ongoing	Accessible to all local communities.
Peace Management Initiative (PMI)	The PMI is a civil society agent which seeks to diffuse potential or actual explosions of violence in volatile communities.	Ongoing	May Pen, York Town
The Safe Schools Programme	The Safe Schools Programme is a special programme developed to assist schools in managing violence, antisocial behaviour, truancy, children at risk and generally to keep the school environment safe.	Ongoing	Crofts Hill, Denbigh, Effortville, Gimme-mi-bit, Hayes

## 4.3. SAFETY AND SECURITY

Inner City Basic Services Project	The Inner City Basic Services Project seeks to improve the services, basic infrastructure and targeted crime and violence interventions in 18 "vulnerable" inner-city communities,	Completed	Bucknor
Poverty Reduction Programme			Effortville, Hazard

### 3.3.1.2.2. SLOW RESPONSE TIMES

Police response times within the Plan Area have been described as generally slow by residents. There is no empirical data available to support this claim, but locals assert that police response time frequently exceeds one hour. They attribute the issue to several factors, including the number of police stations in the parish, which has often been questioned based on their geographical spread. Throughout the Situation Validation and Visioning Workshop, at least eight (8) communities expressed the need for a police post in their local area. Other issues cited by stakeholders as impacting on police response times, are a lack of resources coupled with the high crime rate, the parish's sprawling development, poor road conditions, traffic management issues, particularly within town centres, and limited directional signs.

### 3.3.1.2.3. HIGH LEVELS OF UNREPORTED CRIMES

Consultations with residents through the Situation Validation and Visioning Workshops indicated a high level of unreported crimes in the Plan Area. According to residents, domestic violence, child abuse, carnal abuse, sexual abuse, incest and praedial larceny are common crimes that are not reported to the police. They explained that these cases go unreported due to personal (embarrassment, fear of retaliation, economic dependency) and societal (unbalanced power relations for men and women in society, privacy of the family, victim blaming attitudes) reasons, as well a lack of confidence in the justice system.

### 3.3.1.2.4. DIFFICULTIES POLICING UNPLANNED SETTLEMENTS

There are a number of informal settlements in the parish of Clarendon. The SMU (2012) identified 76 potential squatter settlements in the parish. In addition to these squatter settlements, most other areas in the parish have developed organically. These informal settlements are however posing a number of challenges with regards to policing efforts. Chief among these is a lack of adequate access, due, in part, to improper or non-existent roadways and the absence of directional signs. These policing challenges are even more pronounced in squatter settlements. According to former head of the Clarendon Police Division, Senior Superintendent Dayton Henry, as a result of this, squatter settlements, particularly in and around May Pen, are providing a haven for criminals.

### 3.3.1.2.5. LACK OF TRUST IN POLICE

Consultations through the Situation Validation and Visioning Workshops revealed a general lack of public trust in the police. According to residents, this issue is stemming from a high level of misconduct on the part of uniformed officers. They claim that the security force periodically utilize excessive force, including lethal force, in their conduct. They also asserted that in the past, persons have shared confidential information with the police to aid in their investigations, only for such information, including the source, to be leaked to the public. This is very serious in light of the fact that the "informer-fi-dead"<sup>95</sup> culture is rooted in the parish. Furthermore, the residents generally claim that a large number of police officers do not know how to conduct themselves properly in conversations with citizens. The claims of the residents have been somewhat supported by additional research. . The findings from the strategic review of the Jamaica Constabulary Force in 2007 indicated that the culture within the JCF is that of command and control and there is also a general lack of regard for human rights.

## 4.3. SAFETY AND SECURITY

The review also stated that the JCF leadership and the GOJ have not been able to address these problems, which further undermines public confidence and the effectiveness of the security force.

Since the release of the findings of this review, a number of measures have been implemented which are believed to be steps in the right direction. The Independent Commission of Investigations (INDECOM) was established in 2010 to undertake investigations concerning actions by members of the Security Forces and other agents of the State that result in death or injury to persons or the abuse of their rights. In recent times, eleven (11) policemen, ranging in rank from constables to sergeants, have been arrested and charged by the Commission for crimes including murder, conspiracy to murder, and wounding with intent arising from allegations that they were part of a police death squad operating in the parish. Additionally, the Anti-Corruption Branch, an internal unit of the JCF dedicated to investigating allegations of police corruption and misconduct, was merged with the Major Organised Crime and Anti-Corruption Task Force to form the Major Organised Crime and Anti-Corruption Agency (MOCA). This new agency is an elite Agency focusing on tackling corruption in the public sector and bringing high-value criminal targets to justice. The Government also introduced a revised “Use of Force” policy in 2012, and has insisted on its island-wide implementation.

In spite of this, locals still believe that more ought to be done by the police to gain their trust. They highlighted increased police transparency and accountability as critical in this process.

### 3.3.1.2.6. BORDER SECURITY ISSUES

Securing and managing the parish's borders, particularly the coast, is proving to be a major challenge. The parish has been described by the former head of the Clarendon Police Division, Senior Superintendent Maurice Robinson, as a transshipment point for illegal guns and cocaine flowing within the island and between Haiti and South America (The Gleaner, 2015). This illicit trade has been identified as one of the most significant drivers of crime and violence not just in Clarendon but all of Jamaica. Gun-related murders are one of the most problematic security issues in Jamaica, and according to the Senior Superintendent, guns which enter Clarendon through this trade are taken to other areas of Jamaica, including the Corporate Area, St Catherine, and sometimes the western parts of the island (The Gleaner, 2015). Senior Superintendent Robinson pointed out that this trade thrives on the fact that there are numerous porous points along the parish's coast which is very challenging for the police to cover at any one time (The Gleaner, 2015). Since the closest marine police post is in the neighbouring parish of St Catherine, and the marine police are severely challenged due to lack of resources, it is quite easy for criminals, who sometimes disguise themselves as fishermen, to participate in this illicit trade.

### 3.3.1.2.7. WEAK POLICE YOUTH CLUBS

The Police Youth Club network should serve as a channel through which the JCF moulds and provides a positive influence on the young people of the parish. By extension, it should help in the reduction of crime, as it is a way for the young people to find meaningful activities to do, which would prevent them from being involved in criminal activities.

The network in the parish is however quite weak and is not achieving its full potential. The parish is made up of 81 communities but just over 60 clubs have been formed, with 45 being active in the past few years. In addition to that, participation in the active clubs is inadequate and these clubs also suffer from a general lack of support from the police<sup>95</sup>. Consultations across the parish revealed that the programmes of these clubs are diverting from the true goals and objectives of the movement. That is, these clubs generally act as party promotion entities. However, dialogue with the former president of the local network, Steve Tindale, revealed that a system was being introduced where all clubs will have to seek approval from the parish executive in the promotion of events.

95. The informer fi dead culture is the belief that person who provide information to the police should be killed.

96. Based on consultations with members of police youth clubs across the Parish.

## 4.3. SAFETY AND SECURITY

### 3.3.1.2.8. LACK OF ADEQUATE PARTICIPATION IN THE NEIGHBOURHOOD WATCH PROGRAMME

Neighbourhood Watch schemes have an important role to play locally in helping to reduce crime and keep neighbourhoods safe. They help to unite citizens in a community to protect themselves and their property from the threat of criminality. Their function is particularly important in light of the fact that the police force is challenged with a shortage of resources, including human resource, which is impacting on the level of service it provides. Nonetheless, citizens' participation in the Neighbourhood Watch Programme in the parish is lacking. Of the 81 communities in the Parish, only 45 or just over a half, have Neighbourhood Watch groups. Furthermore, a fraction of these groups are dormant due to various reasons, including a lack of participation. Moreover, at the Safety and Security Sector Meeting, it was highlighted that the low participation of youth in these Neighbourhood Watch groups is a cause for concern.

### 3.3.2. FIRE AND RESCUE

#### 3.3.2.1. OVERVIEW



Figure 75: The Frankfield Fire Station.

Fire and rescue services in the Clarendon Development Area is the responsibility of the MLGD through the CPC. The overall services are administered by the JFB through its two local departments. One of these departments is located in Frankfield, whilst the other is located in the parish's capital, May Pen. Each of these department is equipped with one fire unit. Together they seek to minimize the loss of lives, injury to persons and damage to property from fires, natural disasters, accidents and other emergencies.

#### 3.3.2.2. ISSUES AND CHALLENGES

##### 3.3.2.2.1. A LESS THAN ADEQUATE NUMBER OF FIRE STATIONS

Based on consultations with residents of the parish, through the Situation Validation and Visioning Workshops, fire response in Clarendon is often less than desirable. According to the residents, the impacts of several fires to have taken place in the parish could have been reduced with better response times from the Fire Department. This has been attributed in part to the number of fire stations in the parish. As highlighted earlier, there are two (2) fire stations in the parish which are expected to serve the approximately 1196km<sup>2</sup> of land which makes up Clarendon. This is a relatively big ask in light of the fact that some parts of the road network, especially in the rural areas, are in a poor state and traverse difficult terrains. Additionally, traffic congestion is significantly impacting on the most town centres in the parish, including May Pen, which is host to one of the local fire departments. With the parish earmarked for significant development, the need for an additional fire station will become more apparent.

## 4.3. SAFETY AND SECURITY

### 3.3.2.2.2. INADEQUATE RESOURCES

Due to funding deficiencies, both fire stations in the parish are lacking the resources needed to efficiently carry out their functions. As stated earlier, each station is equipped with only one working fire unit, which seriously compromises its ability to provide an efficient level of service. To elaborate, each station can only respond to one incident at a time, and response can only be with one truck which carries a limited amount of water, personnel and other resources. Additionally, the fire departments are lacking in human resources, pumps, appropriate modern technologies (such as Global Positioning System (GPS) and Geographic Information System (GIS), and turntable ladders to address fires on high-rise buildings. While these issues are recognized, a lack of adequate funding means that they remain unaddressed and lives and property remain seriously at risk.

### 3.3.2.2.3. WATER SUPPLY ISSUES

Firefighting efforts in the parish are at times hampered by a lack of water. As highlighted earlier by the Water Section of this Plan (See pgs. 104-124), the parish's water supply is generally unreliable. This is due to a number of issues including, technical and non-technical losses from the NWC's system, vulnerability to drought, and poor water consumption practices. There is also an overall shortage of fire hydrants, especially in rural areas, whilst some of those hydrants present are out of service due to poor maintenance. The first table below shows that there were 568 fire hydrants installed in the Parish as at January 2013, with at least 31.5% out of service, while the second table shows only two fire hydrants were repaired or serviced in the parish from 2009 to 2010. These issues combine to severely challenge the two fire departments who are already burdened with a lack of adequate resources.

**Status of Fire Hydrant at January 2013**

Total	Working	Not Working	Unknown	Repaired	Serviced
568	355	179	34	0	0

The status of 34 was recorded as unknown, due to the absence of running water at the time of the survey to determine whether the hydrants were functional.

**Analysis of JFB's service and repair of hydrants Source: Auditor General's Department, 2014**

2012		2011		2010		2009		Total	
Repaired	Serviced								
0	0	0	0	1	0	1		2	0

## 3.3.5. PARISH STRATEGIES

### 3.3.5.1. STRATEGIC OBJECTIVE #112

**To promote social development as a crime prevention strategy.**

Crime prevention through social development is necessary to reduce the high crime rate in Clarendon. Stakeholders, including residents and the police, have identified several social issues as factors which are contributing to the high crime rate in the parish. These issues include poverty, unemployment, a lack of education and poor parenting. A range of programmes and projects which target these issues will be developed and implemented. They will target communities, families and individuals, including at risk youth. This will include early intervention programmes and will therefore coincide with the strategy to reduce antisocial behaviours in schools (see 3.4.4.13. Strategic Objective #138, pg. 298). It will also coincide with ongoing programmes such as the Community Renewal Programme, COMET and CSJP.

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and maintain social programmes which target volatile communities, as well as at risk and unattached youth and adults, including families. These programmes should seek to address the social issues which have been identified as contributing to crime in the parish; that is, poverty, unemployment, a lack of education and poor parenting. Employment programmes should seek to provide long term meaningful jobs, while education programmes should match the demands of the local economy and be short term so as to reduce the possibility of dropouts due to a lack of interest.</p>	<p>Short to Long Term</p>	<p>MNS, SDC, CPC, MLSS, Private Sector</p>
<p>Support Strategic Objective #138 of the Education section of this plan.</p>	<p>Short to Long Term</p>	<p>MNS</p>

### 3.3.5.2. STRATEGIC OBJECTIVE #113

#### To promote crime prevention through environmental design (CPTED).

The data collected revealed that opportunities for crime are arising out of a variety of environmental conditions related to the layout and the design of a number of local communities. This situation begs the need for the promotion of CPTED. CPTED, is based on the idea that the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime, and an improvement in the quality of life. In other words, if a site is laid out well, the likelihood of it being targeted for a crime may be reduced.

CPTED will be promoted through changes in the physical environment of several local communities, as well as through the implementation of policies at the approval stage of the development process. CPTED strategies and tactics will focus on natural access control; natural surveillance; and territoriality. Natural access control will limit the opportunity for crime by decreasing criminal accessibility, especially into areas where a person with criminal intent would not be easily seen by others. It will include taking steps to discourage unwanted access to private space and dark or unmonitored areas. Natural surveillance will increase the perception of capture by providing opportunities to see and to be seen. It will include designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction among legitimate users of private and public space. Potential offenders will therefore feel increased scrutiny and limitations on their escape routes. Territoriality will include providing clear designation between public and private spaces, which will make it easier for people to understand, and participate in, an area's intended use, and actively maintain an area to avoid deterioration which indicates less control and a greater tolerance of disorder. Territoriality, which often embodies natural surveillance and natural access control strategies, will communicate a sense of active ownership of an area which will discourage the perception that illegal acts may be committed in the area without notice or consequences. The table below shows some of the CPTED strategies that will be utilized.

## 4.3. SAFETY AND SECURITY

<b>Natural access control</b>
<ul style="list-style-type: none"> <li>• Using a single, clearly identifiable, point of entry</li> <li>• Installing gates at all entrances and exits.</li> <li>• Using substantial, high, closed fencing (for example, masonry) between a backyard and a public alley.</li> <li>• Using low, thorny bushes beneath ground level windows.</li> <li>• Using rambling or climbing thorny plants next to fences to discourage intrusion.</li> <li>• Using the maze type entry</li> <li>• Using a locking gate between front and backyards</li> </ul>
<b>Natural surveillance</b>
<ul style="list-style-type: none"> <li>• Placing windows overlooking sidewalks and parking lots.</li> <li>• Creating landscape designs that provide surveillance, especially in close proximity to designated points of entry and opportunistic points of entry. That is, avoiding landscaping that creates blind spots or potential hiding places.</li> <li>• Using the shortest, least sight-limiting fence appropriate for the situation.</li> <li>• Using transparent weather vestibules at building entrances.</li> <li>• Minimising obstructive structures such as zinc fencing.</li> <li>• Avoiding sharp corners in subdivision designs.</li> <li>• Installing adequate lighting. Lighting should not be too bright or too dull to create blind spots.</li> <li>• Avoid covering windows and glass walls with posters and signs.</li> </ul>
<b>Territoriality</b>
<ul style="list-style-type: none"> <li>• Displaying security system signage at access points.</li> <li>• Actively maintaining property to avoid deterioration.</li> </ul>

### RECOMMENDED POLICIES

- Permission will only be granted where the development provides for adequate personal and vehicle security, including providing for natural surveillance through site layout and the design of buildings, car parking, open spaces, access roads, cycleways and footpaths, lighting, landscaping and boundary treatment.
- The relevant authorities will encourage and support the development of gated communities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Educate the local population about the principles of crime prevention through environmental design and encourage their adoption.	Short Term	Clarendon Police Division, CPC
Promote crime prevention through environmental design via the development approval process.	Short to Long Term	CPC

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide assistance to local communities which desire to implement avenues of crime prevention through environmental design.	Short to Long Term	CPC, Clarendon Police Division
Develop crime prevention strategies through environmental design projects targeting specific communities or local areas which are difficult to police due to their physical characteristics. Such projects may include the removal of zinc fences, properly identifying property boundaries, and installing adequate lighting.	Short to Long Term	MNS, CPC, Private Sector
Promote the active maintenance of property as a crime prevention strategy.	Short to Long Term	CPC, Clarendon Police Division

### 3.3.5.3. STRATEGIC OBJECTIVE #114

**To increase monitoring of the coastline to help combat the illicit guns-for-drugs trade in the parish.**

Increased coastal monitoring is critical to combat and eradicate the illicit guns-for-drugs trade. Central to this strategy will be the establishment of an effective and efficient marine police post in the parish. It will allow for the continuous patrolling of the parish's coastal waters and the interception of boats before they come ashore where it is difficult for the police to adequately monitor all access points. In addition, the use of the drones being obtained by the MICAF to monitor illegal activities outside of poaching will be encouraged. These strategies will complement the patrolling efforts of the Clarendon Police Division, as well as the proposals under the Fisheries section of this Plan to explore the feasibility of developing a Vessel Monitoring System (VMS) and to develop a local monitoring system which involves members of the Fishers' Cooperative serving as fishery wardens and sharing the responsibility of monitoring with the responsible organisations.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish a marine police post along the coast of Clarendon.	Medium to Long Term	MNS
Encourage the relevant authorities to use the drone being acquired by the MICAF for the monitoring of illegal activities at sea outside of poaching.	Short Term	MNS, CPC, Private Sector

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #193 of the Fisheries section of this Plan. See pg. 394	Short to Long Term	MNS, Clarendon Police Division
Increase patrolling of coastal areas in the Parish.	Short to Long Term	Marine Police, Clarendon Police Division

### 3.3.5.4. STRATEGIC OBJECTIVE #115

**To promote the increased use of CCTV surveillance systems, to improve the incidents of capture and to deter potential offenders.**

The installation of adequate surveillance cameras within public spaces will be promoted as one of the main crime prevention methods. The use of CCTV surveillance systems in public places has the potential to generate a significant number of benefits if properly implemented. These benefits include a reduction in crimes and antisocial behaviours, including littering, urinating in public, traffic violation, and illegal vending. The presence of surveillance cameras will increase the perceived risk of capture and will therefore force the potential offender (assuming that he is behaving in a rational manner) not to offend or to offend elsewhere. In addition to that, the cameras will be able to assist in police investigations and information gathering by detecting offenders, identifying potential witnesses who might not otherwise come forward, and providing an avenue to monitor the movement of offenders and suspicious behaving individuals. Nevertheless, the use of CCTV surveillance systems may result in unintended consequences, such as the displacement of crime and an increase in the suspicion or fear of crime and therefore adequate measures will be put in place to minimise such issues.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a public education campaign aimed at sensitising citizens about the benefits of using CCTV surveillance systems in the Plan area, as well as reducing the unintended consequences of its use, particularly the increased suspicion or fear of crime.	Short Term	CPC, Clarendon Chamber of Commerce, Clarendon Police Division
Increase the use of surveillance cameras in public spaces, particularly crime prone areas.	Short to Long Term	MNS, CPC, Private Sector
Encourage business owners and citizens to install surveillance cameras within their businesses and homes.	Short Term	CPC, Clarendon Chamber of Commerce

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a code of practice for the use of surveillance cameras by bodies such as the local authority and the police.	Short Term	MNS

### 3.3.5.5. STRATEGIC OBJECTIVE #116

**To encourage the application of ANPR systems to assist in surveillance efforts.**

Under this Plan, the feasibility of utilizing Automatic Number Plate Recognition (ANPR) Systems at strategic locations across the Parish will be explored. ANPR systems are used to help detect, deter and disrupt criminality at all levels and its application would offer tremendous benefits to local safety and security efforts. It is an established technology that reads vehicle license plates via cameras, which are compared instantly against police and other databases. As a vehicle passes an ANPR camera, its registration number is read and instantly checked against database records of vehicles of interest. A police team working with the ANPR system can therefore intercept stolen vehicles, uninsured vehicles, vehicles involved in crimes, and other vehicles of interest.

The implementation of this system would require coordination from the national level. A record for all vehicles would be required and such records would include information from a number of different agencies including the Transport Authority, the Police, Insurance Companies, and the Tax Administration Office. Therefore a multi-sectoral approach will be utilized in exploring the feasibility utilizing the system.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of developing a national Automatic Number Plate Recognition System. This system would involve the installation of Automatic Number Plate Recognition cameras at strategic locations across the parish, e.g. at the Toll Plaza and the May Pen bridge.	Long Term	GOJ, MTM

### 3.3.5.6. STRATEGIC OBJECTIVE #117

**To ensure adequate street lighting to support crime reduction efforts in the parish.**

Improved street lighting will be promoted as a strategy to reduce crime within the Plan Area. Through the Situation Validation and Visioning Workshops, residents identified inadequate street lighting as a 'facilitator' of crime. Consultations with agency stakeholders, including the police, also revealed that inadequate street lighting is an issue negatively impacting the fight against crime in the parish. In both cases, it was suggested that improved lighting will lead to increased surveillance of potential offenders (both by improving visibility and by increasing the number of people on the street) and hence increased deterrence of potential offenders. However, research has shown that there is no evidence to support this theory.

## 4.3. SAFETY AND SECURITY

Further research revealed that improved street lighting reduces crime, by as much in the day as during the night time. This is believed to be linked to the fact that improved lighting signals community investment in the area and that the area is improving, leading to increased community pride, community cohesiveness, and informal social control. Regardless of the theoretical underpinning, there appears to be potential benefits to be derived and therefore improved street lighting will be promoted.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #44 and #50 of the Energy Section of this Plan. See pgs. 133 and 144	Short to Long Term	MNS

### 3.3.5.7. STRATEGIC OBJECTIVE #118

**To build and maintain trust between the police and the citizens to support the meaningful sharing of information and community participation in crime management.**

Building and maintaining trust between the Police and the citizens is one of the cornerstone strategies to improve safety and security in the Plan Area. It is critical to ensuring effective policing and to rid the parish of the ‘informer-fi-dead’ culture which is undermining efforts to bring more crimes to justice, which will further increase the perceived risk of capture and deter potential offenders. A number of factors are contributing to the generally low levels of trust between the police and the local citizens and therefore a wide range of sub strategies will be implemented to address this issue. These include strengthening the Police Youth Club Network, increasing community policing, and improving police accountability/ transparency.

#### 3.3.5.7.1. STRATEGIC OBJECTIVE #118A

**To improve police accountability/ transparency.**

Clarendonians identified improved transparency and accountability in the conduct of police officers as integral to developing and maintaining trust between the police and the local citizenry. A key part of this effort in the parish will be the use of police cameras (both police body cameras and police dash cameras). This is being utilized around the world to help curtail police misconduct and to improve police transparency and accountability. Its use in the Plan Area will not only help to prevent/reduce the excessive use of force by police officers, but will also help to reduce complaints against officers and strengthen the trust between law enforcement and the citizens in the local communities. The relevant authorities will implement the requisite policies to ensure success in the use of this equipment. Such policies will include punishing officers who don’t turn their cameras on when they’re supposed to and making videos from these cameras available to the public, albeit with certain provisions to protect privacy.

In addition to that, police officers found guilty of misconduct will be appropriately punished. Adequate consideration will be given to the incorporation of shaming into such punishments, particularly for those found guilty of corruption. This would involve publishing the names and photographs of these officers in the media for a specified period. Similarly, the media will be used to publicize positive stories about police officers.

## 4.3. SAFETY AND SECURITY

### RECOMMENDED POLICIES

- The relevant authorities and stakeholders will support the use of police cameras.
- Videos from police cameras will be made available to the public, albeit with certain provisions to protect privacy.
- Officers who do not turn their cameras on when they're supposed to will face appropriate disciplinary actions.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Outfit police officers and police cars with cameras.	Medium to Long Term	MNS
Develop a code of practice for the use of police cameras.	Medium Term	MNS
Continue to mete out appropriate punishments for officers found guilty of misconduct.	Short to Long Term	Police High Command
Explore the possibility of incorporating shaming into punishments for police officers found guilty of misconduct, particularly for those found guilty of corruption. This would involve publishing the names and faces of these officers in the media for a specified period.	Short Term	Police High Command
Use the media to publicize positive stories about the police officers.	Short Term	Police High Command, JCF

#### 3.3.5.7.2. STRATEGIC OBJECTIVE #118B

##### To widen the practice of community policing.

A valuable and effective way to develop and maintain trust between the police and the citizenry whilst reducing the high crime rate is to widen the practice of community policing. Community policing is a philosophy and organizational strategy that promotes partnership between the community and the police to identify, prioritize, and solve contemporary problems such as crime, drugs, fear of crime, and overall neighbourhood decay, with the goal of improving the quality of life in the community. According to the JCF (2015), community policing is central to the concept of community safety. The JCF (2015) noted that the traditional style of policing used across Jamaica is not suitable to deliver modern policing and community safety services. The demands of our modern age require that the police act in partnership with the public and with other public, private and voluntary sector organisations to deliver collaborative services that address crime, fear of crime and other safety issues which concern communities. This therefore underscores a need for the widening of the practice of community policing as it is currently seen as the preserve of the Community Safety and Security Branch (CSSB). In widening the practice of community policing in the parish, geographically decentralized models of policing that are tailored to the needs of individual communities rather than a 'one-size-fits-all' approach, will be emphasized.

## 4.3. SAFETY AND SECURITY

This will require more police officers to be involved in the practice; consequently the feasibility of deploying all district constables as designated community police officers will be explored. Training will also be provided for additional officers who will become engaged in the practice. Despite being localised or area specific, all models of community policing in the parish will include regular meetings with community based organisations (CBOs) and groups, and volunteer programmes for police officers, including those which are not actively practicing community policing. Strong interagency partnerships to address issues which may contribute to crime will also be promoted.

### RECOMMENDED POLICIES

- The practice of community policing will be widened to play a more central role in policing efforts in the parish.
- Community policing in the parish will utilize geographically decentralized models of policing that are tailored to the needs of individual communities rather than a one-size-fits-all approach.
- All stakeholder organisations and groups will support community policing efforts through the formation of strong partnerships.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of utilizing all district constables as designated community policing officers.	Short Term	MNS, Police High Command
Train officers in the practice of community policing.	Short Term	Police High Command
Develop a volunteer programme for police officers in local communities. Such programmes may include police officers coordinating with residents and community groups to beautify a community, renovate the home of a disabled person or a senior citizen.	Short to Medium Term	Police High Command
Schedule regular meetings between the police and community groups. This will complement the strategies to strengthen the Neighbourhood Watch and Police Youth Clubs networks (see 3.3.5.8. Strategic Objective #119, pg. 272 and 3.3.5.7.3. Strategic Objective #118C, pg. 272).	Short to Long Term	Clarendon Police Department
Promote interagency involvement in problem identification and resolution.	Short to Long Term	MNS

## 4.3. SAFETY AND SECURITY

### 3.3.5.7.3. STRATEGIC OBJECTIVE #118C

#### To strengthen the police youth club network.

A key part of the strategy to build and maintain trust between the police and the citizens is the strengthening of the Police Youth Club network locally. This will be achieved by encouraging the development of such clubs in all local communities, encouraging the full support of the police, and implementing measures to ensure that the programmes and activities of all Police Youth Clubs in the parish are tailored towards meeting the goals and objectives of the overall movement.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the development of Police Youth Clubs in all local communities.	Short to Medium Term	SDC, Clarendon Police Department. Clarendon Police Youth Club Council
Educate the youth about the functions of Police Youth Clubs and reasons why being involved is important.	Short Term	Clarendon Police Youth Club Council
Develop a manual to assist Police Youth Clubs in creating their programmes and activities.	Short Term	Clarendon Police Youth Club Council, National Police Youth Club Council
Develop a mechanism to ensure that all the programmes and activities of Police Youth Clubs in the Parish are approved by the Clarendon Police Youth Club Council. No administrative cost should be charged for this service.	Short Term	Clarendon Police Youth Club Council
Mandate police officers to attend Police Youth Club Meetings. These officers should not just attend meetings but should actively participate.	Short Term	Clarendon Police Department

### 3.3.5.8. STRATEGIC OBJECTIVE #119

#### To support the development of effective Neighbourhood Watch and community alert systems, to complement the efforts of the Police.

Neighbourhood Watch schemes and community alert systems will perform an important role in reducing residential crime and the fear of crime in local communities. A Neighbourhood Watch is an organized group of civilians devoted to crime prevention within a neighbourhood. Under the scheme, members collectively agree to keep an eye on one another's properties, patrol the street, and report suspicious incidents to law enforcement agencies in a timely manner. The community alert systems enable communities to set up a group to receive alerts advising them of suspicious or criminal activity in their area. This enables citizens to take the necessary precautions to protect themselves in the event of a crime. Both initiatives will reduce the opportunities for crime to occur.

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a Neighbourhood Watch manual which will assist local communities in starting neighbourhood watch groups.	Short Term	Clarendon Police Division, SDC
Support the reactivation of dormant Neighbourhood Watch groups and the development of new ones in communities.	Short to Long Term	Clarendon Police Division, SDC
Encourage more youth to become a part of Neighbourhood Watch groups	Short Term	Clarendon Police Division, SDC
Provide adequate support to neighbourhood watch groups, including through regular meetings.	Short to Long Term	Clarendon Police Division
Educate the general public about community alert systems, including text alert systems.	Short Term	MNS, Clarendon Police Division
Support the implementation of community alert systems in the Plan Area, particularly in rural communities which are relatively far from police stations.	Short Term	MNS, Clarendon Police Division, Telecommunications Providers

### 3.3.5.9. STRATEGIC OBJECTIVE #120

**To undertake public education in order to break the ‘informer-fi-dead’ culture and to ensure that the lethargic attitudes towards jury duty is reduced or eliminated.**

Public education is one of the most important strategies for reducing crime in the parish. It is critical to bringing more crimes to justice, by helping to break the ‘informer-fi-dead’ culture and to ensure that the lethargic attitudes towards jury duty is reduced or eliminated. These issues are significantly compromising effective policing and justice processes in the parish; therefore, the need for public education is unequivocal. This will help to increase the perceived risk of capture and punishment and will help to deter potential offenders from committing crimes in the parish.

## 4.3. SAFETY AND SECURITY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a public education campaign aimed at ridding the parish of the 'informer-fi-dead' culture. This programme should complement programmes aimed at building and maintaining trust between residents and the police.	Short to Medium Term	MNS, Clarendon Police Division
Develop and implement a public education campaign aimed at encouraging the local population not to shun jury duty. This campaign should highlight the importance of jurors in reducing crime in the Parish.	Short Term	Ministry of Justice (MOJ), Clarendon Police

### 3.3.5.11. STRATEGIC OBJECTIVE #122

**To ensure that offenders are adequately rehabilitated and reintegrated in the local society to reduce the likelihood of repeat offenders.**

According to the United Nations Office on Drugs and Crime (2012) no crime prevention strategy is complete without effective measures to address the problem of recidivism. It has been widely accepted that sanctions and incarceration without the effective rehabilitation and reintegration of offenders are unlikely to reduce re-offending. Without effective rehabilitation, and reintegration programmes, re-offending remains likely. Most offenders face significant social adaptation issues, including family and community stigmatization and ostracism. These are issues which may impact their ability to find jobs or housing, return to formal education, build or re-build individual and social capital. The recent performance audit conducted by the Auditor General's Department revealed that Jamaica's correctional facilities are failing to adequately rehabilitate prisoners and the rate of re-offending in the country is actually 51 percent. This plan promotes the effective rehabilitation and reintegration of offenders to reduce crime in the parish of Clarendon.

Rehabilitation and reintegration programmes will be administered within prisons, and through local communities. The former will involve activities in correctional facilities that restore offenders to a useful life in which they can meaningfully contribute to themselves and society, while the latter will support their successful re-entry into society where they can live and function as peaceful, law-abiding citizens. The rehabilitation programmes will therefore aid reintegration. Such programmes will be tailored to the needs of individual offenders, including juveniles and the mentally-challenged. This will require the rehabilitation needs of all inmates to be assessed on entry to correctional facilities. Programmes offered may comprise education and vocational training, to include entrepreneurship, as well as social programmes such as community integration and parenting. In order to be successful, education and training programmes will seek to match the demands of the local economies in the areas in which the offender will be returned, rather than be general. All inmates will receive cognitive behavioural therapy, which is said to be very effective in reducing recidivism in both juveniles and adults around the world. The reintegration programmes will seek to support the immediate transition of offenders from prisons to local communities and reinforce the gains achieved through rehabilitation in prison.

## 4.3. SAFETY AND SECURITY

This will require the support and participation of a wide cross section of stakeholders, including local communities. Residents will be educated about the importance of ensuring the successful reintegration of offenders in preventing recidivism, and will also be encouraged to facilitate the process. Those offenders who apply for rehabilitation grants to assist in starting a business will be provided with special business incubators, including temporary office space. The relevant authorities will also develop a halfway house in the parish, to facilitate the re-adjustment of local prisoners and deportees to private life, as well as a monitoring system for ex-offenders.

### RECOMMENDED POLICIES

- The rehabilitation needs of all inmates will be assessed on entry to correctional facilities.
- Rehabilitation programmes will be tailored to the needs of individual offenders.
- All inmates will receive cognitive behavioural therapy as part of their rehabilitation programme.
- Education and training programmes for offenders should seek to match the demands of the local economies in the areas in which the offender will be returned.
- Reintegration interventions will support the immediate transition from the prison of ex-offenders to the community and continue until a successful reintegration is completed.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a monitoring system for ex-offenders, including deportees, which may involve the use of GPS tags.	Short to Medium Term	MNS, Ministry of Justice
Educate local population about the importance of ensuring the successful reintegration of offenders, and encourage residents to facilitate the process.	Short Term	MNS, Ministry of Justice,
Develop a halfway house in the parish, to facilitate the re-adjustment of both local prisoners and deportees to private life.	Medium Term	MNS, Ministry of Justice

### 3.3.5.12. STRATEGIC OBJECTIVE #123

**To improve the capacities of the existing fire stations in the parish to ensure the provision of an efficient level of service.**

A lack of resources is significantly impacting on the fire department in its efforts to provide an efficient level of service. This issue will become more apparent as the parish continues to grow and expand. Under this Plan, the local Fire Departments will be equipped with adequate resources to ensure public safety. Such resources will include human resources and fire units equipped with GPS to aid in the provision of timely responses. In the provision of adequate human resources, the feasibility of utilizing volunteer firefighters will be explored. A Needs Assessment will be done to determine the exact needs of the Fire Department.

## 4.3. SAFETY AND SECURITY

This Needs Assessment will give consideration to the planned development of the parish over the long-term. It will focus on, among other things; staffing, facilities and apparatus, personal protective equipment, communications and technologies, and the personnel's ability to handle unusually challenging incidents.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Undertake a needs assessment to determine the resource needs of the Fire Department. This Needs Assessment should give consideration to the planned development of the parish over the long-term.</p>	<p>Short Term</p>	<p>JFB, MLGCD</p>
<p>Adequately equip the Fire Department with the necessary resources to provide an efficient level of service based on the results of the Needs Assessment. In the provision of adequate human resources, the feasibility of utilizing volunteer firefighters should be explored. Once feasibility is determined, a coordinated training programme for volunteer participants should be developed to enable them to provide the first line of response in their communities during emergencies, e.g. fires. This programme should include, among other things, First Aid training which will enable participants to confidently manage emergency situations and provide care for the injured until medical aid arrives.</p>	<p>Short to Long Term</p>	<p>MLGCD, Private Sector</p>

### 3.3.5.13. STRATEGIC OBJECTIVE #124

**To increase the number of fire stations in the parish commensurate with the growth and development of the Parish.**

The present complement of fire stations in the parish is inadequate to deliver the services necessary as Clarendon looks to achieve its overall vision. Even with this Plan proposing significant improvements in the capacities of the existing fire stations, as well as improvements to the transportation sector, the level of service they provide will still be inadequate. This is due to the distance to be covered, the physiographic conditions of the parish and proposed growth and expansion within the parish. Accordingly, the feasibility of developing a third fire station in the Parish will be explored.

## 4.3. SAFETY AND SECURITY

Sites within the lower Clarendon area will be considered since the other two geographic regions, Upper Clarendon and Central Clarendon already have fire stations, and lower Clarendon has been earmarked for significant development, including within the tourism and logistics industries. In addition to that, the feasibility of assigning a fire boat to the parish will be explored. This is based on the fact that two ports are already operating in the parish and proposed developments include a dry dock which will handle petrol and also attract increased maritime traffic in the parish's waters.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of developing a fire station in the lower Clarendon Area.	Medium to Long Term	MLGCD
Explore the feasibility of assigning a fire boat to the parish.	Long Term	MLGCD

### 3.3.5.14. STRATEGIC OBJECTIVE #125

**To ensure the availability of adequate water for firefighting purposes.**

Adequate water supply is critical for effective firefighting. Clarendon is however challenged with ensuring an adequate supply of water for this purpose due largely to the shortage and poor maintenance of fire hydrants and the unreliability of the parish's water supply. Policies and actions will therefore be implemented under this Plan to address these issues and to ensure the delivery of effective firefighting service.

Part of the overall approach will focus on ensuring the development and functionality of a comprehensive fire hydrant system. As part of this process, the relevant authorities will seek to ensure that fire hydrants are installed in all new housing developments. These fire hydrants will be properly tested to ensure their functionality, and legal actions will be taken against the contractors where dummy or phantom fire hydrants are installed. Fire hydrants will also be installed in existing developments where the need exists, while all those which are malfunctioning will be repaired. An effective fire hydrant maintenance programme will be developed and implemented to ensure that these hydrants continue to provide an efficient level of service.

This strategy will also place emphasis on improving the reliability of the parish's water supply. This will include: the upgrading and maintenance the public water supply systems in the parish; the development of alternative sources of water; the restoration and management of the groundwater resources; the storing of water; and the conservation of the local water resources. See 2.2.2.5.2. Strategic Objective #31 (pg.112), 2.2.2.5.4. Strategic Objective #33 (pg. 114), 2.2.2.5.6. Strategic Objective #35 (pg. 119), 2.2.2.5.7. Strategic Objective #36 (pg. 120), and 2.3.9.11. Strategic Objective #87 (pg. 208).

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that fire hydrants are installed in all new housing developments.
- Newly installed fire hydrants will be properly tested to ensure their functionality, and legal actions will be taken against the contractors where dummy or phantom fire hydrants are installed.

## 4.3. SAFETY AND SECURITY

### RECOMMENDED POLICIES

- Where the need for hydrants exist because of the shortcomings of a developer, the relevant authorities to seek to ensure that the developer is held accountable for the installation of the resource and legal actions are taken where necessary.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Install fire hydrants in areas where this resource is needed.	Short to Long Term	CPC, Clarendon Fire Department
Repair all malfunctioning fire hydrants in the parish.	Short to Medium Term	NWC, Clarendon Fire Department
Develop an effective fire hydrant maintenance programme for the entire parish. This should include the undertaking of regular fire hydrant audits.	Short to Medium Term	Clarendon Fire Department, CPC, NWC
Support Strategic Objectives #31 (pg.112), #33 (pg.114), #35 (pg.119), and #36 (pg.120) of the Water section of this Plan.	Short to Long Term	Clarendon Fire Department,
Support Strategic Objective #87 of the Disaster Management and CCA Section of this Plan (pg.208).	Short to Long Term	Clarendon Fire Department,

## 3.4. EDUCATION

### 3.4.1. EDUCATION, TRAINING AND HUMAN RESOURCE DEVELOPMENT

There are a wide range of educational offerings in the Clarendon Development Area at all levels of the educational hierarchy. According to the SDC (2014), data from the education ministry and the Early Childhood Commission (ECC) revealed that there are a total of three hundred and seventy nine (379) educational institutions spread across the parish, with the majority of two hundred and forty (240) being those at the very foundation. These schools are distributed across urban, rural and remote areas of the parish, and may be classified as public schools or independent schools. See table below for the breakdown of schools.

PUBLIC SCHOOLS		INDEPENDENT SCHOOLS	
Type	Number	Type	Number
Infant	3	Kindergarten/ Preparatory	11
Primary & Infant	13	Preparatory & secondary High	1
Primary	46	Secondary	2
All-age & infant	1	Vocational	6
All-age	15	Commercial/ Business College	10
Primary & Jun	11	Special education	2
Secondary High	16	Early Childhood Institutions (ECIs)/Basic	240
Technical High	1		
Community College	1		
<b>Total</b>	<b>107</b>		<b>272</b>

Source: SDC (2014)

### 3.4.2. ENROLLMENT

Over 67 000 students were enrolled in a local educational institution in the academic year 2010-2011 (SDC, 2014). Almost six out of every ten students enrolled in an educational institution in the parish were females who dominated at all the levels. Paralleled to the national trend, enrollment at the primary/preparatory level was the highest for Clarendon accounting for 35.3%. Just over twenty-nine percent (29.2%) were enlisted at the secondary level. Those representing basic/infant schools stood at 14.3% and All-age and Junior High enrollment stood at 7.0% and 6.8% respectively. A combined 6.8% accounted for those that were beyond the secondary level in tertiary, vocational or post-secondary institutions.

## 3.4. EDUCATION

EDUCATIONAL LEVEL	PERCENT (within each gender)		TOTAL PERCENT (Within educational level)
	Males	Females	Total
Basic/Infant	6.0	8.3	14.3
Primary/Preparatory	14.5	20.8	35.3
All-age	3.0	4.0	7.0
Junior High	2.7	4.1	6.8
Secondary	11.9	17.3	29.2
Tertiary	1.1	1.8	2.8
Vocational	1.3	1.8	3.1
Post-Secondary	0.4	0.5	0.9
Other	0.2	0.4	0.6
<b>Total</b>	<b>41.0</b>	<b>59.0</b>	<b>100.0</b>

### 3.4.3. ISSUES AND CHALLENGES

#### 3.4.3.1. LACK OF ACCOUNTABILITY

Through the Situation Validation and Visioning Workshops, some parents and students claim that some teachers periodically display lethargic attitudes towards their job. Among the complaints received are: unmarked assignments and teachers using cell phones and other gadgets during class lessons. These issues are believed to impact negatively on the children's learning experience, but the absence of policies governing teaching standards, makes it challenging to measure teacher performance, especially at the primary and secondary levels, and to hold teachers accountable for the results of teaching and learning in classrooms.

#### 3.4.3.2. INCREASING ANTI-SOCIAL BEHAVIOURS AND VIOLENCE IN SCHOOLS

The high levels of anti-social and violent behaviours evident in the local society are being reflected in the local education sector. Over the past decade, there has been a frightening increase in the number of incidents in which students and teachers have been attacked by other students or members of the school's host community. Some of these incidents have resulted in fatalities, serious injuries, and trauma to the school population. Also, there is an upsurge in the number of cases of students engaging in non-consensual sexual activities on school compounds. This overall situation is proving to be a challenge to the management of schools, as most are not adequately equipped to deal with such incidents. Some of these schools lack as much as a perimeter fencing making access of unauthorized persons very easy.

The upsurge in such behaviours is believed to be linked to the social and moral decay in the society which is further linked to poor parenting and a breakdown in family structures. See 5.3.13. Moral and Social Decay, pg. 462.

Nevertheless, a number of intervention programmes have been developed and implemented to address students' antisocial, disruptive and deviant behaviours. These include the Safe Schools Programme and the Programme for Alternative Student Support (PASS). Most recently, the Ministry of Education has created the School Wide Behavior Modification Intervention Programme. This programme is implemented within a three-tiered framework that entails primary, secondary and tertiary prevention. The components of the programme include the Culture in Education Programme, Change from Within Programme, Health and Family Life Education, and the establishment of additional uniform groups in schools.

## 3.4. EDUCATION

### 3.4.3.3. LOW LEVELS OF PERFORMANCE (PARTICULARLY AT THE PRIMARY AND SECONDARY LEVELS)

According to the SDC (2014) the educational attainment of the parish is generally low. This issue is believed to be linked to the fact that a large proportion of students transitioning from the primary to the secondary level are not ready to manage the secondary curriculum. The 2011 Grade Four Literacy Test Preliminary results obtained from the Education Ministry, Students Assessment Unit showed that the overall mastery for the parish was only 70.2%. A closer analysis of this data revealed some disparity, as the overall mastery level within the public schools was 61.0%, when compared to 79.3% achieved in private institutions.

The trend was similar for the 2011 GSAT examination. The top performing school had averages of 78 in Mathematics, 76 in Science, 74 in Social studies, 73 in Language Arts and 10 in Composition. Despite the national averages in that year being 62, 63, 58, 58 and 8 correspondingly, this is fairly low by international standards. Furthermore, only six other local schools were able to surpass the national averages in all areas.

This low level of performance then transitions and continues in the secondary system as a large proportion of students complete their secondary level education without any form of certification. Data collected by the SDC showed that almost 80% of household heads in the parish had no academic qualification. The same is true for 44.0% of other household members. This low human resource development issue then results in further societal problems, including unemployment. This national issue prompted the launch of the Career Advancement Programme in 2010. This programme seeks to ensure that students leaving secondary school are literate and numerate, and have some form of technical and vocational qualification for post-secondary placement. It caters to students aged 16 to 18 years, by facilitating two additional years at the secondary level in selected institutions, including the Kemps Hill Comprehensive High in Clarendon.

One of the fundamental reasons identified for the overall low performance level is the failure of the education system to make adequate provisions for children with exceptionalities. The Government's Special Education Unit at Hazard Primary aims to provide a two year intervention programme for grades two to four (2-4) students experiencing mild learning difficulties. Students are admitted on the recommendation of a Clinical or Educational Psychologist and are returned to their original schools on completion of the programme of intervention. The Mico Child Assessment and Research in Education (CARE) Centre in Mandeville also provides diagnostic testing and offers remediation services for children, ages four to eighteen, with learning disabilities. After completing the programme at the institution, the younger children are mainstreamed back into their regular classrooms, while the older teenagers are placed in a vocational school. These interventions are believed to be inadequate as demand for these services exceed the supply. In addition, it was highlighted at the Education Sector Meeting that most parents cannot afford the costs to access the services of the Mico CARE Centre.

This issue has however been recognised at the national level which has led to the establishment of the Alternative Secondary Transition Education Programme (ASTEP) in 2011. Under this programme, students who have not been certified literate at the Grade Four level after four (4) sittings of the Grade Four Literacy Test are placed in dedicated ASTEP centres where they will benefit from an alternative instructional path. This strategy is designed to provide them with the teaching and learning environment which will equip them with the necessary competencies for transition to the Secondary level. After two years in the programme, those who are still not ready are referred to special education institutions or placed in a vocational education programme. Since its inception, the programme has been plagued by a number of challenges including an inadequate supply of qualified teachers to effectively work with students with exceptionalities and also, lack of resources. At the Education sector meeting, educators, mainly at the secondary level, unanimously agreed that the programme is failing. They explained that students who transition from the programme into their institutions are still not ready for the secondary curricula and they have to develop special intervention measures for such students. For this reason, it was recommended that the Government revisits the whole programme.

## 3.4. EDUCATION

### 3.4.3.4. LACK OF TECHNOLOGICAL APPLICATION

Globally, educational institutions are attempting to maximise on the use of technologies in the educational process. It has been accepted that the use of modern technologies in schools provides a number of benefits including improved teaching, leadership, and decision making, as well as the following benefits for students:

- Improved learning (e.g., higher standardized test scores);
- Increasing student engagement in learning;
- Improving the economic viability of students (e.g., increasing students' abilities to succeed in a 21st century work environment through teaming, technology fluency, and high productivity);
- Increasing relevance and real-world application of academics;
- Closing the digital divide by increasing technology literacy in all students; and
- Building 21st Century skills (e.g., critical thinking and sound reasoning, global awareness, communication skills, information and visual literacy, scientific reasoning, productivity, and creativity). (Metiri Group, 1992)

Despite the recognition of such benefits, and the continuous growth in digital divide between Jamaica and the developed world, the application of technology in local schools is still low. Several institutions in the parish, particularly in the Upper Clarendon Area, still do not have access to the internet. The traditional educational process is still being employed, despite the obvious fact that education is constantly evolving to incorporate new technologies.

Nonetheless, the MEYI and the MSET recently (March 11, 2014) sealed a deal, which will ensure that 37 learning institutions island wide are equipped with tablet computers for the upcoming academic year (2014-2015), as part of a one year pilot project. The pilot will be administered in 13 primary schools, six all age and junior high schools, 11 high schools, six infant departments, one teacher's college, and one special education institution. The initiative will, in the first instance, involve 728 teachers. Following a review of the pilot, the Tablets in Schools project will be rolled out across the entire island, targeting 600,000 students and teachers.

Such initiatives are critical if Clarendon and by extension Jamaica, is to provide the labour market with persons who have the requisite technological skills to sustain local and national development. To this end, there is the need for more partnerships in this area if Jamaica is to match the efforts of countries like Singapore<sup>97</sup>, which has grown from a similar position to becoming the richest country in the world in 2013.

### 3.4.3.5. INCONSISTENT PARENTAL SUPPORT AND MEANINGFUL INVOLVEMENT IN THE EDUCATIONAL PROCESS

It is widely recognized that if pupils are to maximize their potential from schooling, they will need the full support of their parents. There is no universal agreement on what parental involvement in children education is; however parental education involvement usually starts in the early years of a child's life and the parent continues to be the prime educator until the child attends an institution. While the child is enrolled in an institution, it may now take several forms, ranging from involvement at the school (as a governor, helping in the classroom or during lunch breaks) through to reading to the child at home, teaching songs or nursery rhymes and assisting with homework.

Unfortunately, the visioning workshops held across the parish revealed that generally parental support in the local educational process is lacking. It is believed that parents are not involved enough in their children's educational development. So little is their involvement that teachers often complain that students turn up at school with their homework undone. This is believed to be linked to among other things, poor parenting.

97. Ranked the third richest in 2014

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### 3.4.3.6. LIMITED ACCESS TO POST SECONDARY EDUCATION

While the parish appears to have almost achieved universal access at the early childhood, primary, and lower secondary levels of the education system, access to tertiary and vocational education and training is still limited. This position is as a result of the number of spaces available, the entry requirements of these institutions, and the cost to students. Some local students may be able to access post-secondary education outside the parish, but the number of places available is still limited. Due to the shortage of spaces, these institutions generally seek to enrol the most academically qualified individuals. This does not go well with the fact that educational attainment in the parish is quite low. Furthermore, since the 1980s, Government's support to tertiary educational institutions has been declining, whilst the cost of such level of education has been steadily increasing. This has resulted in exorbitant fees to access tertiary education. The Students' Loan Bureau (SLB) however, provides loan financing for some qualified needy Jamaicans, who desire to access tertiary education. Unfortunately, the interest rate of the Agency is deemed by many to be too high, which serves as a deterrent to some bright talent from seeking assistance. Additionally, some individuals complain that they are unable to meet some the requirements of the loan agency, including finding suitable guarantors.

### 3.4.3.7. LIMITED PROVISIONS FOR THE DISABLED

There are no recent data available from the MEYI regarding the number of school aged children with disabilities. However, the Persons with Disabilities Draft Sector Plan of Vision 2030 (2009) revealed that over 200 children with disabilities were identified in the Clarendon Development Area through various intervention programmes. Nonetheless, the total population of disabled children in the parish is believed to be much higher, as not all such individuals are beneficiaries of those programmes.

Even so, there are only 2 institutions which are dedicated to catering to the educational needs of these children: the Woodside School for the Deaf/May Pen Unit Class for the Deaf, located in Woodside, and Vision of Hope, located in Denbigh. Additionally, a few other schools, such as the Kellits High School, are reported to have been equipped with access ramps and other facilities for the physically disabled.

Despite these provisions, the demand for special education services in the parish far outweighs the current supply. Testament to this is the fact that data from the SDC (2014) revealed that disability was a significant factor contributing to relatively low attendance levels in the parish. This finding was supported by a MEYI report, which provided an assessment of educational provisions and services for persons with disabilities, which stated that despite significant efforts, the Special Education programme all across Jamaica continues to suffer from the lack of sufficient numbers of trained teachers, inadequate facilities and equipment and irregularity in student attendance.

### 3.4.3.8. LACK OF COORDINATION BETWEEN THE EDUCATION SYSTEM AND LOCAL ECONOMY

There is generally a poor alignment between the outputs of the educational system and the demands of the local economy, which is evidenced by the fact that a number of individuals who have exited the system at various levels are unable to find meaningful employment, and are also unable to create their own employment opportunities and contribute to local productivity. At the same time, labour has to be periodically imported to fill some vacancies in the parish. Based on consultation with locals through the Situation Validation and Visioning Workshops, this situation is stemming from the fact that a number of locals are trained in areas where there is limited or no opportunity for local employment or in areas that are already saturated. This is further believed to be resulting from a lack of knowledge of the requirements of the labour market.

It should be noted however that this labour mismatch situation exists despite the MLSS having a national Labour Market Information System (LMIS) which provides information for jobseekers and students

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on potential employment opportunities. The H.E.A.R.T. Trust NTA also recently launched a one-stop area (the Labour Market Information Portal (LMIP)) where up-to-date labour market information is accessible to enable users to understand labour supply and demand trends. It is believed to be used by policy makers, employers, educators/trainers, career/guidance counsellors, programme/curriculum developers, employees, students and potential students, and assists the users in:

- Identifying current and future jobs and skills gaps;
- Aligning training programmes to labour market needs;
- Making decisions about their future career development; and
- Accessing information on skills available in the labour market.

The MEYI is however seeking to address this issue through several programmes, including through the establishment of Science, Technology, Engineering, and Mathematics (STEM) academies at the secondary level. Under this programme, several schools across the island, including the Vere Technical High School, will either be transformed into full STEM academies, or have the subjects incorporated into their current curricula. According to the Ministry, this move is based on labour market information, which points to the need to prepare the labour force for STEM-oriented jobs, and better position Jamaica to be globally competitive in these areas. This has also prompted the Ministry to develop a national curriculum that will see the full infusion and integration of STEM at these levels (including the primary level).

### 3.4.3.9. DEMAND EXCEEDING SUPPLY

The majority of public schools within the parish, across all localities, (urban, rural and remote areas), are operating at numbers well beyond their capacities. Data obtained by the SDC (2014) from the education ministry shows that in 2011, some schools in the parish were accommodating almost twice their capacity. See Appendix for listing pg. 613. This is due to the fact that demand for places is greater than supply, despite the provision of additional classrooms over different intervals of time. Based on the figures obtained, there was a shortage of approximately 8600 places across all levels of the local education spectrum. It should however be noted that lands have been reserved in at least one community, Longville Park, for the construction of a school while a few schools in the parish are operating well below their capacities.

Additionally, student/teacher ratio in some of these public institutions is as high as 38:1. However, the average ratio is approximately 20:1, which is acceptable within the Jamaican context, but quite high by international standards.

### 3.4.3.10. INADEQUATELY TRAINED TEACHERS AT THE PRE-PRIMARY LEVEL

It has been widely accepted that there is a critical shortage of qualified teachers in the early-childhood education sector across Jamaica, with no exceptions for Clarendon. A number of practitioners lack the necessary level of certification required by the ECC under the Early Childhood Act (2003). This issue is believed to have the potential to negatively impact early childhood development, and by extension, the future of our children. As a result, Food for the Poor (FFP) Jamaica, the ECC and the HEART Trust/NTA signed an agreement, in 2012, to provide certification for 500 practitioners within the sector, over a five (5) year period. The International University of the Caribbean (IUC) has also been quite active in training local teachers for this level. The general objective is to develop the staff at the early childhood level with the characteristics, training, knowledge, skills, and attitude to help children achieve their full potential, and to help promote positive behaviours in children.

### 3.4.3.11. LACK OF ACCESS TO QUALITY FACILITIES

A lack of access to quality educational facilities within the Plan area includes a lack of modern sanitary conveniences. Several rural schools within the parish, especially at the primary level, are still utilising pit latrines. These facilities pose physical danger to both the teacher and the student populations, and also

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presents several health and sanitation risks. Additionally, they are usually abhorred by female students and teachers because of the fact that they attract crawling insects.

The prevalence of this issue is believed to be partly linked to the fact that there is an absence of running or piped water within some of these areas. However, the Education Ministry recently announced that \$220 million dollars would be spent on eliminating these facilities island-wide. The construction of the new facilities is proposed to be carried out in two phases, with the first phase under way since March 1, 2014. The second phase is expected to begin at the start of the 2014-2015 school year.

Additionally, the data earlier stated that there are approximately 240 ECIs operating within the Plan area. However, according to the SDC (2014) only 173 are permitted to operate. This means that approximately 67 institutions are operating without the necessary approval. Most of these unapproved institutions lack the appropriate standards and requirements under the Early Childhood Act (2003). They lack the quality outdoor and indoor facilities and equipment which promote the optimal development in children.

### 3.4.3.12. BELOW TARGET ATTENDANCE LEVELS AND HIGH DROPOUT RATES

The average daily attendance rate is generally low within the Plan area. At the early childhood education level, the average daily attendance was 72%, while at the primary level it was 81.6%. The secondary level at 86.9% was the only level to achieve the 85 per cent target set by the Education Ministry (SDC, 2014).

Based on data from the SDC (2014), the inability of some parents to afford the cost of schooling, despite the free tuition policy at the primary and secondary levels, was the most significant factor contributing to the below par attendance level. Other noteworthy factors cited are: a lack of interest, work, house chores, disability, pregnancy, no birth certificate and being pulled out of school because of being a slow learner.

<b>REASONS FOR NON-ATTENDANCE AT SCHOOL</b>	<b>PERCENT</b>
Illness	10.5
Cannot afford it	22.6
Distance	1.9
lack Interest	5.4
Work	3.5
House chores	3.1
migration	7.8
Disability	3.1
Truancy	2.3
Expulsion	0.4
Other	8.9
Not stated	14.8
No reason	15.6
<b>Total</b>	<b>100</b>

Source: SDC (2014)

Residents are of the view that the parish is facing mini dropout crisis. Research and consultation revealed that there may be credence to the claim. Several high schools in the Parish are reportedly witnessing a growing trend in dropouts, particularly girls. This is due mainly to teenage pregnancy. The situation was particularly alarming for the administrators of the Kellits High School.

## 3.4. EDUCATION

### 3.4.4. PARISH STRATEGIES

#### 3.4.4.1. STRATEGIC OBJECTIVE #126

**To improve teacher accountability through the improved monitoring and evaluation of teachers.**

As part of the education sector strategy, teacher accountability will be improved in the parish. In order to achieve the aforementioned objective, the relevant authorities will seek to develop a performance appraisal system for all teachers, and also develop the capacity of principals to become instructional leaders. The former will involve the mandatory appraisal of all teachers at frequent intervals, while the latter will involve developing instructional leadership training programmes for principals. This will result in the improved monitoring and evaluation of teachers, which will provide a way for schools to address underperformance among staff.

#### RECOMMENDED POLICIES

- The implementation of a teacher appraisal system at the primary and secondary levels will be supported by all stakeholders.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a performance appraisal system for all teachers at the primary and secondary levels. This system may be coordinated from the national level or left entirely to the discretion of individual schools.	Short to Medium Term	MEYI, School Boards
Develop mandatory instructional leadership training programmes for principals.	Short to Medium Term	MEYI

#### 3.4.4.2. STRATEGIC OBJECTIVE #127

**To improve the physical conditions of schools which are in a poor state in order to ensure the provision of quality education by all institutions.**

Under this Plan, the infrastructure and learning environment of many local schools will be improved. A number of projects designed to improve public schools and associated facilities will be developed and implemented. These projects will seek to improve school buildings, furniture and fittings, water supply, sanitation and energy supply to under-resourced schools. They will therefore coincide with ongoing programmes, such as the MEYI's programme to remove pit latrines from public schools and the PCJ's programme to install solar energy systems in public sector institutions, including schools, to reduce the Government's electricity bill. These projects will also incorporate the principles of sustainability to ensure that they do not conflict in anyway but help to operationalize the overall parish Vision.

### 3.4. EDUCATION

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that all schools are adequately equipped with furniture and fittings and critical other resources.
- The MEYI will continue the process to eliminate the use of pit latrines in all public schools.
- Schools outside of non-utility service areas will be primarily dependent on rainwater harvesting and storage.
- All schools, including those located within utility service areas, will be equipped with water storage tanks to prevent severe disruptions in water supply, especially during periods of drought.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Undertake needs assessments to identify infrastructure deficiencies in individual schools.	Short Term	MEYI
Develop infrastructure projects to improve the buildings, furniture and fittings, water supplies, sanitation and energy supplies of under-resourced schools, based on the results of the needs assessments.	Short Term	MEYI, Private Sector

#### 3.4.4.3. STRATEGIC OBJECTIVE #128

**To increase classroom spaces at the primary and secondary levels to reduce the pressure on those institutions which are operating above capacity.**

The number of classroom spaces available at the primary and secondary levels in the parish will be increased to ensure the provision of quality education. The majority of the public schools are operating at levels well beyond their capacities due to a shortage of approximately 8600 places across all levels of the local education spectrum. In addition to that, the MEYI is seeking to discontinue the shift system which will also increase the demand for additional spaces. In order to satisfy the demand, some existing schools will be upgraded or expanded, while new facilities will also be constructed. This will if necessary, require adequate planning to ensure that new or existing facilities do not become ‘white elephants’ over a period of time.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that adequate classroom spaces are provided to meet the local demands.
- The relevant authorities will ensure that spaces available at public schools which are operating below their capacities are filled before any consideration is given to increasing the number of classroom spaces available.
- In increasing the number of classroom spaces available, first consideration will be given to the expansion of existing schools rather than constructing new facilities.

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop projects to increase the number of classroom spaces available to meet the local demands.	Short to Long Term	MEYI, Private Sector

#### 3.4.4.4. STRATEGIC OBJECTIVE #129

**To make adequate provisions for children with physical disability in order to support their right to accessing education.**

Children with disabilities have the right to education which is provided in a non-discriminatory manner. Therefore, the provisions made for the disabled in the local education system will be increased. In achieving this objective, emphasis will be placed on inclusive education. Inclusive education is primarily about restructuring school cultures, policies and practices so that they respond to the diversity of the students in their locality. In other words, children with disabilities will be allowed where possible to effectively learn in mainstream schools where the system has been changed to facilitate the participation of all students. All local educational institutions will be mandated to provide access ramps and other facilities to accommodate the physically challenged. Awareness programmes which seek to foster a culture of inclusion for the disabled and also encourage parents of children with disability, to ensure that their children are in school, will also be carried out. Schools will further be encouraged to develop supporting programmes which may include “child to child” clubs which allow disabled and non-disabled children to learn from each other and take part in a wide range of activities together. These would include theatre, singing, dancing and telling stories. Adequate support will be given to special schools in the parish to ensure their continued operation and efficiency in the delivery of services.

#### RECOMMENDED POLICIES

- All educational institutions will be required to provide ramps and other facilities to accommodate the physically challenged.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch awareness programmes which seek to foster a culture of inclusion for the disabled and also encourage parents of children with disability to send their children to school.	Short Term	MLSS
Encourage mainstream schools to develop programmes which support the inclusion of children with disability. Such programmes may include “child to child” clubs which allows disabled and non-disabled children to learn from each other and take part in a wide range of activities together, including theatre, singing, dancing and telling stories.	Short Term	MLSS, MEYI

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide adequate support to special schools in the parish to ensure their continued operation and efficiency in the delivery of their services.	Short to Long Term	MEYI

#### 3.4.4.5. STRATEGIC OBJECTIVE #130

**To ensure the provision of appropriate education for students with exceptionalities to maximize their learning potential.**

As an alternative to the ASTEP, it was suggested that the MEYI develop a central boarding facility for students with exceptionalities in the parish. This facility would be staffed by teachers who possess special skills in teaching these children, together with the necessary supporting staff and, and operating of the primary and junior high levels. The facility would also be adequately equipped with the necessary teaching resources and materials to ensure the success of the institution. Its existence would support earlier intervention in students with exceptionalities, and therefore the capacity of teachers, including at the early childhood level, to identify cases of exceptionalities will be improved. Students who attend the institution would spend a minimum of two (2) years. They would be continuously assessed and those who are showing a high level of competency would be placed in regular school programmes, while those who are challenged in mastering the programmes, would be referred to special education institutions or placed in a vocational education programme when they have completed the junior high level. Since this institution would provide a number of benefits to the Plan area, including an improvement in the quality of labour being supplied to the labour market, the feasibility of developing such a facility will be explored.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that adequate provisions are made in the local education system for children with exceptionalities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the feasibility of developing a central boarding facility for the students with exceptionalities, based on the above description.	Long Term	MEYI
Improve the capacity of teachers, including those at the early childhood level, to identify cases of exceptionalities.	Short to Long Term	MEYI

#### 3.4.4.6. STRATEGIC OBJECTIVE #131

**To encourage the full registration of all ECIs to ensure the provision of high quality education at this level.**

As a strategy to ensure access to quality education at the early childhood level, this Plan promotes the full registration of all ECIs. Under the Early Childhood Act and Regulations of 2005, all ECIs operating in Jamaica must be registered with the ECC, which is the regulatory agency for the sector.

### 3.4. EDUCATION

As part of the registration process, ECIs must satisfy standards for health and safety (public health and fire safety reports and police records); and educational quality, including teacher qualification certificates. They must also pass a stringent inspection process. In order to be fully registered, these institutions must adhere to the 12 standards for operation, management and administration of ECIs in Jamaica. These include: staffing, developmental and educational programmes, interactions and relationships with children, physical environment, health, nutrition, safety, child rights, protection and equality, interactions with parents and community members, administration, and finance. Adherence to these standards is very important for ensuring the provision of high quality education at this level. It follows that all the operators of unregistered ECIs across the parish, as well as those which are registered but are operating without a permit, will be urged to become fully compliant with the agency that regulates ECIs.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure the full registration of ECIs in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish a deadline for the closure of all ECI which remain unregistered.	Short Term	ECC
Encourage registered ECIs which are operating without a permit to become fully registered.	Short Term	ECC
Provide support where possible to ECIs to assist them in improving their standards to the level where they can become fully registered.	Short to Medium Term	Private Sector

#### 3.4.4.7. STRATEGIC OBJECTIVE #132

**To increase access to tertiary education as a strategy to advance human capital to support economic development.**

A key part of the education strategy is increasing tertiary education attainment levels in the parish. Tertiary education is a critical component of human development, as it provides the high-level skills necessary for every labour market. It also provides the training essential to developing the capacity and analytical skills that drive local economies, support civil society, teach children, lead effective governments, and make important decisions which affect entire societies. Since access to tertiary education is limited and competition has become quite fierce, emphasis will be placed on increasing access to tertiary education.

In order to increase access to tertiary education, the number of spaces available will be increased and the funding opportunities expanded. Local tertiary education institutions (including those located in other parishes) will be encouraged to develop and market online courses which will extend the virtual borders of their campuses, even beyond Jamaica. This can significantly increase their revenue earning potential and will also provide a number of benefits to students, including, reduced cost, flexibility to accommodate irregular work schedules, increased accessibility for those with restricted mobility (e.g., the disabled, the injured, and the elderly) and those with family responsibilities (e.g., parents with young children at home), and the comfort to study in any convenient location with an internet connection. In addition to that, local businesses will be encouraged to provide scholarships and grants for prospective tertiary students who may be bonded to their organization for a period following the completion of their education. Furthermore, students who

### 3.4. EDUCATION

utilized the SLB will be encouraged to repay their loans to ensure that the institution can continue to support financially challenged students and fulfil its mandate.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage local tertiary education institutions (including those located in other parishes) to develop and market online courses.	Short Term	MEYI
Launch an education awareness programme to lessen/remove any stigma attached to online degrees and other forms of online certification, particularly amongst employers.	Short Term	MEYI, Tertiary Education Institution
Encourage businesses to provide scholarships and grants for prospective tertiary students who may be bonded to their organization for a period following the completion of their education.	Short to Long Term	MEYI
Develop and implement a continuous local education campaign to encourage students who utilized the SLB to repay their loans to ensure that the institution can continue to support financially challenged students.	Short to Long Term	SLB

#### 3.4.4.8. STRATEGIC OBJECTIVE #133

**To develop and enforce school zoning as a strategy to ensure the efficient utilization of classroom spaces, improve attendance rates, improve student learning productivity, and reduce traffic congestion and its associated economic and environmental impacts.**

School zoning is currently a policy initiative of Central Government which will be embraced within the Clarendon Development Area. This initiative will bring a number of benefits to the parish including the efficient utilization of classroom spaces, improved attendance rates, improved student learning productivity, and reduced traffic congestion and its associated economic and environmental impacts, from a reduction in student commuting long distances.

The enforcement of school zoning will be a carefully crafted and highly consultative process in the parish. At the Education Sector Meeting, it was unanimously agreed that there will be a high level of resistance to such a policy and therefore adequate public awareness will be included in this strategy. In addition to that, consideration will be given to developing zonal boundaries rather than just placing students at the closest institution to their home. Adequate consideration will also be given to special cases where valid reasons are provided that students would be more suited to attending schools outside their zone. Furthermore, the MEYI will seek to ensure that all zones are equipped with the necessary resources to guarantee a minimum acceptable standard of education for all.

## 3.4. EDUCATION

### RECOMMENDED POLICIES

- School zoning will be supported at the early childhood, primary and secondary levels in the parish.
- The enforcement of school zoning will be a highly consultative process.
- The MEYI will seek to give consideration to the development of zonal boundaries rather than just placing students at the closest institution to their home.
- The MEYI will seek to give adequate consideration to special cases where valid reasons are provided that students would be more suited to attending schools outside their zone.
- The MEYI will seek to ensure that all school zones are equipped with the necessary resources to guarantee a minimum acceptable standard of education for all.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage government to develop a formal national school zoning Policy.	Short Term	School Boards
Develop and implement a public awareness programme aimed at adequately sensitising locals about the proposed school zoning, including why it is necessary e.g. main objectives and real benefits to be realized by the parish.	Short Term	MEYI

#### 3.4.4.9. STRATEGIC OBJECTIVE #134

**To ensure that daily attendance rates at all levels of the education hierarchy achieve the 85 per cent target set by the MEYI.**

Efforts to improve school attendance are an integral part of the larger local education sector's strategy. Since the below par overall attendance rate is a consequence of several different factors including the inability of parents to afford the cost of schooling, child labour, a lack of interest and truancy, a wide range of actions will be implemented to ensure that targets of the MEYI are surpassed. These actions generally address the more widespread issues and will include enforcing school zoning, promoting parental involvement in the education process, reducing child labour, and improving the transportation system.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #133 (pg.291) and #137 (pg. 296) of this Plan.	Short to Long Term	MEYI
Support Strategic Objective #231 of the Governance section of this Plan (pg. 469)	Short to Long Term	MEYI

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective #101 of the Social Security section of this Plan, pg. 245	Short to Long Term	MEYI
Support Strategic Objective #18 of the Transportation section of this Plan (pg. 92).	Short to Long Term	MEYI

#### 3.4.4.10. STRATEGIC OBJECTIVE #135

**To undertake human capital reform in order to support socioeconomic development.**

Human capital reform is critical to improving not only economic growth but also social conditions in the parish of Clarendon. As highlighted earlier, there is generally a poor alignment between the outputs of the educational system. Furthermore, there is a gap between the skills required for sustained economic growth and the skills profile of the labour force. This situation underscores a need for human capital reform to ensure that the skills profile of the labour force actually match the demands of the labour market and the local economy. This will be achieved through greater coordination among stakeholders in education and training, as well as the promotion of long life learning.

##### 3.4.4.10.1. STRATEGIC OBJECTIVE #135A

**To strengthen the quality and relevance of education programmes and the link between education and the labour market as a precondition for employability and economic development.**

There is a need to ensure that the skills entering the labour force actually match the demands of the labour market and the local economy. In order to achieve this objective, improved coordination among employers, educators, local government, students and potential students will be promoted. Knowledge of the LMIP will be increased locally, as a way to encourage students and potential students to seek education and training in areas where the likelihood of being employed is highest and can contribute to local economic development. Similarly, the parish Job Board, which will be developed in conjunction with the private sector, (See 4.1.5.6. Strategic Objective #162, pg.350) will be used to identify trends in skills demanded, which will then be marketed to assist students and potential students in choosing their field. Local education and training institutions will also be encouraged to utilize the data from these medium in developing education and training programmes in the areas with the highest demand. Furthermore, cooperation and dialogue between local education and training institutions and employers will be promoted, as a way of ensuring that programmes are structured with due consideration to the needs of the local economy. This strategy will not only increase productivity and help to reduce unemployment, but will also help to address the brain drain issue in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase knowledge of the LMIP as a way to encourage students and potential students to seek education and training in areas where the likelihood of being employed is highest and can contribute to local economic development.	Short Term	MEYI, School Admin-istrations

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the development of the parish job board. (See 4.1.5.6. Strategic Objective #162, pg.350)	Short to Medium Term	MEYI, CPC
Identify and market trends in skills demanded based on the parish job board.	Short to Long Term	CPC
Encourage local education and training institutions to utilize the data from the LMIP and the parish Job Board to develop programmes in the areas with the highest demand.	Short to Medium Term	MEYI
Encourage cooperation and dialogue between local education and training institutions and employers as a way of ensuring that programmes are structured with due consideration to the needs of the local economy.	Short Term	MEYI

#### 3.4.4.10.2. STRATEGIC OBJECTIVE #135B

**To promote lifelong learning as part of the human capital reform strategy.**

Lifelong learning will be promoted as a critical part of the local development strategy. It is necessary to improve the below desired adult literacy rate and to improve the quality and competitiveness of the labour force. Since education and training are essential to development and success in today's knowledge based society and economy, illiterate adults in the Parish will be encouraged to become enrolled in a lifelong learning institution. At the same time, the relevant authorities will seek to increase access to these institutions. Additionally, continuous learning will be promoted as a strategy for personal and professional development and to keep pace within the dynamic global society.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to increase access to opportunities for lifelong learning.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage illiterate adults in the parish to become enrolled in a lifelong learning institution.	Short Term	Jamaica Foundation for Life-long Learning (JFLL), SDC, MLSS
Promote lifelong learning as a strategy for personal and professional development and to keep pace with the dynamic global society	Short Term	JFLL, SDC, MLSS

## 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase the number of lifelong learning institutions in the parish.	Short Term	JFLL

### 3.4.4.11. STRATEGIC OBJECTIVE #136

**To integrate ICT in the local education system in order to keep abreast of global trends and to maximize on the benefits of utilizing technology in the education processes.**

As a key strategy to ensure the provision of labour with the requisite technological skills to sustain local and national development, this Plan promotes the increased application of ICT within the local educational process. Educational institutions all around the world are incorporating ICT into the education process, and according to the United Nations Educational, Scientific and Cultural Organization (UNESCO), the move to advanced technology use in schools offers great hope for improving the access, quality, and efficiency of basic education. Therefore in order to keep abreast of global trends and maximise on the benefits of utilizing technology in the education process, the increased use of ICT will be promoted.

The incorporation of ICT in the educational process will involve a number of different initiatives ranging from the training of teachers to the provision of adequate ICT infrastructure. The schools' curricula will be redesigned to integrate the usage of ICT in learning materials and to reduce the use of paper-based exams in students' performance assessment and integrate ICT-based performance into the assessment portfolio. Teachers will also be trained to enhance their qualification and familiarity to using ICT as teaching tools. Furthermore, schools will be equipped with adequate hardware, software and internet connections and institutions such as PowerSchool<sup>98</sup> and SchoolNet<sup>99</sup> will also be established. Key concerns regarding the inappropriate use of technology in schools by students for purposes such as pornography will be addressed through adequate monitoring and the installation of safety and security features. The relevant authorities will also ensure that the implementation of technology in the schools is balanced so reducing/eliminating inequities in school quality and student learning.

### RECOMMENDED POLICIES

- The relevant authorities will also ensure that the implementation of technology in the schools is balanced so reducing/eliminating inequities in school quality and student learning.
- The relevant authorities will seek to prevent the inappropriate use of technologies in schools by students through adequate monitoring and the installation of safety and security features.

98. PowerSchool is a secure web-based student-information system that provides real-time updates to parents, teachers, students, and school administrators about grades, attendance, and assignments. It features an email notification of grade changes, and parents can view their student's profile.

99. Schoolnet is the instructional improvement system located within PowerSchool. Through Schoolnet, educators can create, deploy, and manage a variety of classroom assessments and have immediate access to actionable data to make real-time adjustments in instruction where needed. Everything done in Schoolnet connects directly and immediately with student information in PowerSchool. For example, when tests are scanned using Schoolnet, the grades immediately appear in the PowerSchool gradebook.

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Equip schools with adequate hardware (computers or laptops, tablets, multimedia projectors, document cameras, smartboards, etc) software and internet connections.	Short to Long Term	MEYI, MSET
Establish institutions such as “PowerSchool” and “SchoolNet” to support the integration of ICT in education in all local schools.	Long Term	MEYI, MSET
Redesign the schools curricula to integrate the usage of ICT in learning materials for as many subjects as possible.	Short to Medium Term	MEYI
Reduce the weighting of paper-based exams in students’ performance assessment and integrate ICT-based performance into the assessment portfolio.	Medium to Long Term	MEYI
Provide training for teachers to enhance their qualification and familiarity to use ICT as teaching tools. This will also serve as an incentive for teachers to incorporate ICT in their practice.	Short to Medium Term	MEYI, MSET

#### 3.4.4.12. STRATEGIC OBJECTIVE #137

**To promote parental involvement in the local education process to advance children’s achievement and to support the democratization of school governance.**

Research shows that children are more likely to succeed academically and are less likely to engage in violent behaviours if their families are involved in their education. This Plan therefore promotes increased parental involvement in the local education process as a strategy to support improved academic performances and a reduction in anti-social behaviours, including violence, in local schools. It is anticipated that parents will play a role not only in the promotion of their own children’s achievements but more broadly, in school improvement and the democratisation of school governance.

The strategy to increase parental involvement in the local education process will focus primarily on three areas: providing parents with information; giving parents a voice; and encouraging parental partnerships with schools. These objectives will be met through the implementation of several actions, including public awareness, the promotion of ICT in schools, and the development of classroom parental volunteer programmes. This will also help to foster good parenting skills.

### 3.4. EDUCATION

#### RECOMMENDED POLICIES

- All local schools will, where necessary and possible, reach out to their host communities for resources to strengthen their structure.
- Local schools will seek to accommodate parents' work schedule, language and cultural differences as far as is possible.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement an awareness programme which highlights the importance of parental involvement in the education process. This programme should also highlight ways in which parents can get involved.</p>	<p>Short to Medium Term</p>	<p>MEYI, ECC, School Administrations</p>
<p>Ensure that all parents have regular access to clear, concise, and easily readable information about their children's school and classroom activities. This strategy may involve the provision of school newsletters and related materials, as well as the use of PowerSchool which is a secure web-based student-information system that provides real-time updates to parents, teachers, students, and school administrators about grades, attendance, and assignments via email notification (See 3.4.4.11. Strategic Objective #136, pg. 295). The option of sending PTA minutes to all parents, including those who were absent, should also be explored.</p>	<p>Short to Long Term</p>	<p>School Administrations</p>
<p>Develop classroom parental volunteer programmes in all local schools.</p>	<p>Short to Long Term</p>	<p>MEYI, ECC, School Administrations</p>
<p>Develop mechanisms in schools which allow parents to act as full partners in making some of the critical school decisions that will affect children and families. This may involve strengthening the Parents-Teachers Association (PTAs) in local schools.</p>	<p>Short to Medium Term</p>	<p>School Administration, MEYI</p>

## 3.4. EDUCATION

### 3.4.4.13. STRATEGIC OBJECTIVE #138

#### **To reduce violence and other anti-social behaviours in schools.**

Preventing the onset or recurrence of antisocial behaviours in schools and ensuring that students feel safe on campus are among the specific objectives of the education section of this Plan. A range of interventions, which will be of four (4) main types, will be used to achieve the desired outcomes. These are: early interventions, coercive interventions, developmental interventions, and situational interventions. Early interventions, which seek to reduce the prevalence of risk factors during children's development, will be the primary focus of this strategy. It will mainly target the younger children and will be used as a means to prevent the onset of offending. These interventions include education and training programmes for parents, children and teachers. The coercive interventions will be used, to sanction or punish offenders. That is, these interventions will be designed as restrictive, regulatory or punitive measures, including imprisonment or detention. There will be no discretion to ignore or 'cover up' an offence, but school administrations will ensure that sanctions are appropriate to the offence. Developmental interventions will be used to rehabilitate offenders by helping him/her to develop the skills and capacities required to lead a more socially constructive lifestyle. This type of intervention will include behavioural, skills and education programmes for offenders (and sometimes their families). It will help to reduce the potential for the recurrence of antisocial behaviours on the part of offenders. The situational interventions will be used to reduce the opportunity to commit crime. Such interventions will include actions as the installation of surveillance cameras, supporting the searching of students where appropriate and policing areas with a high potential for student antisocial behaviours.

These interventions will be complemented by, and will also complement other strategies of this Plan. The promotion of parental involvement in the local education process (see 3.4.4.12. Strategic Objective #137, pg.296), as well as the development of parenting skills (see 3.3.5.1. Strategic Objective #112, pg. 263) in the parish will also help to reduce antisocial behaviours in schools. In turn, reducing antisocial behaviours in schools will also help to reduce juvenile delinquency as well as the potential for adult criminality, as early interventions will reduce the prevalence of risk factors associated with delinquent behaviours and strengthen protective factors that insulate the youth from situations that may favour the development of delinquent behaviours.

#### **RECOMMENDED POLICIES**

- School administrations will ensure that all crimes committed in schools are reported to the Police and the other relevant authorities. There should be no discretion to ignore or 'cover up' an offence.
- School administrations will apply sanctions to all anti-social behaviours in schools, and the sanction will be appropriate to the offence.
- All students who are suspended from school will be required to enrol in the Clarendon Peace and Justice Centre.
- School detention sessions will be used as rehabilitative sessions to help to ensure that student offenders are less likely to end up at the Peace and Justice Centre again.

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Create behavioural parent training programmes which teaches parents to be consistent in reinforcing helpful behaviour and punishing or ignoring hostile or unco-operative behaviour in children.</p>	<p>Short Term</p>	<p>Child Development Agency (CDA)</p>
<p>Incorporate child skills training programmes into the school curricula at the early childhood and primary levels to directly teach students social, emotional and cognitive competence by addressing appropriate social skills, effective problem solving, anger management and emotion language.</p>	<p>Short to Medium Term</p>	<p>ECC, MEYI</p>
<p>Train school staff members to be observant and respond to student needs before they result in unhealthy behaviours. This training should include a clearly articulated process for threat assessment.</p>	<p>Short to Medium Term</p>	<p>MEYI, CDA</p>
<p>Ensure that students are adequately aware that behaviours which threaten the security and safety of the school environment will be recorded to the account of the students involved and this will have a negative impact on their future prospects.</p>	<p>Short to Long Term</p>	<p>School Administration</p>
<p>Reorganise grades or classes at the secondary level to group high risk or disruptive pupils for periods of the school day, teaching them an alternative curriculum with material using cognitive behavioural methods.</p>	<p>Short to Medium Term</p>	<p>MEYI</p>
<p>Develop anti-bullying programmes in all local schools at the early childhood to secondary levels.</p>	<p>Short to Long Term</p>	<p>MEYI, ECC</p>

### 3.4. EDUCATION

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop programmes in schools to reward good behaviour.	Short to Long Term	School Administrations
Strengthen the powers of Deans of Disciplines to give them powers equivalent to that of special District Constables in order for them to better handle some of the behavioural problems of students.	Short to Medium Term	MNS, MEYI
Encourage students to identify and report anti-social behaviours on school compounds.	Short to Long Term	School Admin-istrations, MEYI
Strengthen the Capacity of the Clarendon Peace and Justice Centre which provides remedial skills training and support for students suspended from schools.	Short Term	MOJ
Develop a school detention policy which facilitates the wise use of detention sessions. Such sessions should be used as rehabilitative sessions to help to ensure that student offenders are less likely to end up there again.	Short Term	MEYI
Encourage the installation of surveillance cameras in all local schools to serve as a deterrent and to increase the potential for identifying offenders.	Short Term	MNS, Clarendon Police Division
Ensure that all local school compounds are properly fenced.	Short to Long Term	MEYI, MNS
Ensure that all schools have functioning metal detectors in place.	Short to Long Term	MEYI, MNS
Partner with the police to undertake before and after school patrols of areas with a high potential for student anti-social behaviours.	Short to Long Term	School Administration

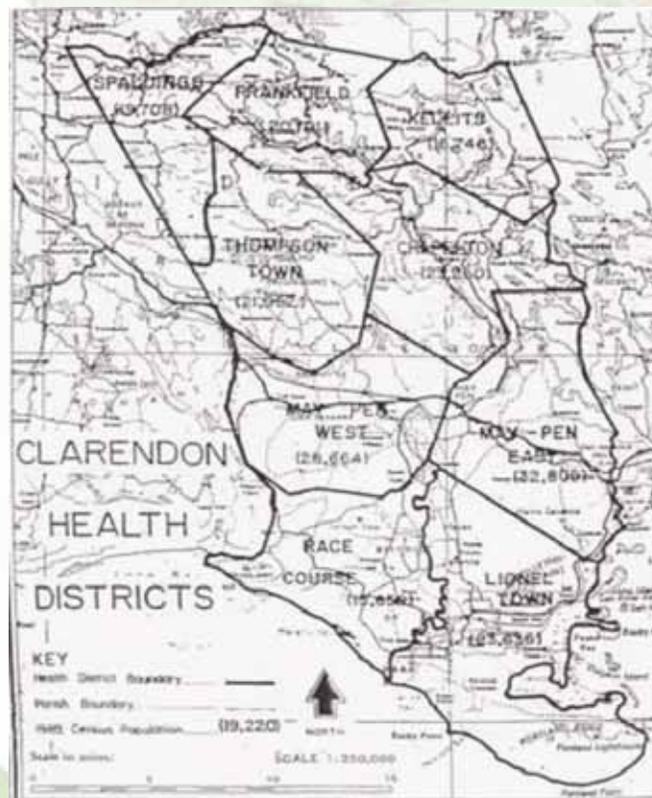
## 3.5. THE HEALTH SECTOR

### 3.5.1. OVERVIEW AND BACKGROUND

The health sector in Clarendon is comprised of the public sector, which provides services to the majority of Clarendonians at the primary, secondary and tertiary levels at a highly subsidized cost (no user fees are charged) and the private sector which provides an alternative paid service to the public.

The public health services of Clarendon is administered by the MOH, through the Southern Regional Health Authority (SRHA) which is the second largest of all the regional health authorities in Jamaica. The SRHA oversees public health services in the parishes of Clarendon, Manchester and St. Elizabeth. Health care is delivered in the SRHA through a network of six (6) hospitals with a total of 648 beds - (2 Type B, 3 Type C and 1 Community hospitals); two (2) rural maternity centres and seventy four (74) health centres (SDC, 2014).

Each of the parishes within the SRHA has a health department which is headed by a Parish Manager. These health departments are responsible for managing the operations of the various health districts throughout their respective parish. Clarendon, which is the largest parish within the SRHA, is divided into nine (9) health districts as shown on the captioned map. This comprises three hospitals and thirty-one health centres. The hospitals comprise a Type B facility (the May Pen Hospital), a Type C facility (the Lionel Town Hospital) and a Community Hospital (the Chapelton Hospital), while the health centres include nine Type 3 facilities, ten Type 2 facilities, and 12 Type one facilities. Each health district generally has three to five (3-5) health centres, including a Type 3 facility.

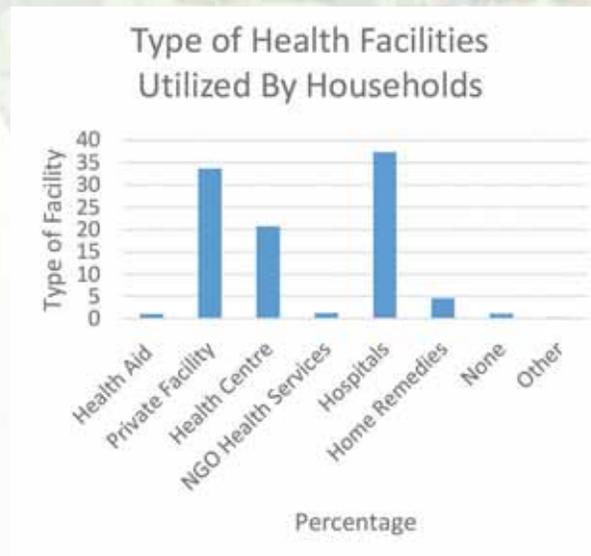


There are three (3) main layers to the delivery of care in the public health sector, namely; primary, secondary and tertiary. The primary level includes all the parish's health centres, as well as the Chapelton Hospital, and is the first point of access by citizens to the health services. Patients are assessed and appropriately referred to the next layer of the health care system (the secondary level) depending on the nature of care that they require. The secondary level includes the May Pen and Lionel Town hospitals<sup>100</sup>. Patients requiring admission and/or surgical procedures and an overall advanced level of care, receive medical care at this level. The third layer is the tertiary level, and this involves highly specialized services. There is no tertiary level facility within the parish or the SRHA.

## 3.5. THE HEALTH SECTOR

Residents will generally access such a facility in Kingston. In addition to the public health services, the parish has a vast array of private health facilities. These facilities range from private medical centres to pharmacies, which complement the offerings of the public sector. Most of these facilities are located in and around the May Pen region. Data on this sector of the local health services is however lacking.

The private sector is touted by many as the leader in terms of the quality of services offered, but data from the SDC (2014) revealed that the most preferred choice of households in the parish is the public sector. As reflected on the figure below, 58 percent (58%) of households utilize the public health facilities, while 33.6 percent (33.6%) utilize the private health sector. Most of the other households in the parish utilize a range of services including home remedies and health aid, while 1.2 percent utilizes none. The choice of care that residents make is believed to be heavily dependent on the cost of accessing the services.



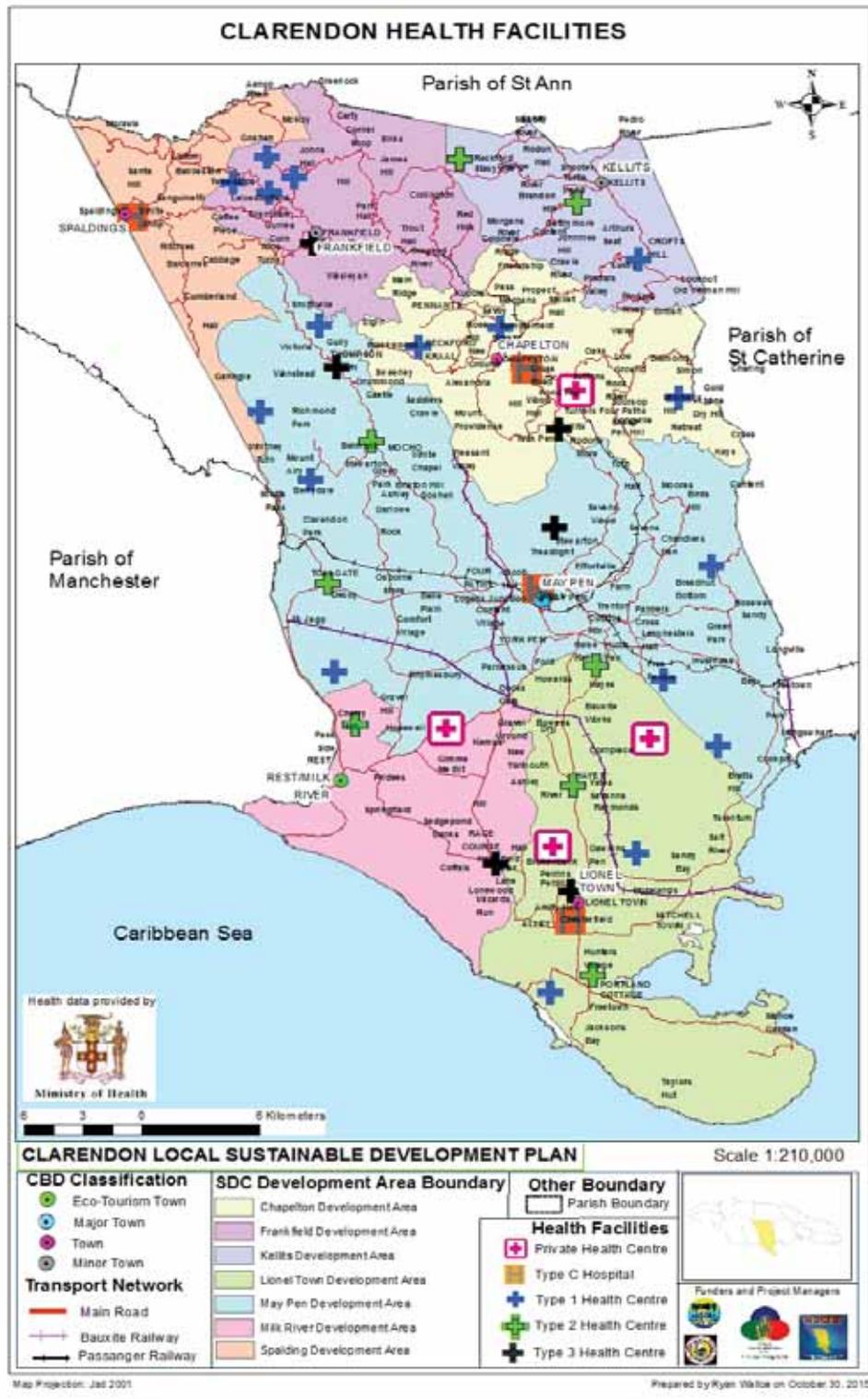
### 3.5.2. HEALTH SECTOR ISSUES AND CHALLENGES

#### 3.5.2.1. UNEVEN DISTRIBUTION OF HEALTHCARE INSTITUTIONS

Health districts were established as a strategy to rationalize the distribution of primary health care. However, the current boundaries were delineated in 1986, and will not be able to support the planned development of the parish, which includes the concentration of growth and development in designated areas. In areas targeted for growth, there is either no health facility or the growth in population will likely exceed the present capacity of particular health centres. For instance, the Longville Park area will be developed into a growth centre, but currently there is no health centre within the area, and furthermore there is no operational Type 2 or Type 3 health centre within the May Pen East Health District in which it falls. This situation emphasizes the need for the redistribution of primary health care in the parish.

100. As a type C facility, the Lionel Town Hospital only provides basic secondary care services.

# 3.5. THE HEALTH SECTOR



## 3.5.2.2. UNDER-RESOURCED FACILITIES

Several of the health care institutions in the parish are under-equipped and under-staffed with respect to some categories of staff. The ability of these institutions to deliver the required level of service is severely restricted by these shortcomings. For instance, the Alston, James Hill, York Town and Milk River health centres are Type 2 facilities which function as Type 1, while the May Pen East/ Main Street facility is a Type 3 which functions as a Type 1, due to limitations, including human resources. As a result of this, there are frequent complaints from the public on the poor quality of service delivered in the public health sector; patients often complain of having to wait long hours in order to get assistance.

## 3.5. THE HEALTH SECTOR

As the parish's population increases, these shortcomings will only be brought into greater focus, and the overall quality of the service provided will further decline.

### 3.5.2.3. OVERCROWDING OF THE MAY PEN HOSPITAL

Overcrowding has become a recurring problem at the parish's premier hospital, the May Pen Hospital. At times, the facility experiences increased patient loads which results in it exceeding its capacity to function normally. The latest incident occurred in January 2015, and resulted in the Hospital accepting only emergency cases due to a shortage of space. This prompted a decision to hire additional medical personnel at the Lionel Town Hospital in order to accommodate patients who were transferred from the May Pen facility. This is due in part to the fact that the facility is often pressured with primary health care concerns which should be dealt with by the parish's health centres. With the parish earmarked for significant development and the population increasing steadily, the pressure on the May Pen Hospital will likely increase. Without intervention, such occurrences will likely increase.

### 3.5.2.4. HIGH COST OF INTENTIONAL INJURIES AND ROAD ACCIDENTS

Violence and road accidents are impacting negatively on the local health sector. Injuries from these incidences continue to cost the state as resources have to be allocated to facilitate the management and treatment of victims. This is impacting heavily on the budget of the MOH, and further preventing the development of the local health sector in other capacities. Furthermore, according to the SDC (2014), the number of adults and children who utilize the mental health services in the parish is on the rise due to social considerations particularly related to violence. This is overwhelming the staff compliment available, and highlighting a need for intervention in terms of providing additional staff e.g. a Social Worker and Child Psychologist to provide needed support to patients or measures to reduce violence in the parish.

### 3.5.2.5. VULNERABILITY TO DISASTERS

The vulnerability of the parish's health sector to natural disasters is an area of significant concern. The continuous provision of services by the sector is essential to the health and safety, of the local population. However, in the past, healthcare facilities have been damaged or rendered inaccessible by various events. The May Pen Hospital was damaged by hurricane Ivan in 2004 and again by hurricane Dean in 2007. The Chapelton Hospital was also made inaccessible due to water, debris and fallen trees which blocked the access road leading to the hospital following the passage of Hurricane Wilma in 2005. These situations can result in catastrophic loss of life and significant harm to public confidence, as the continuous provision of services, including during and immediately after extreme events, is vital to minimising the impact of disasters on the parish.

Clarendon's vulnerability to natural hazards is a threat to human health. Natural events can result in injuries and deaths and there is also a high potential for natural hazards in the parish to lead to outbreaks of diseases, particularly tropical (vector-borne) and water-related diseases. With climate change likely to increase the frequency of such events, it means that the risk posed by natural hazards will increase.

### 3.5.2.6. ENVIRONMENTAL RISKS AND CLIMATE CHANGE

In many parts of Clarendon, waste of all types is improperly disposed of and the atmosphere is polluted through sources such as emissions from factories and automobiles (See. 2.1.2.3. Pollution, pg. 57). This situation is presenting a significant risk to public health, as the state of the environment is a major determinant of human health. Such conditions support the spreading of diseases and vectors of diseases such as rats and mosquitoes. They are already identified as factors that influence the prevalence and management of a wide gamut of communicable diseases present in different parts of the parish. Communicable diseases present in the parish include Respiratory Tract Infections, Skin Conditions (in particular Fungal

## 3.5. THE HEALTH SECTOR

and Scabies), and Gastrointestinal/ Diarrhoeal Diseases (SDC, 2014). In addition to that, the parish is endemic for illnesses such as Dengue fever and Leptospirosis which are supported by the aforementioned conditions (SDC, 2014). It is necessary to implement appropriate measures to enlighten the population on acceptable ways of disposing of waste and implement standards that will contain the levels of atmospheric, water, and ground pollution.

In addition to that, climate change which is fuelled by pollution will affect the most fundamental determinants of human health (air, water, food, shelter, and freedom from disease) and likely increase the prevalence of some diseases. Higher temperatures will fuel the proliferation of mosquitoes and other disease carriers, giving rise to more incidences of vector-borne diseases (such as dengue fever, Malaria and yellow fever). It will also likely increase the occurrence of heat and stress related injuries. Increases in the frequencies of water-related diseases, such as dysentery, typhoid and cholera, are also expected, particularly following extreme rainfall events. This is linked to the fact that climate change will increase the frequency of extreme weather events, producing more flooding and drought. There is an urgent need to fully integrate climate change concerns into local health policies and plans.

### 3.5.2.7. GROWTH IN CHRONIC AND LIFESTYLE DISEASES

As with the rest of Jamaica, there has been a shift in the parish's epidemiological profile from communicable to non-communicable diseases (NCDs) over the past few decades (SDC, 2014). Diseases such as cancers, hypertension and diabetes have become the most common health concerns within the parish. This shift is believed to be the result of lifestyle changes, which are further resulting from changes in the global environment. Four (4) underlying risk factors; tobacco use, unhealthy diets, physical inactivity and the harmful use of alcohol, have been identified as largely responsible for the development of these NCDs, and such risk factors are believed to be fairly common in Clarendon. As a result, the majority of the curative services provided at the local health centres have been concentrated on the prevention and management of these illnesses. This highlights the need for the population to take responsibility for the preservation of its health and for early interventions at the primary level to reduce/prevent the onset of chronic illnesses.

### 3.5.2.8. HIGH LEVELS OF TEENAGE PREGNANCY

Teenage pregnancies continue to be a major problem all across Jamaica, with no exception for the parish of Clarendon. Poor parenting (including absentee parent(s)), low self-esteem and moral values, poverty, peer pressure, a lack of education concerning the negatives of early parenthood, a lack of community involvement in the rearing of children, dancehall music, the media, and the commercialization of sex are some of the issues believed to be impacting on the psychological development of the parish's children, giving rise to adolescent pregnancies<sup>101</sup>. The birth rate among adolescent mothers in the parish is estimated to be approximately 74 per 1,000, which is above the general rate of 72 per 1,000 for Jamaica. Many of these teenage mothers are below the age of fifteen (15), and most of these pregnancies are also unplanned, placing the children at risk for educational failure, social instability and emotional disturbances.

Additionally, the National Family Planning Board noted that adolescents are likely to have low use of antenatal health-care services, babies with low-birth weight, premature babies, and suffer from complications during labour and postpartum challenges, which lead to higher morbidity and mortality for themselves and their children.

It should be noted that a national study conducted by A. Crawford, T. Crawford and McGrowder (2009) revealed that a lack of confidentiality is a sore point, which is discouraging teens from seeking advice regarding sexual and reproductive health. This is inhibiting communication with health care providers at the health centers and guidance counselors at their schools, on sexual related matters.

<sup>101</sup>. Based on consultations with residents.

## 3.5. THE HEALTH SECTOR

The study also found that reservations also stem from having shared social settings (church, family circle, clubs) with health professionals, hence fear for a breach of confidentiality.

### 3.5.2.9. UNDERAGE DRINKING

Underage drinking is a risk that is attracting many adolescents in the Plan area. There is no official statistic for the parish of Clarendon, but data collected by the National Council on Drug Abuse (NCDA) revealed that seventy per cent (70%) of teenagers all across Jamaica drink alcohol, with more than one-third (1/3) of them being drunk more than once (Budd, 2012). In addition to that, the Situation Validation and Visioning Workshops highlighted the fact that alcohol abuse among teenagers is a major concern.

Aside from being illegal, underage drinking is a widespread public health problem that poses many risks. Youths who drink alcohol are likely to experience: educational problems, such as high rates of absence and poor or failing grades; social problems, such as fighting and lack of participation in youth activities; legal issues, such as physical and sexual assault; unwanted, unplanned, and unprotected sexual activity; disruption of normal growth and sexual development; a high risk for suicide and homicide; and memory problems. An analysis of the data collected by the NCDA shows that 50 per cent of the students that used alcohol got in trouble with school authorities because of bad behaviour, including violent confrontations (Tucker, 2014).

## 3.5.5. PARISH STRATEGIES

### 3.5.5.1. STRATEGIC OBJECTIVE #139

**To rationalize the distribution of primary healthcare across the parish.**

With the implementation of this Plan, the relevant authorities will be encouraged to realign the boundaries of the parish's health districts. The current boundaries were delineated in 1986, and will not be able to support the planned development of the parish, which includes the concentration of growth and development in designated areas. That is, areas where growth will be accommodated based on the propensity of locals to gravitate towards these areas to access services, are not necessarily where health centres are currently located; or the planned development of certain areas will overwhelm the present capacity of particular health centres. Therefore, the realignment of the boundaries will be encouraged to improve the efficiency in the distribution of primary healthcare.

As part of this strategy, it will further be recommended that new health district boundaries coincide with those of the Parish's DAs. The DAs are groupings of communities, based on geographic, demographic, economic and social criteria, with the potential for growth, and where persons gravitate towards their centres or hub for their socio-economic activities. However, large DA's such as the May Pen DA should be subdivided along community boundaries. These DAs should be split in such a way that no more than one growth centre is located within a boundary. Furthermore, these boundaries should not dissect the growth centres or the rural settlement nodes.

To complement the above, appropriate policies will be implemented to support the equitable distribution of primary healthcare across the parish. Current policies require that each health district has a Type 3 health centre, and this facility will be located within the growth centre, which may have more than one health centre based on its size. However, where there is no growth centre, the type 3 facility will be located within the most central rural settlement node. Nonetheless, rural settlement nodes should generally have at least a Type 2 facility.

### 3.5. THE HEALTH SECTOR

#### RECOMMENDED POLICIES

- The boundaries of health districts should not divide designated growth centres or rural settlement nodes.
- No more than one growth centre should be located within the boundaries of a health district.
- All health districts will have at least one fully functioning Type 3 health centre.
- The Type 3 health centre, within each health district, should be located within the growth centre; where there is no growth centre, the facility should be located within the most central rural settlement node.
- Rural settlement nodes will generally have at least a Type 2 health centre.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Realign the boundaries of the parish's health districts to support the planned growth and development of the parish.	Medium Term	MOH
Re-examine the distribution of primary health centres within the health districts and determine whether or not there is a need to upgrade or downgrade particular facilities to support the policies outlined above.	Medium to Long Term	MOH
Undertake upgrading or new construction works to ensure the provision of the facilities to deliver levels of services required.	Short to Long Term	MOH

#### 3.5.5.2. STRATEGIC OBJECTIVE #140

**To provide healthcare institutions with adequate resources to ensure the provision of quality services.**

The provision of a high standard of healthcare is necessary to support social wellbeing which is critical to human productivity. Hence this Plan is supporting the development of quality healthcare institutions in the parish. In order to achieve this objective, healthcare facilities in the parish will be equipped with the necessary resources to support population trends and to provide the level of care they were designed for. This includes both human and non-human resources. Needs assessment will be carried out at all healthcare institutions, and these facilities will be equipped with the necessary resources based on the results of the analysis.

### 3.5. THE HEALTH SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Undertake needs assessments at all local healthcare institutions to determine the resources required.	Short to Medium Term	MOH
Equip local health institutions with the necessary human and non-human resources based on the needs assessment.	Short to Long Term	MOH, Private Sector

#### 3.5.5.3. STRATEGIC OBJECTIVE #141

**To reduce the strain on the May Pen Hospital to ensure the continuous provision of an efficient and effective level of service.**

It is critical that measures be implemented to reduce the strain on the May Pen Hospital. Overcrowding has become a recurring problem at the facility, which often exceeds its capacity to function normally. This issue must be resolved to ensure the efficient and effective provision of service.

In order to achieve the above objective, a number of actions will be undertaken. The Lionel Town Hospital will be expanded and upgraded to a fully functioning Type B facility. The distribution of primary healthcare facilities will also be rationalised, and a public education campaign will be undertaken to encourage residents to access primary care within their locale instead of travelling to Hospitals. Health centres will be promoted as the first point for accessing health services. In addition to that, measures will be implemented to reduce the number of road accidents and incidences of violence in the parish, which will reduce the number of victims to be treated at the facility.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Expand and upgrade the Lionel Town Hospital to a Type B facility.	Long Term	MOH
Support Strategic Objectives #139 and #143 of this Plan (pgs. 306 and 309).	Medium to Long Term	MOH
Launch a local education campaign to promote health centres as the first point for accessing health care.	Short Term	MOH, Clarendon Health Department

#### 3.5.5.4. STRATEGIC OBJECTIVE #142

**To improve resilience to disasters to ensure the provision of quality services during and immediately after disaster events.**

It is necessary to enhance the resilience of the local health sector. The capacity of the sector to provide an efficient and effective level of service during and after major events is of concern, as there have been instances where health facilities have sustained varying levels of structural damage or have been made inaccessible. This can have significant socioeconomic consequences, as the provision of services by the sector is essential to the health and safety of the local population.

### 3.5. THE HEALTH SECTOR

It is essential to enhance the resiliency of the local health sector to avoid/reduce disruption and ensure the provision of quality services during and immediately after disaster events. This objective will be achieved by undertaking Vulnerability Assessments of healthcare facilities, prioritizing the risks identified, and implementing plans to make the infrastructure more resilient. Additionally, new facilities will be sited in such a way that they avoid or minimise hazard exposure. See 2.3.9.19. Strategic Objective #95, pg. 220

#### 3.5.5.5. STRATEGIC OBJECTIVE #143

**To reduce violence and transportation accidents as a strategy to ease the pressure on the local health sector and ensure that more resources are available to spend elsewhere in the local health sector.**

As part of the health sector’s strategy, this Plan is promoting a reduction in violence and road crashes in the parish. As highlighted above, injuries from these occurrences continue to cost the state a significant portion of the budget. Reducing their frequencies will therefore reduce the amount of resources needed to facilitate the management and treatment of victims, including for mental health related purposes. Strategies to reduce violence will focus on 1.Crime prevention through social development, 2.Situational crime prevention, 3. Effective policing and 4.Justice processes, and reducing re-offending. Those to reduce road accidents will fall in one of the following categories: legislation; education; engineering; enforcement; or medical. This overall approach will also reduce the possibility of overcrowding at the parish’s healthcare facilities and ensure that more resources are available to spend elsewhere in the local health sector.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support all Strategic Objectives of the Safety and Security section of this Plan (pgs. 263-278).	Short to Long Term	MOH
Support Strategy #22 of the Transportation section of this Plan (pg. 96).	Short to Long Term	MOH

#### 3.5.5.6. STRATEGIC OBJECTIVE #144

**To promote personal responsibility for health.**

One of the key areas of focus of this overall Health Sector Strategy is the promotion of personal responsibility for health. The underlying premise of this strategy holds that if people have a vested interest in their health, they will do more to maintain it. This approach is ideal for indirectly helping to address the issues within the local health sector, as non-communicable diseases, which are caused by four behavioural risk factors, have been identified as most common health concerns within the parish. Promoting personal responsibility will therefore benefit individuals through improved health outcomes, and will also have a collective benefit in controlling health care costs and the strain placed on scarce resources within the local health sector. Local citizens will be encouraged to play an active role in promoting their own health and choosing healthier lifestyles.

This strategy will place particular emphasis on four areas: 1.increasing involvement in physical activity, 2. promoting balanced and healthy diets, 3.reducing alcohol abuse and 4.decreasing smoking. To increase involvement in physical activities, participation in formal and informal sporting activities will be encouraged. This includes the development of recreational facilities and adequate public education. Public education will also be the main avenue used to promote balanced and healthy diets, reduced alcohol use and decreased smoking. Additionally, the relevant authorities will explore the feasibility of providing incentives where appropriate.

### 3.5. THE HEALTH SECTOR

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that the personal responsibility in promoting individual health is incorporated into formal health policies.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a public education campaign to promote personal responsibility for individual health. Emphasis should be placed on increasing involvement in physical activities, promoting balanced and healthy diets, reducing alcohol abuse and decreasing smoking.	Short Term	Clarendon Health Department, MOH
Support Strategic Objective #150 of the Other Social Amenities section of this Plan (pg. 322).	Short to Medium Term	MOH
Explore the possibility of providing incentives for personal responsibility in individual health.	Short to Medium Term	MOH, Clarendon Health Department

#### 3.5.5.7. STRATEGIC OBJECTIVE #145

**To strengthen the relationship between human health and environmental health in the Parish.**

Human induced changes in the natural environment is a factor which is negatively impacting on the local health sector. This situation underscores a need to strengthen the relationship between human health and environmental health. Accordingly, this Plan will promote a better understanding between the health of Clarendonians and the state of the local environment. Appropriate measures will also be implemented to anticipate changing environmental conditions and reduce such changes where necessary. Such measures include actions across sectors, e.g. waste management and agriculture, to modify the environmental determinants of health.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase local knowledge of the link between the health of the environment and human health.	Short Term	Clarendon Health Department
Support all the Strategic Objectives of the Waste Management Section of this Plan. See pgs. 155-173	Short to Long Term	Clarendon Health Department, MOH
Support all Strategic Objectives of the Natural Environment Section of this Plan. See pgs. 65-82	Short to Long Term	Clarendon Health Department, MOH

### 3.5. THE HEALTH SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #90 (pg. 213) and #97 (pg. 221) of the Disaster Management and CCA Section of this Plan.	Short to Long Term	Clarendon Health Department, MOH

#### 3.5.5.8. STRATEGIC OBJECTIVE #146

##### To reduce the rate of teenage pregnancy in the parish.

Teenage pregnancy is a prevalent issue in the parish and the consequences are serious and numerous. This Plan is promoting a number of initiatives to reduce the issue and the negative outcomes that accompany it. These initiatives include responsible and medically accurate sex education, improvements in access to family planning services, and youth development programs to improve the life options of teens. Research has shown that age appropriate sex education that includes a variety of subjects has been a success in reducing teenage pregnancy in many parts of the world, including developed and developing countries. With calls increasing for sex education in Jamaica, this Plan will promote the same, as well as the establishment of school-linked health centres. In addition to schools and school-linked health centres, the media will be used to promote sex education. A public education campaign will be launched to sensitise citizens, particularly parents, about sex education since there is likely to be opposition from some quarters. Additionally, the relevant authorities will seek to implement measures aimed at ensuring easy and confidential access to family planning. Poverty is believed to be one of the main underlying factors contributing to teenage pregnancy in the parish, therefore youth development programs for poor teens, e.g. academic tutoring, job training and placement, mentoring, and youth-led enterprise programs will be created.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a programme to educate adults, particularly parents, about age appropriate sex education and why there is a critical need for it in the parish.	Short to Medium Term	MOH, MEYI, CDA
Introduce age appropriate sex education which focuses on a variety of subjects, including communication and coping skills, the emotional aspects of sexual relationships, sexually transmitted infections, how to use contraception, etc. in schools.	Medium Term	MOH, MEYI, CDA
Support the establishment of school-linked health centres to help in the provision of easy and confidential access to family planning services.	Medium Term	MOH, MEYI, CDA

### 3.5. THE HEALTH SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide responsible sex education in the media through a long term teenage pregnancy prevention media campaign.	Medium Term	MOH, MEYI, CDA
Establish youth development programs for poor teens, such as academic tutoring, job training and placement, mentoring, and youth-led enterprise programs.	Short to Long Term	SDC, MLSS, MEYI, CPC, Private Sector

#### 3.5.5.9. STRATEGIC OBJECTIVE #147

**To reduce drinking by under aged persons in the parish.**

Drinking by under aged persons is a persistent public health problem in Clarendon that must be addressed. Consequently, this Plan is promoting strategies aimed at reducing the prevalence of the issue. These strategies will involve the collective responsibility of a number of stakeholders, including parents, local communities, the alcohol and entertainment industries, and law enforcement. The strategies will be aimed at reducing young person’s risk of using alcohol or increasing factors that help protect them against alcohol use.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Through the medium of music and other avenues, educate young people about the dangers of under aged alcohol use. As part of this action, entertainers would be encouraged to help send the message that under aged drinking is wrong and dangerous.	Short Term	Clarendon Health Department, MOH, NCDA
Promote proper parental supervision to help prevent under aged drinking.	Short to Long Term	Clarendon Health Department, MOH, NCDA
Work with community groups and sponsors of community events to help them send the message that under aged drinking is illegal and has grave personal and public health consequences. This process should seek to change community’s thinking about under aged alcohol use.	Short to Long Term	Clarendon Health Department, MOH, NCDA

### 3.5. THE HEALTH SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the alcohol and entertainment industries to support the campaign against under aged drinking, through avenues including funding.	Short Term	MOH, NCDA
Educate the public about policies to prevent under aged drinking.	Short Term	Clarendon Health Department, MOH, NCDA
Adequately enforce the Spirit License Act and any other laws and/ or policies which relate to the legal age of drinking in Jamaica. This should include routine checks at parties and establishments with spirit licenses.	Short to Long Term	Clarendon Police Division
Support the development of programs that help under aged teens already involved in drinking.	Short to Long Term	Clarendon Health Department, MOH
Create friendly, exciting alcohol-free places where teens can gather and socialize.	Short to Long Term	SDC, CPC, Private Sector

## 3.6. OTHER SOCIAL AMENITIES

### 3.6.1. CEMETERIES

#### 3.6.1.1. BACKGROUND

Cemeteries represent an important component of the life of Clarendon, serving the local society's need for the memorialisation and accommodation of the deceased. Cemeteries are places, for the local society to honour and pay homage to its deceased ancestors, and family members. They are therefore important linkages to the cultural heritage of the parish.

Currently, there are ten (10) cemeteries in the parish. This is inclusive of five (5) public cemeteries, four paupers' cemeteries and a privately owned facility. Interment on rural family land and within churchyards are also prevalent in the parish, and significantly reduces the pressure on the aforementioned designated burial sites.

Type	Number	Location (District)
Public	5	Denbigh, Race Course, Spalding, Mount Airey, Pennants
Paupers	4	Trout Hall, Turners, Chapelton, Crooked River
Private	1	New Bowens

Source: SDC (2014)



Figure 76: A Section of the Crooked River Cemetery.

The operation and maintenance of the public cemeteries is a function of the MLGCD under the Public Cemetery Management and Regulation Act. This function is executed in the Plan Area through the CPC. The Council is also reported to be in negotiations with JAMALCO to assume the responsibilities of the New Bowen's facility. The status of these negotiations is unclear.

#### 3.6.1.2. ISSUES AND CHALLENGES

##### 3.6.1.2.1. INCREASING DEMAND

The population of Clarendon has been growing at one of the highest rates in Jamaica, and growth is projected to continue into 2030. This increasing population means that the demand for burial plots is also increasing and more and more of the local land is being consumed for that purpose. The situation is placing a severe strain on the existing facilities, some of which will reach their capacities within a few years. It is also underscoring an urgent need to identify new lands for the development of public cemeteries. This issue is very complex in light of the fact that the number of developable lands is gradually being reduced, and the siting of cemeteries should be such that there is no conflict with surrounding land uses or hindrance to the growth potential of the host area. To this end, there is a growing need for innovation and improvisation in burial provisions in the parish.

##### 3.6.1.2.2. INDISCRIMINATE BACKYARD BURIAL

Backyard burial is a prevalent feature of the rural parts of the Clarendon Development Area. This is stemming from several issues including the shortage of public cemeteries, the relatively high cost associated with accessing public cemeteries, as well as the culture of some residents to closely preserve the memory of their loved ones. Unfortunately, this is an unhealthy practice as it increases the risk of ground water pollution. The CPC in conjunction with the Public Health Authority is taking steps to reduce/prevent this occurrence through its approval system.

## 3.6. OTHER SOCIAL AMENITIES

In addition, backyard burial is impacting on property values within the Plan area. More specifically, it is reducing the value of the properties on which the graves are located, and depending on the locations of these graves, it may also be negatively impacting on the values of adjacent properties. It is believed that the presence of a grave can reduce the value of a property by as much as 20%. This figure is still to be confirmed.

### 3.6.1.2.3. INADEQUATE MAINTENANCE OF PUBLIC CEMETERIES

The maintenance of public cemeteries includes activities such as consistent bushing and repairing wear and tear on graves. These are usually costly undertakings for the financially challenged CPC. As a consequence, residents often complain about poor maintenance practices related to the local public cemeteries. Such complaints periodically include that of open graves which pose serious threats to public safety and public health.

## 3.6.2. OPEN SPACE

### 3.6.2.1. OVERVIEW



Figure 77: The Pennant Playfield.

Open spaces<sup>102</sup> are very important as community amenities and as a means of protecting local resources. They function to provide aesthetic and psychological relief in an otherwise built up area, and also provide a host of environmental benefits.

The parish of Clarendon currently has approximately 70 open spaces which provide places for residents to relax, enjoy and unwind (SDC, 2014). These include both active and passive open spaces, such as parks, gardens and sports complexes. They are owned and managed by public and private entities, and are sited across the parish in a variety of places, including school properties.

### 3.6.2.2. OPEN SPACE ISSUES AND CHALLENGES

#### 3.6.2.2.1. LIMITED OPEN SPACES

Generally, Clarendon is inadequately supplied with open spaces. The number of open spaces available is grossly inadequate in relation to the size of the population, as well as the size of the built up areas. The fundamental reason for this is a lack of proper planning and a lack of resources, including land and money. Most of the areas subdivided prior to 1966 made no provision for open spaces, and the acute shortage in

<sup>102</sup> Open spaces are land and/or water areas with the surface open to the sky, which are consciously acquired or publicly regulated to serve conservation and urban shaping functions in addition to providing recreational opportunities.

## **3.6. OTHER SOCIAL AMENITIES**

shortage in financing makes it difficult for the local authority to acquire lands for the development of the said facility. Furthermore, much of the suitable sites within these built up areas are already utilized for alternate purposes.

### **3.6.2.2.2. HIGH MANAGEMENT AND MAINTENANCE COSTS**

The management and maintenance of open spaces is generally a very challenging and expensive undertaking. This is especially so in the Plan area where public and private entities that have such responsibilities have inadequate funding structures. As a result, a number of open spaces within the parish are subject to poor maintenance practices and are in a state of disrepair. To this end, there is a need to find ways to ensure that local open spaces sustain themselves even partially.

### **3.6.2.2.3. UNDEVELOPED OPEN SPACES**

There are a number of vacant lots which were left as open space reservations in several subdivisions in the parish. These spaces were reserved for the aforesaid use as conditions for approval in the development application processes. Unfortunately, they are left largely undeveloped, with no party willing to take up the responsibility for their development. As a result, they are not serving the purpose for which they were intended, and some of the host communities are faced with the issue of a lack of access to these open spaces.

A number of the undeveloped open spaces are becoming attractive for other uses. The local Planning Authority periodically receives applications for the use of land which were reserved for open spaces, for other purposes, such as the development of churches. In other instances, these lots are used by individuals for their own personal benefits, without the consent of the community or the local authority.

## **3.6.3. POSTAL SERVICE**

### **3.6.3.1. EXISTING CONDITION**

Currently, the parish is served by a network of 27 post offices and 60 postal agencies which are sited across the entire boundary (SDC, 2014). The post offices offer a full range of postal services including the acceptance and delivery of mail and the sale of postage stamps on a full time basis, while the postal agencies operate on a part-time basis, offering a restricted range of postal services.

### **3.6.3.2. ISSUES AND CHALLENGES**

#### **3.6.3.2.1. SLOW PACE OF MODERNIZATION**

Despite the ongoing commercialisation and product diversification efforts of the Postal Corporation of Jamaica Limited (PostCorp), most local post offices and postal agencies still only offer traditional postal services. Growth in the telecommunications sector is however rendering much of these services as obsolete. As a result, the revenues of the Post Offices and Postal Agencies are declining to unsustainable levels. There is an urgent need to retool the post offices and postal agencies so that they can be self-sufficient and can keep a-pace with modern trends.

## 3.6. OTHER SOCIAL AMENITIES

### 3.6.3.2.2. POOR MAINTENANCE



Figure 78: The Brea Head (left) and Taymount (right) postal agencies are examples of the poor state of some post offices/ postal agencies in the Parish.

Much of the postal service infrastructure within the parish is poorly maintained. Several Post Offices and Postal Agencies have become dilapidated structures, which expose staff and members of the public to standards not expected of public institutions. This situation is linked to a lack of funding which is in turn linked to the marginal economic return from postal services.

### 3.6.3.2.3. LACK OF ADEQUATE STAFF

A lack of adequate staff is one of the primary problems impacting on postal services within the Clarendon Development Area (SDC, 2014). Residents, especially the elderly, frequently complain of having to wait long periods in order to obtain access to the services. This issue is believed to be linked to a shortage of staff, as well as the lethargic attitudes of some personnel. It should however be noted that these long waiting periods are usually during peak times, when postal services include the distribution of pension and the PATH benefits.

## 3.6.4. MARKETS

### 3.6.4.1. CURRENT SITUATION

There are seven (7) physical places dedicated to the gathering of people for the purchase and sale of goods within Clarendon. These facilities are located in May Pen, Frankfield, Chapelton, Rocky Point, Spalding, Kellits and Thompson Town. They are owned and operated by the CPC. As shown by the table below, close to 1500 registered vendors operate within these facilities.

Location of Market	Number of Vendors
Chapelton	88
Spalding	52
Frankfield	30
May Pen	1187
Kellits	110
Rocky Point	8*
Thompson Town	4*

Source: CPC

## 3.6. OTHER SOCIAL AMENITIES

### 3.6.4.2. ISSUES AND CHALLENGES

#### 3.6.4.2.1. POOR UTILIZATION OF SPACE

The improper use of space is a major issue affecting markets within the Plan area. It is customary for vendors to spread their goods in a haphazard manner, causing the accommodations to appear inadequate. Additionally, some vendors usually ply their trade beyond the established limits within the markets in an attempt to gain an advantage over their competitors. These two actions usually combine to exacerbate other issues, as they often result in the occupation of the sidewalks or roadways, further leading to vehicular-pedestrian conflict and traffic congestion.



Figure 79: The contrast between the front (left) and the back (right) of the May Pen market on a regular day.

#### 3.6.4.2.2. CENTRALIZED MARKETS

The May Pen market acts as the major centre for the purchase and sale of provisions, livestock, and other goods in the parish of Clarendon. Residents from a number of local communities and neighbouring parishes travel to May Pen in order to buy and sell their goods. In the process, some of these people bypass other smaller markets, claiming that they provide slow business for the vendors and not enough variety for the customers. This practice however increases the pressure on the facilities in May Pen, and also result in other issues e.g. traffic congestion. It further results in the underutilization of some of these decentralized markets, and a high cost to the Local Authority which is responsible for the maintenance of these facilities.

#### 3.6.4.2.3. ILLEGAL STREET VENDING



Figure 80: A woman picks through the offerings of an illegal clothes vendor outside the May Pen Market.

Source: <http://www.jamaicaobserver.com/assets/12870034/197044.jpg>

## 3.6. OTHER SOCIAL AMENITIES

Illegal street vending is a hazard in most town centres within the Clarendon Development Area. Vendors continue to ply their trade illegally on the sidewalks of the local towns, severely impacting on public safety and circulation (See 2.2.1.3.1. Traffic Congestion, pg. 83). This issue also results in the underutilisation of the markets and a loss of potential revenue for the Local Authority. This situation is especially true within the capital, May Pen, but the CPC in conjunction with the police is taking steps to address the issue.

### 3.6.5. COMMUNITY CENTRES

#### 3.6.5.1. CURRENT CONDITIONS

There are forty-five (45) community centres in the parish of Clarendon. Twenty-one (21) of these centres are located within the May Pen DA, while the remaining twenty-four (24) are distributed across the other six DAs. These centres have different ownership structures and are predominantly managed by leading community groups, usually the CDC, or an individual living within the host community. The majority of these centres are in good condition but a few are deemed to be in a poor state. The uses of these community centres include for educational purposes (basic schools), community meetings, training centres, remedial classes, computer labs, health clinics and community recreational activities. (SDC, 2014)

#### 3.6.5.2. ISSUES AND CHALLENGES

##### 3.6.5.2.1 MAINTENANCE DIFFICULTIES

The maintenance of community centres in the parish has proven to be a very difficult undertaking. This is especially true for those which are not multi-purpose facilities. These community centres are generally underutilized and are subject to losses from vandalism, break-ins and theft. In addition, a number of these community centres are faced with other issues ranging from leaking roofs to electrical problems and structural damages caused by hurricanes. At present, a few are out of use due to their physical condition.



Figure 81: The Brae Head Community Centre has been severely underutilized and subject to poor maintenance.

### 3.6.7. PARISH STRATEGIES

#### 3.6.7.1. STRATEGIC OBJECTIVE #148

**To make adequate provisions for the disposal of human corpses.**

In order to satisfy current and future demands and also reduce the occurrence of indiscriminate backyard burials, there is a need to develop additional cemetery facilities (including paupers' cemeteries) in appropriate locations and with appropriate designs in the Plan Area.

### 3.6. OTHER SOCIAL AMENITIES

These facilities will be sited such that they have no significant harmful effects on the environment or surrounding developments. The use of underground crypts in cemeteries, as opposed to sepulchres, will be promoted since these may be easier for the Local Authority to maintain. The use of adequate landscaping will also be encouraged. With the local population increasing, and the amount of developable lands being rapidly consumed, maximum use of lands designated as cemeteries will be encouraged. The exploration of other internment options which conserve land space or which may be incorporated into public open space will also be highly supported.



Figure 82: Examples of Garden Cemeteries.

Sources: <http://www.usgenmet.org/usa/ne/county/cedar/cemeteries/stbonifacegarden.jpg> and [https://upload.wikimedia.org/wikipedia/commons/c/c3/Suresnes\\_American\\_Cemetery\\_and\\_Memorial191.JPG](https://upload.wikimedia.org/wikipedia/commons/c/c3/Suresnes_American_Cemetery_and_Memorial191.JPG)

### RECOMMENDED POLICIES

- The Local Planning Authority will designate suitable lands for the development of cemeteries and/or crematoria, including the expansion of existing facilities where possible.
- The Local Planning Authority will support the development of private cemeteries.
- All new cemetery developments (public and private) will be encouraged to designate a section of the facility for the burial of paupers.
- The Local Planning Authority will ensure that the development of cemeteries and/or crematoria have no significant harmful effects on the environment or surrounding developments.
- The development of lawn crypts and garden cemeteries will be supported.
- The Local Planning Authority will not support the development of sepulchres unless it is part of the design plan of a garden cemetery.
- Priority will be given to designs which include double depths and adequate landscaping in assessing development applications for cemeteries.
- The Local Planning Authority will resist indiscriminate backyard burials
- The Local Planning Authority will support the use of crematoria and other approved internment options provided that the relevant planning, health and environmental standards are met.

#### SPECIFIC ACTIONS

Educate citizens about the negative implications of indiscriminate backyard burying.

#### TIME FRAME

Short Term

#### RESPONSIBLE AGENCIES/GROUPS

MOH, MEGJC, WRA, NEPA, CPC

## 3.6. OTHER SOCIAL AMENITIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the application of alternatives to burials, e.g. cremation, green burial and the donation of bodies to science, as a means of conserving land space.	Short to Long Term	GOJ
Carry out adequate monitoring to discourage unapproved burials	Short to Long Term	CPC, Clarendon Police Department
Develop additional cemetery facilities at appropriate locations in the parish.	Short to Long Term	CPC, Private Sector

### 3.6.7.2. STRATEGIC OBJECTIVE #149

#### To ensure adequate maintenance of cemeteries.

The inadequate maintenance of public cemeteries in the parish is a major public safety and public health concern, which underscores a need to develop a structured management and maintenance plan for all such facilities. This Plan will be developed using a highly consultative approach. It will set out policy and direction as it relates to public cemeteries in the parish, and will also act as a basis for identifying priorities for future improvements and ongoing actions. This Plan will further ensure that the management and maintenance of the cemeteries is done in accordance with the Public Cemetery Management and Regulation Act. Rules and regulations governing the public cemeteries will be established; such rules will include prohibiting the grazing of animals in cemeteries and the mixing of concrete on existing graves. The Plan will also explore the feasibility of utilizing inmates/prisoners as a source of labour for maintenance programmes, in addition to the feasibility of using non-traditional sources of funding, including crowd funding, to undertake such programmes.

It should also be noted that policies will be enacted to protect the Local Authority in the takeover of private cemeteries. Such cemeteries will need to be in a state or condition deemed satisfactory by the Local Authority.

#### RECOMMENDED POLICIES

- The cemetery management and maintenance plan for the Parish should be developed using a highly consultative approach.
- Private cemeteries which are being proposed for takeover by the Local Authority will need to be in a state or condition deemed satisfactory by the Local Authority.

### 3.6. OTHER SOCIAL AMENITIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop a structured management and maintenance plan for all public cemeteries in the parish. This Plan should ensure that the management and maintenance of the cemeteries is done in accordance with the Public Cemetery Management and Regulation Act. It should also establish rules and regulations which govern public cemeteries. Such rules should include prohibiting the grazing of animals in cemeteries and the mixing of concrete on existing graves. The Plan should also explore the feasibility of utilizing inmates as a source of labour for maintenance programmes, in addition to the feasibility of using non-traditional sources of funding, including crowd funding, to undertake such programmes.</p>	<p>Short Term</p>	<p>CPC</p>

#### 3.6.7.3. STRATEGIC OBJECTIVE #150

##### To improve access to open space.

A crucial part of the overall strategy to support social well-being is to improve access to open space in the Plan Area. Access to open space is important to the health and overall quality of life of the local population. However, it is currently restricted mainly by the quantity and quality of the open spaces. This issue has the potential of increasing with rapid population growth, and urbanization.

In order to address the current demand for open space in the parish, new ones will be created, the quality of some of the existing ones will be improved, and public access to privately owned recreational space will be improved. New open spaces will be developed in all areas of the parish (particularly growth centres) where this facility is critically lacking. The Local Planning Authority will seek to develop all the vacant lots which were left as open space reservation in subdivisions as condition of approval, and will also seek to identify other suitable lands within the parish to be used for this purpose. Unkempt open spaces across the parish will also be renovated, while the intensification of uses within the current inventory of sports fields will be pursued through retrofitting opportunities. Furthermore, encouragement will be given to making privately owned recreational space available to the public. This strategy will require the establishment of public-private partnerships, which include community integration, for the provision, development, maintenance, and operations of the open space.

In order to address future demands for open space, the Local Authority will implement and enforce several land use policies. These policies will seek to ensure that adequate lands are reserved for the development of open spaces. See 2.4.3.1.9. Strategic Objective #98I, pg. 233

## 3.6. OTHER SOCIAL AMENITIES

### RECOMMENDED POLICIES

- The Local Planning Authority will seek to develop all the vacant lots which were left as open space reservation in subdivisions as condition of approval, and will also seek to identify other suitable lands within the parish to be used for this purpose.
- Encouragement will be given to making privately owned recreational space available to the public.
- The intensification of use within the current inventory of sports fields will be pursued through retrofit opportunities before new site development.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an inventory of all open spaces in the parish. This should include all categories of open space, their owners, as well as their state and other characteristics.	Medium Term	SDC
Establish public-private partnerships, which include community integration, for the provision, development, maintenance, and operations of the open space.	Short to Medium Term	CPC, SDC, Ministry of Culture, Gender, Entertainment and Sport (CGES)
Rehabilitate unkempt open spaces in the parish (See also Strategic Objective #152, pg. 324).	Short to Long Term	CPC, CGES
Develop additional open spaces to satisfy existing and future demands. (See also 3.6.7.5. Strategic Objective #152, pg. 324)	Short to Long Term	CPC, Private Sector
Develop a structured program for the maintenance of public open spaces in the parish. This program should involve public-private partnerships.	Short Term	CPC, CGES

#### 3.6.7.4. STRATEGIC OBJECTIVE #151

##### To protect lands reserved for open spaces from other development pressures.

As highlighted earlier, population and urban growth is placing a tremendous amount of pressure on the lands which have been reserved for open spaces in the parish. The Local Planning Authority will seek to protect these lands from such pressures as part of the process to ensure adequate access to open spaces. This will be achieved largely through policy implementation.

## 3.6. OTHER SOCIAL AMENITIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objective 98I pg. 233 of the Land Use section of this plan.	Short to Long Term	CPC

### 3.6.7.5. STRATEGIC OBJECTIVE #152

#### To develop self-sufficient open spaces.

The need for local open spaces to sustain themselves financially will be addressed by increasing their revenue earning potential and reducing their operations and maintenance cost where practical. This will be achieved through the implementation of several innovative approaches and/ or programmes, which include:

- **The development of multi-purpose sports complexes** - The intensification of use within existing sports fields and complexes will be pursued through retrofitting opportunities. Retrofitted and new sites will be designed to accommodate alternative field uses in the off-seasons. This will help to ensure a sustainable source of revenue even when sporting seasons are over.
- **Edible landscaping**- Edible landscaping, which is the use of food plants as design features in a landscape, will be promoted particularly within passive open spaces. Shrubs, trees, vines, grasses and ground covers will be substituted with edible plants that add interest, colour, texture and taste to open spaces. These plants will then be used both for their aesthetic value and consumption purposes. However, strategies to prevent praedial larceny will have to be implemented (See 4.2.7.11. Strategic Objective #186, pg. 381).



Figure 83: An example of edible landscaping along the Gilman Boulevard in the United States.

Source: <http://parkstrails.myparksandrecreation.com/Details.aspx?pid=252>

- **The use of sustainable technologies** – The use of sustainable technologies will be encouraged to reduce operational costs and also generate revenue. Large sports complexes will be encouraged to utilize their own source of renewable energy in order to reduce their electricity bills and earn an income through net billing. The use of other sustainable technologies such as energy efficient lighting, low flush toilets, etc. will be promoted where practical.

### 3.6. OTHER SOCIAL AMENITIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the intensification of use within existing sports fields and complexes as a strategy to increase revenue generation and self-sufficiency within open spaces.	Short Term	CGES, CPC
Encourage new sports venues to be designed to accommodate alternative field uses in the off-seasons. This will help to ensure a sustainable source of revenue even when sporting seasons are over.	Short to Long Term	CGES, CPC
Encourage edible landscaping as a strategy to increase self-sufficiency in open spaces.	Short Term	CPC
Encourage the application of sustainable technologies within open spaces where practical. Such technologies may include energy efficient lighting, low flush toilets, water recycling, rain water harvesting, etc.	Short to Long Term	CGES
Encourage large sports complexes to utilize their own source of renewable energy in order to reduce their electricity bills and earn an income through net billing.	Short to Long Term	CGES

#### 3.6.6.6. STRATEGIC OBJECTIVE #153

##### To rationalise the postal service.

It is critical that the postal services be rationalized to improve the level of service offered as well as their financial viability. Through the Situation Validation and Visioning Workshops, over ten (10) local communities have expressed a need to have a Post Office or Postal Agency located in their community. However, the PostCorp of Jamaica has been struggling financially for a number of years, and is unable to even properly staff and maintain all the existing postal points in the parish. This Plan therefore supports the Ministry of Science Technology Energy and Mining decision to rationalise the postal service. The rationalisation process will take place in two phases. The first phase will include the closure of poorly utilised postal points and the use of post men, mobile post offices and possibly drones to fill the void. This will not only reduce the operational costs, but will also enable services to be provided directly to the local communities which have expressed a need to have a postal point. Since this will involve job cuts, adequate consultation will be done with the relevant parties and stakeholders. Adequate notice will also be given to the public regarding the closure of postal points and dates and times when mobile post offices will be in specific communities.

### 3.6. OTHER SOCIAL AMENITIES

The second phase of the rationalisation process will include the diversification of services offered. This is necessary to increase the revenue earning potential and the financial viability of the service. The diversification will include the addition of services like fast mail delivery and courier services.



Minister of Science, Energy and Technology Andrew Wheatley (right) cuts the ribbon to officially launch the mobile post office service in the community of Steer Town, St Ann.  
[http://www.jamaicaobserver.com/news/Minister-launches-mobile-post-office\\_70648](http://www.jamaicaobserver.com/news/Minister-launches-mobile-post-office_70648)

#### RECOMMENDED POLICIES

- The rationalisation of the postal services will be supported by all local stakeholders.
- Adequate consultation will be done with the relevant parties and stakeholders in rationalising the postal services.
- Adequate notice will be given to the public regarding the closure of postal points and dates and times when mobile post offices will be in specific communities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement a strategy for closing poorly utilised postal points and using post men and mobile post offices and possibly drones to fill the void which is left. This strategy should also seek to expand direct services to areas in the parish which weren't traditionally served by a postal point.</p>	<p>Short to Medium Term</p>	<p>MSET</p>
<p>Diversify the postal services to increase the revenue earning potential and the financial viability. The diversification should include the addition of services like fast mail delivery and courier services.</p>	<p>Short to Long Term</p>	<p>MSET</p>

### 3.6. OTHER SOCIAL AMENITIES

#### 3.6.6.7. STRATEGIC OBJECTIVE #154

**To provide adequate access to quality markets.**

The implementation of this Plan will ensure that vendors and customers alike have adequate access to quality markets. As part of this strategy, new facilities will be developed in emerging towns where the need arises, and also as part of efforts to reduce the pressure on the May Pen facility. Additionally, the capacity of some existing structures will be increased through extension and renovation works where necessary. Renovation works (or reconstruction) will also be used to make local markets more comfortable and attractive for vendors and purchasers alike. This may include sectionalising the markets by designating separate areas of the facilities for the exclusive sale of particular goods. The CPC will look to establish public private partnerships, which include Build-Operate-Transfer and Design-Build-Operate, in developing local markets.

#### RECOMMENDED POLICIES

- The CPC will look to establish public private partnerships, which include Build-Operate-Transfer and Design-Build-Operate, in developing local markets.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop new markets in emerging towns where the need arises and to support the decentralization of the facilities.	Medium to Long Term	CPC, MLGCD
Renovate or reconstruct existing markets as is necessary to make them more comfortable and attractive to vendors and consumers.	Short to Long Term	CPC, MLGCD

#### 3.6.6.8. STRATEGIC OBJECTIVE #155

**To provide adequate access to community centres.**

There is a shortage of community centres in the Parish. At the same time, some of the existing facilities are underutilized and those which are not multi-purpose facilities are subject to vandalism and theft. Therefore the need exists for a creative strategy to address both the shortage and the vandalism theft. This strategy will see all future community centres being multi-purpose facilities. Consideration will first be given for churches to be used as community centres. This may involve the expansion to the physical infrastructure of selected churches. Consideration will be given to the sharing of community centres by local communities.

#### RECOMMENDED POLICIES

- Consideration will first be given for churches to be used as community centres.
- Consideration will be given to the sharing of community centres by local communities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop community centres across the parish in areas where the need exist.	Short to Long Term	CDC's, Private Sector

## 3.7. CULTURAL HERITAGE

### 3.7.1. CURRENT SITUATION

The Parish of Clarendon is endowed with a rich cultural heritage, represented tangibly by several heritage sites and structures and intangibly in music, dance, art, stories, crafts, and foods of folk culture.

There are several sites and or buildings which are of particular architectural and or historical significance. The JNHT has declared eight (8) sites as of December 2011 as heritage sites. These are St. Peter's Church (Alley), May Pen Clock Tower, Halse Hall Great House, Portland Point Lighthouse, Milk River Spa, Claude McKay's Birthplace, Four Paths Railway Station and the Suttons Railway Station. In addition to these sites, there are buildings within the Plan area which can be considered for preservation.

### 3.7.2. ISSUES AND CHALLENGES

#### 3.7.2.1. UNUTILIZED STRUCTURES

Research has shown that several of the parish's historic buildings (both declared and undeclared) are left vacant and are at risk of being lost due to deterioration from time, the elements and illegal activities. These buildings are left unutilized for various reasons, including difficulties in obtaining funds to maintain the properties and difficulties in re-using the building because of its location, size, etc. These buildings are poorly maintained and are subject to damage from hurricanes, tropical storms and other weather systems, as well as illegal activities such as vandalism and squatting. Vandalism is often gratuitous, and includes the breaking of windows and drawing/writing of graffiti. Occasionally, squatters take advantage of unsecured openings caused by vandalism or other factors to gain entry to these buildings and further cause deliberate or accidental damage to the properties. It should also be noted that these vacant historic buildings also attract other illegal activities such as illicit drinking and sexual activity.



*Figure 84: The remains of the Wood Hall Great House which was reported by residents to be in a reasonably good condition up to a few years ago, but was vandalised by unscrupulous persons who sold the cut stones.*

### 3.7.3. PARISH STRATEGIES

#### 3.7.3.1. STRATEGIC OBJECTIVE #156

**To preserve the parish's cultural heritage.**

Clarendon's cultural heritage is a non-renewable resource made up of unique elements, which offer a wide variety of benefits. It is a legacy inherited from past generations, which provides tangible and intangible links with history, and also helps to create a sense of belonging. In addition to that, it can be the source of significant revenue. Therefore the conservation and/ or preservation of the Clarendon's cultural heritage is vital to preserving history, fostering local pride and providing economic opportunities.

### 3.7. CULTURAL HERITAGE

The preservation of the Parish cultural heritage will involve the protection of both the tangible and intangible cultural heritage assets. This will require active efforts on the part of all stakeholders. The preservation of the Parish’s cultural heritage will involve identifying, recording, protecting and enhancing (where necessary) additional archaeological sites, ancient monuments and historic landscape features which are not designated as protected national heritage. As highlighted earlier, funding for heritage sites is an issue, but research has revealed that in such situations adaptive reuse<sup>103</sup> may be used to generate revenue whilst preserving cultural heritage. The sensitive adaptation of heritage buildings, when combined with contemporary designs, can create vibrant and visually exciting spaces that attract people. These buildings may be used as tourism enterprises, office spaces, apartments, etc. This strategy has been used successfully around the world including in Jamaica and will therefore be promoted locally. This will also generate significant environmental and financial savings for the parish by avoiding the creation of waste and the need for replacing building materials. It will also prevent the owners of historic property as well as local communities from viewing heritage preservation as a burden on them. On the other hand, safeguarding the intangible cultural heritage will involve the utilisation of different measures from those used to conserve the tangible cultural heritage assets. These measures will ensure that intangible cultural heritage is regularly practiced and learned within local communities and between generations in order to remain relevant. This will not necessarily be through income generating activities like tourism, as they have the potential to damage living heritage.

#### RECOMMENDED POLICIES

- Local communities will be adequately engaged in cultural heritage preservation and/ or conservation initiatives.
- The Planning Authorities will not normally approve developments which would lead to the damage or destruction of cultural heritage assets.
- The demolition of buildings with archaeological or historic features will only be allowed if there is no practical alternative.
- Before granting permission for the demolition of any building or the development of any site with historic/archaeological buildings, the Planning Authorities may require the developer to provide information regarding the importance of the site and the impact on the development.
- The relevant authorities will promote and support adaptive reuse as a strategy to conserve buildings of architectural or historic importance.
- The relevant authorities will seek to ensure that the original design of heritage assets are preserved where restoration works are necessary.
- The design and character of new buildings, should as far as possible be in keeping with the scale and character of the surrounding existing buildings.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase awareness of the need for heritage preservation in the Parish.	Short Term	CPC, JNHT
Identify, record and award protected status to additional archaeological sites, ancient monuments and historic landscape features which are not designated as protected national heritage.	Short to Medium Term	CPC, JNHT

103. This refers to the process involving the reuse of an old site or building for a purpose other than which it was built or designed for.

### 3.7. CULTURAL HERITAGE

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Actively promote adaptive reuse in the parish. This may include the provision of incentives to developers.	Short to Medium Term	CPC, JNHT
Support Strategic Objective #208 of the Tourism section of this Plan.	Short to Long Term	CPC, JNHT
Support Strategic Objective #98J pg. 234 of the Land Use section of this Plan.	Short to Long Term	JNHT
Identify expressions and manifestations that can be considered intangible cultural heritage and make a record or inventory of them. These inventories should serve as the basis for developing measures for safeguarding intangible cultural heritage assets.	Short to Long Term	CPC, JNHT
Increase the number of free public cultural events that occur in Clarendon on an annual basis. Free events will ensure that the significance of the event or aspects of cultural heritage is not diluted to satisfy economic demands.	Short to Long Term	Private Sector
Encourage the development of cultural clubs within local schools and local communities.	Short Term	MEYI, CGES
Encourage local educational institutions to integrate authentic local cultural education into their curricula. This should include field trips to heritage sites and cultural events in the parish.	Short Term	MEYI, CGES

# ECONOMIC PROSPERITY



## 4.0. ECONOMIC PROSPERITY

Economic prosperity is one of the underlying principles of the CLSDP. It is the key element to quality of life and is also necessary for the parish to be competitive in the national and global economy. The chapter (or thematic area) focuses on The General Economy, Agriculture, Fisheries, Tourism, Manufacturing, The Minerals Industry, The Services Sector, and The Informal Sector. The strategic objectives, and the recommended policies and actions seek to achieve Goal #3, which is:

***“To create a strong diversified economy which is built around agriculture, tourism, and manufacturing.”***

Economic prosperity in the context of Clarendon means that Clarendonians generally have the monies necessary to fulfill all their needs and most of their wants. Critical to this is the creation of a strong and vibrant economy. Such an economy is characterised by the provision of equal opportunities, high levels of employment, sustained positive growth and environmentally friendly systems and processes. This goal can only be achieved through economic diversification as Clarendon’s economy is heavily dependent on a few sectors, including agriculture which is vulnerable to numerous hazards, and is unable to generate the desired rate of growth. There is the opportunity for Clarendon to diversify its economy by increasing activities in a number of sectors, such as mining, tourism and manufacturing, and by venturing into relatively new industries, including the nutraceuticals and film industries. Nevertheless, efforts to create a strong diversified economy will seek to capitalise on the strengths of the parish. In this regard, agriculture, tourism, and manufacturing will be developed as the primary sectors.

Each strategy is aligned with the strategic framework of Vision 2030 Jamaica -National Development Plan. The Economic Prosperity strategies are aligned with the National Development Plan under the National Goal and National Outcomes which are shown in the table below.

National Goals	National Outcome	National Goals	National Outcome
2. The Jamaican society is secure, cohesive and just	5. Security and Safety		12. Internationally Competitive Industry Structures <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Manufacturing</li> <li>• Mining and Quarrying</li> <li>• Construction</li> <li>• Creative Industries</li> <li>• Sport</li> <li>• Information and Communications Technology</li> <li>• Services</li> <li>• Tourism</li> </ul>
	6. Effective Governance		
3. Jamaica’s economy is prosperous	7. A Stable Macroeconomy		
	8. An Enabling Business Environment		
	9. Strong Economic Infrastructure		
	10. Energy Security and Efficiency		
	11. A Technology-Enabled Society		

## 4.1. THE GENERAL ECONOMY

### 4.1.1. OVERVIEW OF THE LOCAL ECONOMY

The economy of Clarendon is heavily dependent on the agriculture and services sector, with the mining, manufacturing and tourism sectors also playing important roles. In the post-independence period, the parish was heavily dependent on agriculture with sugarcane production being the most dominant agricultural activity (Taylor, 1976). The parish was also an important producer of citrus, cotton, allspice (colloquially referred to as pimento), ginger, livestock, indigo, bananas, coffee, and cocoa (TCPA, 2012). The mining sector would however soon emerge and overtake agriculture as the leader of the local economy. ALCOA Minerals of Jamaica (AMJ), a wholly owned subsidiary of Aluminium Company of America (ALCOA), started bauxite mining in the parish in 1963. The company later developed a partnership with the GOJ which led to the joint venture called Jamalco. After successfully averting a shutdown during the aluminium slump of the 1980s, the company would constantly upgrade its operations to increase its capacity and efficiency (Milk River and the Clarendon Plains, n.d.). Jamalco would however cease mining operations in Clarendon in the early 2000s following the depletion of bauxite reserves in the Mocho Mountains. Nevertheless, the company still processes bauxite mined in the neighbouring parish of Manchester at the Halse Hall facility, and also remains a chief provider of local employment through its loading Station at St. Jago and the port in Rocky Point (SDC, 2014). The decline in the mining sector however means that agriculture has re-emerged as the most dominant local sector. The fast emerging commercial sector is showing signs of dominating the local economy (SDC, 2014). Wholesale and retail trades inclusive of financial institutions, supermarkets/wholesales, pharmacies, hardware stores and petrol stations among others have increased in numbers and capacities, and are contributing to massive urban growth in areas such as May Pen, Frankfield, Kellits, Chapelton, Spalding and Lionel Town (SDC, 2014). Other important sectors which contribute to the local economy are tourism, which is relatively undeveloped, and manufacturing which thrived on sugar cane processing and the development of many enterprises involving dry goods, confectionery and baked products.

The bulk of the employment in the parish is provided by MSMEs. Of the 77, 632 persons employed in the Parish in the week preceding the 2011 Population and Housing Census, 86.34% were employed in the private sector, which is primarily comprised of MSMEs (STATIN, 2011). There is no comprehensive statistic available on MSMEs in the parish, but a survey carried out locally by CARILED revealed a sample frame of approximately 200 MSMEs (Tindigarukayo, 2013). The survey further revealed that 62 %, 29% and 9% of the firms were MSMEs respectively (Tindigarukayo, 2013). This finding is similar to that of STATIN's Census which also revealed that the largest group of employed persons in the parish (38.33%) was self-employed without paid employees.

### 4.1.2. GENERAL ISSUES AND CHALLENGES WITHIN THE LOCAL ECONOMY

#### 4.1.2.1. LACK OF DIVERSITY IN THE ECONOMY

Economic diversification is vital to long-term economic growth, but as highlighted earlier, Clarendon is heavily dependent on a few sectors. The local economy is largely agricultural as a result of the decline in bauxite mining in the parish, resulting in the displacement of a large number of workers. While the services sector has witnessed tremendous growth over the last decade, this is still failing to translate into meaningful job creation opportunities and the broad-based economic and social development needed to reduce the high poverty rate (See 3.1.2.4.2. Constantly High Levels of Poverty, pg. 244). Furthermore, the informal sector is quite large and opportunities remain limited for many seeking to enter the labour market, as evidenced by the high unemployment rate (see 4.1.2.2. High Unemployment Rate, pg. 334). Continuous pressure on the labour market from a steady stream of new entrants due to population growth has also meant that the need to develop new industries and expand existing ones is becoming more apparent.

## 4.1. THE GENERAL ECONOMY

### 4.1.2.2. HIGH UNEMPLOYMENT RATE

The level of unemployment in the parish of Clarendon is quite high. STATIN (2011) revealed that 32, 252 Clarendonians were unemployed, with 29,942 or 92.84 % being job seekers. STATIN (2011) also revealed that 14,163 persons were unemployed in the week preceding the census. This represented an unemployment rate of 15.43%, which was well above the national average of approximately 13% at the same time. This figure is particularly high when further compared with those of developed countries such as the United States of America, Germany and Switzerland which had unemployment rates of 5.30, 4.70 and 3.10 respectively in 2015, as well as fast emerging economies such as China and India which have rates of 4.04 and 4.90 respectively<sup>104</sup>. Based on background research and consultations through the Situation Validation and Visioning Workshops and the Sector Meetings, there are two (2) main factors contributing to the high level of unemployment in the parish. Firstly, the economy of Clarendon has been arguably stagnant over the past several years and is therefore failing to create meaningful job opportunities. When placed against the backdrop of a steady rate of population growth, which is increasing the size of the labour force, the magnitude of this situation becomes more apparent. Secondly, labour mismatch<sup>105</sup> means that it is extremely difficult for a number of unemployed citizens to find jobs locally or create their own employment, while labour has to be periodically imported to fill some vacancies in the parish. This is due mainly to the generally poor alignment between the outputs of the educational system and the demands of the local economy. That is, a number of locals are trained in areas where there is limited or no opportunity for local employment or in areas that are already saturated, while several members of the labour force lack the necessary certification to qualify for specialist jobs. The situation is further causing rural-urban migration and contributing to brain drain in the parish. To this end, there exists a need for human capital reform to better coordinate education and training with the needs of the local economy.

### 4.1.2.3. INADEQUATE INFRASTRUCTURE

Public utilities and infrastructure including electricity, telecommunications, transport, and water are integral to economic growth and development. Such utilities and infrastructure help to influence the image and attractiveness of a place as a destination for doing business, and also influence business efficiency and relative competitiveness. The parish of Clarendon is challenged by an inadequate provision of public utilities and infrastructure. Whilst the parish is well connected to the remainder of Jamaica through Highway 2000, many local roads are in urgent need of rehabilitation. Similarly, access to piped water (including standpipes) is only 73 percent and the reliability of the NWC's system averages approximately 12 hours per day (NWC, 2011; Rural Water Supply Development Strategy, 2015). Additionally, the electricity service in the parish is marred by frequent unscheduled power outages, and internet penetration is extremely low at approximately 6.9 percent (SDC, 2014)

### 4.1.2.4. DIFFICULTY IN DOING BUSINESS IN THE PARISH

It is fairly difficult to do business in Clarendon. The existing business environment has a high level of bureaucracy, which increases transaction time and costs, and also cause other unfavourable situations in the business climate. A survey conducted by CARILED revealed that the tax environment is having the most telling effect on local businesses. Some 61% of the businesses surveyed reported that the tax situation is severely inhibiting their growth and development (Tindigarukayo, 2013). Other noteworthy factors or inhibitors highlighted are the environment (10 %) and the system of licenses and permits (9%) (Tindigarukayo, 2013). These factors combined, not only have the potential to retard the development and growth of MSMEs, and injection of investments, but have the potential to undermine local economic development.

<sup>104</sup>. Source: <http://www.tradingeconomics.com/jamaica/unemployment-rate>

<sup>105</sup>. This labour mismatch situation exist despite the fact that labour market information is available. See 3.4.3.8 lack of coordinatiion between the education system and local economy, pg. 283

## 4.1. THE GENERAL ECONOMY

Through Central Government policies, Jamaica has been making significant strides in improving the business environment. The country has implemented several reforms which include streamlining the requirements for starting a business, reducing the cost of getting an electricity connection, and establishing new credit bureaus while also adopting a new secured transactions law that broadens the range of assets that can be used as collateral. As a result, in 2014, Jamaica moved up 27 places from 85 to 58 in the World Bank's Doing Business report, to become the Caribbean's highest ranked country in terms of ease of doing business. Jamaica also improved its ranking in the World Economic Forum's Global Competitiveness Report, moving up eight places to 86 out of 144 countries.

Since then the country has continued to improve its business and investment climates and boost its ranking. The areas targeted include dealing with construction permits and trading across borders. The Application Management and Data Automation (AMANDA) system has already been implemented in all Parish Councils and several referral agencies as a strategy to significantly reduce the time for development approvals. The Bureau of Standards Jamaica (BSJ) has also removed a requirement for export certificates in order to export prescribed foods, mainly agro-processed foods, which will significantly improve external trade. A number of other initiatives are also underway which when completed, will significantly enhance the business environment.

### 4.1.2.5. LIMITED ACCESS TO FINANCE BY ENTREPRENEURS AND MSMEs

As highlighted above Micro, Small and Medium Sized Enterprises (MSMEs) account for the major share of the private sector and employment in the parish of Clarendon. They are also recognised as the engine of economic growth, since they have the potential to create more employment than large firms. Despite their importance, these businesses, as well as entrepreneurs are severely challenged in accessing finance. Access to credit, not just in Clarendon but in Jamaica, is limited to well-established businesses and persons who own real property (MIIC, 2013). Accordingly, there is inadequate funding for entrepreneurship and for investment in business expansion by MSMEs. This stifles the growth potential of the parish.

Access to finance is limited both in terms of the collateral available and the supply of credit from financial institutions (MIIC, 2013). Most local financial institutions require physical assets, such as land and motor vehicle fleets, as security for the guaranteed repayment of the loan. However, the owners of many local businesses as well as prospective entrepreneurs do not possess the required collateral to qualify for commercial financing. In addition to that, where micro-loans are available, there is a high administrative cost per dollar loaned. This sometimes deters businesses from accessing these loans (MIIC, 2013). Most local business operators are forced to rely on their own savings and/or financing from relatives. See table....below.

<b>Source of Funding</b>	<b>Percentage</b>
Self/Family	53
Commercial Bank	38
Micro Finance	2
Credit Union	4
Others	3
<b>Total</b>	<b>100</b>

Source: Tindigarukayo (2013)

The Government is making significant strides in increasing access to credit for entrepreneurs and MSMEs, with this being one of the objectives of the National MSME and Entrepreneurship Policy.

## 4.1. THE GENERAL ECONOMY

Furthermore, the Security Interests in Personal Property Act was enacted in 2013 to implement a legal framework, meeting international standards, intended to modernize and improve the availability of domestic credit to the private sector, while effectively minimizing the risks of non-payment of loans. More specifically, the Act provides a framework for broadening the collateral base, allowing for assets other than the traditional forms of collateral to be accepted for the provision of credit. However, while this is allowed in law, local financial institutions have been slow in adopting this practice. Additionally, the DBJ in 2013 commenced work on the Jamaica Venture Capital Programme (JVCP). This is a Government initiative, aimed at developing the environment to mobilize long-term equity funding to enable greater access to alternative financing sources for high potential small and medium sized enterprises and entrepreneurs.

### 4.1.2.6. THE HIGH COST OF ENERGY

The high cost of energy in Jamaica is a clear inhibitor to economic growth in the parish of Clarendon. In fact, it has often been touted as the single greatest deterrent to economic growth, not just in Clarendon but in all of Jamaica. The cost of energy in Jamaica is relatively high compared to energy costs in key competing jurisdictions (see 2.2.3.3.3. High Electricity Cost, pg. 129). Studies further indicate that the price of electricity in Jamaica is in the mid-range of electricity prices in the Caribbean, but higher than electricity prices in many developed and developing countries (Hutchinson, 2011). This relatively high cost of energy reduces the competitiveness of local firms, not just in the regional and international markets, but also in the domestic market which is flooded with imported goods.

According to the results of a survey conducted by CARILED, 93 % of local businesses reported that they are negatively impacted by the high cost of energy. Furthermore, when these businesses were asked to place the level of impact on a scale of 1-5, with 5 being the most severe, 68% indicated a rank of 4 or 5 (See graph below). Consequently, reducing the cost of energy, or at least significantly moderating its growth trend is a key part of promoting local economic.

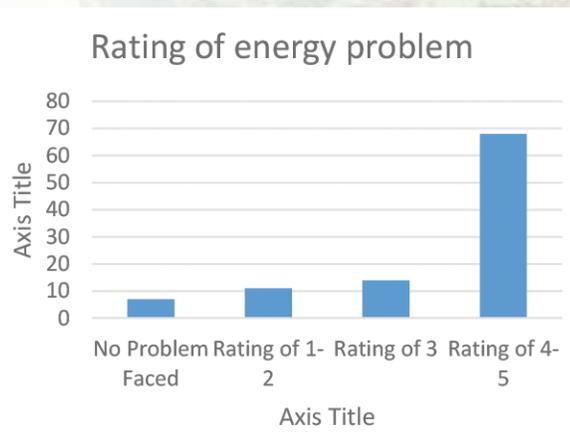


Chart 6: Rating of Energy Problem by local businesses. Source: Tindigarukayo (2013).

### 4.1.2.7. HIGH RATES OF SERIOUS CRIMES

Crime is another major impediment to the general economic growth and development of Clarendon. The incidence of major crimes, which include robbery, break-ins, rape, carnal abuse, murder and shootings, have remained very high in the parish over the past decade (See 3.3.1.2.1. Constantly High Rates of Serious Crimes, pg. 258). Research has shown that over this period, several local firms have fallen victims to various types of crime, essentially crippling their operations in some instances. Similarly, praedial larceny continues to rob farmers of millions of dollars annually. In extreme situations, these businesses and farmers are forced to shut down<sup>106</sup> their operations or simply relocate.

## 4.1. THE GENERAL ECONOMY

To counter the threat of crime, most local firms undertake protective measures, including the installation of electronic alarm systems, metal grills on buildings, special perimeter fencing, the hiring of armed or unarmed security guards, and closing before dark. While these measures are somewhat effective in reducing the probability of such firms falling victim, they also impact negatively on business growth and competitiveness. The need to employ different forms of security leads to higher cost of doing business, and diverts investment away from business expansion and productivity improvement, and may lead to a less than optimal operating strategy. Similarly, reduced hours of operation leads to loss of labour output which may impact on revenue generation as well as competitiveness.

A recent survey conducted by CARILED revealed that local businesses viewed crime as one of the top two issues<sup>107</sup> impacting on their operations (Tindigarukayo, 2013). Respondents to a survey ranked the level of impact of crime on their operations on a scale of 1-5, with 5 being the most severe, 56% of the respondent indicated a rank of 4 or 5, as seen on the chart below.



Chart 7: Rating of crime related problems by local businesses.  
Source: (Tindigarukayo, 2013)

In addition to the material and immaterial costs for those who have become victims, crime is having several other negative impacts on the economy within the Plan Area. It is believed to be having a negative impact on the investment climate, which further impacts on economic growth. Consultations through the Situation Validation and Visioning Workshops revealed that many investors are hesitant to increase their investments, while potential investors are hesitant to make an investment in the parish out of fear of becoming victims or because of the high cost associated with security. Furthermore, crime diverts public resources excessively away from productive uses that have a potentially much higher impact on social development and growth, to areas such as policing, the justice system, and the medical system (for treatment of violence-related injuries and trauma).

### 4.1.2.8. LIMITED APPLICATION OF TECHNOLOGY

The incorporation of new technology in production processes has been recognized as a key ingredient in fostering economic growth. Research has shown that the application of new technology in business processes increases efficiency, and also improves the quality of final products. It further helps firms to become more competitive and to sustain their level of competitiveness, and thereby contribute to local economic development. In spite of this, investment in modern technology in the local economy continues to be quite low. Most local firms continue to depend on manual processes and/or obsolete technology; e.g. the sugar industry continues to depend on the manual cutting of canes which renders the local industry unable

106. The case of Trans-Global Aquaculture Limited is a classic example. In 2013, the owners of the marine shrimp farm had to place the company in liquidation after suffering the continuous theft of both its stock and its equipment.

107. Along with the high energy costs.

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to compete in the global market. This situation is believed to be mainly linked to the fact that most local firms are MSMEs and are unable to access financing for such technologies or they lack the human resources needed to effectively incorporate such technology in their operations. The productivity of local firms is not being maximised and this is impacting on their competitiveness.

### 4.1.2.9. LOW LEVELS OF INNOVATION AND INVESTMENT IN R&D

Low levels of innovation and investment in R&D is believed to be a significant issue contributing to the lack of meaningful local economic growth. This is an issue which is further believed to be stemming from the national level but significantly impacting development at the local level. Innovation which is the conversion of knowledge and ideas into tangible or intangible products, processes and services which may be for commercial use or for the public good, is critical to the development of a country (Kelly, 2008). A country whose citizens convert ideas into scientific and technological production is expected to experience a high level of economic progress (Kelly, 2008). However, this innovation system is driven by R&D; therefore, economists agree that countries with high levels of R&D usually enjoy high levels of innovation and thus, significant economic growth (Kelly, 2008). Despite this, investment in R&D by the public and private sectors in Jamaica continues to be quite low. Statistics from the PIOJ (2008) revealed that investment in R&D in Jamaica is less than 1% of GDP, while in Singapore (another small island developing state, but with a strong performing economy) investment is actually 2.15% of GDP (Kelly, 2008). In addition to that, Singapore boasts over 4,000 researchers in R&D per million people, which is significantly higher than in Jamaica (although statistics on the exact number for Jamaica is not available) (Kelly, 2008). Furthermore, Singapore has successfully forged public and private sector partnerships to boost R&D activities, while this is very much dependent on Government in Jamaica (Kelly, 2008). Besides, Jamaica's innovation over the years has had low impact unlike Singapore, which expends greater effort and money in high impact, high technology R&D activities (Kelly, 2008). Moreover, apart from the Ebony Park HEART Academy, no other institution known for undertaking scientific research in Jamaica is located in Clarendon, and there is no evidence of any established relationships between businesses in the parish and such institutions. There is a need encourage adequate R&D within the parish to contribute to local economic development and by extension national development.

### 4.1.2.10. LACK OF KNOWLEDGE OF INTELLECTUAL PROPERTY (IP)

The value of IP is not being maximised in the local Clarendon economy. According to the World Intellectual Property Organization (WIPO) (2002), in order to be successful in the market place, it is crucial that businesses understand the importance of the various components of the IP system and use it effectively as an integral part of its business strategy. Businesses need the IP system to protect manufacturing secrets or other useful information and remain ahead of the competition (WIPO, 2002). They need to fully exploit their IP assets to maintain consistent quality and market products and services to consumers so as to develop long-term customer loyalty (WIPO, 2002). However, through consultations, it was revealed that many local citizens, including the operators of some local businesses, lack knowledge of what constitutes IP, the laws which relates to IP protection, the work of the Jamaica Intellectual Property Office (JIPO), and the value of this property to individual firms. This lack of knowledge therefore means that the value of IP is not being maximised. To this end, there is a need for IP capacity building at the local level.

It should be noted however, that Jamaica has been making significant progress in this area. Since its inception in 2001, JIPO has made great strides in educating the Jamaican public on Intellectual Property Rights, and the national business community is generally believed to be displaying increased awareness of the role of IP in business profitability. Jamaica has also steadily revised and replaced outdated IP laws, which sets the framework for an effective system. Therefore efforts to increase knowledge of IP in the parish may require the intensification of existing programmes.

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### 4.1.2.11. LIMITED APPLICATION OF ENVIRONMENTALLY FRIENDLY PROCESSES

The application of environmentally friendly processes within the local economy is very limited. Many local firms appear to use price as the most important criteria in developing business processes. Scant regard is therefore given to the implementation of environmental management systems. This is however negatively impacting on their competitiveness and sustainability. Better environmental performance generally leads to improved resource efficiency and direct cost savings for businesses, which promote competitiveness. It can also improve access to customers who are increasingly demanding more environmentally friendly products and services. Furthermore, these businesses will be exposed to risks of rising prices for water, energy, materials, and waste disposal. It is therefore imperative that they upgrade their facilities, to retro-fit and replace obsolete equipment with cleaner, state-of-the-art technologies to minimize operating costs and ensure sustainability.

### 4.1.1. PARISH STRATEGIES

#### 4.1.5.1. STRATEGIC OBJECTIVE #157

**To encourage investment in new/ non-traditional industries in order to diversify the local economy and support local economic growth and job creation.**

The diversification of the economy is central to the overall general economic strategy of this Plan. The local economy is highly dependent on a few traditional industries, including the bauxite industry which is not sustainable. These traditional industries have failed to generate sustained economic growth and create sufficient employment. Hence, diversification is crucial in steering the local economy towards a trajectory of sustainable economic growth and job creation.

In order to diversify Clarendon's economy, investments in new or non-traditional sectors/ industries will be promoted. There are opportunities for the parish to maximise the benefits of or tap into lucrative and growing industries, including global industries. These industries include:

- **The Logistics Hub/ Industry** – Global trade has exploded in the last two decades and today its value exceeds US\$ 20 trillion (World Economic Forum, 2013). This is due in part to innovations in logistics<sup>108</sup>, which include the establishment of logistics clusters or hubs<sup>109</sup> at strategic points around the world (World Economic Forum, 2013). Countries and cities are increasingly developing logistics hubs or clusters as the pursuit of efficiency in production is resulting in splintered processes (World Economic Forum, 2013). In other words, the need to lower production costs and ensure high quality for consumers has resulted in international supply networks and value chains becoming a prominent feature of global commerce, with goods being processed and value being added in multiple countries.

The continuing evolution of international trade has resulted in noticeable shifts in the major arterial trade corridors over the years (Deans, 2013). The expansion of the Panama Canal, which is scheduled for completion in 2016, is expected to lead to a substantial redeployment of maritime traffic. Jamaica sits at the doorway of the Panama Canal, and as such at the convergence of global trade corridors with regional and hemispheric trade routes. As a result, the Government of Jamaica has embarked on the GLHI which seeks to position Jamaica as the fourth global logistics connecting point, comparable to Singapore, Dubai and Rotterdam. This initiative which seeks to capitalise on the trade and business opportunities that will emanate when the Panama Canal expansion is completed, is expected to result in Jamaica having a logistics centred economy (Deans, 2013). The GLHI will benefit from several strategic projects. Two (2) of these cornerstone projects will be located in Clarendon at Vernamfield and Jackson Bay.

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The 2,900 acres of land at Vernamfield is projected as a cargo aerodrome, warehousing facility and industrial centre, while Jackson Bay will be developed as a dry dock for the maintenance and repair of ships, boats, and other watercraft (Jamaica Promotions Corporation (JAMPRO), 2013). These locations will be designated as special economic zones (SEZ)<sup>110</sup> which is an incentive to investment (MIIC, n.d.). Opportunities abound for investment in the logistics industry within these two SEZ as well as outside these areas. The business activities which are envisioned include:

- Major manufacturing and distribution, along with offices and/or warehousing facilities;
- Logistics companies handling trade-related deals globally for goods and services will be housed in the logistics hub;
- E-commerce, import and export-related activity, financial, free zone and cargo/mail/passenger hub activity;
- Intermodal transfers of passengers, cargo and mail and related education and training, plus cargo security activities and intermodal transport and trans-shipment of goods;
- Value-added activities including assembling, processing, packaging, labelling, preparing instruction booklets and finishing, i.e. getting goods to completion;
- The activities will be supplemented by a wide range of services, typically provided by Micro, Small and Medium size Enterprises (MSMEs), geared towards supporting activities within the hub, and also supporting the general well-being of people working in the hub. (MIIC, n.d.)

It should also be noted that other SEZ may be established across the parish, including Technology Parks.

• **The Nutraceutical Industry** – In March 2015, former Prime Minister, the Honourable Portia Simpson Miller, launched the National Nutraceutical Industry. According to her, Jamaica is poised to gain a significant share of the fast-growing global nutraceutical industry, which is estimated at US\$270 billion, and projected to reach US\$600 billion with the opening of the Asian markets by 2018 (Jamaica Observer, 2015). It is said that of the 160 established medicinal plants worldwide, 84 can be found in Jamaica, and the island also has some of the most radioactive mineral springs (Watson, n.d.).

The official launch of the National Nutraceutical Industry represents Government's thrust to develop the framework for a sustainable industry. This framework will include a structure for regulating and monitoring people, products and facilities, and will bring practitioners and support agencies together under one umbrella in a manner that is systematic and coordinated. The Food and Drug Act will also be amended to incorporate the classification and registration of nutraceutical products, which will align the industry with international standards. Other objectives outlined for the development of the industry include: 1. building media interest to educate the public and healthcare practitioners of nutraceutical products and the trade market impact, 2. expanding the local market, whilst gaining a great share of the international market, 3. building consumer confidence in nutraceutical products through the promotion of R&D standardization and 4. laying the scientific and social ground work to facilitate the emerging and expanding market. (National Commission on Science and Technology (NCST), n.d.)

With Clarendon having a wealth of medicinal plants, which are being used locally for all kinds of treatments, based on ethno-pharmacological tradition, and the parish also boasting two mineral springs, including the Milk River Mineral Spa which is one of the most radioactive in the world, there is significant potential to tap into the nutraceutical industry. Investment opportunities include investment in research, processing and the cultivation of medicinal plants, in addition to the development of the parish's Mineral Spas (See also 4.4.5.7. Strategic Objective #209, pg. 419).

108. Logistics is the means of getting products from producers to consumers.

109. A logistics hub is a centralized geographical location that brings together the key business operators in logistics, e.g. manufacturers, shipping lines, air cargo companies, third and fourth party logistics providers (e.g. express cargo service providers), and logistics support services. Raw material and unfinished goods are stored, processed, finalized and managed in the logistics hub, closer to final consumers. The Hub also provides a clearing house for data, facilitating digital processing and quality management systems to track and trace shipments.

110. A special economic zone is a geographically delimited area, usually physically secured (fenced-in), single management/administration, eligibility for benefits based upon physical location within the zone, separate customs area (duty-free benefits) and streamlined procedures.

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Investments in the nutraceutical industry in Clarendon will not mean starting a local industry from scratch. The CPDCBS is already involved in a community project in the Pleasant Valley Area, which seeks to conserve biodiversity through the production of medicinal plants and the promotion of alternative livelihoods. The project includes the development of a Community Medicinal Plant Register, as well as a demonstration Medicinal Plant Nursery. Previously, the Scientific Research Council had also established an Organization of American States (OAS)-funded Nutraceutical Project experimental cultivation plots in Clarendon in collaboration with RADA, to determine the effect of climatic and soil conditions on yields of actives in select medicinal plant species (ginger and turmeric).

- **Waste Industry** – Solid waste management is posing a significant challenge in Clarendon. The parish generates tonnes of solid waste on a daily basis, including organics, papers, plastics, metals, cardboard and textile; large portions of which are burnt, dumped or landfilled. In addition to that, the volume and composition of waste being generated is overwhelming the resource-deficient formal system of solid waste management. This overall situation is posing a threat to both public and environmental health. (See 2.2.4.1.4.1. An Inadequate Formal System, pg. 151 and 2.2.4.1.4.2. Alternative Methods of Disposal, pg. 152)

However, it also presents a major economic opportunity for the parish. There is significant potential for turning the waste stream into a valuable resource and developing a new and viable waste industry. Waste reuse and recovery have significant economic potential, which is evidenced in the fact that waste management is one of the fastest-growing industries in the world. There are existing markets, including local markets, for recycling (particularly plastic and scrap metal), while the market for organic fertilizer or compost is set to increase significantly with changes in eating patterns, as well as the promotion of compost as a viable alternative to expensive imported synthetic fertilizers in the agriculture sector. Additionally, the local demand for renewable energy is quite high and the parish produces tonnes of organic waste which may be used to generate biofuels. In addition to composting, recycling and waste-to-energy, the waste management section of this Plan is promoting the separation of solid waste through legislation. It means that the structure for a successful waste industry will be developed.

Some of the business opportunities within the waste industry are:

- Collecting and transporting various categories of waste
- Commercial composting
- Recycling
- Bio-fuel generation
- Landfill management (will require negotiations with Government and the NSWMA)

- **Creative industries** - Jamaica is recognised globally for its broad and deep range of cultural and creative industries, but these industries have not featured highly in the local economic landscape. According to the Exim Bank Jamaica (n.d.), Jamaica's creative industries represent a reservoir of untapped potential that needs to be fully exploited and developed as an important avenue that can drive Jamaica's export economy, contribute to job creation and generate additional foreign exchange. The Bank asserted that the creative industries, as a non-traditional sector, have the strongest potential to contribute to Jamaica's economic well-being, if supported and exploited in the appropriate way. Dunn and Williams (2013) noted that the main challenges besetting the creative industries from reaching its full potential are institutional and governmental.

It appears as though this issue has been finally recognised by the relevant authorities, as over the last few years, there has been a concerted push to develop the island's creative industries. In early 2014, the Government formed a National Cultural and Creative Industries Commission, which is undertaking the development and implementation of a policy and master plan. The Government has also earmarked \$2.6 billion in the 2015/16 Budget for allocation across all Ministries, to support Jamaica's creative industry (McIntosh, 2015).

## 4.1. THE GENERAL ECONOMY

Furthermore, Government is supporting the advancement of the Caribbean's Draft Regional Development Strategy and Action Plan for the Cultural Industries. It lists among its objectives, growing the creative economy by building more globally competitive cultural industries as the foundation for increased employment in the sector, and it also advocates for better management of the sector to relocate more of the value chain within the Region. The state owned promotion agency, JAMPRO, has been actively promoting local and international investment within the industries. Its efforts are supported by those of other organisations including the JIPO and the WIPO.

The creative industries in Jamaica now appear well on a path of take-off. According to data from the Economic and Social Survey published by the PIOJ, in 2012 JAMPRO facilitated expenditure of \$1.16 billion for the industries, up from \$313 million in 2011 (Jackson, 2013). The agency also facilitated about \$900 million in spending on creative projects over the first nine (9) months of the fiscal year 2014-2015, or 7.5 per cent higher than the entire 2013-2014 fiscal year (Jackson, 2015). While the music industry has traditionally been the most exploited, the film, animation and fashion sectors are experiencing rapid development. The inaugural Jamaica Film Festival which was held in July 2015 has been hailed as a success by organisers (JAMPRO) as well as several international guest presenters who attended the five-day event which attracted significant international interest. Jamaica is also the producer of the Caribbean's first animated cartoon series, "Cabbie Chronicles," which was developed by Alcyone Animation's. Additionally, Reel Rock GSW Studio, a player in the local animation industry, has been successful in securing deals with international studios to create content for animation series. The fashion industry is also benefiting tremendously from two (2) major calendar events, Style Week Jamaica<sup>111</sup> and Caribbean Fashion Week<sup>112</sup>, which provide effective avenues for local designers and models to gain exposure on the regional and international stage. Based on these trends and happenings, the creative industries are now rife with opportunities for investment. While the music industry is arguably saturated, with Jamaica boasting the largest number of recording studios per square mile in the world, the film, animation and fashion sectors demonstrate huge economic potential for the future. The sports industry also presents significant opportunities for investment.

**Investment Opportunities in Film** - While enjoying success as a location for overseas film projects, Jamaica's rich history, global brand recognition and achievements in sports and music, present local and international film makers with an abundance of stories that are yet to be told, and a number of opportunities for investment in areas such as:

- Production of local movies and documentaries
- Production equipment rental
- Development of film studios
- Film distribution and marketing
- Sound Stages

**Investment Opportunities in Animation** - Jamaica is making significant strides in positioning itself as a credible player within the fast growing global animation industry, and has also outlined its plan to achieve continuous success. According to Vice President of Export and Market Development at JAMPRO, Robert Scott, the way forward is the development of at least ten (10) animation studios with a production capacity of a minimum of fifty (50) professionals (JAMPRO, 2014). With only a few animation studios already developed in the island, and most having a capacity way smaller, there is significant potential for such developments in Clarendon. Additionally, there is the potential for developing an institution dedicated to animation training, despite several institutions already providing training courses in the field.

## 4.1. THE GENERAL ECONOMY

**Investment Opportunities in Fashion** - Jamaica's fashion industry is filled with numerous creative designers, pattern-makers, seamstresses, finishers and manufacturers. However, the opportunity exists for a fashion house and skills training centre to teach technical skills and to also impart the business side of fashion to aspiring fashion designers.

**OPPORTUNITIES IN MUSIC** - Strategic investment in the music industry, closely aligned with tourism development, has the potential to generate more revenue from these entertainment events.

**OPPORTUNITIES IN SPORTS** – Investment opportunities within the local sporting industry mainly relates to the construction of training facilities to position Jamaica as an off-season training destination for international athletes.

### RECOMMENDED POLICIES

- The relevant authorities will support the development of new and emerging industries within the parish, provided that their development or operation will not violate any local, national or international laws or treaties, or be detrimental to the sustainable development of the parish.
- The Government and the relevant authorities will seek to develop the framework for the growth and establishment of new and emerging industries with a high potential for development locally.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Carry out special marketing of investment opportunities available in the areas/ industries identified above.	Short to Long Term	JAMPRO, CPC
Provide adequate incentives for investment in the areas/ industries highlighted above.	Short to Long Term	GOJ, CPC
Provide technical guidance and support to investors for investment projects within the industries highlighted above.	Short to Long Term	Jamaica Business Development Corporation (JBDC), CPC
Support Strategic Objective #167 of this this Plan (pg. 353).	Short to Long Term	JBDC, CPC

### 4.1.5.2. STRATEGIC OBJECTIVE #158

**To attract domestic and foreign direct investment through the marketing of investment opportunities and incentives.**

Private sector investment, including foreign direct investment, is critical to stimulating meaningful economic growth in Clarendon. Whilst public sector investment is central and fundamental to sustainable economic development, public investment alone cannot meet the demands of the local economy for improving income and generating employment. Sustained private sector investment is therefore an important precondition to improving income and employment prospects in Clarendon.

## 4.1. THE GENERAL ECONOMY

In order to attract private investment in the parish, investment opportunities as well as possible incentives, will be marketed. An Annual Parish Investment Forum will be staged which will focus on the business opportunities that exist in priority areas as well as major privatization and development projects. This forum will further provide potential investors with insightful information pertaining to local/national investment policies and incentive regimes, as well as networking opportunities among existing investors and leaders in the local business community. Additionally, these investment opportunities and possible incentives will be highlighted within business forums on the parish's marketing website (See 4.1.5.5. Strategic Objective #161, pg. 348). Local stakeholders will also seek to improve coordination with JAMPRO in order to engage potential foreign investors and market the Parish in international forums.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Plan and stage an Annual Parish Investment Forum which will focus on the business opportunities that exist in priority areas as well as major privatization and development projects within the parish.	Medium to Long Term	JAMPRO, CPC, Clarendon Chamber of Commerce
Highlight investment opportunities and possible incentives at business forums.	Short to Long Term	JAMPRO, CPC, Clarendon Chamber of Commerce
Ensure that investment opportunities and possible incentives are highlighted on the parish's marketing website.	Short to Long Term	CPC
Improve coordination with JAMPRO in order to engage potential foreign investors and market the parish in international forums.	Short Term	CPC

### 4.1.5.3. STRATEGIC OBJECTIVE #159

**To support entrepreneurships in order to achieve economic growth and create employment opportunities.**

In order to achieve economic growth and create employment opportunities, Clarendon must foster growth in entrepreneurship. Entrepreneurship creates new companies and jobs, opens up new markets, and nurtures new skills and capabilities, which are essential in achieving local sustainable economic development. It follows that entrepreneurship and entrepreneurial culture will be actively promoted in the parish.

In promoting entrepreneurship, the focus will be on five (5) priority areas: 1.entrepreneurship education, 2.access to capital, 3.the business environment, 4.access to incubators and 5.mentorship. Entrepreneurship education will focus on inculcating a culture of entrepreneurship in the parish. This will be achieved through the introduction of entrepreneurship in the curricula of all primary, secondary and tertiary institutions. . The development of an institution dedicated to teaching of entrepreneurship will be strongly encouraged and supported. Partnerships which allow aspiring entrepreneurs to develop their entrepreneurial skills through

## 4.1. THE GENERAL ECONOMY

informal and non-formal education like volunteering and internship will also be facilitated. The possibility of engaging in exchange programmes, including international programmes, for educators and trainers will also be explored. As it relates to access to capital, awareness of existing funding opportunities for entrepreneurs will be increased, while the relevant stakeholders will be encouraged to increase the provision of grants and 'entrepreneur friendly' loans. Improvements in the business environment will also be encouraged and supported to ensure growth in entrepreneurship as well as the success of entrepreneurs. In addition to supporting the development of a one stop shop for essential services such as business registration, access to loans, counselling and mentoring, incubators or support for businesses which may last throughout their lifecycles will be provided. Awareness of entrepreneurial support programmes and organisation will also be increased in order to achieve this objective. Additionally, a structured Mentorship Programme will be introduced in the Parish. This will involve the utilization of entrepreneurs, senior executives and business professionals with proven track record in their respective fields to volunteer as mentors. The feasibility of providing online business counselling will also be explored.

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage growth in entrepreneurship in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the development of a school or college of entrepreneurship within the parish.	Medium to Long Term	MEYI, Private Sector
Ensure that entrepreneurship is a part of the schools' curricula from the primary to university level. This should include the development of teaching resources and models to ensure student-centred learning and adequately preparing instructors/teachers to administer lessons on entrepreneurship. The possibility of engaging in exchange programmes, including international programmes, for educators and trainers in entrepreneurship should be explored.	Short Term	MEYI
Facilitate the development of partnerships, which allow aspiring entrepreneurs to develop their entrepreneurial skills through informal and non-formal education like volunteering and internship.	Short to Long Term	National Youth Service (NYS), Educational Institutions, MEYI

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Increase awareness of existing funding opportunities for entrepreneurs, as well as other entrepreneurial support programmes and organisations, including Jamaica Youth Business Trust (JYBT), Jamaica Youth Employment Network (JYEN), Jamaica Business Development Centre (JBDC), Young Entrepreneurs Association (YEA), Youth Entrepreneurship Programme (YEP) and the Young Americas Business Trust (YABT).</p>	<p>Short Term</p>	<p>CPC, JBDC, MEGJC</p>
<p>Continue to provide entrepreneurship grants, whilst exploring the possibility of increasing such grants. Awareness of such programmes should also be increased.</p>	<p>Short to Long Term</p>	<p>GOJ, CPC, Private Sector</p>
<p>Increase awareness of the JVCP.</p>	<p>Short Term</p>	<p>JBDC, CPC, MEGJC</p>
<p>Explore the feasibility of crowdfunding.</p>	<p>Short Term</p>	<p>CPC, MEGJC</p>
<p>Develop a framework to facilitate diaspora investments in business ventures.</p>	<p>Short to Medium Term</p>	<p>CPC, MEGJC</p>
<p>Support the development of a one stop shop for essential services such as business registration, access to loans, counselling and mentoring. In the interim, mobile teams may be used to increase access to such services locally.</p>	<p>Short to Medium Term</p>	<p>GOJ, JBDC</p>
<p>Continue to offer service support to entrepreneurs in areas such as marketing, record keeping, business advisory, research and project management, etc.</p>	<p>Short to long Term</p>	<p>JBDC</p>
<p>Increase awareness of business support resources and services available.</p>	<p>Short Term</p>	<p>JBDC</p>

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Offer tangible incubators such as office space, shared equipment, land and direct access markets to support new start-ups.	Short to Long Term	JBDC, CPC
Develop and implement a structured Mentorship Programme for entrepreneurs in the parish. This programme should: <ul style="list-style-type: none"> <li>• Encourage entrepreneurs, senior executives and business professionals with proven track record in a particular field to volunteer as mentors.</li> <li>• Recognize business mentors for their contributions through annual award ceremonies.</li> <li>• Provide resources to facilitate networking opportunities.</li> <li>• Organize educational activities to enhance the mentorship experience through seminars, workshops, visits, etc.</li> <li>• Facilitate and promote online business counselling.</li> <li>• Establish a local competition for entrepreneurs, the reward for which will be mentorship from successful businesses.</li> </ul>	Medium Term	JBDC, CPC

### 4.1.5.4. STRATEGIC OBJECTIVE #160

**To promote franchising as a strategy to stimulate entrepreneurship, create jobs and generate local economic growth and development.**

In order to stimulate entrepreneurship, create jobs and generate local economic growth and development, this Plan strongly promotes franchising. Franchising is the establishment of an agreement (usually through the granting of a license) between two legally independent parties which gives an individual or group (the franchisee) the right to market a product or service using the trademark or trade name and operating methods of another business (the franchisor). The franchisee also has the obligation to pay the franchisor fees for these rights, whilst the franchisor which may be a local or overseas company is obligated to provide support to the franchisee. This concept has been fully and successfully established both locally and internationally, including in the USA and Canada, providing employment and contributing to sustained economic development<sup>113</sup>. There is considerable scope for growth within this industry, as highlighted by the president of JAMPRO, Diane Edwards, who stated that business opportunities abound locally and at the global level in franchise arrangements (Angus, 2015). Research has shown that a number of companies, including local and international establishments, are offering franchising opportunities in Jamaica.

## 4.1. THE GENERAL ECONOMY

In addition to that, franchising may be promoted as a strategy for expanding local businesses, including in other countries, which will also offer additional opportunities. It follows that franchising will be promoted within the parish as an investment opportunity for potential entrepreneurs as well as a business expansion opportunity for existing businesses.

### RECOMMENDED POLICIES

- The relevant authorities will seek to promote franchising as an investment opportunity.
- The relevant authorities will seek to promote franchising as a strategy for expanding local businesses.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage prospective entrepreneurs to take advantage of franchising opportunities.	Short Term	JAMPRO, CPC
Encourage more local businesses to explore the possibility of providing franchising licenses. This may require upgrading the standards of their products.	Short Term	CPC, Clarendon Chamber of Commerce
Increase awareness of franchising opportunities available.	Short Term	CPC, JAMPRO

#### 4.1.5.5. STRATEGIC OBJECTIVE #161

**To develop and market a local destination brand in order to gain competitive advantages for local products and services and also support sustainable investment.**

The development of a distinctive and compelling local brand, supported by effective marketing, is essential to attracting investment and for achieving growth within the local economy. Potential investors and tourists have an overwhelming number of choices and are faced with a large number of competing messages from competing destinations each day. In order to thrive in this environment, Clarendon must establish itself as a strong brand which will help to differentiate the parish from other destinations locally and regionally. This will help to foster competitive advantages for local products and services, and also support sustainable investment. At the same time, effective marketing must be undertaken to raise awareness of the parish as a leading destination for visiting and doing business.

Destination branding and marketing will take place through a collaborative approach. The establishment of a committee which will coordinate the parish's overall branding and marketing strategy will be supported. This committee may be a body within an existing agency or organisation, such as the CPC or the CPDCBS, or may be newly created. The relevant authorities will explore the feasibility of introducing a compulsory levy on local businesses and institutions as a source of funding for the local branding and marketing committee, as well as the parish's branding and marketing strategy.

113. Popular examples of franchise within Jamaica, include local companies such as Island Grill, Taste Patties, Juicy Patties, and Sugar and Spice and international companies such as Burger King, Kentucky Fried Chicken, Pizza Hut and Little Tokyo. While these are all food establishments, there are other types of franchises in Jamaica in areas such as dry cleaning, automobile care and rental, and training services.

## 4.1. THE GENERAL ECONOMY

Destination branding for the parish will involve the development of quality products and services, in addition to a logo, tag lines and other suitable imaging and branding materials, which are focussed on the unique selling proposition of Clarendon and also conveys the promise of a memorable experience that is uniquely associated with the parish. All destination branding materials will be properly field tested, through surveys and focus groups by the branding committee. These surveys and focus groups will be conducted in the local and international markets, as well as among the stakeholders. Following the development and testing of branding materials, a brand sensitization programme will be rolled out to all stakeholders. Local businesses and institutions will then be encouraged to adopt and use the brand strategy, whilst adhering to any standards and regulations set out by the branding and marketing organisation, as part of the commitment to the local brand.

The marketing of the parish as a brand will require coordination. Local businesses and institutions which commit to the local brand will therefore be linked together in a database which will be packaged and presented in an authentic and attractive manner, which includes video content. This will be in the form of a powerful and user-friendly website, which is developed by the branding and marketing committee. The possibility of linking this website to other marketing websites such as that of the JAMPRO will be explored. This website will also provide clear links to key sources of information, such as online accommodation, booking and information on travel services for tourists, and potential economic activities, incentives and the development approval process for potential investors. This will form part of a robust online strategy that will be actively pursued. The overall online strategy will incorporate online video marketing, social media, blogging, ad campaigns and other information sharing activities to build awareness and visibility of the Parish. This online marketing strategy will be used in conjunction with traditional types of advertising such as radio, television, newspapers, brochures and magazines.

### RECOMMENDED POLICIES

- The relevant authorities will seek to explore the feasibility of introducing a compulsory levy on local business and institutions, in order to fund the establishment of a committee responsible for coordinating a local branding and marketing strategy, as well as to fund this strategy.
- Only licensed/ formal businesses and institutions will be eligible to use the local brand or branding materials.
- All business and institutions which are approved to use the local brand will commit to the provision of quality products and services.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish a committee which will coordinate the parish's overall branding and marketing strategy.	Short Term	CPC, Clarendon Chamber of Commerce
Develop a comprehensive destination brand for the parish of Clarendon which includes a logo, tag lines and other suitable imaging and branding materials, which are focussed on the unique selling proposition of Clarendon and also conveys the promise of a memorable experience that is uniquely associated with the parish.	Short to Medium Term	Marketing Committee

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Test all destination branding materials through surveys and focus groups in the local and international markets, as well as among the industry stakeholders.	Short to Medium Term	Marketing Committee
Undertake a brand sensitization programme targeting all stakeholders.	Medium Term	CPC, Clarendon Chamber of Commerce
Encourage local businesses and institutions to adopt and use the brand strategy, whilst adhering to all accompanying standards and regulations.	Medium Term	CPC, Clarendon Chamber of Commerce
Develop a comprehensive marketing strategy for the parish, focussing on the destination brand. This strategy should include the creation of: a database linking local businesses and institutions; a website which packages and presents the database in an authentic and attractive manner, and also provide clear links to key sources of information; and a robust online strategy which incorporates online video marketing, social media, blogging, advertising campaigns and other information sharing activities. The use of other marketing approaches and tools such as press visits, brochures and magazines should also be included. Marketing should also be customer focussed and based on a clear understanding of the market.	Medium Term	Marketing Committee

### 4.1.5.6. STRATEGIC OBJECTIVE #162

**To promote awareness of local employment opportunities as a strategy to help reduce unemployment.**

Finding local employment has been described as extremely difficult. Therefore, promoting the awareness of local jobs is necessary to assist unemployed Clarendonians in finding local employment. This will be achieved through the development of a local electronic job board, which may or may not be linked to the parish's marketing and branding website (See 4.1.5.5. Strategic Objective #161, pg. 348). All employment opportunities available in local public and private sector entities will be posted on this job board.

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The feasibility of charging a small fee for posting jobs will be explored. This will improve awareness of local employment opportunities, and will also help provide important labour market information specific to the parish of Clarendon, which may be used to inform policy makers, programme developers, students, potential students, and others in developing or selecting training programmes, career paths, etc.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop a local electronic parish job board. This may or may not be linked to the parish's marketing and branding website.	Short to Medium Term	CPC, Clarendon Chamber of Commerce
Encourage all local public and private sector entities to post all available employment opportunities on the local parish job board.	Short to Medium Term	CPC, Clarendon Chamber of Commerce
Explore the feasibility of charging a small fee for posting jobs on the parish's job board.	Short Term	CPC, Clarendon Chamber of Commerce

### 4.1.5.7. STRATEGIC OBJECTIVE #163

**To increase financing for MSMEs by introducing financing options that are less dependent on the provision of traditional collateral and facilitating an increase in the supply of credit.**

Improving access to financing for the MSMEs is a critically important strategy to ensuring local economic growth and development. MSMEs are a key driver of economic growth, but access to finance is a key constraint to their development within the Plan Area. Since access is limited both in terms of the collateral available and the supply of credit from financial institutions, emphasis will be placed on introducing financing options that are less dependent on the provision of traditional collateral and facilitating an increase in the supply of credit to MSMEs. This will involve the active participation of all the major players including the MSMEs, banks, other financial institutions, and the government.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise awareness locally of the Security Interest in Personal Property Act.	Short Term	MEGJC, Ministry of Finance
Lobby private lending institutions to explore the viability of the business idea, rather than focus on traditional collateral.	Short Term	GOJ
Encourage private lending institutions to accept non-traditional collateral instruments such as IP.	Short Term	GOJ

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Explore the possibility of introducing innovative financing options for MSMEs such as crowdfunding.	Short to Long Term	CPC, GOJ, Private Sector
Provide loan capital at highly subsidized interest rates to institutions that are willing to lend to the micro sector.	Short to Long Term	Private Sector

### 4.1.5.8. STRATEGIC OBJECTIVE #164

**To reduce the high cost of energy in order to improve the competitiveness of local businesses.**

The relatively high cost of energy has been identified as the main challenge inhibiting business growth and development within the Plan Area. Hence, reducing the cost of energy is a key objective of this Plan. In order to achieve this objective, energy efficiency and conservation, as well as the use of renewables will be promoted. Energy efficiency and conservation will be promoted through several different programmes and initiatives, ranging from technological applications to good consumption patterns. Likewise, the use of renewables will involve several programmes including: the promotion of solar, wind and biogas energy; the establishment of a green Revolving Fund for local businesses wishing to develop renewable energy systems; and exploring the feasibility of implementing net metering, whilst raising the awareness of net billing which is already in place.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #45 and #46 of the Energy Section of this Plan. See pgs. 134-141	Short to Long Term	Clarendon Chamber of Commerce, Private Sector, MEGJC

### 4.1.5.9. STRATEGIC OBJECTIVE #165

**To significantly reduce the frequency of serious crimes in order to improve the competitiveness of local businesses and to attract investment.**

A key objective of this Plan is to reduce the high rate of serious crimes in the parish. This will be achieved through the implementation of actions which focus on: 1.preventing crime through social development, 2. preventing situational crimes through spatial interventions, 3.preventing crime through effective policing and justice processes, and 4.preventing crime by reducing the potential for reoffending.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #112-#122 of the Safety and Security Section of this plan. See Pgs. 263-276	Short to Long Term	Clarendon Chamber of Commerce, Private Sector, MEGJC

## 4.1. THE GENERAL ECONOMY

### 4.1.5.10. STRATEGIC OBJECTIVE #166

**To promote the development of a green economy in order to improve the competitiveness and profitability of local businesses and foster environmentally and socially responsible behaviours amongst firms.**

In order to foster more environmentally and socially responsible behaviours among local firms, this Plan promotes the development of a green local economy. In order to achieve this objective, eco-efficiency will be promoted which will create the potential for a reduction in materials and energy costs and further improve the competitiveness and profitability of local businesses. This will include the adoption of the principles of natural capitalism and go beyond simply minimizing their negative impacts on the natural environment. Local businesses will be encouraged to integrate environmental considerations into all functional management areas, including R&D, strategic planning, and marketing. New jobs and industries will also be based on sustainable use of natural resources and unique environmental assets. For example organic agriculture and sustainable tourism will be promoted, whilst a renewable energy sector and a nutraceutical industry which explores the genetic potential of endemic species will be developed. This will lay the foundation for the sustainability of local businesses and therefore support sustained local economic development.

#### RECOMMENDED POLICIES

- Adequate consideration will be given to environmental protection and/ or conservation in all business processes.
- All economic developments or activities will be required to comply with the relevant environmental policy objectives of this Plan.

### 4.1.5.11. STRATEGIC OBJECTIVE #167

**To encourage clustering as a strategy to improve productivity and competitiveness.**

Fostering the development of business clusters is a key part of national development strategies which will be highly supported in Clarendon. Clusters are local concentrations of horizontally or vertically linked firms that specialise in related lines of business together with supporting organisations. Numerous studies have shown that on average, a business located in a cluster has a stronger growth and survival rate than those located outside it. Clusters are also considered to increase the productivity with which companies can compete, nationally and globally. Fostering the development of clusters will therefore be used to achieve a wide range of local development goals, such as small and medium sized enterprise support, job creation and skills upgrading that are important locally and will translate into welfare gains at the regional and national levels.

In order to encourage or foster the development of clusters, support will be provided from both the local and the national levels. Under Jamaica's GLHI, at least two (2) geographical areas (at Vernamfield and Jackson Bay) in the parish will be designated as clusters called SEZs. These SEZs are geographically designated areas set aside for specifically targeted economic activities, supported through special arrangements (that may include laws) and systems that are different from those that apply in the rest of the country. Over 2900 acres of land at Vernamfield will be developed into an aerotropolis, to include a cargo aerodrome, warehousing facility and industrial centre, while Jackson Bay will be developed as a dry dock for the maintenance and repair of ships, boats, and other watercraft. The Government is already in the process of developing a SEZ legislation which will provide the framework for the management of these clusters, including the allocation of incentives. The Government will also seek to allocate crown lands in other areas of the parish for the development of clusters as needed. In addition to that, a local education programme will be developed to inform businesses, particularly MSMEs, of the benefits of being a part of a cluster. Businesses will also be encouraged to develop clusters outside of SEZs in order to increase productivity. At the same time, the labour force will be prepared to meet the demands of businesses and activities associated with these clusters.

## 4.1. THE GENERAL ECONOMY

### RECOMMENDED POLICIES

- The Government will seek to allocate crown lands in other areas of the Parish for the development of clusters as needed.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the establishment of the SEZs in the parish. This should include the undertaking of the infrastructural works.	Short to Long Term	GOJ, Private Sector
Increase marketing efforts for the designated SEZs in the parish.	Short to Long Term	JAMPRO, CPC
Develop and implement a local education programme to inform businesses, particularly MSMEs, as well as entrepreneurs, of the benefits of being a part of a cluster.	Short Term	JBDC, CPC, Clarendon Chamber of Commerce
Support Strategy #168 of this of this Plan. See pg. 354	Short to Long Term	Clarendon Chamber of Commerce, MEGJC

#### 4.1.5.12. STRATEGIC OBJECTIVE #168

##### To undertake human capital reform in order to support socioeconomic development.

Human capital reform is critical to improving not only economic growth but also social conditions in the parish of Clarendon. As highlighted earlier, there is generally a poor alignment between the outputs of the educational system and the demands of the local economy, which is evidenced by the fact that a number of individuals who have exited the system at various levels are unable to find meaningful employment, and are also unable to create their own employment. Additionally, there is a gap between the skills required for sustained economic growth and the skills profile of the labour force. This situation underscores a need for human capital reform to ensure that the skills profile of the labour force actually match the demands of the labour market and the local economy. See. pg 293.

#### 4.1.5.13. STRATEGIC OBJECTIVE #169

##### To encourage investment in infrastructure as a strategy to support local economic growth and expansion.

According to Vision 2030, high-quality infrastructure is important to economic prosperity for many reasons. Transport, water supply and telecommunications infrastructure influence the spatial location of economic activities and contribute to balanced and sustainable regional development, as they enhance the efficient movement of people, goods, services and information. Therefore, regions that invest in infrastructure are better positioned to attract investment (including foreign direct investment), stimulate commerce and support local businesses. It follows that extensive and high-quality infrastructure is a pillar of competitiveness that: enables the efficient functioning of markets for goods, services and labour; increases the productivity of economic processes; and improves decision-making by entrepreneurs and other economic actors. Based on these premises, investment in infrastructure will be promoted as an economic strategy.

## 4.1. THE GENERAL ECONOMY

### RECOMMENDED POLICIES

- The relevant authorities will seek to develop the requisite infrastructure to facilitate economic development.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the implementation of all Strategies of the Water Section of this Plan. See pgs. 112-124	Short to Long Term	CPC, Private Sector, MEGJC
Support the implementation of Strategic Objective #72 of the Telecommunications Section of this Plan (pg. 175).	Short to Long Term	CPC, Private Sector, MEGJC
Support the implementation of Strategic Objectives #17, #18, #26, #27, #28 and #29 of the Transportation Section of this Plan. See pgs.91-92, 101-103	Short to Long Term	CPC, Private Sector, MEGJC
Support the implementation of Strategic Objective #44 of the Energy Section of this Plan (pg. 133).	Short to Long Term	CPC, Private Sector, MEGJC

#### 4.1.5.14. STRATEGIC OBJECTIVE #170

**To promote flexible work arrangements as a key strategy to maximise labour productivity and economic development.**

The introduction of flexible work arrangements is considered a key part of Jamaica's economic growth agenda and one of the main strategies for the reform of the Jamaican labour market. On Tuesday, September 23, 2014, the House of Representatives passed the Employment (Flexible Work Arrangements) (Miscellaneous Provisions) Act, which paved the way for the introduction of flexible working arrangements. The main element of the flexi-work arrangement under this Act is that there will not be a set 8 or 10 hour work day, but that the workday will be capped at a maximum of 12 hours and all seven days of the week will be considered as normal working days. It follows that the 40 hour workweek can be spread over any number of days, including the traditional weekend. These arrangements are expected to provide a number of tangible benefits for both employers and employees and contribute to economic growth and productivity.

Flexible working arrangements will be embraced in the parish to support Government's Policy. Whilst it is not necessarily a new phenomenon, adequate public education will be facilitated since the MLSS (2010) noted that many employers seemed to have limited understanding of what it entails, and in some cases workers haven't embraced the concept. Government will play an important role in facilitating a public education campaign that will inform people about the different types of flexible work arrangements and the benefits. Employers will also be encouraged to educate themselves about flexible work arrangements in terms of what it entails as well as what would be most suitable for their organizations. In the implementation of such arrangements, adequate consultation will be undertaken between employers and employees. Nevertheless, the MLSS will closely monitor complaints under the flexi-work arrangements and take appropriate actions where there are breaches.

## 4.1. THE GENERAL ECONOMY

### RECOMMENDED POLICIES

- The introduction of flexible working arrangements, will be supported in the parish provided there is adequate consultations between employers and employees.
- The MLSS will closely monitor complaints under the flexi-work arrangements and take appropriate actions where there are breaches.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement a public education campaign which informs people about the different types of flexible work arrangements and their benefits, and also encourage employers to educate themselves about flexible work arrangements in terms of what it entails as well as what would be most suitable for their organizations.	Short Term	MLSS

#### 4.1.5.15. STRATEGIC OBJECTIVE #171

**To encourage the application of appropriate technologies in order to improve productivity and competitiveness.**

The application of appropriate technologies can significantly improve the productivity and competitiveness of local businesses. An appropriate technology is that which an organization, with given technical and management skills, educational levels, resources and cultural background, can apply to maximize the added value of its activities. A more advanced technology, which does not add further value would therefore be unjustified, whilst a less advanced technology would not yield sufficient added value. An appropriate technology is not necessarily a competitive technology at world class level but it best satisfies the economic requirements of a particular business. This may be applied to all local business functions and operations.

The application of appropriate technologies will therefore be strongly encouraged to support local economic growth. Awareness of this type of technology will be raised amongst local businesses, who will also be encouraged to carry out and implement the results of assessments of what is the appropriate technology within the context of their business. These businesses will also be encouraged to carry out periodic reviews of their technology strategy as what is appropriate today may not necessarily be at some future stage. At the same time, the responsible stakeholders, including Government, will seek to ensure the availability of technologies which are deemed appropriate by local businesses. Financial institutions will also provide loans for local businesses which seek to mechanise their operations or purchase appropriate technologies to optimise productivity.

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage the application of appropriate technologies within the local productive sector.

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Raise awareness of appropriate technologies amongst local businesses and encourage them to carry out and implement the results of assessments of what is appropriate technology within the context of their business.	Short Term	MSET
Provide loans for local businesses which seek to mechanise their operations or purchase appropriate technologies to optimise productivity.	Short to Long Term	Private Sector
Ensure the availability of technologies which are deemed appropriate by local businesses.	Short to Long Term	Private Sector
Encourage local businesses to periodically review their technology strategy.	Short Term	MSET

### 4.1.5.16. STRATEGIC OBJECTIVE #172

**To promote adequate R&D to support innovation, while enhancing business competitiveness and economic expansion.**

Adequate R&D is necessary to stimulate innovation, competitiveness and economic growth. R&D is a crucial part of all innovation systems, which creates new and better products. R&D also improves the methods for making these products, and thereby develops new market opportunities to sustain or accelerate competitiveness and economic growth. Hence this Plan promotes an increase in the R&D activities in the parish. Several actions will be undertaken to achieve this objective. A scientific and technological culture will be created in the parish by encouraging creative thinking and awarding creative talents that boost innovation.

Local colleges, universities and training institutions will also be encouraged to become more actively engaged in R&D through the provision of incentives. Additionally, awareness of the importance of R&D will be increased within all local business sectors, while local businesses will be further encouraged to develop strong links and collaborate with research bodies, including tertiary institutions, in R&D activities. Moreover, the feasibility of developing a science and technology park in the parish will be explored in the long term.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase awareness of the importance of R&D within all local business sectors.	Short Term	JBDC, MEGJC, Clarendon Chamber of Commerce

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage local colleges, universities and training institutions to become more actively engaged in R&D through the provision of incentives. These incentives may include grant funding or commercial funding at special interest rates.	Short Term	MSET, MEYI, Private Sector
Encourage local businesses to collaborate with educational institutions, including those outside of the parish, in R&D activities.	Short Term	MSET, CPC, Clarendon Chamber of Commerce
Encourage local businesses to develop strong links with research bodies such as the Scientific Research Council.	Short Term	MSET, CPC, Clarendon Chamber of Commerce
Create a scientific and technological culture in the parish by encouraging creative thinking and awarding creative talents to boost innovation.	Short to Long Term	MSET, MEYI, CPC, Private Sector
Explore the feasibility of developing a Science and Technology Park in Clarendon.	Long Term	MSET

### 4.1.5.17. STRATEGIC OBJECTIVE #173

#### **To encourage continuous capacity building and improvement through investment in human capital to support the sustainability of local businesses.**

The world of business is becoming increasingly dynamic and complex, which underscores a need for businesses to constantly adjust to changing market demands and/ or conditions. As a consequence, businesses around the world are investing in continuous capacity building programmes in order to keep their employees on the cutting edge of industry developments. In order for local businesses to thrive and compete successfully in this ever-changing corporate arena, it is imperative for them to follow suit; that is, local businesses must continuously invest in human capital. This will help to improve business operations, which reduces wasted resources from unskilled workers and increases overall employee efficiency.

Continuous capacity building and improvement through investment in human capital will be strongly encouraged within local businesses. This will include investment in education and training. Investment in education usually involves reimbursing employees for traditional college degrees or paying for seminars or attendance to trade schools. It is often used to develop an employee's technical skills in areas such as accounting, finance, or production. On the other hand, training is most often conducted by supervisors working on the job with employees, showing them how to complete specific functions. The relevant stakeholders will also be encouraged to undertake technical workshops and develop targeted capacity building programmes for local businesses in areas such as customer services and management of technology.

## 4.1. THE GENERAL ECONOMY

Nevertheless, companies will be required to analyse the total cost of improving employee output against the benefits of the investment and carefully select the employees which should receive education and/ or training. They will also be encouraged to develop strategic alliances with other businesses to strengthen their technical capacity and reduce their cost of training.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase awareness of the importance of investing in human capital for the development and growth of local businesses. During this process, businesses should be encouraged to analyse the benefits of improving employees' output against the total cost of investing in human capital when selecting employees for education and/or training.	Short Term	JBDC
Develop targeted capacity building programmes for local businesses in areas such as customer services, management of technology, business planning, cash flow projections, inventory management, the protection of IP, and quality assurance.	Short to Long Term	JBDC
Undertake technical workshops with the aim of showcasing new and emerging methods of business operations.	Short to Long Term	MSET, Private Sector, Clarendon Chamber of Commerce
Encourage strategic alliances among businesses to strengthen their technical capacity and reduce their cost of training.	Short to Long Term	Clarendon Chamber of Commerce

### 4.1.5.18. STRATEGIC OBJECTIVE #174

**To encourage local businesses to maximise IP value, to support local economic development.**

Maximising the value of IP is another key part of the economic development strategy. It is important that local businesses understand the importance of the various components of the IP system and use it effectively as an integral part of their business strategy. They need to fully exploit their IP assets to maintain consistent quality and market products and services to consumers so as to develop long-term customer loyalty. Since most local citizens, including the operators of many local businesses, lack knowledge of what constitutes IP, the laws which relate to IP protection, the work of the JIPO, and the value of this property to individual firms, an awareness and capacity building programme at the local level will be developed and implemented. This programme will complement the ongoing efforts of JIPO and will also include knowledge on how to maximise the value of IP, including through the development of ecosystems built around particular IP.

## 4.1. THE GENERAL ECONOMY

### RECOMMENDED POLICIES

- The relevant authorities will seek to adequately enforce IP laws within the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop and implement an IP awareness and capacity building programme at the local level. This programme should complement the ongoing efforts of JIPO and should include among other things knowledge of what constitutes IP, the laws which relate to IP protection, the work of the JIPO, the value of IP to individual firms, and how to maximise the value of IP, including through the development of ecosystems built around particular IP. This programme should seek to utilize various mediums to reach the population, including electronic and print media, school curricula, workshops, brochures, and other appropriate methods.</p>	<p>Short Term</p>	<p>CPC, JIPO</p>

#### 4.1.5.19. STRATEGIC OBJECTIVE #175

##### To encourage networking as a strategy to ensure the sustainability of local businesses.

Under this Plan, networking will be promoted as a critical part of local business strategies. It is an effective low-cost marketing method for developing sales opportunities and contacts, based on referrals and introductions, either face-to-face at meetings and gatherings, or by other contact methods such as phone, email, and increasingly social and business networking websites. For decades, this method has been recognized as a foundational means of business development. However, its use isn't fully exhausted in the Plan Area. A number of local business operators are using social media, including Facebook, Twitter and LinkedIn, but there is significant scope for increasing the application of networking in business development. Accordingly, business networking opportunities will be facilitated by the relevant stakeholders at the different levels, including the local and national levels. Awareness of the range of business networking websites available will also be raised, while local businesses will be encouraged to take advantage of them.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Ensure that local businesses are fully aware of the benefits of networking.</p>	<p>Short Term</p>	<p>JBDC</p>

## 4.1. THE GENERAL ECONOMY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Facilitate networking sessions for local businesses.	Short to Long Term	Clarendon Chamber of Commerce
Raise awareness of the range of business networking websites available and encourage local businesses to take advantage of them.	Short Term	JBDC

## 4.2. AGRICULTURE

### 4.2.1. OVERVIEW OF THE LOCAL AGRICULTURE SECTOR

Agriculture has always been a fundamental component of Clarendon's economy and overall development strategy. The 1978/79 Census of Agriculture indicated that the parish had approximately 24, 113 farms, with 10, 302 being used for the cultivation of Export Crops (TCPA, 2012). The number of farms have been significantly reduced, but agriculture still remains the most dominant economic activity of the parish. Data obtained from RADA revealed that at present, there are approximately 22,020 farmers in the parish, whose production contributes over \$600 million per annum to the local economy. The sector is also a significant driver of the manufacturing sector, and makes important contributions to tourism, education and overall social well-being. Agriculture is arguably the most critical economic activity in the parish.

Agricultural activities in Clarendon range from small to large scale, and include the production of crops, livestock and dairy. Most farmers have small plots of land and produce mainly for local consumption, while the larger farms produce both for the domestic and export markets. Currently, legumes, vegetables, condiments, fruits, cereals, plantains, potatoes, yams and other tubers are planted, but the production of sugar cane, which has declined over the years, is by far the leading agricultural activity<sup>114</sup>.

Sugarcane is grown extensively on the plains of the parish, mainly on the New Yarmouth and Monymusk plantations (TCPA, 2012). Citrus is also grown on a large scale, having its greatest concentration at the Trout Hall Farms where oranges, grapefruit and tangerines are grown for the export and local markets (TCPA, 2012). There are at least 34 dairy farms which yield approximately 2,919.7 litres of milk each year (TCPA, 2012). Livestock farming includes the rearing of chicken, cows, pigs, and other domesticated animals. Bee keeping is also done on a very small scale, mainly to satisfy the domestic market. The 2009 census of bee farmers revealed that there were 101 bee farmers in the parish.



Figure 85: Sugarcane cultivation on the Vere Plains.  
Source: CCAM (2014)

### 4.2.2. INSTITUTIONAL FRAMEWORK OF THE LOCAL SECTOR

The MICAF has the overall responsibility to guide the long-term development of the agricultural sector of Jamaica. However, the RADA is currently the major local authority for agriculture in the parish of Clarendon. RADA was established as the extension arm of the MICAF to provide training and technical assistance to farmers. The Authority currently divides the parish into several extension areas with a few extension and livestock officers, complimented by field assistants, assigned to monitor different areas. The main objectives of the RADA include: (a) to provide a technical extension advisory service to farmers in the parish in an effort to increase production and productivity; (b) to provide training and development for extension personnel at all levels; (c) to administer farmer training programmes; (d) to stimulate agricultural credit and inputs for small farmers; (e) to provide assistance to small farmers and intermediaries in organizing co-operative marketing ventures and (f) to disseminate in a timely manner, marketing information to farmers; (g) to co-operate with agencies involved in the development of rural infrastructure with a view to improve the quality of life in rural communities;

<sup>114</sup>. Data obtained from RADA.

## 4.2. AGRICULTURE

(i) to be the implementing agency for selected projects that impact on the farming biological environment; (j) to liaise with agricultural research organizations; and (k) to provide a channel for the free flow of inputs from farmers upwards, and for the implementation of policy decisions taken by the policy makers. (Agriculture Task Force, 2009).

### 4.2.3. LOCAL EDUCATIONAL AND TRAINING INSTITUTIONS FOR AGRICULTURAL STUDIES

In a bid to protect and maintain the agricultural viability of the parish, the HEART Trust/NTA continues to prepare certified workers to successfully pursue careers in that sector. The Trust, with the assistance of industry partners, has invested heavily in agro-processing technology and has a close collaborative relationship with the College of Agriculture, Science and Education (CASE). Its flagship training institution, the Ebony Park Academy in Toll Gate offers a multi-disciplinary curriculum in agricultural skills. It also serves as a demonstration site where farmers can observe appropriate layout and disciplined systematic approach to agricultural enterprises, and be introduced to new crops and advanced farming techniques. (Agriculture Task Force, 2009 and TCPA, 2012).

### 4.2.4. ISSUES AND CHALLENGES WITHIN THE LOCAL AGRICULTURE SECTOR

#### 4.2.4.1. ENCROACHMENT OF RESIDENTIAL, COMMERCIAL AND INDUSTRIAL DEVELOPMENTS ON AGRICULTURAL LANDS

Over the past decades, the population of Clarendon has been increasing, which is manifesting itself primarily in an outward expansion of built-up areas and the conversion of prime agricultural lands into non-agricultural uses. Prior to independence, the parish was predominantly agricultural, producing mainly sugarcane from its fertile plains (Taylor, n.d.). However, high population growth, coupled with modernization and the consequent demand for land, has resulted in the encroachment of non-agricultural uses on arable lands (TCPA, 2012). Additionally, agricultural activities have declined over the past few decades, which has left a number of hectares of arable lands idle and attractive for other uses, including squatting. Some 76 potential squatter settlements were identified by the SMU in the parish in 2007, of which sixty four percent (64%) were located on arable lands (SMU, 2008). These settlements are found within a number of areas including Denbigh Craawl, Spring Plain and Belle Plain.

This issue represents a serious threat to the local food security, as the parish's land resources are finite. More importantly, only about fourteen percent (14%) of the land area within the parish is suitable for cultivation (TCPA, 2012). Only fourteen percent (14%) of the parish's total land resources is classified as good quality agricultural lands. Ultimately, the use of such lands for purposes other than agriculture represents a reduction in the production potential of the parish and a significant threat to local food security.

#### 4.2.4.2. LARGE TRACTS OF IDLE AND UNDERUTILIZED AGRICULTURAL LANDS

The decline in agricultural activities over the past few decades, has left a number of hectares of arable lands (both Government owned and privately owned properties) idle or underutilized. According to the TCPA (2012) the Vere Plains was a significant agricultural area, used predominantly for the cultivation of sugar cane and the grazing of animals during the 1900s. Howard and Mulling (n.d.) noted that much of its success was attributed to its rich alluvial soils, a year round tropical climate and copious supplies of good quality irrigation water from the karstic limestone aquifer. However, several sugar plantations have been abandoned and much acreage of this prime agricultural land is now left barren, idle and over grown by shrub. STATIN's 2007 agricultural census revealed that the area of land cultivated in the parish has declined to 44,856 hectares in 2007, some 13.8 percent of the farmlands in the parish, from 58,275 hectares in 1996 and 68,059 hectares in 1979. The TCPA (2012) noted that this has resulted from a loss of nutrients from the soil and the fact that the land has not been re-structured to facilitate the cultivation of other crops.

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Howard and Mulling (n.d.) added that increased development led to increased salinity of the ground water, which has also contributed to the decline in productivity. These idle lands represent a loss to the local economy as land is a productive resource and its productive potential is currently not being fully utilized.

Large plots of idle and underutilized lands exist despite the presence of the Land Development and Utilization Act, which was passed in December 1966. This Act seeks to ensure that Jamaica's agricultural land resources are adequately utilised. Under the Act, the Authority is empowered to declare a farm of 40 hectares or more idle if it finds lands which are either not used or grossly under-used, provided that the amount of idle land is not less than 20 hectares. Where a farm is declared idle, the owner is required to submit a Development Plan to the Authority. On refusal to do this or to pursue the development approved within a stipulated period, the Ministry of Agriculture is empowered to acquire the land or any part of it, provided the amount acquired is not less than 20 hectares. However, the general consensus in the parish is that this Act is inadequately enforced. Through the Agriculture and Fisheries Sector Meeting, representatives from RADA noted that there is generally a serious challenge in finding and contacting owners of the underutilized or idle properties, especially in areas such as Gravel Ground, Clarendon Park and Toll Gate. Furthermore, a number of the properties which are in the aforesaid state are believed to be less than 40 hectares and therefore the Land Utilization and Development Act cannot be enforced.

### 4.2.4.3. SMALL SIZE OF LAND HOLDINGS AND THE ABSENCE OF ECONOMIES OF SCALE

Generally, farming in Clarendon takes place on a small scale. However, a number of studies have revealed that farming on a large scale is often more efficient than farming on a small scale in this mechanization era. The cost per unit of input is lower on large farms than on small farms. In addition, most local small scale farmers do not plant crops which will allow them to maximize on the returns from their land space. To explain, at the Agriculture and Fisheries Sector Meeting, it was established that a minimum of ten acres of sugarcane has to be planted in order for the crop to be profitable. However, a number of farmers in the parish, with plots smaller than the aforesaid amount, are engaged in sugarcane production. Productivity in the agricultural sector in the parish is not being maximized as there is a lack of economies of scale.

### 4.2.4.4. HIGH COST OF INPUTS

The local agriculture sector is burdened with the challenge of high input costs. Local agricultural production is highly dependent on inputs, including tools, equipment, fertilizers, chemicals and animal feeds, which are either imported or are made from imported materials. The farmers' productivity has been negatively affected by; among other things, escalating costs of essential inputs including oils and fertilizers and the rapid depreciation of the Jamaican dollar. An input that is essential to the farmers' productivity is fertilizer. The price of fertilizers rose to such an extent that in 2008, the Government had to intervene by importing cheaper brands. A monitoring mechanism had to be instituted for the distribution of the products, to ensure that farmers benefitted from the lower prices. At present, the MICAF is facilitating the production of sorghum through its agro-park initiative as a replacement for some of the imported animal feed in Jamaica. The Government is also continuing its effort to promote the production of root crops such as cassava as an input for animal feed rations and as a substitute for corn.

### 4.2.4.5. LIMITED APPLICATION OF MODERN TECHNOLOGY AND EFFICIENT PRODUCTION SYSTEMS

Despite the critical role agriculture plays in the local economy, investment in terms of innovative technologies and mechanization is still very low in the parish. The application of improved agricultural practices, crop varieties, inputs, and associated products remains extremely low. Small and medium-scale farmers have limited access to farm machinery, with many still heavily oriented towards subsistence production. Larger farms, such as the sugarcane fields, continue to depend heavily on an ageing and declining stock of farm equipment. Nevertheless, greenhouse farming takes place in communities like Mocho, Pleasant Valley

## 4.2. AGRICULTURE

and Summerfield. However, this is on a small scale, and furthermore, a few are out of use for various reasons, including praedial larceny. This lack of technological application is a reflection of the fact that the farmers are constrained by limited access to finance, and a business environment that is not conducive to agricultural development. It is one of the factors contributing to low productivity and competitiveness.

In response to this challenge, the agriculture ministry launched the Tractor Programme which was being implemented by RADA. The Tractor Programme formed part of Government's efforts to mechanize the small and medium scale farming sector through the utilization of appropriate technologies and to bring appropriate equipment within the economic reach of the average small and medium sized farmers. The parish of Clarendon had two tractors which were made available for hireage to farmers and agro processors to facilitate land clearing. According to RADA, this programme was doing well in the parish until recently; the price for the service was last revised in 2013 and the cost of maintenance has now become unsustainable against the backdrop of increasing oil prices. Presently, the tractors are mostly parked.

The Mocho Greenhouse Training Centre was also established in 2010 in the community. The centre provides training for farmers and agricultural students in greenhouse technology or protected farming. The HEART Trust/NTA, through its flagship training institution for agriculture, the Ebony Park HEART Academy, is in charge of training and certifying the participants.

### 4.2.4.6. ENVIRONMENTAL ISSUES FROM IMPROPER AGRICULTURAL PRACTICES

Improper practices in the local agricultural sector are having a negative impact on the local environment. Air, water (including ground water) and soil pollution, habitat fragmentation, a loss of wildlife and soil erosion are problems resulting from improper agricultural practices in the parish. See 2.1.2.6. Improper Agricultural Techniques, pg. 63.

### 4.2.4.7. VULNERABILITY TO HAZARDS

The local agricultural sector is highly susceptible to damage from disasters. The geographical location of Clarendon makes it vulnerable to hurricanes, earthquakes and droughts, while its geology and topography make it prone to landslides in the hilly areas, and to flooding on the plains during heavy rainfall (See 2.3.3. Natural Hazards and Disasters (pg.181), 2.3.3.3.2. Pest and Disease Infestation (pg.189), and 2.3.4.1. Bushfires (pg. 189). In the past, susceptibility to multiple natural hazards has resulted in considerable damage to the agricultural sector and a loss of livelihood for a number of farmers. According to data obtained from RADA, over a period of eight years, 4000 hectares of productive agricultural land has been lost to bushfires, hurricanes and other natural and anthropogenic hazards in the parish. In addition, some of these hazards result in considerable damage to the agricultural infrastructure, including farm roads, irrigation systems and green houses, while increasing susceptibility to disease.

### 4.2.4.8. PRAEDIAL LARCENY

Praedial larceny has been cited as one of the major challenges negatively impacting on agricultural production, food security, and the overall growth of the local agricultural sector. Thieves continuously prey on agricultural producers, including both livestock and crop farmers, some of whom are the most economically vulnerable in the parish. It has become quite normal for farmers to discover that their crops or livestock are missing, or that their livestock had been slaughtered and only parts of the carcasses are left behind. These complaints were particularly high in the Lionel Town, Chapelton, Frankfield and Milk River Development Areas. This theft of agricultural produce and or livestock is robbing legitimate producers of millions of dollars annually, stifling incentives for farming entrepreneurs, adversely affecting some families and negatively impacting the economic landscape of the parish.

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The high incidence of praedial larceny is believed to be linked to the fact that there is little coordination between local stakeholders, including farmers, law enforcement, and buyers of produce, which allows the issue to thrive. Through the Situation Validation and Visioning workshops, local farmers unanimously claimed that the police do not treat praedial larceny as a serious crime, and as a result their plight is routinely ignored by law enforcement. They also claimed that the penalties awarded under the law have not proven to be a deterrent to the thieves, as they are not sufficiently tough. The farmers further claimed that these issues, in addition to the fact that a number of them have become frustrated with inaction by the authorities and do not bother to report such incidents, means that praedial thieves are fairly confident they will face limited or no consequences. Additionally, it is believed that some vendors and consumers knowingly purchase agricultural produce from person who do not have farms.

Currently, the Receipt Book serves as a traceability tool for agricultural produce, but it is not sufficient to track movement along the value chain. It was introduced as part of a system which came into effect in 2005 following the amendment of the Agricultural Produce Act. Under the system, the JAS prints and sells receipt books to farmers for compulsory use in their sales transactions to the purchaser. However, the Jamaica Observer quoted the then Minister of Agriculture, Dr Christopher Tufton, in 2008 as saying that the receipt book system had failed. The system was subsequently suspended, only to be re-launched in 2012. It however is still believed to be inefficient.

Nevertheless, the MICAF is currently working on a Praedial Larceny Prevention Programme. This includes the strengthening of the legislative and policy framework as well as collaboration with other entities to implement special programmes e.g. a four-pronged framework has been developed for this programme, focussing on Traceability, Enforcement and Compliance, Legislation, and Institutional Arrangement.

The traceability aspect of the programme involves the development of the praedial larceny software and the National Animal Identification and Traceability System, as well as the rationalization of the network of abattoirs. The praedial larceny software, which was developed from a partnership between RADA and the Mona School of Business and Management is intended to assist police officers confirm information provided by persons found with agricultural produce during routine stop and search operations. With this application, law enforcers will be able to send text messages to an automated system to determine whether agricultural produce was purchased from farmers registered with RADA and the JAS.

Under The National Animal Identification and Traceability System, livestock will be tagged and issued a passport. The current focus is however on cattle and pigs, with the Ministry already contracting a consulting firm to implement the system for cattle. The rationalization of the network of abattoirs will involve the development of four (4) strategically located abattoirs across Jamaica, equipped to international standards to provide meat processing and distribution services. (Clarke, 2014).

As it concerns enforcement and compliance, the Ministry has partnered with the JCF to assist in enforcing the use of the receipt book system and developing other supporting activities such as the Community Farm Watch groups. Strategies' employed by the JCF locally include increased police presence in areas where praedial larceny is prevalent, and regular stopping and searching of vehicles transporting agricultural produce. The parish's first Farmers' Watch group was launched in the community of Rock River in 2012. This group; developed in partnership with the local police consists of farmers, and operates similarly to Neighbourhood Watch programme. According to Corporal Junior Forbes, the very first day the executive of the group was assembled; it bore fruit, as the group aided the police in nabbing a praedial thief (Fisher, 2012). At the Agriculture and Fisheries Sector meeting, it was revealed that the group has aided in the arrest of six (6) praedial thieves up to the date of the meeting. Due to the overwhelming success of this group, the initiative is being promoted across the parish, one other group has been developed in Windsor.

## 4.2. AGRICULTURE

In terms of legislation, recommendations for bolstering the legislative framework to provide greater penalties for praedial larceny, which were made by stakeholders at a strategic workshop held in November 2013 have been documented and incorporated into the Medium Term Plan of Action 2014-2017 for the Praedial Larceny Prevention Programme. In November 2014, former Minister of Agriculture, Labour and Social Security, Derrick Kellier, disclosed that a Cabinet Submission incorporating recommended amendments to the Agricultural Produce Act was being prepared. Approval for drafting instructions for the legislative measures would be sought. Submission should have been considered the following month.

As it relates to institutional arrangements, the Ministry has employed a participatory approach to address the issue. A relationship has been established with key stakeholders e.g. the JAS, RADA, the MNS and all its agencies, the MOH, Crime Stop and the Attorney General's Chambers. Private stakeholders, and especially farmers, have also been engaged in developing strategies to reduce the incidences of praedial larceny. It should further be noted that the MNS is proposing the establishment of a special unit within the JCF specifically targeting praedial larceny. The MICAFA will work with this special unit to coordinate joint inspection of agricultural produce, agricultural trade and transshipment of goods with a view to ensuring enforcement and compliance with new regulations.

### 4.2.4.9. WEAK MARKETING STRATEGY

The marketing of agricultural produce in Clarendon is experiencing a number of weaknesses. These weaknesses stem from a number of issues, including high levels of informality in marketing and distribution channels, a lack of adequate storage facilities, a lack of direct access to markets for farmers, and relatively weak linkages to non-traditional markets. As a result, local farmers have to constantly compete among themselves for the disposal of their crops. In this race, they are often placed at the mercy of the middlemen<sup>115</sup>. This often witnesses agricultural produce being sold by local farmers at knockdown prices, or being dumped because of lack of sale. The end result is a loss for farmers who incurred high input costs.

This issue was recognised by the JAS which prompted the launch of a weekly farmers market on May 6, 2004. This initiative was also established as a pilot project under the 'Eat Jamaican' campaign. After a period of success, the programme had to be abandoned due to the high cost to the JAS. The agency had to pay the transportation cost for the farmers to travel to the market, but this became unsustainable and hence the programme had to be aborted.

Farmers can access marketing information from RADA and the Ministry of Agriculture. RADA has developed a web-based information system: the Agricultural Business Information System (ABIS), which provides information on crops, livestock and agricultural production, markets and stakeholders to support the business of agriculture. One of the most important features of ABIS, as it relates to marketing, is its ability to track and identify crops. This enables a marketer to use the system to locate farmers and offer them a price for their produce. The Agriculture Ministry has also developed a web-based application called the Jamaica Agricultural Marketing Information System (JAMIS), which provides weekly market information for over 50 items of agricultural produce. Market information including prices, availability and quality of produce is uploaded to the JAMIS website and is available through online reports.

### 4.2.4.10. POOR AGRICULTURAL ROAD INFRASTRUCTURE

The poor state of the local agricultural road infrastructure often drives a wedge between the prices farmers receive for their outputs and actual market prices, which lowers the profits associated with a harvest. Farmers and vendors usually have to 'dig deep into their pockets' in order to pay the high cost associated with transporting produce from farmlands to the market.

*115. These middlemen generally attach substantial mark-ups to the farmers' produce, often using the cost of transportation as a justification)*

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This high transportation cost is a consequence of the generally poor state of the local farm roads infrastructure. These conditions exist despite the Sugar Transformation Unit spending millions to upgrade several roads in Southern Clarendon and the MOAF embarking on a farm road rehabilitation programme. A number of these farm roads, particularly in the Upper Clarendon area are unsurfaced or are riddled with potholes, and therefore have the potential to cause serious damage to motor vehicles. In some cases, these roads are only accessible by donkeys. As a result of these conditions, transportation can account for half of the cost of agricultural output marketing; a considerable fraction of the value of the product.

In addition to that, residents of the Kellits Development Area are complaining that the complete absence of road infrastructure in some local areas is rendering quality agricultural lands inaccessible. As a result of this, such lands are left idle or unutilized, creating a situation which means that the productive potential of the agricultural lands in the parish is not being maximised.

### 4.2.4.11. ECONOMIC GLOBALIZATION AND LIBERALIZATION FREE TRADE POLICIES

The emergence of economic globalization and free trade is having a negative impact on the local agricultural sector. Globalization has resulted in an explosion in international agricultural trade and reduced prices in agricultural products, whilst free trade policies have replaced the old system which provided protection for some local agricultural produce in the international market and also presented barriers to protect local markets from imports. As a consequence, there is increased competition in export markets and large volumes of cheap agricultural produce are being imported to unfairly compete with locally produced goods. Whilst this is perceived to be fair competition which benefits consumers, it is severely undermining the growth of the local agricultural sector, as local systems are not sufficiently mechanized and lack economies of scale in order to successfully compete. In other words, low levels of productivity and efficiency within the local agricultural sector is rendering it incapable of competing fairly within the free market.

### 4.2.4.12. LACK OF COORDINATION BETWEEN PRODUCTION AND MARKETING

A large portion of the local diet consists of foods which are not produced locally. The parish's food needs are met only in part by domestic production, and foodstuffs, including staples which are considered as the major crops for local food security, are key import items. The main staples grown locally are potatoes and yams, while the major staple eaten in the parish is rice, which is imported. A number of other imported foods, including wheat, milk, butter and meat, also constitute major portions of the local diet. It is believed that most of these foods are imported based more on choice rather than necessity. This is negatively impacting the local economy, by racking up very high and unsustainable food import bills.

This issue is not confined to the parish of Clarendon, therefore, the GOJ is seeking to address the problem at the national level. In 2012, the agriculture ministry started the Agro Park Development Programme which seeks to integrate all facets of the agricultural value chain from pre-production to production, post harvesting and marketing, resulting in import substitution, increased rural employment, and the utilization of idle agricultural lands. Under the programme, nine (9) agro-parks are being strategically implemented across the island. Two of these facilities, Ebony Park and Spring Plain, are being developed in the Plan Area. The Ebony Park Agro-Park has already been touted as a major success, with over 650 acres of the 1400 acres of land already leased; over 75 investors producing a mix of crops; over 330 persons employed; and over 582, 000 pounds of produce, valuing in excess of \$24 million dollars, already harvested. The Spring Plain facility is however in its early developmental stage. Over 630 acres of the 1149 acres of land have already been leased, but much of the infrastructural works are yet to be completed. Informal settlers, currently occupy sections of the property that are in production. Regularisation is needed. The JAS has also launched the 'Eat Jamaican' campaign, with the catch phrase "grow what we eat, eat what we grow." The campaign was aimed at increasing local production and encouraging consumers to make healthy choices by eating local produce.

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When the campaign was launched, November 25 was declared Eat Jamaican Day. In 2013, to commemorate the 10th anniversary, November was recognized as Eat Jamaican Month. A three month national campaign, also called Eat Jamaican, was launched in 2011 as well. This campaign entailed a series of road shows across Jamaica, and sought to get consumers united behind the 'grow what we eat, eat what we grow' theme." In 2013, the Gleaner quoted Senator Norman Grant, president of the JAS as saying that, the goal of sensitising the population of the national, community and personal benefits to be derived from embracing this mantra has been successful.

### 4.2.4.13. DECLINING INTEREST AMONGST YOUTHS

Despite agriculture being a major economic activity in Clarendon, there is a steady and continuous decline of interest among the youth in entering agricultural related fields. This situation is due largely to the fact that agriculture has developed an image problem. The general perception is that it is an outdated field with minimal financial returns. In other words, the youth generally perceive those involved in agricultural related activities to be uneducated and unskilled physical labourers with extremely low economic returns.

Consequently, there is an ageing farming population in the parish which must be addressed to facilitate sustainability in agricultural production. The average age of farmers in the parish is well over 50 years (to be justified with RADA) and life expectancy in Jamaica averages just over 73 years. It is essential that young farmers replace the ageing producers to improve, the production of food within the parish. Failure to do so will seriously compromise agricultural production in the next 12-15 years.

Additionally, increased productivity in the agricultural sector depends highly on the youth. The young people are the ideal catalysts for the growth of the sector, given their greater propensity and willingness to adopt new ideas, concepts and technology which are all critical to changing the way agriculture is practiced and perceived.

Against this background, the agriculture ministry has launched several programmes aimed at attracting youths into the sector. These programmes include the Young Farmers Entrepreneurship Programme (YEEP) and the Youth in Agriculture Programme. The former programme aims to place 500 youths across Jamaica into the agriculture sector annually. Interested youths receive support in the form of land, access to markets, links to credit agencies, and infrastructure (farm roads, office space and fencing). The latter project seeks to encourage young people to become involved in agriculture-based activities as well as to influence them to pursue careers in agriculture and agriculture-based industries. It seeks to introduce new technologies and knowledge to youngsters that will lead to: (a) diversified modern farming practices (b) new crop varieties and animal strains (c) less soil pollution (d) a move to bio-energy; national food security (e) a reduction in rural-urban migration (f) and increased employment for youngsters. Youth in Agriculture activities culminate each year at the Denbigh Agricultural Show in Clarendon, where participants compete for prizes including the opportunity to study at the College of Agriculture, Science and Education (CASE). In addition to these programmes, as part of the strategy to attract local youth into the sector, 20 young people have each been allocated five acres of land in the Ebony Park Agro-Park.

## 4.2.7. PARISH STRATEGIES

### 4.2.7.1. STRATEGIC OBJECTIVE #176

**To ensure sustainable and productive use of the parish's agricultural land resources through efficient land use planning.**

The protection of agricultural lands from unplanned developments is essential to ensuring productivity and sustainability within the local agricultural sector. It is important that lands of high agricultural value be

## 4.2. AGRICULTURE

protected and rationalized to safeguard the economy of the parish, and more specifically the economy of the rural areas. Land use zoning proposals will be the primary tool used to control encroachment and diminish the loss of agriculturally important lands to non-agricultural uses. This includes the use of maps and the implementation of related policies which clearly demarcate urban development areas (growth centres) and protect agriculturally viable lands. See 2.4.3.1.4. STRATEGIC OBJECTIVE #98D, pg. 230

### 4.2.7.2. STRATEGIC OBJECTIVE #177

**To bring idle or underutilised lands into full production in order to maximise on their economic potential and to increase local food production.**

There is a need to bring the idle and underutilized lands in the parish into full production in order to: (i) maximise on their economic potential, (ii) avoid their conversion to none agricultural uses, (iii) increase local food production, and (iv) improve the social and economic conditions of the rural populations. This will be done through the implementation of several policy initiatives and strategies. The Government's agro-park initiative which seeks to, among other things, put some of these idle and underutilised lands into productive use, will be strongly supported. The Government will also be encouraged to revisit and enforce the Land Utilisation Act, at the same time as owners of idle or underutilised properties will be encouraged to put such lands into production.

### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that idle or underutilized agricultural lands are put into productive use.
- The relevant authorities will seek to revoke leases for any idle and underutilized Government owned agricultural lands for which such an agreement exist.
- The Government will seek to divest idle or underutilized state owned agricultural lands.
- The relevant authorities will seek to enforce the Land Utilisation Act

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an inventory of agricultural lands in the parish, detailing ownerships and status.	Short to Medium Term	RADA
Lobby the government to amend the Land Development and Utilization Act, to deal with idle lands of twenty (20) hectares and over instead of the existing forty (40) hectares and over, in an effort to encourage the use of idle lands.	Short Term	RADA, CPC

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Contact all owners of underutilised or idle agricultural lands and issue idle land orders. Where there are absentee owners, provisions should be made to place such orders in the newspaper, in conspicuous places on the property, or similar places. Where owners declare that they are unable to fully utilize such lands, they should be encouraged to enter into lease agreements.	Short to Medium Term	RADA
Educate farmers and investors about Government's agro-parks and encourage them to support the initiative.	Short Term	RADA, MICAFA, JAS
Identify and recommend to Government the development of other sites within the parish which may be suitable for agro-parks.	Short to Medium Term	RADA, CPC

### 4.2.7.3. STRATEGIC OBJECTIVE #178

**To implement crop suitability zoning in order to optimise the use of the scarce agricultural land resources, as well as crop production in the parish.**

As a strategy to optimise the use of the scarce agricultural land resources, as well as crop production, this Plan promotes Crop Suitability Zoning. This will involve the creation of crop zones by determining the most suitable crops for particular soil types and other environmental conditions. However, zoning will not be mandatory. Farmers will be given appropriate incentives for planting crops best suited to their locations.

### RECOMMENDED POLICIES

- The relevant authorities will seek to establish a voluntary crop zoning system within the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop crop suitability zoning maps for the parish.	Medium Term	MICAFA, RADA
Distribute crop suitability zoning maps to farmers.	Medium Term	MICAFA, RADA
Provide appropriate incentives to encourage farmers to plant the crops best suited for their locations.	Medium to Long Term	MICAFA

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### 4.2.7.4. STRATEGIC OBJECTIVE #179

**To reduce agriculture related environmental degradation and encourage long-term conservation measures.**

Agriculture is a fundamental component of Clarendon’s economic development, but improper practices are having a negative impact on the local environment. The agricultural sector, and especially farmers, will therefore be encouraged to adopt more eco-friendly agricultural practices. These practices fall under the ambit of Ecological Pest Management, Conservation Tillage, Nutrient Management, Efficient Water Management, and On-Farm Energy Conservation and Generation which bring together aspects of organic agriculture and integrated farm management. Additionally, farmers will be encouraged to undertake agroforestry activities. Such practices will not only address the environmental concerns, but it will also alleviate some social issues and ensure profitability in farming operations. See 2.1.5.5. Strategic Objective #5, pg. 72.

### 4.2.7.5. STRATEGIC OBJECTIVE #180

**To improve the affordability of agricultural inputs for local farmers.**

In order to improve profitability, productivity and competitiveness within the local agricultural sector, it is critical that strategies be employed to reduce the cost of agricultural inputs to farmers. The high cost of the inputs is mainly related to the fact that they are either imported or are made from imported materials. Emphasis will therefore be placed on promoting the greater use of local resources, including on-farm organic matter, as replacements for imported commodities. Local farmers will also be encouraged to adopt eco-friendly agricultural practices, (Section 2.1.5.5. Strategic Objective #5, pg. 72) which will eliminate, or significantly reduce the use of synthetic fertilizers, agrochemicals and other costly inputs. The government will be encouraged to continue subsidizing the cost of agricultural inputs, where necessary, and particularly for vulnerable farming groups, including the youth.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Source cheaper inputs for local agricultural production, so far as is necessary.	Short to Long Term	MICAf
Encourage collaboration and collective buying of inputs to obtain lower unit costs of supplies and cheaper agricultural inputs	Short to Long Term	MICAf, JAS
Promote the use of local materials for agricultural inputs as replacements for imported commodities. This should include the use of: compost as opposed to imported chemical fertilizers; sugarcane tops and molasses from the local sugar industry as a replacement for imported materials for animal feed; etc.	Short to Long Term	MICAf, RADA, JAS, SRC

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the increased production of crops, such as hay and corn, which may be used as replacements for imported feedstock in agricultural production. This should include sugarcane for energy generation.	Short to Long Term	MICAFA
Determine the viability of producing non-native crops which are imported and used as feedstock in agricultural food production.	Short to Long Term	MICAFA
Support Strategic Objective #5 of the Natural Environment Section of this Plan (pg. 72).	Short to Long Term	MICAFA, RADA, JAS,

### 4.2.7.6. STRATEGIC OBJECTIVE #181

**To improve the productivity of local farmers through the application of modern technologies and farm practices.**

The application of modern technology in the local agricultural sector is quite low. However, in order to increase the efficiency and competitiveness of the sector, the widespread and systematic application of such technologies will be essential. All areas of the local agricultural production system, including crop development, disease control, irrigation, crop/land yields, security, farm management and marketing will require technological advancement. In addition, the tractor programme will be revived and successful practices locally and regionally will be expanded or adapted. At the same time, care will be taken to ensure that technological solutions are effective in meeting the needs of competitive agriculture in the local context. In this regard, emphasis will be placed on the following technologies:

**1. Greenhouse Technology-** In simple terms, greenhouses are buildings specially designed for growing plants. The technology has been in existence for quite a while and has been applied both locally and internationally in the commercial production of horticultural crops with tremendous success. It will provide farmers the opportunity to achieve significantly higher yields, as well as consistently higher quality, than open field production. This is mainly due to the use of enclosed structures and protective antiviral netting which protect plants from pests, diseases and harsh elements. Additionally, the use of drip irrigation and a fertilization program ensures good plant nutrition and an increased capacity of the plants to bear more. The technology also involves the use of less land area compared to open field production, more efficient use of water resources; and reduced use of chemicals to control pests and diseases.

**2. Hydroponic Greenhouse-** Hydroponics is a technology for growing plants in nutrient solutions and without soil. In combination with greenhouses, it is a highly efficient, reliable and beneficial system of production. Hydroponic greenhouses are considered an improvement on the protected agricultural greenhouse technology. It has two main features: a soilless medium such as perlite, gravel or coir, used solely to give stability to the plants' roots, and a system for distributing the nutrient water solution. Crops grown using hydroponic greenhouses will have shorter harvest times and the yields will be more stable and higher compared to open field. Plants will also grow healthier and be of a higher quality as the greenhouse allows for a favourable and managed environment in which the grower will be able to manipulate some of the variables affecting production including temperature, ventilation and irrigation.

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Hydroponics is useable in places where in-ground agriculture is impossible, such as dense urban areas where land is at a premium. It uses approximately 10 per cent of the water of soil based agriculture as it facilitates the recycling of water and nutrients. This will help in mitigating the effects of water scarcity. The soilless culture will also eliminate some of the threats from insects and pests, e.g. soil borne pathogen and nematodes.

### 3. Aquaponics-

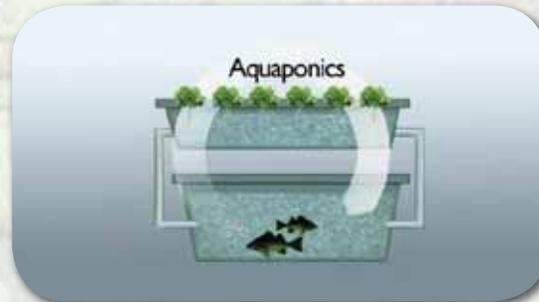


Figure 86: The basic principles of an aquaponics system.

Source: <http://www.powerhousehydroponics.com/introduction-aquaponics/#pretty-photo/0/>

Aquaponics is an integration of hydroponics with aquaculture. In normal aquaculture, excretions from the fish being raised can accumulate in the water, so increasing toxicity. In an aquaponic system, water from an aquaculture system is fed to a hydroponic system where the by-products are broken down by nitrogen-fixing bacteria into nitrates and nitrites, which are utilized by the plants as nutrients. The water is then re-circulated into the aquaculture system.

This technology is gaining increased attention both locally and internationally as a bio-integrated food production system and will provide a number of benefits for the Plan Area. It will help to ensure a sustainable supply of fish and horticultural crops and will also help to reduce the possibility of water pollution from the effluent discharged from fish farms in the parish.

### 4. Solar Yam Stakes-



Figure 87: Dr. Mark Harris, Professor of Environmental Chemistry and Environmental Science, Northern Caribbean University (NCU) stands beside the solar yam-stake which is built to enhance yam growth over several seasons, thereby protecting native forest trees.

Source: [http://news.ncu.edu.jm/mobile/news\\_item.aspx?NewsID=1139](http://news.ncu.edu.jm/mobile/news_item.aspx?NewsID=1139)

The solar yam stakes is a locally developed (The technology was developed by Dr Mark Harris, Professor of Environmental Chemistry and Environmental Science, Charles Koomson Graduate Researcher, and Lemore Jones, Assistant Professor, of the Northern Caribbean University (NCU)) technology which uses artificial stakes to decrease leaf senescence, increase crop yields, and potentially reduce deforestation and the threat to biodiversity. In simple terms, it is a plastic yam stake which has side branches arranged in north-south and east-west directions, which increases the cylindrical area occupied by leaves and reduces the usually dense interior shade. This allows the plants to trap more photosynthetic rays, and also increases the longevity of the leaves. Solar staked yams produce higher tuber weights than conventionally staked by approximately 30%. The solar stakes are re-usable. Based on the known durability of the materials used, a usable life of at least 10 years is predicted for each solar yam stake.

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This will reduce the demand for yam sticks and will further reduce deforestation and the threat of biodiversity loss.

**5. Biotechnology (Plant Tissue Culture)**- Biotechnology has been globally accepted as one of the most important tools for enhancing agricultural production. It includes plant tissue culture, applied microbiology, and applied molecular biology which contributes to the production of crops with improved food, feed, fibre and fuel. The technique of plant tissue culture is well translated from ‘concept’ to ‘commercialization’ and is currently being applied in Jamaica. The application of this technology in the local agricultural sector will allow for the production and propagation of genetically homogeneous, disease-free plant material. Plant tissue culture will result in the production and propagation of plants with desirable traits, and the quick generation of mature plants.

In order to ensure the development of an efficient technologically-driven local agricultural sector, adequate R&D will have to be undertaken. New approaches in keeping with current international best practice will of necessity be examined. The private sector will be encouraged to play a lead role in agricultural research through investments particularly related to funding. The formation of strategic public-private sector partnerships will also be encouraged so as to pool resources in agricultural research efforts. Additionally, local educational institutions like the Ebony Park HEART Academy will be encouraged to engage in R&D activities.

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage the application of modern technologies and farm practices in the local agricultural sector.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the private sector to invest in agricultural R&D.	Short Term	MICAF
Facilitate the establishment of public/private sector partnerships in local agricultural R&D.	Short to Long Term	MICAF
Encourage local educational institutions to engage in agricultural R&D.	Short Term	MICAF
Promote the application of modern technologies in the local agricultural sector.	Short to Long Term	RADA, JAS, MICAF
Provide education and training in the application of selected technologies, including but not limited to those listed above. This may involve giving local farmers the opportunity to take part in overseas study tours.	Short to Long Term	RADA, Education and Training Institutions

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide appropriate incentives for the application of selected technologies; such incentives may include, among other things, surveillance cameras to assist in the fight against praedial larceny.	Short to long Term	MICAf
Make materials for greenhouses and other technological applications more readily available to farmers.	Short to long Term	MICAf, Private Sector
Revive the tractor programme for small and medium scale farmers. This should explore the feasibility of using biofuel as opposed to gasoline.	Short to Medium Term	RADA

### 4.2.7.7. STRATEGIC OBJECTIVE #182

#### To promote home-based food production in order to increase local household food security and reduce food bills.

In order to increase local household food security and reduce food bills, this Plan promotes home gardening. In Clarendon, home gardening is the practice of growing and cultivating food plants within residential properties, including in urban and growth centres, without the use of imported inputs, high technology tools and food aid. The growth of horticultural crops such as lettuce, callaloo, hot pepper, sweet pepper, tomatoes, okra, garden egg, cucumbers, parsley, scallion and thyme (thyme will be difficult to grow on the hot lowlands of the parish, but it can grow well in the hilly interior areas such as Kellits and Spalding) will be promoted on residential properties, since these crops only require a space of 8' by 5' with 10-12 inches of soil, and can also be grown in containers. Ensure that the soil being used is rich in nutrients, and thins can be achieved by applying a compost made from kitchen waste (rotted vegetables) and yard trimmings (leaves and grass cutting).

The development of home-gardening systems which takes the form of edible landscaping will be strongly recommended. Edible landscaping is the practical integration of food plants within an ornamental or decorative setting. Shrubs, trees, vines, grasses and ground covers are substituted with edible plants that add interest, colour, texture and taste to the landscapes. These plants are then used both for aesthetic value and consumption purposes. This practice also has the potential to stimulate interest among the youth in agriculture in the Plan Area.

Agricultural activities within towns and growth centres will need to be regulated. Despite providing additional benefits, such as increasing the ratio of green space to hard space, agricultural activities within these areas can also have negative implications, e.g. reduced population densities, land use conflicts, and pollution. Policies will therefore be put in place to ensure that occurrence of these potential issues are minimised.

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### RECOMMENDED POLICIES

- The relevant authorities will support the development of home-based food production systems within residential properties.
- The relevant authorities will seek to encourage the development of edible landscapes within urban environments.
- Agricultural activities, such as the rearing of animals and apiculture, which have the potential of becoming a nuisance to occupants of nearby properties, will not be supported in residential areas, unless it can be demonstrated that such activities will have no negative implications on its immediate surroundings.
- The planning authorities will not support developments which make provision for urban agriculture by increasing lot sizes, which would cause reductions in population densities.
- The planning authorities will support the development of gardens on rooftops, provided that such developments do not detract from the character of the local area.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a program encouraging locals to develop home gardens, particularly, edible landscapes.	Short Term	JAS, MICAF
Provide technical assistance in the development of edible landscapes.	Short to Long Term	RADA
Draft a policy which regulates agricultural activities within urban areas.	Short to Medium Term	CPC
Explore the possibility of providing tax breaks for the development of edible landscapes within urban centres.	Short to Medium Term	CPC

#### 4.2.7.8. STRATEGIC OBJECTIVE #183

**To improve local food security and the profits of farmers by encouraging the diversification of the local agriculture sector.**

##### 4.2.7.8.1. STRATEGIC OBJECTIVE #183A

**To increase the production of non-traditional crops.**

An increase in the production of non-traditional crops is a critical part of the strategy to improve profitability in the local agricultural sector. Non-traditional crops are those that are not part of the customary diet of the local population and are grown primarily for their high cash values and export potential. Such crops may be new to the parish or simply new to the grower<sup>116</sup>. The potential for an increase in the production of these crops in the parish stems from the fact that most developed countries fall in the temperate climate zone where cropping season is limited to the summer months, while crops can be grown throughout the year in Jamaica (including in Clarendon) which enjoys year-long tropical climate. Furthermore, increasing consumer demand in developed countries for out-of-season crops has opened up a niche for countries like Jamaica to produce these crops for export during the void period.

## 4.2. AGRICULTURE

Moreover, according to the Permanent Secretary of the MICAFA, Donovan Stanberry, the international marketplace can absorb so much more than what Jamaica is now exporting (Bennett, 2014)

To this end, the growth of crops such as yam, papaya, pumpkin, dasheen, pepper, condiments, coco, and ginger will be expanded. Prior to crops being selected, comprehensive business cases will be built. This will increase the probability of success by providing a realistic assessment of the potential risks and gains associated with the production of a particular crop. Such cases will generally be built by the agricultural authorities, and the findings, including the agronomics of growing the crop, potential food safety and regulatory issues, and marketing, will be passed on to farmers. Farmers will also be properly educated in this regard, as they may be reluctant to choose a non-traditional crop over a traditional one.

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage the increased production of non-traditional crops in the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop business cases for specific non-traditional crops.	Short to Long Term	JAMPRO, MICAFA, JAS, RADA
Encourage farmers to engage in the production of non-traditional crops which have a high possibility of being successful.	Short Term	JAMPRO, MICAFA, JAS, RADA
Provide technical guidance for farmers wishing to engage in the production of non-traditional crops.	Short to Long Term	RADA
Provide seeds/planting materials (tuber, bulbs, runner suckers, buds, seedlings etc.) of non-traditional crops to farmers.	Short to Long Term	MICAFA, RADA

#### 4.2.7.8.1. STRATEGIC OBJECTIVE #183B

##### To grow the apiculture industry in the Parish.

The 2009 census of Bee Farmers in Jamaica revealed that Clarendon had only 101 bee farmers. This means that, there is considerable scope for increasing the production of honey within the parish. The major quantity of honey produced in Jamaica is consumed locally, leaving only a small amount for the export market which includes countries as the United Kingdom, United States, Bermuda and the US Virgin Islands. According to JAMPRO, MOAF and RADA (n.d.), projections are that the overall high demand for honey on the local and international markets will increase, as consumers become more health conscious. This position will create opportunities for expansion in the industry. Given the climate and the wide variety of pollen-producing plants which grow in the Northern Clarendon area (particularly the Spaulding and Kellits Development Areas), there is an excellent opportunity to increase apiculture activities. Hence bee keeping will be promoted as a viable economic activity.

116. These non-traditional crops include crops already grown locally on a minor scale, as well as crops not widely grown locally to be tested on an experimental or semi-commercial scale before being promoted.

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From this, a number of spill-over benefits will evolve for the parish. These benefits include increased pollination from the presence of more bees which will boost food production in the agriculture dependent parish.

### RECOMMENDED POLICIES

- The relevant authorities will support the expansion of the apiculture industry, provided that related activities will not be a nuisance to occupants of nearby properties.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote the expansion of apiculture in the parish.	Short to Medium Term	MICAF, JAMPRO, RADA
Provide appropriate incentives to encourage new entrants into the apiculture industry.	Short to Medium Term	MICAF
Facilitate the training of bee farmers in the parish.	Short Term	RADA

#### 4.2.7.8.1. STRATEGIC OBJECTIVE #183C

##### To increase the production of livestock.

The MOAF is promoting increased livestock production as part of the national sustainable agriculture strategy, and the presence of large tracts of idle or underutilized agricultural lands makes this an attractive prospect for Clarendon. With the country already described as self-sufficient in the production of pork and poultry, emphasis will be placed on the production of other livestock, particularly goats, and rabbits. According to Rose (2014) the former Minister of Agriculture and Fisheries, Hon. Roger Clarke, in March 2014 urged farmers to prepare to significantly increase the rearing of small ruminants as the Government intended to import less goat meat into the country. According to Rose (2014) the former Minister noted, that approximately 80 per cent of the goat meat consumed in Jamaica, is imported and therefore there is considerable scope for increased local production. There are opportunities for local goat farmers to increase their output, and for new entrants to venture into the industry. Similarly, there is a high demand for rabbit meat in Jamaica, particularly within the tourism sector. Despite the Jamaican 4H Club, the Jamaica Livestock Association (JLA) and even farmers promoting increased rabbit production among local farmers, there is the absence of a consistent local supply. This therefore provides an opportunity for Clarendon to develop a sustainable cuniculture programme.

Additionally, livestock farmers will generally be encouraged to improve their stock through the introduction of breeds that have been proven to be high producers of meat and milk, and are suited to the local climate and feeds available.

### RECOMMENDED POLICIES

- The relevant authorities will support activities geared towards the increased production of livestock, provided that such activities will have no detrimental impact on the natural environment and will not be a nuisance to the public.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage the increased production of livestock, particularly rabbits, and goats.	Short to Medium Term	MICAF, RADA, JAS
Provide appropriate incentives for farmers to increase the production of targeted types of livestock.	Short Term	MICAF
Continue to encourage livestock farmers to improve their stock through the introduction of breeds that have been proven to be high producers of meat and milk, and are suitable for the local climate and feeds available.	Short to Long Term	MICAF, RADA, JAS

### 4.2.7.9. STRATEGIC OBJECTIVE #184

**To provide an adequate water supply and irrigation for optimising local food production.**

Freshwater is one of the most fundamental resources for local crop production. Clarendon is climatically a dry parish and therefore irrigation is an important input for ensuring maximum yields and optimal quality for local farmers. For this reason, this Plan promotes the implementation of an efficient irrigation programme aimed at ensuring an adequate supply of irrigation water to meet the needs of the local agriculture sector. Since the parish is challenged with a lack of adequate surface water sources and saline intrusion in the groundwater resources, emphasis will be placed on rainwater harvesting and water recycling. The overall programme will also include the extension of the existing irrigation infrastructure, the reversal of the impact of saline intrusion, and the adoption of water conservation practices.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Implement an irrigation programme aimed at ensuring an adequate supply of irrigation water to meet the needs of the local agriculture sector.	Short to Long Term	MICAF, MEGJC
Support Strategic Objectives #33, #35, and #36 of the Water section of this Document. See pgs. 114 and 119-121	Short to Long Term	MICAF, MEGJC

### 4.2.7.10. STRATEGIC OBJECTIVE #185

**To reduce disaster risk and climate change vulnerability through the application of appropriate practices.**

The local agriculture sector is extremely exposed and highly vulnerable to natural and manmade disasters, and the impacts of climate change. It is therefore imperative that measures be implemented to build disaster and climate change resilience within the sector.

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Such measures will include the development of an agricultural insurance system, the strengthening of on-farm hazard mitigation measures, the development of comprehensive hazard preparedness activities, and the strengthening of disaster response and recovery mechanisms. See 2.3.9.15.1. Strategic Objective #91A pg. 214.

### 4.2.7.11. STRATEGIC OBJECTIVE #186

**To develop a programme to reduce the risk of praedial larceny, as well as the impact on the livelihoods of farmers and the overall agricultural sector.**

A multi-sectional and multi-faceted approach to praedial larceny prevention, which supports and strengthens the Ministry’s current programme, will be implemented to rid the parish of the aforesaid scourge. This approach entails several different strategies which support traceability, enforcement and compliance, legislation and institutional arrangements. Government will be encouraged to amend the Praedial Larceny Act to provide stiffer penalties which may serve as a deterrent to the practice and also widen the definition of praedial larceny to include livestock, fisheries, lumber and other classes of agricultural produce. Local farming communities will also be encouraged to develop active farmers watch/ neighbourhood watch groups. Such groups will be developed in partnership with the local police, and will complement the police’s monitoring efforts. Members of these farmers watch groups will be responsible for, among other things, carrying out patrols and alerting the police to suspicious activities. Additionally, farmers will be encouraged to fence their properties. The use of solar powered Hi-Tensile electric fencing will be supported. This has had relative success in deterring people from crossing a boundary in a number of areas. The voltage of the shock may have effects ranging from discomfort to death. Hence such fences will have to be properly designed (using 3 layers) and carry appropriate signage. The use of appropriate monitoring technologies will also be promoted. Farmers will be encouraged to invest in security cameras which should be installed on key buildings, at entrances to the farms or even in the fields. The use of other technologies which may suit individual needs will also be supported. Moreover, consumers will be encouraged to ensure that there is no market for stolen produce. This will be achieved mainly by emphasizing the importance of the receipt book system and encouraging consumers to purchase crops or meat from only reputable vendors and suppliers.

### RECOMMENDED POLICIES

- The relevant authorities will seek to amend the Praedial Larceny Act to provide greater penalties for praedial thieves and to also widen the definition of praedial larceny to include livestock, fisheries, lumber and other classes of agricultural produce.
- The relevant authorities will support the installation of electrically powered fences around agricultural properties, provided that the appropriate design is utilised and adequate warning signs are in place.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Supports the MOAF’s praedial larceny prevention programme	Short to Long Term	Clarendon Police Division
Explore the feasibility for expanding the animal passport system to include goats and other livestock.	Medium to Long Term	MICAF
Encourage Government to speedily amend the Praedial Larceny Act.	Short Term	MICAF, Clarendon Police Division

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the establishment of farmers watch groups in all local farming communities.	Short to Long Term	Clarendon Police Division
Encourage farmers to install surveillance cameras and/or other appropriate technologies to monitor activities on their farms.	Short Term	RADA, MICAF
Launch a public education programme to sensitize persons buying and selling produce of the direct benefits in using the receipt book.	Short Term	RADA, MICAF
Encourage unregistered farmers to become registered with RADA so that they can access receipt books and any other available assistance.	Short Term	RADA, MICAF
Encourage consumers to purchase crops or meat from only reputable vendors and suppliers.	Short Term	MICAF, Clarendon Police Division

### 4.2.7.12. STRATEGIC OBJECTIVE #187

**To provide adequate storage and packing facilities in order to safeguard the supply of seasonal produce, as well as prices, and to prevent wastage of produce.**

The development of adequate post-harvest storage, including on-farm storage facilities, is crucial to the sustainable development of the local agricultural sector. Adequate storage is critical not only to enable storage of surplus food items during production season, but to provide farmers with a constant supply beyond the harvest period to ensure the year-round availability of seasonal crops. The creation of long-term stocks will also reduce sudden price fluctuations, by adjusting the balance between supply and demand. Storage facilities will also provide employment for some locals, and will further encourage farmers to expand agricultural production during favourable periods. This will help to establish more predictable and reliable marketing arrangements between farmers and distributors and also improve local food security.

Both surface and underground agricultural storage facilities will be supported in the parish, provided that there will be no adverse environmental impact. Their designs and construction will take into consideration, energy efficiency among other things. Principles such as constructing square rather than rectangular buildings, which will reduce the area per square foot of storage space and the amount of heat conducted across the walls, painting storehouses with white or silver to help reflect the sun's rays, shading buildings, and using sprinkler systems on the roof of a building for evaporative cooling will be followed. Additionally, the United Nations' Food and Agriculture Organization (FAO) recommendation of using Ferro-cement with thick walls to provide insulation will be implemented.

Where central storage facilities are being developed, these will generally be in or near to rural farming communities. Where necessary, the development of these facilities will be undertaken in collaboration with

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community organizations to ensure that there is a responsible entity to manage the facility.

Farmers will also be educated about proper food storage practices. Such practices generally include: temperature control, relative humidity control, maintaining air circulation and adequate ventilation, and avoiding incompatible product mixes. Farmers will also be educated on the type of atmosphere within which a particular crop can be stored, the types of commodities which are capable of tolerating the same temperatures, relative humidity and levels of ethylene, to enable them being stored together.

### RECOMMENDED POLICIES

- The relevant authorities will seek to develop adequate cold storage facilities across the parish.
- The relevant authorities will support the development of both surface and underground agricultural storage facilities in the parish, provided that there will be no adverse environmental impact.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop solar-powered cold and ambient storage facilities at strategic locations across the parish. The designs and construction of these facilities should take into consideration recommendations for energy efficiency, among other things.	Short to Long Term	MICAF, Private Sector
Educate farmers about proper food storage practices, including but not limited to; temperature control, relative humidity control, air circulation and ventilation maintenance, and compatible product mixes.	Short to Medium Term	MICAF, Private Sector RADA

### 4.2.7.13. STRATEGIC OBJECTIVE #188

**To improve the local agricultural road infrastructure in order to increase efficiency in marketing.**

Farm roads rehabilitation will be a key intervention strategy aimed at improving food security and increasing farmer incomes. Rehabilitating the rural roads will bring better access to markets and reduced transportation costs, which will increase profitability. These road improvements will consider the provision of adequate drainage and the use of non-inferior materials which will increase the durability of the road network and reduce maintenance cost over the long term.

### RECOMMENDED POLICIES

- The relevant authorities will seek to improve the local agricultural road infrastructure as part of the strategy to enhance the efficiency within the sector.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop an inventory of all agricultural roads in the parish.	Short Term	MICAF
Undertake a systematic analysis to prioritise agricultural road improvement works.	Medium to Long Term	MICAF
Prioritise agricultural road maintenance according to the results of the analysis.	Medium to Long Term	MICAF
Develop a programme for the maintenance of the local agricultural road infrastructure.	Medium to Long Term	MICAF

### 4.2.7.14. STRATEGIC OBJECTIVE #189

#### To develop expanded and new markets for local agricultural products.

A key part of the strategy to expand and enhance the market for local agricultural produce is to increase consumption among the local population. Domestic consumers can make a significant contribution to the sustainable growth and development of the local agricultural sector, and by extension the local economy, by eating locally produced food as opposed to imported products. It is an established fact that when consumers buy domestically produced food, they employ locals and when they eat imported food they employ foreigners and pay them in foreign exchange. In other words, the local economy gets a boost when consumers buy locally produced food, because dollars are kept within the local communities along with the jobs, which can strengthen the local economy.

Locals will therefore be encouraged to make healthy choices by eating local produce. This will be done by strengthening the “Eat Jamaican” and the “Grow What We Eat, Eat What We Grow” campaigns. The strengthening of the campaigns will involve the use of multiple channels and media to reach the target audience, which is all stakeholders in the parish. Multi-level approaches will be utilized for specific sub-groups, which include homes, schools, religious institutions, civic organizations and businesses. The importance of eating domestic food and other benefits such as eating fresher produce will be emphasized. Local products will also be highlighted/displayed/showcased in order to make it easier for the public to identify them.

The development of strategic alliances between local farmers and local educational institutions, hotels, supermarkets, agro processors, restaurants and shops will also be promoted. Local schools will be encouraged to align the needs of their school feeding programme with local production, in order to include more locally produced food in their meals. Such alliances may give preferential treatment to youth farmers, which will facilitate a ‘Youth Feed the Youth Programme’. In addition to ensuring a continuous supply of fresh food, this will guarantee markets for farmers, especially young farmers, and improve their incomes. Similarly, the hospitality sector can create ready and secured markets for local agricultural products. The food purchasing bills of tourism entities in Jamaica are generally described as large in the context of the local economy, but little is spent locally. Hoteliers are generally concerned that local farmers are unable to produce a sustainable supply of high quality products. This issue will however be significantly reduced alleviated with the development of agro parks in the parish. The linkages between tourism and agriculture will continue to be facilitated through the Tourism Linkages Council.

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Other important strategic relationships will be required between farmers and supermarkets, and restaurants and shops. Appropriate incentives will also be provided to encourage supermarkets to increase the quantity of local produce on their shelves.

The establishment of direct links with the international market will also be facilitated. This will include bringing farmers and exporters together in forums, whilst capitalizing on opportunities for the promotion of local agricultural produce in the international market.

### RECOMMENDED POLICIES

- All local public sector institutions will seek to substitute imported agricultural products for locally produced goods to the maximum extent possible in any existing or new feeding programmes.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Strengthen the “Eat Jamaican” and the “Grow What We Eat, Eat What We Grow” campaigns locally. This should involve the use of multiple channels and media to reach all stakeholders in the parish and should also highlight local products in order to make them easier for the public to identify.	Short Term	JAS
Facilitate the development of strategic alliances between local farmers and local educational institutions, hotels, supermarkets, agro processors, restaurants, shops, etc.	Short Term	JAS, MICAF
Explore the feasibility of developing a ‘Youth Feed The Youth Programme’.	Short Term	JAS
Support the growth of the agro-processing industry.	Short to Long Term	MICAF, Private Sector
Provide appropriate incentives to encourage local supermarkets to increase the quantity of local produce on their shelves.	Medium Term	MICAF
Encourage import substitution for agricultural products with potential for local production on a competitive basis.	Short Term	MICAF, JAS, RADA
Create, expand and maintain foreign markets for local farmers.	Short to Long Term	JAMPRO

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Hold forums to establish links between farmers and exporters.	Short to Long Term	MICAF, JAS

### 4.2.7.14.1. STRATEGIC OBJECTIVE #189A

#### To establish a farmers' markets in the parish.

The establishment of a successful farmers' market in the parish is another very important part of the overall local agriculture marketing strategy. A farmers' market will provide farmers with opportunities to increase their profits, and also provide a variety of fresh produce at reasonable prices to consumers. This may also lead to the increased consumption of local produce and a reduction in the dependence on imported goods.

The establishment of a farmers' market can also present some negative consequences. These consequences may include competition with local agriculture retailers and vendors who sell in traditional markets. A sustained level of competition can lead to permanent displacement, and therefore careful planning and execution will be done to ensure that this issue is kept to a minimum.

#### RECOMMENDED POLICIES

- The relevant authorities will support the establishment of a farmers market in the parish.
- The number of farmers markets held per interval of time will be limited to ensure that there is no high level of competition between such markets and local agriculture retailers and vendors who sell in traditional markets.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish a farmers' market in the parish of Clarendon.	Short Term	JAS

### 4.2.7.15. STRATEGIC OBJECTIVE #190

#### To improve the food handling practices within the informal marketing and distribution system in order to improve marketing and ensure food safety and food quality.

As highlighted earlier, there is a high level of informality in marketing and distribution channels within the local agriculture sector. This issue can have negative implications on food quality and food safety; therefore there is a need to ensure proper food handling practices. The proposed development of the local agricultural sector provides an opportunity to strengthen the capacity of current practitioners within this informal marketing and distribution system to address this issue. This will be achieved through the development of an appropriate training programme, focusing on sorting, grading, packaging, presenting and transporting produce. This will ensure improved quality and safety and also improve the marketability of local agricultural products. Additionally, materials such as RADA's Produce Grading Manual which can assist practitioners, will be highlighted.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage proper food handling practices within the local informal agricultural marketing and distribution system.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide special training in sorting, grading, packaging, presentation technologies and transporting of produce.	Short Term	RADA
Encourage the adoption of best practices and innovations by higglers, truckers, purveyors and marketers.	Short Term	RADA, JAS, MICAF
Increase the awareness of materials such as RADA's Produce Grading Manual which can assist practitioners in improving food handling.	Short Term	RADA

### 4.2.7.16. STRATEGIC OBJECTIVE #191

**To continue to encourage youth in agriculture through the provision of training and other appropriate incentives.**

The participation of youth in the local agricultural sector will be increased. Since disinterest is stemming mainly from the negative perception of the practice, the poor image of those involved in the sector will be changed, and agriculture will be presented as a viable career path for the youth. Outside of improving food and nutrition security and increasing productivity, this will result in a decrease in youth and rural unemployment.

Changing the face of agriculture will be achieved through the introduction of several new activities and programmes, as well as the continuation of existing ones. Agriculture as a subject will be introduced to the children at the primary school level and will incorporate the use of ICT, which will make the field attractive and interesting to youngsters. The agriculture curriculum in schools will also continue to promote agriculture as a business, which goes beyond the planting of crops and the rearing of animals. The diverse offerings of the agricultural sector, which includes R&D, pest management, agro processing, marketing, etc. will continue to be highlighted. The MICAF's Youth in Agriculture Programme which seeks to introduce new technologies to young people and encourage them to become involved in agriculture-based activities and to pursue careers in agriculture and agriculture-based industries will also be supported. This programme will be complemented by the YEOP which aims to annually place five hundred (500) youths across Jamaica into the agriculture sector, by providing incentives such as land, access to markets, links to credit agencies, and infrastructure (farm roads, office space and fencing). The awareness of these incentives amongst the youth will also be increased through appropriate communication channels. At the same time, remarkable success stories of those who have benefited from these programmes will be highlighted as a means of encouraging others to participate. Additionally, local agricultural organizations and groups will seek to have youth members on their boards, as a way of offering them a clear voice in the affairs of the sector.

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### RECOMMENDED POLICIES

- The relevant authorities will seek to introduce agriculture as a subject at the primary school level.
- The agriculture curriculum in schools will continue to promote agriculture as a business, which goes beyond the planting of crops and the rearing of animals, and includes R&D, pest management, agro processing, marketing, etc.
- The relevant authorities will seek to incorporate new technologies in the training of young people in order to encourage them to become involved in agriculture-based activities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Examine school curricula to ensure that adequate provision is made for the incorporation of technological training.	Short Term	MEYI, MICAF
Support the MICAF's Youth in Agriculture Programme and the YEAP.	Short to Long Term	CPC, Private Sector
Increase the awareness of the Youth in Agriculture Programme and the YEAP.	Short Term	MICAF, CPC
Highlight remarkable success stories of those who have benefited from youth in agriculture programmes through several different channels as a means of encouraging others to participate.	Short to Long Term	JAS, MICAF
Facilitate the active participation of youths on local agricultural boards.	Short to Long Term	JAS, MICAF

## 4.3. FISHERIES

### 4.3.1. OVERVIEW OF THE LOCAL FISHING INDUSTRY



Figure 88: Scaling fish on the Rocky Point fishing beach.  
Source: <https://journals.worldnomads.com/islandgirl/photo/38502/929862/Jamaica/Rocky-Point-is-a-small-fishing-village-in-the-parish-of-Clarendon>

The local fishing industry/ the fisheries subsector is comprised of the marine fisheries, freshwater fisheries and aquaculture. The industry plays an important role in the development of Clarendon, contributing to employment, foreign exchange and food security. Marine fishing has been the traditional way of life for many residents living in fishing villages along the southern coast of Clarendon, while inland fishing and aquaculture have emerged as less extensive but equally significant (TCPA, 2012). There are approximately 1755 registered artisanal fishers operating about 465 registered vessels from 11 identified fishing beaches<sup>117</sup> in the parish, including Rocky Point which is the second largest fish retail and wholesale market in Jamaica after Old Harbour Bay (MOAF, 2008; TCPA, 2012; C-CAM, FAO, MOAF & RADA, 2012). These fishers generally fish in the inshore areas (that is, the island shelf and proximal banks). Subsistence fishing also occurs inland along several local rivers, but mainly the Rio Minho (TCPA, 2012). Additionally, aquaculture has also become a very profitable economic activity for many; fish farms in the parish occupy a total of 60.45 hectares or 133 acres (TCPA, 2012). These fish farms are mainly found within the Tollgate and Mitchell Town communities.

### 4.3.2. THE MANAGEMENT OF THE LOCAL FISHING INDUSTRY

The local fishing industry comes under the supervision of the Fisheries Division of the MICAFA, but the C-CAM also plays a critical role in local management. The Fisheries Division is the Government entity responsible for the conservation and sustainable utilization of the parish's fisheries resources, as well as the development of aquaculture. Much of the parish's primary fishing grounds are found within the boundaries of the Portland Bight Protected Area which the C-CAM is currently responsible for managing. The organisation is also responsible for managing the Salt Harbour Special Fisheries Conservation Area/ Fish Sanctuary.

C-CAM takes a co-management approach to managing the local fisheries. This includes the establishment of the Portland Bight Fisheries Management Council (PBFMC). This Council is designed to facilitate collaborations and partnerships with community groups, non-governmental organizations (NGOs), business people, government departments and agencies in managing the local fisheries. The members include the Marine Police, JDF Coast Guard, Fisheries Division, Jamaica Fishermen's Cooperative, NEPA and all fisheries organizations (cooperatives) on the beaches in the area as well as other fishing interests. The PBFMC generally meets every month, and the members are responsible for discussing and devising solutions to issues raised by fishers, lobbying on behalf of fishers, reviewing acts (e.g. Fisheries Act), providing training to fishers, and providing interchange with other fishers through exchanges (e.g. Haitian fishers 1998, Colombian Fishers (2006). (C-CAM, n.d.)

117. Fishing beaches identified in Clarendon are: Salt River, Welcome, Mitchell town, Bournemouth, Portland Cottage, Barnswell Dale, Jackson Bay, rocky point, Beauchamp, Knights, Farquhar's Beach.

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The Fishing Industry Act (1975) is the main legislation used to regulate the local industry. Under this Act, all vessels and persons must be registered and licensed prior to engaging in any type of fishing. The Act also provides for the general administration of the Fishing Industry through regulations for registration and licensing of boats and fishers, transfer of ownership of boats, reporting on the loss or destruction of vessels, and the cancellation and suspension of licences. The Act further makes provision for fishery protection in the form of "closed seasons" and the establishment of fish sanctuaries. The closed season for lobster is April 1st to June 30th and August 1st to November 30th for conch each year. The Fisheries Division however has the authority to extend the periods beyond the stated dates. Restrictions are also in place to prevent fishers from catching undersized fish and lobsters and prohibit the use of certain techniques.

### 4.3.3. THE IMPORTANCE OF THE LOCAL FISHING INDUSTRY

The fisheries subsector provides a wide range of employment opportunities and also helps to alleviate extreme poverty in the Plan Area (Kong, n.d). Those employed in the local subsector include fish harvesters, processors, traders, pot-stick cutters, pot makers, boat builders, net makers, ice suppliers, vendors and persons who help to load the boat before it goes to sea and off-load the fish, conch or lobster when it comes back to port (Kong, nd). The subsector is dominated by males, but several of the critical roles are carried out by females (Kong, nd). It therefore gives women the opportunity to supplement their household income from other sources. Many of these participants in the local industry are the poorest and most marginalized in society and may have little or no other economic activity available to them (Kong, nd; Burke, Cooper, Waite and Zenny, 2011). Data from the MOAF (2008) revealed that over 70 per cent of fishers across Jamaica, have achieved only secondary education or below. It follows therefore that a number of these fishers lack the training or literacy to move into alternative economic endeavours.

The local fisheries subsector further provides critical support for alternative income generating opportunities and also contributes to the earning of foreign exchange. Many businesses such as bars, shops and restaurants were developed in the local fishing villages around the fishing industry, and some were even started with cash earned through fishing (C-CAM et al, 2012; Kong, n.d.). In addition to that, fishing activities contribute directly to foreign exchange generation through the export of fisheries products, including conch and lobster, from the local area. The sector also contributes to the balance of foreign exchange by substituting for other protein sources which would otherwise need to be imported.

In addition to being economically important, the local fisheries subsector is also very crucial socially, as it contributes to local food and nutrition security. Fish is an important part of the local diet, by being a vital source of protein, that is available all year round. It occurs in diverse forms and is used in many local dishes.

### 4.3.4. ISSUES AND CHALLENGES WITHIN THE LOCAL FISHING INDUSTRY

#### 4.3.4.1. OVERFISHING COUPLED WITH IMPROPER FISHING TECHNIQUES

There has been a marked decline in output from ocean fishing over the past few decades. According to the C-CAM (n.d.) and the SDC (2014), the fish stock in the PBPA has been depleted to levels which are almost unacceptable. This is believed to be linked to overfishing, coupled with improper or destructive fishing practices. According to Kong (n.d.), there are too many fishers chasing too little fish. Layoffs in the public and private sector which occurred from the 1970s to the 1990s led to significant increases in fishing pressure as displaced workers invested their severance pay in fishing boats and equipment (Hatziolos, Hooten, International Centre for Living Aquatic Resources Management and World Bank, 1998). In addition to that, fishing is very attractive to young males in communities such as Rocky Point, mainly because of the ease of entry into the industry (C-CAM et al, 2012).

Added to this issue of too many fishers is the fact that many of them employ techniques such as dynamiting,

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pot-fishing in fairly shallow water, and the use of fine mesh nets which trap immature fish. Some of these practices were innocuous in earlier years, with smaller numbers of fishers, but has now led to the overexploitation of the fish resources with the increased numbers (Hatzios et al, 1998). Not only do these practices contribute to overfishing, but they also destroy critical habitats, thereby reducing the total capacity of the system to produce. As a result, there is the continuous removal of large quantities of fish, at a rate which far exceeds that of replenishment. This is causing the yields to decline, as the average size of fish is decreasing, due to the fact that most landed are young adults or juveniles. According to Burke et al (2011), local fishermen are complaining that they have to go further out at sea, work harder and longer hours in order to catch the same amount of fish they used to catch some years ago.

In efforts to respond to this issue, a number of fisheries-management strategies have been implemented and enforced in order to combat this problem. The Portland Bight Fisheries Management Council was established in 1995, with the objective of improving fisheries management by involving fishers' organizations in the process. A SFCA was also established at Salt Harbour in the parish in 2010. The level of success of this fish sanctuary is currently undetermined, but if the Oracabessa fish sanctuary<sup>118</sup> in St Mary is anything to judge by, its impact may be very significant. Scientific studies there from 2010 to early 2014 showed a 570% per cent increase in fish biomass, a 200% per cent increase in parrot fish, a 1,000% per cent increase in doctor fish, a 150% per cent reduction in harmful smothering algae, and a 23% per cent rise in live coral cover (Aiken, 2014). In 2011, amendments were made to the Fisheries Industry Act 1975 as a means of improving the legislative framework within the sector. The capacity of the Marine Police has also been continuously improved, and recently, the Ministry of Agriculture announced that drones will be employed to aid monitoring efforts.

### 4.3.4.2. ILLEGAL POACHING

Illegal, unreported and unregulated fishing is quite rampant within the local fishing industry. This is inclusive of illegal poaching by both local and foreign nationals, as a result of inadequate surveillance and enforcement. This practice especially by foreigners, is particularly destructive, as it deprives the local fishing industry of millions of United States dollars (US \$) annually. In addition to the loss of foreign exchange, illegal poaching prevents the Fisheries Division from accurately determining the extent to which the fish resources are being exploited. This contributes to overfishing and undermines efforts to rebuild stocks and ensure sustainability. The MOAF is currently seeking to implement measures to address this issue. In April 2014, it was announced that drones will be acquired to man Jamaica's fish resources, as part of the strategy to combat illegal fishing by foreign poachers. The Ministry also announced its intention to seek an increase in fines for poaching through amendments to the current Fisheries Act, even as work proceeds towards the enactment of new legislation to govern the industry. However, these strategies have not yet materialized.

### 4.3.4.3. POLLUTION

According to the TCPA (2012), there are two major rivers, and several bays and beaches in Clarendon which are at risk due to pollution by garbage and sewerage. Garbage disposal that contravenes sustainable development principles is a major issue affecting the parish (SDC, 2014; TCPA 2012; Town Planning Department, 1995; UTech, 2007). Garbage is being dumped on roadsides, vacant lots, in river beds, wetlands, and drainage channels. That which is dumped on land often ends up in rivers and streams via surface runoff. Similarly, the disposal of sewage in the parish is a significant challenge as only a few communities are served by central sewerage systems. A large percentage of the local population also depends on on-site treatment systems, including pit latrines (See 2.2.4.1. Waste Management in Clarendon, pg. 149), which are not equipped with secondary treatment facilities. During heavy rainfall periods, some of these sewerage systems, particularly those located in flood prone areas, overflow into freshwater systems.

<sup>118</sup> The Oracabessa fish sanctuary was established at the same time as the Salt Harbour fish sanctuary.

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These challenging situations are combining to threaten the sustainability of the local freshwater fisheries industry, by causing deterioration in water quality. In addition, some freshwater animals, including fish, may accidentally ingest debris for food or become entangled in it, causing serious injury or death from suffocation, starvation, drowning, increased vulnerability to predators, or other injury. The end result is the disruption of the delicate ecological balance. These issues also combine to threaten the marine fisheries as the freshwater systems empty into the sea. This is exacerbated by the fact that the parish is home to informal coastal communities such as Rocky Point and Portland Cottage which partially lack sanitary systems and infrastructure. The impacts on the marine environment are quite similar to those on the freshwater resources, in addition to presenting a threat to the health of the coral reefs.

Improper agricultural practices are contributing to sediment and nutrient pollution in the parish's fresh and coastal waters. Over-cultivation and inadequate soil conservation techniques in hillsides farming, (practiced widely in Upper Clarendon), is causing soil erosion which is further contributing to the siltation of local rivers, while agricultural runoff from the use of agrochemicals is contributing to eutrophication. In both cases, there is disruption of the aquatic ecosystems which results in significant threat to the local fishing industry. Siltation inhibits or prevents spawning of fish, while eutrophication increases plant and animal biomass and decreases species diversity. In the latter case, anoxic conditions may also develop which will deplete oxygen to levels which are insufficient to support most organisms. These pollutants are generally carried into the marine environment, where they present a significant threat to coral reefs.

The generation of wastewater from the processing of sugarcane by Monymusk and New Yarmouth, and their associated rum distilleries, has been identified by fishers as a significant threat to the viability of the local fishing industry. Dunder from these establishments periodically ends up in water bodies, causing massive fish kills. See 2.1.2.3.2. Inadequate Sewage Disposal, pg. 58

### 4.3.4.4 INVASIVE ALIEN SPECIES



*Figure 89: The Lionfish which severely threatened the fish population in Jamaican waters.*

Source: [http://www.moa.gov.jm/Fisheries/data/Lionfish%20Brochure\\_printed%20version.pdf](http://www.moa.gov.jm/Fisheries/data/Lionfish%20Brochure_printed%20version.pdf)

The sustainability of the local fishing industry is also threatened by the introduction of invasive alien species. A few years ago, the introduction of the Lionfish in Jamaican waters severely threatened the local fish population. The Lionfish are voracious predators and one may eat more than 30,000 juvenile fish per year. Additionally, they are fast growing and are able to outgrow native species with whom they compete for food and space. Moreover, it has no aggressive natural predators in Jamaican waters, which means that its population cannot be controlled naturally. Whilst the population of this alien fish has been reduced to manageable levels, through an aggressive programme, the species is still present in Jamaican waters and remaining a looming threat. Additionally, there is always the possibility of reintroduction, as well as the introduction of other alien species through global trade and tropical cyclones. There is also the possibility that other alien species, such as the Green Mussel, which has been found in Jamaican waters for some time

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now, may spread with detrimental effects. There exists a need for strict monitoring.

### 4.3.4.5. CLIMATE CHANGE

The global threat of climate change is compounding the localized issues affecting the parish's fishing industry. Increasing sea temperatures, ocean acidification and increasing frequency of storm events, which are driven by greenhouse gas emissions, are the main effects of climate change which have been identified as posing a serious risk. According to Burke et al (2011), in recent years, observations of coral bleaching and disease as a result of ocean warming have been on the rise across Jamaica, including in Clarendon's waters. The National Oceanic and Atmospheric Administration (NOAA) (n.d.) has also noted that many marine species are moving quickly towards the poles to stay cool as average ocean temperatures rise. These shifts can cause ecological disruptions as predators become separated from their prey, and they can also cause economic disruptions if a fish population becomes less productive or moves out of range of the local fishermen. In addition to getting warmer, the oceans are also becoming more acidic. This increased acidity can create unfavourable conditions for organisms, such as corals and shellfish, which build shells out of calcium carbonate. Besides, waves associated with tropical storms and hurricanes frequently damage coral reefs and sea grass beds, and the frequency of such events is on the rise with the intensification of climate change.

### 4.3.4.6. POOR FISHING BEACH INFRASTRUCTURE

The nine (9) designated fish landing sites or fishing beaches within the Plan Area generally lack the basic infrastructure for the post-harvest handling of fish. They lack sanitary facilities, ice facilities, jetties, raised platforms for washing/cleaning fish, and several other critical infrastructure. In 2014, the new Rocky Point market was officially opened, primarily to accommodate fish vendors and scrapers. However, many such persons continue to use the Rocky Point beach as no cold storage facility was constructed in the market and they are not allowed to take their small refrigerators into the facility. Toilet facilities were also constructed on the Rocky Point fishing beach, but these facilities are currently out of use, allegedly due to a lack of local support due to the cost attached to using them. As a result, conditions on shore at fish landing sites are generally unsanitary.

The lack of infrastructure also severely impedes the fishers' potential for revenue generation. Despite the fact that the fish stock is well exploited, the revenue generated is far below what it could be with better infrastructure. The absence of adequate cold storage usually forces fishers to sell their catch as soon as possible after returning to land. As a result, there is generally a high level of competition between fisher folks who seek to dispose of their catch; often causing the sale price to be significantly reduced. According to the local fishers, this situation discourages them from catching the Kingfish species which is very lucrative when sold to the tourism industry. They have no storage facilities for such large fish and the price usually obtained on the beach does not warrant effort to catch the fish or the load it generates on the boat while at sea.

### 4.3.4.7. PIRACY

Piracy, which is the stealing of another fisherman's catch and or fishing gear/ equipment, has been highlighted as a potential deterrent to the sustainable development of the local fishing industry. In the past, local fishers have lost fish pots, fish traps, boat engines, etc. to theft, allegedly by other fishers (including illegal poachers). This has generally had negative implications for the economic and social welfare of the victims, and has also served to reduce incentives to play fair within the industry. According to the local fishers, the incidents of piracy within the local industry have declined significantly in the last few years, although there are periodic incidents of theft, mainly of boat engines.

### 4.3.4.8. ACCESS TO CREDIT

Access to institutional credit is a very significant obstacle to efficiency in the overall development of the local

## 4.3. FISHERIES

fishing industry. The provision of credit by local financial institutions to fisher folks continues to be limited. This is due mainly to the fact that the fishers lack the physical and livelihood assets that can be used as collateral, as well as ability to repay the high interest rates offered by institutions for insecure loans. As explained earlier, many of the participants in this industry are the poorest and some of the most marginalized in society and may have little or no other economic activity available to them. In addition to that, catches are getting smaller due to overfishing and other related activities, and incomes are generally low due to the absence of adequate post-harvest handling facilities, particularly cold storage. Consequently, it is difficult for the fishermen to secure loans from formal financial institutions to purchase or replace equipment.

### 4.3.4.9. SAFETY AT SEA

Safety at sea is a serious issue in the local fishing industry. Fishers are vulnerable to accidents, injuries and death, mainly due to the fact that fishing fleets are generally made up of small open canoes which are ill-equipped for navigation, communication and safety. In addition to that, most fishers tend to routinely disregard safety regulations, despite repeated incidents at sea which periodically results in fatalities; the consequences of which usually fall heavily on the dependants. This may be somewhat linked to the fact that there is no agency mandated by law to ensure that local fishermen adhere to the law and observe minimum safety requirement.

In the latest attempt by the Government to address this issue, a total of 250 fisher folk from across the island, including some from Clarendon, were certified in basic safety at sea under the Cold Chain Supply and Safety Project, in November 2014. The certification program took the form of a three-day customized course which was delivered by the Caribbean Maritime Institute (CMI), and covered areas such as elementary first aid, the sea and weather, types of emergency situations, emergency signals, first aid emergency drills, principles concerning survival at sea, and man overboard actions. The training involved a combination of practical and theory-teaching methods.

## 4.3.7. PARISH STRATEGIES

### 4.3.7.1. STRATEGIC OBJECTIVE #192

**To prevent development from causing any increased marine and coastal contamination and degradation which would adversely affect the local fishing industry.**

Unplanned and unmanaged coastal developments are having a negative impact on the marine resources. These impacts include water pollution and the loss of coastal vegetation, which can have devastating consequences for the local fishing industry. Proper planning and the enforcement of environmental standards will therefore be used to prevent any increased marine and coastal contamination and degradation. More specifically, coastal setbacks will be established, density standards will be developed and developments that will result in the loss of mangroves, sea grass beds, coral reefs, sea turtle nesting sites, fish spawning and nursery areas and other marine and coastal resources will be resisted. See Strategic Objective #98C, pg. 229

### 4.3.7.2. STRATEGIC OBJECTIVE #193

**To improve the yields of marine fishers by protecting critical habitats, reducing fishing efforts and eliminating unsustainable fishing practices through a co-management approach.**

#### 4.3.7.2.1. STRATEGIC OBJECTIVE #193A

**To develop and sustain the productivity of the marine fisheries.**

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In order to develop and sustain the productive capacity of the local marine fisheries, it is critical that the impacts of overfishing be reversed and the fish stock is managed in a sustainable manner. This will be done by conserving critical habitats, reducing fishing efforts and eliminating unsustainable fishing practices. Such activities will allow the stock to recover to a healthy level which will rapidly increase productivity, profitability and net economic benefits. These activities will also ensure that the marine fisheries provide safe, secure and long-term employment for residents, whilst contributing to local food security.

The restoration of the depleted fisheries will involve the maintenance of the existing fish sanctuary and the development of new ones in appropriate coastal locations. This will ensure the conservation of critical habitats, and the protection of spawning areas and the juvenile fish population. This will essentially allow the marine species the opportunity to reach full sexual maturity, thereby increasing their egg producing potential and ultimately the fish populations. See 2.1.5.6. Strategic Objective #6, pg. 77.

In order to ensure the sustainable exploitation of the fisheries, measures will be implemented to reduce fishing efforts and eliminate unsustainable fishing practices, while promoting responsible fishing. Reducing fishing efforts will involve limiting the further entry into the industry and encouraging the voluntary exit of some fishers. Appropriate incentives, including the provision of alternative means of employment, will be put in place to facilitate the latter. Illegal, unreported and unregulated fishing, as well as illegal and questionable practices such as dynamiting and the use of fine mesh nets will also be eliminated by promoting sustainable fishing practices through training and undertaking adequate monitoring and enforcement of new and existing legislations.

#### RECOMMENDED POLICIES

- The number of beaches designated as fishing beaches will be maintained, and no new fishing beach will be created and the landing of fish will not be allowed on the shores of non-fishing areas.
- The relevant authorities will seek to reduce marine fishing efforts by stopping new entrants until stocks have recovered sufficiently and encouraging existing fishermen to seek alternative sources of livelihoods.
- All regulations regarding the use of certain fishing gears, methods, closed seasons, etc. will be strictly enforced.
- The relevant authorities will seek to criminalize the sale of mesh nets with sizes finer than the recommended minimum size.
- The relevant authorities will seek to develop stringent penalties for fishers and vendors caught with dynamite fish.
- The relevant authorities will seek to auction large fishing vessels which are seized to local fishers as a means of encouraging them to travel further out at sea to fish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support the passage of the new fisheries legislation.	Short Term	Jamaica Fishermen Co-op Union Ltd, C-CAM
Support Strategic Objective #6 of the Natural Environment Section of this document (pg. 77).	Short to Long Term	Fisheries Division, C-CAM

## 4.3. FISHERIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Launch a public education programme aimed at increasing the capacity of the public to identify dynamite fish and discouraging the purchase of such fish.	Short Term	Fisheries Division, C-CAM, NEPA
Promote the use of improved fish pots with biodegradable panels to prevent ghost fishing.	Short Term	Fisheries Division, C-CAM
Design and implement training/awareness-raising programmes to encourage fishers to practice proper catch and release techniques such as using a circle hook, which is less likely to catch a fish's gut and improves its chances of survival upon release.	Short Term	Fisheries Division, C-CAM
Provide suitable incentives to best practices in the conservation and management of the local fishery.	Short to Medium Term	Fisheries Division
Explore the possibility of introducing a VMS for monitoring the location of fishing vessels while at sea to ensure that catches are harvested in accordance with the terms of the licences of fishers.	Long Term	Fisheries Division
Promote aquaculture and fish tourism as alternative sources of livelihoods for marine fishers.	Short to Long Term	Fisheries Division, CCAM

### 4.3.7.2.2. STRATEGIC OBJECTIVE #193A

#### To manage the marine fisheries through a community co-management approach

The local Fishermen Cooperatives will be strengthened to increase their responsibility in the management of the marine fisheries. Research has shown that giving more responsibility for fisheries management to local fishermen can yield positive results in terms of the control of fisheries malpractices, willingness to collect and give accurate data and compliance with regulations. Furthermore, international experts are increasingly of the view that community-based co-management is the only realistic solution to effectively sustain aquatic resources and the livelihoods of communities dependent on them.

The strengthening of the Cooperatives will take place through several strategic activities. These include, increasing membership, providing training, and devolving certain fisheries management powers to fishers. Non-members, including women, will be informed about the roles and functions of the Cooperatives and will also be encouraged to become a part of it.

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Appropriate training programmes will be provided to develop the human resource capacity to properly manage the Cooperatives. At the same time, the role of females in the Cooperatives will be strengthened since women are considered as better money managers than their male counterparts. Such structural developments will enable fishers to accept more responsibilities in managing the local fisheries. This will include local monitoring.

### RECOMMENDED POLICIES

- The management of the local fisheries will continue to take place through a Cooperative co-management approach.
- The relevant authorities will support the strengthening of the fisheries cooperative.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Assess capacity needs and develop training programmes to strengthen the Cooperative management	Short to Medium Term	Jamaica Fishermen Co-op Union Ltd
Increase awareness regarding the value of female membership in the Cooperatives	Short Term	Jamaica Fishermen Co-op Union Ltd
Strengthen the role of females in fisheries management strategies	Short Term	Local Fishermen's Cooperative
Increase awareness amongst non-members about the role and functions of the Cooperatives and criteria for membership.	Short Term	Local Fishermen's Cooperative
Develop a local monitoring system which involves members of the Cooperative serving as fishery wardens and sharing the responsibility of monitoring with the responsible organisations. This system may operate similar to a Neighbourhood Watch, where members observe and report suspicious activities to the authorities.	Short Term	Local Fishermen's Cooperative, Fisheries Division, C-CAM, Clarendon Police Division,

#### 4.3.7.3. STRATEGIC OBJECTIVE #194

**To improve the efficiency of post-harvesting handling of fisheries resources through the provision of adequate onshore facilities, as well as implementation of health standards and guidelines.**

Providing adequate onshore facilities for post-harvest handling and storage, in addition to implementing health standards and guidelines, are very important to the development of the local fishing industry. Local fishers and fish processors tend to rely on simple low cost tools and equipment and work in the absence of basic services and facilities at fish landing sites. As a result, conditions on shore at such sites are frequently unsanitary and fish are sold at low prices, resulting in a loss of income.

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For these reasons, facilities at fishing beaches will be upgraded to an appropriate level for the fishing operations that take place there, and fishers and fish processors will be trained in the use of these facilities. Such upgrades will give consideration to the provision of ice, fish storage, retailing and distribution facilities, as well as sanitary handling. This will be undertaken in collaboration with community-based organizations to ensure that there is a responsible entity to manage the improvements. Additionally, fishers and fish processors will be required to comply with all existing and new health and sanitation requirements as the presence of unsanitary conditions will result in penalties which may include the closure of such sites.

#### RECOMMENDED POLICIES

- The relevant authorities will seek to ensure that all fish landing sites in the parish are upgraded to an acceptable level for the fishing operations conducted there.
- The relevant authorities will support any action taken to ensure that, fishing beaches have the necessary storage, selling and waste disposal facilities that will enhance and make it more attractive to customers, provided that there will be no negative environmental impact.
- The relevant authority will continue to monitor fishing beaches and ensure that appropriate sanitary conditions are in place. Closure notices will be effected where breaches occur.
- All food vendors on fishing beaches will be required to obtain a valid Food Handler's Permit.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Conduct needs assessments for all designated fishing beaches in the parish.	Short Term	Fisheries Division, CPC
Develop the required level of infrastructure on each fishing beach, as identified by the needs assessments.	Short to Long Term	MICAFA, CPC, Private Sector
Provide adequate training for fisher folk in fish handling and storage.	Short to Long Term	Fisheries Division
Establish a deadline for the removal of all vendors without Food Handlers' Permit on fishing beaches.	Short Term	Clarendon Health Department

## 4.3. FISHERIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Create a Beach Management Plan for all designated fishing beaches in the parish. This should be done in collaboration with the relevant community-based organisations and stakeholders and clearly outline the responsibilities of all parties involved. The operational system should be established for each beach. The issue of charging a small fee for using the bathroom facilities should be explored and incorporated where necessary.</p>	<p>Short Term</p> 	<p>Clarendon Health Department</p>

### 4.3.7.4. STRATEGIC OBJECTIVE #195

#### To ensure efficiency in the fishing industry by increasing the application of technology.

The application of technology in the local fishing industry is low. However, technical advances can lead to more efficient and economical fishing operations, and improved safety. There is a wide range of technologies including very high frequency (VHF) radios, GPS, sonar, and emergency immersion suits, which can be applied in the fisheries sector. The increased application of the GPS in particular will be facilitated due largely to its cost-effectiveness and the general small size of the fishing fleets.

The benefits that the increased application of GPS will bring to fishers and the local fishing industry lie mainly in its ability to digitally and easily mark specific locations. With these units, fisher folks will be able to record the spots where fish populations frequent, where fish pots are placed or where significant structures lay. This information will become important when fishermen desire to return to these areas at later dates. Finding these places will become much easier as a GPS unit will tell fishers where they are and where they are going to within a few meters. GPS technology will make fishing expeditions much more rewarding, as it is more accurate than “line of sight” or other navigation methods currently being used. Additionally, fishers will be able to share the recorded data between devices and with other people. The GPS also facilitates safe and quick navigation which will improve safety at sea. Regardless of the visibility (whether its night, a heavy fog, or other bad weather), with a GPS receiver fishermen will know where they are and the direction in which they are headed. In case of a ‘man overboard’ situation, a GPS unit will be able to mark the exact place where the event occurred greatly assisting rescue crews. GPS also allows one to easily communicate precise positions to the Coast Guard in case a boat in distress is spotted.

### RECOMMENDED POLICIES

- The relevant authorities will seek to facilitate the increased application of modern technologies in the local fishing industry.

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide GPS training programs to increase the awareness of its capabilities to fishers.	Short Term	Fisheries Division, C-CAM
Increase the availability of GPS units to local fishers.	Short to Medium Term	Fisheries Division, Local Fishermen's Cooperative
Conduct research to identify other technologies that may be feasibly applied in the local fishing industry.	Short to Long Term	MICAF
Educate fishers about other technologies that may be applied within the industry and encourage the application of such technologies.	Short to Long Term	Fisheries Division, C-CAM

### 4.3.7.5. STRATEGIC OBJECTIVE #196

**To improve and promote safety at sea amongst fishers for the purpose of saving lives and property and reducing the cost of search and rescue operations.**

The consequences that often arise from incidents at sea necessitate the need to improve and promote safety in the industry. This will be achieved through the cooperation and active involvement of several key stakeholders. The overall strategy will focus on preventing and mitigating potential risks or threats at sea. It includes a series of steps including awareness creation on safety related issues, the provision of training on practical aspects which include navigation, communicating distress situations, survival at sea, first aid, etc., and the establishment of a mechanism to ensure compliance with existing and newly developed standards and guidelines.

### RECOMMENDED POLICIES

- All fishers must be able to demonstrate that they possess basic safety equipment before they are granted fishing licences.
- All fishers will be required to obtain certification in basic safety at sea.
- No fishing vessel will be allowed to leave harbour unless it is inspected and found to have on-board the minimum safety requirements, including the IDs of the fishers.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote awareness of safety at sea practices such as; "Boat pooling", fishing within the limit of cell phone signals, wearing of life jackets while at sea, carrying back up paddles and fishing in small 'convoy'	Short Term	ODPEM, CPC, Fisheries Division, Caribbean Maritime Institute

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Improve access to safety equipment/gear to fishers (e.g. life jackets and marine flares)	Short Term	Private Sector, Local Fishermen's Cooperative, MICAF
Provide a list of the basic safety and communication equipment specific to each type of vessel.	Short Term	Fisheries Division
Provide an education and training programme which includes, among other things, elementary first aid, knowledge of sea and weather, types of emergency situations, understanding emergency signals, first aid emergency drills, principles concerning survival at sea, and man overboard actions. At the end of such training, fishers should be certified in basic safety at sea.	Short to Medium Term	Fisheries Division, Caribbean Maritime Institute
Develop a mechanism for the inspection of all boats at fishing beaches prior to departure. This mechanism should seek to utilize locals from the fisher's Cooperative as Fishery Wardens.	Short to Medium Term	Fisheries Division, Clarendon Police Division, JDF Coast Guard, Local Fishermen's Cooperative, C-CAM
Introduce mechanisms for fishers to lodge pre-sailing information at fishery harbours. Such information should include their destination, expected time of return, etc.	Short to Medium Term	Fisheries Division, Clarendon Police Division, JDF Coast Guard, Local Fishermen's Cooperative, C-CAM
Develop stringent penalties for fishers caught at sea without the minimum safety requirements. Such penalties may include the temporary seizure of boats and fishing gears.	Short to Medium Term	GOJ
Explore the feasibility of developing a VMS for assisting search and rescue operations.	Long Term	Fisheries Division

### 4.3.7.6. STRATEGIC OBJECTIVE #197

**To promote the expansion of aquaculture as an alternative to marine fishing and as a sustainable economic opportunity.**

In order to reduce the pressure on the marine fisheries, this Plan proposes the development of the aquaculture industry. Expanding the production of commercial fish in ponds and enclosures will satisfy

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satisfy some of the demands for fish and thereby reduce the strain on the marine ecosystems. Tilapia is currently being produced locally by a number of fish farmers, and its production can be increased by rehabilitating those fish ponds that are presently not in use and developing new ones on agricultural lands (preferably avoiding Class I and Class II) across the parish. The intensification of production by investing in high-technology, such as efficient aerators and water cycling and filtration equipment will also be encouraged. Additionally, the practice of fish polyculture, which is the cultivation of various species of fish together, should be explored. Revenue per hectare can be increased by developing polyculture using species such as macrobrachium prawns, crayfish, mudfish, snook and tarpon along with the tilapia (Sir William Halcrow and Partners Limited, 1999). The development of shrimp aquaculture in brackish water ponds should also be explored, as areas such as Rocky Point and Portland Cottage appear to offer potential for the development of the said species. These developments may however require the pumping of salt water. Aquaculture operations can have some negative impacts on the local environment. These impacts may include the addition of organic matter and nutrients to streams and lagoons during low flow periods, increasing the risk of eutrophication. Maximum utilisation of this water will therefore be promoted. The high nutrient and organic-matter sludge from aquaculture ponds can be useful when composted with high-carbon organic matter sources (such as straw, waste paper, bagasse or cane tops) and applied to the land as a soil conditioner. This can be used locally on a wide range of crops, or transported to the mining areas for strip-mine land rehabilitation activities. It may also be used in the development of aquaponic systems, which is a technology which will be highly promoted. Any effluent channels discharging into water bodies will be monitored carefully, especially in the dry season, for organic matter and nutrients. Irrigation discharge onto agricultural lands will also be monitored.

The location of such ponds will be closely examined by the planning authorities as they could be environmentally incompatible, especially where large scale excavation has to be done and streams diverted to supply them with water.

#### RECOMMENDED POLICIES

- The relevant authorities will support aquaculture developments, provided that there will be no adverse environmental impact.
- Aquaculture developments will not normally be permitted on Class I and Class II agricultural lands.
- The relevant authorities will continuously monitor effluent output from aquaculture operations, especially during dry periods.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage aquaculture development as an alternative to commercial marine fishing	Short to Long Term	Fisheries Division
Provide subsidies and incentives and explore possibilities for an amicable financing regime for aquaculture development.	Short to Long Term	MICAF
Encourage developers of aquaculture systems to make provision for the use of the wastewater generated for irrigation purposes or in aquaponics.	Short to Long Term	WRA, MICAF, NEPA

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### 4.3.7.7. STRATEGIC OBJECTIVE #198

**To integrate community tourism activities into the local fishing industry as a way of broadening the scope of offerings in the industry and supporting alternative livelihoods for fishermen.**

There is a need to diversify the activities within the local fishing industry. The marine fisheries have witnessed considerable changes over the last few decades, including overfishing and the depletion of the fish stocks, as well as the introduction of management measures aimed at restricting fishing efforts and output. The impact of these developments are very important at the local level, since fishing represents a significant component of the economies of several local communities. To this end, the activities of the local fishing industry will be diversified to reduce the pressure on the fish stocks and also provide alternative employment for commercial fishers. This will be achieved in part by integrating fishing activities and tourism activities.

Fish sanctuaries will be used to support tourism activities. This will provide alternative employment for fishermen and will also generate revenue for management organisations for the sustainable management of the sanctuaries. In addition to tours guided by trained local fishermen, the sanctuaries will support recreational fishing which will only be the catch and release practice. These activities will however be regulated to ensure that they do not infringe upon the primary function of the fish sanctuaries which is to protect critical fisheries habitat.

This Plan also promotes the integration of tourism activities into fish farming activities. This is a strategy which has been used both locally and internationally with tremendous success to improve the face of fish farms, while increasing employment opportunities and revenue generation. It involves the proper designing and landscaping of fish farms and the development of additional attractions, including “fish your own facilities”. “Fish your own facilities” are fish ponds from which the consumers are given the chance to catch their own fish (whether for consumption or ornamental purposes), using fishing rods and baits. The facilities may also include rural outdoor restaurants where the consumers may have their catch prepared in their desired method. Additional attraction may include fresh-water aquaria.

The development of fried fish outlets in appropriate fishing beach settings, will be encouraged. This will provide the opportunity for the recreational use of active fishing beaches, centred on the restaurants. It may also be necessary to develop complementary recreational facilities along such beaches.

### RECOMMENDED POLICIES

- The relevant authorities will encourage and support the development of aquaculture facilities for tourism purposes.
- The relevant authorities will support fishing tourism within fish sanctuaries, provided that such activities are not done in a manner which will defeat the primary function of the sanctuaries, which is to protect critical fisheries habitat and spawning areas, as well as juvenile fish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage fishing tourism as an alternative to commercial marine fishing.	Short to Long Term	Fisheries Division, C-CAM
Provide training for fishers to become tour guides within fish sanctuaries.	Short to Long Term	C-CAM, Tourism Product Development Company (TPDCo)

## 4.3. FISHERIES

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Clearly establish guidelines and develop a comprehensive plan of action for the sustainable management of tourism activities within fish sanctuaries.	Short Term	Fisheries Division, C-CAM
Provide technical guidance where necessary for individuals and entities wishing to integrate tourism into fish farming or other fisheries related activities.	Short to Long Term	TPDCo, Fisheries Division
Support the marketing of the tourism product of Clarendon. See 4.1.5.5. Strategic Objective #161, pg. 348	Short to Long Term	Fisheries Division

### 4.3.7.8. STRATEGIC OBJECTIVE #199

**To prevent habitat loss and maintain water quality for the sustainable production of the freshwater fishery.**

Management of the local freshwater fisheries is not currently feasible owing to their widely scattered subsistence nature. The key however to sustainable freshwater fisheries production is the prevention of habitat loss and the maintenance of water quality. Appropriate measures include establishing fluvial corridors with riparian vegetation buffers, as well as establishing and enforcing standards for discharges into fluvial systems. In certain areas, this may include low-flow augmentation in the dry season to maintain adequate dilution of effluents.

This strategy will also have a positive impact on the marine fisheries, as it will reduce watershed-based sedimentation and pollution, which will in turn reduce the flows of sediments, debris and other pollutants to coastal waters.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Support Strategic Objectives #1, #2, #3, #4, #5, #8, #10, #11 and #12 of the Natural Environment section of this Plan. See pgs. 65-79 and 80-82	Short to Long Term	Fisheries Division

### 4.3.7.9. STRATEGIC OBJECTIVE #200

**To increase access to credit for fishers to support capacity improvements.**

Access to institutional credit is one of the most significant obstacles to efficiency in and the overall development of the local fishing industry. The provision of credit by local financial institutions to fishers, continues to be limited mainly due to the fact that they lack the physical and livelihood assets that can be used as collateral. This situation underscores the need for innovative approaches to facilitate access to financing. Local financial institutions will therefore be encouraged to, among other things, consider adopting

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a household cash-flow approach in assessing the capacity to pay of a fisherfolk-borrower. This would be in lieu of collateral so that sources of income other than from fisheries production, will be considered and would boost the capacity to pay of fisherfolk borrowers. Fishers will also be made aware of existing avenues through which they can access credit.

### RECOMMENDED POLICIES

- The relevant authorities will seek to encourage local financial institutions to develop a special loan program for fishers.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and conduct targeted awareness programmes about possible loan and credit options available to fishers.	Short Term	Fisheries Division, C-CAM, Fishermen's Cooperative
Promote alternative livelihood strategies for fishers as a means of ensuring adequate security in the procurement of loans.	Short to Long Term	Fisheries Division, C-CAM, Fishermen's Cooperative

#### 4.3.7.10. STRATEGIC OBJECTIVE #201

**To increase disaster resilience and climate change adaptation within the local fishing industry.**

Improving disaster resilience within the local fishing industry is critical to ensuring the continuous contribution of the sector to food security and rural economic development. Fishers and fish farmers are faced with a number of risks, which are associated with natural and manmade hazards, but particularly from tropical cyclones. These risks include loss of lives, assets, food source, and employment or income-earning opportunities. It is vital that interventions aimed at reducing the risk associated with specific types of hazards, be made so as to prevent or reduce the possibility of disasters within the industry. Such interventions will include the development of early warning systems, the promotion of good practices for securing boats, engines and other fishing gear/equipment, and encouraging the provision of fisheries insurance, as well as enforcing building codes and ordinances for the development of fisheries infrastructure. See 2.3.9.15.2. Strategic Objective #91B, pg. 217.

#### 4.3.7.11. STRATEGIC OBJECTIVE #202

**To mitigate the threat of invasive alien species.**

Invasive alien species is a serious threat to the local fishing industry and to the Parish's Biodiversity and will therefore be effectively managed. Once invasive species become established and spread, it can be extremely difficult and costly to control or eradicate them. As a result, the management approach in the Parish will be focused on: creating an effective mechanisms to prevent their introduction in the first place, which includes developing regulations aimed at preventing future incursions of exotic and invasive species; carrying out adequate monitoring to detect new infestations; and moving rapidly to eradicate newly detected invaders.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Increase awareness of the threat posed by invasive alien species.	Short Term	NEPA, C-CAM, MICAF

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop regulations aimed at preventing future incursions of exotic and invasive species	Short to Medium Term	NEPA
Increase monitoring and control of invasive plant and aquatic species	Short to Long Term	NEPA, C-CAM, Fisheries Division
Promote the health of native populations, which gives them a better chance to compete successfully	Short to Long Term	NEPA, C-CAM, Fisheries Division
Increase research into new techniques for controlling/managing invasive species	Short to Long Term	NEPA, C-CAM, Fisheries Division, UWI

## **4.4. THE TOURISM SECTOR**

### **4.4.1. OVERVIEW OF THE LOCAL TOURISM INDUSTRY**

Tourism is a growing economic activity in Clarendon, but the industry is not considered to be one of the major contributors to the economic base of the parish. The local industry which has developed around small and medium sized businesses in the accommodation subsector provides a source of employment, including seasonal and permanent, for a few residents of several local communities. In addition to the accommodations subsector, these residents are mainly employed within the areas of attractions, dining and entertainment (inclusive of festivals and events), and the support services which are the areas experiencing most growth.

The local accommodation subsector is made up of hotels, villas, guesthouses, and apartments. The Milk River Spa is arguably the most revered accommodation in the parish. It has consistently been a major tourist accommodation, not just in Clarendon but in Jamaica. This facility is located in the southern part of the parish and boasts a hotel and the famous Milk River Baths. It is reputed for the therapeutic value of its waters that have been attributed to the cure of certain ailments. The Spa has been identified as one of Governments' millennium development projects and has also been earmarked for significant development. Grants are currently in place to do some development at the facility. Other accommodations in the parish include Bridge Palm Hotel, Fairfield Guest House, and Dynasty Hotel.

The tourism attractions in the parish are very limited, but are of a variety of types including agri-tourism, heritage tourism and ecotourism. These attractions include the St. Peters Anglican Church, which is the third oldest remaining church in Jamaica, the Halse Hall Great House, the Bog Sugar Estate, the Canoe Valley, the Salt River and the Ebony Park Agro-Tourism Park.

The parish also offers a wide variety of festivals and entertainment events including community and national events. The parish is host of the annual Denbigh Agricultural and Industrial Show, Jamaica's largest agricultural show, which is held over the three-day Independence weekend. Other noteworthy events are the Ash Wednesday Bull Head Mountain Bash held at Bull Head Mountain and the Hosay festivals practised and staged by the local East Indian community in Milk River.

In recent times there has been an attempt to develop the south coast of Jamaica (including Clarendon) as an alternative tourist destination to the north coast of the island. A number of local based groups are currently working in the parish to develop or enhance the local tourism product. The Milk River Tourism Organisation (MRTO), is currently undertaking an initiative to enhance the local, regional and international tourism potential of tourism within the community. In 2014, this organisation staged the inaugural Milk River Seafood & Jerk Festival under the theme 'Expanding Community Tourism' as a platform to showcase the community as a viable tourism economic zone. The C-CAM has also been actively promoting tourism within southern Clarendon. The organisation is currently constructing a wetlands and wildlife interpretation centre which will be a study in ecotourism and wildlife conservation.

### **4.4.2. ISSUES AND CHALLENGES WITHIN THE LOCAL TOURISM INDUSTRY**

#### **4.4.2.1. UNTAPPED POTENTIAL**

The potential of the tourism industry in Clarendon remains largely untapped. The parish contains some of the best natural and heritage sites in Jamaica, but they are generally undeveloped or poorly developed and managed. Appendix 11 highlights over twenty (20) natural, built heritage and cultural heritage sites which are listed by Jamaica's Tourism Master Plan as sites with significant tourism potential. A number of other sites in the Parish have also been documented to have tourism potential. Furthermore, the parish's intangible cultural heritage, which includes festivals and entertainment events and other live traditions and artistic media are significant tourism assets. There is therefore a considerable scope for increasing the offerings within the local tourism industry.

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### 4.4.2.2. HIGH NUMBER OF UNLICENSED ACCOMMODATIONS

According to data gathered from the Tourism Sector meeting, a number of tourism entities are operating in the parish informally. Under the Tourist Accommodation (Licence Duties) Act, all operators of hotels, resort cottages, villas and guesthouses designed to accommodate guests at a cost are required to obtain a license. However, many small entities are operating locally without such a license. This compromises guest security and comfort, as licensing is the primary tool used for monitoring activities within the local industry. In the absence of a license, the informal or unlicensed tourism enterprises are not monitored. The primary underlying issue is the existing licensing policy. Most small operators are unable to finance the insurance and security charges required to become registered properties. Many are expressing the need for an urgent review of this system to enable them to become legally operating registered entities.

### 4.4.2.3. LOW AND DECLINING OCCUPANCY LEVELS IN THE ACCOMMODATIONS SUBSECTOR

Through the Tourism Sector meeting, it was revealed that occupancy levels in Clarendon are low and declining. The Versailles Hotel, which was one of the most popular accommodations/venues in the parish in the 1990s, has already converted a section of its property into a college, the Middlesex International College. It is believed that this diversion is directly linked to this issue of low occupancy. The overall issue is a consequence of the fact that many of the properties were built over two decades ago and are now in need of renovation and upgrading, including service upgrading. This is necessary in order to keep abreast with current market trends and to remain competitive. Additionally, the failure to take full advantage of the parish's excellent natural, cultural and heritage assets to distinguish the local product from its competitors is being reflected in the poor performance of the attractions sub-sector.

Nevertheless, there are various types of incentives that are presently being offered to the accommodations sub-sector in order to encourage upgrading and expansion. These incentives are mainly in the form of tax reliefs which are provided under the fiscal Incentives (Miscellaneous Provisions) Act, 2013.

### 4.4.2.4. THE THREAT OF UNSUSTAINABILITY

At the parish visioning symposium, locals unanimously agreed that the threat of unsustainability looms with the potential development of the local tourism industry. Clarendonians have generally recognised the fact that tourism in Jamaica has developed primarily in the form of resort enclaves, and as a result, the participation of local populations in tourism development and investment activities as well as in accessing the product (both in terms of affordability and availability) appears to be limited<sup>119</sup>. In addition to that, Clarendonians also recognised that in most of these resort areas, ownership and control of the accommodations subsector are in the hands of foreign investors which are generally large multinational corporations. The result is that profits from the industry may not necessarily be retained locally. Furthermore, the development of all-inclusive products on the North Coast are encouraging visitors to remain on property, which is having implications for tourist spending within the local areas and also the numbers of persons who actually benefit from tourism. Moreover, mass tourism on the north coast of Jamaica is believed to be resulting in several environmental issues such as damage to beaches and coral reefs; habitat loss and other pressures on biodiversity; intensive use of water resources; and increased pollution. Clarendonians therefore fear that significant growth in tourism in the parish will not provide significant benefits for the local population, but will cause significant environmental damage.

Community-based tourism is high on the agenda of advocates for tourism within the parish. Community based tourism is loosely defined as a form of tourism that emphasizes the development of local communities and allows for local residents to have substantial control over, and involvement in, its development and

<sup>119</sup>. Local people however have considerable opportunity for employment in the industry.

## 4.4. THE TOURISM SECTOR

management, and a major proportion of the benefits remain within the community. This form of tourism offers visitors the opportunity to visit village communities and to enjoy meeting the local people in their own communities, while conserving the local heritage, protecting the environment and contributing to an improvement in the quality of life in these communities. Both Government and private sector entities, including the C-CAM, are advocating for this form of tourism as a major part of the strategy in developing the local tourism industry.

### 4.4.2.5. INADEQUATE OR POOR PUBLIC UTILITIES AND INFRASTRUCTURE

Public utilities and infrastructure including electricity, telecommunications, transport, and water are integral to the functioning of the tourism sector. Such utilities and infrastructure helps to influence the image and attractiveness, as well as the relative competitiveness of destinations or tourist regions. The parish of Clarendon is however challenged by an inadequate provision in public utilities and infrastructure. Whilst the parish is well connected to the remainder of Jamaica through Highway 2000, many local roads, including arterial roads such as the Milk River Main Road, which serve as links to tourism facilities, are in urgent need of rehabilitation. Similarly, access to piped water (including standpipes) is only 73 per cent<sup>120</sup> and the reliability of the NWC's system averages approximately 12 hours per day<sup>121</sup>. Additionally, the electricity service in the parish is marred by frequent unscheduled power outages, and internet penetration is extremely low at approximately 6.9 per cent (SDC, 2014). This overall situation was cited at the Tourism Sector meeting as one of the challenges retarding the parish's efforts of realising its full potential as a tourism destination. The lack of adequate infrastructure is believed to be discouraging potential investment and also negatively influencing the image and attractiveness of the local tourism product.

## 4.4.5. PARISH STRATEGIES

### 4.4.5.1. STRATEGIC OBJECTIVE #203

**To promote the concept of sustainability within the local tourism industry.**

There is a great deal of evidence to suggest that many forms of traditional tourism developments and activities cause varying degrees of harm to the natural environment, as well as the wellbeing and culture of local populations, and therefore threatens sustainability. With this Plan promoting sustainable development, it means that such developments and activities would contradict its foundation principles. An alternative approach to developing the local tourism industry is required. This approach will be in the form of sustainable tourism which is currently being promoted worldwide, including by the United Nations.

Sustainable tourism is tourism that takes full account of its current and future economic, social and environmental impacts, whilst addressing the needs of visitors, the industry, the environment and the host communities. It is committed to generating a low impact on the surrounding environment and communities by acting in a responsible manner, whilst generating income and employment for the local economy and fostering social cohesion. It is applicable to all forms of tourism in all destinations, including mass tourism and the various niche tourism segments. That is, sustainable tourism is not a particular kind or type of tourism, but an approach which is based on the principles of sustainable development.

This approach will be promoted in all subsectors of the local tourism industry. This will involve the implementation of a number of policies and actions geared towards environmental sustainability, community based development, and an inclusive industry. Environmental sustainability will involve encouraging the development of green accommodations, as well as the proper management of tourism activities to reduce pressures on the natural and built environment. Community based development will involve generating

120. Source: Rural Water Supply Development Strategy (2015) | 121. Source: NWC (NWC, 2011)

## 4.4. THE TOURISM SECTOR

employment and providing livelihoods for locals, engaging the local population by contributing to social values such as participation, education and enhanced local governance, empowering local communities, and ultimately bringing in new opportunities for a better future. Inclusivity will include supporting micro and small tourism businesses and community based ventures.

### RECOMMENDED POLICIES

- The relevant stakeholders will seek to ensure the viability and competitiveness of the local tourism product in order to ensure that tourism delivers long term benefits to the parish.
- The relevant authorities will actively support and encourage local tourism enterprises to develop and promote environmentally sound and sustainable practices to improve their competitiveness and the quality of tourism offered.
- The relevant stakeholders will seek to undertake adequate management of visitor flows to ensure that tourism maintains the quality of the local natural environment, as well as the quality of life of local residents.
- The relevant authorities will seek to ensure that the contribution of tourism to the economic prosperity of the host communities in particular and the parish in general, including the proportion of visitor spending that is retained locally, is maximized.
- Tourism activities which do not respect the historic heritage, authentic culture, traditions and distinctiveness of host communities will not normally be supported.
- Tourism developments and activities which maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation will be strongly encouraged.
- The relevant authorities will seek to ensure that all new tourism developments are effectively and appropriately controlled in order to ensure social and environmental sustainability.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Co-ordinate an annual sustainable tourism forum for the parish, sharing ideas, interests and networking.	Medium to Long Term	CPC, Ministry of Tourism (MOT), Clarendon Chamber of Commerce
Work with tourism businesses to develop and promote new product ideas based around the special qualities of Clarendon and aimed at encouraging longer stays and better quality visitor experiences.	Short to Long Term	TPDCo
Encourage off-peak tourism based around seasonal products to ensure that tourism contributes to the local economy throughout the entire year.	Short to Long Term	MOT

## 4.4. THE TOURISM SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage local tourism enterprises to minimize the use of scarce and non-renewable resources in the development and operation of tourism facilities and services.	Short to Long Term	TPDCo, MOT, CPC
Encourage local tourism enterprises to utilize waste reduction strategies in their development.	Short to Long Term	MOT, NSWMA, CPC
Work with businesses and tourism authorities to encourage visitors to reduce the negative impact of their visit, while enhancing their experience.	Short to Long Term	NEPA, TPDCo, MOT
Create visitor flow management plans, particularly for protected areas, to ensure related activities do not result in environmental degradation and a deterioration in the quality of life of host communities.	Short to Long Term	Private Sector
Encourage tourism businesses to take part in a local green business scheme to be developed as a way of encouraging businesses to become sustainable. See 4.1.5.10. Strategic Objective #166, pg 353.	Short to Medium Term	CPC
Reward tourism enterprises that are meeting identified environmental standards through greater exposure in marketing, among other things.	Medium to Long Term	CPC
Continuously monitor the impacts of tourism activities in order to introduce the necessary preventive and/or corrective measures where necessary.	Short to Long Term	NEPA
Encourage developers within the local tourism industry to utilize local resources, including labour, in the construction and operation of tourism enterprises.	Short to Long Term	MLSS

## 4.4. THE TOURISM SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Facilitate the sourcing of supplies, including agricultural produce from local sources for the parish's tourism industry.	Short to Long Term	MOT, MICAF
Promote the purchasing of local products by visitors through the strengthening of the retailing process as well as the quality, price, distribution and display of local products such as food, drink and handicrafts.	Short to Long Term	MOT, Private Sector, TPDCo
Increase the availability of spending opportunities and visitors' awareness of them. (See also 4.4.5.9. Strategic Objective #211, pg. 422)	Short to Long Term	Private Sector
Encourage tourism enterprises to provide sponsorship, including scholarships to members of host communities and local groups, where possible, to support local development.	Medium to Long Term	MOT
Explore the possibility of implementing compulsory levies or charges on tourists or tourism enterprises which operate within protected areas as a way of financing the management of these areas.	Short Term	NEPA, Management Organisations
Provide support for micro and small tourism businesses and community based ventures. See also 4.4.5.4. Strategic Objective #206, pg. 414	Short to Long Term	CPC, MOT, TPDCo

### 4.4.5.2. STRATEGIC OBJECTIVE #204

**To ensure the provision of adequate infrastructure and public utilities to support tourism in the parish.**

The provision of adequate public utilities and infrastructure forms an integral part of tourism packages. It influences the image and attractiveness, as well as the relative competitiveness of destinations or tourist regions. With many areas in Clarendon suffering from infrastructural deficiencies, it means that significant infrastructural works will have to be undertaken in conjunction with tourism growth and development. Investors will therefore be encouraged to undertake adequate infrastructural assessments prior to the development of tourism attractions and accommodations. At the same time, the relevant authorities will

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be encouraged to put in place the requisite infrastructure to facilitate growth and development within the local tourism industry.

Priority will be given to the development of the transportation infrastructure since travel is one of the foundations of a successful tourism industry. Travel by road will continue to be the main mode of transportation locally, consequently road construction and improvement works will be the main activities undertaken to ensure linkages and connectivity between visitor accommodation and attractions. Road construction will be undertaken to attract investment to new areas with high potential for tourism development, while road improvements will be used to enhance existing connections. Road construction and improvement works will be accompanied by adequate way-finding signage, as the feasibility of implementing a tourist oriented directional signing programme will be explored. Consideration will also be given to the development of scenic routes and provision of lay-bys and other street furniture features to facilitate stops along such routes.

### RECOMMENDED POLICIES

- The relevant authority will seek to ensure that the requisite infrastructure is in place to support the growth of the local tourism industry.
- Consideration will be given to the creation of scenic routes and provision of lay-bys and other street furniture in road developments which link tourism features within the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Coordinate and cooperate with other Ministries, organisations and groups, to identify areas with high potential for tourism and develop the requisite infrastructure based on a priority basis.	Short to Long Term	CPC
Explore the feasibility of developing and implementing a tourist oriented directional signing programme.	Medium Term	CPC, NWA

### 4.4.5.3. STRATEGIC OBJECTIVE #205

**To improve levels of supervision and quality assurance through the application of achievable and appropriate standards for small-scale operators which are enforced through licensing, as well as through the promotion of product improvements.**

There is a need to improve registration rates within the local tourism industry to ensure the provision of consistent quality services. The existing licensing policy for small accommodations and enterprises will be reviewed since the significant cost is believed to be the main reason behind the establishment of informal operations within the local tourism industry. At the same time, informal operators will be encouraged to become licensed, and the relevant authorities will undertake adequate monitoring to ensure compliance with established standards and guidelines in order to improve quality assurance. Many of the existing tourism entities in the parish, including licensed facilities, will also require upgrading. The understanding of the importance of quality in the provision of tourism products and services is increasing rapidly due to increasing customer expectations and a competitive market environment.

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In the current economic environment, local tourism enterprises will need to have a realistic understanding of visitor requirements and be equipped to meet/exceed those expectations. They will need to continuously revise their strategies, do the comparative analysis with other companies of all sectors to improve the offering while, adopting best practices in the process. This will require new initiatives in human resource training, which could be linked to licensing requirements. Such training will target the delivery of effective information and interpretation, among other things. Additional upgrading strategies will include renovations to buildings and sites.

### RECOMMENDED POLICIES

- The relevant authorities will seek to reduce informality within the local tourism industry.
- The relevant authorities will undertake adequate monitoring to ensure compliance with established standards and guidelines in order to improve quality assurance.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Review the existing licensing policy for small accommodation and enterprises, in order to develop more achievable standards for such accommodations, and also reduce the cost for licensing.	Short Term	TPDCo, MOT
Encourage informal operators within the local tourism industry to become licensed.	Short Term	TPDCo
Explore the feasibility of including human resource training in the requirements for obtaining tourism licenses.	Short Term	TPDCo, MOT
Provide training in quality customer service, information and interpretation delivery and other related areas to support the development of the local tourism industry.	Short to Long Term	TPDCo

### 4.4.5.4. STRATEGIC OBJECTIVE #206

**To promote community tourism as the main tool to propel the growth of the local tourism industry.**

According to the National Community Tourism Policy, community based tourism is an important segment for the fast growing experiential tourism sector which appeals to markets interested in nature, heritage and cultural experiences. Community Based Tourism is the interaction between the host community and visitors which leads to the sharing and enjoyment of community experiences, products and services. It provides tourists with a personal, interactive connection with local community members that enhances their understanding of cultural differences, whilst providing the communities themselves with an opportunity to interpret their culture to an appreciative audience, foster pride in their community, and diversify their economies.

## 4.4. THE TOURISM SECTOR

Community based tourism presents a major opportunity for Clarendon to advance its economic and social development goals and therefore, it will be promoted locally. The parish has a number of communities that can offer exciting and distinctive natural, heritage and cultural experiences well matched to this experiential tourism market trend. Local communities will be strongly encouraged to become engaged in 'front line operations' that incorporate direct interface with tourists. These operations will generally be located within the residential boundaries of a community, adjacent to or in close proximity to the community. Both the Community Tourist approach and the Community Excursionist approach will be encouraged. The Community Tourist approach is one where the core motivation for travel is to participate in short stays at the community destination for more than 24 hours and enjoy a community based experience, product and service specific to that community. The community will therefore be required to host the visitor and develop a series of interpreted activities that can be packaged and sold as a set of three-to-four-day itineraries. On the other hand, the Community Excursionist approach sees community activities as an attraction (an experience, product or service) that is consumed in a one day visit. This will require the establishment of dependent relationship between mainstream tourism (including hotels outside the parish) and local communities where there are designated days for community interaction. The advancement of community tourism in Clarendon will therefore generate much needed revenue for some local communities, help to alleviate poverty and lead to socio-economic empowerment.

Of necessity, some preliminary groundwork will need to be laid to ensure that the full potential of this local industry is realised. Minimum criteria will be established for each community tourism product in order to meet the expectations of the domestic and international markets. Proper planning will also be used to ensure that the development of local resources as attractions or as direct services to tourists does not contradict national policies or the manner in which they are used by the local communities. Technical support will also be provided to ensure that communities are equipped with the necessary advice, capacity building support, marketing tools to create viable community tourism experiences and products that are export market ready. Host community members will also be educated before they are exposed to visitors in order to protect the visitors from harassment and crime.

### RECOMMENDED POLICIES

- The relevant stakeholders will seek to encourage the Government to fast track the National Community Tourism Policy
- The relevant authorities will seek to encourage local communities to become engaged in 'front line operations' that incorporate direct interface with tourists.
- The relevant stakeholders will collaborate with the relevant Ministries and other agencies, organisations and groups in the development of community tourism products, particularly those involving the use of natural, heritage and cultural facilities and resources.
- The relevant authorities will seek to ensure that the development of local resources as attractions or as direct services to tourists does not contradict national policies or the manner in which they are used by the local communities.
- Priority will be given for tourism developments and activities which involve community co-management approaches.
- The relevant authorities will seek to encourage operators of community based tourism enterprises to license their operations and adhere to the established standards and guidelines established for such activities.

## 4.4. THE TOURISM SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Collaborate with Ministries, other agencies and community organizations to identify priorities, natural, heritage and cultural areas that are critical for community tourism and confirm that such a priority designation best reflects the overall national interest.	Short Term	CPC
Strengthen the appreciation of natural, heritage, cultural and community resources through local awareness programmes.	Short Term	CPC, SDC
Increase awareness of the publication “Principles and Guidelines for Community-Based Tourism” which was developed by TPDCo to provide details on how to set up a community tourism product and also provide guidelines, standards and requirements for community tourism products.	Short Term	TPDCo, MOT, CPC
Provide a variety of training and capacity building programmes to support community tourism initiatives.	Short to Long Term	TPDCo, MOT
Provide financial assistance, including grant funding, to support community tourism initiatives.	Short to Long Term	TPDCo, MOT
Develop and implement education programmes for local communities interested in community tourism in order to protect visitors from harassment and crime.	Short Term	SDC, CPC, TPDCo, Clarendon Police Division, MOT

### 4.4.5.5. STRATEGIC OBJECTIVE #207

**To promote growth and expansion in the local tourism industry through eco-tourism.**

The parish of Clarendon has enormous eco-tourism potential. It is one of Jamaica’s richest parishes in terms of biodiversity, which is very significant in light of the fact that the country has been rated fifth (5th) in islands of the world in terms of endemic plants. There is also a high level of endemism for animals which include marine, terrestrial and freshwater species. The organisms are scattered across the entire geographic boundary of the parish, but there are specific areas, such as the Portland Bight Protected Area, the Mason River Protected Area, Canoe Valley and Peckham Woods, where there are notably high concentrations.

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Portions of the parish, such as James Hill, Rock River and Milk River, are also characterized by scenic vistas including undeveloped hillsides, and open spaces. These view sheds are formed from scenic natural resources, including forests, hills and waterfalls, which contribute to the identity of the local areas.

With this Plan seeking to conserve the biodiversity, protect important view sheds and enhance socioeconomic development, ecotourism has the potential to contribute to all (3) three objectives. Ecotourism involves travel to relatively undisturbed natural areas with the specific object of studying, admiring, and enjoying scenery, plants, and animals, as well as any cultural features found in these areas. It is distinguished from mass or resort tourism by its lower impact on the environment, lower infrastructure requirements, and its role in educating tourists about natural environments and cultural values. It can therefore minimise the threats posed by conventional mass tourism and could provide several socio-economic benefits to the local communities.

Eco-tourism will therefore be promoted in the parish both in protected and unprotected areas. Priority will be given to protected areas and national parks in order to enhance their financial sustainability and ensure that they will eventually be able to manage their affairs independently of grants. However, protected areas may include physical zonation which restricts the scale of the activities which can take place in such areas. An important pre-condition will be the availability of high quality resources. Adequate planning will be used to minimize negative cultural and environmental impact and maximize local economic return and environmental gains. In cases where some degradation has already taken place, the resources will be restored to the prior relatively undisturbed state.

A number of ecotourism activities may be developed in the parish. These include birding, fishing, boating, trekking, hiking, cycling, caving or spelunking, ziplining and a host of other adventurous, interesting and exciting activities. However, in the case of (caving) spelunking, adequate assessments will be required as many of the caves found within the Portland Bight Protected Area were used as tombs or burial places by the early inhabitants and may therefore pose a health risk.

### RECOMMENDED POLICIES

- Ecotourism activities will be supported within both protected and unprotected areas of the parish.
- Priority will be given to protected areas and national parks in the establishment of ecotourism activities.
- Implementation of ecotourism activities will require compliance with zoning ordinances or proposals.
- The relevant authorities will seek to ensure that ecotourism activities do not compromise the health of the natural environment.
- Ecotourism activities may require an Environmental Impact Assessment.
- Adequate assessments will be undertaken prior to the use of caves for (caving) spelunking to ensure such activities pose no health risks to tourists.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote a better understanding of the potential for the eco-tourism by locals in the parish.	Short Term	CPC, MOT, TPDCo
Introduce incentives for ecotourism projects, including financial assistance through grant funding.	Short to Long Term	MOT

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide technical support to facilitate the development of ecotourism products and initiatives in the parish.	Short to Long Term	TPDCo
Develop ecotourism facilities, products and services that appeal to tourists.	Short to Long Term	Private Sector

### 4.4.5.6. STRATEGIC OBJECTIVE #208

**To promote growth and expansion within the local tourism industry through cultural heritage tourism.**

The Tourism Master Plan is promoting cultural heritage tourism as part of the strategy to diversify the tourism product in Jamaica. According to the document, the development of Jamaica's outstanding heritage assets will help to differentiate its tourism product from the vast majority of other Caribbean islands. This is a key strategy in developing a sustainable tourism industry as it will ensure that the product reflects the culture and aspirations of the local people.

There is considerable scope in the parish of Clarendon for the development of cultural heritage tourism. The parish's rich and unique cultural heritage, particularly its built heritage, cultural expressions and events, and documented and folk history, should prove to be attractive to both domestic and international tourists. Importantly, the tourism Master Plan identifies over nineteen (19) sites in the parish which may have cultural heritage tourism potential, as well as potential markets for particular aspects of cultural heritage tourism in Jamaica. In that regard, cultural heritage tourism will be promoted as part of the local tourism and economic development strategy.

The promotion of cultural heritage tourism will provide a number of benefits for the parish. It will support local socio-economic development efforts, particularly rural development. It will also serve to educate and inform Clarendonians and reinforce the pride they should have in their heritage. In addition, cultural heritage tourism also has a vital role to play in the protection, conservation and development of heritage assets. It will help to ensure the commercial viability of heritage assets and this, in turn, will raise additional finance for protection and conservation efforts. However, it should be noted that the primary function of heritage preservation is not commercial exploitation but to transfer the assets to future generations; therefore, the commercialization of heritage assets which may end up lost due to cultural heritage tourism will not be supported. The development of all cultural heritage assets into tourism products will not be viable so priority will be given to those with the most potential.

The development of themed cultural heritage trails will be strongly supported. According to the Tourism Master Plan, the grouping of sites in themes facilitates their development into tourism products. It further facilitates the development of marketing materials such as videos and guide books, road signage and interpretative materials at individual sites. Additionally, by organising the themes into trails, it will encourage both the enthusiast and the general visitor to visit other heritage sites in the parish. Recommended themed cultural heritage trails for the parish include a church heritage trail, a sugar cane trail or an industrial trail, a Taino trail, and a Spanish trail. The stakeholders in the parish will also coordinate with other parishes in developing regional cultural heritage trails.

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The development of cultural heritage attractions linked to live artistic and musical traditions, will also be highly recommended. The cultural heritage of Clarendon includes a number of live traditions and artistic media that can be used to improve the level of interpretation available to visitors. These include: the hosay festivals practised by the local East Indian community; spiritual traditions from Africa such as Pocomania and Revivalism; bammie-making which is a remnant of Taino heritage; and Rastafarian cultures and customs. Nevertheless, the insensitive exploitative commercialization of these cultural and artistic traditions to suit the taste of the mass tourism industry, will not be supported.

### RECOMMENDED POLICIES

- Cultural heritage tourism will normally be supported in the parish, provided that such activities will not infringe upon the primary function of heritage preservation or end up in the loss of or damage to, heritage assets.
- The development of themed cultural heritage trails will be strongly supported.
- The development of cultural heritage attractions linked to live artistic and musical traditions will be highly recommended.
- The insensitive exploitative commercialization of cultural and artistic traditions to suit the taste of the mass tourism industry will not be supported.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote cultural heritage tourism as a viable economic activity within the parish.	Short to Long Term	CPC, MOT, JAMPRO,
Introduce incentives for heritage tourism projects, including financial assistance.	Short to Long Term	MOT, CPC
Provide technical support to facilitate the development of heritage tourism initiatives, including the extending of same to communities.	Short to Long Term	TPDCo

#### 4.4.5.7. STRATEGIC OBJECTIVE #209

**To promote growth and expansion within the local tourism industry through wellness tourism.**

Wellness tourism is being promoted by the Caribbean Export Development Agency (CEDA) and the Caribbean Tourism Organization (CTO) as one of the specialised tourism products for regional product diversification. It is also being promoted nationally by JAMPRO as a viable business opportunity. This is due to the fact that it is one of the fastest growing and most lucrative forms of international tourism, and this trend is expected to continue over the next 5-10 years. It is believed that there is heightened awareness among consumers of the need to take a proactive approach to their health, whether travelling or at home. This is the main driver behind the boom in wellness tourism. At present, the estimated global market size of the wellness tourism industry is approximately US\$500 billion. The opportunities are therefore rife for more destinations to jump on board and promote themselves as premier wellness countries for tourists.

The parish of Clarendon is well poised to tap into this lucrative market as it has received the blessings of nature in this regard. Its natural beauty is complemented by an abundance of medicinal herbs and two

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(2) mineral springs, the world reknown the Milk River Spa and the Salt River Mineral Spring. The scenic vistas created by the beauty of the natural environment, in addition to the very pleasant climate, make the parish a suitable wellness tourism destination. Additionally, the wealth of herbal medicines and plants found locally are used for all kinds of treatments, based on ethno-pharmacological tradition, and therefore wellness tourism can be used to preserve these traditional medicinal practices. Wellness tourism can help commercialize these herbal medicinal practices to the extent that they are adopted as an integral part of the treatment programs in several wellness therapies, as though formal structure will be required. It can also complement efforts aimed at employment generation and forest resources conservation, as it will involve presentation and use of curative, aromatic, edible and seasoning plants that have been sustainably and responsibly collected. However, with the Milk River Spa already being world reknown and earmarked for significant development, it is ideally placed to be the catalyst for the development of the local wellness tourism industry. Other experiences or activities that may be offered locally include health resorts, retirement villages, salons, yoga retreats, national parks, gyms and fitness centres, and specialty restaurants. Particular emphasis may be placed on retirement villages since the concept has become increasingly popular in the US, and more recently, in and around the Caribbean region.

### RECOMMENDED POLICIES

- The relevant authorities will seek to develop a formal structure for the use of alternative medicines.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote wellness tourism as a viable economic activity within the parish.	Short to Long Term	CPC, JAMPRO, TPDCo
Provide technical support to facilitate the development of wellness tourism initiatives, including the extending of same to communities. Such support should include the administration of training exercises.	Short to Long Term	TPDCo
Facilitate the establishment of partnerships between the private sector and research institutions to determine best practices in wellness.	Short to Long Term	MOT
Create opportunities for innovators and start-up companies to establish relationships with health and wellness companies.	Short to Long Term	MOT

### 4.4.5.8. STRATEGIC OBJECTIVE #210

**To promote growth and expansion within the local tourism industry through agri-tourism.**

There is considerable scope for growing the agri-tourism subsector within the Plan Area. Research indicates that more international tourists are looking for differentiated tourism experiences, and agri-tourism is an area with considerable demand. The Inter-American Institute for Cooperation on Agriculture (IICA) has also

## 4.4. THE TOURISM SECTOR

been promoting agri-tourism in the Caribbean since 2005 as part of its Hemispheric Program to strengthen links between tourism and agriculture through research, training and small business development. With the parish of Clarendon heavily dependent on agriculture, the Mayor of May Pen, Cllr. Scean Barnswell, after visiting the agro-industrial city of Changsha in south-central China in 2013, and hearing the residents expressing significant interest through the situation validation and visioning workshop, posited that Clarendon is ripe for agri-tourism. There is potential for growth within the subsector.

Visitors will be encouraged to experience the local agricultural life first-hand and participate in a number of activities including but not limited to educational experiences, outdoor recreational activities, entertainment events, and hospitality services. Such activities will include horseback riding, nature trails, animal petting, harvest festivals, farm stays, guided tours, pick your own operations, and a variety of other activities<sup>122</sup>. The MICAFA, local universities and other relevant stakeholders will provide technical guidance in the development of a sustainable agri-tourism subsector locally. This will help to improve the economic, social and environmental situations within a number of rural communities in the parish.

### RECOMMENDED POLICIES

- The relevant authorities will support agri-tourism initiatives in rural areas as part of the economic development strategy.
- All agri-tourism activities will comply with zoning proposals or regulations.
- Tourism activities merged with agricultural activities should not compromise the primary function of agriculture which is to ensure local food security.
- Adequate consideration will be given to individual and environmental health in the development of agri-tourism initiatives.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote agri-tourism as a viable economic activity in the parish.	Short to Long Term	CPC, JAMPRO, TPDCo
Provide technical support to facilitate the development of the agri-tourism subsector.	Short to Long Term	TPDCo, RADA
Develop standards and guidelines to manage and regulate the agri-tourism subsector.	Short Term	TPDCo
Encourage and support the development of a range of agri-tourism products including but not limited to horseback riding, nature trails, animal petting, harvest festivals, farm stays, guided tours, and pick your own operations.	Short Term	TPDCo, CPC
Support Strategic Objective #198 of the Fisheries section of this Plan.	Short Term	TPDCo

122. It should be noted that activities such establishing farmers market also falls under the ambit of agritourism, but such activities are being promoted under other areas of this plan.

## 4.4. THE TOURISM SECTOR

### 4.4.5.9. STRATEGIC OBJECTIVE #211

**To promote growth and an improvement in the quality of offerings in the ancillary sector to support the development of the local tourism industry.**

Increasing the availability of ancillary services and improving the overall quality of such services in the parish is another critical strategy for developing the local tourism industry. Ancillary services within the tourism industry are those services that provide tourist-industry support; they differ from or enhance the main product or services of the industry. These services include but are not limited to transportation, shopping, entertainment and sports, food and beverages, and arts and handicrafts. This sector of the tourism industry is critical for enhancing the customer experience, whilst providing jobs and increasing GDP. With this Plan promoting significant growth within the local tourism industry, current provisions will be inadequate. There is huge potential for increasing the availability of ancillary services in the parish. This will require coordination with growth within the overall local tourism industry. There is also a need to increase the overall quality of offerings in an intensified ancillary sector with the expansion of the local tourism industry.

In promoting growth and improvement in the quality of offerings in the ancillary sector, there are several areas to which particular attention will be given. These areas include the arts and handicrafts industry, transportation, entertainment, and food and beverages. The traditional arts and handicrafts industry will be revitalized in order to create employment and business opportunities, in order to offer tourists options in purchasing unique, locally-made souvenirs. The relevant authorities will also support the establishment of a reliable private sector led transportation system for tourists which includes car hire and car rental services. Additionally, entertainment and food and beverage service providers will be encouraged to upgrade the quality of and expand varieties of their products. Where necessary, training will be conducted to support such activities.

### RECOMMENDED POLICIES

- The relevant authorities will seek to provide an enabling environment for the development of the ancillary sector to support the growth of the local tourism industry.
- High priority will be given to the establishment of a reliable private sector led transportation system for tourists which includes car hire and car rental services in order to ensure access to the parish.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Carry out adequate market and needs assessments in order to identify opportunities for provision of ancillary services within the local tourism industry.	Short to Long Term	Jamaica Tourist Board (JTB)
Engage in the development or provision of additional ancillary services as needed.	Short to Long Term	Private Sector
Undertake adequate market research in order to continuously improve products and services within the ancillary sector.	Short to Long Term	JTB, Private Sector

## 4.4. THE TOURISM SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Develop a strategy to revitalize the traditional arts and handicrafts industry in order to create employment and business opportunities, and offer tourists options to purchase unique, locally-made souvenirs. This strategy should explore the possibility of revising the Visual Arts module in schools, in efforts to produce trained personnel to produce excellent quality services.</p>	<p>Short to Long Term</p> 	<p>TPDCo, MOT, MEYI</p>
<p>Encourage food and beverages and entertainment service providers to upgrade the quality of and offer varieties within their products.</p>	<p>Short Term</p> 	<p>MOT, TPDCo</p>

## 4.5. THE MANUFACTURING SECTOR

### 4.5.1. OVERVIEW OF THE MANUFACTURING SECTOR

The manufacturing industry in Clarendon has declined but continues to play a major role in the local economy (SDC, 2014; TCPA 2012). The sector was once a key contributor to the economic development of the parish and thrived mainly on the processing of sugarcane. However, sugarcane processing has witnessed a considerable decline, which includes the recent closure of the Monymusk Sugar Factory. Over the last two decades, a number of other manufacturing enterprises in the parish, including the citrus packaging/ orange juice factories in May Pen which supported orange plantations in Danks and Trout Hall, and the ackee and coconut water factory in Palmers Cross which provided employment for a number of locals, have also been closed.

The sector is currently dominated by the processing of a range of agricultural produce. In addition to the rum distilleries at Monymusk and New Yarmouth, there are several other agro-processors focussing on the processing of food, beverage, confectionary, etc. Other manufacturing enterprises<sup>123</sup> include plastic, furniture, and garment manufacturing.

### 4.5.2. MANUFACTURING SECTOR ISSUES AND CHALLENGES

#### 4.5.2.1. ECONOMIC GLOBALIZATION AND FREE TRADE

The emergence of economic globalization and free trade is having a negative impact on the local manufacturing sector. Globalization has resulted in an explosion in international trade and reduced prices in manufactured products, whilst free trade policies have replaced the old system which possessed barriers to protect local markets from imports. As a consequence, there is increased competition in export markets and large volumes of cheap manufactured goods are being imported and are competing with locally produced goods. Whilst this is perceived to be fair competition which benefits consumers, it is severely undermining the growth of the local manufacturing sector, as local processes are not sufficiently mechanized and lack economies of scale in order to successfully compete. In other words, most local firms are very small by international standards and continue to depend on manual processes and or obsolete technology (see also 4.1.2.8. Limited Application of Technology, pg. 337). This lowers productivity and efficiency within the sector, rendering it incapable of competing within the free market.

### 4.5.5. PARISH STRATEGIES

#### 4.5.5.1. STRATEGIC OBJECTIVE #212

**To revitalise the local manufacturing sector through the promotion and marketing of investment opportunities.**

A critical part of the overall economic strategy of this Plan is the revitalisation of the local manufacturing sector. Manufacturing has declined over the past two decades, but there is a chance to breathe new life into the sector, as it is abound with opportunities for both large and small scale investors. Such opportunities exist particularly within the agro processing, furniture manufacturing, bamboo manufacturing and packaging subsectors, as well as within the proposed logistic hub. These opportunities will be promoted or marketed, and the Government will, where necessary and appropriate, introduce policies to protect the local manufacturing sector.

#### EXPANDING THE AGROPROCESSING-INDUSTRY

There is significant scope for expanding the local agro-processing industry. According to JAMPRO (2015), the increased demand for Jamaica's unique and diverse range of food products from both the local and export

123. It should be noted that this section of the document does not consider the processing of minerals since it is looked at under the Minerals Industry.

## 4.5. THE MANUFACTURING SECTOR

markets has opened up significant room for expansion in agro-processing. In addition to that, there are the occasional seasons of agricultural product gluts on the local market which often result in the spoilage of tonnes of produce. This may be reduced with increased agro processing. This Plan is promoting increased agricultural production which should result in agro processing facilities having an adequate supply of raw material that will also provide critical markets for local produce. This plan is supporting the development of cold storage facilities which will ensure a consistent supply of seasonal produce throughout the year for agro processing.

The agro processing opportunities presented are unlimited. The parish currently produces livestock, including cows, goats, pigs, and poultry, and crops such as sugarcane, legumes, vegetables, condiments, fruits, cereals, plantains, potatoes, yams and other tubers. In addition, this Plan is promoting the increased diversification of the agricultural industry. It means that there are opportunities for the production of a variety of value added products such as canned goods (including soups and vegetables), sauces, dry packed foods, frozen foods (including meat products), purees and baked goods.

### FURNITURE MANUFACTURING

Considerable scope exists for increased production in the local furniture manufacturing industry. According to the President of the Jamaica Wood Products & Furniture Association, Mortimer McPherson (2011), imported furniture currently occupies about 75% per cent of the furniture market in Jamaica. Since McPherson (2011) also pointed out that the quality of domestically produced furniture is fairly high and oftentimes higher than that of imported furniture, it means that there is the opportunity for import substitution. With the parish earmarked for significant development in the tourism, housing and commercial sectors, it also means that the local demand for furniture will rise. Manufacturers may also explore the use of bamboo which is readily available, since there is significant interest in the plant and its related products lately.

### MANUFACTURING OF BAMBOO RELATED PRODUCTS

As part of the strategy to revitalize the manufacturing industry, this Plan is also promoting investments in the manufacturing of bamboo products. The global bamboo industry was estimated at US\$12 billion in 2014, and was projected to be worth some US\$20 billion by 2015. This prompted the MIIC to launch the Bamboo Products Industry Project (BPIP). Under this project, the island will be divided into four (4) zones to facilitate the establishment of bamboo factories. Clarendon, along with St Catherine and St Andrew, comprise zone three which is expected to have factories producing bamboo saw dust pellets, bamboo shipping pallets, preserved bamboo yam sticks, bamboo charcoal, water and air filters. A Bamboo and Indigenous Materials Advisory Committee (BIMAC) is already in place and the MIIC is also developing a bamboo sector policy which is aimed at positioning the country to take advantage of opportunities within the global industry. Furthermore, the Ministry has commenced the development of a National Vocational Qualification (NVQ) training and certification programme in Bamboo Technology, as well as an Industry Product Standards regime. This means that opportunities for investment in the industry are rife.

The opportunities present within the industry are evidenced by the multi-million dollar investment within the community of Peckham Woods. See Expanding Bamboo Manufacturing, pg. 500. The main partners in the project include the OAS, the PIOJ, the CARILED, the NHT, the BIMAC and the Peckham Woods CDC. Despite this investment, there is still scope for more investments in the industry.

It should be noted that the cultivation of bamboo will be supported with strict regulations to ensure a sustainable source of the wood. See 2.1.5.2.2. Strategic Objective #2B, pg. 67

### PACKAGING MATERIALS

Under this Plan, Clarendon will become a high growth area for the packaging industry. The proposed growth

## 4.5. THE MANUFACTURING SECTOR

within the manufacturing sector will create opportunities for the production of packaging materials, particularly those that are eco-friendly. This is due to the fact that packaging materials are an essential component of the complex supply chain for most manufactured goods, and the concept of sustainability will increase consumer demand for eco-friendly products.

### MANUFACTURING OPPORTUNITIES WITHIN THE LOGISTICS HUB

The expansion of the Panama Canal is expected to lead to a substantial redeployment of maritime traffic which will create significant opportunities for global manufacturers in Clarendon, Jamaica, and by extension Clarendon, sits at the doorway of the Panama Canal, and as such at the convergence of global trade corridors with regional and hemispheric trade routes. In addition to that, Clarendon has an abundant supply of skilled and readily available labour, and the Government is offering incentives under the Logistic Hub Initiative for investments in manufacturing including in the proposed SEZs in the parish. It means that Clarendon is an attractive option for global manufacturers who supply the markets within the Americas. Consequently, global manufacturers may increase their efficiencies by setting up operations in the parish for value addition, as part of international supply networks and value chains.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote investments in the local manufacturing industry, particularly in agro processing, furniture manufacturing, bamboo processing, and packaging.	Short to Long Term	JAMPRO, CPC, MICAFA, MEGJC
Market Clarendon as a destination for global manufacturers supplying markets within the Americas to increase their efficiencies by setting up operations in the parish for value addition, as part of international supply networks and value chains.	Short to Long Term	JAMPRO, CPC
Where necessary and appropriate, encourage government to introduce policies to protect the local manufacturing sector from imported goods.	Short Term	Clarendon Chamber of Commerce

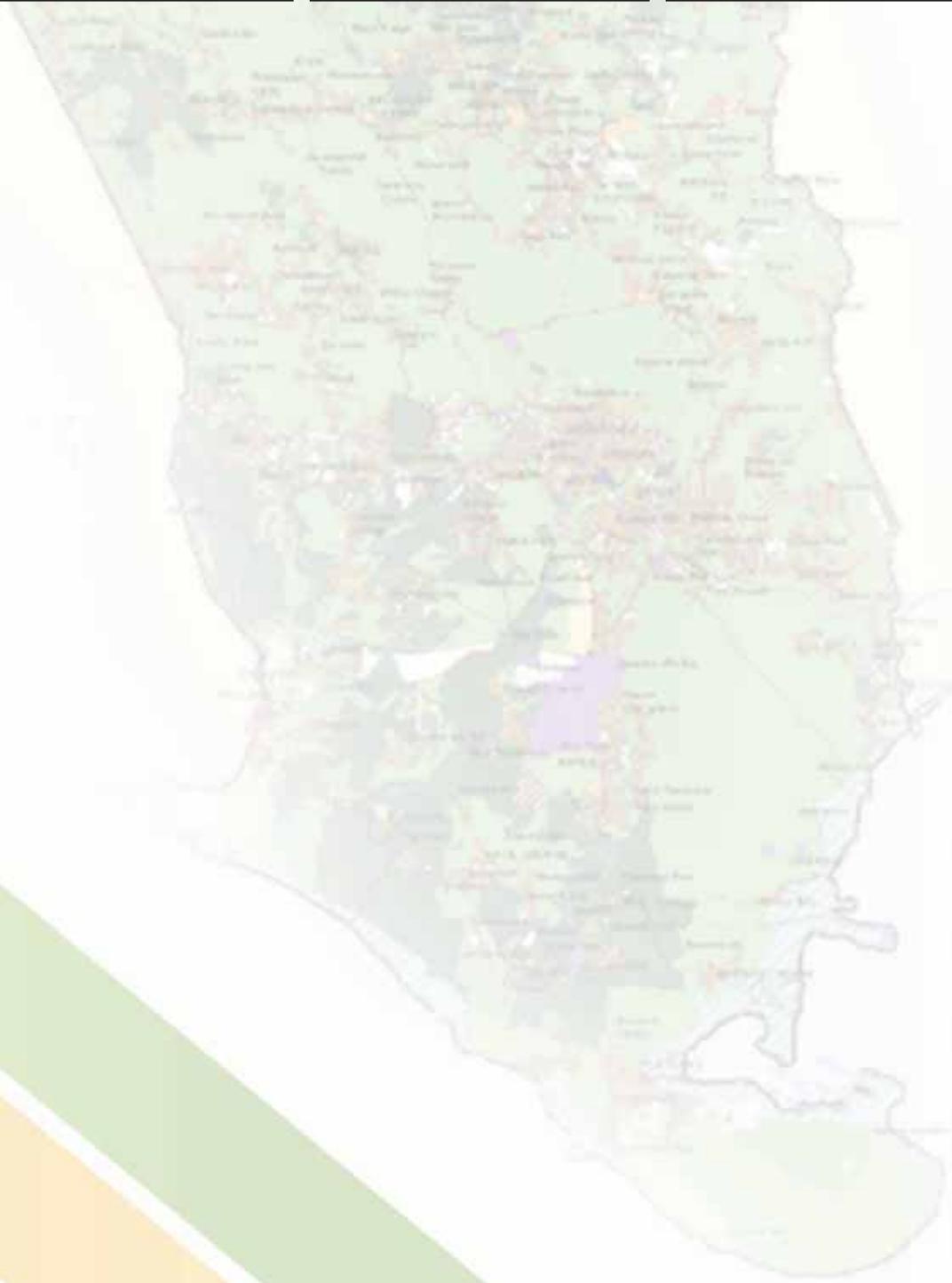
### 4.5.5.2. STRATEGIC OBJECTIVE #213

**To encourage investments in capacity expansion in order to increase competitiveness.**

It is necessary to implement mechanisms aimed at encouraging some existing manufacturers to increase their capacities. This will in turn increase their competitiveness, especially on the domestic market, and help to ensure their survival in light of economic globalization and free trade. This will also result in increased income for the parish. In this respect, several incentives will be provided to encourage existing manufacturers to increase their capacities. These incentives may include Accelerated Depreciation Allowance.

## 4.5. THE MANUFACTURING SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Provide incentives to encourage existing operators to increase their capacities in order to improve their competitiveness and to take full advantage of export opportunities. Such incentives may include Accelerated Depreciation Allowance.</p>	Short to Long Term	CPC



## 4.6. THE MINERALS INDUSTRY

### 4.6.1. CLASSIFICATION OF MINERALS

According to conventional National Accounting classifications, minerals are classified as metallic and non-metallic. Metallic minerals are those which contain ferrous and non-ferrous metal ore deposits. The main metallic mineral resources discovered in Clarendon include bauxite, copper, and gold. The non-metallic minerals include industrial minerals, which may be defined as commercially valuable non-metallic, non-fuel rocks and minerals used in their natural and processed state in the construction, chemical, manufacturing and other industries. Those discovered in Clarendon include clay, limestone, sand, gravel, marble and marl. See 2.1.1.5. Minerals, pg. 45.

### 4.6.2 THE METALLIC MINERAL SUBSECTOR

#### 4.6.2.1. THE BAUXITE INDUSTRY

The bauxite industry continues to be one of the most important sectors of the local economy. The local industry was established primarily by the ALCOA and JAMALCO, which developed out of a partnership with ALCOA and the GOJ. ALCOA's roots go back as far as 1959 with the formation of AMJ, a wholly owned subsidiary of ALCOA, which started to mine bauxite in Teak Pen and the Mocho Mountains in 1963 & 1971 respectively. The company mined bauxite for export, with the first shipment made in the first year of its operation. In 1972, the company began processing bauxite into alumina at a new refinery in Halse Hall, with a production capacity of 500,000 metric tonnes per year (mtpy), and exporting alumina from its port facility at Rocky Point. A partnership then developed between the bauxite company and the GOJ in 1976, which saw ALCOA as the majority shareholder, owning 94% per cent of the shares and Jamaica Bauxite Mining Ltd. (JBM) owning 6 per cent; the joint venture was called JAMALCO.

During the aluminium slump of the 1980s, when ALCOA was preparing to dispose of the plant, the GOJ averted the shutdown by creating another company (Clarendon Aluminium Products Ltd) which assumed responsibility for production, and retained ALCOA on a Management contract. In 1988, the GOJ acquired a 50 per cent share in the operations. The refinery's capacity was subsequently upgraded to one million mtpy in 1999, and then to 1.25 million mtpy in 2003. The completion of a further upgrade in March 2007 increased the production capacity of the refinery to 1.425 million mtpy. Following the final expansion, JAMALCO became owned 55 percent by ALCOA and 45 percent by the GOJ.

JAMALCO would however cease mining operations in Clarendon in the early 2000s following the depletion of bauxite reserves in the Mocho Mountains. Nevertheless, the company still processes bauxite mined in the neighbouring parish of Manchester at the Halse Hall facility. It also remains a chief provider of local employment through its loading Station at St. Jago and the port in Rocky Point. The company also continues to invest heavily in local community development projects and initiatives.

On Friday June 13, 2014, ALCOA announced that it had signed a non-binding letter of intent with Noble Resources UK Limited to pursue the sale of its 55 per cent stake in JAMALCO; a decision influenced by the high cost of energy in Jamaica. The company said that it would retain a minority interest in AMJ and serve as JAMALCO's managing operator for at least two years. More importantly, the company gave the assurance that the decision will not result in any of the company's workers losing their jobs.

#### 4.6.2.2. GOLD MINING

The Metallic Minerals Industry in Clarendon also includes gold mining. Ausjam Limited, an Australian company, set up Jamaica's first and only known gold mine in Pennants in May 2001, providing employment to residents of the surrounding communities. By December 2002, it reportedly yielded 12 000 ounces of gold, and geologists suggested that another 3 000 to 4 000 ounces remained to be extracted (Cunningham, 2014).

## 4.6. THE MINERALS INDUSTRY

However, plagued with management issues, labour conflicts and low yields due to incorrect projections, the company ceased all operations by 2004 (Cunningham, 2014). Overall, Ausjam reportedly mined 13000 to 15 000 ounces of gold at the plant, down from the projected 41 000 ounces (Cunningham, 2014).

The gold mine was left unmanned for several years. However, the permit for mining was granted by the NRCA in 1997, without the provision of a closure plan, in keeping with stated stipulations, which meant that the Australian company still had responsibility for the mine (JIS, 2011). In 2011, cyanide which was stored on the site reportedly leaked from a rotting container and contaminated water sources in the area. A team of consultants hired by NEPA removed tonnes of the highly toxic chemical as part of the clean-up operation. The environmental agency subsequently revoked the licence of Ausjam and sued the company in order to recover clean-up costs. However, after settling a portion of the claim, the Australian company countersued for damages on the grounds that the sum being demanded was excessive and the issues were grossly exaggerated.

According to NEPA in a media briefing on July 18, 2011, operations at the gold mine could resume soon (JIS, 2011). According to the Chief Executive Officer, Peter Knight, the agency was advised that the operators, AUSJAM Limited, wished to return to re-activate the site (JIS, 2011). The caretaker of the facility also confirmed that the company was really seeking to have the GOJ renew the licence to enable them to resume operations (Cunningham, 2014). This is based on reports of additional gold deposits in the area. According to the Commissioner of the MGD, Clinton Thompson, who also spoke at the aforementioned press briefing, based on knowledge of the area's geology, there are more deposits on the site which require further exploration and that was why closure of the mine was not affected (JIS, 2011). He also pointed out that when the mine was being operated, gold was sold for less than US\$300 per ounce, and now it is being sold for approximately US\$1,500 (JIS, 2011).

### 4.6.2.3. COPPER MINING

Copper mining was only carried out briefly in the Plan Area. Deposits of copper occur in Upper Clarendon, particularly in the Pennants and Charing Cross-Bellas Gate areas. This information has been known since about 1869, but not considered to be in economic deposits. Nevertheless, the Charing Cross and Standford Hill Mines operated briefly during the latter part of the 19th century, as well as between 1906 and 1909.

### 4.6.3. THE NON-METALLIC MINERALS SUBSECTOR

The MGD has delineated two (2) quarry zones in Clarendon; the May Pen and the Rio Minho Quarry Zones. As at May 1, 2014 there were 37 licensed quarries in the parish, of which 15 were active<sup>124</sup>. (MGD, 2014) Of the total number of licensed quarries, 26 were involved in river-based sand and stone extraction. Many of these quarries are concentrated along the Rio Minho River, and are used to supply building materials to the construction industry. Beyond river based sand and stone extraction, the non-metallic minerals industry in the parish also includes the extraction of limestone and marl. Large deposits of limestone are scattered across the entire parish, as limestone formations cover approximately two-fifths of the boundary (See 2.1.1.2. GEOLOGY, pg.41). Some horizons of the limestone are extremely pure and are used in the manufacture of lime, which is a major raw material in the alumina industry. It is also used in agriculture, sugar-refining, glass-manufacturing and building construction. In addition, it is used in the production of concrete and white cement. Marl is also found at several different locations in the parish, including Toll Gate, Colebeck and Chateau, and is mainly used in the construction sector for road works (MGD, 2014).

Commercially exploitable deposits of other non-metallic minerals which are not currently being extracted, are also found in the parish. Marble deposits with the highest economic potential can be found in Rodons Store. The marble is characterised by vibrant colours, unique grains and outstanding beauty that

<sup>124</sup>. Some licences were in the process of renewal or new application.

## 4.6. THE MINERALS INDUSTRY

make them ideal for luxurious and high-end applications. (JAMPRO, 2015)

### 4.6.4. MINERALS INDUSTRY ISSUES AND CHALLENGES

#### 4.6.4.1. INCREASING DISTANCE OF MINEABLE BAUXITE RESERVES FROM PROCESSING PLANTS

The bauxite industry in Clarendon is at a mature stage, and the reserves closest to the processing plant at Hayes have been depleted. As highlighted earlier, extraction no longer takes place in the parish, and the minerals being processed at Hayes are obtained from neighbouring Manchester. As the industry continues to shift over the medium term to exploit reserves that are more distant from the existing processing plant, the cost of transport will increase. This will therefore require adequate responses from the industry in order to remain price competitive.

#### 4.6.4.2. INADEQUATE SUPPORTING INFRASTRUCTURE FOR THE NON-METALLIC MINERALS SUBSECTOR

There is a deficiency of a key supporting infrastructure for the bulk export of non-metallic minerals in the Parish. Unlike in the bauxite industry, there is no port dedicated to the export of non-metallic minerals or their products in the parish. In fact, the Old Reynolds Pier in Ocho Rios, St. Ann, and Jamaica Gypsum Pier at Harbour Head, Kingston, are the only ports available for the shipments of bulk industrial minerals in Jamaica (MSTEM, 2014). This is serving as a disincentive for new entrants in the subsector, as access to the lucrative export market would require haulage of cargo over long distances which may prove to be very expensive.

It should be noted however that the plan by Cement Jamaica Limited (CJL) to build and operate a cement plant on the border of St Catherine and Clarendon, will make optimum use of the existing Port Esquivel in neighbouring St Catherine, for the cost-effective export of cement products. With the existing ports in Clarendon similarly underutilized as Port Esquivel facility, there may be scope for similar arrangements to be made.

#### 4.6.4.3. SIZE AND ECONOMIES OF SCALE

The vast majority of quarrying operations in the parish of Clarendon are small and under-equipped, and therefore lack the economies of scale needed to compete with large, capital-intensive operations. This renders the sub-sector generally unable to take full advantage of export opportunities in external markets, and usually confine operations to the less profitable domestic market. It also renders local producers highly vulnerable to the establishment of large-scale operations in Clarendon by new, global competitors. The scale of operation of these operators would be such that they would have the potential to take advantage of export opportunities and also dominate the local market to the detriment of local producers.

#### 4.6.4.4. ABSENCE OF VALUE-ADDED PRODUCTION

The non-metallic minerals sub sector is currently losing out on millions in revenue due to the absence of local value-added production. Some minerals, such as limestone, are extracted and exported as primary raw materials, despite the fact that the economic value of the materials generally increase as they progress up the value chain. The issue is more remarkable due to the fact that Jamaica continuously imports products made from raw materials that are being exported from the local market. One could conclude that the sub-sector is inefficient and not capitalizing on the opportunities present.

## 4.6. THE MINERALS INDUSTRY

### 4.6.4.5. CONFLICTS WITH LOCAL COMMUNITIES

Several mineral related operations are located in close proximity to population centres. Over the past decade, there have been a few instances of conflict between mineral related companies and some of these local communities. For example, there have been numerous complaints of air pollution, including odour and dust nuisance, from the JAMALCO bauxite processing plant by residents of nearby communities. Similarly, there was a recent incident where residents of the Rock River community complained that mineral related operations were taking place in their community without their prior knowledge. They admitted that members of the community were employed, but in the absence of consultation, no one, including those who were employed, had any idea of the details of what was taking place. Even as operations proceeded, attempts to get information from the relevant authorities were still unsuccessful. In this particular instance, the CPDCBS had to intervene on behalf of the residents.

### 4.6.4.6. ENVIRONMENTAL CONCERNS

The extraction of economic minerals in Clarendon helps to boost the local economy, but in turn scars the landscape and poses a nuisance to local ecological balance (TCPA, 2012). Bauxite mining has been a major contributor to environmental degradation in the parish. Likewise, the extraction of river aggregates, particularly when done without regulatory approval, presents a serious challenge to the environment. See 2.1.2.4. Unsustainable Mining and Quarrying Practices, pg. 61.

## 4.6.7. PARISH STRATEGIES

### 4.6.7.1. STRATEGIC OBJECTIVE #214

**To guard lands of significant mineral wealth against encroachment by other uses or development.**

Mineral bearing lands within the parish are finite resources. It is therefore very important that lands of significant mineral wealth be protected to support the sustainability of the mining industry. These lands will be protected from sterilization, as well as developments which would render them incapable of extraction. See 2.4.3.1.8. Strategic Objective #98H, pg. 233.

### 4.6.7.2. STRATEGIC OBJECTIVE #215

**To support mineral exploration exercises to ensure the viability of the minerals industry.**

Mineral exploration is critical to ensuring the viability of the local minerals industry. It is the process through which commercially viable concentrations of minerals or ores are found. Since most of the mineral resources in the parish are finite, it is expedient that more discoveries are made to enable the replacement of declining reserves. It is also necessary to determine the feasibility of workable deposits of minerals which are currently not being extracted. Investments in mineral exploration will be encouraged, consequently, such exercises will normally be supported in the parish, provided that there will be no resultant adverse social or environmental impact.

### RECOMMENDED POLICIES

- Mineral exploration exercises will normally be supported in the parish, provided that there will be no adverse social or environmental impact

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage investments in mineral exploration.	Short to Long Term	MTM

## 4.6. THE MINERALS INDUSTRY

### 4.6.7.3. STRATEGIC OBJECTIVE #216

**To promote investment opportunities in proven and potentially workable mineral resources to support growth and expansion within the sector.**

The parish is the site of several proven and potentially workable mineral deposits which could be viable investment opportunities. There are large deposits of high quality limestone which have numerous applications for food processing, manufacturing and the development of pharmaceutical and industrial items. The parish also possesses true marble deposits of commercial significance, which can be used in the dimension stone industry. These marbles are characterised by vibrant colours, unique grains and outstanding beauty that make them ideal for luxurious and high-end applications. Additionally, the operators of the gold mine in Penants, AUSJAM Limited, expressed an interest in returning to re-activate the site, which means that gold extraction in the parish is very feasible. In addition, a pilot project to extract rare earth oxides from red mud was launched jointly by the JBI and Nippon Light Metals Company Limited from Japan in early 2013. This project revealed that the country's red mud deposits boast up to 2,500 per cent higher concentration of these elements than global competitors. Investment in these areas will therefore be promoted to support growth and expansion.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote investment opportunities in the extraction and processing of limestone, marble, gold, rare earth minerals and other proven and potentially workable mineral resources in the parish.	Short to Long Term	JAMPRO, CPC, MTM

### 4.6.7.4. STRATEGIC OBJECTIVE #217

**To encourage investments in capacity expansion in order to increase competitiveness and help to maximise on the potential of the local industry.**

It is necessary to implement mechanisms aimed at encouraging existing operators within the minerals industry to increase their capacity. This will in turn increase their competitiveness and help to maximise the potential of the local industry. This will also result in increased income for the parish. In furtherance of this objective, several incentives will be provided to encourage existing operators to increase their capacities. These incentives may include guaranteed access to export markets and Accelerated Depreciation Allowance.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Provide incentives to encourage existing operators to increase their capacities in order to improve their competitiveness and to take full advantage of export opportunities. Such incentives may include guaranteed access to export market and Accelerated Depreciation Allowance.	Short to Long Term	MTM

## 4.6. THE MINERALS INDUSTRY

### 4.6.7.5. STRATEGIC OBJECTIVE #218

**To encourage investments in the production of value added mineral products to increase revenues and profits within the local industry.**

The non-metallic minerals sub sector is currently losing out on millions in revenue due to the absence of local value-added production. In efforts to address this, increased emphasis will be placed on achieving higher rates of value-added products. This will produce greater revenues and increased profits within the local industry.

There is scope for value added production in a number of areas. Limestone may be used to produce value added products such as manufactured sand, cement and lime. The demand for river aggregates appears to be quite high based on the number of quarries, including illegal facilities, operating in the parish. This demand is expected to increase dramatically with growth forecasted in the construction sector through proposed and planned developments in a number of different local sectors, including the housing, transportation, logistics and tourism sectors. The extraction of river aggregates to satisfy this demand may result in environmental issues, and furthermore policies will be implemented to control or manage extraction rates. Manufactured sand may be used to satisfy some of this demand. Similarly, the demand for cement, which is a product of limestone will increase with the planned and proposed developments. Previously, with a spike in demand, Jamaica experienced a cement shortage, due to both quality and quantity issues. With the proposed CJL which will operate on the borders of Clarendon and St Catherine, appearing to be the only firm to join Caribbean Cement Company Limited in the production of cement in Jamaica, there is scope for further investment. Such investment may also target the export market, to include parts of the Caribbean which are seeking cheaper alternatives to the existing dominant supplier, Trinidad Cement Limited, TCL. The production of lime, may also be used to satisfy both local and international demand, with the former case being through import substitution. Additionally, marble may be used to produce stone craft and decorative products which will easily find markets within the housing and decorative sectors. Support for the local tourism industry, through the provision of raw materials for the production of arts and handicrafts, could also be explored. Similarly, clay may be used to produce craft, ceramics and decorative products which will find markets in the tourism, housing, and decorative sectors.

Accordingly, investments in value added products will be encouraged within the local minerals sector. In addition to encouraging operators to produce a wider range of mineral products, the relevant authorities will seek to identify markets including export markets for such products. Other incentives that will be provided include access to ports and related facilities.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage operators to produce a wide range of value added mineral products, especially the high-end products.	Short to Long Term	MTM
Identify markets, both local and export for value-added mineral products.	Short to Long Term	JAMPRO, MTM
Support Strategic Objective #219, pg. 434 of this Plan.	Short to Long Term	MTM

## 4.6. THE MINERALS INDUSTRY

### 4.6.7.6. STRATEGIC OBJECTIVE #219

**To facilitate the exportation of minerals and mineral products to support market expansion.**

Facilitating increased access to the export market is critical to ensuring growth within the local minerals industry. The domestic market is relatively small, therefore profit maximization is dependent upon the identification of external markets. Access to the export market within the non-metallic minerals subsector is however restricted by, among other things, the unavailability of bulk-handling port and loading facilities. Therefore, as part of this strategy, the shared use of the existing port facilities will be explored. In addition to that, the relevant authorities will seek to identify export markets for mineral and mineral products, as an incentive to support the strategy.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Facilitate the shared use of existing port at reasonable rates. This will complement Strategy #28 of the Transportation Section of this Plan (pg. 103).	Short to Long Term	MTM
Identify export markets and assist companies, especially small and medium sized enterprises (SMEs), to increase market share and export earnings.	Short to Long Term	MTM, JAMPRO
1. Simplify existing export procedures as part of a broad drive to facilitate increased export of minerals and mineral-derived products.	Short to Long Term	National Competitiveness Council, MICAF

### 4.6.7.7. STRATEGIC OBJECTIVE #220

**To strengthen ties between the minerals industry and host communities to reduce conflicts and ensure that local communities benefit from the industry.**

Conflicts between local communities and mining and quarrying firms in the parish underscore a need for the strengthening of the ties between both types of stakeholders. In order to achieve this objective, several different initiatives will be implemented. These initiatives include encouraging mineral-related companies to be good corporate neighbours and to be more communicative and responsive to the concerns of host communities. In the same vein, host communities will be encouraged to accommodate these companies, as their importance to local sustainable development will be outlined. Furthermore, the relevant authorities will facilitate continuous dialogue between minerals-related companies and local communities at all phases of the mining or quarrying process. Together these actions will serve to minimise the potential for conflicts.

## 4.6. THE MINERALS INDUSTRY

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage mineral-related companies to be good corporate neighbours and to be more responsive and communicative to the concerns of host communities.	Short Term	MTM, CPC, CPDCBS
Encourage host communities to accommodate or to be more receptive to mineral-related companies. As part of this action, the importance of these companies to local sustainable development should be outlined and emphasized.	Short Term	MTM, CPC, CPDCBS
Facilitate continuous dialogue between mineral-related companies and local communities at all phases of the mining or quarrying process. As part of this strategy, communities should be formally incorporated as stakeholders with corresponding responsibilities and obligations within the sector.	Short to Long Term	MTM, CPC, CPDCBS

### 4.6.7.8. STRATEGIC OBJECTIVE #221

**To ensure that the extraction of minerals proceeds in a sustainable manner, and all stakeholders are engaged in the formulation of strategies for land reclamation practices, in order to achieve the optimal use of quarried or mined out areas.**

Mineral extraction and processing help to boost the economy of Clarendon but it also scars the natural environment. The environmental impacts are quite substantial and therefore the industry requires a high degree of environmental management and control, which will be achieved through the application of a green mining initiative. This will involve the application of best practices, technologies, and mine processes that reduce the environmental impacts associated with the extraction and processing of minerals. See 2.1.5.4. Strategic Objective #4, pg. 70.

## 4.7. THE SERVICES SECTOR

### 4.7.1. OVERVIEW OF THE SERVICES SECTOR

The fast emerging commercial sector is showing signs of dominating the local economy (SDC, 2014). As the population increases, so do the demands of people, thus the economy has expanded to try to meet this demand. The increase in urban growth has led to the expansion of the service industries within the major towns of May Pen, Frankfield, Kellits, Chapelton, Spalding and Lionel Town. Wholesale and retail trades inclusive of financial institutions, supermarkets/wholesales, pharmacies, hardware stores and petrol stations among others, have increased in numbers and their capacities to meet the local demand.

### 4.7.2. SERVICES SECTOR ISSUES AND CHALLENGES

#### 4.7.2.1. POOR CUSTOMER SERVICE

Through the Situation Validation and Visioning Workshops, poor customer service was identified as a major problem within the local service industry. Residents unanimously agreed that customer service at most businesses within the service sector is very poor. They explained that customer service representatives are often rude to customers, or they display lethargic attitudes while providing their service. This is negatively impacting on these local businesses and the overall local economy, as residents claim that they not only try to avoid places where they are repeatedly subjected to poor customer service, but also encourage relatives and friends to conduct business elsewhere, including outside of the parish.

### 4.7.5. PARISH STRATEGIES

#### 4.7.5.1. STRATEGIC OBJECTIVE #222

**To improve customer service to support sustained growth within the industry.**

Good customer service is vital to creating new customers, keeping loyal customers, and developing referrals for future customers in local businesses. Therefore improvements will be made to the overall quality of service offered in the parish. This will be achieved by encouraging businesses to establish a culture of excellent customer service within their businesses, and training of their staff in customer service, through internal and external programmes.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage local businesses to establish a culture of excellent customer service within their businesses.	Short Term	JBDC
Encourage local businesses to train their staff in customer service, though internal and external programmes.	Short Term	JBDC
Develop customer service training programmes for local businesses.	Short to Medium Term	JBDC

## 4.7. THE SERVICES SECTOR

### 4.7.5.2. STRATEGIC OBJECTIVE #223

**To capitalize on opportunities for growth within the sector.**

Growth within the service sector is critical to facilitate planned development within other sectors. This is due to the fact that services are key inputs in a number of the proposed sector developments. For instance, this Plan is promoting the increased use of renewable energy and therefore the opportunity exists within the service industry for investments in the distribution and installation of renewable energy apparatus, equipment and systems. Opportunities also abound for investors within other areas like: education and training, transportation, tourism, construction, water systems, security systems, and exportation.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote investment opportunities within the service sector.	Short Term	CPC, JAMPRO, MEGJC

## 4.8. THE INFORMAL SECTOR

### 4.8.1. OVERVIEW OF THE INFORMAL SECTOR

The informal sector<sup>125</sup> are those economic activities and incomes that are partially or fully outside government's regulation, taxation, and observation. It is a large and growing section of Clarendon's economy, and consists of micro and small enterprises and individuals, undertaking activities such as small-scale farming, vending, taxi driving, marijuana trafficking, and a host of other activities<sup>126</sup>. There is no official statistics from this sector, however, it is believed to have experienced more rapid growth than the formal sector over the past two decades. A survey conducted by CARILED revealed a business registration rate of 95 per cent in the Parish (Tindigarukayo, 2013).

Based on local consultations<sup>127</sup>, it is believed that many participants operate within this local sector mainly because of limited formal employment opportunities and to a lesser extent, limited education. They generally hold labour-intensive jobs characterized by low productivity. Additionally, their work is usually part-time and almost never includes a formal employment contract. Consequently, participants in the informal sector generally receive lower pay compared with those in the formal sector.

### 4.8.2. THE INFORMAL SECTOR ISSUES AND CHALLENGES

#### 4.8.2.1. TAX EVASION

One of the negative features of the informal sector is tax evasion, which is both intentional and unintentional. Generally, entry into the local informal sector is as a survival mechanism, but a number of individuals who have entered for this reason choose to remain in this unofficial sector because of tax evasion. The prevalence of intentional tax evasion is believed to be stemming from the fact that a number of residents have a negative view of tax structures. The perception is that taxes are unfairly levied, and tax rates are so burdensome that it's worth the risk to operate in defiance of tax laws and other regulations.

This issue of tax evasion, is having a significant impact on fiscal spending, not just in Clarendon, but in Jamaica. The informal sector contributes substantially to the GDP of the parish and therefore, there is a correspondingly significant loss of potential tax revenue. This is a very important issue in light of the fact that it has been found that in countries with disproportionate tax burdens combined with weak compliance structures, an increase in the size of the informal economy leads to a decline in overall economic growth (Chiang, Rhodd and Wedderburn, n.d.). For this reason, efforts must be intensified to devise a mechanism to identify, monitor, tax, and enforce compliance on individuals and businesses operating in the informal sector.

#### 4.8.2.2. LACK OF ACCESS TO BENEFITS

There are several disadvantages to operating in the informal sector which may further impact economic development. These include a lack of access to capital for business growth, a lack of access to business development opportunities, no property right protection, and a lack of employment contracts to protect workers.

#### 4.8.2.3. ISSUES ASSOCIATED WITH ILLEGAL VENDING



Figure 90: Illegal street vending in May Pen.  
Source: <https://www.youtube.com/watch?v=Zp30Nxfjuivo>

125. Also referred to as the informal economy, the shadow economy, the underground economy, and a host of other names. | 126. Based on consultations through the Situation Validation and Visioning Workshops. | 127. Through the Situation Validation and Visioning Workshops.

## 4.8. THE INFORMAL SECTOR

Illegal street vending is a hazard in most town centres within the Clarendon Development Area, but particularly within the capital, May Pen. Local town centres are often the scenes of chaos, as vendors ply their trade illegally on the sidewalks or along the roadways, in the process depriving the CPC of much needed revenue through utilizing the designated vending areas, restricting free access to legitimate business establishments, and forcing pedestrians, including children, the physically challenged and the elderly to share space with the motorised traffic. The end result of this situation is a serious threat to public safety and traffic congestion within the town centre.

In mid-2015, the problem escalated to new levels in May Pen. Following a clampdown on illegal vending in the Kingston Metropolitan Region, there was an influx of displaced vendors from that area into the town of May Pen. This caused widespread chaos and headaches for the Local Authority. According to the Mayor of May Pen, Scean Barnswell, the merger of the JCF and the Island Special Constabulary Force (ISCF) is partly to be blamed. He explained that the ISCF used to assist the municipal officers in carrying out patrols, but since the merger, the support has declined considerably. He also noted that the present fine (maximum \$5, 000) is not sufficient to deter the activity.

### 4.8.5. PARISH STRATEGIES

#### 4.8.5.1. STRATEGIC OBJECTIVE #224

**To encourage the formalisation of businesses.**

The formalization of businesses within the parish is a crucial strategy to support local economic growth and development. This is necessary to improve Government's revenue collection and fiscal spending and also ensure the sustainability of MSMEs. Consultations revealed that the major barriers to formalization are regulatory and administrative procedures, and the fees and financial requirements for operating in the formal economy. Therefore formalization will not be an instantaneous process; it will require public education, incentives, simplification of existing systems and ongoing support in order to achieve the goal of reducing the number of enterprises that operate outside of the formal sector. These actions will not only remove barriers to formalization but will also strongly encourage business registration.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Promote greater simplicity, cost effectiveness and efficiency in business licensing, registration and tax compliance procedures through greater use of ICT.	Short to Medium Term	GOJ, Tax Administration Jamaica (TAJ)
Continue to promote the marketing and developmental assistance available to firms that are registered to encourage formalization among MSMEs.	Short to Long Term	JBDC
Embark on public education campaigns involving MSME operators in an effort to educate them about formalization requirements and procedures.	Short to Long Term	JBDC

## 4.8. THE INFORMAL SECTOR

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Establish a supportive tax incentive framework for the MSME sector	Short to Medium Term	MEGJC

### 4.8.5.1. STRATEGIC OBJECTIVE #225

#### To reduce illegal vending in the parish.

A reduction in illegal vending is necessary to improve revenue generation for the CPC, safeguard public and environmental health, and ensure the efficient movement of people, goods and services. This will be achieved through an approach which involves facilitating vendors, rather than taking away individuals' livelihood. All vendors will be required to register with the CPC, who will seek to increase the amount of designated vending spaces available. The markets will also be upgraded to become more appealing to customers and vendors alike where necessary. Nevertheless, the CPC will seek to work with the Police to rid the streets of illegal vendors. The relevant authority will also seek to increase fines for vending breaches in order to deter the activity.

#### RECOMMENDED POLICIES

- Illegal vending will not be tolerated in the parish.
- Priority will be given to locals in the vendor registration process.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage all vendors in the parish to get registered. This may include launching a limited amnesty.	Short Term	CPC
Increase the amount of designated vending areas within town centres. Consideration should be given to the provision of spaces within parks, bus parks, etc.	Short to Long Term	CPC
Support Strategic Objective #154 of the Other Social Amenities section of this plan. See pgs. 327	Short to Long Term	CPC
Develop a relationship with the Police to remove all illegal vendors from the streets.	Short Term	CPC
Increase the fines for illegal vending breaches.	Short Term	GOJ, CPC, MLGCD

# GOOD GOVERNANCE



## 5.0. GOOD GOVERNANCE

### INTRODUCTION

The CLSDP embraces good governance as one of the underlying principles of sustainable development. Good governance has become a part of the vernacular of development institutions and actors within the international arena. It has recently being accepted as a fourth principle of sustainable development, as it has now been recognized as essential to achieving sustainability.

This Chapter focuses on Governance in Clarendon. The strategies provided seek to achieve Goal #4, which is: To create a parish where Government operates in a participative, transparent and accountable manner, and rules and regulations are adequately enforced to guide sustainable development.

The achievement of this goal will ensure that:

- I. Development takes place in an equitable, efficient and sustainable manner
- II. High levels of public confidence that the best decisions are being taken for the right reasons.

At the heart of good governance is an effective Local Government System, an efficient public sector, and a strong rule of law, which are currently absent in Clarendon. It therefore means that the parish will need to embrace and encourage local government reform, public sector reform, justice reform and legislative reform, while strengthening local institutions and processes to ensure good governance.

Each strategy is aligned with the strategic framework of Vision 2030 Jamaica -National Development Plan. The Good Governance strategies are aligned with the National Development Plan under the following National Goals and National Outcomes which are shown in the table below.

<b>National Goals</b>	<b>National Outcome</b>
2. The Jamaican society is secure, cohesive and just	5. Security and Safety
	6. Effective Governance

### 5.1. GOVERNANCE IN THE PARISH OF CLARENDON

Governance in the context of Clarendon is the process by which the affairs of the parish and its people are managed. It is administered from the national, parish and community levels, through Central and Local government. Currently, Central Government is considered as supreme, while Local Government exercises only the powers that Central Government chooses to delegate. The following subsections present a clear understanding of the structure and functions of these two tiers of government.

#### 5.1.1. CENTRAL GOVERNMENT

The system of Government in Jamaica, as set out by the Constitution of 1962, is a representative parliamentary democracy. It is based on the Westminster and Whitehall Systems of Government, which means that the citizens choose the individuals that govern them. Every Jamaican citizen, 18 years and older, has the right to vote in elections deemed free and fair, which are used to decide the parliamentarians who form the Government.

Jamaica is also a unitary constitutional monarchy and is a member of the Commonwealth. Therefore, the Queen of England is the titular head of the country. She is represented by a Governor-General who is

## 5.0. GOOD GOVERNANCE

appointed based on the recommendation of the Prime Minister. However, neither the Queen nor the Governor-General has any real authority in conducting the administration of the country. Real legislative and executive responsibilities rest with the elected representatives of the people.

The Separation of Powers is one of the sacred components of the Constitution of Jamaica. This establishes that the GOJ is comprised of three (3) arms: the executive, the legislature and the judiciary. The relationship between these three arms of government should be such that all three are separate and perform their functions individually without exerting influence or power on the other.

### 5.1.1.1. THE LEGISLATURE

The Legislature, also referred to as Parliament, has legal supremacy under the Constitution. Its functions are: (a) to enact laws for the peace, (b) order and good governance of the country, (c) to evaluate proposals for new and amended legislation, (d) to carry out the existing laws and (e) to provide taxation money for the work of Government.

Parliament is bicameral. It consists of two (2) Houses; the House of Representatives, also known as the Lower House, and the Senate, also called the Upper House. The House of Representatives consists of 63 members who are elected to five-year terms on a first-past-the-post basis in single-seat constituencies. The Senate consists of 21 members who are appointed by the Governor-General; thirteen are appointed on the advice of the Prime Minister; and eight on the advice of the Leader of the Opposition. The function of the Senate is to review legislations passed in the House before they are signed into law by the Governor General.

The maximum life of a Parliament is five years, at the end of which Parliament must be dissolved and a general election held. However, the Prime Minister may advise the Governor-General to dissolve Parliament at any time within the five years and the same Prime Minister names a date for a general election. Also, Parliament must be dissolved and a general election held, if a majority of the members of the House of Representatives support a no-confidence motion against the Government.

### 5.1.1.2. THE EXECUTIVE

Executive power in the Government is exercised by Cabinet which is the main instrument of government policy. When a new Government is elected, or when there is a vacancy for the Office of Prime Minister, the Governor-General appoints as Prime Minister, the member of the House of Representatives who, in the Governor-General's judgement, is best able to command the confidence of the majority of the members of that House. The Prime Minister then forms and presides over the Cabinet. Cabinet initiates Government policies and programmes, and is responsible for the general direction and control of the Government. It consists of the Prime Minister and at least 13 other ministers of Government, whose membership is restricted to one of the two Houses of Parliament. However, not more than four (4) members of the Cabinet may be members of the Senate, and the Minister of Finance must be an elected member of the House of Representatives.

### 5.1.1.3. THE JUDICIARY

The legal system of Jamaica is based on British common-law. The administration of justice is carried out through a network of courts. The courts of Jamaica are:

- The Judicial Committee of the Privy Council, which is the final court of appeal. It is based in London, England and hears appeals on criminal and civil matters from the Jamaican Court of Appeal.
- The Court of Appeal which hears the appeal of persons who are dissatisfied with the decisions of one of the other courts, except Petty Sessions. Petty Sessions appeals are heard by a judge in chambers.
- The Caribbean Court of Justice (CCJ) which acts as the final appellate court for the Caribbean Community (CARICOM) member states and as an international court ruling on matters relating to the

## 5.0. GOOD GOVERNANCE

foreign policy coordination of the Revised Treaty of Chaguaramas (2001) that outlines terms of economic cooperation among CARICOM members.

- The Supreme Court of Jamaica which is responsible for hearing serious civil and criminal matters.
- The Resident Magistrates' Courts which deal with less serious civil and criminal offences at the parish level.
- The four special courts: the Traffic Court, Gun Court, Family Court and Revenue Court. There are also Petty Sessions courts that deal with minor offences and are presided over by Justices of the Peace.

### 5.1.1.4. ADDITIONAL CHECKS AND BALANCES IN CENTRAL GOVERNMENT

In addition to the separation of functions of the legislature, executive, and judiciary, a number of checks and balances have been established by the Constitution to limit the power of the executive. These include the offices of Leader of the Opposition, Auditor General and Director of Public Prosecutions and the institution of the three services commissions with responsibilities relating to the appointment and disciplinary control of public servants.

### 5.1.1.5. CENTRAL GOVERNMENT CONSTITUENCIES IN CLARENDON

The parish of Clarendon is currently divided into six (6) central government constituencies as shown on Map.....below.



## 5.0. GOOD GOVERNANCE

These are: Northern Clarendon, North Central Clarendon, North Western Clarendon, Central Clarendon, South Eastern Clarendon, and South Western Clarendon. This means that six Members of Parliament are charged with the responsibility of representing the interests of the people of Clarendon in Parliament.

### 5.1.2. LOCAL GOVERNMENT

Local Government may be defined as a sub-national level of Government which has jurisdiction over the administration of a limited range of public or state functions, within a defined geographical area which is part of a larger territory. It may also be defined as a decentralised administration, democratically controlled by local communities. The latter definition highlights the fact that a characteristic of Local Government is democratic control over the state or public functions which are delegated to decentralized authorities. This helps to distinguish between Local Government which is responsible for providing local services and management of local affairs, and Central Government which is responsible for national and international affairs.

This form of Government was first introduced in Jamaica in 1655 by the British. Since then, the system has undergone several reform initiatives<sup>128</sup>, but it is still unentrenched in the Constitution of Jamaica.

Currently, there are 14 Local Government jurisdictions in the island, inclusive of the parish of Clarendon. Each jurisdiction is represented by a local authority<sup>129</sup> which is oversighted by the MLGD. The MLGCD also has five (5) other agencies through which it dispenses its function. These are the SDC, the JFB, the NSWMA, the ODPEM and the Board of Supervision.

#### 5.1.2.1. THE STRUCTURE OF LOCAL GOVERNMENT IN CLARENDON

Local governance in Clarendon is undertaken by the CPC, the CPDCBS, the DACs, and a number of Community Based Organizations (CBOs). The figure below graphically represents the local governance structure.

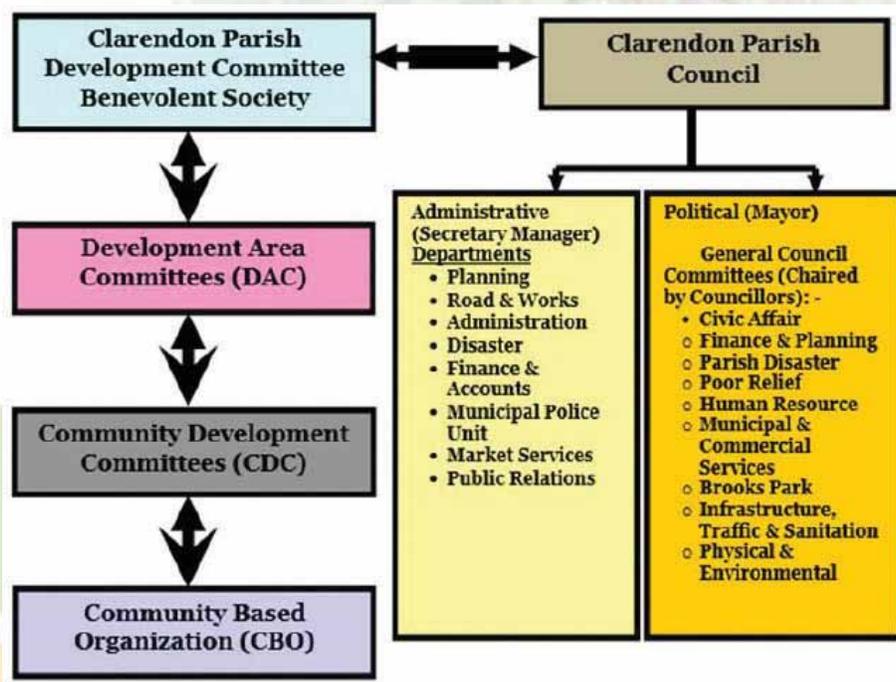


Figure 91: The structure of local government in Clarendon.

<sup>128</sup>. One currently underway. | <sup>129</sup>. The CPC in the case of Clarendon.

## 5.0. GOOD GOVERNANCE

### 5.1.2.1.1. THE CPC

The CPC is the supreme policy and decision-making body at the parish level. The Council is governed by laws and regulations and is mandated to exercise all powers, responsibilities, duties and obligations granted to or imposed upon it. It is the vehicle through which Local Government acts and discharges all functions, powers and responsibilities that are entrusted to it.

The CPC has two arms, the political arm and the administrative arm. The political arm is made up of the twenty-two (22) Councillors who represent the electoral divisions in the parish, See map Below... and is headed by the Mayor of May Pen<sup>130</sup> who also chairs the Council. This arm is responsible for determining broad policies within the Council, as well as representing the interests of the local population by bringing to the fore the varying issues impacting on the lives of the citizens within each electoral division. On the other hand, the administrative arm consists of a core management team along with a supporting staff, and is headed by a Manager who is also Secretary to the Council and is therefore called the Secretary/Manager. This arm is responsible for the day to day operation of the Council, and also for implementing the policies of the political arm.

The CPC is empowered to make by-laws, regulations and rules for the good governance of the parish of Clarendon. Its specific responsibilities include:

- Developing, managing and maintaining infrastructure and public facilities such as parochial roads, water supplies, drains and gullies, parks, recreational centres, markets, abattoirs, pounds, cemeteries, transportation centres, public sanitary conveniences and public beaches.
- Provision of local services such as poor relief, public cleansing, public health, street lighting
- Exercising regulation powers in respect to building and planning approvals and development control, licensing of trades and businesses, street parking, control of public vending.
- Coordinating inter-agency collaboration among NGOs, CBOs and government agencies which operate in the parish and are engaged in the delivery of local services or in local development.
- Supporting of national policies/development programmes at the local level.
- Spearheading plans and initiatives for the orderly, balanced and sustainable development of the parish as a whole, and major towns in particular, and for the boosting of economic activity and local wealth creation within the parish.

### 5.1.2.1.2. THE CPDCBS

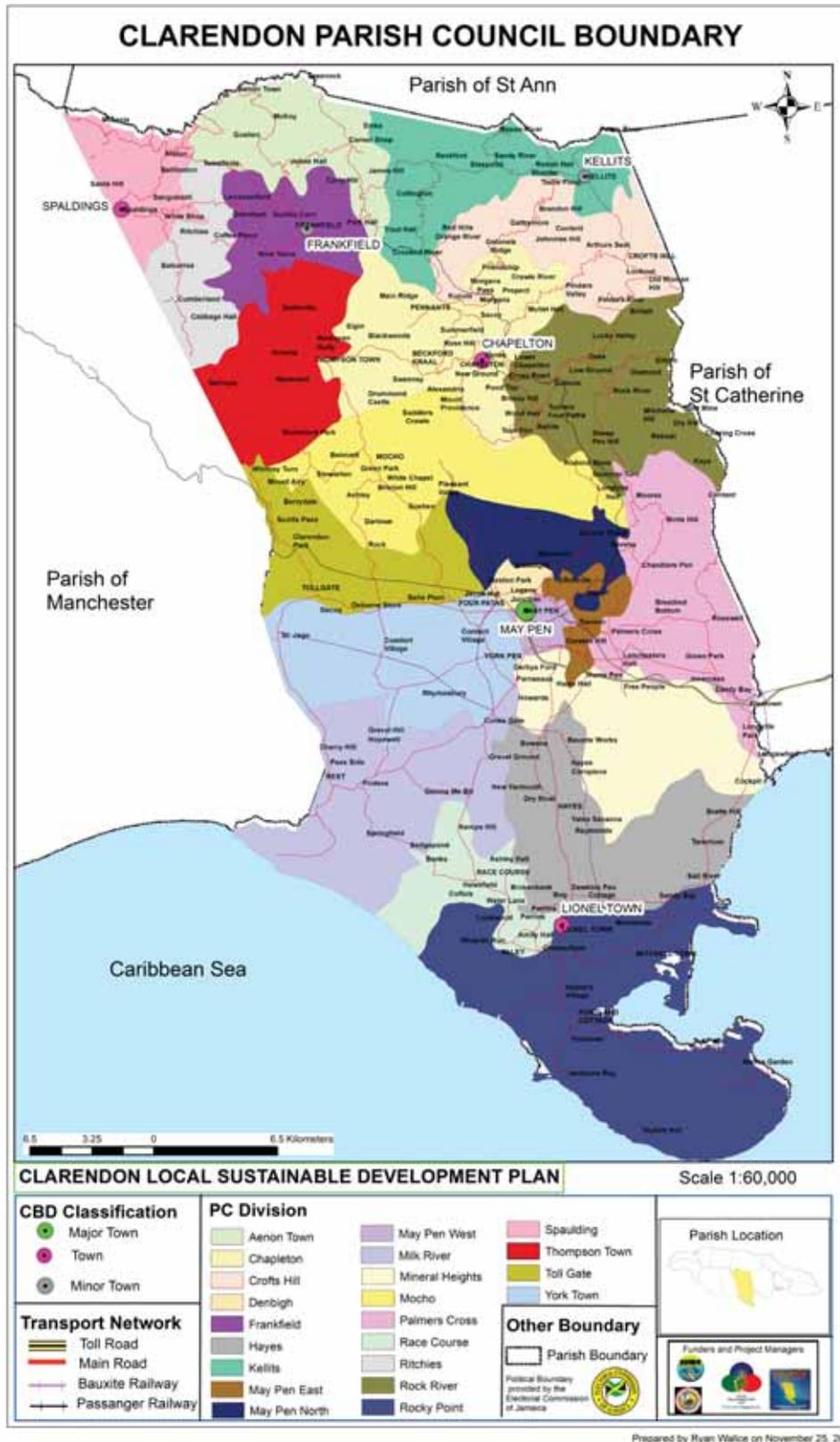
The CPDCBS is a voluntary organization which was formed in 1999 out of a thrust by the Ministry of Local Government and the SDC, to give the citizens a say in the decision making process under the Local Government Reform Programme. Its role is to promote partnership amongst stakeholders, aimed at providing a mechanism to coordinate the planning, implementation and monitoring of local development processes.

To this end, the objectives of the organization are to:

- Establish non-partisan association of individual Development Committees existing in Clarendon
- Act as the main consultative body on behalf of the various DACs and residents within Clarendon, on matters common to the parish and affecting each community; i.e., matters dealing with sports, civic awareness, utilities, public transportation, disaster preparedness, governance etc.
- Help in the monitoring of improvement to infrastructures, i.e. drains, roads and green areas of the parish while not interfering with the operations, policies and procedures of any individual DAC
- Liaise with DACs, Local and Central Government for the formulation and implementation of development strategies for communities
- Lobby with funding agencies in order to secure financial assistance for the development of the parish

<sup>130</sup>. The mayor is one of these Councillors)

# 5.0. GOOD GOVERNANCE



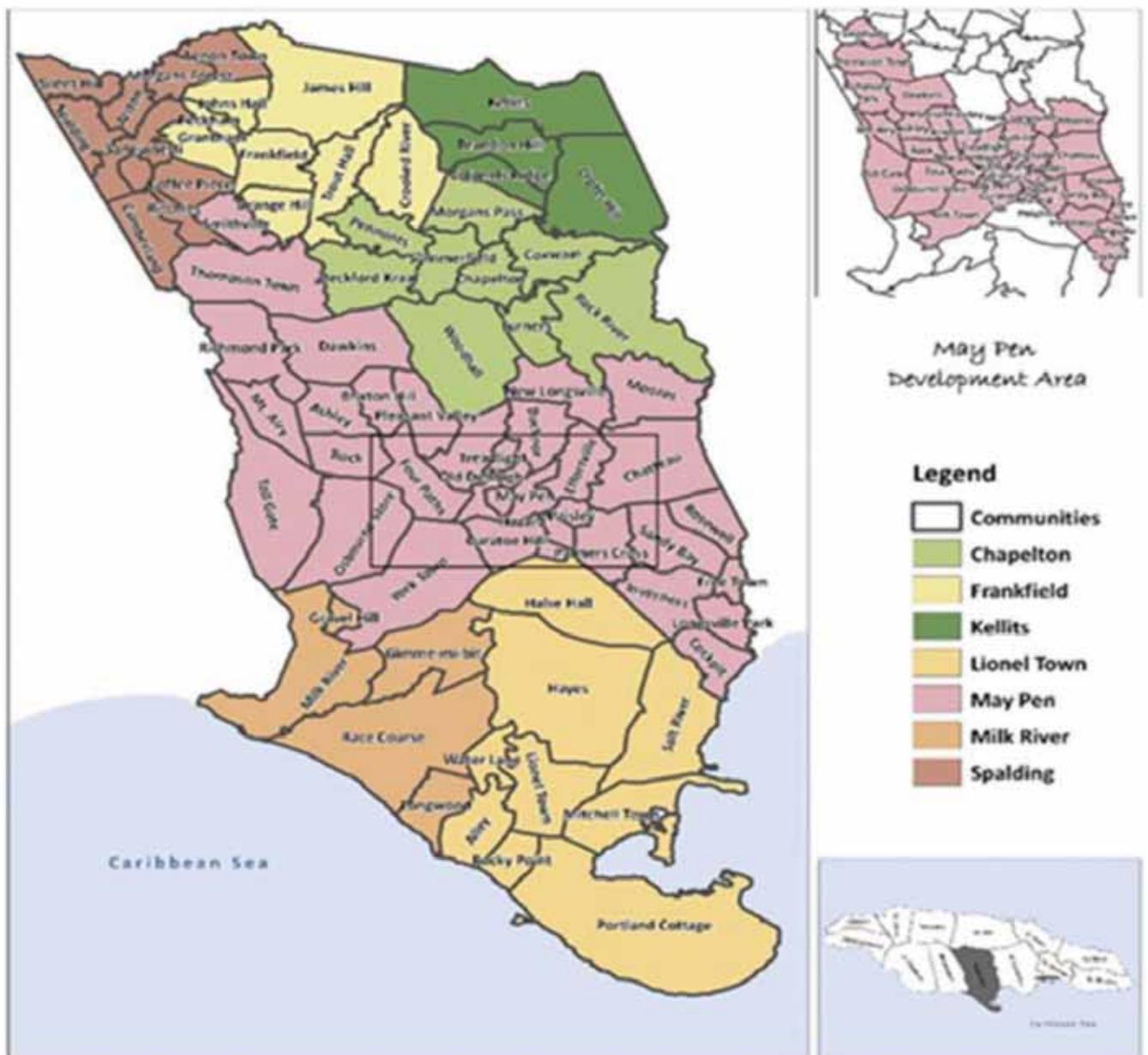
- Act on concerns common to citizens of the parish or on matters requested of it by representatives from member DACs
- Assist communities seeking to establish or revitalize their DAC
- Ensure representation on all relevant bodies and committees concerned with parish and national development.

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### 5.1.2.1.3. DACs

The parish of Clarendon is subdivided into seven DAs: May Pen, Lionel Town, Milk River, Frankfield, Spalding, Kellits and Chapelton. Each of these DAs is a cluster of communities based on locally defined geographic, economic and social boundaries. That is, they are groupings of communities based on geographic, economic and social criteria or commonalities, with the potential for growth to satisfy the needs of the people. The SDC has identified seventy-eight (78) communities, further subdivided into four hundred and sixty-two (462) districts, which constitutes these seven DAs. The May Pen DA is the largest, comprising of thirty-two (32) communities while the Kellits DA is the smallest, having only four (4). See DA Plans and Appendix for complete listings.

These DAs are represented by active civil society groups called DACs. A DAC is a forum that allows stakeholders to come together, share information on communities and build consensus on the priorities within the DA and pursue relevant and appropriate solutions to these issues. These committees are essentially subsets of the CPDCBS.



## 5.0. GOOD GOVERNANCE

### 5.1.2.1.4. CDCs AND CBOs

Governance is also coordinated at the community level through CBOs and CDCs. CBO's are non-profit groups that work at the community or district level to represent the interests of members of the community, focusing on working together towards a common vision for future development. These groups are typically staffed by local members and fall into different categories, e.g. social welfare, safety and security, health and agriculture. They come together to form CDCs. That is, a CDC is a composition of all CBOs and other key stakeholders in a community in a forum which discusses development issues in the community and analyses the causes and solutions, which are then communicated to decision makers. The CDCs are therefore subsets of the DAC, whereas the CBOs are subsets of the CDCs.

As at 2013, the total number of CBOs within the Plan area was 278. Of this number, 120 or 43.2% were located within the May Pen Development Area, while only 4 or 1.4% were located in Frankfield. This list of CBOs was comprised mainly of Citizens Associations and CDCs, which accounted for 18.7 and 16.2 percent of the total, respectively. See Appendix 13 pg. 619. Over 70% of these organizations were active, while 10.9% were inactive, 9.9% dormant and 6.7% partially active. The most dormant structures were located in the Chapelton and Spalding DAs. The reasons cited for a lack of activity include poor attendance to meetings, a breakdown in management structures and a lack of funding.

## 5.2. CURRENT GOVERNANCE POLICIES AND INITIATIVES

### 5.2.1. THE INTERNATIONAL MONETARY FUND (IMF) PROGRAMME

In May 2013, the IMF approved a four-year (4) Extended Fund Facility (EFF) yielding a total support package of US\$932 million to facilitate the GOJ's economic reform agenda to stabilize the economy, reduce debt and create the conditions for growth and resilience. In coordination with the IMF, the World Bank and the IDB, they have each allocated US\$510 million over the same period to support these efforts.

This programme seeks to create a platform for sustainable economic growth by improving the country's fiscal balances and reducing the debt burden. The main elements of the programme are as follows:

- Overall structural economic reforms to reduce unemployment and increase economic growth.
- Initiate actions to increase competitiveness in prices and other areas.
- Immediate adjustment to Government spending and tax policy (fiscal reforms).
- Debt-reduction strategies including debt exchange programme (NDX)
- Improved social protection programmes, which will increase social safety nets to cushion the poor from hardship, while the other adjustment programmes take effect. The Agreement has in place a minimum amount which the Government must spend on social programmes to minimise the effect of the structural reforms.

In early 2013, the Jamaican authorities adopted a comprehensive economic reform program to tackle the challenges of low growth and high debt head-on. Since then, fiscal policy has been tightened further and extensive structural reforms have been implemented, including wide-ranging tax reform and a fiscal rule anchored on a reduction in public debt to 60% per cent of GDP by 2025/26. The authorities also initiated significant reforms in the financial sector, and have allowed the exchange rate to depreciate. In addition, and in view of minimizing the social impact of the reform program, the government has taken steps to strengthen social protection programs, including: through the cash transfer program PATH, a vital component of the social safety net.

### 5.2.2. LOCAL GOVERNMENT REFORM

Since February 1993, the Government of Jamaica has been pursuing a programme of Local Government Reform, aimed at fundamentally transforming the Local Government System in Jamaica.

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This was initiated with the tabling in Parliament of Ministry Paper 8/93. This Ministry Paper envisioned that the creation of a strong and vibrant Local Government is essential to the development of a society in which all citizens enjoy real opportunities to fully and directly participate in, and contribute to the management and development of local communities. It further considered Local Government and Community Development as complementary processes to achieve the objective of empowering citizens to exercise greater self-management.

Since then, the reform process has led to a detailed analysis of the development environment in the country, and has also led to a number of achievements. These achievements include: 1. the establishment of a participatory mechanism through the formation of Parish Development Committees (PDCs), 2. legislative improvements through the amendment of several pieces of legislation, 3. improvement in revenue flows and financial autonomy for local authorities, 4. the implementation of the Parish Infrastructure Development Programme (PIDP), 5. the staging of fourteen 14 one-day parish visioning symposia between February and March 2010 led by the Department of Local Government to allow citizens/communities the opportunity to develop a vision for their parish (footnote date of Clarendon's symposium), which is expected to guide the development of 20-year Sustainable Development Plans for each of the 14 parishes, 6. the development in the capacity of key officers within local authorities in strategic planning towards enabling the development of local level corporate plans, 7. the development of a Memorandum of Understanding (MOU) between the Department of Local Government and the SDC towards managing governance issues in each parish, and 8. the completion of an organizational assessment of the local authorities.

More recently, Local Governance Reform has been focussed on or advanced by: the passage of three (3) strategic laws: (a) the entrenchment of the Local Government system in the Constitution, (a) the promulgation of the new National Building Bill, and (c) the implementation of the Local Economic Development (LED) programme.

### 5.2.2.1. THREE STRATEGIC LAWS

A National Advisory Council (NAC) was established in 2003 to advise Parliament on issues related to Local Government Reform. This facilitated broad stakeholder consultation which has been documented and used along with further research to produce an Interim and a Final Report. One of the fundamental recommendations of the Council's report is the need for comprehensive revision of the legislations relating to Local Government. There are approximately eighty (80) Laws relating to local government, many of which are dated in the 19th Century and require revision. However, given the limited capacity to undertake such a task, three pieces of legislation were identified as critical to achieving the goals of a Reformed Local Governance System. These laws were passed in the House of Representatives in November, 2015, and the Senate in January, 2016.

#### 5.2.2.1.1. THE LOCAL GOVERNANCE ACT

This Act was created by consolidating several existing Acts. The Parish Councils Act (1887), The Kingston and St. Andrew Corporation Act (1923), The Municipalities Act (2003), and The Parochial Elections (Modifications) Act (1979), were all repealed with appropriate provisions once the new legislation was enacted. Additionally, the new Act introduces several new concepts and tenets which reflect a modern approach to local governance and which strengthen local self-management. This will result in Local Authorities becoming more autonomous and responsive to their citizenry.

#### 5.2.2.1.2. THE LOCAL GOVERNMENT FINANCING AND FINANCIAL MANAGEMENT ACT

This Act consolidated several existing Acts, including the Parochial Rates and Finance Act, the Loans (Local Authorities) Act, the Kingston and St. Andrew (Loans) Act, the Provisions in the Financial Administration and

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Audit (FAA) Act, the Public Bodies Management and Accountability (PBMA) Act, and the Contractor General's Act, which was reflected in the legislation, where relevant, to ensure that Local Authorities are compliant with national guidelines. The new Act requires Local Authorities to adopt modern, internationally accepted public sector accounting and financial management practices and to be guided by domestic financial legislations, national fiscal policies and accountability standards.

### 5.2.2.1.3. THE LOCAL GOVERNMENT (UNIFIED SERVICES AND EMPLOYMENT) ACT

The new Local Government (Unified Services and Employment) Act addresses issues that are critical to establishing a competent work-force, with the requisite skills, orientation and commitment to effectively perform the required functions. This Act was created by consolidating five (5) existing Acts which relate to human resources management issues in respect of staff employed in the services of Local Authorities. The Acts consolidated are: the Parish Councils (Unified Services) Act; the Municipal Services Commission Act; the Poor Relief Officers (Unified Services) Act; the Municipal Officers (Surcharge) Act; and the Pensions (Parochial Officers) Act.

### 5.2.2.2. ENTRENCHMENT OF LOCAL GOVERNMENT IN THE CONSTITUTION

The Senate, in July of 2015 passed the Constitution (Amendment) (Local Government) Act which entrenches local governance in the Constitution of Jamaica. Under the Act, local authorities are given the ability to perform regulatory functions to facilitate the management, improvement and development of resources of local communities. It also allows Parliament to make provisions for local authorities to generate and spend their own revenue, and to provide for the holding of local government elections.

### 5.2.2.3. NATIONAL BUILDING ACT

The purpose of the new National Building Bill is to provide a modern legal framework for the effective regulation and management of buildings and building related activity, to ensure safety in the built environment and the promotion of sustainable development. This piece of legislation is urgent since current laws and related building codes are too outdated to apply to modern construction. The new Bill will operationalize a new National Building Code as a separate set of documents which can be more easily updated and amended where necessary and will therefore reduce the risk resulting from natural disasters to the built environment.

### 5.2.2.4. LED

The LED programme is expected to provide the catalyst for the transformation of communities throughout Jamaica. This programme will provide the opportunity to achieve meaningful economic growth and job creation. Resources for the Jamaica LED programme include funding from the CIDA through the CARILED for pilot parishes. Six parishes, including Clarendon were selected (footnote: the others are Kingston, St. Andrew, Portmore in St. Catherine; Manchester and St. Elizabeth) and funding include salaries for a National Country Coordinator and a Local Economic Development Officer (LEDOs) in each of the selected pilot parishes, in addition to support for preparation of LED Parish Plans.

Since 2014, CARILED has assisted the CPC with the establishment of four (4) demonstration projects; namely the Whiteshop Agro Bizz project, the Mocho Greenhouse project, the Milk River Seafood Festival, and the Peckham Bamboo Project.

The White Shop Agro-Bizz Project engages ten (10) youth farmers (2 females/8males) in the White Shop area. The farmers who were trained by RADA, plant sweet peppers, tomatoes and scotch bonnet peppers on six (6) acres of land for the hotel industry and sauce producers. They also have access to a seedling house, irrigation and other start up inputs provided under the project.

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Additionally, the farmers hold fortnightly meetings where the Champion farmer for each quarter is identified, based on set criteria that include neatness on plots, crop yield and crop care.



Figure 92: The reaping of sweet peppers from the plot.



Figure 93: Packing produce from the White Shop Agro-Bizz Project.

The Mocho Green House Expansion Project involved the construction and outfitting of two (2) greenhouses to produce fresh vegetables for sale to supermarkets, hotels and restaurants. Under the project, four (4) farmers are engaged (two per greenhouse), and will operate the houses for a period not exceeding four (4) years, after which the facilities will be rented to other farmers. The project utilizes mined out bauxite areas and is an example of resource pooling; the lands (approx. USD130,000 in value) were donated by JAMALCO and the water catchment and solar panels were made available through the Australian supported Small Grants Programme (Approx. USD86,000).



Figure 94: The two greenhouses that were constructed under the Mocho Green House Expansion Project.

The Milk River Seafood and Jerk Festival is an annual event which was inaugurated in 2014. The event seeks to act as an anchor for tourism within the local area. In addition to providing visitors with succulent and delicious dishes, the festival provides entertainment including a celebrity chef cook-off, live concert, beach netball, volleyball, boat racing and boat rides (See also Improving the Milk River Seafood and Jerk Festival pg. 585).

Under the BPIP, the CARILED and its partners, the OAS, the NHT, the BIMAC and the Peckham Woods CDC, are implementing a community bamboo project. (See Expanding Bamboo Manufacturing, pg. 500)

### 5.2.2.5. THE MEANING OF LOCAL GOVERNMENT REFORM IN THE CONTEXT OF CLARENDON

The full implementation of Local Government reform is expected to create a strong and vibrant Local Government. This means that the CPC will have an adequate and independent source of funding and will

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also have greater autonomy in the management of the local affairs. That is, the CPC will have effective control over its sources of revenue, and several functions now being performed by Central Government will become its responsibilities. Clarendonians will also have real opportunities to fully and directly participate in and contribute to the management and development of the local communities. To this end, Local Government Reform will lead to improved local accountability and transparency, and better service delivery.

### 5.2.3. CONSTITUTIONAL REFORM

Constitutional Reform has come on the agenda as a necessary strategy for good governance in Jamaica. The Constitution of Jamaica was written in the early 1960s (1961-1962) and has been the subject of constant deliberations for the past two decades, in light of the changing reality of Jamaican politics, as well as the local society. The reform process actually dates back to 1991, and although the matter had been under active debate since then, constitutional amendments have been slow in coming. The Charter of Fundamental Rights and Freedoms which was passed in Parliament in March 2011 has been the only amendment made to the Constitution thus far. The process of constitutional reform will consider a number of other issues including: the change from a Constitutional Monarchy to a Republic; the replacement of the Judicial Committee of the Privy Council as the final court of appeal; the entrenchment of local government in the Constitution; and the separation of powers.

Constitutional reform will change the way in which governance is administered in the parish. It will change the way in which the judicial system performs.

### 5.2.4. PUBLIC SECTOR REFORM

Jamaica has recognized that an efficient Public Service is important to the development of the country. Since the 1950's, a number of reports have been produced dealing with some aspects of public sector reform, and the systems and processes of public sector have also been constantly upgraded to align with emerging demands. The first major initiative was in the 1970's through the creation of the Ministry of the Public Service which was charged with the responsibility of modernizing management practices in the public sector. Other initiatives include the Administrative Reform Programme, the Public Sector Modernization Project (PSMP) 1996-2002, and the Public Sector Modernization Vision and Strategy 2002-2012.

Current national and global imperatives have prompted the Government to accelerate the modernization and restructuring of the public sector to become smaller, more efficient, flexible, responsive and accountable. This initiative commenced with Cabinet's approval of the Medium Term Action Plan (MTAP) of Ministry Paper 56/2002: Government at Your Service--Public Sector Modernization Vision and Strategy-the Government's blue print for public sector reform by 2012, in the year 2009. Under the MTAP, four (4) strategic areas are being pursued, with programmes being developed and implemented around these. These four areas are Service Delivery; Governance and Accountability; Managing for Results; and Change Management and Communication.

Public Sector Reform is projected to bring significant benefits to the Plan Area. Ministries and other Government Departments and Agencies will see improved management systems, and customer service structures for the delivery of efficient public service. Public Sector Reform will ensure the effective management and use of public funds, in providing high-quality and well-functioning educational, healthcare, social security, and other local systems. In addition to that, it will ensure that managerial and technical staff are fully qualified, and workers display a high level of efficiency. Local public sector operations will become more efficient, creating a climate capable of supporting the qualitative development of the local society.

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### 1.2.5. JUSTICE REFORM

The Jamaican Justice System Reform Project (JJSR) was established by the Government of Jamaica in 2006 to undertake a comprehensive review of the state of the country's justice system and to develop strategies and mechanisms to facilitate its modernization. A subsequent report produced in 2007 characterized it as weak and inefficient; a situation which is augmented by the high levels of crime and violence. Following this, significant progress has been achieved as the Government attempts to put in place a "Jamaican justice system which is available, accessible, accountable and affordable on a timely, courteous, respectful, flexible, fair and competent basis for all". The strategies implemented include:

- The development of the RJ System. RJ is a different way of thinking about crime and conflict; it is a process whereby all the parties with a stake in a particular offence come together to collectively resolve how to deal with the aftermath of the offence. The RJ Policy was developed and approved by Cabinet in 2013, and the programme has been implemented in several communities across Jamaica. Four (4) communities, including Effortville, were selected for the pilot which was expected to last for approximately eighteen (18) months, after which the system was to be replicated nationally. In April, 2012, Canaan Heights was among three (3) additional communities added to the Programme. A restorative Justice Centre which serves both communities has also been opened in May Pen, and a number of local citizens, including Justices of the Peace, have benefited from training in the administration of the programme.

This RJ programme seeks to, among other things:

- Reduce criminal case backlog by diverting cases from the formal justice system and also resolving conflicts at the community level; and
- Increase public confidence and trust in the justice system by fostering greater participation in and ownership of RJ processes by communities and victims;
- Increasing the number of Justices of the Peace. Over the last few years a number of justices of the peace (JPs) have been commissioned to enhance the dispensation of justice in the parish.



Figure 95: Custos of Clarendon, the Honourable William Shagoury, commissioning a JP at a Swearing-In Ceremony in 2015.

Full justice reform will bring a number of benefits to individuals, business and the parish as a whole. These benefits include:

- I. The delivery of timely decisions. This will ensure that victims receive appropriate redress, and will also be more attractive to investors.
- II. A decrease in violent crimes through a more effective justice system. This will also reduce the amount of time employees are away from work due to injuries and could reduce the number of individuals who migrate from the parish, as one of the push factors will be eliminated. This should foster a more productive workforce.
- III. A reduction in the time people will spend away from productive activities to participate in the justice system as parties, accused persons, witnesses or jurors.

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- IV. A reduction in security costs, including the cost incurred by businesses and private individuals. In the case of business, this will lead to lower cost of production, which may be passed on to consumers.
- V. The creation of a healthy society through enhanced psychological well-being.

### 5.3. ISSUES AND CHALLENGES

#### 5.3.1. POOR POLITICAL REPRESENTATION AND LACK OF CITIZEN PARTICIPATION IN GOVERNANCE

According to the SDC (2014), poor political representation is one of the most compelling governance issues plaguing the Clarendon Development Area. This finding was supported by the data gathered from the eight (8) Situation Validation and Visioning Workshops held across the parish, as well as a survey undertaken by CARILED. The local citizens have unanimously claimed that the majority of the constituencies and local government divisions in the parish have a history of poor political representation. They explained that some of the elected political representatives totally neglect their constituency or political division, while others only make sporadic visits.

To this end, the residents believe that their views, opinions, needs, interests, etcetera, are not being adequately represented in the House of Parliament or in other political settings. As a result, decisions are made using a top down approach rather than a bottom up approach which is fundamental to local sustainability, and is also epitomized by Vision 2030. Citizen participation in governance is lacking, and decisions usually reflect the interests of political parties rather than that of the people.

In addition to that, rural residents are generally of the view that political representatives and governments wilfully neglect the rural areas. They feel that the political directorate is ignoring their need for public infrastructure investments which are necessary for achieving and sustaining an acceptable standard of living and contribute to economic development in the 21st century. It is believed that the urban areas of the parish are usually the priority for infrastructural development, leading to a deficiency in rural areas<sup>131</sup>.

Harande (n.d.) has however noted that any nation that neglects the development and empowerment of the rural communities should not expect meaningful development. This is due to the very important linkage which exists between urban and rural areas. Hence, there is a need for a balanced approach to development which encompasses both rural and urban populations and the inter-connections between them.

Further consultation revealed that the expectations of citizens is a factor contributing to the perceived generally poor quality of political representation in the parish. It was revealed that a number of persons have come to expect handouts from elected officials and when this does not happen, representation is classified as poor. Therefore, ignorance towards the roles and responsibilities of the political directorate may be an issue.

#### 5.3.2. POLITICAL TRIBALISM

The local society is showing signs of political polarization which is negatively impacting the growth and development of the parish (SDC, 2014). Clarendon, like the rest of Jamaica, effectively has a two-party system, which means that there are two dominant political parties. Some residents hold that they are born supporters of one of these political parties, while others hold that they are hard-core supporters of the other. As a result of these strong party bonds, many residents maintain that the rival political party has done nothing good for the parish, merely because they are supporters of the other party. Similarly, some political representatives will never support policies and decisions of the rival political party, regardless of its importance. This issue of political loyalty and political polarisation often make it difficult to reach consensus on policies that are in the broad interest of the public and necessitate a long time planning horizon.

<sup>131</sup> This deficiency contributes to brain drain. See 3.1.1.6.1. Brain Drain, pg. 242

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### 5.3.3. SLOW PACE OF LOCAL GOVERNMENT REFORM

For several years, Jamaica has been in the process of reforming its Local Government System to create a more decentralized governance framework. This reform initiative is very significant in light of the fact that sustainable development is generally achieved against the backdrop of an efficient Local Government System. However, despite progress on some fronts, there are uncertainties and delays, and the local authorities, including the CPC, are yet to take over several of the functions being performed on their behalf by central government.

Many Clarendonians are displeased with the slow pace at which this reform process is moving. They are displaying a high level of eagerness for the opportunity to fully participate in the local government process. On January 15, 2014, several hundred residents formally joined thousands of Jamaicans in the call for the swift passage of legislation relating to Local Government Reform<sup>132</sup>, by signing a petition for their Members of Parliament and Councillors to apply urgency to the passage of the legislation. This signing took place at the CDC conference held at the St Gabriel's Anglican Church in May Pen, which was organised by the SDC, in partnership with NAPDEC and the NIA. The conference was one in a series held island wide to heighten participants' knowledge of the importance of local governance and its processes; and the link between governance and economic development, as well as to increase public advocacy for timely passage of the aforesaid legislation.

### 5.3.4. UNCERTAINTY IN THE STATE OF PREPAREDNESS OF THE CPC FOR LOCAL GOVERNMENT REFORM

Despite the general enthusiasm for Local Government Reform, there are concerns over the state of preparedness of the local authority, the CPC, to embrace greater autonomy and responsibility in the management of its affairs. These concerns stem from chronic deficiencies in the performance of the Local Authority in the past. Chief among these is the inability of the Council to curtail squatting.

The incidence of squatting in the parish is very high. See 3.2.3.3. Squatting, pg. 250. This is despite the fact that the local authority is responsible for monitoring existing squatter settlements to ensure that they do not expand, and that new settlements are not established. Furthermore, permits for the construction of buildings should come from the Planning Department of the CPC. This apparent failure of the Council in this regard may be attributed to a lack of resources, including human resources. At present, there are only sixteen (16) municipal officers assigned to the Council, who have the responsibility of maintaining public order, undertaking revenue enforcement activities and enforcing the various Laws that govern the activities of the Council. This number appears to be inadequate to properly monitor the 1,196 square kilometres (km<sup>2</sup>) of land which make up the parish. This issue is made worse by the fact that these officers only have one (1) unit (motor vehicle) available to them to patrol the entire parish.

One of the specific objectives of Local Government Reform is to up-grade the institutional capability of the Local Authorities ensuring that they are able to perform their functions in an efficient and cost-effective manner, and are empowered to take on the new challenge of providing leadership and coordination in the process of community development and empowerment. The MLGCD has an on-going capacity building programme as part of the process, and significant progress has already been made. An organizational review of the Local Authorities has been commissioned along with completion of the diagnostic report. Various capacity building programmes have been conducted with the Councillors and Administrative staff of the Council. An assessment was also conducted with a view to strengthen the Local Public Accounts Committee.

<sup>132</sup>. The three strategic laws have now been passed.

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### 5.3.5. LOW PROPERTY TAX COMPLIANCE RATES

Property tax compliance rates in the parish of Clarendon is generally below 65 per cent which is quite low, when compared to localities in the developed world which exhibit compliance rates in the high ninetieth percentile. Data obtained from the MLGCD (2014) showed that arrears to the CPC has generally been increasing exponentially since the financial year 2009-2010 (See Table below). As at the period ending June 2014, the Council was owed in excess of 162 million dollars (\$162 055 577. 49) in property taxes by 22 communities. One of these communities, Longville Park housing scheme, owed in excess of 30 million dollars, while another, Mineral Heights, owed 21 million dollars.

<b>2009- 2010</b>	<b>2010- 2011</b>	<b>2011- 2012</b>	<b>2012- 2013</b>	<b>Total Arrear s</b>
71,020, 132.15	117,466 ,592.91	129,704 ,244.90	126,944 ,839.95	632,037 ,218.30

Source: MLGCD (2014)

As a result of the low property tax compliance rates, the revenues of the local authority have been unable to fund the costs of the services which are required locally. Property tax is the single largest source of revenue for the Council and is used to fund public services such as solid waste collections and disposal, streetlight services, community support and beautification, minor and social water supply, and the maintenance of parochial roads, in addition to supporting the Councils' Administration. The negative situation resulting from the large tax gap is further exacerbated by escalating costs of the aforementioned services, particularly streetlight services. As a consequence, many local areas suffer from inefficient garbage collection, lack of streetlights and poorly maintained parochial roads.

Based on consultations, the low property tax compliance rates are linked to two (2) fundamental factors: a weak deterrent policy and low tax morale, the latter being twofold. The standard argument goes that if the probability of detection of tax evasion is low and punishment is not punitive, people will have every incentive for not paying taxes. In addition to that, a taxpayer is strongly influenced by his perception of other taxpayers (or potential taxpayers). Therefore, if a taxpayer believes that tax evasion is high, as is the case in Clarendon, tax morale decreases and the citizen who wants to pay his taxes will have little motivation to do so. Furthermore, a number of residents (especially those from the most delinquent housing schemes) have cited non-payment as a protest against the CPC over its failure to provide basic services.

### 5.3.6. CRIMINAL GOVERNANCE STRUCTURES

The formal system of governance in Clarendon is being undermined by informal governance structures. According to the police, there are several criminal networks (gangs) operating in primarily informal settlements in and around the parish's capital, May Pen. The presence of these gangs essentially creates garrisons. These garrisons exhibit elements of autonomy, in that they are "states within the state." They function as autonomous self-governing entities, under the control of Dons, and the Jamaican State has very little authority or power in these areas. As a result of this, some of these communities have high rates of utility theft, and it is also difficult to implement Government programmes, such as community policing.

In the past, these criminal networks have also competed directly with the local authority. The former Superintendent In Charge of the Clarendon Police division, Dayton Henry, was quoted as saying that a particular gang was cheating the CPC out of millions of dollars annually, as it took control of the May Pen Bus

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Park and established an extortion racket<sup>133</sup> (Tobias, 2010). Gangs were also believed to be charging fees to vendors and collecting “taxes” from local businesses in return for security services.

### 5.3.7. INFRINGEMENTS ON HUMAN RIGHTS

Infringements on human rights in the Plan Area are evidenced by issues such as child labour and police excesses.

#### 5.3.7.1. CHILD LABOUR

A dipstick survey conducted by the Child Labour Unit of the MLSS in 2013 revealed that the incidence of child labour in the parish of Clarendon is quite high (Jamaica Information Service (JIS), 2013). The survey found that the parish has one of the highest rates in Jamaica, with over two hundred (200) children engaged in the practice. According to Cooke (2002), child labour in Clarendon is overwhelmingly a male phenomenon; approximately 75 per cent of those engaged in the practice are males. The average age at which these children start working is just before their eleventh birthday, with the vast majority having the consent of their parents or guardians (Cooke, 2002).

A large number of the children are engaged in domestic labour, while others are involved in agriculture, vending, and the sex industry (JIS, 2013). Cooke (2002) concluded that the main causes of the phenomenon in the parish are poverty and the need for the very poor children to assist in sending themselves to school. He found that a large per cent of the guardians of child labourers, who also happen to be household heads, are themselves unemployed, while the rest can be described, in the main, as marginally employed.

Approximately a half of these children are sure that they are unhappy with having to work (Cooke, 2002). However, there is some disparity between the urban and the rural areas; more than two-thirds (2/3) of the children living in the rural areas are unhappy with having to work, while just under a half in the urban areas are unhappy. The disparity is partly explained by the abysmally low returns for child labour reported by the children in the rural township. Besides, the nature of the labour done by the rural based children is more back-breaking than that done by their urban based counterparts.

Child labour in Clarendon is primarily a part-time activity (Cooke, 2002). However, the aforementioned survey conducted by the Child Labour Unit of the MLSS revealed that of the total number of child labourers in the parish, approximately 143 children were not attending school. This finding supports that of Cooke (2002) which established that there is a clear literacy problem among at least a third of the population of working children in Jamaica. Additionally, just over 30 per cent of these working children in Clarendon can be considered high risk, posing a serious social problem (Cooke, 2002).

At the Situation Validation and Visioning Workshops, many parents and other adults admitted to not knowing that child labour is a violation of the rights of a child and also an illegal act. This situation therefore emphasizes a need for increased public awareness and education.

#### 5.3.7.2. POLICE EXCESSES

Some local citizens have also cited the abuse of power by members of the security forces and a lack of police accountability as infringements on their rights. They claim that the security forces periodically utilize excessive force, including lethal force, in their conduct. See 3.3.1.2.5. Lack of Trust in Police, pg. 260

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133. Normality has since returned to the bus park with the intervention of the police.

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### 1.3.8. INEFFICIENT PUBLIC SECTOR

There are some general concerns regarding the quality of public institutions and the efficiency of their operations not just in Clarendon, but in all parishes of Jamaica. This is despite the fact that the Jamaican public sector is constantly being strengthened and reformed under the Public Sector Modernization programme. It is believed that the public sector continues to be lacking in some critical capacities, which is evidenced by weak systems and processes within its management and administrative structures (PIOJ, 2012). As a consequence, corruption, overregulation, excessive bureaucracy and red tape, improper management of government contracts, and lack of transparency and accountability continue to exist and impose exorbitant transaction costs on citizens and businesses, which negatively affects competitiveness and growth (PIOJ, 2012).

Inefficiencies in the development approval process, have been frequently cited by locals to support the above argument. The development approval process has been described as “excessively bureaucratic and time consuming.” In 2007, a review spearheaded by the Cabinet Office was conducted and revealed a number of process inefficiencies that complicated and delayed the development of the application process. This gave rise to a revamping of the entire application process, which focused primarily on achieving a strict ninety (90) day response timeframe for all applications. However, in a media release on December 4, 2013, NEPA noted that the former Minister of Water, Land, Environment and Climate Change, Hon. Robert Pickersgill, has admitted that previous efforts to reduce the cumbersome, inefficiency and red tape in the development approval system have not been effective.

Nonetheless, the government is seeking to fully implement the AMANDA system. The AMANDA is a web-based application management system which is aimed at providing greater transparency in the development approval process. Using the system, applicants for development permits will be able to monitor and track the progress of their applications as they pass through the various stages of the approval process, which may include revision by multiple agencies. Consequently, applicants will be able to hold people/agencies accountable to the time frames on which they should deliver.

Efforts to improve the efficiency of the public sector in the parish also include the establishment of the Clarendon Inter-Agency Network (CIAN). This network is a multi-agency partnership which comprises approximately 20 government agencies which come together to share resources and ideas in a bid to ensure efficient and effective service delivery. These agencies include the CPC, the SDC, the Clarendon Police Division, the NSWMA, and the CDA. Among the achievements of the CIAN are the hosting of customer service workshops for its partners and the implementation of the Clarendon Rural Safe School Bus Programme.



Figure 96: Students exiting one of the buses used in the Clarendon Rural Safe School Bus Programme

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### 5.3.9. PERCEPTION OF CORRUPTION

Through the Visioning Symposium and the Situation Validation and Visioning Workshops, Clarendonians have unanimously agreed that corruption is the largest single impediment to the attainment of sustainable development in the Plan Area. They claim that corruption is seriously undermining the rule of law in Jamaica, as public officials frequently abuse public offices for private gains, despite the presence of three anti-corruption agencies: the Office of the Contractor General, the Parliamentary Integrity Commission, and the Corruption Prevention Commission. According to the residents, this scourge is eroding the quality of life in the local society, as it is denying people access to basic entitlements, violating human rights, and reducing investor confidence.

Their claims are consistent with the findings of Transparency International, the global civil society organisation leading the fight against corruption. In the latest annual Global Corruption Perception Index released by the organisation, Jamaica is ranked 69th out of the 168 countries, 16 places higher than it did on the previous index. The score indicates the perceived level of public sector corruption on a scale of 0-100, where 0 means that the country is perceived as highly corrupt and 100 means it is perceived as very clean. Jamaica received a score of 41 out of 100 which means it is very corrupt. It should be noted that for the past twelve (12) years, the country has averaged an abysmal corruption perception score of approximately 36 out of 100, and has never scored higher than 40 out of 100 in any year.

A lack of transparency in public sector operations is believed to be one of the major factors contributing to the perceived high levels of corruption. Residents are alleging that governments are generally unwilling to be transparent and do not actively support their; the citizens' right to information. This allegation is made despite the Access to Information Act 2002, which gives members of the public right of access to view and copy official documents which are housed by government entities<sup>134</sup>. The residents charged that simply making information available is not sufficient to achieve transparency. They explained that information should be managed and published so that it is relevant and accessible and also timely and accurate. In this context, relevant and accessible mean that information should be presented in plain and readily comprehensible language and formats, appropriate for different stakeholders, whilst retaining the detail and disaggregation necessary for analysis, evaluation and participation. That is, information should be made available in ways appropriate to different audiences. In the same vein, timely and accurate, means that information should be made available in sufficient time to permit analysis, evaluation and engagement by relevant stakeholders. This means that information needs to be provided while planning, as well as during and after the implementation of policies and programmes, and it should be managed so that it is (up-to-date), current, accurate, and complete.

The Constituency Development Fund (CDF) has been highlighted as a major source of information opacity and potential corruption. The Fund was established as a means of improving the effectiveness of Members of Parliament (MPs) by providing a funding mechanism for constituency projects. The main thrust of the Fund is to promote human and infrastructural development at the community and constituency levels through the establishment of sustainable development projects. This is to be done by streamlining economic activities at the Constituency level; fostering local governance, including good environmental stewardship; improving service delivery and bringing government and the public closer together; and increasing the effectiveness of the elected representative. However, Clarendonians claim that they are generally unaware of how the funds are being spent. Additionally, they asserted that they are largely uninvolved in plans which include funding from the CDF. For these reasons, they fear that the monies are being channelled into partisan politics and are demanding a higher level of transparency.

In addition to a lack of transparency, a lack of accountability is also believed to be a significant factor contributing to corruption. Residents claim that due to the lack of transparency, they are generally unaware

<sup>134</sup>. And which do not fall within the exempt categories.

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of what is to be done, what is actually being done, who is to do it, when it is to be done, and the rules that govern the process. It is therefore difficult for them to monitor and evaluate any progress being made within the parish. Furthermore, it is difficult for them to hold anyone accountable for their actions and ensure that there is redress when duties and commitments are not met.

Nevertheless, there is some amount of work being done to address the corruption issue. Following a fairly recent investigation which led Contractor General, Dirk Harrison, to recommend that an accountability framework be created and implemented to clearly outline the reporting relationships and obligations of officers at Parish Councils, the MLGCD has noted that it is working to implement the same. At the same time, the GOJ is working on a legislation to establish a single anti-corruption commission which will merge the three existing agencies. This single anti-corruption agency is expected to have prosecutorial powers. The GOJ is also in the process of implementing Local Government Reform which should result in a higher level of transparency and accountability.

Clarendonians are however calling for more social accountability. This is an approach towards building accountability that relies on civic engagement; that is, it is an approach in which ordinary citizens and/or civil society organizations participate directly or indirectly in exacting accountability.

### 1.3.10. SLOW PACE OF JUSTICE REFORM

Many justice reform initiatives have been introduced in specific areas and other initiatives are currently underway. Unfortunately, these measures have been piecemeal for the most part, rather than applied to the justice system as a whole. Consequently, the old structures and the traditional ways of doing things remain basically the same and the court system is plagued by a huge backlog. Consultations revealed that there are many Clarendonians awaiting trial and the dispensation of justice for various matters for more than four years. This therefore means that there is the need for a cohesive and wide ranging strategy to modernize the justice system.

### 5.3.11. PLANNING AND IMPLEMENTATION ISSUES

Through the Visioning Symposium, residents claimed that much of Clarendon's sluggish development may be attributed to a lack of forward planning on the part of the relevant authorities. They claim that development in the parish has been largely reactive rather than proactive, and the Local Authority is primarily concerned with development control in lieu of development planning. According to the residents, the local area is characterised by a number of social, economic and environmental issues which could have been prevented or minimised with proper planning. Some of the issues highlighted were traffic congestion, flooding, crime and violence, poverty and the shortage of recreational space. The residents also claim that this lack of forward planning is a serious issue inhibiting response to the aforesaid problems, and it further serves as a disincentive to investment. Such a situation only serves to greatly reduce confidence in the ability of the state to manage the local area.

The literature reviewed however revealed that several development plans which relate to the local area have been prepared. These plans include the South Coast Sustainable Development Plan, May Pen Urban Plan, and the Portmore to Clarendon Park Highway 2000 Corridor Development Plan 2004-2025. Nonetheless, research has shown that none of these Plans have been implemented in its entirety. According to the Commonwealth Secretariat (2002), Jamaica, including Clarendon, is characterised by a plethora of Development Plans and strategies, the majority of which have never been fully implemented. These Plans usually fail as a result of four (4) factors: 1) they fail to build consensus amongst the main stakeholders, 2) they do not specify the mechanisms and the responsibilities for implementation, 3) they fail to address the crucial issue of mobilization of resources and 4) they also rely mainly on Government to find resources from existing budgets (Commonwealth Secretariat, 2002).

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### 5.3.12. LACK OF INTEREST IN COMMUNITY BASED ORGANIZATIONS

Clarendonians generally show apathy towards the close to 300 existing community based organisations in the parish. The executives of these clubs, societies and groups have labelled the local population as “hard to reach,” despite meetings being held at central locations, at perceived convenient times and with adequate notification. As a result of this lack of interest, routine meetings of these organisations are generally poorly attended. This essentially creates a disconnect between the CBOs and the local population; an issue cited as one of the factors contributing to the lack of social cohesion in the local society. That is, CBOs help to foster social cohesion, but the poor attendance rates means that this function is not reaching a significant enough portion of the local population. The situation is also undermining efforts to decentralize the local governance framework, as strong CBOs are essential to developing an effective Local Government. That is, citizen participation through community based organisations is at the root of an effective system of Local Government.

### 5.3.13. MORAL AND SOCIAL DECAY

The Situation Validation and Visioning Workshops revealed that there is increasing disregard for the norms of civil society by a growing number of Clarendonians, especially the youth. According to the residents, the parish of Clarendon is suffering from a moral breakdown, which is contributing to a lack of civic pride and a noticeable increase in social disorder. It has become customary to see adult males urinating in public spaces, people throwing garbage on the ground beside the bins, vendors blocking roadways within the town centres, public passenger vehicles breaking traffic rules, pedestrians jaywalking on busy roadways, adults and children wearing inappropriate clothing into business establishments, and a wide range of other anti-social behaviours.

According to the locals, the issue is stemming from a number of different sources. Chief among these is a weakening of the rule of law in Jamaica. According to the PIOJ (2012), there has been much progress in the implementation of projects and programmes geared towards improving the face of governance in Jamaica, but the World Bank’s Worldwide Governance Indicators revealed that indices relating to rule of law has been unresponsive. Currently, the rule of law in Jamaica is being weakened by: the slow pace in the development of appropriate guidelines, laws or procedures for adherence to effective governance principles; outdated legislation; a lack of resources to monitor and enforce the implementation of laws, policies etc.; escalating crime and violence; and the persistence of garrison communities (PIOJ, 2012). Other factors cited by the residents as contributing to the moral and social decay are poor parenting, poverty, poor leadership, poor role models, media corruption, music influences, and a disconnect between the church and the youth population.

## 5.4. PARISH STRATEGIES

### 5.4.1. STRATEGIC OBJECTIVE #226

**To review and update the DA boundaries where necessary to support changes in the population distribution.**

With the implementation of this Plan, the relevant authorities will be encouraged to periodically review and update the boundaries of the Parish’s Development Area where necessary. As explained earlier, DAs are groupings of communities, based on geographic, demographic, economic and social criteria, with the potential for growth, and where persons gravitate towards their centres or hub for their socio-economic activities. With the implementation of this Plan, urban development will be concentrated within specific areas (see 2.4.3.1.1. STRATEGIC OBJECTIVE #98A, pg. 228), resulting in the May Pen DA having more than one hub of socio-economic activities. It therefore means that the existing May Pen DA will not conform to the definition of a DA and must be subdivided in such a way that only one growth centre or hub is found within each boundary. . This means that growth centres must be fully established before the boundaries of the DAs are changed.

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With the formation of the new DAs, the supporting DACs will have to be established. The relevant authorities will therefore provide the necessary support in establishing these committees. Projects, programmes, and other responsibilities being managed by the May Pen DAC (or any other DAC) which falls within the boundaries of a new DA will be transferred to the newly established DAC on a phased basis.

### RECOMMENDED POLICIES

- Projects, programmes, and other responsibilities being managed by the May Pen DAC (or any other DAC) which falls within the boundaries of a new DA will be transferred to the newly established DAC on a phased basis

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Monitor growth within designated growth centres and realign DA boundaries when appropriate.	Short to Long Term	CPDCBS, SDC
Support the development of DACs within newly established DAs.	Short to Long Term	CPDCBS, SDC

### 5.4.2. STRATEGIC OBJECTIVE #227

**To strengthen the institutional capacity of the Local Authority to ensure the effective and efficient delivery of services.**

The strengthening of the institutional capacity of the Local Authority is integral to local sustainable development. The CPC is currently under-resourced and will be the key actor in promoting the CLSDP and the sustainable development of the Parish. Therefore its institutional capacity must be developed in order to ensure that it is able to accommodate additional responsibilities and perform all functions in an efficient and cost-effective manner. This process is ongoing under the Local Government Reform and Public Sector Reform initiatives and will be supported with the implementation of this Plan.

In further strengthening the institutional capacity of the Local Authority, consideration will be given to several key areas. These areas are: ICT, economic development planning, enforcement (including environmental enforcement), marketing and GIS planning. The relevant authorities will also be encouraged to speedily complete the implementation of the AMANDA platform, and explore the feasibility of implementing an Online Application System for certain approvals.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Continue to strengthen the institutional capacity of the CPC through the provision of resources, including human resources. Particular emphasis should be placed on information technology, economic development planning, enforcement (including environmental enforcement), marketing and GIS planning	Short to Long Term	MLGCD, CPC

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Speedily complete the implementation of the AMANDA platform.	Short Term	CPC
Explore the possibility of implementing an Online Application System for party permits, advertisement/ sign permits and other approvals.	Short to Medium Term	CPC

### 5.4.3. STRATEGIC OBJECTIVE #228

#### To increase the source of revenue for the CPC to ensure the effective provision of services

In order to ensure the effective provision of services by the Local Authority, the revenue stream of the CPC must be improved. This will be achieved mainly by ensuring publicly run facilities are financially sustainable, increasing the provision of self-financing services, and improving revenue flows from property tax. However, other additional strategies such as implementing Business Improvement Districts (BIDs) or Special Improvement Districts (SIDs), crowd-funding and cost recovery will be employed, particularly to ensure the sustainable financing of the CLSDP.

#### 5.4.3.1. STRATEGIC OBJECTIVE #228A

##### To ensure public run facilities are financially sustainable.

A significant portion of the CPC's revenues should come from self-financing services which include the operation of facilities such as public cemeteries, markets and transportation centres. However, most of these facilities within the parish are operating at a loss; that is, they are consuming rather than generating revenues. In order to improve revenue generation and ensure the efficient provision of goods and services within the parish, the Local Authority will therefore seek to ensure that these facilities are at least able to sustain themselves. This objective will be achieved through policy implementation and enforcement, as well as the use of modern efficient technologies to reduce operational costs where possible. The policies that will be implemented and enforced will seek to deter delinquency in the payment of fees to utilize the requisite facilities, and also set out stringent penalties for non-compliance. With regards to technological applications, the Local Authority will explore the feasibility of utilizing solar energy, LED lighting, rainwater harvesting, among other things, within markets, transportation centres, and any other public run facilities where this is possible.

#### 5.4.3.2. STRATEGIC OBJECTIVE #228B

##### To increase the provision of self-financing services.

In order to adequately finance its operations, the CPC will seek to expand its sources of revenue by increasing the provision of self-financing services. With the implementation of this Plan, there are several activities which the CPC may undertake in order to achieve this objective. For instance, this Plan is encouraging the elimination of storefront and on-street parking in several areas of the town of May Pen and the development of a transportation park for private motor vehicles. The CPC may therefore develop and operate the transportation park, as well as a metro pound system for the towing and impounding of vehicles from no-parking areas. Additionally, the Council may explore the feasibility of installing parking meters where on-street parking is permitted (SEE 2.2.1.14.1.3. Strategic Objective #15, pg. 90). Other areas where the CPC may increase its offering include: the provision of additional markets in places such as Lionel Town and

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Longville Park; the provision of public cemeteries, including chapels, across the parish to support the establishment of growth centres which will be impacted by the Burial within Towns' Limit Act; and increasing the number of designated vending areas in the parish.

### 5.4.3.3. STRATEGIC OBJECTIVE #228C

#### **To improve revenue flows from property tax.**

The Strategy to improve revenue flows from property tax include (i) improving compliance and (ii) increasing land ownership.

#### **I) Improving Compliance**

Property tax is the single most important source of tax revenue for the CPC. Despite showing improvements in the last few years, compliance rates continue to be quite low by international standards. At the same time, the demand for goods and services from Local Government is increasing due to population increase and modernisation. Since the culture of non-payment is believed to be the primary cause of the non-compliance, much emphasis will be placed on enforcement in improving the compliance rate. However, continuous public education and service improvements will be a part of the strategy.

Service improvements and public education are prerequisites for improving property tax compliance. Service improvements are necessary to make compliance activities simple, easily accessible and of high quality, while public education is essential to assist stakeholders in understanding their tax obligations and rights to ensure compliance with property tax laws. Initiatives related to these areas are currently on-going and the relevant authorities will be urged to continue their efforts.

Enforcement efforts which seek to detect and deter potential non-compliance are also ongoing, but is in dire need of an alternative approach. In response this Plan is advocating that the feasibility of payroll deductions be explored in the payment of property taxes. That is, the relevant authorities will explore the possibility of deducting property taxes from employees' salary/occupational pension where an individual elects to have this happen or where the individual fails to make payments over a prescribed period. Nevertheless, should this be found feasible, appropriate policies will be incorporated in order to protect both employers and employees in extenuating situations such as where an employee has insufficient pay in a particular pay period to meet property tax payments or where an employee is on unpaid leave. Additionally, the relevant authorities should explore the possibility of seizing and selling personal properties, including land, to recover property tax revenues.

#### **II) Increasing Land Ownership To Boost Property Tax Revenues**

Squatting is a longstanding issue within Clarendon. A number of squatter settlements have developed over time, with some existing for decades, thereby becoming part of the regular development of the parish. Despite lacking formal titles, these individuals have gained some form of rights to the land and therefore regularisation has been proposed as part of the strategy to address the issue. Whilst the strategy to regularise tenure may be viewed mainly as a step towards addressing the socioeconomic conditions of the residents, it should also be viewed as a critical part of the effort to increase the revenue of the Local Authority. The regularisation of tenure will result in more persons having titles to land, and importantly, more of the parish's land becoming taxable. Hence, increasing land ownership will be adopted as part of the strategy to ensure the availability of adequate sources of revenue for the CPC.

### 5.4.3.4. STRATEGIC OBJECTIVE #228D

#### **To undertake bids, crowdfunding, resource pooling and cost recovery.**

BIDs, Crowdfunding, Resource Pooling and Cost Recovery are additional approaches that will be undertaken by the CPC in order to ensure adequate sources of financing. However funds from these activities will be used

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primarily to implement projects under the CLSDP and not to carry out regular functions such as the payment of bills for street lighting and garbage collection. See 7.1.4. Sustainable Financing, pg. 589.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Implement and enforce policies to ensure that self-financing facilities are at least self-sufficient.	Short to Long term	CPC
Explore the feasibility of utilizing solar energy, LED lighting, rainwater harvesting, among other things, within markets, transportation centres, and any other public run facilities where this is possible, to reduce operational expenses.	Short to Long term	CPC, MLGCD
Increase the provision of self-financing services within the parish.	Short to Long term	CPC
Continue public education efforts to assist stakeholders in understanding their tax obligations and rights to ensure compliance with property tax laws.	Short term	CPC, TAJ
Continue to make service improvement to ensure property tax compliance activities are simple, easily accessible and of high quality.	Short term	TAJ
Explore the possibility of deducting property taxes from employees' salary/occupational pension.	Short term	TAJ, GOJ
Support Strategic Objective #109 and #110 of the Housing Section of this Plan. See pgs. 254-255	Short to Long Term	CPC
Undertake BIDs, Crowdfunding, Resource Pooling and Cost Recovery activities (see 7.1.4. Sustainable Financing, pg. 589)	Short to Long Term	CPC

### 5.4.4. STRATEGIC OBJECTIVE #229

**To support improved political transparency and accountability in the Parish.**

With the implementation of this Plan, support will be given to improving political transparency and accountability in the Plan Area. This is necessary to address the issues of poor political representation and partisanship, as well as the perception of a high level of corruption. As a key part of this strategy, locals will be encouraged to fully embrace Local Government Reform. Against this backdrop, an aggressive local public education campaign to enhance awareness of Local Government Reform will be implemented.

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This campaign will clearly highlight the roles and responsibilities of all stakeholders, including the CPC, the Councillors, and members of the public in ensuring its success. Additionally, since there are concerns over the state of preparedness of the CPC to embrace greater autonomy and responsibility in the management of its affairs, this public education campaign will also seek to increase awareness of what has been done, what is being done and what is to be done both at the local and the national levels to fully embrace Local Government Reform. Further efforts to support improved transparency and accountability will include: encouraging the speedy completion of Public Sector Reform; encouraging political representatives to implement projects from the CLSDP Planning Document which is a reflection of the consensus of all stakeholders, rather than arbitrarily developing projects; clearly communicating achievements or gains made in achieving the Parish's Vision; and increasing awareness of the Access to Information Act.

### RECOMMENDED POLICIES

- The Parish Council and the Political representatives will seek to disclose information on the resources available to the Parish Council and the political representatives on an annual basis.
- Projects being implemented by the political directorate will generally be taken from the CLSDP Planning Document.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop and implement an aggressive public education campaign which seeks to enhance awareness of Local Government Reform. This campaign should seek to increase awareness of what has been done, what is being done and what is to be done both at the local and the national levels. It should also clearly highlight the roles and responsibilities of all stakeholders.	Short Term	MLGCD, CPC, CPDCBS, NIA
Clearly communicate achievements or gains toward achieving the Parish's Vision, through newsletters, social media, press conferences and other media.	Short to Long Term	CPC, CPDCBS
Increase awareness of the Access to Information Act	Short Term	CPDCBS, NIA
Support Strategic Objective #230 of this Plan. See pg. 467	Short to Medium Term	CPDCBS, NIA

### 5.4.5. STRATEGIC OBJECTIVE #230

**To build strong Community Based Organisations or groups to support a vibrant Local Government.**

Community Based Organisations make important contributions to local, social and economic development and will be essential to effective local governance. However, Clarendonians generally show apathy towards the Community Based Organisations in the parish, which underscores a need to increase their interest.

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This will be achieved by increasing awareness of the importance of strong community groups and organisations in achieving the local vision as well as in the context of Local Government Reform. In addition to that, these organisations will be encouraged to tailor their programmes according to the sector of the society they are trying to reach and also more effectively market themselves. Furthermore, all local clubs and other Community Based Organisations will be encouraged to become registered as a strategy to strengthen their structure. Moreover, capacity building programmes will be developed for these organisations, including the DACs, where necessary.

### RECOMMENDED POLICIES

- Local CBOs will be mindful of deviating from their function in tailoring their programmes for their target population.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
<p>Increase awareness of the importance of strong community groups and organisations in achieving the local vision as well as in the context of Local Government Reform.</p>	<p>Short Term</p>	<p>SDC, CPDCBS</p>
<p>Encourage local Community Based Organisations to tailor their programmes toward the needs of their target population. In the process they should be encouraged to:</p> <ul style="list-style-type: none"> <li>• Survey their members on a periodic basis to find how satisfied they are with the club and its activities, and what other activities and programs they would like to see;</li> <li>• Conduct “exit interviews” of members who have left the organisation to find out why they left;</li> <li>• Interview non-members who come to events but who have not joined to find out why they haven’t</li> <li>• Be willing to experiment and try different things and to develop a schedule of regular events.</li> <li>• Etc.</li> </ul>	<p>Short Term</p>	<p>SDC, CPDCBS</p>
<p>Encourage Community Based Organisations to properly market themselves and develop clear communications channel.</p>	<p>Short Term</p>	<p>SDC, CPDCBS</p>

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SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Develop capacity building programmes for local clubs and other Community Based Organisations and groups where necessary.	Short to Medium Term	SDC, CPDCBS

### 5.4.6. STRATEGIC OBJECTIVE #231

#### To strengthen the rule of law.

A strong rule of law regime is essential for sustainable development; it contributes positively to increases in foreign and domestic investments, and improved social indicators. The rule of law in Clarendon is however weaker than it ought to be as evidenced by inefficiencies in the justice system, high crime rates, human rights violations, and the existence of criminal governance structures. Accordingly, a series of actions or steps will be undertaken to strengthen the rule of law within the parish. This process will involve deepening and improving on-going efforts to enhance justice and security, with particular emphasis on: legislative reforms; knowledge improvements; improved access to and participation in justice; capacity development of key justice and security institutions; and crime prevention and community safety.

Legislative reforms and knowledge improvements are important prerequisites of a strong rule of law within the parish. A number of existing laws and legislations in Jamaica, including some which will have implications on the implementation of this Plan, are out-dated and will therefore be amended or repealed. Since knowledge of existing statutes appears to be inadequate, a public education programme will be implemented. This campaign will also seek to educate the public on new laws or amendments to existing regulations. Particular emphasis will be placed on the Charter of Fundamental Rights and Freedom, as well as other laws which protect human rights, since there appears to be several related issues within the parish. Furthermore, special attention will be given to child protection since child labour appears to be a widespread human rights issue in the parish. Residents will also be made fully aware of avenues through which they can lodge complaints, including against civil servants and the Government.

Equally critical to the strengthening of the rule of law in the parish, is increasing access to and participation in justice processes. The former is a fundamental human right while the latter will increase confidence in the justice system. Access to justice will be increased through a number of strategies, including the promotion of appropriate training to deal with all social classes for those working in the field of justice administration, the development of court forms and written materials that use language more easily understandable by the public, and the use of technological aid such as satellite and videoconferencing to allow stakeholders who are unable to attend court to take part in the proceedings. Increased participation will be fostered by, among other things, an expansion in the number of local communities involved in Restorative Justice.

Capacity improvements in key security and justice institutions are also critical to the efficient enforcement of the rule of law and the delivery of timely justice. Security and justice institutions within the parish generally suffer from weak institutional capacities which mainly relate to a lack of resources. Hence capacity improvement will be primarily in the form of the provision of adequate resources including human resource. As part of this process, technology will be leveraged to maximise process efficiency and staff productivity.

Crime prevention and community safety initiatives are also necessary to reduce the high rate of crime and the prevalence of gangs which make the rule of law a critical concern. This will involve the implementation of a range of programmes and projects focusing on social development, situational crime prevention and

## 5.0. GOOD GOVERNANCE

reducing re-offending. These programmes will target communities, families and individuals, including at risk youth.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage Government to speedily complete legislative reforms.	Short Term	CPC, MPs, CPDCBS, NIA
Launch a public awareness programme which seeks to educate locals about the existing, new, repealed and amended laws, legislations, rules or regulations which govern the parish (or Jamaica). Emphasis should be placed on the protection of human rights, including child protection.	Short Term	MOJ, CPDCBS, NIA
Increase awareness of avenues and bodies, such as INDECOM and Centre for the Investigation of Sexual Offences and Child Abuse (CISOCA), through which the public can lodge complaints, including against civil servants and the Government.	Short Term	CPDCBS, NIA
Support the implementation of Strategic Objectives #112 to 122 of the Safety Security Sector Strategy of this Plan. See pgd. 263- 275	Short to Long Term	CPDCBS, NIA, CPC, MPs
Encourage the Speedy completion of Justice Reform.	Short Term	NIA

### 5.4.7. STRATEGIC OBJECTIVE #232

**To foster civic pride, to support social well-being in the parish.**

Encouraging civic pride is essential for achieving the local vision and quality of life desired by residents of the parish. Citizens have identified a lack of civic pride as a primary factor contributing to a number of the problems plaguing the local society. In addition to that, strong civic pride is critical to achieving the goals and ultimately the vision outlined by the residents for the development of the parish. Civic pride will be nurtured to the point it becomes contagious in all local communities. This will require active efforts on the part of all local stakeholders, including local officials, members of the public, service clubs, businesses, religious organisations and educational institutions.

Most emphasis will be placed on the youth, since the moral breakdown in the local society is most evidenced in that cohort, and more importantly, they have a critical role to play in shaping the future of the parish. It follows that increased importance will be placed on civics education in local schools at all levels, including at the early childhood level. A culture of volunteerism will also be nurtured in the parish and volunteering projects which contribute to the beauty and cleanliness of local communities will be established.

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Furthermore, a “community-of-the-month” competition will be established in the parish, and individuals and groups who do good deeds in their local communities will continue to be recognised and rewarded. Additionally, locals will be encouraged to support local businesses and at the same time local businesses will be encouraged to support community efforts.

### RECOMMENDED POLICIES

- Increased emphasis will be placed on civics education in local schools at all levels.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Foster a culture of volunteerism in schools, churches and civic groups.	Short to Long Term	MEYI, School Boards, Churches, Civic Groups Managements
Use volunteer groups to implement projects contributing to the beauty and cleanliness of local communities.	Short to Long Term	CPC, CPDCBS
Develop a “community-of-the-month” competition which seeks to encourage locals to take care of their surroundings.	Short Term	CPC, CPDCBS, SDC
Continue to recognize and reward those who do good deeds in their local communities.	Short to Long Term	CPDCBS
Encourage locals to support local businesses and at the same time encourage local businesses to support community efforts.	Short Term	CPC

### 5.4.8. STRATEGIC OBJECTIVE #233

**To improve public sector efficiency and the delivery of public service.**

Effective and efficiently performing public institutions are critical to the sustainable development of a country. However there are local concerns about the level of efficiency, responsiveness and customer service in the public sector. The ongoing Public Sector Transformation and Modernisation Programme is seeking to address these concerns and therefore Government will be encouraged to fast track its implementation. Additionally, effort will be made to improve local structures to ensure the efficient delivery of public service.

SPECIFIC ACTIONS	TIME FRAME	RESPONSIBLE AGENCIES/GROUPS
Encourage Government to fast track the Public Sector Reform.	Short Term	CPC, MPs
Strengthen the CIAN.	Short to Long Term	CPC, SDC, Other Local Public Sector Institutions

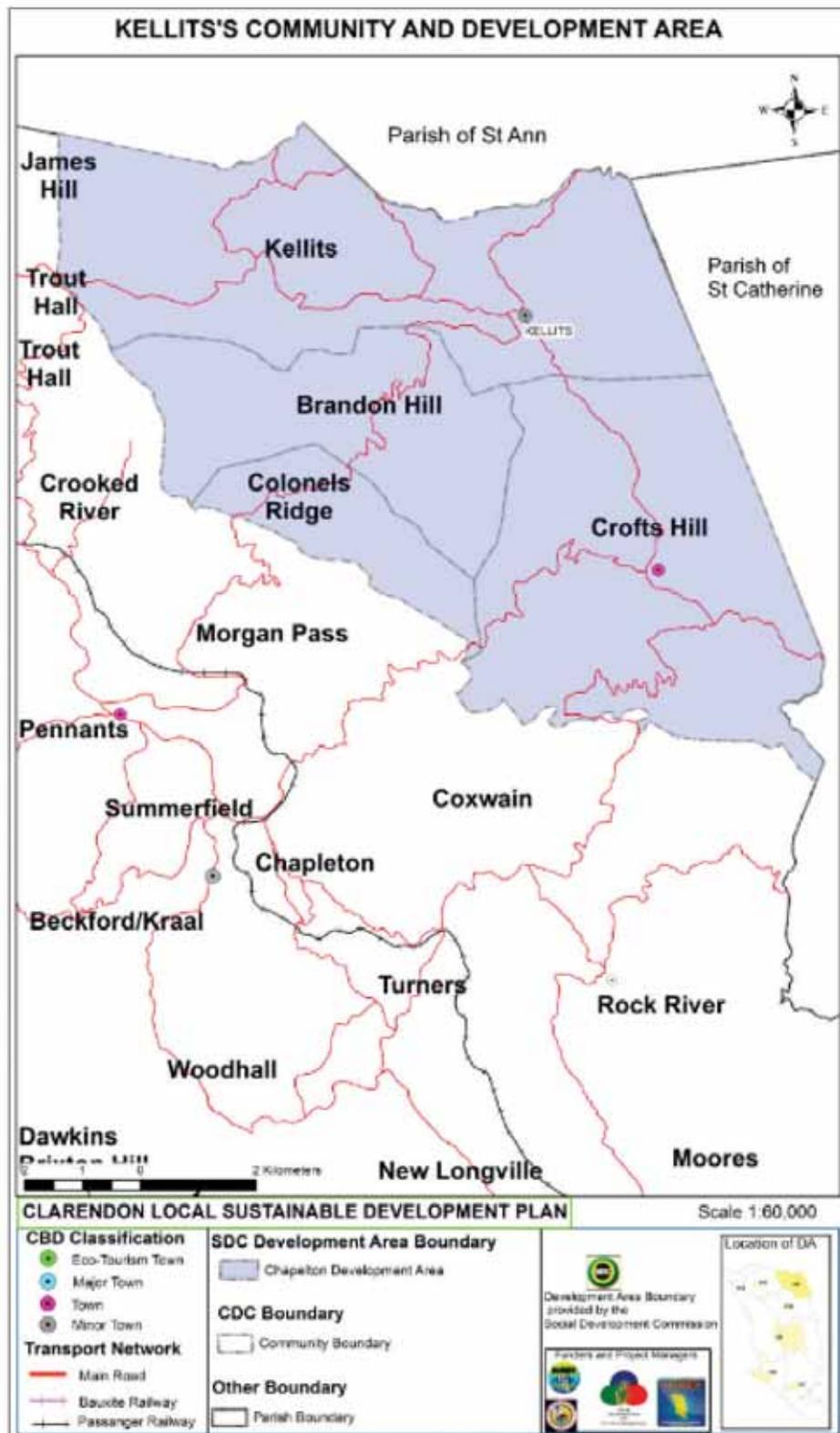
# LOCAL AREA PLANS



## 6.1. THE KELLITS DA PLAN

### 6.1.1. INTRODUCTION TO THE KELLITS DA

The Kellits DA is located in the Northern section of the parish of Clarendon. It is bordered to the North by Macknie (St. Ann), to the South by Coxswain and Morgan's Pass, to the East by Lluidas Vale (St. Catherine), and to the West by Crooked River. The DA covers approximately 32.94 square miles of land, and is made up of four (4) communities; Kellits, Brandon Hill, Crofts Hill and Colonels Ridge. There are thirty three (33) districts that constitute the Kellits. See Appendix 12, pg. 616.



## 6.1. THE KELLITS DA PLAN

### 6.1.2. OVERVIEW OF NATURAL ENVIRONMENT

The Kellits Development Area is predominantly hilly, with the terrain comprising of several rivers, springs, gullies, lush vegetation, and fertile agricultural land. The geographical centre of Jamaica is said to be located in the Bull Head Mountain; with the tallest peak in the parish at 3600 feet. As a result of being located on a hill, the DA is relatively cool compared to other areas within the parish.



Figure 97: The trigonometric station which marks the geographic centre of Jamaica.

The Bull Head Mountain is protected and forms a part of the Jamaican Forest Reserves. The BHFR stretches from Western St. Catherine to Northern Clarendon and covers 220.6 hectares of land. The vegetation is lush and abounds with animals and birds, while the climate is pleasant all year round. At the mountain's peak, there is a magnificent view of the country's South Coast including the parishes of Manchester and St. Elizabeth with their bauxite plants and sites rising high in the skies.

The DA is also home to the Mason River Protected Area which has been designated as Jamaica's 4th Wetland of International Importance under the Ramsar Convention on Wetlands. This Ramsar Site has plants that are exotic, indigenous, endemic and even endangered and is the only place in Jamaica where four (4) different types of carnivorous plants can be found. It also boasts a range of animal species including mammals, birds, insects, crustaceans, amphibians and reptiles.

### 6.1.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

There are several issues which are negatively impacting the natural environment of the Kellits DA. These include pollution, deforestation, soil erosion and climate change. Solid and hazardous waste management practices throughout the DA are generally very poor; with some residents persistently dumping their garbage on the streets, and in gullies, rivers and nearby bushes, while others practice burning, which results in air pollution. The pollutants from the burning of the garbage fuel climate change; a very important issue in light of the fact that deforestation is resulting in the loss of trees which mitigates against the same. Climate change is already severely impacting on the local natural environment, as rainfall patterns have changed and a number of ponds and other natural water features have dried up. Deforestation, in conjunction with poor agricultural practices<sup>1</sup>, is also leading to soil erosion, while the latter issue is threatening to pollute water resources<sup>2</sup>, including ground water.

### 6.1.4. OVERVIEW OF THE BUILT ENVIRONMENT

Access to public transportation is fair within the DA. The community of Kellits is located on the main road leading to St. Ann, while the other areas are accessed from ancillary roads. The main mode of transportation is public passenger vehicles comprising of buses and robot taxis. Farmers utilize donkeys as a mode of transportation to transport their produce over the poor road surfaces.

1. Over-cultivation and inadequate soil conservation techniques in hillsides farming. | 2. Through uncontrolled grazing and the use of chemical fertiliser.

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Access to NWC's public water system is quite. Only the communities of Kellits and Crofts Hill utilize this system as their main source of water. Standpipes are the predominant sources of water throughout the DA. Additional sources of water include springs, rivers, water trucks, and private water sources piped into yards and dwellings.

Crofts Hill has one of the few sewage treatment plants in the parish, an Oxidation Ditch which has a capacity 0.05MGD. However, private pit latrines (58.6%) and private water closets (23.9%) are the two main toilet facilities utilized.

Garbage collection by the NSWMA is done inconsistently in most local communities, whilst there is a total lack of service in some areas resulting in burning and dumping in bushes, rivers and gullies as prominent waste disposal practices.

All the communities within the DA have electricity, but kerosene oil lamps and/or bottle torches are also used as main sources of lighting for several households. Cooking gas (propane) is the predominant fuel used for cooking, with charcoal and wood also being popular alternatives.

The local telecommunications sector is poorly developed. All local communities benefit from telephone services, but like most rural areas, access is mainly via cell phones. Access to landlines is generally fair within Kellits and Crofts Hill, but the requisite infrastructure is lacking in the remaining areas. Similarly, access to the internet is very low. Internet access is restricted to facilities located in Crofts Hill and Kellits Square, the public library, and via cell phones in the wider communities.

### 6.1.5. SUMMARY OF BUILT ENVIRONMENT ISSUES AND CHALLENGES

The built environment within the Kellits DA faces a series of issues and challenges. The roads are generally in poor conditions, forcing some residents to resort to using donkeys. The area also suffers from insufficient water supply, as only a mere 24.8% of the households have access to potable piped water. Additionally, the use of pit latrines is quite high, which becomes a public health and sanitation risk. A number of residents are unable to afford electricity and this results in the use kerosene oil lamps and/or bottle torches as their main source of lighting. Street lighting is lacking and this is perceived as a major risk to public safety especially in light of the fact that there are a number of derelict buildings and overgrown lots throughout the DA. Access to telecommunications is quite low, and this may be a factor contributing to low local investment and educational performances.

### 6.1.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

The DA is particularly susceptible to five (5) main hazards: landslides, hurricane, drought, floods and bush fires. Landslides within the local area are both the results of natural and anthropogenic factors. This area of the parish is a volcanoclastic mountainous terrain, characterized by igneous, metamorphic and sedimentary formations, as well as numerous faults, which make it vulnerable to landslides. In addition, deforestation and cultivation are destabilizing the already fragile slopes. The landslide events are generally induced by heavy rainfall, which is usually associated with tropical weather systems, including hurricanes. Heavy rainfall also results in flooding in several areas within the DA, as natural drainage channels overflow, and artificial channels are poorly maintained. In addition to flooding, the incidents of hurricanes also tend to cause severe wind damage to the natural and the built environment within the DA, resulting further in socioeconomic headaches. Similarly, the dry season brings a high probability of drought, which destroys crops and the general vegetation. During such periods bush fires are also prevalent. These are generally the result of the careless management of fires in the burning of garbage or the use of the slash and burn technique utilized by some farmers.

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## 6.1.7. OVERVIEW OF LAND USE

The Kellits DA is quite rural in nature. Much of the lands are covered in woodland, which include the BHFR. The communities that form the primarily practise farming and other agriculture related activities, with these activities occupying a significant portion of the lands. The built up areas generally display linear settlement patterns, and are mainly residential with scatterings of commercial and industrial usage to support the rural economy. The largest concentration of commercial activities is found within the town of Kellits. Other land uses within the DA include institutions, education, and the wetlands mainly the Mason River Protected Area.



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### 6.1.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

Competing interests in the development of land and the absence of land use regulations have resulted in an uncoordinated and haphazard land use pattern. In fact, apart from the linear settlement layout, it is difficult to identify any other spatial patterns. This has the potential of leading to a number of socio-economic issues, including high infrastructural costs, sub-optimal use of lands, and traffic congestion with some of these issues are already manifesting themselves.

### 6.1.9. OVERVIEW OF SOCIAL WELL BEING

The Kellits DA has a population of approximately 16, 049 persons, which occupy approximately 4902 dwelling units. This population is comprised of 53 % males and 47 % females.

The Kellits DA has access to a number of social infrastructure and services which are highlighted in the table below.

Types	Number	Location	Types	Number	Location
Community Centre	1	Crofts Hill (1 used as a skills training centre but closed presently), Kellits (1),	Playfields	4	Crofts Hill (2), Kellits (1), Brandon Hill 1 @ Primary,
Educational Institutions	24	Crofts Hill (8), Kellits (12), Brandon Hill (2), Colonel's Ridge (2)	Public Libraries	1	Kellits (Brandon Hill & Colonels Ridge Mobile Library every 3 <sup>rd</sup> Wednesdays)
Churches	53	Crofts Hill (17), Kellits (19), Brandon Hill (10), Colonel's Ridge (7)	Community Shelters	9	Crofts Hill Primary & Junior High, Red Hills All-age, Brandon Hill All-age, Arthurs Seat Primary, Mount Carmel Primary, Kellits Primary, Crooked River All-age, Staceyville All-age, Macknie Primary.
Police Station	1	Crofts Hill which serves the entire DA, Chapelton also provides service.	Post Offices/ Postal Agencies	4	Kellits, Colonel's Ridge, Crofts Hill, Reckford
Fire Station	0	Linstead Fire department serves the area	Health Centres	4	Colonel Ridge (Type I), Crofts Hill (Type II), Kellits (Type III) Reckford (Type I)
Sports Complex	1	Crofts Hill			
Cemeteries	0	Churches & family plots used as well as individual yards.			
Markets	1	Kellits (persons also use May Pen and Linstead markets)			
Recreational Sites	2	North Clarendon Cultural Complex Skating Rink in Crofts Hill, Kellits Square.			

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As evidenced by table... above, the Kellits DA has access to most social infrastructure and services. Twenty four (25) educational institutions are located throughout the boundaries, which comprise thirteen (13) basic, five (5) primary/all-age, and two (2) secondary. There are four (4) health centres, inclusive of two Type I, one Type II and one Type III facility, with conditions ranging from good to fair<sup>3</sup>. Additionally, one police station, one community, one public library, and several recreational and social spaces are found within the local area. However, there are no public cemeteries and no fire stations within the DA.



Figure 98: The Evelyn Mitchell Infant School/Centre of Excellence, the multiple time winner of the Early Childhood Commissions' Standards Award, in Brandon Hill.

### 6.1.10. SOCIAL WELL BEING ISSUES AND CHALLENGES

Social services are lacking throughout all the communities within the DA. One community centre together with an inadequate number of recreation and social spaces serve the entire DA. There is also the absence of a public cemetery, resulting in burials currently taking place indiscriminately in backyards, church cemeteries and in family plots.

Several issues related to public safety exist within the local area. There is no fire station; the nearest facility is located in Linstead, St Catherine. Fire units have to travel long and difficult terrains in order to get to the area in the event of a fire. The physical and operational condition of the single police station in the DA is poor. The station is staffed by nineteen (19) officers with five (5) being in station at any one time, with access to only a single jeep. Thankfully, the DA is one that is considered to be very quiet and peaceful, with domestic disputes and praedial larceny being the main criminal activities experienced.

Financial constraints and long distances to travel are the major health care obstacles, with the rate of teenage pregnancy being a major concern. This has led to a number of high school dropouts within the DA. The situation prompted the CPDCBS to host a few intervention programmes in the local area.

Residents, especially those in Crofts Hill, are particularly perturbed about the high medical and dental care costs. This is mainly the result of a shortage of doctors at the Crofts Hill Health Centre<sup>4</sup> and the centralization of pharmaceutical and dental services in the Kellits community. Residents are forced to journey all the way to the town centre of Kellits to fill prescriptions. These prescriptions are frequently not fully filled in one trip due to shortages or other factors. Multiple trips are also required at times to see the dentist who only visits once per week and can only attend to fifteen persons on each occasion.

The local educational sector is not without its challenges. The sustainability of the Arthurs Seat Primary, the Colonel's Ridge Basic and the Comsee Basic schools is threatened by low enrollment, while half of the listed institutions are operating above capacity with the most serious being Crofts Hill Primary & Junior High. Additionally, several local schools, especially at the primary and the pre-primary levels, are in a dilapidated

3. Residents also utilizes surrounding health facilities such as the Chapelton Hospital, May Pen Public Hospital and the St. Ann's Bay Hospital.

4. The doctor visits once per week.

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state and are still utilising pit latrines, which pose physical danger to both the teacher and the student populations, and also present several health and sanitation risks.

### 6.1.11. OVERVIEW OF ECONOMIC DEVELOPMENT

The town of Kellits, which is the centre of economic activities in the Development Area, has experienced rapid growth in recent years, and has become a thriving business and administrative district for the surrounding communities. There are small, medium sized, and to a lesser extent, large business enterprises such as restaurants, hardware stores, grocery shops, variety stores, bank, bars and corner shops operating. The chief economic activities are still largely agricultural with the main crops grown being sugarcane, yam, cabbage, lettuce, pakchoi, carrot and cash crops.

Land holdings for agricultural activities, which include animal and poultry rearing, are medium to small with the latter having the edge. Many of these farmers utilize market facilities in May Pen, Kellits, Linstead and Kingston to vend their produce, or they sell to distributors who come into the area to purchase for export as well as for the tourism sector.

Several persons are also employed as skilled professionals, for example, teachers, beauty technicians, and fashion designers.

### 6.1.12. ECONOMIC DEVELOPMENT ISSUES AND CHALLENGES

Employment levels and opportunities for employment in the DA are very low. Both these issues are linked primarily to the fact that the local economy is lacking diversity and there are limited job opportunities outside of agriculture. Interest in agriculture is however declining amongst the youth, and it is difficult to incorporate them in the sector. Additionally, it is very difficult for prospective entrepreneurs to access the required capital in order to start their own businesses.

There are a number of issues impacting the performance and sustainable development of the local agricultural sector. Praedial larceny has become a disincentive to investment and a threat to the livelihoods of the local communities. Additionally, disasters such as hurricanes, landslides, drought and bushfires also cause significant losses to the sector on an annual basis. Furthermore, technological applications are quite low, and farm roads are generally in a poor state, which means that productivity and competitiveness is also quite low. Moreover, the sector is losing out on millions in revenue due to the absence of local value-added production; an issue augmented by the fact that storage facilities are also absent and farmers therefore have to periodically sell their produce at significantly reduced prices in an attempt to dispose of the crops before they are lost to spoilage.

### 6.1.13. OVERVIEW OF GOVERNANCE

The Kellits DA falls within the Northern Clarendon Constituency, and the Kellits and Crofts Hill Parish Council Divisions. Civil Society Governance of the DA is being carried out by twenty three (23) CBOs, most of which fall under the umbrella of the Kellits DAC. The CBOs include a mix of youth clubs, citizens associations, faith based institutions and agricultural groups, with the Church groups being the most notable<sup>5</sup>.

### 6.1.14. GOVERNANCE ISSUES AND CHALLENGES

The primary issues relating to governance within the Kellits DA are political tribalism and a perceived neglect by the relevant authorities. Citizens generally show strong, unequivocal and indiscriminate loyalty towards political parties. This is believed to be negatively impacting on the growth and development of the DA, as locals tend to settle for less than acceptable standards because of the political affiliation of persons

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<sup>5</sup> Perhaps due to their popularity with a total of fifty three (53) churches that spreads across all four communities.

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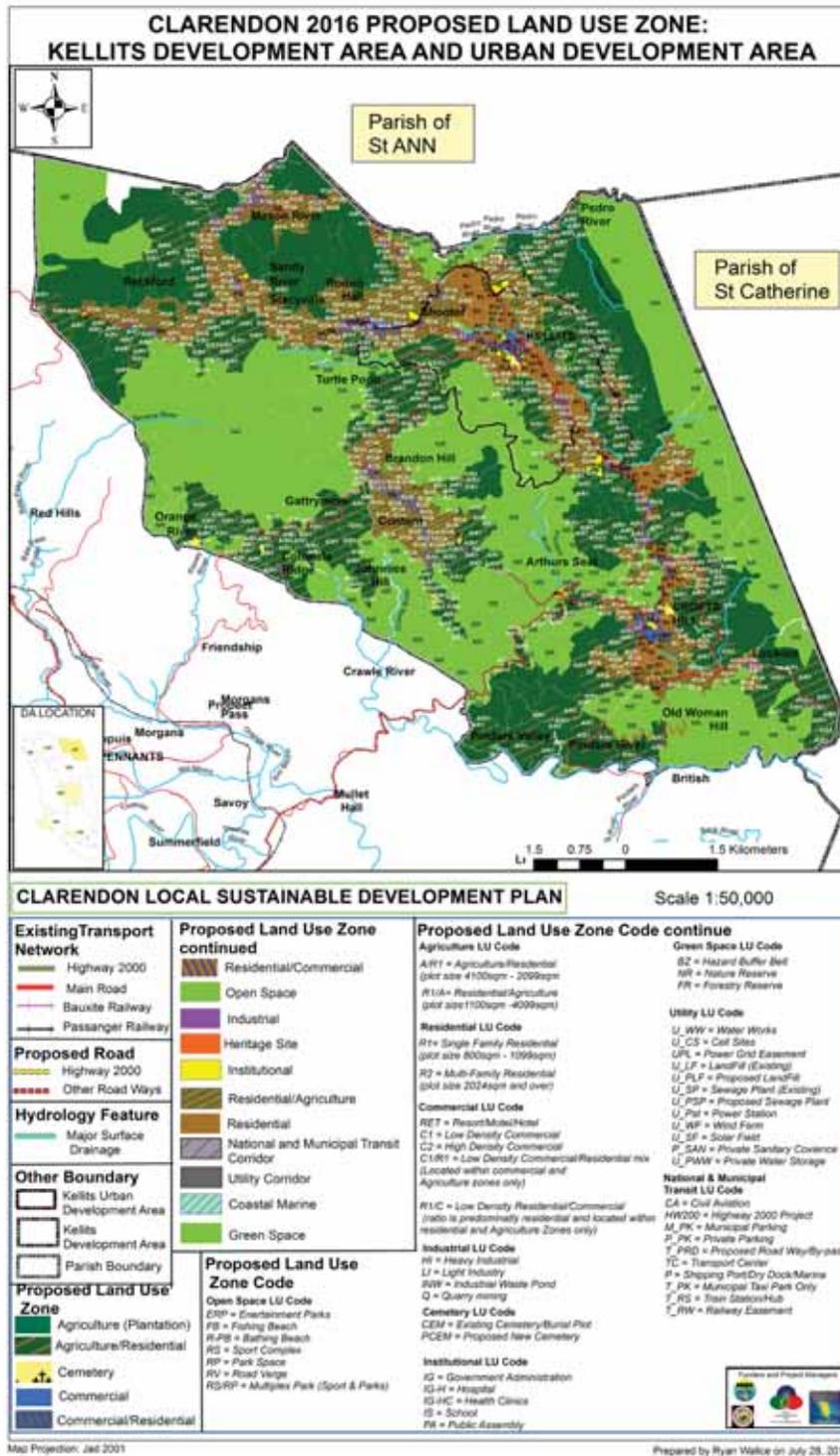
because of the political affiliation of persons guilty of the breaches. Additionally, it is believed that neglect by the relevant authorities is also contributing to the less than acceptable levels of overall development.

## 6.1.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

### • PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the Kellits DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** Agricultural activities or any developments that are in breach of conservation policies will not normally be supported within areas zoned as green spaces.



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**Policy 2:** The Kellits Growth Centre will accommodate urban type residential developments up to a maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and heights not exceeding two storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 3:** Development on the eastern side of the Crofts River, within the vicinity of Kellits that is zoned for Agriculture Residential will be kept to a minimum.

**Policy 4:** The Crofts Hill Rural Settlement Node will accommodate residential developments of up to 10 units, maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and building heights not exceeding two storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 5:** Only individual dwellings and other small developments will normally be allowed outside of Kellits and Crofts Hill, in accordance with the Proposed Land Use Map and the relevant Planning Standards and Policies.

**Policy 6:** Light industrial uses which are ancillary to the residential use will be supported in areas zoned for residential/commercial purposes on the proposed land use map, provided that such activities will not detract from the residential amenities of the area.

**Policy 7:** Consideration will be given to proposals involving the establishment of agro-industrial and agro-tourism related developments on lands zoned for agriculture and agriculture/residential purposes.

**Policy 8:** Developments which will lead to the destruction of the Old Slave Hospital, the Slave Tomb and any other identified heritage site will not be permitted.

**Policy 9:** Planning permission will not be given for any development that will in any way result in the removal of vegetation on unstable or potentially unstable land.

**Policy 10:** Planning permission will not be given for any developments which will adversely affect any water resources or flow and quality of water of the Pindars, Savannah, Crofts, Bullhead, Crawle, Back, Sevens and any other identified rivers and their tributaries.

**Policy 11:** In areas where development is permitted adjacent to rivers or streams, the setback shall be a minimum of 30 metres from the banks and may be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 12:** Planning permission will not be granted for any development that will conflict with the proposal to use the Long Ground Pond as a recreational site and any development allowed in proximity should blend into and harmonize with the landscape and be generally for the enjoyment of the area.

### • REFORESTATION OF THE BULL HEAD MOUNTAINS AND ITS ENVIRONS

Sections of the Bull Head Forest Reserve and its environs are being affected by deforestation, as a result of both natural and human related factors. This is leading to soil erosion, land slippages and a number of other environmental issues. It is also threatening the livelihoods of those directly dependent on the forest. As part of this Plan, a reforestation programme will be undertaken. This programme will coincide with the existing programme at the Kellits High School. The Forestry Department will play an advisory role.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	FD, Private Sector Groups

### • PROMOTING AGROFORESTRY

Agroforestry practices that are strategically integrated into individual farm operations and watersheds can significantly benefit the local environment. The integration of trees into agricultural crops and/or pastures

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can help to ensure a sustainable source of trees for the production of yam sticks, timber, charcoal, and similar purposes, thereby reducing deforestation, soil erosion, and water pollution. It will also complement wider conservation efforts, including within the forest reserve. Agroforestry will therefore be encouraged throughout the DA, especially on slopes zoned for agricultural purposes and on agricultural lands surrounding the forest reserves. This will include the provision of training exercises for participants.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	RADA, FD

### • PRIORITIZING ROAD REPAIRS

Road improvements will be given high priority within the local area. This is necessary to support economic growth and social advancement, which will be driven primarily by sustainable growth within the agriculture and tourism sectors. Road improvements are critical to both these sectors as it will increase access for tourists to potential tourism sites and also improve efficiency in the transportation of agricultural inputs and produce. Importantly, tourism activities will be centred on the agricultural activities. High priority will be given to rehabilitation of farm roads, as well as main roads which connect these farm roads to local communities and external areas. Highest priority will be given to the main road which leads to St Ann, which is famous for its tourism product. This road which will open up the DA and Clarendon in general to tourism activities and also help farmers to source markets on the North Coast will be developed as a scenic route through landscaping projects.



Figure 99: A Section of the roadway leading to Mahoe Hill, which highlights the poor condition of some local roads.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MTM, NWA, CPC, MICAF

### • IMPROVING ACCESS TO POTABLE WATER

Access to safe and reliable sources of potable water is a major issue within the DA. Only a few residents have access to the NWC's system, while standpipes are the predominant source utilised. Additional sources of water include springs, rivers, water trucks, and private water sources piped into yards and dwellings. With this Plan encouraging a shift away from the use of standpipes, and a reduction in the number of homes with their source of potable water being more than 100 metres away, it is critical that alternative water sources be developed. The ongoing upgrading of the Mason River Water Supply System, which includes the construction of a 100,000-gallon concrete tank, will help to address the issue in some areas of the DA, including Mason

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River, Kellits, Sandy River, Rhoden Hall, and McKnie. Additionally, this Plan is encouraging the rehabilitation of the Dawkins Land water supply system; this would also lead to improvements in the Colonel's Ridge since it is responsible for supplying the Dawkins land facility. This upgrading work would also positively impact the residents in Johnnies Hill. Furthermore, the NWC will seek to expand its infrastructure in utility serviced areas, such as Arthur's Seat. There are several settlements within the DA which are located at significant elevations above the service area of the closest system requiring a significant amount of energy for pumping to provide the service via system extensions, therefore individual rainwater harvesting will be encouraged.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	NWC, MEGJC, CPC, RWSL

### • IMPROVING IRRIGATION

Northern Clarendon, including Kellits, is generally impacted severely by periods of drought. During such times, farmers suffer heavy losses in their production. Since the local economy is almost solely dependent on agriculture, it is critical that measures be put in place to safeguard this activity. An extensive irrigation programme will be implemented ensuring the availability of water during drought periods. The DA generally receives adequate rainfall during rainy seasons, therefore emphasis will be placed on rainwater harvesting and storage. It may therefore include the provision of storage tanks and/or the construction of catchment tanks to alleviate the water shortage periods.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	NIC, MLGCD, CPC

### • PROMOTING APICULTURE

Through consultations, residents of the DA, including farmers and prospective farmers, expressed significant interest in apiculture. This is due to the high demand for honey (see 4.2.7.8.1. Strategic Objective #183B, pg. 378) coupled with the local climate and the wide variety of pollen producing plants which grow in the DA. Such conditions create the ideal setting for this activity. Apiculture activities will be promoted within the DA to support economic development.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	RADA, CPC, MICAFA

### • EQUIPPING RESIDENTS WITH THE SKILLS NECESSARY TO GROW AND SUPPORT THE LOCAL ECONOMY

With the implementation of this Plan, agriculture and tourism will be the main economic base of the Kellits DA. In order for locals to fully take advantage of the economic and employment opportunities, they must be trained in the related skills. The Kellits Skills Training Centre which is underutilised currently offers skills training in Hospitality and is therefore the ideal institution to offer programmes tailored towards the local tourism industry. The feasibility of offering agricultural programmes at the Centre should also be explored.

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Figure 100: The Kellits Skills Training Centre.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEYI, Administration of the Kellits skills training centre, HEART Trust

### • ESTABLISHMENT OF TOURISM ATTRACTIONS

- Old Slave Hospital



Figure 101: Remnants of the Old Slave Hospital in Kellits.

Research reveals that Kellits was a very productive plantation. On this plantation was a Great House and a slave hospital. The ruins of the hospital still stand today, and therefore the feasibility of declaring the site a national heritage site will be explored. It will also be utilized for tourism purposes by accommodating guided tours.

- Slave Tomb

Within the community of Kellits is a tomb and monument which was built by a slave master in honour of one of his slaves. It reads:

“Here lies honest Page, whose principles did honour to his human nature. He died October 1795 aged 49. His Master in gratitude for his long and faithful services has erected this tomb to his memory”.

The feasibility of declaring this site a national heritage site will be explored, and it will also be utilized for tourism purposes by facilitating guided tours.

- Developing the Eco-Tourism Potential of the Mason River Protected Area

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Figure 102: The entrance to the Mason River Protected Area.  
Source: [http://jamaicachm.org.jm/ioj\\_wp/small-grants-initiative-ioj/](http://jamaicachm.org.jm/ioj_wp/small-grants-initiative-ioj/)

The Mason River Protected Area has significant tourism potential that will be harnessed. This Ramsar Site has plants that are exotic, indigenous, endemic and even endangered and is the only place in Jamaica where four (4) different types of carnivorous plants can be found. It also boasts a range of animal species including mammals, birds, insects, crustaceans, amphibians and reptiles. (NEPA, 2011). The site currently boasts several trails and hosts periodic Open Day activities. However, the trails and the administrative infrastructure are in a state of ruin. This Plan therefore includes the rehabilitation of the site and the proper marketing of opportunities for birding, wildlife photography, and nature walks conducted by trained tour guides.



Figure 103: One of the trails within the Mason River Protected Area. Source: [http://www.jamaicaobserver.com/news/Protection-coming-for-Pedro-Cays-Black-River-Morass-\\_15770616](http://www.jamaicaobserver.com/news/Protection-coming-for-Pedro-Cays-Black-River-Morass-_15770616)

- Developing the Eco-Tourism Potential of The Bull Head Forest Reserve

The BHFR sits at the top of the Rio Minho Watershed which is predominantly within the Kellits DA. It is a part of the Bull Head Mountain Range that extends from western St. Catherine to northern Clarendon. The Reserve covers an area of 220.6 hectares with an elevation of over 4,000 feet (930 metres) and is the site of the trigonometric point that marks the geographic centre of Jamaica.

The tourism potential of the Bull Head Forest Reserve is well known and documented. Attractions on the BHFR include the Bull Head Peak (highest point on the property at 930m); the Bull Head Monument - an obelisk that marks the trigonometric centre of the island; beautiful awe-inspiring vistas of 4 Jamaican parishes Clarendon, St. Catherine, Manchester and St. Ann; cool, salubrious climate and trails leading to nearby communities that are lined with beautiful and unique Jamaican flora and fauna several of which have medicinal qualities.

Nevertheless, tourism activities within the reserve is grossly undeveloped. The main tourism activity that occurs on the BHFR is an Ash Wednesday event, which is an annual opportunity for community and wider

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nationals gathering for food and fun. The Ash Wednesday event has been held annually over the last 25 years with an estimated 20,000 persons on average in attendance. Activities for the day include: hiking to Bull Head Peak; cooking; camping; vending of a large variety of items and foodstuff; merry-go-round; sound system music; and sports such as football. The event is supported mainly by persons from the surrounding communities many of whom undertake the trek up the mountain as an annual pilgrimage. Additional tourism activities within the Reserve include visits by church and school groups, sightseers, campers and hikers. The Bull Head Forest Management Committee also has an annual cookout in December.

There is however significant potential to increase the scale of tourism in the Reserve. Despite the tremendous success of the Ash Wednesday event, it has never been marketed or promoted. According to Chairman of the Bull Head Benevolent Society, Tracy-Ann Mahoney, going public would leave the organisers open for things they are not currently capable of handling (the Gleaner 2015). The site has no electricity, no sanitary convenience, and no shelter for visitors.

This Plan is therefore seeking to build on the existing attractions and to develop the site into a destination for domestic and international tourists. The proposal includes the provision of proper toilet facilities, a cafeteria, artificial swimming ponds, gazebos, educational and interpretation signs and simple accommodations (log cabins) for overnight visitors. Additional tourism enterprises that utilize the BHFR resources in a sustainable manner may also be developed.



Figure 104: An example of a log cabin. Such a design may be used within the Bull Head mountains.

- Raising Awareness of the Potential for Agri-Tourism

The Kellits DA is of significant agritourism potential. The DA is heavily dependent on agriculture and residents also expressed significant interest in community tourism through the Situation Validation and Visioning Workshop. In addition to that, the DA is predominantly covered with lush vegetation and research has shown that areas with high natural amenity values and low urban influence have great potential for such activities. It therefore means that there is potential for development within the subsector. This will help to diversify the local tourism product and provide an opportunity for local farmers to earn additional income from their produce. It will also stimulate employment within the DA.

The list of possible agritourism activities for the DA include, but is not limited to:

- Bee keeping tourism- visitors learn about the practice of bee keeping and may also partake in the related activities, in addition to learning about and tasting a myriad of honeybee products.
- Farm stays- this may offer peaceful retreats for adults or may be interactive and family focused, offering children opportunities to feed animals, collect eggs and learn how a farm functions.

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- Farm Tours- visitors are taken on guided tours of the farm where they learn how the farm functions and about farming technologies such as composting, hydroponics, greenhouse, and aquaponics.
- Crop tasting- visitors are given the opportunity to taste or sample produce from the farm.
- Cooking classes- visitors learn how to prepare some of the crops that they see growing on the farm.
- U-pick operations- consumers find and pick their own fruits and vegetables on the farm.

Farm operators will be made aware of such opportunities and be encouraged to integrate one or more in their operations. They will be encouraged to undertake adequate market research to ascertain the feasibility of such undertakings.



Figure 105: Donkey cart riding as part of a tourism package.  
Source: <http://www.alsorat.com/id1.html>



Figure 106: Hiking with donkeys.  
Source: <http://www.brda.si/mma/treking%20vodilna/2014101116475400/mid/>

### • Creating Donkey Cart/ Riding Trails

Donkeys are widely utilized as a mode of transportation by farmers within the DA. Whilst this may be viewed as primitive, it provides an opportunity for tourism activities. The terrain and rich biodiversity of the DA provides opportunities for nature based tourism, and therefore there is the opportunity to incorporate donkey riding or donkey cart trails as attractions. Trails may traverse the entire landscape of the DA and include marked stations or stops next to points of natural and cultural interest. They may further provide interpretative materials such as display boards, models, and other exhibits, as well as trained tour guides to support the educational experiences for visitors.

The path down the hill to the old slave market in British appears to be a perfect route for donkey riding. Hence the feasibility of utilizing this path as a trail will be explored.

### • Long Ground Pond

The Long Ground Pond is located within the community of Crofts Hill. It serves as a habitat for fish and as a water drinking area for other animals within the community. This natural feature has the potential to be used as a recreational area for non-motorised sporting activities such as kayaking and rafting for the community members and tourist alike. Hence this area will be developed into an attraction.

#### TIMEFRAME

Short to Long  
Term

#### MAIN RESPONSIBLE AGENCIES/ GROUPS

TPDCo, CPC, MOT,  
Private Investors, JNHT

### • NORTH CLARENDON CULTURAL COMPLEX SKATING RINK IN CROFTS HILL

The Northern Clarendon Cultural Complex Skating Rink is a popular entertainment facility within Crofts Hill. Despite being heavily utilized, the facility has the potential to contribute more to social cohesion and

## 6.1. THE KELLITS DA PLAN

economic development in the DA. The feasibility of providing skating classes, including roller skating, free dance skating and figure skating, as well as cultural dance classes, at the facility should be explored. These activities may generate significant local interest and domestic tourism, which will contribute to social well-being and economic development.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium Term	Kellits DAC, CPC

### • DEVELOPMENT OF A PUBLIC CEMETERY

There is no public cemetery within the Kellits DA. As a consequence, backyard burials are prevalent features of the area. With this practice impacting on property values, and posing a health and environmental risk, the need for the development of a public cemetery is immediate. Additionally, the Kellits community will be designated a growth centre which means that the Burial Within Towns' Limit Act will affect a large segment of the population. Hence this Plan proposes the identification of lands within the DA for the immediate development of a public cemetery.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	CPC, MLGCD, Private Investor

### • RATIONALISING THE SCHOOL SYSTEM

As highlighted earlier, there are a number of issues impacting on the education sector within the DA, particularly at the primary and pre-primary levels which warrant urgent attention. This includes low enrolment in some schools and overcrowding in others, as well as poor building and infrastructure conditions. While the proposed school zoning system (See 3.4.4.8. STRATEGIC OBJECTIVE #133, pg. 291) will help to address the enrolment issue, the physical conditions of the schools will complicate the situation; several schools are believed to be operating below capacity due to the poor physical environments while others are operating above capacity because of better conditions. The School Zoning System will therefore likely see more students being asked to attend institutions which are currently in substandard conditions. These schools will consequently require upgrading works. Financial resources being limited means that the relevant authorities and stakeholders will have to maximise on what is available or utilise the most cost effective approach to effect upgrading works. It therefore means that in some cases it may be necessary to provide additional classroom space at overcrowded institutions rather than rehabilitating or developing underutilised facilities. Severely underutilised institutions will be closed to achieve greater levels of efficiencies in the school system. Nevertheless, closure of any school will be done after extensive public consultations with all stakeholders including parents, the Jamaica Teachers Association (JTA), churches, community leaders and political representatives. Below is a list of primary and pre-primary schools which are recommended for development; a comprehensive assessment should be done to determine the fate of others.

- The Reckford Basic School –
- The Kellits ECI
- Rhoden Hall Basic-

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEYI

## 6.1. THE KELLITS DA PLAN

### • INTRODUCTION OF A SEXUAL EDUCATION INTERVENTION PROGRAMME

Consultations revealed that the incidences of non-consensual sexual activities and teenage pregnancy are quite high within the DA. Under this Plan, sex education will be provided in schools and in the media, but this situation begs the need for an immediate intervention programme in the DA. Accordingly, a programme which provides instructions on issues relating to sexual activity, sexual reproduction, reproductive health, reproductive rights, safe sex, birth control and sexual abstinence will be implemented within the local area. This programme will include, among other things, interactive workshops in schools and youth clubs.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CDA, Ministry of Health, Family Planning Board

### • ESTABLISHMENT OF A NEW POLICE POST IN KELLITS

Under this Plan, a new police station will be constructed in the Kellits Area. The community is currently without a Police post. With the area being designated a growth centre, there will be increased demand for such a critical facility. In addition to that, the Crofts Hill Police Station which is the only one within the DA, is in a poor state and its resource complement, which includes one jeep, will not be able to support the population growth and distribution.



Figure 107: The Crofts Hill Police Station.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	MNS

### • PROVIDING CAPs

Internet access in the DA is quite low and will be improved. At present, internet access is restricted mainly to facilities located in Crofts Hill, and in and around the Kellits Square. CAPs will therefore be developed in Colonels Ridge and Brandon Hill. These will enable community members to use the Internet at minimal or no cost to them to facilitate research, bill payments, education, communication, business, marketing, and social networking.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MSET, Private Sector

## 6.1. THE KELLITS DA PLAN

### • DEVELOPMENT OF A TRANSPORTATION CENTRE

The town of Kellits does not have a public transportation centre and does not generate enough activity to require one at this time. Public passenger vehicles currently park for the loading and unloading of passengers along the roadways. They are concentrated mostly in the area of the town where pedestrian presence is highest near to the Kellits High School. However, with the development of Kellits as a growth centre, the scale of activities in the town will increase, generating more traffic. Without a public transportation centre, this will eventually lead to traffic congestion and chaos in the town. Therefore allowance will be made to secure lands along Atkinson's Crescent for this facility in the short term and the facility will be developed in the long term.



TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	CPC, MTM

## 6.2. THE FRANKFIELD DA PLAN

### 6.2.1. INTRODUCTION TO THE FRANKFIELD DEVELOPMENT AREA

The Frankfield DA is located in the upper mountainous region of the parish of Clarendon. It is rural in nature and occupies approximately 4.9sq miles. The DA is comprised of eight (8) communities which are Frankfield Proper, Trout Hall, Peckham, Orange Hill, James Hill, John's Hall, Grantham and Crooked River. There are forty-five (45) districts. It is bordered to the North by the parish of St Ann, Thompson Town on the south, the east by Kellits and the West by Coffee Piece and Sanguinetti.



## 6.2. THE FRANKFIELD DA PLAN

### 6.2.2. OVERVIEW OF NATURAL ENVIRONMENT

The Frankfield DA lies near the top of Jamaica's central ridge of mountains which overlooks the south coast. It has an inherent undulating terrain and possesses an abundance of natural resources which include rivers, springs, farmlands, gullies, forests and a rich biodiversity. The Mahoe River and Green River which are tributaries to the Rio Minho River which spans the length of the DA, are among the main rivers. The district of Collington has a number of waterfalls which add to the landscape of the area.

### 6.2.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

The Frankfield DA suffers from several environmental issues with a high potential for others. Chief among these issues is pollution which is stemming from inconsistent garbage collection. Throughout the DA the communities are plagued by garbage pile ups which force residents to use alternative methods of garbage disposal. Burning is the main alternative method utilized while dumping in drains and gullies is also a common practice. Other environmental issues within the DA include deforestation which is driven by economic pressures and illegal sand mining which takes place along the Rio Minho.

### 6.2.4. OVERVIEW OF THE BUILT ENVIRONMENT

Transportation within the Frankfield DA is solely by road. The different sections of the DA are connected by several categories of roads with conditions ranging from good to very poor. The communities of Trout Hall, Frankfield and James Hill are located along the main road from Chapelton and traverse all the way into the parish of St. Ann. All the other communities can be accessed from off-roads from any of the aforementioned areas. The main mode of transportation is public passenger vehicles (buses and taxis) which are both licensed and unlicensed.

Access to water in the Frankfield DA is mainly from public sources. Some 32.8, 4.5, 23.1 and 3 percent of the residents utilize public water piped into their dwellings, public water piped into yard, public standpipe and public catchments respectively. The other sources of water include private water piped into dwellings (14.8 percent), private catchments (7 percent) and springs or rivers (8.2 percent). SDC (2014).

There is no central sewage system within the DA. Both water closets and pit latrines are prevalent with the latter having a slight majority usage by residents.

Garbage collection by the NSWMA is done spontaneously and collection is only done from households along the main road. As a consequence, burning and dumping in bushes, rivers and gullies are prominent waste disposal practices.

Almost all the households in the DA have electricity. However, a few residents cannot afford to pay for electricity provided by the JPS and use kerosene lamp and candles. These two sources are also used in conjunction with electrical energy.

Access to the various types of telecommunications varies within the DA. More than 90 % of the local households have access to telephone service, via cellular phones. Landlines are mainly available in the communities of Frankfield, Trout Hall and James Hill. Only a small fraction of the population have access to internet and access is mainly through mobile data services through either Digicel or LIME. The main service providers.

### 6.2.5. SUMMARY OF THE BUILT ENVIRONMENT ISSUES AND CHALLENGES

The Frankfield DA is faced with a number of issues and challenges related to the built environment. Many of the local roads are in disrepair stemming mainly from the poor maintenance of the drainage systems.

## 6.2. THE FRANKFIELD DA PLAN

The district of Collington is said to be almost inaccessible due to the state of the road. Migration therefore affects the area and even the population of the Collington Primary School has been experiencing a decline in recent years due to this age old problem. Additionally, the area suffers from a chronic shortage of water as the public sources are generally unreliable and some of the natural sources may be significantly reduced in periods of drought. Furthermore, those dependent on standpipes are fearful of consuming unhygienic water, as the pipes are said to be old and rusting and therefore release rust strips in the water. The use of pit latrines is quite high and this presents a public health and sanitation risk. Street lighting is lacking resulting in a public safety risk, as there are a number of derelict buildings and overgrown lots throughout the DA providing hiding places for persons with evil intentions. Access to telecommunications is quite low, and this may be a factor impacting on local investment and educational performances.

### 6.2.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

The Frankfield DA is vulnerable to several hazards. These include landslides, hurricanes, floods, drought and bushfires. Landslides within the local area are both the result of natural and man-caused factors. This area of the parish is characterized by igneous, metamorphic and sedimentary formations, as well as numerous faults, which make it vulnerable to landslides. The high vulnerability is increased by deforestation and cultivation which are destabilizing the already fragile slopes. The landslide events are generally induced by heavy rainfall, which is usually associated with tropical weather systems, including hurricanes. Heavy rainfall also results in flooding in several areas within the DA, as natural drainage channels overflow, and poorly maintained artificial channels are unable to accommodate the heavy flow of water. The dry season results in the destruction of crops and general vegetation. During such periods bush fires are also prevalent. These bush fires are generally the result of careless management of fires in the burning of garbage or the use of the slash and burn technique by our farmers.

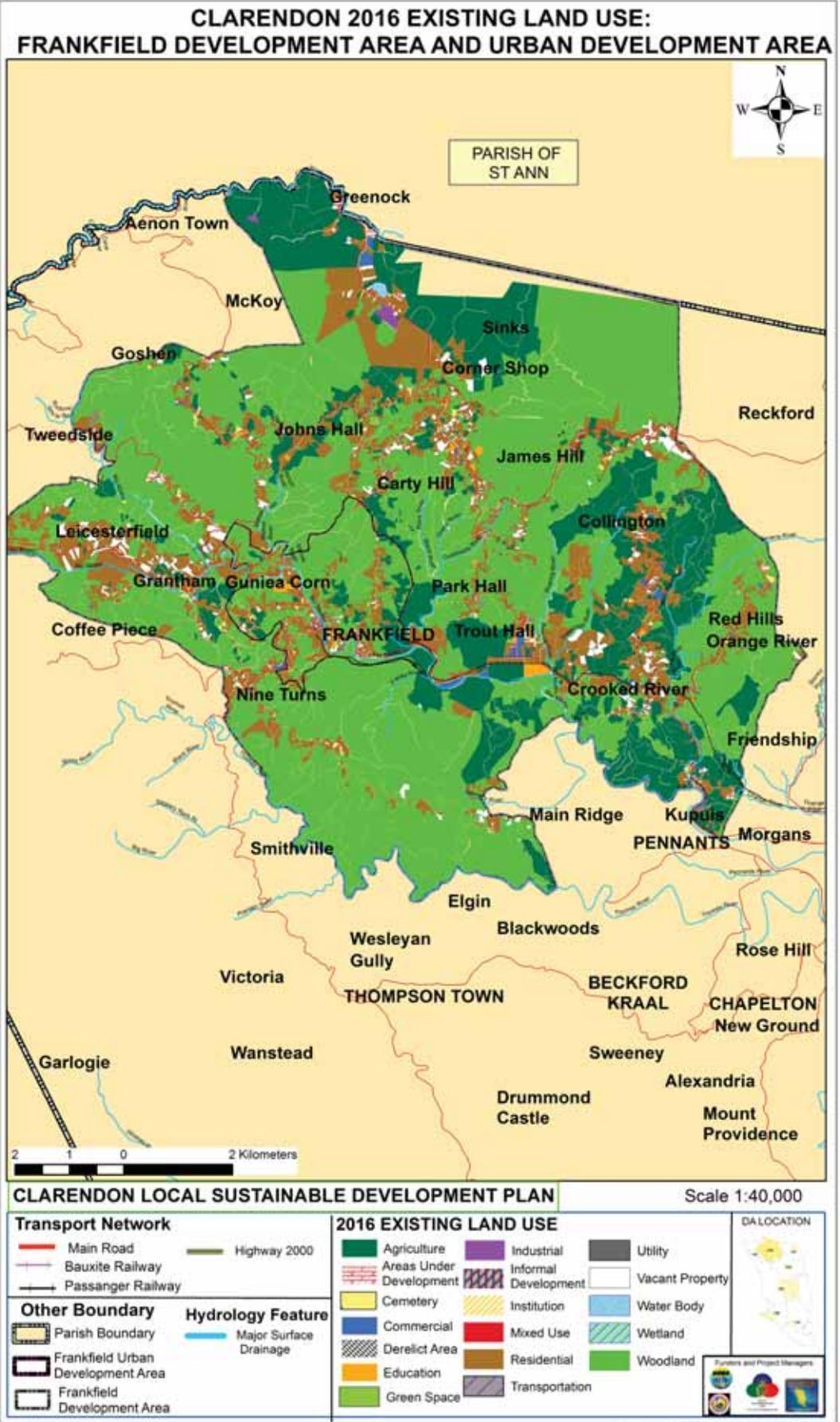
### 6.2.7. OVERVIEW OF LAND USE

The existing land use pattern of the the Frankfield DA reflects the rural nature of the local area. Woodlands which dominate, are spread along the entire geographic boundaries. Agriculture which is the mainstay of the local economy is second. Linear built up areas; primarily made up of residential parcels are spread across the entire DA; with the highest concentrations occurring in Frankfield and James Hill, which are the main centres for economic activities.

### 6.2.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

All land use related issues and challenges within the Frankfield DA relate to uncoordinated use of the land. Competing interests in the development of land in the DA, coupled with the absence of up to date land use regulations, have resulted in a haphazard land use pattern. This is further resulting in scale diseconomies in the provision of infrastructure and services, as well as other socioeconomic issues.

# 6.2. THE FRANKFIELD DA PLAN



## 6.2. THE FRANKFIELD DA PLAN

### 6.2.9. OVERVIEW OF SOCIAL WELL-BEING

There are approximately 5879 dwelling units within the Frankfield DA which house a population of approximately 21,763 persons. This aggregates to approximately 11,328 (52%) males and 10,435 (48%) females.

The DA has access to a number of social facilities and services as highlighted in Table., below.

Types	Number	Location	Types	Number	Location
Community Centre	6		Public Libraries	2	James Hill & Frankfield
Educational Institutions	34	All communities	Community Shelters	9	
Churches	93	All communities	Court House	1	Frankfield
Police Station	1	Frankfield	Post Office/ Postal Agency	8	James Hill Proper, James Hill, Crooked River, Trout Hall, Peckham, Frankfield
Fire Station	1	Frankfield			
Cemeteries	4	James Hill Proper, Crooked River, Trout Hall, Peckham			
Markets	1	Frankfield			
Playfields	9	Frankfield, Trout Hall, Peckham			

### 6.2.10. SUMMARY OF SOCIAL WELL-BEING ISSUES AND CHALLENGES

Most of the social problems within the Frankfield DA relate to the poor conditions of the social infrastructure. A number of the social facilities, including the playfields, schools, community centres, market, postal points, and cemeteries are in a poor state.

Additionally, most of these same social services are not easily accessible, and some are also lacking of resources. Throughout the consultations, residents complained of traveling long distances to access healthcare and the postal services. They also claim that due to a lack of resources, they usually have to wait long periods to access these services. Their claims were somewhat substantiated by research which shows that a number of social facilities and services lack the requisite resources. For instance, the James Hill Health Centre is a Type II facility which is operating as a Type I. Residents have also pointed out that robbery and praedial larceny are common crimes throughout the DA. They believe these activities are being carried out by the younger population, which include individuals from outside the DA and unattached youth from the local area. The residents have also expressed that several abandoned buildings are found within the DA. These are becoming popular hangout spots for unattached youth and could even facilitate the coordination of crimes.

### 6.2.11. OVERVIEW OF ECONOMIC DEVELOPMENT

Agriculture, which includes small to medium-scale farming, forms the core of the economic base of the Frankfield DA. Agricultural activities include both livestock and crop production. Crop production is however more dominant with the chief crops grown being sugar cane, citrus, tobacco, coffee, yam and dasheen. Trout Hall Limited, which is involved in the growing, reaping and exporting of ugli, which is a citrus fruit, is one

## 6.2. THE FRANKFIELD DA PLAN

of the main source of employment in the DA. The agro processing plant, Maurice Food Processing, in Tweedside, is also a major source of employment for residents. Other economic activities within the DA are mainly centred on commerce which is restricted to the town of Frankfield. Commercial activities within the DA include medium and small scale businesses for example, financial institutions, wholesale and retail supermarkets, clothing stores, pharmacies, bakeries and restaurants.

### 6.2.12. SUMMARY OF ECONOMIC ISSUES AND CHALLENGES

Lack of diversity is hurting the local economy, which is highly dependent on agriculture which is unable to generate sustained economic growth within the DA. The sector is faces several issues and challenges including low levels of productivity, praedial larceny and disasters which cause significant loss to farmers annually. Employment levels are therefore quite low, and there are limited job opportunities outside of the sector. Additionally interest in agriculture is declining amongst the youth, which makes it difficult to incorporate them in the sector. Two (2) of the major sources of employment; Trout Hall Limited and Maurice Food Processing, hire most of their labour on a seasonal basis. Unemployment is therefore a perennial problem in the DA.

### 6.2.13. OVERVIEW OF GOVERNANCE

The Frankfield DA falls within the Northern and Western Clarendon Constituencies, and the Frankfield and Ritchies Parish Council Divisions. Civil Society Governance of the DA is being carried out by thirteen (13) CBOs, most of which are youth clubs.

### 6.2.14. SUMMARY OF GOVERNANCE ISSUES AND CHALLENGES

The primary issues relating to governance within the Frankfield DA is political tribalism, and was identified to be one of the top five issues plaguing the DA. Limited participation in CBOs is another issue. Locals tend to show strong, unequivocal and indiscriminate loyalty towards political parties. This is believed to be negatively impacting the growth and development of the DA. Additionally, participation in local governance is largely lacking, as a significant percentage of residents are unaware of existing CBOs.

### 6.2.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### • PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the Frankfield DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** The Frankfield Growth Centre will accommodate urban type residential developments up to a maximum density of 50 habitable rooms per hectare (20 habitable rooms per acre) with heights not exceeding two storeys which will vary by the Planning Authorities in relation to the physical conditions that exist in the area.

**Policy 2:** Only individual dwellings and other small developments will normally be allowed outside of the Frankfield Growth Centre in accordance with the proposed land use map and the relevant planning standards and policies.

**Policy 3:** The Planning Authorities will ensure that new developments in the vicinity of the Guinea Corn formations be carefully assessed to ensure sensitivity to the characteristics of this area and for the protection and safety of the development and residents.

**Policy 4:** Strong consideration will be given for proposals involving the establishment of agro-industrial developments on lands zoned for agriculture and residential/agriculture purposes, provided that there will be no negative impact on the character of the area.

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**Policy 5:** Light industrial uses which are ancillary to the residential use, will be supported in areas zoned for residential/commercial purposes on the proposed land use map, provided that such activities do not detract from or negatively impact the residential amenities of the area.

**Policy 6:** Agricultural activities or any developments that are in breach of conservation policies will not normally be supported within areas zoned as green spaces.

**Policy 7:** The Planning Authorities will not support any activities that will result in the degradation of the Rio Minho Watershed Unit and the quality and quantity of the water resources throughout the local Planning Area.

**Policy 8:** In areas where development is permitted adjacent to rivers or streams, the setback shall be a minimum of 30 metres from the banks and may be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 9:** The local Planning Authority will not grant planning permission for any developments to historic buildings or sites in the Tweedside Square, at the birthplace of Claude McKay, or any identified area if it considers that such action would adversely affect the architectural or historic interest of the area.

**Policy 10:** Planning permission will not be given for any activities which will be in conflict with proposals to use waterfalls in the Collington area for recreational tourism purposes.

### • TRAINING OF THE RIO MINHO

A river training programme will be implemented along the Rio Minho within the DA as part of the Development Strategy. Over time, sections of the banks of the Rio Minho have been eroded resulting in the widening of the river bank, mainly in the area of the Frankfield town centre. There has also been the loss of roadways and the under cutting of lands. River training exercises will therefore be carried out to modify the course of the Rio Minho so as to minimize these adverse effects.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	NWA, NEPA, WRA

### • ESTABLISHMENT OF A TRANSPORT CENTRE

There is no public transportation centre in the town of Frankfield. This results in public passenger vehicles picking up and letting down passengers arbitrarily along the Frankfield main road. This situation has resulted in some amount of chaos and traffic congestion in the town; a situation which will be exacerbated with the development of the local area into a growth centre. Allowance will therefore be made to secure lands for the development of a public transportation centre as a part of the long term plan.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MTM

### • ROAD REHABILITATION

Several roads within the DA are in need of repairs and will be rehabilitated under this Plan. However, the rehabilitation of the access road to Collington is one of the projects which is critical to the development of the DA. The rehabilitation of this roadway is necessary not only to address the migration issue plaguing the district but to support the proposal to develop the waterfalls within the area as tourism attractions<sup>6</sup>. Likewise, improvements in the road condition is critical to address migration issues in Trout Hall Pass.

<sup>6</sup> The use of zip lines to access the waterfalls for tourism may also be explored.

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TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MTM, NWA, CPC, MICAF

### • WATER SYSYTEM IMPROVEMENTS

The Frankfield DA faces a chronic water supply issue. Despite the presence of several springs and rivers within the DA, residents do not benefit from a regular and consistent water supply. Data collected revealed that just about a half of the population has water (from public or private sources) piped into their yards or into their dwellings. The remaining half of the population depend on standpipes, rivers, springs, streams and other unimproved sources for water. A significant fraction of those with piped water, also depend on these sources due to irregularities in the supply. The community of Grantham has been identified in the Rural Water Supply Strategy, 2015 as one of the most water deficient areas in the Parish.

With this Plan encouraging a shift away from the use of standpipes and unimproved sources of water for potable purposes, as well as a reduction in the number of homes with their source of potable water being more than 100 metres away, it is critical that the DA's water resources be developed. Several different types of systems will be utilized based on the physical and locational characteristics of local communities. Individual household rainwater harvesting is proposed for the community of Grantham, as the NWC network does not reach the area, and the local infrastructure does not appear to be adequate to meet residents' needs. This option will also be utilized in areas with similar characteristics. Old pipelines within areas such as Trout Hall Pass and Lampard will be replaced to reduce water loss. Other approaches will include building new catchments and increasing the storage capacities of existing community catchments.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEGJC, CPC, RWSL, NWC

### • RURAL ELECTRIFICATION

There is need for an electrification programme in the districts of Lampard and Collington in the community of Trout Hall. Less than a half of the households within these districts have access to electricity. This is inconsistent with Government's policy which is to have 100 percent access to the utility. The relevant stakeholder will be encouraged to implement the Rural Electrification Programme within the local areas. This programme will explore the potential for providing small decentralised electricity systems as these districts are characterised by isolated developments.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	REP

### • THE PROVISION OF CAPs

Internet access in the DA is quite low and needs to be significantly improved. At present, internet access is restricted mainly to facilities located in Frankfield and James Hill. CAPs will therefore be developed in Trout Hall, Peckham, Orange Hill, John's Hall, Grantham and Crooked River. These will enable community members to use the Internet at minimal or no cost to them to facilitate research, bill payments, education, communication, business, marketing, and social networking.

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TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MSET, Private Sector

### • PROMOTING AGROPROCESSING

As highlighted under section....of the Manufacturing Sector of this Plan, there is significant scope for expanding the local agro-processing industry. Small to medium scale agro-processing currently takes place in the Frankfield DA and the area is ideal for the expansion in such activities. The northern section of the parish is heavily dependent on agriculture with the Frankfield community acting as a catchment for produce in this section of Clarendon. Much of the raw material needed for agro-processing will therefore be readily available. Additionally, the possible reintroduction of the rail service will complement this initiative.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF

### • DEVELOPING DRY STORAGE, FROZEN FOOD STORAGE AND REFRIGERATED STORAGE FACILITIES

Farmers across the parish are faced with the issue of a weak marketing strategy, which stems from, among other things, the absence of adequate storage facilities. As a result they constantly suffer heavy losses from produce being sold at knockdown prices, or being dumped because of lack of sale. With the DA heavily dependent on agriculture, such losses can be crippling to the local economy. Measures, which include the provision of adequate storage, will be implemented to assist in safeguarding the local economy. The provision of efficient and consistent dry storage, frozen food storage and refrigerated storage facilities is critical, to enable storage of surplus food items during production season, and provide farmers with a constant supply beyond the harvest period. Year-round availability of seasonal crop is essential to sustain business. This will ensure that local agro processing plants have a constant year-long supply of raw materials which can further convert seasonal employment into fulltime employment. This will reduce economic losses and help farmers to have a more sustainable source of income.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF, Private Sector

### • DEVELOPMENT OF A CENTRAL ABATTOIR

With the implementation of this Plan, support will be given to the establishment of a central abattoir for the parish within the Frankfield DA. This is necessary to support Government's effort to streamline the country's slaughtering houses and abattoirs to meet international best practices. The facility will be fully automated and will produce meats of highest standards, making it suitable for the hotel and manufacturing sectors, as well as for the export market. It therefore means that this functional state of the art abattoir will contribute to reducing Jamaica's reliance on imported meat, while generating foreign exchange. It will also provide a ready market for local livestock farmers.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MICAF, Private Sector

## 6.2. THE FRANKFIELD DA PLAN

### • RESTORING AND/OR RETROFITTING THE OLD COFFEE FACTORY



Figure 108: The Old Coffee Factory in Trout Hall.

The Trout Hall Coffee Factory closed its doors in 2000. However, the building which still stands may be considered as an asset to the DA. There is the opportunity for it to be restored and/ or retrofitted and used as an agro processing plant. A feasibility study will be undertaken to determine whether the facility should be reused as a coffee factory or as another type of agro processing facility. Following the results of the study, it will be developed for use by the community or by an investor.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF, Private Sector, Frankfield DAC

### • EXPANDING BAMBOO MANUFACTURING

As highlighted under the manufacturing section of this Plan, there is significant scope for investment in bamboo manufacturing. A multi-million dollar investment currently operates in the Frankfield DA in the Peckham community under the BPIP. This project includes: the training of 50 to 80 residents of Peckham Woods in bamboo cultivation, by-product manufacturing methodologies and techniques; facilitating organic certification of bamboo cultivations; and the establishment of a pre-processing plant. The inadequate support will be given to this project and the feasibility of expanding its scope or accommodating similar projects within the DA will be explored.



Figure 109: The Peckham Bamboo Project.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	CPC, MEGJC

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### • TOURISM DEVELOPMENT COLLINGTON IN TROUT HALL (WATER FALLS)



Figure 110: One of the many waterfalls in Collington.

The landscape of the district of Collington in the DA is dotwith several waterfalls. These waterfalls are believed to have some amount of tourism potential and can contribute to the nature based tourism product. Through the community consultations, residents of the DA have advocated for their development. The feasibility of developing one or more of these waterfalls into tourist attractions will be explored. As part of the study, the potential for providing a picnic area with rental kiosks, recreational gazebos, and a photo sales facility will be explored.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MOT, TPDCO

### • ESTABLISHMENT OF THE CLAUDE MCKAY MUSEUM

Claude McKay was an internationally acclaimed writer and poet, who was born in James Hill. He was awarded the Silver Musgrave Medal from the Institute of Jamaica for first volumes of poems, Songs of Jamaica and Constab Ballads, which were published in 1912. He later migrated to the United States where he became one of the leading writers of the Harlem Negro Renaissance. He died in 1948 and was awarded the Order of Jamaica in 1977 in recognition of his admirable contribution to literature.

With the international recognition and fame of Claude McKay, his birthplace in Clarendon may be exploited through tourism. More specifically, a museum named in his honour may be developed on the site where he was born to showcase his work. This museum may be dedicated to not just his work, but that of all famous Jamaican poets. This will contribute to the Parish's heritage tourism product.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	CGES, MOT

## 6.2. THE FRANKFIELD DA PLAN

### • EQUIPPING RESIDENTS WITH THE SKILLS NECESSARY TO GROW AND SUPPORT THE LOCAL ECONOMY

With the implementation of this Plan, agro processing and bamboo manufacturing will be the main economic activities within the DA. Locals will be empowered to take advantage of the opportunities within these industries through training. Training in bamboo manufacturing is already ongoing, but programmes in agro processing will need to be developed. The Brae Head Community Centre which is severely underutilised, as well as the Crooked River Skills Training Centre which was vandalized a few years ago, may be upgraded and used to roll out such training sessions.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEYI, Heart Trust, Private Sector, Education and Training Institution

### • SCHOOL IMPROVEMENTS

There are several schools within the DA which are recommended for rehabilitation or improvement works. These schools include:

- Tweedside Primary-
- Tweedside Early Childhood Institute Peckham Basic-
- Crooked River All Age-
- Crooked River Basic School-
- Long Look Primary-
- The Gladstone Ricketts Basic School Trout Hall All Age-
- Park Hall Primary & Infant-
- Mears Basic School-

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEYI

### • REHABILITATION OF THE FRANKFIELD MARKET

Despite the fact that Frankfield acts as a catchment for agricultural produce in the northern section of Clarendon, the local market currently sits virtually abandoned. Only a few vendors sell their wares on the fringes of the facility, as most farmers tend to take these produce to May Pen, Spalding and as far as Mandeville and Linstead. With the May Pen Market under severe pressure, for adequate space, there is need to renovate the Frankfield Market to help ease the strain. There is also the recognition that with the regulation of street vending in the May Pen town centre, the need for additional space becomes urgent. In order to develop the Frankfield Market to rival the May Pen market, dry storage, frozen food storage and refrigerated storage facilities will be provided within the Market. This will enable farmers/vendors to adequately store surplus food items during times of glut and also provide them with a consistent supply all year-round. The provision of these facilities will help to encourage more farmer/vendors to use the Frankfield Market. In addition, the availability of seasonal crops outside of the production season, will also help to pull consumers to the Frankfield Market.

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Figure 111: The Frankfield Market which is currently underutilized.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MLGCD

### • TWEEDSIDE SQUARE HERITAGE PRESERVATION

Located within the Tweedside square are a number of buildings of architectural significance. These buildings were built several decades ago and some are currently being used as dwelling houses and business places. They represent an important part of the district and the Parish's cultural heritage which should therefore be preserved. In light of this, the potential for offering formal protection to these structures will be explored.

### • RAILWAY STATION

The use of the rail service during the period 1925- 1974 significantly impacted the history of the Frankfield community. Though the rail service in the region has been discontinued, the railway station could be restored and be available for use when the rail service is reinstated. The railway station will also be seen as a point of interest within Frankfield due to its contribution to the area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	JNHT, CPC

### • PROVISION OF RECREATIONAL SPACES

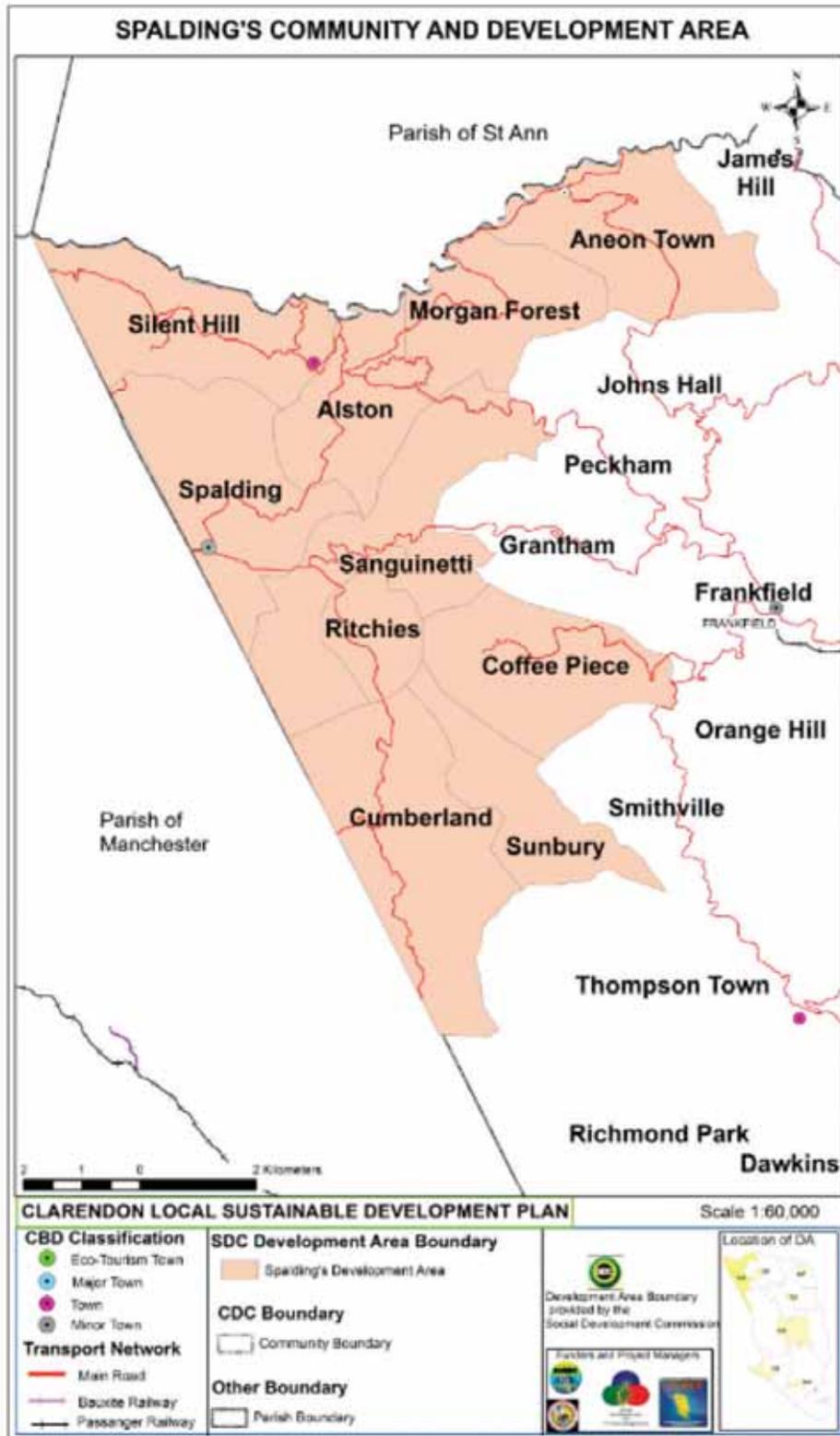
The Frankfield DA has an acute shortage of recreational spaces which residents claim is negatively impacting the social advancement of the area. However, there are several existing sites within the DA which may be redeveloped to remedy this issue. As one of the EATs of this Plan, the James Hill multipurpose sports facility has been rehabilitated. Similar works are proposed for the Crooked River Playfield. This playfield lies adjacent to the Crooked River Basic School and Community Centre/Training Centre and though still being utilized, it needs significant upgrading and rehabilitation. It is large enough to be redeveloped into a multipurpose sports facility. Additionally, this Plan is proposing that the incomplete multifunctional court in Trout Hall be fully completed. Adequate Management Plans will be required from the relevant local stakeholders before these facilities are redeveloped and maintained.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, Private Sector

## 6.3. THE SPALDING DA PLAN

### 6.3.1. INTRODUCTION TO THE SPALDING DA

The Spalding DA covers approximately 76.03 sq.km of land in the hilly north-western section of Clarendon, on the border of St Ann and Manchester. It is bordered to the north by St Ann, to the south by Thompson Town and Smithville, to the East by Grantham and Peckham, and to the west by Manchester. The DA comprises of nine (9) communities, Spalding, Alston, Coffee Piece, Cumberland, Ritchies, Aeon Town, Morgan Forrest, Silent Hill, and Sanguinetti, and 40 districts.



## 6.3. THE SPALDING DA PLAN

### 6.3.2. OVERVIEW OF THE NATURAL ENVIRONMENT

The Spalding DA possesses an abundance of natural resources. The Rio Minho (92.8 km) which is the longest river in Jamaica is believed to have its origin/source in the community of Ritchies. The Da is also home to several springs, gullies, farmlands, and forests which include medicinal plants. Due to its location in the hilly interior of the island, the area enjoys a salubrious climate especially during the night. Rain falls more frequently than in the remainder of the parish, though the pattern follows the general pattern of the island where the ultimate rainy periods are at the beginning and end of the hurricane season.

### 6.3.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

Natural environmental issues and challenges within the Spalding DA are seemingly low. The main problem reported to be affecting the local area is pollution, which includes the contamination of air and water. Air pollution is generally the result of traffic congestion within the town of Spalding, in addition to the burning of garbage throughout the boundaries of the DA. Water pollution is mainly caused by tainted agricultural practices, including the use of chemical fertilisers. Other minor issues of impact on the local natural environment are: deforestation and illegal sand mining.

### 6.3.4. OVERVIEW OF THE BUILT ENVIRONMENT

The transportation system in the Spalding DA is fairly good. The road conditions can be described as good with only a few potholes in communities like Sanguinetti, Coffee Piece and Spalding. The main mode of transport is by licensed and unlicensed taxis and buses, which provide a fairly reliable service. The only other noteworthy mode of transportation is by personal motor vehicles.

The Spalding DA is served by both the Christiana/Spalding Water Supply System in Silent Hill as well as the Two Meeting Water Supply System in Borobridge. However, over half of the households (52.0%) utilize stored water either from a private or public catchment. Less than ten percent (8.9%) of households have portable water piped into their homes and yards and a notable 21.1% receive the basic commodity from a river/spring or stream. Other sources of water include public standpipes and water from trucks.

There is no central sewage system in the DA. There is an approximately equal split between the number of households utilizing pit latrines and those utilizing water closets not linked to a central sewer system. Pit latrines are however more prevalent in Coffee Piece and Aenon Town.

Over 70 percent of the garbage generated by households within the DA is burnt, while approximately 22 percent is collected through the public system. Only the community of Spalding receives a fairly reliable service of public garbage collection, resulting in approximately 70 percent of the garbage generated being collected by trucks.

Almost all households (97%) in the Development Area use electricity as their main source of lighting, while propane gas is the predominant fuel used for cooking, with charcoal being the only other notable alternative.

Access to the various mode of telecommunications varies within the DA. Almost all the local households have access to telephone service, but mainly via cellular phones. Only a few households have access to landlines only or both landlines and cellular phones. Similarly, access to the internet and cable television is also very low.

### 6.3.5. SUMMARY OF THE BUILT ENVIRONMENT ISSUES AND CHALLENGES

There are a number of issues impacting the built environment within the Spalding DA, These stem primarily from a haphazard development pattern. The town of Spalding is experiencing a major traffic congestion

## 6.3. THE SPALDING DA PLAN

problem. This situation can be attributed to a lack of adequate on-site parking facilities, inadequate sidewalks, and the commercialization of walkways which forces pedestrians to walk on roadways. The DA is also plagued with water supply issues, as less than ten percent (10%) of the households have potable water piped into their homes and yards. Those with piped water frequently experience low pressure or no pressure at all. In addition to that, the use of pit latrines is quite high, and that poses a public health and sanitation risk. Likewise, solid waste which is generated and not collected by the formal system is a risk to public health. Burning is also resulting in environmental damage. Street lighting is lacking and is a major risk to public safety especially that there are a number of overgrown lots throughout the DA. Access to internet and cable services are extremely low.

### 6.3.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

The DA is particularly vulnerable to damage from hurricanes. In the recent past, several hurricanes, which periodically trigger flooding and/landslides, have damaged homes and infrastructure. Additionally, hurricanes have also threatened local economic development, by severely impacting the local agricultural sector. Much of the damage resulting from these tropical cyclones may be attributed to the hilly terrain of the Development Area.

The DA also has a short history of earthquakes. In 2005 the community of Aeon Town was affected by an earthquake measuring 5.1 which destroyed two homes and damaged several others. According to the Earthquake Unit at the University of West Indies, the tremor is attributed to the Rio Minho-Crawle River fault which traverses the local area.

### 6.3.7. OVERVIEW OF LAND USE

Woodlands comprise the most significant land use within the Spalding DA. Except for the North Western section, all other areas of the DA are in woodlands. Agriculture also occupies a significant portion of the lands, especially in the north western section. The DA's land use also includes built up areas spread across the entire boundary in linear fashion. The built up areas are primarily comprised of residences with several vacant lots in the vicinity of Alston.

### 6.3.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

Unplanned growth within the DA has created a haphazard land use pattern. This uncoordinated land use can lead to the suboptimal use of lands, as well as a number of socio-economic issues, including land use conflicts. This state of affairs is resulting in scale diseconomies in the provision of infrastructure and services.

## 6.3. THE SPALDING DA PLAN



### 6.3.9. OVERVIEW OF ECONOMIC DEVELOPMENT

The Spalding DA abounds with economic activities. The local economy is highly dependent on agriculture, however, many individuals are also employed in other industries, particularly service and manufacturing. These alternatives to agriculture are concentrated mainly in the commercial hub of Spalding. The town is a constant buzz of activities which is aptly described as ‘the town that never sleeps’. The several business enterprises throughout the area include: banks and cambios, pharmacies, fast food outlets, hardware stores, supermarkets, and medical facilities. The area not only serves as a shopping centre for residents from the surrounding communities who would otherwise have to journey to Manchester or May Pen, but has become a popular rest stop for tourists travelling from the North Coast via Brown’s Town en route to the South Coast.

## 6.3. THE SPALDING DA PLAN

### 6.3.10. SUMMARY OF ECONOMIC ISSUES AND CHALLENGES

Most of the issues reported to be impacting on the local economy are related to the agricultural sector. Praedial larceny is a widespread issue in the sector resulting in millions of dollars' worth of losses to farmers annually basis. This praedial larceny also serves as a disincentive to investment. Investment in modern technologies is quite low, resulting in low production and competitiveness. The absence of value added production within the sector results in under maximisation of production and some loss of produce due to the absence of markets.

Foreign investment is also believed to be negatively impacting local economic development, as residents observe that, Chinese businesses unfairly compete with locally-owned businesses, as the Chinese businesses tend to emerge as the winners, due to their seeming ability to access capital. The conclusion is that wealth from the local area is being transferred out of the country.

### 6.3.11. OVERVIEW OF SOCIAL WELL-BEING

The population of the Spalding DA is approximately 19,993 persons who reside in approximately 5,160 dwelling units. This population is made up of 10,335 males and 9,658 females.

The DA has a number of social facilities which are highlighted in the table below.

Types	Number	Location	Types	Number	Location
Churches	31	All communities in DA	Court Houses	1	Spalding
Post Office/ Agency	6	Spalding, Coffee Piece, Morgan's Forrest, Silent Hill, Sanguinetti, Alston	Police Station	1	Spalding
Community Centre	4	Alston, Coffee Piece, Sanguinetti, Silent Hill	Libraries	1	Spalding
Markets	1	Spalding	Heritage Sites	1 (Quaco Rocks)	Ritchies
Public Cemeteries	3		Recreation	1	Coffee Piece
Financial Institutions	3	Spalding	Educational Institutions	33	
Playfields	7	Spalding, Coffee Piece, Silent Hill, Sanguinetti, Spalding			

The Spalding DA facilitates access to a number of social amenities. Within the local area, are churches, schools<sup>7</sup>, healthcare facilities<sup>8</sup>, a police station, post offices and postal agencies, financial institutions, cemeteries, community centres, recreational open spaces and other social amenities.

### 6.3.12. SUMMARY OF SOCIAL WELL-BEING ISSUES AND CHALLENGES

The list of social problems within the Spalding DA is fairly lengthy. One of the most prominent is the issue of unemployment. Approximately 46% percent of the labour force is unemployed. The reasons cited for this are: lack of job opportunities, lack of requisite qualifications and skills, lack of certification, lack of access to

7. Fifteen (15) basic, six (6) primaries, 5 Junior high, 3 secondary and one (1) tertiary.

8. Two type I and three type II facilities. The Chapelton Hospital, the Percy Junior Hospital and the May Pen Public Hospital are also utilized by residents.

## 6.3. THE SPALDING DA PLAN

finances to start businesses, and over supply of persons with the same skills. Educational issues are also believed to be impacting unemployment, as the local educational sector is faced with relatively high levels of school drop-outs and inadequate opportunities for education beyond the secondary level. Both issues are linked to financial challenges, as students/parents experience difficulty in funding educational programmes. The DA is also facing several public safety issues. There are no firefighting facility; the closest facility is located in Frankfield, meaning that fire units have to travel over long and difficult terrain to get to some areas in the event of a fire. The single police station is also deemed to be inadequate to serve the area. It has a staff complement of twenty (20) officers and is equipped with one motor vehicle and one motor cycle. At present, the incidences of crime within the DA is quite low, but this may change with the development of small criminal gangs<sup>9</sup>. The moral breakdown in the local society which is resulting in a lack of cooperation among citizens and disunity even amongst churches, may serve as an encouragement for these criminal activities. It should be noted that there are numerous allegations of unreported cases of child abuse, domestic violence, carnal abuse, sexual abuse, child labour and incest. Regarding healthcare, the major issue is the long waiting periods which patients endure. This is linked to poor customer service, in addition to pressure on the existing facilities, and staff complement is also inadequate. Other social problems identified within the DA include teenage pregnancy, a shortage of recreational facilities including community centres, and the absence of a public library which is accentuated by the fact that internet access is low.

### 6.3.13. OVERVIEW OF GOVERNANCE

The Spalding DA falls primarily in the North Western constituency of Clarendon, with a very small section being in Northern Clarendon. It also forms part of the Spalding, Aenon Town and Ritches Parish Council Divisions. Civil Society Governance of the DA is being carried out by thirty-one (31) CBOs, most of which fall under the umbrella of the Spalding DAC. The CBOs include a mix of youth clubs, Citizens Associations, Faith based institutions and agricultural groups.

### 6.3.14. SUMMARY OF GOVERNANCE ISSUES AND CHALLENGES

Poor political representation was identified by residents as among the main issues impacting growth and development in the Spalding DA. According to residents, decisions are usually made using a top down rather than bottom up approach i.e residents don't feel that they are integral to their own growth and development.

### 6.3.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### • PROPOSED LAND USE POLICIES

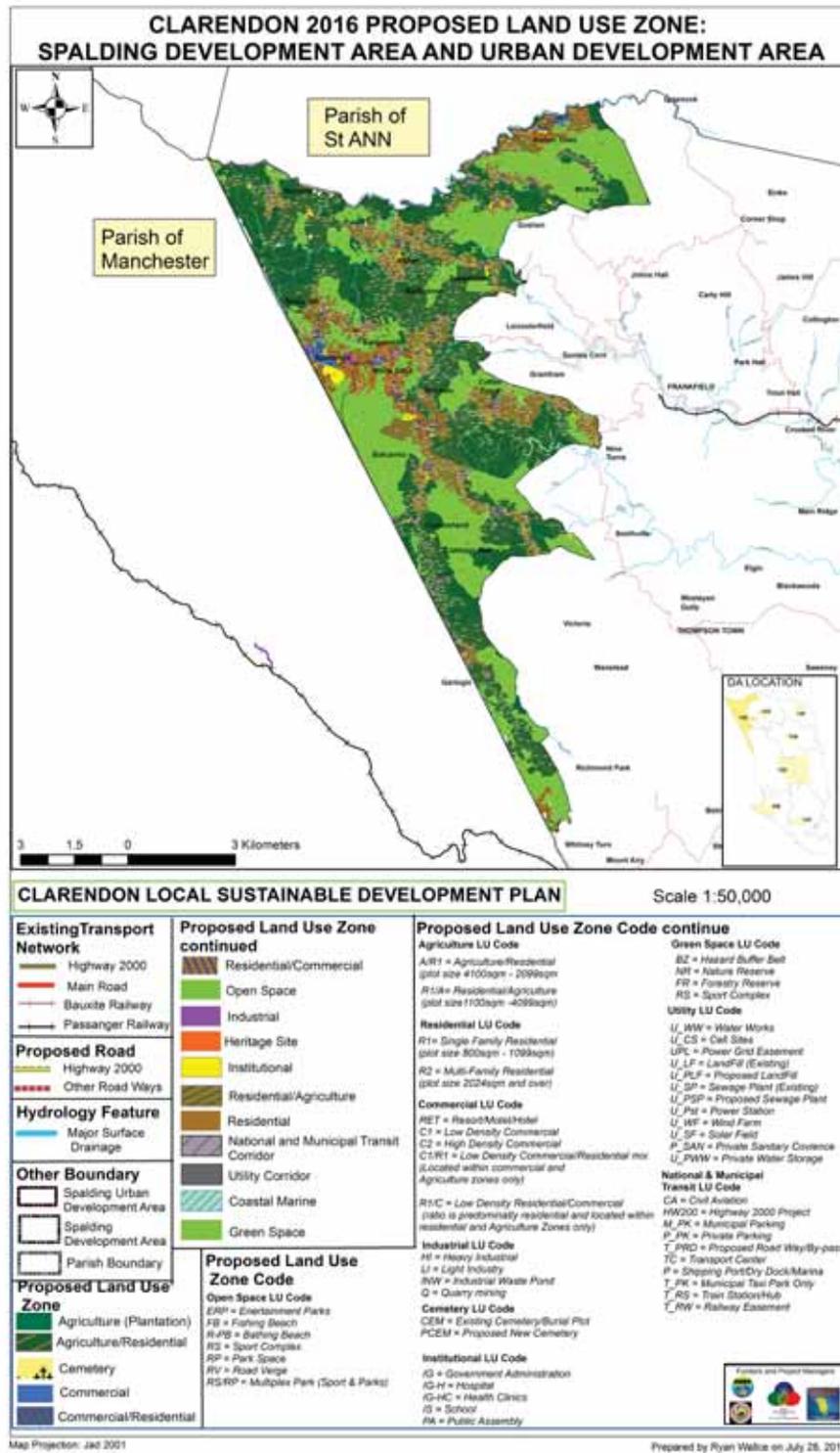
The following policies are made specifically for the orderly and progressive development of the Spalding DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** The Spalding Growth Centre will accommodate urban type residential developments up to a maximum density of 50 habitable rooms per hectare (30 habitable rooms per acre) and heights not exceeding two stories which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 2:** The Aenon Town Rural Settlement Node will accommodate residential developments of up to 10 units, maximum density of 50 habitable rooms per hectare (20 habitable rooms per acre) which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 3:** Only individual dwellings and other small developments will normally be allowed outside of Spalding and Aenon Town, in accordance with the proposed land use map and the relevant Planning Standards and Policies.

## 6.3. THE SPALDING DA PLAN



**Policy 4:** Consideration will be given to the establishment of a retirement tourism village outside of Spalding and Aeon Town, particularly in Alston. A change of use request may need to be submitted.

**Policy 5:** In areas where development is permitted adjacent to rivers or streams, the setback shall be a minimum of 30 metres from the banks and may be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 6:** Consideration will be given for proposals involving the establishment of agro-industrial developments on lands zoned for agriculture and residential/agriculture purposes, provided that there will be no negative impact on the character of the area.

## 6.3. THE SPALDING DA PLAN

**Policy 7:** Light industrial uses which are ancillary to the residential use will be supported in areas zoned for residential/commercial purposes on the proposed land use map, provided that such activities do not detract from the residential amenities of the area.

**Policy 10:** Planning permission will not be given for any developments which will adversely affect the flow and quality of any water resources, including rivers, streams, caves and sinkholes.

**Policy 8:** Agricultural activities or any developments that are in breach of Conservation Policies will not normally be supported within areas zoned for green space.

**Policy 9:** The relevant authorities will seek to acquire lands highlighted on the proposed land use zoning map for the construction of a bypass road.

### • ESTABLISHMENT OF A SPECIAL RELATIONSHIP TO MANAGE THE DEVELOPMENT OF THE SPALDINGS GROWTH CENTRE

The Spaldings community which includes the growth centre spans the Clarendon-Manchester parish border. It will therefore require special provisions to be made between the two (2) respective Local Planning Authorities to assess any future developments in the area. As such, this Plan is advocating the establishment of a structured relationship between the two (2) organisations, to ensure that policies and programmes are implemented in a coordinated manner. This relationship will include supporting cross border projects which contribute to the wholesome development of the area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, Manchester Parish Council

### • CREATING A TRAFFIC MANAGEMENT PLAN FOR THE TOWN OF SPALDING

The town of Spalding is plagued with the issue of traffic congestion. This is stemming from inadequate parking for vehicles and the failure of the public transporters to utilize the Minnie Mae Clarke transportation centre. The situation will become more chaotic with increased development within the DA, therefore, a Traffic Management Plan will be implemented in the Town.

This Traffic Management Plan will focus on eliminating the root causes of the traffic congestion. Among the key actions proposed is: the development of a multi storey parking facility on a suitable portion of the Minnie Mae Clarke Transportation Centre. This will be utilized to satisfy the demand for private parking, which will be regulated along the streets to include the use of parking meters. Additionally, the section of the Minnie Mae Clarke Transportation Centre dedicated to public parking, will be upgraded to include all the requisite facilities to satisfy the needs of the commuting public. Full compliance and usage of the facility will be ensured.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MTM, Manchester Parish Council

### • EXPANDING THE VISIONARY BEE PROJECT

Through consultations, residents of the DA, including farmers and prospective farmers, expressed significant interest in apiculture, due to the high demand for honey (see 4.2.7.8.1. Strategic Objective #183B, pg. 378), coupled with the local climate. This interest can be supported as there is a wide variety of pollen producing plants in the DA. Such conditions create the ideal setting for this activity. This has resulted in residents selecting an apiculture project as their EAT under the CLSDP. The project, which is located in Alston and dubbed Visionary Bee, involves the training of twelve (12) participants in apiculture and the subsequent

## 6.3. THE SPALDING DA PLAN

commercial production of honey.

There is significant room for expanding the scope of this project in order to stimulate employment and economic growth in the DA. The number of boxes can be significantly increased from the present complement of 14 and participants may also be provided with proper stands to minimise the negative impact of ant infestation. There is now need for a honey extractor and the development of a storage and administrative building, in addition to proper marketing of the product.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, SDC

### • EXPANSION OF THE WHITE SHOP AGRO-BIZZ PROJECT

The White Shop Agro-Bizz Project which engages 10 youth farmers is one of the local economic initiatives implemented in the Parish under the CARILED programme (see 5.2.2.4. LED, pg. 451). The project has achieved overwhelming success and residents are advocating its expansion. Among other things, they are encouraging an increase in the number of crops planted and the number of farmers engaged. This Plan will support the request of the residents as an expansion in the project will further stimulate local economic development.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, SDC

### • PROMOTING AGRO PROCESSING

As outlined under of the Manufacturing Section of this Plan, an expansion in the scope of agro processing will be encouraged in the parish (see Expanding the Agro processing Industry, pg. 424). The Spalding DA is ideal for this activity as not only is it heavily dependent on agriculture but also has large expanses of underutilized Class III and Class IV agricultural lands. Additionally, residents of the DA have expressed considerable interest in agro processing. This will be promoted to support alternative income, job creation and local economic development.

The establishment of a Central Poultry Processing Plant will be used as a catalyst project for agroprocessing in the DA. Residents have expressed a strong desire for such a facility through the various consultation sessions. According to them, a number of local small farmers are engaged in poultry rearing, but there are high levels of inefficiency in the processing and marketing of their produce. With this Plan encouraging agro processing within the DA, this facility will be developed to spur growth in the industry. It will be equipped with, among other things, chicken plucker machines and cold storage.

Product diversification can lead to increased profits hence this will be undertaken. Accordingly, the feasibility of producing seasoned chicken (in addition to the unseasoned meat) will be explored. Modernisation has led to an increase in demand for more ready-made products therefore, there is a market for this product. Much of the seasonings may be obtained from local farmers which will establish a local supply chain, thereby contributing to local economic development.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF, CPC, SDC

## 6.3. THE SPALDING DA PLAN

### • ESTABLISHMENT OF A RETIREMENT TOURISM VILLAGE

As highlighted by the Tourism Sector Plan, there is the potential for Clarendon to tap into the retirement tourism market. This is particularly true for the Spalding DA which has a similar climate to that of Mandeville, Manchester, which is an attractive location for Jamaican returning residents due to the aforesaid factor. This Plan therefore proposes the development of a Rental Retirement Village in the Spalding DA.

This Village will possibly comprise single-family homes, duplexes, townhouses, or condominiums and will be equipped with a mini golf course and a multipurpose community centre. The community centre will likely include a lounge, dining room, library, business centre, arts and crafts room, gym, billiards room, an indoor pool and other facilities. Residents will also have access to a range of personal services, including transportation. The facility will be well supported by qualified and efficient staff.

This should prove to be very attractive for both local and foreign retirees as it will provide a number of advantages to the residents which include low maintenance, easy access to entertainment and other facilities, fixed monthly living expenses and likeminded neighbours. Loneliness will also be significantly reduced. It will also be ideal for retirees who may not be able to afford to own their desired home, as well as those who travel regularly.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	Private Investor

### • DEVELOPING THE ECOTOURISM POTENTIAL OF AENON TOWN

Aenon Town is an occasional tourist destination with significant potential for development. The community is just south of the resort parish of St Ann and also has quality attractions, including caves and scenic look out points. These attractions will be developed to better position the community as an ecotourism destination. The product offered will be centred on spelunking or caving and picnicking.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	Private Investors, CPC, SDC

### • DEVELOPING A COMMUNITY CENTRE AND MULTIPURPOSE SPORTS FACILITY IN SPALDING

The availability of community centres and recreational facilities within the Spalding DA is limited. The need for such facilities is particularly compelling in the community of Spalding. Hence the lands across from the Spalding Primary School, which are currently used for recreational purposes by the school and surrounding residents, will be acquired for the erection of a community centre with recreational space to serve the entire area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium Term	MLGCD

### • PROVIDING CAPs

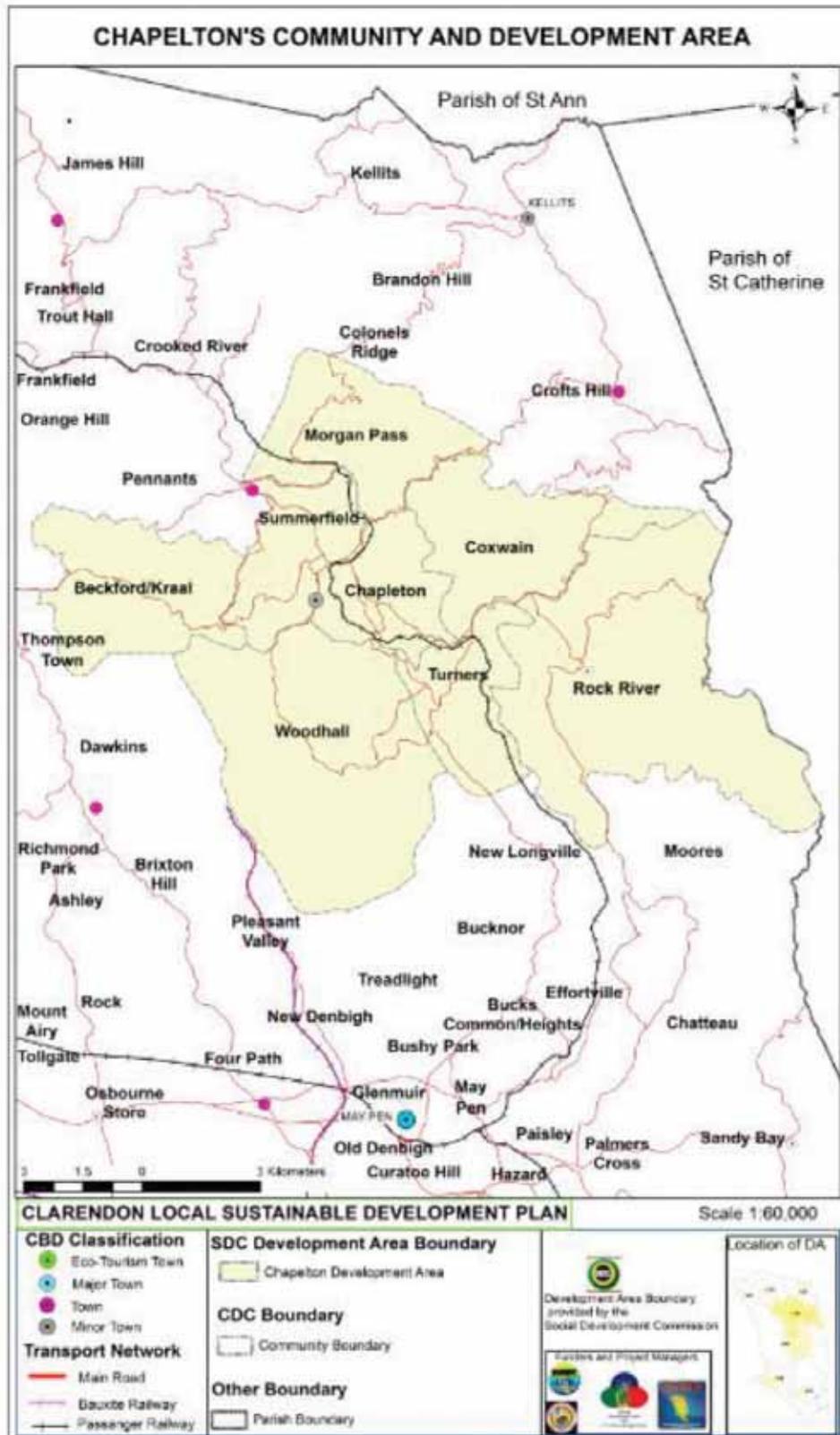
Internet access in the DA is quite low and will therefore be improved. This will be done through the provision of CAPs. These facilities will be located within the communities of Coffee Piece, Cumberland, Ritchies, Morgan Forrest, Silent Hill, and Sanguinetti. They will enable community members to use the internet at minimal or no cost to them to facilitate research, bill payments, education, communication, business, marketing, and social networking.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MSET, Private Investors

## 6.4. THE CHAPELTON DA PLAN

### 6.4.1. INTRODUCTION TO THE CHAPELTON DA

The Chapelton DA is located in the hills of Upper Clarendon, half way between Frankfield and May Pen. It covers an area of 152 sq kilometres, and is comprised of nine (9) communities and fifty-seven (57) districts. The DA is bordered by Colonel's Ridge to the North, New Denbigh and Pleasant Valley to the South, Ginger Ridge (St. Catherine) to the East and Thompson Town and Dawkins to the West.



## 6.4. THE CHAPELTON DA PLAN

### 6.4.2. OVERVIEW OF NATURAL ENVIRONMENT

The Chapelton DA, like much of Upper Clarendon, is predominantly hilly. It is endowed with several rivers, including the Thomas, Rio Minho, and Pindars, springs, gullies, lush vegetation, and fertile soil. The DA also has important deposits of sand and gold.



Figure 112: A section of the Rio Minho which runs through the DA.

### 6.4.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

The natural environment of the Chapelton DA is being impacted by several issues including pollution, illegal sand mining, and soil erosion. Pollution is mainly the end result of poor waste management practices throughout the DA which give rise to widespread dumping and the burning of garbage. The latter is a significant contributor to air pollution within the DA; an issue which is also stemming from traffic congestion in the town of Chapelton. The issue of illegal sand mining is a major cause for concern; as such activities are usually done with scant regard for the environment, leading to its wanton destruction. Similarly, soil erosion is a major issue in the local area, mainly as a result of over-cultivation and inadequate soil conservation techniques in hillside farming, as well as deforestation.

### 6.4.4. OVERVIEW OF THE BUILT ENVIRONMENT

Transportation within the DA is exclusively by road. The road network includes main and parochial roads which support several different modes of transport. These include licensed taxis which are used by 48% of households, private motor vehicles (16%), unlicensed taxis (13.5%), buses (9.5%) and motorcycles (3%). Other households utilize donkeys or walk.

Water for domestic purposes is sourced mainly from the Drummond Spring in Beckford Kraal in addition to three other facilities in Chapelton. However, only 42 percent of households depend on public water from these sources. This is inclusive of public water piped into dwellings (30%), public water piped into yard (1.5%), public catchments (1.5%) and public standpipes (9%). The other sources of water are private piped into dwelling (30%), private catchments (17%), springs/rivers/streams (6%) and purchased water (5%).

There is no central sewage treatment system within the DA. Most households (51%) utilize water closets that are linked to a sewer, while others depend on pit latrines (40%), water closets not linked to a sewer (8%) and soakaways (1%).

Garbage collection is limited mainly to the town of Chapelton, resulting in burning being the most widely practiced method of disposal. Some 55 % of local households burn their garbage, while 41 percent utilize the formal system of collection. The remainder of households dispose of their garbage by dumping or burning.

All communities within the DA have access to electricity, but a small fraction of households (1.7%) utilize kerosene lamps as their source of lighting. The fuel used for cooking is more diversified, as 53% of households use cooking gas (LAG), 34% use charcoal and 13% wood for cooking.

## 6.4. THE CHAPELTON DA PLAN

Most households in the DA have access to telephone service with almost 80% using cellular phones only, 5% use landlines only and 16.7% uses both landlines and cellular phones. However, less than 10 % of household have access to internet or cable services.



Figure 113: A donkey transporting pimento wood for fuel in Blackwoods.

### 6.4.5. SUMMARY OF BUILT ENVIRONMENT ISSUES AND CHALLENGES

The built environment within the Chapelton DA is facing a series of issues and challenges. The local roads are generally in a deplorable state with several sections becoming mud holes when it rains and dust bowls in dry periods. This has resulted from poor maintenance which renders the infrastructure particularly vulnerable to damage from heavy rainfall events. The issue is dealing a crippling blow to the local economy as it significantly reduces the competitiveness of the local agricultural sector which forms the backbone of the economy. The DA also suffers from a chronic potable water problem, as less than half of the households have access to public water sources and the dependence on unimproved sources is quite high. This situation is exacerbated by the fact that the public water sources are generally unable to satisfy the daily demands, especially during periods of drought. The use of pit latrines is quite high, and this is also poses a public health and sanitation risk. Street lighting is lacking and this is perceived as a major risk to public safety. This is further highlighted due to the number of derelict buildings and overgrown lots throughout the DA, which can become hang-out spots for unattached youth and hide out spots for criminals. Access to telecommunications is quite low, and this may be a factor negatively impacting local investment and educational performances.

### 6.4.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

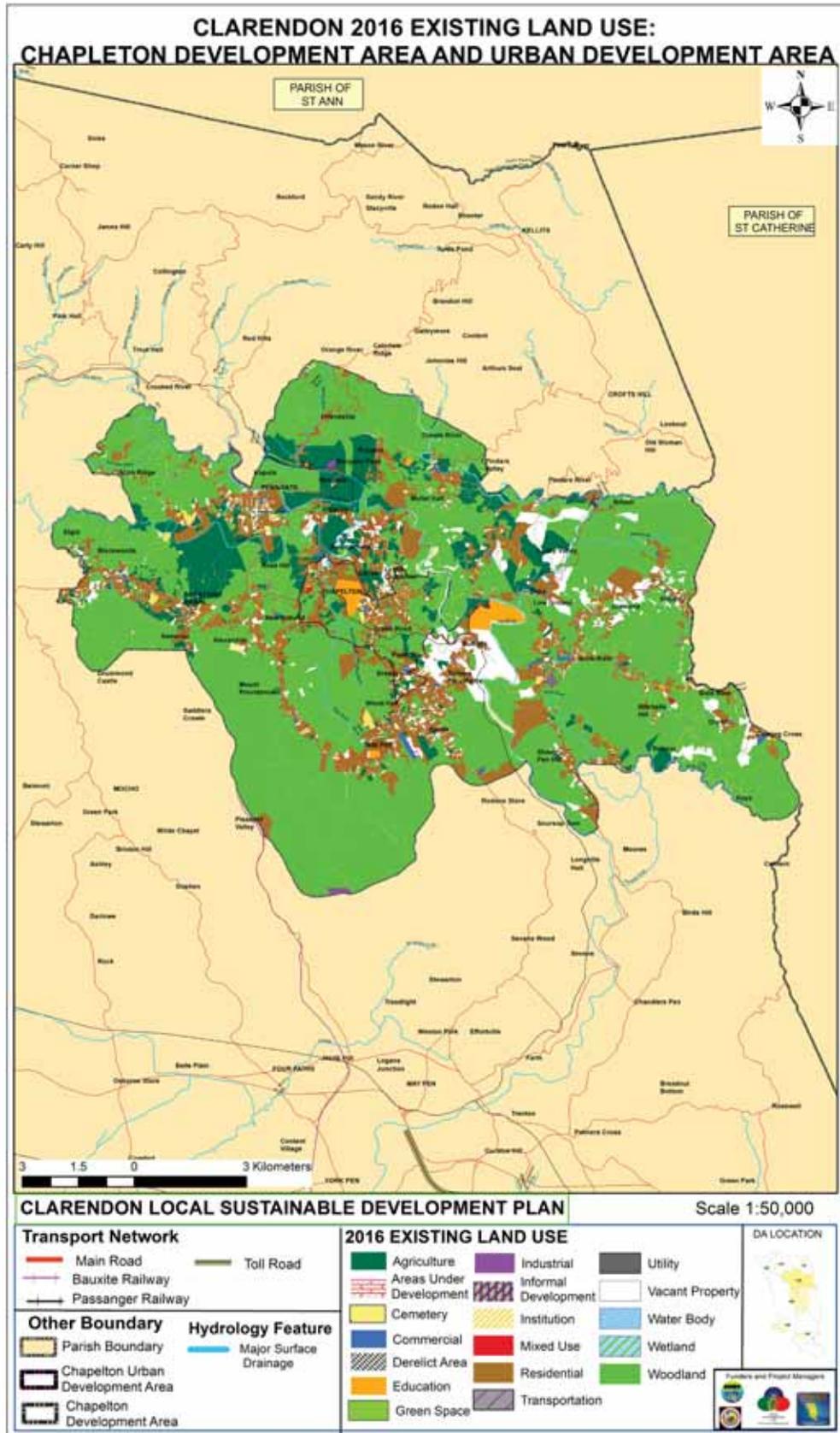
The Chapelton DA is vulnerable to several hazards. These include landslides, floods, tropical cyclones and droughts. Landslides within the local area are both the result of natural and manmade factors. This area of the parish is a volcanoclastic mountainous terrain which is vulnerable to landslides, and the fragile slopes are being destabilized by deforestation. The landslides are generally triggered by heavy rainfall, which is usually associated with tropical weather systems, including hurricanes. Heavy rainfall also results in flooding in several areas within the DA, which is the result of blocked drainage channels. In addition to flooding, hurricanes also tend to cause severe wind damage to the natural and the built environment within the DA. The dry season brings a high possibility of drought, with increased the risks of bush fires which further exacerbates the water deficiency issues.

### 6.4.7. OVERVIEW OF LAND USE

The existing land use in the Chapelton DA is primarily woodlands, interspersed with pockets of agricultural lands and built up areas. The woodlands and the built up areas are spread across the entire geographic boundaries of the DA, while the agricultural lands are mainly concentrated in the north west and north central sections. The built up areas generally display linear patterns, and include a mix of residential, commercial, industrial, institutional and other activities.

## 6.4. THE CHAPELTON DA PLAN

The highest population concentration is located in the central section of the DA, in the vicinity of Chapelton. The DA also contains large pockets of vacant property, particularly in the central and north central sections.



## 6.4. THE CHAPELTON DA PLAN

### 6.4.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

Unplanned growth within the DA has created a haphazard land use pattern which is leading to the suboptimal use of lands, and a number of socio-economic issues, including land use conflicts. It is also resulting in scale diseconomies in the provision of infrastructure and services.

### 6.4.9. OVERVIEW OF SOCIAL WELL-BEING

The Chapelton DA has a population of 24031 persons. This is made up of 12440 males and 11591 females. This population occupies 6150 dwelling units which are constructed from variety of materials, including concrete, wood, and a mixture of both.

The table below reveals that the DA has access to a number of social amenities and services.

TYPES	NUM-BER	LOCATION	TYPES	NUM-BER	LOCATION
Community Centre	4	Blackwoods, Wood Hall; Sangster's Heights, Chapelton; Pennants & Summerfield.	Markets	1	Chapelton citizens also access the May Pen market.
Churches	99	Turners (10), Pennants (12), Summerfield (8), Beckford Kraal (13), Rock River (21), Wood Hall (13), Morgan's Pass (8), Chapelton (13) and Coxswain (1)	Recreational Sites	1	Chapelton Park
Police Station	2	Chapelton and Rock River which serve many communities in North and Central Clarendon	Public Libraries	2	Chapelton & Pennants
Fire Station	0	Serviced by May Pen & Frankfield	Court House	1	Chapelton
Sports Complexes/Playfields	9	All communities. Sport complex in Summerfield	Community Shelters	16	15 schools and 1 church
Public Cemeteries	3	Pennants, Chapelton, Turners (Suttons)	Places of Safety	3	St. Augustine Boys Home in Sangster's Heights, Summerfield Girls Home, St. Monica's Home Chapelton
			Declared Heritage Sites	1	Suttons Railway Station
			Post Office/Agencies	7	Pennants (PA), Turners (PA), Rock River (PO & Mitchell's Hill PA), Beckford Kraal (PO), Coxswain (PA & Crawl River PA),
			Financial Institutions	3	Chapelton and Rock River
			Schools	37	Throughout the DA
			Healthcare Facilities	4	

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Figure 114: The Chapelton Hospital.

The table above shows that the Chapelton DA has 37 educational institutions. This includes twenty-one (21) basic, seven (7) all-age, four primary (4), two (2) preparatory, two (2) primary and infant and one (1) secondary school. Access to healthcare is mainly by the Chapelton Hospital which is a Type III facility. Additionally, two police stations, four community centres, two public libraries, and several recreational and social spaces are found in the local area.

### 6.4.10. SOCIAL WELL BEING ISSUES AND CHALLENGES

Only four (4) of the nine (9) communities have access to community centres, with the one in Pennants being in a very poor condition. Those available are poorly utilized, although residents believe that community spirit is dying. A number of other social facilities, including schools, cemeteries and recreational sites, are also in poor state.

### 6.4.11. OVERVIEW OF ECONOMIC DEVELOPMENT

The economy of the Chapelton DA is limited to only a few economic activities. Approximately 40.1 percent of the labour force is employed with most working in the agriculture sector. Many of these persons are engaged in the growing of crops which include citrus, sugarcane, ackee, yam, and banana. Most of these farm produce are sold at the Chapelton market, while the remainder is distributed mainly in May Pen. Manufacturing is also a major source of employment within the DA, mainly through the Ugli Farm/Factory in Suttons which provides employment for persons in Turners and neighbouring communities. Likewise, the services sector is a major contributor to employment. Many SMEs are located in the DA, especially in the Chapelton Business District which is the hub of economic activities. These include financial institutions, grocery shops, bars restaurants, beauty salons and auto shops. Other economic activities within the DA include mining, which is exclusively sand mining as the gold mine in Pennants is currently inactive. It should also be noted that many professionals seek work outside the confines of the DA due to the limited opportunities present.

### 6.4.12. OVERVIEW OF ECONOMIC DEVELOPMENT ISSUES AND CHALLENGES

Employment opportunities within in the DA are very low. As a result, unemployment levels are quite high and as highlighted earlier, many professionals have to seek work outside the area. The unemployment rate currently stands at approximately 59.9 percent, with 33.3 percent being females. Furthermore, approximately 30% of the households within the DA do not have any member employed while 51.7% have only one member employed. This therefore means that there is a very high level of dependency within the DA which is an incubator for poverty.

Agriculture which is the backbone of the local economy is being undermined by a number of issues including praedial larceny and natural and manmade disasters. Praedial larceny is disincentive to investment and a threat to the livelihoods of the local communities, as this scourge continues to rob farmers of millions

## 6.4. THE CHAPELTON DA PLAN

of dollars on an annual basis. Additionally, disasters such as hurricanes, landslides, drought and bushfires cause significant losses to the sector. Farm roads are generally in a poor state with the agriculture sector being heavily dependent on inefficient labour intensive processes, resulting in productivity and competitiveness being quite low. The sector is losing out on millions in revenue due to the absence of local value-added production; an issue augmented by the fact that proper storage facilities are also absent and farmers are forced have to periodically sell their produce at significantly reduced prices in an attempt to dispose of the crops.

### 6.4.13. OVERVIEW OF GOVERNANCE

The Chapelton DA falls within the North Central Clarendon Constituency, and the Chapelton and Rock River Parish Council Divisions. Community governance is carried out by the 34 CBOs led by the Chapelton DAC. The CBOs include a mix of CDCs, youth clubs, citizens associations, sports clubs and agricultural groups, with most (17) being youth clubs.

### 6.4.14. OVERVIEW OF GOVERNANCE ISSUES AND CHALLENGES

Poor political representation was the only issue of governance highlighted by the Chapelton DA. According to the residents, they often feel neglected by their political representatives.

### 6.4.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### •PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the Chapelton DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** The Chapelton Growth Centre will accommodate urban type residential developments up to a maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and heights not exceeding two storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 2:** The Rock River Rural Settlement Node will accommodate residential developments of up to 10 units, maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and building heights not exceeding three storeys which will be varied by the planning authorities in relation to the physical conditions existing in the area.

**Policy 3:** Only individual dwellings and other small developments will normally be allowed outside of Chapelton and Rock River in accordance with the proposed land use map and the relevant planning standards and policies.

**Policy 4:** In areas where development is permitted adjacent to rivers or streams, the setback shall be a minimum of 30 metres from the banks and may be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 5:** Consideration will be given for proposals involving the establishment of agro-industrial developments on lands zoned for agriculture and residential/agriculture purposes, provided that there will be no negative impact on the character of the area.

**Policy 6:** Light industrial uses which are ancillary to the residential use will be supported in areas zoned for residential/commercial purposes on the proposed Land Use Map, provided that such activities do not detract from the residential amenities of the area.

**Policy 7:** Planning permission will not be given for any developments which will adversely the flow and quality of any water resources, including rivers, streams, caves and sinkholes.

**Policy 8:** Agricultural activities or any developments that are in breach of conservation policies will not normally be supported within areas zoned for green space.



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**Policy 9:** Developments which will lead to the destruction of any identified heritage site will not be permitted. Those in proximity to declared sites or monuments will need to conform with the policies of the Jamaica National Heritage Trust, and no approval will be given until after adequate consultation with the entity.

**Policy 10:** Development will be restricted in the western section of Rock River, along the Sheep Hill Main Road to Rock River’s urban core, to protect the scenic quality of the area.

**Policy 11:** The Local Planning Authority may support the development of tourism accommodations in residential and residential/ agriculture areas provided that it is in character with the area and will not be detrimental to the natural and physical environment.

**Policy 12:** Planning permission will not be given for any developments which will adversely affect the flow and quality of any water resources, including rivers, streams, caves and sinkholes.

### • REVITALISATION OF CHAPELTON

Chapelton was once the capital of Clarendon and a major business hub in south central Jamaica. However, the town is today described as ‘sleepy’ as it is currently suffering from urban decay and struggling to find its economic relevance. Many of the dry goods stores, hotels, and other businesses which came to define the vibrant town have disappeared over the years. Today the survival of the town is heavily linked to the student population of Clarendon College.

Chapelton has an important regional function to play in the development of Clarendon. Its restoration is critical to reducing the pressure on the parish capital May Pen. Chapelton must serve as a regional town for Northern Clarendon. This Plan is therefore recommending the development of a Revitalisation Strategy for the town. Among other things, this revitalisation strategy should consider extending the Urban Renewal Act to establish a Special Development Area in Chapelton. This would encourage investments through incentives.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, MEGJC,

### • Development of a Transportation Centre in Chapelton

Currently there is no provision for a transportation centre in Chapelton. Most taxis park North West of the Chapelton Square on a site that formerly housed the Parish Council Office, but others, including mini buses, park arbitrarily along the roadway within the town centre. This is contributing to traffic congestion; an issue which will be exacerbated with the revitalization of the Town and its development into a growth centre. A modern transportation centre will be established in the town to address the congestion and indiscipline problems. This will be established on the aforementioned site which is deemed to be the most suitable for this purpose. It will be equipped with all the auxiliary facilities necessary for the proper functioning of the centre, with all public transporters required to operate from the facility.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MTM

### • Exploring an additional source of water

The Chapelton DA suffers from a chronic water problem despite the availability of a number of water sources. This underscores a need to sustainably develop the local water resources. Consultation through the Water Sector Meeting revealed that the feasibility of damming the Thomas River was once being explored, but the proposal was abandoned without the disclosure of any particular reason. There is no evidence to suggest that

## 6.4. THE CHAPELTON DA PLAN

the damming of the river was not feasible then or it won't be practical now. Consequently, this Plan will encourage the relevant authorities to revisit the proposal.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MEGJC, RWSL, NWC, WRA, CPC, NEPA

### • RENOVATION OF THE CHAPELTON POST OFFICE

This Plan is encouraging the renovation of the Chapelton Post Office. The said Post Office is in a very poor physical condition, but will not be replaced by the proposed Mobile Post Offices as it is located in a proposed growth centre and is also heavily utilized. The building will therefore be renovated and the relevant authority will seek to diversify the services offered to improve self-sufficiency.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MSET

### • DEVELOPING CAPs

Internet access in the DA is quite low and will be improved. At present, internet access is less than 10 percent and is non-existent in almost all local communities. CAPs will therefore be developed in Turners, Pennants, Rock River<sup>10</sup>, Beckford Kraal, Coxswain, Wood Hall, Morgan's Pass and Summerfield. These facilities will enable community members to use the Internet at minimal or no cost to them to facilitate research, bill payments, education, communication, business, marketing, and social networking.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MSET, Private Investors

### • Promoting Heritage Preservation and Cultural Heritage Tourism

There are several sites within the DA which are of historical or archaeological importance. These sites are significant pieces of the parish's cultural heritage and will therefore be preserved and developed into cultural heritage tourism attractions where feasible and based on a priority listing. The adaptive reuse<sup>11</sup> of some of these sites will also be promoted to generate funding to support the preservation initiatives. These sites include:

- **The Sutton's Plantation**- This site is proposed to be used for tourism purposes. The authentic re-enactment of the 1690 slave rebellion which took place on the site, may have the potential to contribute to not just historic preservation and historical awareness but; to local economic development. This event which involved between 300 and 400 slaves descending on the poorly defended plantation, burning the land and the Great House and killing a number of whites, while seizing arms and ammunition, is an important piece of Jamaica's history. The re-enactment of this event will create employment involving producing props and costumes, provision of food, beverage, and transportation. Hence, the feasibility of hosting such an event at an appropriate time interval will be explored.

10. The Rock River Primary School, in Clarendon, has been awarded a grant of \$10 million by the Japanese Government, to build a learning centre.

11. Adaptive reuse refers to the process of reusing an old site or building for a purpose other than which it was built or designed for.

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- **The Chapelton Park (The Cenotaph)**



*Figure 115: A section of the Chapelton Park.*

- Efforts will be made to declare this location a national heritage site and it will also be marketed for tourism purposes. The park is dedicated to World War 1 veterans from the area, and houses the Chapelton clock tower which was built in 1942, in addition to the cenotaph. It is policed by the bust of Cudjoe, which is a statue that was erected in honour of the famous Maroon leader, Cudjoe, who led the first Maroon War (see *The Sutton's Plantation*, pg. 523).

- **The Suttons Railway Station**



*Figure 116: The Suttons Train Station*

- This location is a declared national heritage site and will be preserved and adaptively reused. It will also be used for tourism purposes by accommodating guided tours, since it showcases some impressive early 20th century architecture. The building is a Jamaica/Georgian timber house which was constructed on a stone base; on one side of the building are four (4) 100" x 100" timber posts. Between each post are handrails with latticework. On the other side of the building is a concrete passage covered with a cantilevered, quarter of a vented gable end zinc roof. The other features of this structure are solid recessed panel timber doors and uniquely combined sash windows and jalousie.

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### • The Rock River Great House



Figure 117: The Rock River Great House.



Figure 118: A section of the interior of the Rock River Great House.

- The feasibility of declaring this site a national heritage site will be explored, and it will also be utilized for tourism purposes by accommodating guided tours. The building which is located on the McPherson's property is a representation of ancient architecture, and it also contains a number of antiques which are tangible pieces of the parish's cultural heritage.

### • St. Paul's Anglican Church



Figure 119: The St Paul's Anglican Church.

- The feasibility of declaring this location a national heritage site will be explored, and it will also be utilized for tourism purposes, including as part of the Parish Church's heritage trail. The Church began as a chapel in the town of Chapelton dating back to 1666 when it was built as an ease to the then Cross Parish Church. It was the largest place of worship in Upper Clarendon at the time and was popularly known as 'The Chapel'. The village around it soon acquired the name 'Chapel Town' but, over the years, this was shortened to Chapelton.

The St. Paul's Anglican Church was built following the ruin of the Cross Parish Church and later rose to the status of parish church when Chapelton was named the capital of Clarendon. It is the second oldest Anglican Church in Jamaica. In 1938, May Pen was named the capital of Clarendon following widespread growth and development in and around the town with St Paul's Anglican Church remaining the parish church. The church still boasts its 17th century-style architecture and continues to host the Annual Remembrance Day service held at the Cenotaph in Chapelton in memory of those who were killed in World War I.

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### • Rock River Sugar Estate Ruins



Figure 120: Some of the ruins of the Rock River Sugar Estate.



Figure 121: Inside a section of the ruins of the Rock River Sugar Estate.

- Support will be given to the declaration of the Ruins of the Rock River Sugar Estate as a national heritage site, provided that it meets the criteria outlined by the Jamaica National Heritage Trust, and its use as a tourist attraction through the accommodation of guided tours. The ruins of the sugar estate represent some of the most impressive ancient architectural designs in Jamaica.
- **Malmsy Valley Great House**- Support will be given to the declaration of the Malmsy Valley Great House as a national heritage site, as well as its use as a tourist attraction through the accommodation of guided tours. The Great House is located in an area known as “Beckford” about three miles (5 km) south of the sugar works at Rock River. It is one of the earliest houses built after the English occupation in 1655. The building appears to have been designed along the lines of a seventeenth (17th) century Italian mansion. At present it lies in ruins but, there is enough evidence to show the original grandeur of the structure.
- **The Rock River Aqueduct**



Figure 122: The Rock River Aqueduct.

- The Rock River Aqueduct is one of many historic sites within the Rock River community which dates back to the period when the area was still under Colonial rule and the Master and Slave was the order of the society. This Aqueduct was used then to transport water from the Juan D’Bolos River to one of the plantations in the area. This site will be preserved and support will be given to its declaration as a national heritage site. A storyboard will be erected and the site used for tourism purposes accommodating guided tours.
- **The Bethlehem Baptist Church**



Figure 123: The remains of the original Bethlehem Baptist Church.

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- The Bethlehem Baptist Church is said to be one of the oldest churches in Jamaica. A new church building has been erected but semblance of its original structure still stands tall in the Rock River community. Support will be given to the declaration of this site as a national heritage site, and its use for tourism purposes including the organizing of guided tours.
- **The Rock River Stone Bridge** – The Rock River Stone Bridge is located within the Rock River Community, in the vicinity of the Rock River All-Age School. This bridge which crosses the Rock River is of historical significance and therefore the feasibility of declaring it a national heritage site will be explored.
- **Mr. Grant's Property/ Boiling House**



Figure 124: Frontal view of Mr. Grants House.

- This is a private property which is located within the community of Pennants. This property has tremendous tourism potential as it boasts a residence of ancient architecture, as well as a boiling house which utilized primitive technologies in the production of sugar. The architectural beauty of Mr. Grant's house is a reflection of ancient architecture which has stood the test of time, while the boiling house is one of the few where sugar is still produced in a way, similar to how it was during the time of slavery. Regarding sugar production on the property, the sugar cane is washed and placed in a mill which is drawn by a horse; the juice then travels through a large funnel into the boiling house where it is collected by large containers and boiled. The boiled juice is then put to cool and to become sugar which is placed in buckets and sold. Fuel for boiling the mixture is wood and the dried out cane trash.
- With such an active industrial heritage site, the owner of the property will be encouraged to develop the site to accommodate guided tours.



Figure 125: Mr Grant's sugar mill (top) and boiling house (bottom).

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- **Morgan's Pass-** The Morgan's Pass community was named after the famous English Buccaneer leader and later lecturer and Governor of Jamaica, Henry Morgan. The community is believed to have once been a big property which was owned by Morgan, who also lived there while he was Governor of Jamaica. There is potential for the community to capitalize on the international fame of the Buccaneer leader through tourism. Among other things, this Plan is encouraging the exploration of the feasibility of developing pirate-themed bars, restaurants and live music venues within the community.

- **Old Residence in Morgan's Pass**



Figure 126: The old residence in Morgan's Pass.

- According to locals, Morgan's Pass was one big property which was later subdivided and shared between a sister and two brothers. One of the brothers later became a doctor and practiced and resided in the community. His residence still stands tall in the community and is over a hundred (100) years old. This building is of architectural importance and will therefore be preserved. The restoration and adaptive reuse of this structure will also be encouraged.

- **Old Chinese Residence**



Figure 127: Old residence on Blackwoods Main Road.

- Quite conspicuous along the Blackwoods main road in the Beckford Kraal community, is an old upstairs building. This building is the only one of its kind in the community. According to the local folks, it was owned by a Chinese man called "My Friend" and his wife, who operated a grocery and clothing store from the location. The building is of architectural significance and hence the current owners will be encouraged to preserve the structure.

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- **The Light of the Valley United Church**



Figure 128: The Light of the Valley United Church.

- The Light of the Valley United church is one of several landmarks within Morgan’s Pass. This church can be found in the community square and is referred to by many as “Big Church”. Construction commenced on the present building in 1918 and was completed in April 1924. This structure is of architectural significance and will therefore be preserved. The feasibility of including this Church in the Parish’s Church heritage trail will also be explored.
- The district of Simon is said to be a Maroon Town of sorts and caves which have significance can be found in the area. These caves will be protected from development pressures and other human related damage, and will also be used for tourism purposes where possible.

In addition to these places, there are many local folktales which can add to the heritage tourism product. For instance, the Juan D’Bolos River that runs through the Rock River community is said to be named after the famed Juan D’Bolos that is mentioned in Jamaica’s history. According to local Folks, he was in charge of opening the flood gates during heavy rains to allow the free passage of the water. However, on one occasion, this was not done on time and the share volume of the water drowned him. Such stories (folk tales) can help to attract guests to the local area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	JNHT, CPC, MOT, TPDCo, Private Investors

- **BED AND BREAKFAST (B&B)**

In keeping with the proposed cultural heritage tourism theme within the Chapelton DA, the development of B&B facilities will be encouraged. These are small lodging establishments that offer overnight accommodation and includes breakfast. Typically, they are private homes or family homes that offer accommodations and provide a wonderful alternative to the traditional hotel stay. These facilities are usually established and run by locals and can accommodate only a handful of guests. Therefore B&B facilities within the DA will enable guests to get a very personal experience which includes learning about the rich local history and culture.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	TPDCo, Private Investors

- **BUILDING THE CAPACITY OF COMMUNITIES TO PARTICIPATE IN THE TOURISM INDUSTRY**

Community participation in the development of the local tourism sector is crucial. . This is not just to support sustainable tourism but to ensure the development of an authentic heritage tourism package.

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Data collection and analysis have however revealed that there are capacity related issues at the community level which need to be addressed to ensure participation. A number of training programmes will be developed to build the capacity of local communities to develop tours and other activities for tourists.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	JNHT, TPDCo, CPC, MOT

### • DEVELOPING THE NUTRACEUTICALS INDUSTRY

The Chapelton DA is endowed with an abundance of medicinal herbs which makes it poised to tap into the lucrative nutraceutical industry. This Plan is proposing the creation of a Nutraceutical Project which will offer tremendous benefits to the local agriculture and manufacturing sectors. This project will involve: (1) the development of a medicinal plant register; (2) the establishment of a medicinal plant agro-park (which will include the cultivation of marijuana); (3) the training and certification of participants in good agricultural practices, (4) the preparation of plants in the field for extraction, laboratory skills and the extraction of essential oils, and food safety systems; and (5) the development of a plant for the processing and manufacturing of key nutraceutical products.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEGJC, Private Sector

### • RE-OPENING OF THE GOLD MINE

Under this Plan, support will be given to the re-opening of the gold mine in Pennants. This is based on reports of additional gold deposits in the area and the apparent interest of the operator, AUSJAM Limited, to return to re-activate the site. Furthermore, the re-opening of the mine will provide employment for a few residents.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	AUSJAM/ Private Sector, MTM, MGD

### • COMMERCIAL COMPOSTING

As is the case in all other DA's in the Parish, improper solid waste management is proving to be a big issue in Chapelton. This situation provides a business opportunity in the form of commercial composting. As a rural area which is heavily dependent on agriculture, compostables continuously account for the largest percentage of the solid wastes generated locally. With the price of chemical fertilizers being a major obstacle to the development of the agricultural sector and with research showing that there is a global trend towards healthier eating choices, including organically produced food, commercial composting is invaluable.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	Private Sector, CDCs/ DAC

### • ESTABLISHMENT OF A FUELWOOD DEMONSTRATION PLOT AND THE PROMOTION OF AGROFORESTRY

At 47 percent, the Chapelton DA has one of the highest percentage dependence on trees as a source of fuel for cooking. This is contributing to deforestation as the harvesting of the trees is not being done in a sustainable manner. The activity helps to meet the local energy and economic needs, and therefore cannot be

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completely eliminated in the short to medium term. Hence, a fuelwood plantation will be developed in the DA. This plantation will serve as a Demonstration Plot for the remainder of the parish. Additionally, agroforestry will be promoted locally.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MSET, FD, MICAFA, NEPA, RADA

### • SCHOOL IMPROVEMENTS

There are several schools in the DA which will be targeted for rehabilitation or improvement works. These schools are selected based on the student population and their physical conditions. They include:

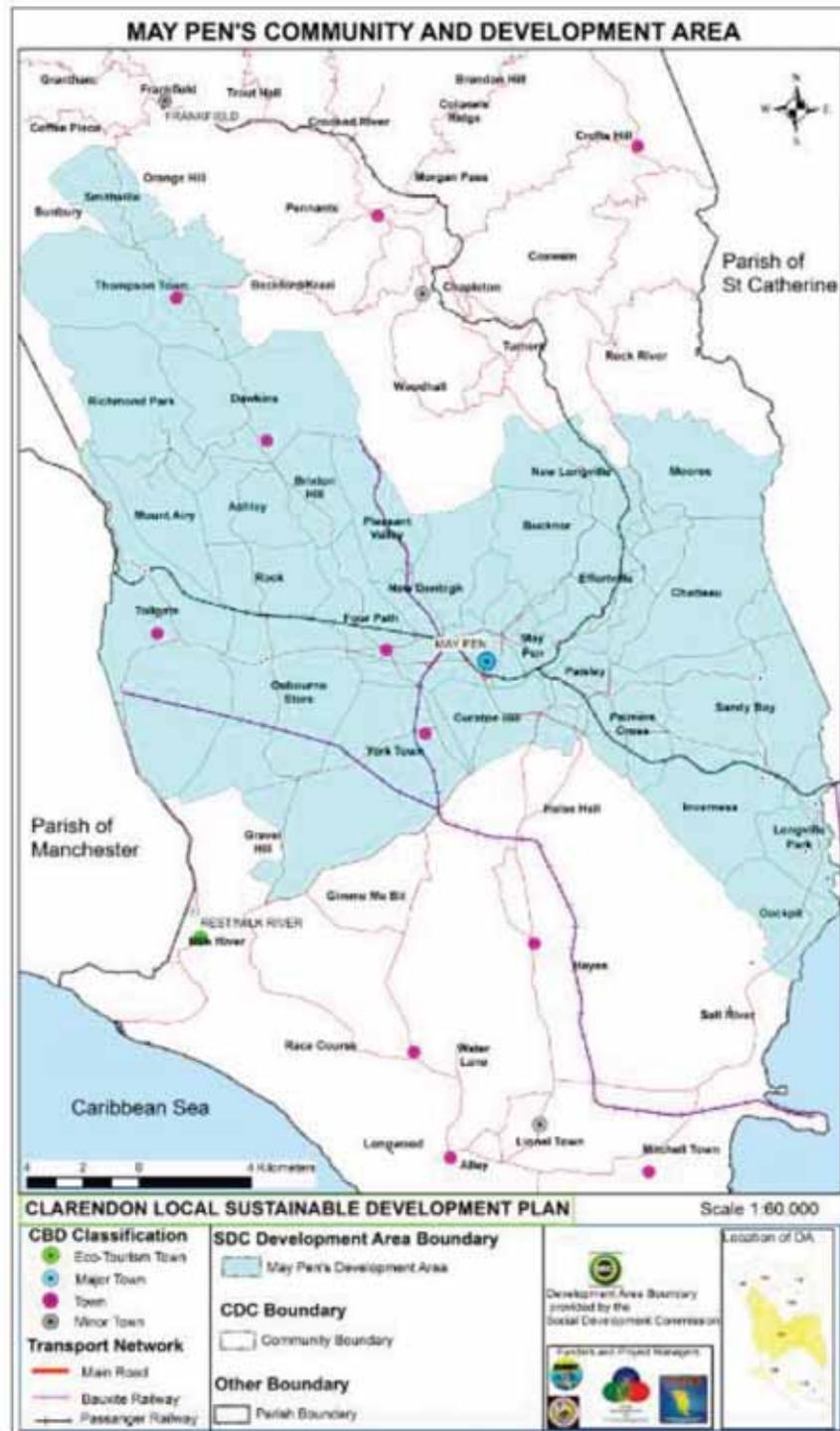
- Coxswain Basic
- Prospect Basic
- Rock River Basic
- The Rock River All-Age
- The Elgin Primary
- Simon All-Age and Infant School
- Diamond Basic
- Blackwoods Early Childhood Institution
- Sweeney's Top Basic
- Iron Gate Early Childhood Institution-
- New Grounds Basic

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEYI, Private Sector

## 6.5. THE MAY PEN DA PLAN

### 6.5.1. INTRODUCTION TO THE MAY PEN DEVELOPMENT AREA

The May Pen DA is situated in central Clarendon approximately 15 km east of Mandeville, Manchester, and 22 km West of Spanish Town, St Catherine. With an area of approximately 295 (403.84) sq km, comprising thirty three (34) (33) communities and one hundred and ninety six (196) districts, the DA is by far the largest in the Parish. It is bounded to the south by the Lionel Town and Milk River DAs, to north by Chapelton, Frankfield and Spalding DAs, to the east by the parish of St Catherine, and to the west by the parish of Manchester. The parish's capital, May Pen is the centre of the DA. It is the largest town in the parish and one of the fastest growing urban centres in Jamaica. In fact, the town is classified as a regional centre in Jamaica's Settlement Strategy 1997. It developed primarily as a midway point between Kingston and Mandeville and also as a midway station from Kingston to growth centres of the north western section of the Island.



## 6.5. THE MAY PEN DA PLAN

### 6.5.2. OVERVIEW OF NATURAL ENVIRONMENT

Like the rest of Clarendon, the May Pen DA is endowed with an abundance of natural resources and features. The terrain is predominantly flat but gets hilly as one approaches the cluster of communities that surround the Mocho Mountains. This mountain range is the second (2nd) highest elevation in the parish, rising approximately 200ft above sea level. Geologically, the DA is comprised mainly of a limestone plateau and alluvium deposits which support a dendritic drainage pattern. This drainage pattern includes a number of sinkholes, as well as the Rio Minho which traverses several local communities, with the parish's capital, May Pen, sitting on its banks. In addition to limestone, the DA has deposits of sand and bauxite. Other natural resources and feature of the DA include limestone aquifers, springs, forests and fertile agricultural lands.

### 6.5.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

The major natural environmental issues in the DA are deforestation, illegal mining, and pollution. Deforestation is a problem especially in the rural sections of the DA where coal burning is widely practiced. Despite this, there has only been one conscious effort to plant seedlings to maintain the balance with nature in Pleasant Valley. Similarly, the indiscriminate extraction of sand from the Rio Minho, through illegal mining, is a cause for concern. It is destabilizing the river banks and thereby increasing hazard vulnerability. The issue of pollution includes land, water and air pollution. Land and water pollution are mainly from improper disposal of solid waste, but liquid waste from sources like informal garages is a contributor. Air pollution is a result of the burning of garbage and traffic congestion within the town of May Pen.

### 6.5.4. OVERVIEW OF THE BUILT ENVIRONMENT

The town of May Pen acts as a transportation hub. It is the midpoint between Kingston and Mandeville and therefore serves as a hub for transportation links to these areas. It also serves as a transportation hub for sub regional towns and settlements within the parish. The construction of Highway 2000 has significantly increased the importance of May Pen in this regard, as it has increased the accessibility of services elsewhere, and is aiding the transfer of industrial aggregates and labour.

The transport system of the DA is comprised of roads and rail. The public passenger railway service ceased operation in 1992. Transportation within the DA is therefore exclusively by road, which provides generally good linkages to internal and external areas, including outside the parish. The main mode of transportation is currently by licensed taxis which is used by 65% of households. Other households utilize private motor cars (16.8%), robot taxis (8.4%), buses (6.9%), bicycles (1.2%), motor cycles (1%), trucks (0.3%) and other unnamed means of transportation.

The DA's principal source of water is groundwater which is supplied by both public and private wells. Most households utilize public sources which include water piped into dwellings (24.7%), water piped into yard (36%), standpipes (3.7%), and catchments (1.1%). Other sources of water include private sources piped into dwelling (11.3%), private catchments (11.5%), springs/rivers/streams (1.7%), trucked water (0.7%) and purchased water (6.2%)<sup>12</sup>.

There are several sewage treatment systems within the local area. These include treatment plants located in Longville Park, Bushy Park, Paisley Pen, Mineral Heights, and Kennedy Grove. The DA has the highest percentage of households with sewages in the parish when compared to the other DAs. More than thirty percent (32.7%) of households utilize water closets linked to sewers. Additionally, 17.4% of households use water closets not linked to sewers, 18.6% use pit latrines, 11.6% use soakaways, 10.2 percent use other types of toilet facilities, and 9.6% have no toilet facility. It should also be noted that the use of pit latrines in the parish of Clarendon is lowest in the May Pen DA.

<sup>12</sup>. The remaining 2.9% did not give a response.

## 6.5. THE MAY PEN DA PLAN

The May Pen DA is the only one in the parish where burning is not the predominant method of garbage disposal. Garbage is mainly picked up by trucks. Fifty nine percent (59%) of household's utilize this method, while thirty seven percent (36.7%) of households burn their garbage. Other households in the DA bury, dump or place their garbage in a community receptacle.

Electricity is the main source of lighting within the DA, while cooking gas is main source of fuel for cooking. Ninety six percent (96.2%) of households use electricity as their main source of energy for lighting. Other sources used in the DA are kerosene, candles and bottle torches. As it concerns the fuel used for cooking, charcoal, wood kerosene and electricity account for 74.4%, 18.3%, 5.1%, 1.5% and 0.8% respectively.

Telecommunications access in the DA include telephone and internet services. Telephone services are accessed by almost 100% of households within the DA through both landlines and cellular phones. Internet access is also fairly high with varied access points. A small fraction of households have access to cable which is supplied by three (3) providers within the local area.

### 6.5.5. SUMMARY OF BUILT ENVIRONMENT ISSUES AND CHALLENGES

There are several issues and challenges related to the built environment in the DA. These issues are mainly related to transportation, water supply, and waste disposal. While the roads found in the interior of the DA generally have acceptable quality surfaces, those on the periphery tend to be in a poor state. Transportation within the DA is also being impacted by traffic congestion, particularly in the town of May Pen. This congestion is attributed to high rates of commuting, a lack of adequate parking facilities, inadequate sidewalks, the commercialization of designated walkways, and the failure of public transporters to use the designated transportation hubs. Water supply issues are mainly related to shortages and high levels of non-revenue water. The May Pen, Goshen, Longville Park and Prospect supply systems are experiencing deficiencies, and as a consequence most communities, especially those located on the eastern and north eastern section of the DA, suffer from insufficient water supply. In addition to that, the region is flanked with under sized, aged and badly leaking pipes in addition to undersized storage tanks. With the planned development of several housing schemes in the May Pen environs, additional pressure will be placed on these existing facilities. The waste disposal issues relate to both wastewater and garbage (solid waste).

Despite the high population density and the low absorbent capacity of the soil in and around the town of May Pen, there is no central sewage treatment system. This situation presents a major public health risk as the area is dependent on groundwater and is also prone to flooding. The garbage disposal issues includes high levels of littering and burning. The former has been linked to rodent infestation within the May Pen area, whilst the latter is contributing to air pollution.

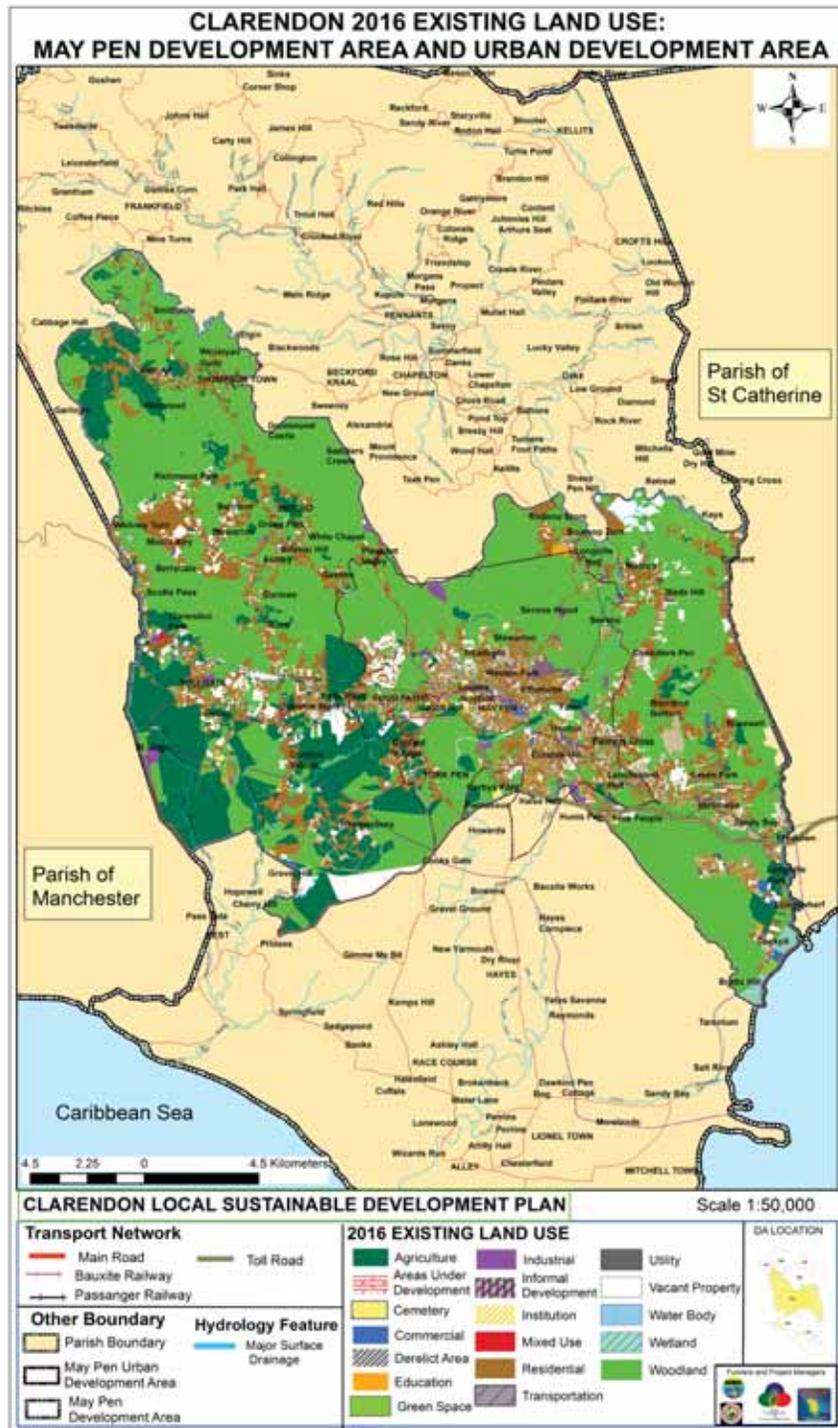
### 6.5.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

The May Pen DA is particularly vulnerable to flooding and incidents of landslides. Much of the terrain in the DA is flat and development has taken place without adequate provisions for proper drainage. As a consequence, drainage is quite poor within the area. This issue is often exacerbated by the blockage of drainage channels by poorly disposed garbage. Areas usually affected include Four Paths, Denbigh, York Town, May Pen Proper, Palmers Cross, Toll Gate and Glenmuir. Landslides usually occur in the northern section of the DA where the land is sloping and relatively unstable. The instability of the land is often exacerbated by deforestation, while the incidents of landslide are triggered by heavy rainfall. Areas affected include Bucknor, New Longville, Pleasant Valley and areas in and around the Mocho area.

## 6.5. THE MAY PEN DA PLAN

### 6.5.7. OVERVIEW OF LAND USE

The existing land use in the May Pen DA is comprised mainly of woodlands which is distributed right across the boundaries. However, built-up areas occupy a fair-sized portion of the DA's land with the largest concentration occurring in and around the Parish capital, May Pen. The built-up area, including the town is spread in an amorphous fashion from Sandy Bay in the east to Tollgate in the west. These built up areas are also spread in linear fashion within the northern section of the DA. The land uses include, residential and commercial use are with planned and unplanned development. The planned developments are found mainly around the town of May Pen, which is the main hub of commercial activities. Other major land uses within the DA include agricultural lands which are concentrated mainly within the South west.



## 6.5. THE MAY PEN DA PLAN

### 6.5.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

Competing interests in the development of land and the absence of up to date land use regulations have resulted in an uncoordinated and haphazard land use pattern in the May Pen DA. The main town, May Pen, has grown in a very sprawling fashion. As a result, the town has spread out in an uneconomic fashion, with low cost effectiveness in the provision of infrastructure and services. This has resulted in the conversion of good quality agricultural lands into other uses, and a number of other socio-economic issues, including traffic congestion and land use conflicts from incompatible uses. Outside of May Pen, development is also spread uneconomically in a linear manner.

### 6.5.9. OVERVIEW OF ECONOMIC DEVELOPMENT

The increase in urban growth has led to an expansion in commerce in the May Pen DA. May Pen is the major market centre of the parish, providing jobs in the commercial, industrial and service sectors. Residents from other DAs and the neighbouring parishes of St. Catherine and Manchester travel to May Pen for employment and also to access services associated with commerce, finance, governance, social services, hospitality and professional services. Small concentrations of economic activities also exist in the communities of Denbigh and Four Paths.

Agriculture plays an important role in the economic development of the sub-urban sections of the DA. This includes fresh water fish farming, poultry rearing and cash and tree crop farming. Two major fresh water fish farms, Murray's Fish Farm and Aquaculture Jamaica Limited, (the latter being operated by Jamaica Broilers), are found in the DA. Poultry produced in the local area also make up a significant portion of Jamaica's poultry production as there are contract farmers producing poultry meat for the two (2) major producers, Jamaica Broilers and Caribbean Broilers. Among the crops planted by local farmers are sugarcane, sweet and hot pepper and pumpkin.

### 6.5.10. ECONOMIC DEVELOPMENT ISSUES AND CHALLENGES

The main economic issue within the DA is high levels of unemployment. The employment rate stood below a half at 49.8%, with 56.5% of those employed being males and 43.5% being females. Furthermore, 22% of households had no member employed, 41% had only one member employed, 27.4% had two members employed and the remainder had 3 or more members employed. The high unemployment levels in the DA may be linked in part to a decline in the local manufacturing sector. The number of large industrial establishments in the local area has declined with the closure of businesses like the tobacco and citrus factories.

### 6.5.11. OVERVIEW OF SOCIAL WELL BEING

The May Pen DA is the largest DA in the parish with a population size of 94,933 persons. This is comprised of 49,033 females and 45,900 males. This population occupies a total of 33,934 dwelling units.

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TYPES	NUM-BER	LOCATION (COMMUNITY)	TYPES	NUM-BER	LOCATION (COMMUNITY)
<b>Recreation sites &amp; Parks</b>	2	Denbigh Agricultural Show Ground, Independence Park			Richmond Park, Toll Gate, Four Paths, Osbourne and York Town
<b>Libraries</b>	1	May Pen Urban	<b>Police Station</b>	3	May Pen Urban , Mocho Road and Four Paths
<b>Infirmary</b>	1	May Pen	<b>Fire Station</b>	1	May Pen Urban
<b>Heritage site</b>	1	May Pen Clock Tower	<b>Community Centre</b>	15	Bucknor, Treadlight, Paisley, Effortville, Hazard, Canaan Heights, Bushy Park, Longville Park Thompson Town, Brixton Hill, Toll Gate, Four Paths, York Town
<b>Hotel /Guest House</b>	6	Fairfield Guest House , Platinum Hotel , Renaissance Inn, King Led's Palace , Hotel Versailles, Bridge Palm Hotel	<b>Markets</b>	2	May Pen Urban, Thompson Town
<b>Places of Safety</b>	1	Anderson Children's Home	<b>Playfields</b>	42	All communities
<b>Nursing Homes</b>	11	Bushy Park, May Pen, Glenmuir, Paisley, Hazard, Denbigh	<b>Courthouse</b>	1	May Pen Urban
<b>Churches</b>	241	All communities	<b>Cemetery</b>	4	Old Denbigh , Mt.Airey and Four Paths
<b>Post Office/Agency</b>	17	May Pen, Denbigh, Freetown, Rosewell, Palmers Cross, Pleasant Valley Brixton Hill, Smithville, Thompson Town, Mt.Airey,	<b>Healthcare Facilities</b>	10	
			<b>Schools</b>	140	Located throughout the DA

As evidenced by the table above, the residents of the May Pen DA have access to all social infrastructure and services. Among them are 10 healthcare facilities, inclusive of one (1) Hospital (The May Pen Hospital which is a Type B facility), and three (3) Type I, one Type II and five (5) Type III health centres. There are also 140 educational institutions throughout the DA, which are seventy-nine (79) basic, thirty-three (33) primary/preparatory/all-age/ junior high, twelve (12) secondary, five (5) tertiary and eleven (11) vocational and training institutions. Other social facilities and services in the DA include cemeteries, markets, a fire station and an infirmary.

### 6.5.12. SOCIAL WELL BEING ISSUES AND CHALLENGES

There are several major social issues plaguing the DA. The Denbigh Cemetery which serves citizens within and outside the local Planning Area is close to its capacity. In addition to that, overcrowding has become a recurring problem at the May Pen Hospital and this issue will worsen with the planned development of the parish. Furthermore, the May Pen fire station which serves the entire southern section of Clarendon is under resourced. The public market after recently undergoing considerable improvements is still in an

## 6.5. THE MAY PEN DA PLAN

unacceptable state. In addition, the parish capital, May Pen, is flocked by a number of homeless persons which adds to the overall poor aesthetics.

### 6.5.13. OVERVIEW OF GOVERNANCE

Governance within the May Pen DA is administered by Government and civil society. The DA falls within the North Central, South Eastern and South Western Clarendon constituencies, as well as the Denbigh, May Pen East, Mocho, York Town, Toll gate, Palmers Cross, Mineral Heights and May Pen West Parish Council Divisions. Civil society's governance in the DA is undertaken by organisations led by the May Pen DAC and includes church groups, sport clubs, and youth clubs, among others.

### 6.5.14. GOVERNANCE ISSUES AND CHALLENGES

Awareness of and participation in CBOs has been identified as the main governance issue within the DA. Data collected revealed that 28.7% of the local population is not aware of any CBOs operating in the DA, while 49.9% do not participate in any of these organisations.

### 6.5.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### •PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the May Pen DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** The May Pen Growth Centre will accommodate urban type residential developments up to a maximum density of 250 habitable rooms per hectare (100 habitable rooms per acre) and heights not exceeding two (2) storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 2:** The Longville Park Growth Centre will accommodate residential developments up to a maximum density of 250 habitable rooms per hectare (100 habitable rooms per acre) and heights not exceeding two (2) storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 3:** The Tollgate/Osbourne Store Growth Centre will accommodate residential developments up to a maximum density of 125 habitable rooms per hectare (50 habitable rooms per acre) and heights not exceeding two (2) storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

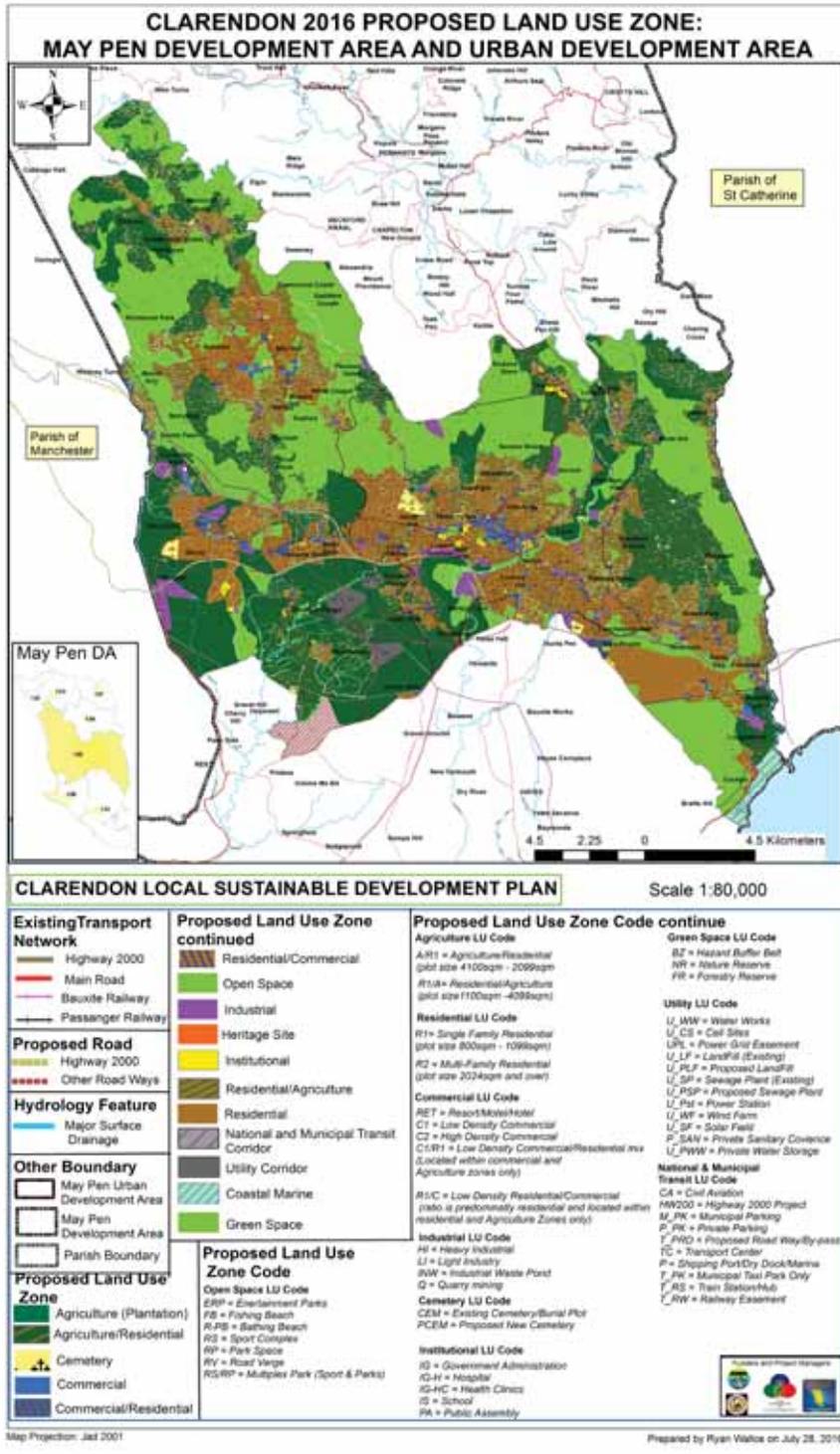
**Policy 4:** The Mocho Rural Settlement Node will accommodate residential developments of up to 10 units, maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and building heights not exceeding three (3) storeys which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 5:** Only individual dwellings and other small developments will normally be allowed outside of May Pen, Longville Park, Tollgate/Osbourne Store and Mocho in accordance with the proposed land use map and the relevant planning standards and policies.

**Policy 6:** In areas where development is permitted adjacent to rivers or streams, the setback shall be a minimum of 30 metres from the banks and may be varied by the planning authorities in relation to the physical conditions existing in the area.

**Policy 7:** Consideration will be given for proposals involving the establishment of agro-industrial developments on lands zoned for residential/agriculture purposes, provided that there will be no negative impact on the character of the area.

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**Policy 8:** Light industrial uses which are ancillary to the residential use, will be supported in areas zoned for residential/commercial purposes on the proposed Land Use Map, provided that such activities do not detract from the residential amenities of the area.

**Policy 9:** Planning permission will not be given for any developments which will adversely affect the flow and quality of any water resources, including rivers, streams, caves and sinkholes.

**Policy 10:** Agricultural activities or any developments that are in breach of conservation policies will not normally be supported within areas zoned for green space.

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**Policy 9:** Developments which will lead to the destruction of identified heritage site, will not be permitted. Those in proximity to declared sites or monuments will need to conform with the policies of the Jamaica National Heritage Trust, and no approval will be given until after the requisite consultation with the agency.

### • PRODUCTIVE USE OF MINED OUT LANDS

Craters are currently the main landscape feature within the formerly densely forested Mocho Mountains as a result of bauxite mining. Large portions of these mined out lands have been reclaimed and are being used for agricultural purposes, however, a number of some craters have also been left in an unsatisfactory condition, unable to support even the growth of general vegetation. These lands will however be used to make a productive contribution to the development of the local communities. The communities within the area are severely challenged in accessing water for both domestic and irrigational purposes therefore the mined out craters are an attractive option for development of water catchments or mini-dams. Additionally, aquaponics and hydroponics which are not dependent on availability of soil will be heavily promoted within these areas. Greenhouse farming will also be promoted where the land reclamation is such that it may accommodate this activity.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, MICAFA, RWSL, NWC, CPDCBS

### • PLEASANT VALLEY MEDICINAL PLANTS

The CPDCBS is involved in a community project in the Pleasant Valley community which seeks to conserve biodiversity through the production of medicinal plants and the promotion of alternative livelihoods. The project includes the development of a Community Medicinal Plant Register, as well as a demonstration Medicinal Plant Nursery. Additional support will be given to this project to include (1) the training and certification of participants in good agricultural practices, (2) the preparation of plants in the field for extraction, laboratory skills and the extraction of essential oils, and food safety systems; and (3) the development of a plant facility for the processing and manufacturing of key nutraceutical products. This project may or may not be coordinated with other similar projects in the parish, especially in the Chapelton DA (See Developing Nutraceuticals Industry, pg. 530).

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAFA, RADA, MEGJC, CPC, NWC, RWSL

### • LONGVILLE PARK TOWNSHIP

As part of this Plan, Longville Park will be developed into a township/ growth centre. Longville Park is a relatively new community being developed by the NHT within the May Pen DA. The Trust commenced this development in 1997 to alleviate the housing shortage being experienced in the Kingston Metropolitan Area (KMA). The property comprises one hundred and twenty (120) hectares which is being developed in phases, and is expected to host a population of approximately 10, 000 persons.

Based on the projected population of Longville Park, the development may be classified as a Sub-regional centre based on the National Settlement Strategy hierarchy. However, centres selected to serve as Sub-Regional Centres should have the following minimum levels of service:

- Secondary school plus one or more Primary School(s)
- General Hospital (Small to Medium Size)
- Branch Library
- Police station
- Fire Station

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- Recreation Park
- Community Centre
- Playing Fields which could be associated with park, community centre or schools
- Good, paved road access to nearby district towns, regional urban centre and Kingston
- Sanitary sewer system where appropriate

Most of these services are absent from Longville Park and the community does not have good access to the regional urban centre and parish capital of May Pen. At present, the only social amenities and services accessible to residents are: a community centre, a temporary police post, and a single developed open space. In addition to that, employment opportunities are almost non-existent in the area. Longville Park essentially functions as a dormitory/ commuter community and most residents conduct business outside of the parish. There are several issues associated with Longville Park as a dormitory community; primary among them is high commuting rates. The absence of employment and critical services means that residents have to travel to other areas to access such necessities. This high level of commuting has the potential of causing traffic congestion along the Longville Boulevard, as well as the Free Town to Salt River main road during peak periods. This further has the potential of contributing to air pollution in the parish. Additionally, high levels of commuting can increase driver stress and lower workers' productivity, which would have a negative effect on the economy. Moreover, a dormitory community can be quite attractive for criminal activities, particularly burglary, as the possibility of being seen is quite low. This situation actually led to the establishment of the temporary police post in the community, but the completion of all phases within the development will put severe strain on the under resourced police force.

Lands have been reserved in the Longville Park subdivision for the amenities outlined above except for a general hospital. However due to Longville Park's proximity to May Pen, Lionel Town and Spanish Town in St. Catherine; which are major towns with hospitals ranging from type C<sup>13</sup> to type B, it would not be necessarily essential for a hospital to be located in the proposed township. However, it is recommended that a Type IV clinic with maternity facilities and ambulance service be located in the community. The recommendation is that all the above social facilities be developed.

Longville Park as a township, will also require a town centre or administrative core. This core/hub is required to provide the administrative functions of the town and other services to include such as a transportation centre, a town hall and a market. Since, the township assessment for the community has also revealed that no lands have been earmarked for a town centre, lands are allocated under this Plan for such a development as seen on the proposed Land Us Map (see pg. 539). In addition to the above services, this town centre will provide a range of employment generation facilities.

The township will require improved connection to May Pen, the major town. It is proposed therefore that on and off-ramps be provided to allow motorists to enter the highway from Longville Park and travel to May Pen and vice versa. This will facilitate efficient two way travel between May Pen and Longville Park and will support revenue generation and will ensure that residents have easy access to support local businesses and local sustainable development.

With efficiency being a key focus of this Plan in the provision of utilities and services, Longville Park will also accommodate some amount of the parish's future urban growth. New largescale housing developments will be accommodated in Longville Park since such developments will benefit from the proposed and existing public amenities and infrastructure. This will reduce the need to expand or provide the infrastructure and services in other areas and also minimise maintenance costs. Consideration will also be given to the provision of a wider mix of residential structures and solutions to attract varying income groups to the township. Nonetheless, several policies will be implemented to control the development of the township.

*13. The Type C hospital in Lionel Town will be upgraded to a Type B under this Plan.*

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One such policy will ensure that the Scenic vistas/views of the Caribbean Sea, WINDALCO's Port Esquivel, and Highway 2000 are safeguarded. The relevant authorities will also ensure that squatting and other issues which may negatively impact the orderly development of the township do not arise. Furthermore, the Local Planning Authority will seek to put a stop to further residential development in the community until some of the necessary social amenities and infrastructure are in place.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	NHT, CPC, UDC, MTM, MEYI, MOH, Private Sector

### • REDEVELOPMENT OF MAY PEN

The parish's capital, May Pen, is facing a number of development issues resulting from years of rapid and uncontrolled growth. These issues include public health and safety issues, aesthetics, hospitality and circulation problems. These issues must be eliminated to ensure the continuous effective functioning of May Pen and to reduce the possibility of future urban blight. To ensure this, a comprehensive redevelopment strategy for the town will be implemented. This includes:

#### • Creating a Business Improvement District

Eradicating the issues plaguing the May Pen Central Business District (CBD) is well beyond the financial capacity of the Local Authority. In light of this; this Plan is encouraging the establishment of a Business Improvement District (BID) for the entire May Pen CBD. A BID is a public/private partnership in which property and business owners elect to make a collective contribution to the development, maintenance, and promotion of their commercial district. Such partnerships have helped to revitalize neighbourhoods and catalyse economic development around the world and can bring the same level of success to May Pen. The proposed May Pen BID will focus mainly on streetscape improvements, with the aim of improving sanitation, aesthetics, and pedestrian safety and friendliness.

It should be noted that the CPC is already spearheading a small BID<sup>14</sup> along Main Street. This will serve as a pilot for the rollout of the larger BID for the entire May Pen CBD. In order to ensure full compliance from all local businesses, the CPC will seek to provide tax incentives for the implementation of both the pilot and full BID.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, Clarendon Chamber of Commerce, Private Sector

#### • Development of New Roadway

As part of the strategy to optimise circulation within the town of May Pen and to open lands in the south eastern section of the town to development, this Plan is proposing the creation of a new roadway. This proposed roadway will start at the intersection of Main Street, Paisley Avenue, and Trenton Road, essentially creating a four way intersection which will be managed through the installation of traffic signals. The roadway will move in a general northerly direction, across the Rio Minho, until it intersects with Sevens Road. This roadway will aid in diverting a significant amount of traffic from the usually congested town centre. It will facilitate the development of a new transportation centre (see pg. 543) as well as the May Pen Primary School and the May Pen Branch Library. This will reduce the current need for a number of public passenger vehicles and other road users to traverse the usually congested Main Street or to unnecessarily venture into the centre of the town.

<sup>14</sup>. See Appendix 14 for preliminary concept design.

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A properly planned and designed street will therefore be developed with adequate consideration to streetscape and functionality. It will provide adequate sidewalks with access for the disabled, street trees, garbage receptacles, lay-bys where necessary, and adequate lighting and signage.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term to Medium Term	MTM, NWA, CPC

### • Transportation Centres

May Pen acts as a major point of transit for inter and intra parish commuting. There are several spaces within the town which are currently used to accommodate public passenger vehicles. However, these spaces are inadequate and the location of some is unsuitable and contributes to congestion. This Plan is encouraging the establishment of two new transportation centres to adequately address the issue of congestion.

The first will be developed on the site opposite the CPC. This area which is currently used as a taxi stand and a vending area was recently acquired by the CPC. It will be formalised and used to accommodate public passenger vehicles which travel from the town in a northerly direction. A preliminary design for this transportation centre, as well as funding for its development is already in place.

The second transportation centre will accommodate all public passenger vehicles traveling from the town in a southerly or easterly direction. It will be developed on currently vacant lands, in the vicinity of the proposed new roadway. In addition to providing adequate parking, the facility will also provide shops for a wide range of vending activities as well as sanitary conveniences, seating, sheltering and other facilities for the comfort of commuters. It will also be properly fenced with provision for pedestrian entrances and exits, as well as elevated walkways and access for the disabled and ensure their safety.

It should be noted that the taxi stand at the corner of Brooks Avenue and Bromanty Street will be maintained for public passenger vehicles travelling from the town in a westerly direction.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MTM, CPC

### • Paid Parking for Private Motor Vehicles

With the development of the proposed new transportation centres, public transport operators utilizing the bus and taxi park adjacent the library (the Vere Bus Park) will be relocated to one of the new facilities. This area will then be developed to accommodate paid private parking. The property will be properly fenced, landscaped and illuminated to enhance the aesthetics and to ensure adequate security. It will also provide direct access to the market.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC

### • Relocation of May Pen Primary

The May Pen Primary School is currently located in the commercial hub of May Pen, adjacent to the market. These entities are incompatible as a relatively quiet environment is required for school, whilst the market is usually a source of noise pollution. This area is not pedestrian friendly and is a significant safety risk to the young children attending the school. Besides, the school requires additional space for expansion to support

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have it removed from the shift system. Additionally, having the school in this area may not facilitate the optimal use of the land; it may be better suited for commercial or infrastructural use. Based on these premises, this Plan is encouraging the relocation of the school. Lands adjacent the proposed site of the library, along the proposed new roadway, appears to be ideal for the school, and therefore the feasibility of relocating it to this site will be explored.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium Term	MEYI

### • Redeveloping the Market

The May Pen Market is considered a problem because its location is said to cause traffic congestion and its physical condition contributes to visual pollution. However, much of the growth and development of the parish's capital is built around the market. Consequently, the market will not be entirely relocated but will be redeveloped into a modern facility which supports adequate circulation.

The section of the market which is bordered by Main Street, Muir Park Avenue, and Sevens Road will be relocated to part of the lands which currently host the May Pen Primary School which is earmarked for relocation. The other section which includes the meat market and the haberdashery will be renovated or redeveloped. It therefore means that the market will no longer be dissected by the Muir Park Avenue. This new facility will ensure the proper use of the site and will also provide proper stalls and designated vending areas for particular goods to ensure the proper use of the space in the market. To this end, the development of a multi-storey facility providing additional commercial space will be explored. A Build-operate-transfer (BOT) or build-own-operate-transfer (BOOT) system may be explored.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MLGCD

### • Relocation of the May Pen Branch Library

As part of the redevelopment strategy for May Pen, this Plan is encouraging the relocation of the library. The facility is currently located adjacent to the bus park, the market and the Mount Faith Tabernacle Church. In this location, the library faces several site related issues. Of note, libraries are generally located in quiet zones, however this facility is being impacted by noise from the bus park, the market and the church. Whenever there is a build-up of garbage in the market, it tends to affect the library. In addition to these site related issues, the area in front of the library is often used by taxi operators for the loading and off-loading of passengers. The entrance gate is often blocked by taxi operators too. As a part of the strategy to revamp the town of May Pen, the relocation of the library is therefore necessary. Lands adjacent the Saint James Methodist Church, along the proposed new roadway, appears ideal for siting the facility.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MEYI

### • City Park (OLD POLICE STATION SITE)

There is need to provide more green spaces within the town of May Pen to support environmental processes and to provide aesthetic and psychological relief in the otherwise built up area. Consequently, the site of the old May Pen police station will be developed into green space. This area will provide a place where people can relax, as well as provide a venue for the hosting of cultural and educational events such as concerts, health fairs, and exhibitions. A preliminary concept design for this Park has already been prepared (See Appendix 15). Among the features of this Park in the concept design are a park cathedral,

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restrooms, kiosk shops, park benches and miniature shade trees, and paved walkways.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	CPC

### • Eliminating Street Vending

Street vending in the town of May Pen contributes to traffic congestion and is also a threat to safety and security. Accordingly, this activity will be eliminated from the town. This will be achieved through enforcement and the provision of adequate designated vending areas. Vending will be accommodated mainly within the redeveloped market and the proposed transportation centres. The Local Authority may also identify other suitable areas to be designated as vending areas.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, JCF, Clarendon Chamber of Commerce

### • Relocation of informal settlement

As part of the strategy to optimise land use in May Pen, this Plan is encouraging the relocation of the small informal settlement called Ghetto. Ghetto is situated next to the Revenue Centre on prime lands for the expansion of the CBD. The settlement lacks basic services and infrastructure, does not comply with Planning and Building Regulations, and is believed to provide a safe haven for criminals. Due to the space constraints and the very high building density, it will be very difficult to formalise the area. For these reasons, residents of the community will be relocated to an appropriate site within the confines of May Pen. This site may be part of one of the informal settlements targeted for upgrading.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	MEGJC

### • Informal Settlement Upgrading

There are numerous informal settlements within and around the May Pen area. These settlements lack basic services and city infrastructure, do not comply with Planning and Building Regulations, and are believed to be safe havens for criminals. Nevertheless it is recognised that many of them are meeting genuine housing needs, in locations where people wish to live. Additionally, most of these settlements have become a part of the urban fabric and residents have acquired some amount of right to the property which they occupy.

An Informal Settlement Upgrading Programme will be developed and implemented to address this situation. This programme will utilize a participatory approach and address infrastructural issues, as well as the social forces at play within these communities. It follows that recommendations from the PSUP will be incorporated. Among the settlements targeted for upgrading are Treadlight, Bucks Common, Effortville and Farm.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEGJC, MLSS, MNS

### • Creating a Comprehensive Drainage Plan

A programme of developing proper drainage facilities in May Pen must be undertaken with some urgency. The drainage network in the urban area installed many decades ago, is outdated, inadequate and almost obsolete. It is imperative that the town be equipped with an adequate system of paved drains which effectively aid the removal of storm water from the streets and then channelled to the main river channels.

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Drainage is extremely poor as the paved drains are few, unplanned and poorly maintained. When there are heavy showers, several parts of the town become flooded and in some instances sewage pits have overflowed.

In creating this drainage plan, the relevant authorities will seek to determine the extent to which large impervious surfaces are contributing to flooding and encourage the implementation of appropriate measures. That is, some large paved parking lots may be contributing to flooding and therefore the provision of landscaping to reduce surface runoff will be encouraged.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	NWA, CPC, MEGJC, MTM

### • Central Sewerage System

Despite May Pen being one of the largest urban centres in Jamaica, the area has no central sewerage system and disposal system. A major sewerage system is already proposed for the area, and high priority will be given to the development of this facility since the population density is increasing and much of the soil is of poor absorbent capacity. The facility will be located south west of Denbigh on the west bank of the Rio Minho, just north of Content, or in another suitable location. The proposal includes the construction of wastewater stabilization ponds and re-use of the treated effluent for irrigating the cane fields within the environs of Content.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	NWC

### • Developing a Conference Centre

There is no facility in May Pen for the hosting of large meetings and/or conferences. Venues such as the St Gabriel's Anglican Church Hall and the Glenmuir High School's auditorium are currently used, but at times these facilities are inadequate based on the size and the type of event planned. As a result, this Plan is promoting the development of an accessible Conference Centre within May Pen. This facility will accommodate conventions, banquets, theatre-style conferences, and trade shows. A potential site, south of the proposed location for the May Pen Primary School has been identified.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MEGJC

### • HISTORIC PRESERVATION AND HERITAGE TOURISM

There are several sites within the Plan Area that are of historical and/ or archaeological interest. These relics help to provide a sense of place and continuity and can also contribute to heritage tourism activities in the parish. For these reasons, their characteristics will be preserved, and where necessary, the relevant authorities will seek to have them declared as historic monuments of national importance.

## 6.5. THE MAY PEN DA PLAN

### • May Pen Clock Tower



*Figure 129: The May Pen Clock Tower.*

The May Pen Clock Tower is a declared national monument that sits prominently in the centre of the town square of May Pen. It was constructed in honour of Dr. Samuel Glaister Bell, a renowned doctor who lost his life while crossing the Rio Minho after visiting a patient. The approximately twenty-four (24) feet high and 8 feet wide stone tower, is also a physical testament to the sacrifice of Jamaican soldiers in World War I. On the western side is a memorial plaque for the Great War of 1914-1918. The exact date of the erection of this tower has not been ascertained, but it appears to have been constructed after World War II. This structure will continue to be preserved and protected, and therefore any development pressures, including traffic management plans, which seek to have it removed will be strongly resisted. The relevant authority will also seek to have the clock restored to effective functioning. It is currently out of service.



*Figure 130: The St Gabriel's Anglican Church.*

### • St. Gabriel's Anglican Church

The St. Gabriel's Anglican Church, which was once called the Lime Savannah Chapel, was the “daughter Church” of St. Paul's in Chapelton. When the Church of the White Cross fell into disuse, St. Gabriel's took its place. No record is found indicating the exact founding date of the Church. However, it would appear that the church was established around 1851 as there is record that Rev. H. Reid served as Rector of the church from 1851 to 1855. This Church was destroyed in 1951 by Hurricane Charlie and was reconstructed and consecrated in 1954, in a ceremony attended by Sir Alexander Bustamante, the then Chief Minister of Jamaica.

The St Gabriel's churchyard also contains a vast and valuable history of May Pen and Clarendon's past. In 1955 Bishop Gibson consecrated a piece of land at the east of the old churchyard “for burials.”

## 6.5. THE MAY PEN DA PLAN

The land was donated to the church and the title was registered in the name of the Incorporated Lay Body of the Diocese.

Due to its historical and archaeological importance, this Plan is encouraging the preservation of the site, inclusive of the building and the cemetery. The relevant authorities will further explore the feasibility of having the site listed as a heritage site to support this effort. Additionally, this Plan is encouraging the use of the facility for heritage tourism purposes, including as part of the parish heritage church trail.

### • The International Peacemakers' Association of the African Reform Church



Figure 131: Service at the International Peacemakers' Association of the African Reform Church.

Source: <https://anniepaul.net/2012/08/19/a-visit-to-rev-claudius-henrys-church-sandy-bay-jamaica/>

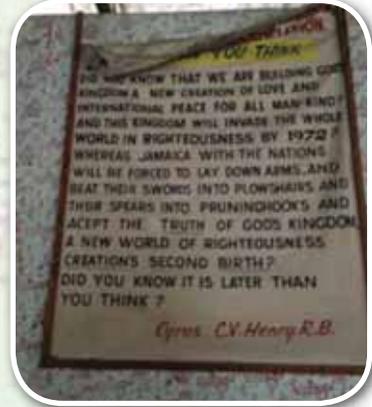


Figure 132: One of the many antique writings on the wall of the Church.

Source: <https://anniepaul.net/2012/08/19/a-visit-to-rev-claudius-henrys-church-sandy-bay-jamaica/>

Located in the district of Green Bottom is the International Peacemakers' Association of the African Reform Church. This Church has its roots firmly entwined with the history of the Rastafarians in Jamaica. It was established by the Reverend Claudius Henry, whose son led the so-called Henry Rebellion in 1959, after he was arrested. The structure still stands in the community and is attended by a few locals. Its interior walls are covered with a number of antique writings, some of which were done by Henry himself. Due to its rich heritage, the feasibility of declaring this structure a national heritage site and its use as a tourist attraction will be explored.

### • Four Paths Railway Station



Figure 133: The Four Paths Railway Station.

The Four Paths Railway Station is believed to have been constructed in the early 1900s. It is a two-story concrete building that has a combination of aluminium louver and sash windows along with solid recessed panel timber doors. On the lower level is a corridor with a colonnade and staircase leading up to the Station Master's quarters. A zinc hip roof with an adjoining zinc shed roof covers the Station Master's quarters, as well as the balcony. This structure is of archaeological importance and is listed by the Jamaica National Heritage Trust as a national monument. Therefore its characteristics will be preserved.

The building is currently not being used and there is a high risk of it falling into ruins due to a lack of maintenance. Additionally it may become a popular hangout for unattached youth and a haven for criminals.

## 6.5. THE MAY PEN DA PLAN

Therefore, this Plan is promoting the adaptive reuse of the building. The ideal use would be temporary, as this Plan is also encouraging the reintroduction of rail services. However, proposals for permanent use will be evaluated, as the possibility of constructing a new railway station may be explored.

- **Belle Plain Great House**



Figure 134: The Belle Plain Great House.

The Belle Plain Great House is located within the district of Belle Plain. The structure is currently in a dilapidated state, but is used as a dwelling by several families. This building was once used to host government banquets and official meetings and also represents the majestic grandeur and simplicity of ancient architecture. The architecture of this structure is of importance and is worth preserving. Therefore this Plan is encouraging the restoration of the building and its adaptive reuse. The feasibility of including this structure in a parish great house tour will also be explored.

- **Whitney Estate and Aqueduct Whitney**

Located in the Mocho Mountains is the Whitney Estate, which was once a producer of coffee, cocoa and sugar. On this property which is over 300 years old, was a cattle mill used for grinding sugarcane, which was later replaced by the water wheel mill and then the steam engine. An aqueduct built of brick, and irregular and squared cut stones, was used to feed water from a dam across the Whitney River to the mill. Although ruined in places, the aqueduct still runs from the dam to a reservoir, and another hundred yards to the mill. This site will be preserved and support will be given to its declaration as a national heritage site. It will also be used for tourism purposes as a storyboard will be erected and it will also accommodate guided tours.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MOT, TPDCO, CPC, JNHT, Private Sector

- **EBONY PARK AGRO-PARK**

The Ebony Park Agro-Park is one of two agro-parks to be developed in Clarendon and one (1) of fourteen (14) to be developed in Jamaica to support import substitution of selected crops. This facility is a contiguous parcel of land measuring 567 hectares which is equipped with the basic infrastructure to ensure good agricultural practices and intensive production. Among the infrastructure provided are good farm roads, irrigation systems, and a packing house. At present, only a portion of the targeted hectarage is under production with an assortment of crops. The facility has already been touted as a major success. Nevertheless the requisite efforts will be made to ensure that all the available lands are brought into full production. Such efforts may include increased marketing to attract investments.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	MICAF,

## 6.5. THE MAY PEN DA PLAN

### • SPRING PLAIN AGRO-PARK

The Spring Plain Agro-Park is the second of two agro-parks to be developed in Clarendon. This facility is a contiguous parcel of land measuring 465 hectares which will be equipped with the basic infrastructure to ensure good agricultural practices and intensive production. Infrastructural works are ongoing at the facility and when complete farmers will have access to good farm roads, irrigation systems, and a packing house. Plans are also afoot to develop a warehouse complex at the facility into Jamaica's first agro-economic zone. The complex will include a drying facility, cold storage, an abattoir and a processing plant for potato chips. The completion of this agro-park/ agro economic zone is important to stimulating local economic growth and increasing local food security. Emphasis will be placed on the speedy completion of the infrastructure and full production at the facility.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	MICAF,

### • DENBIGH AGRI THEME PARK

The Denbigh Showground is 52 acres of prime agricultural land which is owned by the JAS. Most of this property is left idle throughout the year, except for the three-day Independence weekend when the JAS hosts the annual Denbigh Agricultural, Industrial and Food Show, which is the largest agricultural display in the English-speaking Caribbean. The site has an annual maintenance and upkeep bill of approximately \$10 million and needs to be more self-sufficient. In addition to that, its continuous utilisation in a productive manner can see the land making a more meaningful contribution to the economic development of the parish.

For these reasons, this Plan is encouraging the continuous utilisation of the entire property throughout the year. In keeping with the agri-tourism theme of the Showground, this Plan is promoting the development of an Agricultural Theme Park on the lands. This Park which will serve as a model agri-tourism facility, will provide attractions such as a corn maze, a petting zoo, an agriculture museum with information and artefacts regarding indigenous food and agricultural techniques, and a food court which offers a variety of dishes from the different ethnic groups to have inhabited Jamaica. Additionally, the area will host an agriculture training institution which offers training in hi-tech agricultural techniques such as greenhouse farming, fish farming, hydroponics, and aquaponics, as well as cabana style accommodations for visitors who wish to stay over. The site will also be used for the periodic staging of farmers markets and other events.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	JAS, MICAF, MOT, MEGJC, Private Sector, TDPCO

### • NEW CEMETERY

According to the CPC, the Denbigh Cemetery is close to its capacity. This cemetery serves citizens within and outside the Local Planning Area. The Local Planning Authority will seek to ensure that alternative measures are in place whenever the Denbigh Cemetery is closed. Large tracts of land adjacent the Havannah Heights community, appear quite suitable for the establishment of the parish's first garden cemetery and has therefore been reserved on the Land Use Proposal Map for this purpose. Other sites within the DA have been reserved for the aforesaid purpose, but priority will be given to the development of this site.

## 6.5. THE MAY PEN DA PLAN



Figure 135: A section of the Denbigh cemetery.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, MLCD

### • EXTENSION OF PIPELINES INTO MOORES

The community of Moores has been identified as one of the most water deficient areas in the parish of Clarendon. It is situated in proximity to NWC's New Ground/Ennis system and the northern part to Twin Palms system, but the local infrastructure is not adequate to reach residents. In order to ensure access to water in this community, this Plan is encouraging the extension of the NWC's network into the area. Such works appear to be feasible and also the most suitable option.

### • RESTORING OR ADAPTIVE REUSE OF OLD BAKERY IN GREEN BOTTOM

.closed years ago but the structure still stands in the district. There is the opportunity for it to be restored or adaptively reused as another agro processing plant to support local economic development. Therefore a Feasibility Study will be undertaken to determine if the facility should be reused as a bakery or as another type of agro processing facility, following which it will be developed for use by the community or by an investor.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	NWC, MEGJC

## 6.6. THE LIONEL TOWN DA PLAN

### 6.6.1. INTRODUCTION TO THE LIONEL TOWN DA

The Lionel Town DA covers approx. 244 sqkm of land in south eastern Clarendon. It comprises (9) communities with a total of fifty seven (57) districts . The DA is bordered to the North by Mineral Heights, Palmers Cross and Curatoe Hill, to the south by the Caribbean Sea, to the East by the Caribbean Sea and to the West by Gimme-Mi-Bit, Race Course and Longwood.



## 6.6. THE LIONEL TOWN DA PLAN

### 6.6.2. OVERVIEW OF NATURAL ENVIRONMENT

The Lionel Town DA is situated on the Vere Plains and consequently, the terrain is quite flat. The only exception is in the Braziletto Mountain and Portland Ridge areas. Owing to its flat terrain, surface runoff is relatively poor. There are several streams, rivers and springs within the DA. The Rio Minho River runs along the western boundary whilst the Salt River with its famous Mineral Bath, lies therein.

The climatic conditions within the DA are quite similar to that of Jamaica generally. It is usually dry, with heavy rainfall in May and October of each year. However, in recent times, it only rains consistently when the island is affected by a tropical disturbance.

The Lionel Town DA also forms part of the Portland Bight Protected Area which is managed by the C-CAM. Being a part of this internationally recognised protected area, the natural resources in the DA are in abundance. These include caves, mangroves, flora, fauna, mountains, beaches, springs, limestone, sand, and fertile agricultural lands. The rich biodiversity include endemic and endangered species, including the American Crocodile.

### 6.6.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

Despite the DA being a part of the Portland Bight Protected Area, several environmental issues still exist. Pollution, which results from poor waste management practices and economic activities is one of the major ones. It includes dumping on land and in drainage channels which periodically leads to flooding due to blockage. Additionally, the pollution of coastal waters from sewage and garbage continues to be a major cause for concern. Air pollution is a significant issue which is resulting primarily from the burning of garbage, the harvesting of sugarcane through the slash and burn method, and emissions from the sugar and bauxite factories. The biodiversity within the DA is also under severe threat from human actions. Overfishing and questionable fishing techniques such dynamiting and the use of fine mesh nets, have resulted in a reduction in the population of some fish. The poaching of turtles and the killing of crocodiles have become serious problems in recent years.

Climate change is also having a profound impact on the DA, with beach erosion within the Welcome Beach area serving as tangible evidence.



*Figure 136: A View from Welcome Beach, Clarendon.  
Source: CCAM (2014)*

### 6.6.4. OVERVIEW OF THE BUILT ENVIRONMENT

Transportation within the DA is by road and sea. The road network within the area includes main and parochial roads which support several different modes of transport. These include licensed taxis which are used by 44% of households and robot taxis which are utilized by some 21%.

## 6.6. THE LIONEL TOWN DA PLAN

The road network also supports travel by bus (12%), private motor car (5.2%), bicycle (9%), tractor (3%), truck (1%) and motor cycle (0.8%). Boats are also utilized for transportation for 4% of the DA. This is as a result of the fishing villages in the DA.

The DA's principal source of water is that of groundwater which is supplied by both public and private wells. Most households utilize public sources which include water piped into dwelling (5%), water piped into yard (29%), standpipes (24%), and catchments (3%). Other sources of water include private sources piped into dwelling (7%), private catchments (10%), springs/streams (16%) and purchased water (2%)<sup>15</sup>.

There are several sewage treatment systems in the local area. These include two (2) community treatment plants in the Hayes New Town subdivision, two (2) in the New Bowens community, the Lionel Town wastewater treatment system, and the JAMALCO sewage treatment plant. However, pit latrines (41.2%) and water closets not linked to a sewer (26%) are the two main toilet facilities utilized. The pit latrines are most prevalent in communities such as Portland Cottage, Salt River and Rocky Point. Only 14% of the households within the DA have access to sewer services, while 4.9% utilize soakaways and 8.5% reported that they have none. The remainder of the households utilize other unnamed toilet facilities.

Within the DA is also Jamalco's red mud lake. This facility is used for the disposal of the tailings from the processing of the bauxite. See 2.2.4.1.1.2. Industrial Wastewater Treatment (pg. 149)

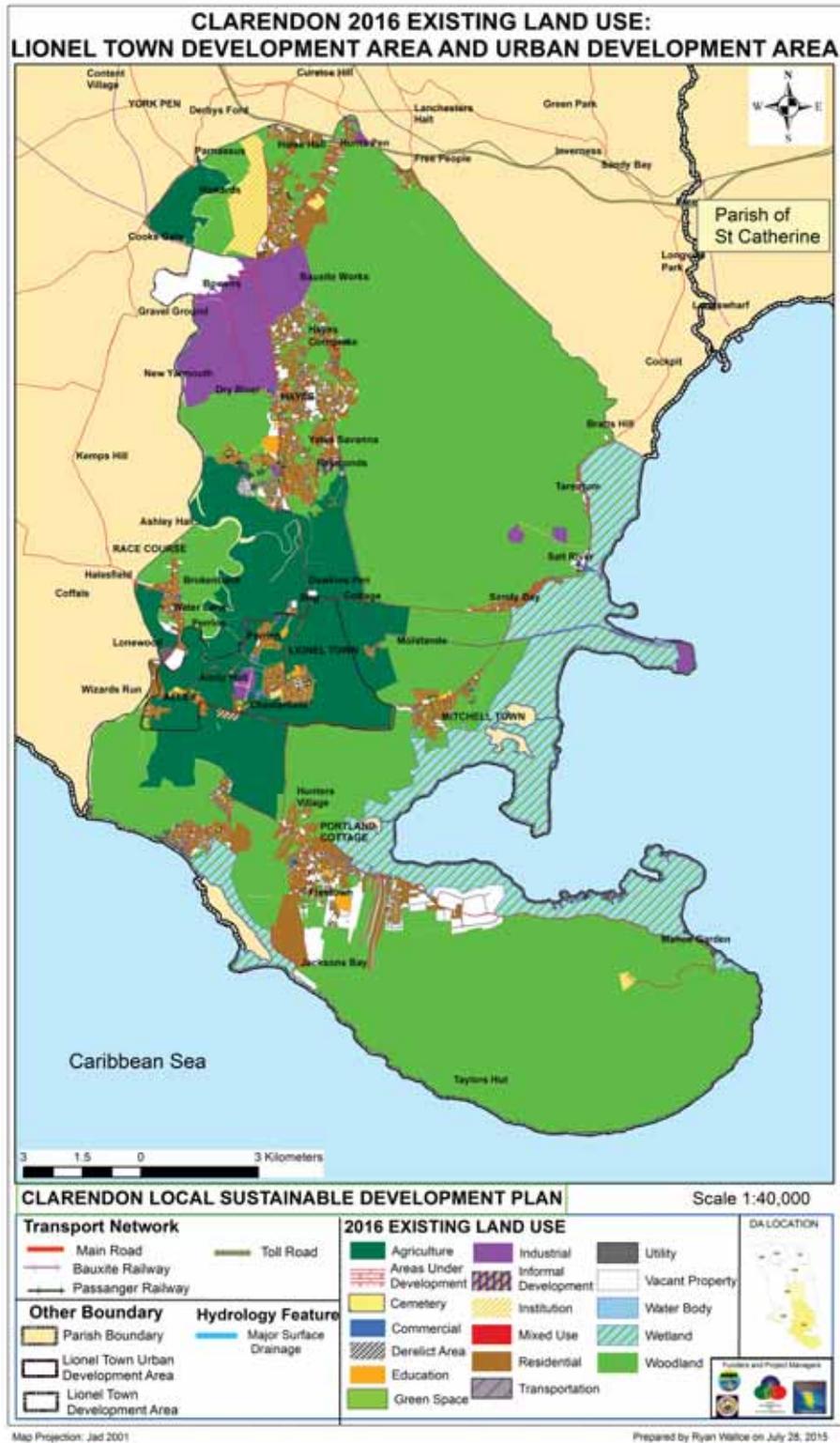
The main method of garbage disposal within the DA is burning. Approximately 41.5 % of households utilize this method. Only 22.6% of households have their garbage picked up by trucks. Other methods utilized are burning (12.3%), dumping in the sea, river, pond or gully (10.2%), dumping on site (9 %) and recycling (5.4%). Electricity is the main source of lighting within the DA, while LPG is main source of fuel for cooking. Seventy one percent (71.2%) of households utilize electricity as their source of lighting, while other households in the DA utilize bottle torch (14.9%), kerosene lamps (6.4%) and candles (0.3%)<sup>16</sup>. With regards to the fuel used for cooking, 70% of households used LPG as their main source of cooking. Other households use charcoal (14%), kerosene (11%), wood (4%) and electricity (1%). Access to telecommunications in the DA include access to telephone and internet services. More than 80% of households have access to telephone services, which is mainly via cell phones. However, internet access is quite low at 11.8%, with limited access to the internet.

### 6.6.5. SUMMARY OF BUILT ENVIRONMENT ISSUES AND CHALLENGES

There are several issues and challenges related to the built environment within the DA. The local roads are generally in a poor state resulting in trips being much longer than necessary. These poor road conditions are the result of constant damage from heavy rainfall and flooding, as the area lacks adequate drainage systems. The DA also suffers from water supply issues which include: inadequate access to piped water, mainly within Portland Cottage, Rocky Point and Salt River; irregularity in the supply of water; and poor quality water as a result of saline intrusion and pollution from industrial activities largely in Lionel Town. Additionally, the use of pit latrines is quite high, resulting in a public health and sanitation risk, as well as a threat to biodiversity especially in coastal areas. Furthermore, burning is the predominant method of garbage disposal in the DA and this is contributing to air pollution. Street lighting is limited and is perceived as a major risk to public safety in light of the fact that there are a number of derelict buildings and overgrown lots which could provide shelter for criminals throughout the DA.

15. The remaining 4% did not give a response. | 16. The remainder of the DA didn't identify a source.

## 6.6. THE LIONEL TOWN DA PLAN



### 6.6.6. OVERVIEW OF LAND USE

Like most other DAs in the parish, the most dominant land use within Lionel Town is woodland. This covers most of the eastern side, which is bordered by a continuous area of wetlands and include the Braziletto Mountain and Portland Ridge. Agriculture is also a major land use, owing mainly to the sugarcane plantations which occupy much of the west central section. The DA also has a considerable amount of industrial lands, which include Jamalco's alumina plant in the north western section of the local area, and pockets of built up areas mainly in the Halse Hall, Hayes, Lionel Town, Portland Cottage and Rocky Point areas.

## 6.6. THE LIONEL TOWN DA PLAN

### 6.6.7. SUMMARY OF LAND USE ISSUES AND CHALLENGES

Competing interests in the development of land and the absence of up to date Land Use Regulations means that the resource is being consumed in an indiscriminate manner. This is resulting in the clearing of wetlands and the use of agricultural lands for the development of settlements. Other land use issues include incompatible uses for example residential developments adjacent to industrial developments, example in and around the area of the alumina plant, and building within disaster prone areas such as Portland Cottage and Rocky Point.

### 6.6.8. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

The generally flat and low-lying topography of the DA, as well as its location in relation to the sea, makes it highly susceptible to flooding and hurricanes. Much of the DA is situated on a plain and as a consequence, natural drainage is quite poor. This issue is often exacerbated by the blockage of drainage channels by garbage reducing their usefulness. In addition to that, the topography means that much of the coastal areas may be inundated by storm surges.

Both the incidences of inland and coastal flooding are oftentimes triggered by hurricane. As highlighted earlier, the entire parish is vulnerable to this hazard. The mangrove wetlands provide important defence from both hurricanes and storm surges, but a fair amount of it has been damaged by past hurricanes or has been harvested for use in the agriculture and fishing industries. Hurricanes have had disastrous effects on the DA in the past, including the loss of lives and properties.

### 6.6.9. DISASTER MITIGATION AND MANAGEMENT ISSUES AND CHALLENGES

The settlements of Portland Cottage and Rocky Point are classic examples of the consequences of the inappropriate siting of settlements. The communities have elevations of zero to ten metres above sea level and are particularly vulnerable to coastal flooding from storm surges associated with hurricanes and tropical storms, as well as inundation and land subsidence from sea level rise. These communities have developed informally, with poor construction practices. Consequently, these communities are quite prone to disasters.

### 6.6.10. OVERVIEW OF ECONOMIC DEVELOPMENT

Despite most residents being dependent on the sugar industry, the Lionel Town DA has several industries from which residents are able to earn a living. The DA is home to the Monymusk Estate, which includes a sugar factory, which also purchases sugar cane from local farmers. It is the primary source of employment within the DA, hiring both field and factory workers. The DA is also home to the JAMALCO bauxite company which processes the mineral in Halse Hall and ships the product from the port in Rocky Point. The largest fishing village in Jamaica is also located within the DA, in Rocky Point. Other economic activities taking place in the DA include aquaculture, farming (outside of sugarcane) and livestock rearing, in addition to small scale commercial services.

### 6.6.11. ECONOMIC DEVELOPMENT ISSUES AND CHALLENGES

Despite having one of the highest employment levels among all the DAs in the parish, the employment rate within the Lionel Town DA is still quite low. The employment rate stood at a fraction below 58 %, with 36.2 percent being males. The male to female ratio for those unemployed was reversed as there were 27% females and 15.3% males. This high level of unemployment can be attributed in part to praedial larceny which dealt a major blow to the local economy. In the past, a number of fish farms were operating in the DA, but praedial larceny resulting in the operations becoming unprofitable and the investors eventually pulled out.

## 6.6. THE LIONEL TOWN DA PLAN

In addition to that, most of those employed are involved in sugar cultivation and fishing which are classified as low income generating jobs. As a consequence, thirty percent (30%) of household heads are earning less than minimum wage. Furthermore, these jobs are also threatened; the local sugar industry is severely challenged by poor yields, droughts and high labour costs, which have resulted in a number of job cuts and the closure of the sugar factory over the past few years. Similarly, the fishing industry is under threat from overfishing, pollution and a lack of infrastructure.

### 6.6.12. OVERVIEW OF SOCIAL WELL BEING

The Lionel Town DA has the second largest population with 56,522 persons. This is comprised of 28,821 males and 27,701 females. This population occupies a total of 9652 dwelling units.

Types	Number	Location (District)	Types	Number	Location (District)
Churches	63	All Communities	Financial Institutions	1	Lionel Town Proper
Post Office/Agency	7	Hayes, Mitchell Town, Portland Cottage, Salt River, Lionel Town, Rocky Point	Playfields	8	Alley, Rocky Point, Portland Cottage & Salt River
Police Station	2	Lionel Town & Hayes	Court Houses	1	Lionel Town
Community Centre	7	Hayes, Mitchell Town, Portland Cottage, Lionel Town, Water Lane	Libraries	1	Lionel Town Proper
Sports Complex	3	Hayes, Rocky Point & Lionel Town	Inland Revenue	1	Lionel Town Proper
Cemeteries	4	Alley, Rocky Point, Hayes and Lionel Town	Recreation	4	Monymusk Gun, Rod & Tiller Club in Salt River, Salt River Mineral
Markets	2	Alley & Rocky Point			Bath, Rocky Point Beach, Welcome Beach
			Schools	38	
			Healthcare Facilities	5	Lionel Town, Halse Hall, Hayes & Monymusk.

As evidenced by the table above, the Lionel Town DA has access to most social infrastructure and services. These include: thirty eight (38) educational institutions which are made up of twenty seven (27) basic, seven (7) primary, two (2) all-age and two (2) high schools; five health care facilities inclusive of a Type C hospital, and a Type III and two (2) Type I health centres; and a range of other social infrastructure and services.

### 6.6.13. SOCIAL WELL BEING ISSUES AND CHALLENGES

There are several social issues and challenges impacting the local area. These include crime, poor housing conditions, and high average household size. Despite 88% of residents reporting that they feel safe within the DA, statistics show that crime has been on an upward trend over the past few years. Most incidents involve burglary, praedial larceny or gun related crimes. Gun related crimes may or may not be linked to the guns for drugs trade, which is believed to be operating within the DA. Concerning housing condition, the overall quality of housing within the DA may be considered as fair. However, approximately 12% are considered to be in a poor or very poor state. Most of those considered to be very poor are found in the Portland Cottage community.

## 6.6. THE LIONEL TOWN DA PLAN

The housing condition in the DA has deteriorated over the years due to the use of poor construction materials in some cases and continuous flooding especially of the coastal areas. Additionally, the average household size in the DA is approximately 4 (4.08 to be exact) which is quite high when compared to that of Clarendon and Jamaica.

In addition to the above issues, the education and health sectors within the DA are also challenged. Educational levels are quite low; data from the SDC (2014) revealed that over seventy percent (78.4%) of household heads and 54.7% of other members of the households have no academic qualification. The main obstacles to health care were identified by residents as long waiting periods at public healthcare facilities, poor transportation and financial constraints.

### 6.6.14. OVERVIEW OF GOVERNANCE

Governance within the Lionel Town DA is administered by Government and civil society. The DA falls within the South East Clarendon and South West Clarendon constituencies and the Hayes and Rocky Point Parish Council Divisions. Governance in the DA is also being carried out by thirty nine (39) CBOs which are led by the Lionel Town DAC and include church groups, sport clubs and youth clubs.

### 6.6.15. GOVERNANCE ISSUES AND CHALLENGES

Poor participation in CBOs has been identified as the main governance issue within the DA. Data collected revealed that participation was highest in church groups at 45.6%, while participation in all other CBOs, except youth clubs and PTAs are well below 10%.

### 6.6.16. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### • PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the Lionel Town DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** The relevant authorities will seek to protect the flora and fauna of the Brazilletto Mountain; the boundaries of the quarry zone within the vicinity will be revised and mining and quarrying activities will only take place in areas of degraded forest. No mining or quarrying activities will be allowed within the aquifer protection zone.

**Policy 2:** Ecotourism activities will normally be supported within the Brazilletto Mountains, provided that there will be no adverse environmental impact.

**Policy 3:** The Eco sensitive coastline of the DA will be maintained. Development along the coast will be kept to a minimum, and approval will not be given for any development which will adversely affect the existing or proposed fish sanctuary.

**Policy 4:** Only low impact eco-tourism activities which are subjected to restrictive conditions will be supported within the vicinity of the Portland Ridge.

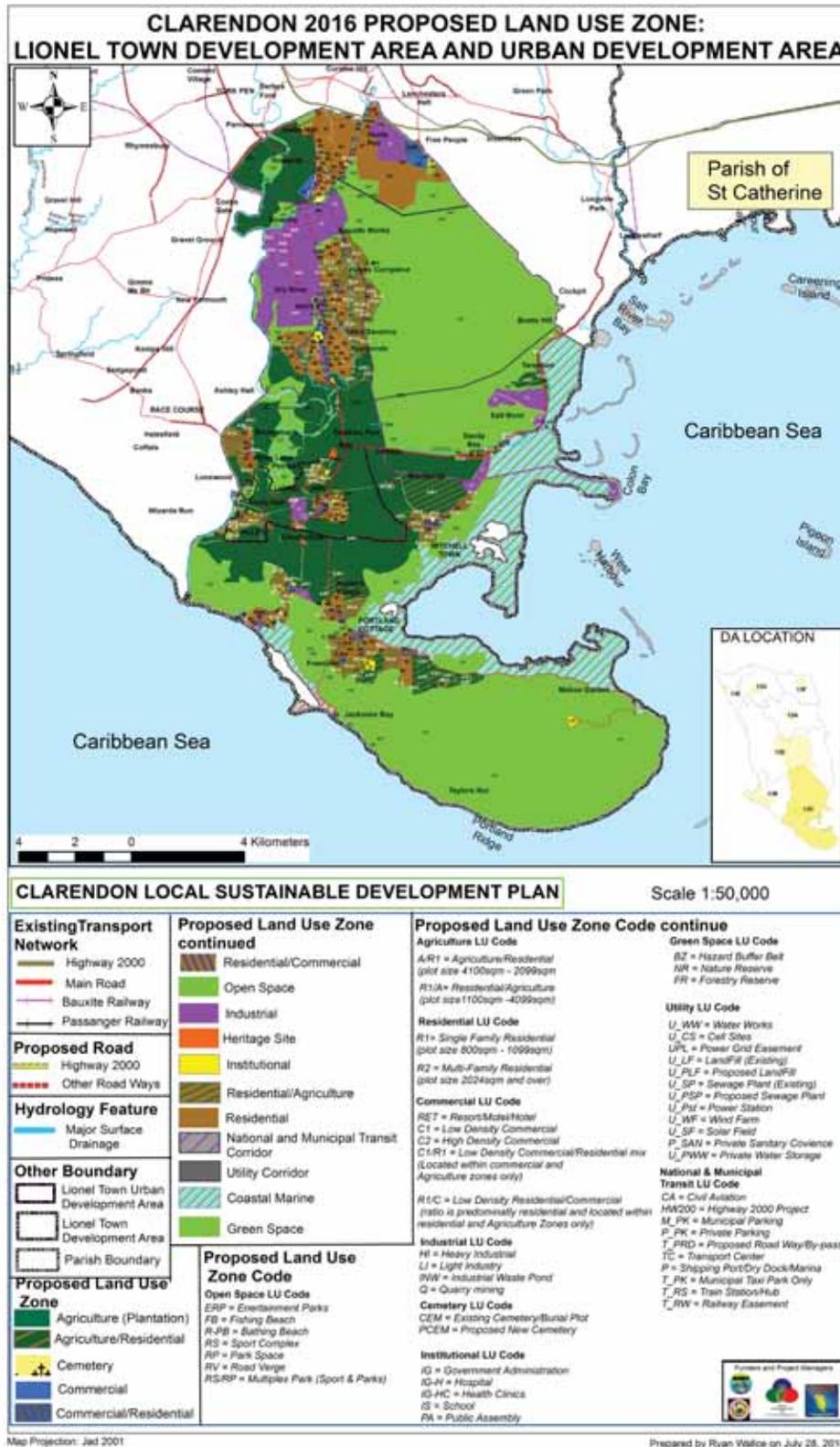
**Policy 5:** No permission will be given for developments which will adversely affect the flow or quality of the Rio Minho, the Salt River and any other natural drainage systems in the DA.

**Policy 6:** The relevant authorities will seek to ensure that the agricultural lands are protected from fragmentation, sterilization and encroachment by uses not associated with agriculture.

**Policy 7:** Applications for change of use for agricultural lands to non-agricultural uses will not normally be supported.

**Policy 8:** The Lionel Town Growth Centre will accommodate urban type residential developments up to a maximum density of 125 habitable rooms per hectare which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

## 6.6. THE LIONEL TOWN DA PLAN



**Policy 9:** The Halse Hall area will accommodate urban type residential developments up to a maximum density of 125 habitable rooms per hectare which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 10:** Only individual dwellings and other small developments will normally be allowed outside of Lionel Town, Hayes and Halse Hall in accordance with the proposed Land Use Map and the relevant planning standards and policies.

## 6.6. THE LIONEL TOWN DA PLAN

**Policy 11:** Residential growth of the Portland Cottage Community will not be supported; approval will only be given for developments which will replace an existing structure, and the new development will need to be appropriately designed with specified set back.

**Policy 12:** Residential growth of the Rocky Point community will not be supported; approval will only be given for developments which will replace an existing structure, and the new development will need to be appropriately designed with specified set back.

### • MANAGING THE EROSION OF THE COASTAL AREAS

There are several coastal areas of the DA, including the once popular Welcome Beach, which are showing evidence of erosion. This activity will likely be amplified by beach erosion and will negatively impact the lives of most locals. The relevant authorities will be encouraged to speedily develop and implement measures to address this issue. Private property owners affected by coastal erosion will also be encouraged to contact the NEPA before attempting any personal solutions.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	NEPA, CCAM, Property Owners

### • REALIGNING THE BOUNDARIES OF THE BRAZILLETTO MOUNTAIN QUARRY ZONE

Much of the Braziletto Mountains is covered by an existing quarry zone designation, providing scope for conflict with the ecological value of the area as a rare dry limestone forest habitat. This designation was made without adequate consideration of the impact of quarrying activities on the landscape and the biodiversity. This Plan is proposing the reviewing of the existing quarry boundaries, giving protection to parts of the limestone forest which are of high quality. The environmental impacts of existing and proposed quarry operations which fall outside the new zone will also be evaluated and mitigating measures will be developed and implemented in partnership with the lease holder where necessary.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	MGD, NEPA, C-CAM

### • UPGRADE OF THE SALT RIVER SPA



Figure 137: The Salt River Spa.

## 6.6. THE LIONEL TOWN DA PLAN

The Salt River Mineral Spa, which is located along the Salt River main road, is one of two (2) warm, radioactive springs located in the parish of Clarendon. The spa is basically a pond with mineral water running from the rocks adjacent to it, which also forms a stream called Salt River (it was so named as it intermingles with the salt water of the Caribbean Sea). It is reputed to have therapeutic properties for healing of several ailments and is therefore a famous spot among community residents and visitors from home and abroad.

The site however has been informally developed. There are several small businesses operating within the area without adequate sanitary conveniences. There are plans to formalize the area and put in place the necessary facilities and infrastructure. These plans will be supported as the area will be developed into a prime tourism destination within the parish. The temptation to charge visitors will be resisted as it is said that some time ago, the authorities fenced off the location for development and the water dried up and only returned when the fencing was removed and the spa was reopened to everyone. The development of the site will therefore serve to benefit the local business operators who provide ancillary services. A storyboard will be erected with the aforementioned tale as part of the attraction.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, TPDCo, C-CAM

### • PROMOTING HERITAGE PRESERVATION AND DEVELOPING HERITAGE TOURISM ATTRACTIONS

There are several sites within the DA which are of historical or archaeological importance. These sites form significant pieces of the parish's cultural heritage and will be preserved and developed into cultural heritage tourism attractions where feasible based on a priority listing. The adaptive reuse of some of these sites will also be promoted to generate funding to support the preservation initiatives. These sites include:

- Halse Hall Great House



Figure 138: The Halse Hall Great House

- The Halse Hall Great House is one of the few declared national heritage sites in Clarendon. It is an architectural masterpiece which is now owned by the JAMALCO. This Plantation Great House was constructed by Major Thomas Halse on lands given to him as a grant following the English's capture of Jamaica. The house had thick walls and served as the centre of the estate, on which Halse raised hogs and grazed cattle. It also served as a rallying point for defence. At the time of Thomas Halse's death in 1702, the Great House was just a single-storey building. By the late 1740s the building was owned by his son, Francis Saddler Halse, who developed the property into a more imposing and beautiful two-storey structure. A new entrance was erected, which included access by an elaborate arrangement of stone steps flanked by columns and capped with a fanlight. A peaked portico was also added. More recently, a new wing which harmonizes well with the Great House's architecture was added by Alcoa Minerals of Jamaica. The most famous owner of the house was Henry de la Beche, a geologist who contributed to the development of geology in Jamaica and who wrote the first, "Geology of Jamaica". Another famous occupant of this house was doctor and botanist, Sir Hans Sloane.

## 6.6. THE LIONEL TOWN DA PLAN

### • Portland Point Lighthouse



Figure 139: The Portland Point Lighthouse.

- The Portland Point Lighthouse has vast untapped tourism potential. Worldwide lighthouses are being used to enthrall tourists with their scenic and serene surroundings and rich maritime heritage. The Portland Point Lighthouse itself is listed by the Jamaica National Heritage Trust as a historic monument. It has the highest tower in Jamaica, standing at a height of 145 feet, with 129 steps. It has a white revolving light, giving two flashes in quick succession every 15 seconds. The lighthouse offers breath-taking views of the Caribbean Sea and some scenic vistas of Jamaica. With such characteristics, the site has the potential to significantly increase tourism activities. To this end, it will be properly developed and marketed.
- **St Peter's Anglican Church**



Figure 140: The St Peter's Anglican Church.

- The St. Peter's Anglican Church, which is the oldest church in Jamaica and also the former parish church of Vere, was founded in 1671 and is located in the community of Alley. The building which currently stands was built in 1715, with the eastern end being erected and consecrated in 1872. The church is made of brick and mortar and the tower, which forms the entrance to the building, is outlined by quoins and crowned with castellations. The detailing of the main building was kept simple, with semi-circular arches for the window openings. The church's cast iron bell, was shipped from London in 1857 and was made by the same company which made the iconic "Big Ben" bell. Within the church are several monuments, including monuments to the Morants, the Gales, and the Sutton families. One of the oldest pipe organs in the Caribbean is housed in the church. Given the church's historical and architectural significance, and the fact that it is listed by the Jamaica National Heritage Trust, its character will be preserved. The church building is also being proposed for tourism purpose. This may be as a part of a Parish Church Heritage Trail. It will include interactive exhibits and tours of the facility. There is need to improve some facilities at the church, including the sanitary conveniences.

## 6.6. THE LIONEL TOWN DA PLAN

Some of the graves in the church cemetery also require covering as they were never covered. These necessary works will be carried out to ensure that the church can sustain itself and contribute to local development.

### • Monymusk Libraries



Figure 141: The Monymusk Library.

- The Monymusk Library which is located in the community of Alley, is of historical significance. It is housed in an Old Brick Windmill which was part of a former sugar estate on the site. This is the only brick windmill in Jamaica. The bricks were imported from England while all other windmills were made of locally-quarried limestone. The building is open to the public, allowing passers-by to visit and view. The relevant authorities will make efforts to have this monument declared as a historic monument of national importance and endeavour to protect its unusual characteristics.

### • Old Jail- Alley



Figure 142: The old jail cell in Alley.

- During the Colonial Period, a jail cell was located in the community of Alley, near the first wharf. This jail can still be seen today and support will be given to the declaration of this structure as a National Heritage site, provided that it meets the criteria outlined by the Jamaica National Heritage Trust. Its use as a tourist attraction through the accommodation of guided tours will be explored.
- ### • Old Jail (Salt River)

## 6.6. THE LIONEL TOWN DA PLAN



Figure 143: The Monymusk Library.

- A police station and jail cell were once located in the community of Salt River, near the first wharf. This cut stone structure can still be seen today and support will be given to the declaration of this structure as a National Heritage site, provided that it meet the criteria outlined by the JNHT. Its use as a tourist attraction through the accommodation of guided tours will be explored.
- **Raymond's Dam Ruins-** The Ruins of the Raymond's Dam is one of many historic sites in the Lionel Town DA which dates back to the period of Colonial rule. Support will be given to the declaration of this structure as a national heritage site, provided that it meet the criteria outlined by the Jamaica National Heritage Trust, and its use as a tourist attraction through the accommodation of guided tours will be explored.
- **Historical Cave Exploration**



Figure 144: Etchings on the wall of the Jackson Bay Cave.

- Within the Portland Bight Protected Area are a number of caves, some of which were used by the Tainos for burials and as shrines and sanctuaries. These caves have the potential of making a significant contribution to the DA's Heritage Tourism product; therefore the feasibility of incorporating them into the package will be explored.
- **The Watsonton Methodist Church**



Figure 145: The Watsonton Methodist Church.

## 6.6. THE LIONEL TOWN DA PLAN

- The Watsonton Methodist Church is one of several landmarks in the Lionel Town area. This structure will be considered for preservation, provided that it meets the criteria outlined by the Jamaica National Heritage Trust. The feasibility of incorporating it into the parish’s church heritage trail will be explored.

- **Carlisle Bay**

Carlisle Bay is located at the mouth of the Rio Minho near Rocky Point. It was named after the Earl of Carlisle and the Governor of Jamaica from 1678 to 1690. It serves as a noteworthy reminder of it being the principal scene of military engagement when the French invaded and attempted to capture Jamaica from the English. At the time, the French Governor of St. Domingue (Haiti) Du Casse, believed that Jamaica was weak and could be easily captured as a result of the recent 1692 earthquake. The July 17th, 1694 invasion did not surprise Jamaica however, as an English sailor who was a prisoner in St. Dominigue, had earlier escaped and sailed to the island and exposed the news of the proposed invasion. This allowed Governor, Sir William Beeston, to make adequate preparations to resist the invasion. The failed invasion led Jamaica’s Governor to build Carlisle Fort the following year. The events of Carlisle Bay marked the last attempt to capture Jamaica by any of England’s European rivals.

This site is proposed to be used for tourism purposes. The authentic re-enactment of the invasion may have the potential to contribute to not only historic preservation and historical awareness but; to local economic development. Additionally, the feasibility of declaring it a National Heritage site will be explored.

- **The Sugarcane Barracks-** Located in the Alley Downer area of the Lionel Town DA, is the Sugarcane Barracks. These are houses which were constructed several decades ago to house sugar workers. These structures will be considered for preservation and the feasibility of developing the area into an Heritage Village will be explored.

- **The Old Mill**

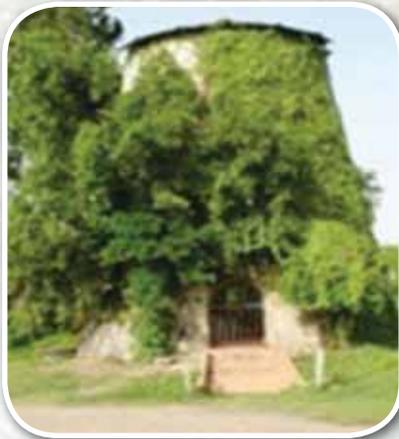


Figure 146: The Old windmill in Bog.

- Located within an area called Bog is an old windmill which dates back several decades. The feasibility of declaring this structure as a National Heritage site will be explored, as well as its use for heritage tourism purposes.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MOT, CPC, Private Investors, TPDCo

## 6.6. THE LIONEL TOWN DA PLAN

### • ESTABLISHMENT OF INDUSTRIAL TOURISM



Figure 147: The JAMALCO bauxite plant.  
Source: <http://jamaica-gleaner.com/gleaner/20101224/news/news5.html>



Figure 148: A section of the Monymusk Sugar Factory.  
Source: [http://www.jamaicaobserver.com/news/Monymusk-sends-home-400-workers-for-two-weeks\\_19224991](http://www.jamaicaobserver.com/news/Monymusk-sends-home-400-workers-for-two-weeks_19224991)

Industrial tourism offers an interesting prospect for the Lionel Town DA. In the DA, are the historic Monymusk Sugar Factory, the JAMALCO bauxite plant and the Rocky Point Port which are potential industrial tourism assets. Tours of these sites offering visitors an experience of seeing their products, production processes, applications, and historical backgrounds have the potential of adding to the diversification of the local tourism product and to strengthen the local economic structure. This will be particularly important for the sustainability of the Monymusk Sugar Factory an entity whose viability is currently challenged The owners/operators of these industrial enterprises will be encouraged to explore the possibility of becoming engaged in industrial tourism.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	Factory Owners, MOT, TPDCo

### • DEVELOPMENT OF ECOTOURISM ATTRACTIONS

#### • Wetland Interpretation Centre



Figure 149: The visitors' interpretation centre at the C-CAM attraction which is under construction.

The C-CAM is developing a Wetlands Interpretation Centre in Salt River. The facility is in its final stages of construction and when opened will promote ecotourism and wildlife conservation in southern Clarendon and its environs. The Centre will feature a boardwalk through mangroves which lead to a bird hide where visitors can learn about the various birds which inhabit the area. There will also be a Visitors' and Interpretation Centre, boat tours of the river and mangroves, a turtle pond, a conservation nursery, and a dipping pond where children will be able to collect samples and observe them under microscopes.

## 6.6. THE LIONEL TOWN DA PLAN

The Visitors Centre will include a multi-purpose display area with exhibits about the plants and animals that live in the Portland Bight area, a viewing area from the top floor of the three (3) storey building which will allow visitors spectacular views of the river and of the mangroves, a teaching area and a library, a cafe and gift shop. This facility will be professionally marketed and will be used as the catalyst for ecotourism, not only in the Lionel Town DA, but in the entire parish of Clarendon.



Figure 150: The boardwalk through the mangroves which leads to a bird hide at the C-CAM's wildlife Interpretation Centre.

- **Rafting-** The Salt River has the potential to be a major tourism attraction in the DA. With its relatively serene front and safe rapids, the river has major potential for non-motorised sporting activities, particularly rafting. The potential for this activity will be explored. However, some areas of the river may require the removal of debris to safety accommodate this activity.
- **Recreational boating-** The tourism sector strategy of this Plan is promoting recreational boating as a part of the parish's overall tourism product. This activity will be used to make a significant contribution to the DA's tourism offering. The establishment of small wharves/marinas at appropriate locations to facilitate this activity, including within fish sanctuaries, will be highly encouraged and supported, subject to appropriate environmental controls. Linkages between the mainland and the cays within the Portland Bight Protected Area as well as linking Clarendon with other tourism destinations on the South Coast example Treasure Beach, Alligator Pond and Port Royal could be developed.
- **Recreational Fishing-** Recreational Fishing activities will be supported within the local area. The Portland Cottage community is already known for hosting a tournament which involves the catching of the biggest Blue Marlin. The organisation of this tournament will be improved and it will be effectively marketed as a tourism event. Additionally, the fish sanctuaries will be used to support recreational fishing which will only be the "Catch and Release" practice. For control, these activities will be regulated.
- **Developing Hiking Trails in the PBPA-** The dry limestone forests of Portland Ridge and the Braziletto Mountains provide opportunities for the development of educational trails. Such trails would include marked stations next to points of natural interest which convey information about the flora and fauna of the area. This can add to the ecotourism product therefore such opportunities will be explored.
- **Caving within the PBPA-** There are several cave systems within the PBPA which offer opportunities for exploration. Accordingly, the sport of caving will be supported as part of the ecotourism package.

## 6.6. THE LIONEL TOWN DA PLAN

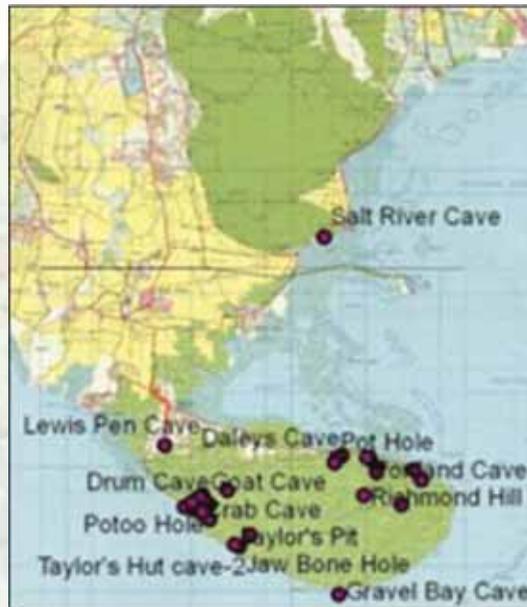


Figure 151: Locations of some caves in the PBPA. Source: CCAM 2014

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MOT, CPC, C-CAM, TPDCo, Private Investors

### • ESTABLISHING THE HAYES SEZ

The Hayes Free Zone in Clarendon is approximately 120, 000 sq. ft. of industrial space. Some amount of this space is currently being used for storage purposes, but the facility itself has the potential of making a more significant contribution to local economic development by operating as an industrial complex. This Plan will support the development of the Hayes Free Zone into a SEZ. This will be key to attracting investors as a diverse mix of incentives will be on offer. Activities that may take place in the zone include agro processing and related manufacturing. Alternatively, residents propose the development of a plastic recycling plant in the area. This plastic recycling plant may be used to produce packing materials for other manufacturing enterprises in the parish, including those which will be attracted through the GLHI.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MEGJC, Private Investors

### • EXPLORING THE POSSIBILITY OF RE-ESTABLISHING SALT MANUFACTURING IN PORTLAND COTTAGE

A solar salt production facility was once established in the community of Portland Cottage. This plant was closed many years ago for undisclosed reasons. It is still believed that there are commercially exploitable concentrated salt sedimentary layers within the area. Much of the soil within the area is salty and people continuously collect fine salt and coarse salt, especially from Jackson Bay and Salt Pond. With large expanses of land available and the local climate, one characterised by low rainfall and plenteous of sunshine, salt production through solar evaporation appears to be feasible. Therefore the possibility of re-establishing salt manufacturing in Portland Cottage will be explored.

## 6.6. THE LIONEL TOWN DA PLAN

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MICAF, Private Investor, SRC

### • ESTABLISHMENT OF A FISH SANCTUARY AT WEST HARBOUR

West Harbour contains extensive areas of mangroves which act as a nursery for fish and other marine animals. Part of this area has been proposed as a fish sanctuary as part of the strategy to conserve biodiversity and ensure the sustainability of the local fishing industry. The proposal will be supported, but some restoration actions may be necessary, as some parts of the area have been badly damaged by hurricanes. The possibility of utilizing artificial coral reefs will also be explored.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MICAF, C-CAM, NEPA, Fishermen's Cooperatives

### • INCREASING THE SCALE OF AQUACULTURE AND AQUAPONICS

In order to reduce pressure on the marine fisheries, this Plan is proposing the expansion of the aquaculture industry. The Lionel Town DA is very dependent on marine fishing but is also a very suitable site for aquaculture. Among its characteristics is the generally flat terrain which suits the topographical requirements for fish pond construction. Hence, aquaculture will be encouraged within the DA as part of the strategy to ensure the sustainability of the marine fishing industry.

The DA has several acres of fish ponds which are currently out of production. This includes 33 acres in Mitchell Town. This is due mainly to issues of praedial larceny. With this Plan proposing measures to combat praedial larceny, including the erection of electrical fencing and the formation of farm watch groups, the rehabilitation of these fish ponds is a feasible option.

These aquaculture operations will be merged with hydroponic systems where feasible to create aquaponics structures. Aquaponics will help to diversify revenue sources, reduce pollution, and demand for water from aquaculture systems.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF, Private Investors

### • REDEVELOPMENT OF THE ROCKY POINT FISHING VILLAGE

The Rocky Point Fishing Village is famous as a destination for tasty, freshly prepared seafood. Persons from all over Clarendon in particular and Jamaica in general for visit to the area to enjoy the seafood meals on offer. The area is badly in need of major infrastructural development, as the beachfront has become a small town with a number of informal settlers. The ad-hoc development means that many of the requisite amenities, including functional sanitary conveniences and garbage disposal facilities, are absent. Such works will be undertaken and the area will be marketed as a tourism destination for both locals and foreigners. A Beach Management Plan will be developed and implemented to ensure the sustainable maintenance of the beach and its supporting facilities.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium Term	CPC, MICAF, MOT

## 6.6. THE LIONEL TOWN DA PLAN

### • PROVIDING THE ROCKY POINT MARKET WITH COLD STORAGE

Under this Plan, the Rocky Point market will be equipped with a cold storage facility to improve the efficiency and economics of fish handling, and to support biodiversity conservation. The market was constructed and opened in 2014 primarily to accommodate fish vendors and scrapers, however, many of these persons continue to use the Rocky Point beach as no cold storage facility was constructed in the market and the fishers are not allowed to take their small refrigerators into the facility. In the absence of adequate cold storage, fishers are forced to sell their catches as soon after returning to land to avoid spoilage. High level of competition among fishers result in sub optimum prices. This situation is discouraging local fishers from catching the Kingfish species which is very lucrative when sold to the tourism industry. They have no storage facilities for such large fish and the prices usually obtained on the beach do not warrant the effort to catch the fish or the load the fish generate on the boat while at sea. The same issues affect the Parrot and Doctor fish population. The cold storage facility will be developed to improve the handling of fish, increase the income of fishers and encourage fishers to catch non-traditional species to reduce the pressure on other fish populations.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	CPC, MLGCD

### • ESTABLISHING A FISH PROCESSING PLANT

There is a high level of informality in the marketing and distribution of fish within the local area. This is contributing to below optimum profits for fishermen and the depletion of the marine fisheries. These issues may be addressed by the development of a Fish Processing Plant in the local area. This plant would purchase fish from marine fishers, and fish farmers, to produce high quality products to be sold to markets within the tourism industry. Exportation of fish products is also a possibility. This would create a safe market for fish farmers and also help to improve earnings from each catch by marine fishers therefore reducing the high levels of competition and over exploitation amongst the farmers.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MICAF, JAS, Private Investor

### • USING FISH SCALES AS A RESOURCE

Tons of fish scales are produced from the local fishing industry on an annual basis. This sometimes results in the pollution of local beaches and other areas, as waste management practices are not good. The situation will likely worsen with an increase in aquaculture and the establishment of a Fish Processing Plant in the DA, which are proposals of this Plan. Therefore the use of fish scale as a resource will be encouraged. Fish scale can be processed into a number of different products, including glue, plastic, fertilizers and flowers. These products may find markets both locally and internationally.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MICAF, CPC, NSWMA, Private Investor

### • REVITALIZING THE SUGAR INDUSTRY

The local sugar industry is currently in limbo against the backdrop of falling prices and the impending end of preferential treatment in the European market. The Monymusk Sugar Factory was recently closed resulting in hundreds of workers being made redundant. Many are of the view that this is the end of the sugar industry, not just in the local area but in Jamaica. However, there is still potential to be harnessed. The sector is in its current state because of the fact that focus has been wholly on the production of brown sugar utilizing

## 6.6. THE LIONEL TOWN DA PLAN

insufficient processes. It may be revitalized through the diversification of the product base and improvements in the efficiency of the production process.

There are several opportunities for diversifying the local sugar industry. These include, the production of liquid sugar, refined white sugar, biofuel and electricity, and the use of the factories and distilleries as industrial tourism attractions. It should be noted that in 2014, Pan Caribbean Sugar Company Limited, owners of the Monymusk Sugar Factory, sought to commence the diversification process through a proposal to burn bagasse to produce energy to reduce its electricity cost and supply 20 megawatt of power to the national grid. However, before the proposal was fully approved by regulators, the factory was closed.

In addition to the diversification of products, improvements in sugar cultivation and harvesting will be encouraged. There are hundreds of acres of formerly productive sugarcane lands which are currently unutilized within the DA, and efforts will be made to put these lands back into full production to achieve better economies of scale. Furthermore, operators will be urged to mechanize the cultivation and harvesting of sugar cane to increase efficiency and reduce production costs. The installation of adequate irrigation systems, which can support crop production even during periods of drought, will be encouraged.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MICAF, Private Investor, RADA, JAS, All Island Jamaica Cane Farmers Association, NIC

### • INCREASING THE PRODUCTION OF OIL NUT

With the scaling back of sugarcane cultivation in the DA, large acreages of former cane fields have witnessed an upshoot of weeds. This includes oil nut which is harvested and sold by some locals for approximately \$200 per pound. Despite having a low value, residents have expressed an interest in the formal production of this crop. This initiative will be supported as there are existing markets for the product and Jamaica is also making a big thrust to tap into the global castor oil industry (which is expected to value an estimated US\$1.81 billion by 2020), as expressed through a recent study commissioned by JAMPRO.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MICAF, RADA,

### • INCREASING COTTON PRODUCTION

Residents of the DA have expressed an interest in the cultivation of cotton and this Plan will support such an initiative. There are large expanses of land within the local area which are covered in wild cotton which is a clear indication that the growing of the plant is feasible. Furthermore, the Jamaica Agricultural Development Foundation (JADF) has been actively pursuing the revitalization of the West Indian Sea Island Cotton (WISIC) industry in Jamaica. This cotton is said to be the world's best quality based on its fibre length, silk-like quality, fineness and texture. It also fetches a high price. There is a very a high demand internationally with buyers from Switzerland, Japan, the United States, Italy and the United Kingdom, but there are only a few players in the industry. Hence the increased production of the WISIC will be supported.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MICAF, JADF, RADA

## 6.6. THE LIONEL TOWN DA PLAN

### • JACKSON BAY DRY DOCK

Jackson Bay is earmarked for the development of a SEZ as part of Government's GLHI. This location will be developed as a dry dock for the maintenance and repair of ships, boats, and other watercraft (JAMPRO, 2013). Investment opportunities and incentives within this area will therefore be promoted.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MEGJC, JAMPRO

### • ESTABLISHMENT OF A MARINE POLICE POST

As part of the strategy to improve coastal monitoring, a marine police post will be developed at a suitable location along the coast within the Lionel Town DA. This is necessary as Clarendon has been identified as a transshipment point for entry of illegal guns and cocaine flowing within the island and between Haiti and South America. This trade thrives on the fact that there are numerous porous points along the parish's coast which prove very challenging for the police to man at any one time. Furthermore, since the closest marine police post is in the neighbouring parish of St Catherine, and the marine police is severely challenged due to a lack of resources, it is quite easy for criminals, who sometime disguise themselves as fishermen, to participate in this illicit trade. Hence a marine police post will be developed to facilitate the continuous patrolling of the parish's coastal waters, and the interception of boats before they reach ashore where it is difficult for the police to adequately monitor all the access points. Residents of the DA have proposed Rocky Point and Portland Cottage as suitable sites for the Marine Police Post.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	MNS

### • TERTIARY SEWAGE TREATMENT

The high usage of pit latrines in the Rocky Point and Portland Cottage areas is posing a threat to the marine environment as well as the local fishing industry. Consequently, this Plan is proposing the establishment of a tertiary sewage treatment plant to serve the local areas.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	NWC

### • ESTABLISHMENT OF A TRANSPORTATION CENTRE

Lionel Town is the hub of economic activities within the DA; consequently, the area attracts a significant amount of traffic. The chief mode of transportation is by way of route taxis and minibuses, but currently there is no facility to accommodate public transport in the town. The buses and taxis that ply the various routes throughout the area pick up and let off passengers arbitrarily along the roadway. They also tend to gather along the Lionel Town Main Road in the vicinity of the police station. This situation causes obstruction to the free flow of vehicular and pedestrian traffic in this vicinity, especially during peak periods. This situation will likely worsen with the designation of Lionel Town as a Growth Centre. A transportation centre to be developed within the town to support road safety and transportation efficiency is required. This transport hub will include all the necessary ancillary facilities to ensure the comfort of the end users and will be utilized by all public passenger vehicles.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MTM

## 6.6. THE LIONEL TOWN DA PLAN

### • REDEVELOPMENT OF THE MARKET

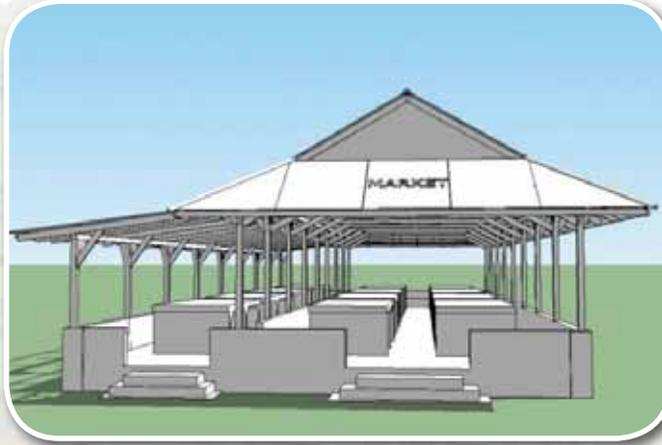


Figure 152: A simple concept design such as this one may be used for small decentralised market facilities such as in Lionel Town.

There is a need for a market in Lionel Town. At present the site which once housed the market is left in ruins and is unused. No alternative has been provided for such usage and vendors sell their goods along the road way in the town centre. With the designation of Lionel Town as a Growth Centre, and the proposed increase in commercial activities, the scale of vending is likely to increase in the area. This will contribute to chaos in the town therefore, the market will be redeveloped. It should be noted that an alternative site may be selected which fits within the proposed zoning of the area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium to Long Term	CPC, MLGCD

### • UPGRADE OF THE LIONEL TOWN HOSPITAL

In order to reduce the strain on the May Pen Hospital, the Lionel Town Hospital will be expanded and upgraded to a fully functioning Type B facility. Overcrowding has become a recurring problem at the May Pen Hospital and this issue will be worsened with the planned development of the parish, including that of Longville Park which is in proximity to Lionel Town. The upgrading of the Lionel Town Hospital will therefore ensure the efficient and effective provision of service at the May Pen facility and will also support future population growth and development.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Long Term	MOH

### • PLANTING MOSQUITO REPELLANT PLANTS

In order to address the longstanding mosquito infestation problem within the Lionel Town DA, the planting of neem trees will be recommended. The trees have bio-pesticide properties and is an effective natural mosquito repellent. Additionally, it is used to make a wide range of medicinal products and may therefore be used as an additional source of income for residents who may sell the plant within the nutraceutical industry which is poised for development. These plants may also be used as part of landscaping features around residential and commercial properties, and may also be planted along water courses and buffers.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, FD, Lionel Town DAC, CPDCBS, MOH

## 6.7. THE MILK RIVER DA PLAN

### 6.7.1. INTRODUCTION TO THE MILK RIVER DEVELOPMENT AREA

The Milk River DA covers approximately 114.56 square kilometres of land on the southwestern coast of Clarendon. It is made up of five (5) communities and thirty two (32) districts. The DA is bordered to the North by York Town, to the south by the Caribbean Sea, to the East by Hayes and Water Lane and to the West by the Caribbean Sea.



## 6.7. THE MILK RIVER DA PLAN

### 6.7.2. OVERVIEW OF NATURAL ENVIRONMENT

The Milk River DA is endowed with an abundance of natural resources and features. The terrain varies from fertile agricultural lands on the Vere Plains to mangroves/wetlands along the coast. The south western section has dry limestone forests which rise to elevations just in excess of three hundred and fifty meters (350m) at Round Hill. The area is also traversed by several streams and rivers, including the Milk River. The DA is also host of the world renowned Milk River Mineral Spa and the famous sinkhole, God's Well. A part of the DA also falls within the Alligator Pond, Guts River/Canoe Valley Game Reserve. This area, along with the other habitats which include the dry limestone forests, mangrove wetlands and the numerous caves support a high level of biodiversity.

### 6.7.3. SUMMARY OF NATURAL ENVIRONMENTAL ISSUES AND CHALLENGES

Pollution has been identified as the main environmental issue within the Milk River DA. This includes land, water and air pollution. Land and water pollution resulting from the dumping of garbage on land, and in drains, gullies and other water bodies. It periodically contributes to flooding by blocking drainage channels and diverting the flow of water. Air pollution is mainly the result of the burning of garbage, and the processing and harvesting of sugarcane through the slash and burn method. Other environmental issues identified as impacting on the DA are illegal sand mining, deforestation and overfishing.

### 6.7.4. OVERVIEW OF THE BUILT ENVIRONMENT

Transportation within the DA is exclusively by road. The road network in the area includes main and parochial roads which support several different modes of transport. These include licensed taxis which are used by 71% of households and robot taxis which are utilized by some 5.7%. Ironically, 12.2 percent of the DA utilize bicycles as their main mode of transportation. Other modes of transportation used include motor bikes and private motor vehicles.

The DA's principal source of water is that of groundwater. Water for domestic purposes is mainly supplied by wells, which are both public and private. Most households (42.7%) have public water piped into their yards, or they purchase water for domestic purposes (17%). A significant number of households (15.8%) also have private water piped into their dwellings, while 7.7% depends on private catchment, 5.7% depends on public water piped into their dwellings, 4% depend on springs, rivers or streams, 3.7 % depend on public catchments and 3.4% depend on public standpipes.

The Milk River DA has one of the few sewage treatment plants found in the parish. This is a 0.40MGD stabilization pond which serves the Pridee Housing Scheme. Pit latrines (53.6%) and water closets not linked to a sewer (25%) are the two main toilet facilities utilized. Only 6.7% of the households have access to sewer services, while 11.3% utilize soakaways and 3.3% reported that they have none. The remainder of the households utilize other unnamed types of toilet facilities.

Burning is the predominant method of garbage disposal in the DA. Approximately a half of the households (50.3%) utilize this method. Garbage is also collected from 47.4% of the local households. Other methods utilized are burring (0.7%), dumping in the sea, river, pond or gully (0.7%), dumping on site (0.7 %) and recycling (0.2%).

Electricity is the main source of lighting in the DA. Eighty seven percent (87%) of households utilize this source, while other households in the DA utilize kerosene, gas lanterns and candles. The main types of fuels used for cooking is more evenly split. There was almost an equal distribution of households which use LPG (46.6%) and charcoal (45.1%). Other fuels utilized for cooking are wood (7.9%), kerosene (0.2%) and electricity (0.2%).

## 6.7. THE MILK RIVER DA PLAN

Telecommunications in the DA include access to telephone and internet services. Ninety one percent (91.4%) of households have telephone services, mainly through cell phones, while 2% have internet access.

### 6.7.5. SUMMARY OF BUILT ENVIRONMENT ISSUES AND CHALLENGES

The built environment within the Milk River DA is facing a series of issues and challenges. The local roads are generally in a poor state resulting in extended travel times when trips are undertaken. The area also suffers from water supply issues which include irregularity in the supply and the receipt of poor quality water as a result of saline intrusion in underground water sources. Additionally, the use of pit latrines is quite high. This poses a public health and sanitation risk. Additionally, burning is the predominant method of garbage disposal in the DA and this is contributing to air pollution. Street lighting is lacking and this is perceived as a major risk to public safety. Access to internet connection is quite low.

### 6.7.6. OVERVIEW OF DISASTER MITIGATION AND MANAGEMENT

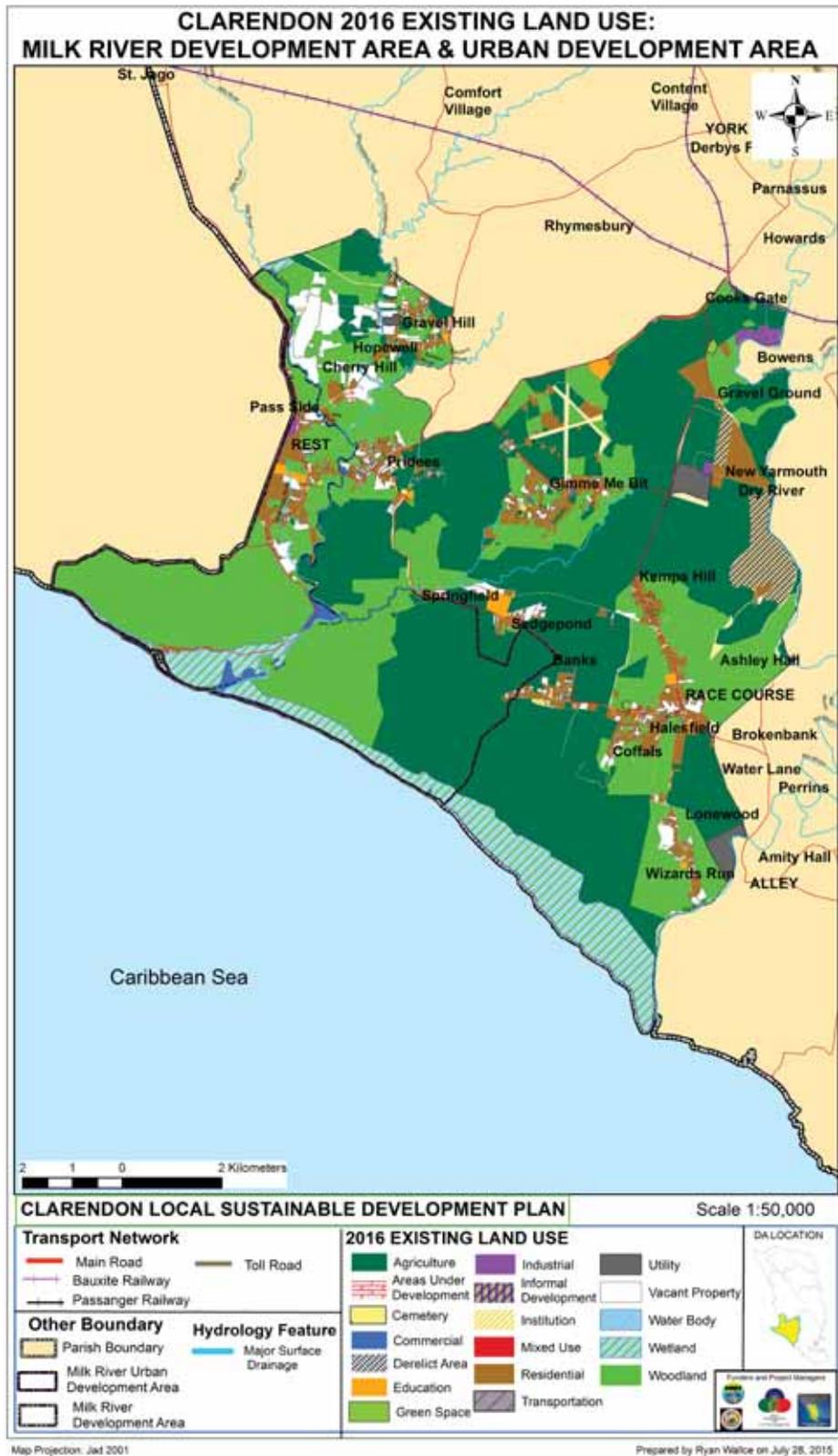
The generally flat and low-lying topography of the DA, as well as its location in relation to the sea, makes it highly susceptible to flooding and the effects of hurricanes. Much of the DA is situated on a plain and as a consequence, natural drainage is quite poor. This issue is often exacerbated by the blockage of drainage channels by garbage which in turn reduces their usefulness. The topography results in the coastal areas being inundated by storm surges. Incidences of inland and coastal flooding are oftentimes triggered by hurricanes. As highlighted earlier, the entire parish is vulnerable to this hazard. The mangrove wetlands provide important defence from both hurricanes and storm surges, but a fair portion of it has been damaged by past hurricanes or has been harvested for use in the agriculture and fishing industries. Hurricanes have had disastrous effects on the DA.

The DA is also quite vulnerable to human induced and biological hazards. The slash and burn method is widely practiced in the harvesting of sugarcane and the clearing of land for planting. The fires periodically gets out of control and start bush fires. This is also the case with the burning of garbage which is widely practiced. The DA is also plagued by mosquitoes. Mosquitoes are vectors for several diseases, including malaria, chikungunya and the zika virus. However, there is no evidence of an elevated level of mosquito borne diseases within the area.

### 6.1.7. OVERVIEW OF LAND USE

The land use pattern of the Milk River DA reflects its rural nature and its heavy dependence on sugarcane farming. The most dominant land use is agriculture which is spread across much of the boundaries of the DA. The second most dominant land use is woodlands which occupy several areas of the eastern, western and northern sections of the DA, with the highest concentration occurring in the south western corner, in the vicinity of the Round Hill. The DA also supports a continuous area of coastal wetlands, which form part of an overall eco sensitive coastline for the parish. Concentrations of built up areas also occur in the Race Course, Gimmme-Me-Bit and Milk River areas. These built up areas display haphazard patterns and include mainly residential use, with patches of commercial, educational, institutional and other uses. The DA also has notable areas of industrial lands, which include the New Yarmouth sugar factory, and derelict areas, which comprise old sugar workers' housing stock.

## 6.7. THE MILK RIVER DA PLAN



### 6.7.8. SUMMARY OF LAND USE ISSUES AND CHALLENGES

The main land use issue in the DA relates to indiscriminate land consumption. The DA contains some of the parish's best agricultural lands but these lands are being rapidly converted to residential and other uses. The DA also contains some of the most environmentally sensitive areas in the parish, but they are at risk from development pressures.

## 6.7. THE MILK RIVER DA PLAN

### 6.7.9. OVERVIEW OF ECONOMIC DEVELOPMENT

Economic activities in the Milk River DA have declined over the years as several residents and business owners have migrated. Commercial activities are far less than in other DAs in the parish. There are however several shops, grocery stores and other small businesses. Residents are largely involved in agricultural activities especially the cultivation of sugarcane and fishing. The New Yarmouth sugar factory is the chief source of employment for residents.

### 6.7.10. ECONOMIC DEVELOPMENT ISSUES AND CHALLENGES

Employment levels within the DA are very low. The level of employment stood below a half at 48%. Furthermore, 29.3% of households had no member employed, 48% had only one member employed, 18.3% had two members employed and the remainder had 3 or more members employed. Most of those employed are involved in sugar cultivation and fishing which are classified as low income generating jobs. These jobs are also threatened; the local sugar industry is severely challenged by poor yields, droughts and high labour costs, which have resulted in a number of job cuts. Similarly, the fishing industry is under threat from overfishing, pollution and a lack of infrastructure.

### 6.7.11. OVERVIEW OF SOCIAL WELL BEING

The Milk River DA has a population of 11,812 persons, comprising 5,764 females and 6,048 males. This population occupies 3,505 dwelling units.

Types	Number	Location (District)	Types	Number	Location (District)
Churches	37	All Communities	Playfields	14	All Communities
Schools	20	All Communities	Libraries	1	Race Course
Post Offices/Agencies	5	All Communities	Recreational Facilities	5	Milk River Spa & Bath, Vernamfield Airdrome, Gods Well, and Round Hill, Croawford Weir Memorial Park
Police Station	2	Milk River and Race Course (Temporary)	Health Centres	2	Milk River and Race Course
Community Centre	3	Milk River, Gimmi-Me-Bit, Gravel Hill	Cemeteries	1	Race Course
Sports Facilities	1	Race Course			
Markets	1	Race Course (non-functional)			

As evidenced by the table above, the Milk River DA has access to most social infrastructure and services. Twenty (20) educational institutions are located throughout the boundaries, which comprise thirteen (13) basic, five (5) primary/all-age, and two (2) secondary. There are two (2) health centres<sup>17</sup>, inclusive of one type II and one type III facility, with conditions ranging from good to fair. Additionally, one police station, three community centres, one public library, and several recreational and social spaces are found within the local area.

<sup>17</sup> Residents also utilize facilities in Lionel Town and May Pen.

## 6.7. THE MILK RIVER DA PLAN

### 6.7.12. SOCIAL WELL BEING ISSUES AND CHALLENGES

Access to social infrastructure and services in the Milk River DA is inadequate. There is no fire station, despite several areas being prone to bush fires; the closest facility is located in the parish capital, May Pen which is approximately 20km away. Additionally, the Race Course market is out of use which means that residents travel to May Pen to access the market. Furthermore, the Milk River Health Centre is a Type II facility but functions as a Type I.

Educational levels within the DA appear to be quite low. Data from the SDC (2014) revealed that over seventy percent (78.6%) of household heads had no academic qualification with a gender distribution of 41.1% males and 37.5% females. Seven percent (7%) had vocational certificates and 4.2% had fewer than two (2) CXC subjects. Only 0.5% had more than five (5) CXC subjects.

### 6.7.13. OVERVIEW OF GOVERNANCE

Governance within the Milk River DA is administered by Government and civil society. The DA falls within the South East Clarendon and South Western Clarendon constituencies, and Milk River, Race Course and Rocky Point Parish Council Divisions. Governance in the DA is also undertaken by civil society organisations which are led by the Milk River DAC and include church groups, sport clubs and youth clubs.

### 6.7.14. GOVERNANCE ISSUES AND CHALLENGES

Two Governance issues were identified by residents as impacting on the Milk River DA. These are poor representation by elected political representatives and limited awareness of and participation in CBOs. The former was identified as one of the top five (5) issues plaguing the development of the DA, while data collected on the latter by the SDC (2014), revealed that sixty four percent (64%) of respondents were not aware of a CBO within the DA, while 75% were participating in none.

### 6.7.15. PROPOSED LAND USE AND SELECTED DA PROJECTS AND INITIATIVES

#### • PROPOSED LAND USE POLICIES

The following policies are made specifically for the orderly and progressive development of the Milk River DA. The appropriate General Land Use Policies of this Plan should also be applied where appropriate.

**Policy 1:** Only low impact eco-tourism activities which are subjected to restrictive conditions will be supported within the vicinity of the Round Hill. An EIA will generally be required for developments within this area.

**Policy 2:** No permission will be given for developments which will adversely affect the flow or quality of the Rio Minho and the Milk River and their tributaries.

**Policy 3:** A buffer zone will be maintained along the banks of the Rio Minho and the Milk River and their tributaries to protect the quality of the fresh water resource.

**Policy 4:** The environmentally sensitive coastline of the DA will be protected from development pressures.

**Policy 5:** Planning permission will not be granted for developments that will result in the destruction and/or removal of vegetation in the area of Kemps Hill.

**Policy 6:** The relevant authorities will ensure that the agricultural lands are protected from fragmentation, sterilization and encroachment by uses not associated with agriculture.

**Policy 7:** Applications for change of use for agricultural lands to non-agricultural uses will not normally be supported.

**Policy 8:** Development within the area zoned for National Municipal Transit Corridor will be severely restricted and will not be permitted unless such developments are part of the planned Vernamfield Aerotropolis or a potential port.

## 6.7. THE MILK RIVER DA PLAN

**Policy 9:** The Vernamfield Aerotropolis will accommodate high density developments, with residential density of up to 375 habitable rooms per hectare and building heights of up to 10 stories.

**Policy 10:** Growth of the existing settlements around the area zoned for National Municipal Transit Corridor will be restricted to prevent encroachment on the lands reserved for the planned Vernamfield Aerotropolis and the proposed port.

**Policy 11:** The relevant authorities will seek to ensure that developments on the outskirts of the Aerotropolis are compatible with adjacent existing land uses.

**Policy 12:** If the need arises for additional land to expand the Vernamfield Aerotropolis beyond the boundaries of the area reserved, the authorities will seek to relocate the community of Gimme-me-bit to an alternative suitable location, in accordance with the relevant policies of this Plan.

**Policy 13:** The Race Course Rural Settlement Node will accommodate urban type residential developments up to a maximum density of 75 habitable rooms per hectare (30 habitable rooms per acre) and heights not exceeding two stories which will be varied by the Planning Authorities in relation to the physical conditions existing in the area.

**Policy 14:** Only individual dwellings and other small developments will normally be allowed outside of Vernamfield and Race Course, in accordance with the proposed Land Use Map and the relevant Planning Standards and Policies.

**Policy 15:** All developments within the vicinity of the Milk River Hotel and Spa and any other identified heritage site, should conform to the policies of the JNHT. No permission will be given for any development until after consultation with the agency.

### • DESIGNATING CANOE VALLEY A PROTECTED AREA

Despite being selected to become Jamaica's first protected area, Canoe Valley is yet to be declared. The site is one of the most ecologically significant areas of undeveloped land in Jamaica and is also rich in Taino artefacts and settlements which make it clearly necessitating legal protection. Based on the ecological and historical importance of this area, this Plan is supporting the Manchester LSDP in advocating the designation of Canoe Valley as a protected area. The proposed protected area extends from Alligator Pond in Manchester to Round Hill in Clarendon and stretches approximately seven (7) miles inland.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	NEPA, CPC

### • ESTABLISHMENT OF A SPECIAL RELATIONSHIP TO MANAGE THE CANOE VALLEY AREA

The Canoe Valley proposed protected area spans the Clarendon-Manchester parish border. It will therefore require special provisions to be made between the two (2) respective Local Planning Authorities to maximize its potential and to assess any future developments in the area. As such, this Plan is advocating the establishment of a structured relationship between the two organizations to ensure that policies and programmes are implemented in a coordinated manner. This relationship will include supporting cross border projects which contribute to the wholesome development of the area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, Manchester Parish Council

## 6.7. THE MILK RIVER DA PLAN

### • UNDERTAKING ARTIFICIAL AQUIFER RECHARGE

Through the Situation Validation and Visioning Workshops, residents of the Milk River DA voiced their frustration at being served salty water through their taps. Further research revealed that this issue is stemming from saline intrusion (See 2.2.2.5.7. Strategic Objective #36, pg. 120). In order to address this issue and safeguard the health of residents, an urgent artificial aquifer recharge project will be supported within the DA.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	PIOJ, MEGJC, WRA

### • EXPLORING THE FEASIBILITY OF ESTABLISHING A WINDFARM IN KEMPS HILL

The Kemps Hill area has strong potential for wind energy. A study conducted by the Petroleum Corporation of Jamaica in 2013 revealed that Kemps Hill could yield more than 5.3 million kWh per year (Jamaica Observer, 2013). Based on such data and Government's push to increase the application of renewable energy, the establishment of a windfarm appears to be an attractive investment. However, with the planned development of the Vernamfield Aerotropolis, such a development may not be feasible as it may be an obstacle in flight paths. This Plan is therefore recommending that the feasibility of the development be explored to determine whether both projects could coexist.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Medium Term	MSET, Private Sector

### • ESTABLISHMENT OF CAPs

Internet access in the DA is quite low and will be improved. At present, internet access is only approximately 2%. CAPs will therefore be developed in Milk River, Gravel Hill, Longwood and Race Course<sup>18</sup>. These will enable residents to use the Internet at minimal or no cost to them to facilitate research, bill payments, education, communication, business, marketing, and social networking.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MSET, Private Investors

### • ROAD IMPROVEMENTS

Road construction and improvements will be a critical part of the development strategy in the Milk River DA. Travel is one of the foundations of a successful tourism industry and most of the road infrastructure within the DA are in a deplorable state. With tourism being promoted as the backbone of the local economy and as travelling by road will continue to be the main mode of transportation locally, road construction and improvement works will therefore be undertaken. Such works will open up areas to investments and also enhance existing connections. They include the development of scenic routes where possible and will be accompanied by adequate wayfinding signage.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MTM, NWA, CPC, MICAF

<sup>18</sup>. None will be developed in Gimme-mi-Bit since the community is earmarked for relocation.

## 6.7. THE MILK RIVER DA PLAN

### • DEVELOPMENT OF VERNAMFIELD AEROTROPOLIS

Vernamfield and its environs are currently earmarked for the development of an Aerotropolis as part of the GLHI and as a policy directive of Government to bring development to the centre of Jamaica (See Appendix for Schematic Diagram). This Plan will support the implementation of the project which involves the establishment of an urban complex whose layout, infrastructure and economy are centred on an airport. In fact, the airport will form the commercial core of an urban space, which will be linked through intermodal and multimodal connections to corridors and clusters of aviation-related businesses and associated residential, commercial, and mixed-use developments that feed off each other and their accessibility to the airport. The Project is expected to be implemented in three (3) phases over a 10 year period, commencing with the offering of a range of international training products, facilities and related services, along with a mix of local and international strategic investors to develop key industries, such as MRO, training in the aviation sector and air cargo and logistics facilities to leverage Jamaica's central location in the global market place. When completed, Vernamfield will be a multimodal, international, industrial and commercial airport offering the following features:

- Air Cargo Transshipment Centre
- Passenger Air Services
- Multimodal Air/Sea Cargo Link
- Multimodal Rail Cargo/Passenger Link
- Maintenance, Repair and Overhaul of Aircraft
- Logistic/Distribution Centre
- A Special Economic Zone
- Jamaica Defence Force Air wing
- General Aviation (non-commercial flights)
- Renewable Energy

It should be noted that the UDC has been mandated to make the creation of Jamaica's third (3rd) city a priority and consideration is currently being given to Vernamfield as a potential site. This Plan is supporting this proposal as the country on a whole may not have sufficient resources to undertake both developments at the same time. Twinning the development of the Aerotropolis and the new city will ensure high value is placed on the development and it will also provide the opportunity for the creation of Jamaica's first (1st) fully planned city.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	MTM, Private Investors, CPC, MEGJC, UDC, JAMPRO

### • ESTABLISHMENT OF TOURISM

- Upgrade of Milk River Hotel and Mineral Spa



Figure 153: The Milk River Hotel and Spa.

## 6.7. THE MILK RIVER DA PLAN

The Milk River Hotel and Spa provides a strong development opportunity for Clarendon. In fact, the Spa has been identified as one of Governments' millennium development projects and has also been earmarked for significant development. Grants are already in place to support some level of upgrading to the facility and the GOJ recently signed a contract for such work. However, this Plan is proposing the establishment of a public-private partnership to ensure that the full potential of the facility is realized. In addition to the renovation of the facility, an increase in rooms for accommodation and the development and marketing of a quality product will be encouraged.

- **Development of a Cactus Park-** There is a proposal to develop a Cactus Park within the Milk River Area. This Plan is supporting the project as it will complement efforts to develop the Milk River DA as the tourism capital of the South Coast. The park will be constructed within walking distance of the Milk River Hotel and Spa and will contain hundreds of species of cactus and succulent plants. It will serve as a social space and offer opportunities for the hosting of events such as weddings.



Figure 154: The proposed site of the Milk River Cactus Park

- **Establishment of Ecotourism in Canoe Valley-**The Canoe Valley proposed protected area spans across the Clarendon-Manchester parish boundary, and includes the Canoe Valley National Nature Preserve. The area is rich with Taino artefacts and settlement sites, as well as in biodiversity which help to provide dramatic views and landscapes. In keeping with the recommendations of the Manchester LSDP to use the area for ecotourism and heritage-based tourism purposes, this Plan will support such activities within the area, albeit with environmental restrictions.

Among the sites within its boundaries with the most potential for development as tourist attractions are, the Alligator Hole River and God's Well. Alligator Hole is a small river which emerges from underground at the base of the Round Hill, and provides an excellent habitat for both marine and freshwater plants and animals, due to its salinity. The river is home to three (3) manatees, which have lived in the river since the 1980s when they were confiscated from fishermen and nursed back to health. The animals are now cared for by the Government and at about 5pm daily, the three usually swim upstream to be fed by local conservationists.



Figure 155: A section of Alligator Hole.

Source <http://www.infonavigate.com/travel-info/jamaica/south/Pict6819-Alligator-Hole-Jamaica.jpg>

## 6.7. THE MILK RIVER DA PLAN

The NEPA has already developed the Canoe Valley Interpretive Centre in the vicinity of the Alligator Hole River. This facility is a mini-museum and Information Centre for the flora and fauna of the Canoe Valley area. It has been closed for some time but, efforts will be made to reopen and rebrand the facility.

God's Well is an immensely deep sinkhole or natural well near Milk River, just across the Manchester boundary, that leads to subterranean, water filled tunnels and caverns. Geographers believe that it was most likely formed from the collapse of the roof of a major underground cavern. Situated at the foot of a hill, the feature is of an oval shape and measures between 25m to 40m in diameter and has near vertical sides. The distance from the rim to the water level below, which appears blue when viewed from above, is approximately 25m. The well is drained to the west, where it issues as a spring at the head of the Alligator Hole River.



Figure 156: God's Well.

Source: [http://www.worldtravelservers.com/travel/en/jamaica/airport\\_gunters\\_hill\\_airport/photo\\_92725077-gods-well.html](http://www.worldtravelservers.com/travel/en/jamaica/airport_gunters_hill_airport/photo_92725077-gods-well.html)

There are a number of interesting stories about God's Well. Old legends claim that the place was an Arawak religious site, and some go even further to say that it is cursed. Residents of nearby communities are also of the view that there are supernatural forces at play within the well. Daily Gleaner of August 10, 2006 quoted a man describing the well as "the devils watchglass." According to the residents, several divers from around the world have visited the giant hole and have tried unsuccessfully to reach the bottom of it. It is also said that tragedy and death once struck a group of cave divers exploring the underwater caves which are connected to God's Well.

These sites will develop into prime tourist attractions. Additionally, this Plan is supporting the development of a Nature Resort in the area. This Resort will offer accommodation cabana style to visitors who seek a quiet, comfortable, and relaxing place to stay and enjoy nature. Consideration will also be given to other ecotourism activities, such as the establishment of nature and hiking trails, provided that they will not negatively impact the health of the environment.

- **Establishment of the Kemps Hill Rastafarian Village-** The district of Kemps Hill in the community of Race Course has a rich history which is associated with the Rastafarians. The reputed head of the African Reform Church, Rev Claudius Henry, who led the so-called Henry Rebellion in 1959, the only full-fledged guerilla movement to be found in independent Jamaica, had a branch of his church in the area. The Church was very influential in the district and Rev Henry had a significant following from the area. Under Rev Henry's organisation, a policy of economic co-operation and self-reliance among black people was implemented which saw Kemps Hill becoming an independent community. The community met most of its socioeconomic needs using internal resources, which included a block factory and bakery (in Green Bottom). This rich history provides an economic opportunity for the district in the form of tourism. It may be capitalised on through the establishment of a Rastafarian village or a similar facility. This attraction may be linked to the Peacemaker Church and old bakery and block factory in Green Bottom which were also established by Rev Henry and will also be used as an attraction.

## 6.7. THE MILK RIVER DA PLAN

The focal point of the product may be the traditional practices and lifestyle of Rastafarians, as well as the biography of Rev Henry and the chronicles of the Rastafarian Movement in Jamaica.

- **Redevelopment of Farquar Beach-** Farquhar's Beach is a small fishing village two miles from Milk River. It is the venue for the annual Milk River Seafood and Jerk Festival. The beach itself which has been designated a fishing and bathing beach has developed informally, which means that many of the necessary amenities are absent. Rehabilitative works will therefore be undertaken to ensure that the fishing village has the necessary storage, selling and waste disposal facilities that will support, enhance and make it more attractive to customers. Likewise, facilities such as a children's play area, seating with tables, picnic areas, gazebos, restrooms and changing rooms, and a lifeguard tower will be provided to ensure that the beach also safely and comfortably accommodates recreational activities.
- **Improving the Milk River Seafood and Jerk Festival-** The Milk River Seafood and Jerk Festival is an annual event which was inaugurated in 2014. The event seeks to act as an anchor for tourism within the local area. In addition to providing visitors with succulent and delicious dishes, the festival provides entertainment including a celebrity chef cook-off, live concert, beach netball, volleyball, boat racing and boat rides. Like the Hosay festival, this event can provide a significant boost to the economy of the DA. However, there is need for improvements in its organisation, particularly to increase its international appeal. Among other things, the organisers will be encouraged to market the Festival as part of a tourism package and get TPDCo on board, increase marketing efforts, and increase the number of international acts performing at the event.
- **Expanding the Hosay Festival**



Figure 157: A scene from the Hosay Festival.

Source: <http://kaalaa-paanii.tumblr.com/post/109594351289/hosay-or-tadjah-is-a-west-indian-commemoration-in>

The Hosay Festival is a religious celebration of the Indians. It is practised by the local East Indian community which is mainly from Race Course Proper, Kemps Hill and Gimmi-me-bit. The festival was brought to Jamaica by the Indian indentured labourers who came to the region following the abolition of slavery. It mirrors the annual Islamic celebration, Moharram, which commemorates the murder of the grandson of Prophet Muhammad, Husayn ibn Ali or Hussein.

The Hosay celebration is a ten-day (10) observance where acts of mourning, singing, fasting, prayer and meditation take place. During this period, the celebrants also build a Hosay which is an elaborate replica of Hussein's tomb, constructed from bamboo and coloured paper. This Hosay eventually forms part of the procession on Ashura, the final day. The procession is the highlight of the final day of the festival, which consists of a large crowd of persons, predominantly of Indian descent, revelling throughout the local area. The procession is usually led by Tasa drummers who play martial music and is accompanied by dancers who perform several types of martial dances.

This festival provides a prime opportunity for attracting tourists to the Milk River DA. While it already attracts persons from all over Jamaica and abroad, there is scope for it to increase tourism activities within the DA.

## 6.7. THE MILK RIVER DA PLAN

With proper support, this festival can provide a significant boost to the economy of the DA, through visitor spending including for accommodations, goods and services. The main organizer has admitted that the traditional festival is suffering especially from dwindling funds. Therefore financial support, including through sponsorship, and all the other necessary assistance will be provided to ensure the proper planning, marketing and roll out of the event.

- **Expanding Drag Racing-** Vernamfield is a nationally renowned recreational site. The former airfield is currently used as a dragway which host a number of local and national championship events. The site is however earmarked for redevelopment as an international airport. Hence it will not be possible to continue using the facility as a dragway. However, with drag racing being such an important part of the DA, this Plan is proposing the development of a dragway on an alternative site (preferably on the periphery of the Aerotropolis). This facility will include stands, guard rails and other important features of a dragway which are absent from Vernamfield. Drag racing will also be marketed as a tourism event within the DA. Stakeholders will also seek to host international events at the facility.



Figure 158: Concept proposal for a drag way. A similar design may be adopted.

- **Development of Crawford Weir Memorial Park into Kids Amusement Park**



Figure 159: The Crawford Weir Memorial Park.

- The Crawford Weir Memorial Park is a kid's playground which was built in honour of past Councillor, Crawford Weir. The facility which is located at the intersection of the Haylesfield and Race Course Main Roads is in fair condition, and is utilized mainly for the hosting of street dances and children's treats. This site has the potential to be developed into a fully functional kid's amusement park. This will assist in addressing the problem of a lack of children's playground facilities in the DA and the parish in general. It will also complement efforts to develop the local tourism product by providing attractions not only for adults but for children and entire families.

## 6.7. THE MILK RIVER DA PLAN



Figure 160: Concept proposal for the Crawford Weir Memorial Park.

- Redevelopment of the Cosmo Garden Theatre-** In keeping with the tourism theme of the Milk River DA, the Cosmo Garden Theatre will be renovated and converted into a venue for live theatre. This building which was once a movie theatre now hosts a shop which is also in a dilapidated condition due to lack of maintenance. Redeveloping the facility will help to create nightlife activities for tourists who occupy accommodations within the DA, as well as for residents of the parish. It may offer live entertainment encompassing every genre eg. music, dance, theatre, magic, etc.



Figure 161: Concept proposal for the Crawford Weir Memorial Park.

- Increasing Accommodations-** More accommodations will be required to support the development of the Milk River DA and the parish of Clarendon on a whole as a tourism destination. Consequently, this Plan will encourage and support the development of small-scale villas, cabins, guest houses and B&B facilities within the local area.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, MOT, TPDCo, Private Sector

### • PREPARING WORKFORCE FOR SHIFT AWAY FROM SUGARCANE

A large percentage of the employed workforce in the Milk River DA are cane cutters. These persons will however need to seek employment in alternative areas as their jobs are not sustainable. Sugarcane is currently harvested through manual cutting which is very inefficient; reduces profitability and also puts the future of the sugar industry in limbo, periodically resulting in workers (including cane cutters) being made redundant. Hence, the manual cutting of sugarcane will be phased out as a strategy to increase the profitability and sustainability of the sugar industry, while workers will be trained in alternative areas, including tourism, agriculture, manufacturing and logistics.

## 6.7. THE MILK RIVER DA PLAN

This will not only promote growth within the sugar industry but will also help cane cutters to be employed in more financially rewarding areas.

The Sedge Pond Skills Training and Literacy Centre may be used as one of the facilities to train workers. It was established under the CLSDP as one of the easily achievable task (EATs). The facility offers education and training in basic literacy, agriculture, baking, and computing. Nevertheless, there is scope for it to increase its offerings and make a more significant contribution to development of not only the DA but the parish. It has the potential to offer certified courses in areas of tourism and manufacturing. The administration will be encouraged to develop such courses and partner with established institutions such as the HEART Trust to offer training and certification.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Medium Term	MEYI, Training Institutions, JFLL, Milk River DAC

### • DEVELOPING THE KEMPS HILL CARPENTRY ENTERPRISE

During the implementation of the CARILED, residents of Kemps Hill submitted a proposal for the development of a carpentry enterprise in the local area. This business would offer services in general carpentry, joinery and cabinet making. The proposal appears to have significant potential and would complement efforts to develop the manufacturing sector; therefore support will be given to its establishment.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short Term	CPC, SDC, JBDC

### • PLANTING MOSQUITO REPELLANT TREES

In order to address the longstanding mosquito infestation problem within the Milk River DA, the planting of neem trees will be recommended. The trees have bio-pesticide properties and provides an effective natural mosquito repellent. Additionally, it is used to make a wide range of medicinal products and may therefore be used as an additional source of income for residents who may sell the plant within the nutraceutical industry which is poised for development. These plants may be used as part of landscaping features around residential and commercial properties, and may also be planted along water courses and buffers.

TIMEFRAME	MAIN RESPONSIBLE AGENCIES/ GROUPS
Short to Long Term	CPC, FD, Milk River DAC, CPDCBS, MOH

## 7. IMPLEMENTATION, MONITORING, EVALUATION AND REVIEW

### 7.1. IMPLEMENTATION

#### 7.1.1. MANAGEMENT FRAMEWORK

The CPC will be responsible for the overall management of the implementation process. The Planning Department will therefore require strengthening to accommodate the added responsibilities, which will also include monitoring, evaluation and review. The Steering Committee will also be retained so that it can continue to advise and influence the Plan's implementation.

#### 7.1.2. PUTTING THE CLSDP INTO ACTION

The CLSDP will be implemented through a series of projects and policy adoptions. As a multidisciplinary and multisectoral initiative, it contains recommendations that will be implemented by a large and diverse group, including residents, the Local Authority, Central Government Agencies, NGOs and community-based organisations (CBOs). The stakeholders will prioritise the recommendations according to their importance and the ease with which they can be accomplished, and subsequently develop specific projects and strategies for implementation. The Action Plans within the document provide timelines which will serve as guidelines for prioritizing and implementing. These timelines range from short term to long term as shown in the table below.

<b>Timeline</b>	<b>Period</b>
Short Term	Year 1-3
Medium Term	Year 4-7
Long Term	Year 8 and Beyond
Short to Medium Term	Year 1-7
Short to Long Term	Year 1 onwards
Medium to Long Term	Year 4 onwards

#### 7.1.3. PROJECT DATABASE

A database of appropriate projects and programmes which will advance the local sustainable development initiative will be established. It will facilitate quick responses to project calls and will also be a key tool in the monitoring and evaluation stages of the Planning Cycle. The projects conceptualized for this database will clearly relate to the delivery of the goals and objectives of this Plan, and will also contribute to the attainment of the overall vision. The project ideas will be produced mainly through group exercises involving the Steering Committee or the sector groups. This database will be reviewed annually to provide new project ideas and to update existing ones.

#### 7.1.4. SUSTAINABLE FINANCING

The long term sustainability of the CLSDP depends to a significant degree on sustainable financing. Funding for each stage of the Plan's life cycle must be sufficient to meet the net project requirements. A number of ongoing programmes are relevant to the implementation of the Plan, and many of these already have funding in place. However, in order to implement the other strategies, the responsible agencies and individuals will seek funding for their specific projects from both traditional and non-traditional sources, and also consider project proposals in the development of their budgets. It is however recognised that a number of these agencies and individuals may not be able to fund some of the projects on their own, and therefore the Steering Committee will be retained to identify strategies that can be addressed using pooled resources.

Additionally, the CPC will seek to undertake crowdfunding as a key financing strategy. This is the practice of funding a project or venture by raising monetary contributions from a large number of people. Today the practice is often performed via internet-mediated registries, but the concept can also be executed through other methods such as mail-order subscriptions and benefit events. The proposal is based on a prediction in a 2013 World Bank report stating that, crowd funding would be a global market, which could grow to

## 7. IMPLEMENTATION, MONITORING, EVALUATION AND REVIEW

to between US\$90-95 billion dollars being invested by persons, over the next 20 years. The report also stated that the sum represented about 25% of the more than US\$400 billion dollars which developing countries were expected to receive in 2015 from remittances sent by their nationals in the Diaspora.

The CPDCBS and to a lesser extent the CPC, will assist individuals and community groups in identifying potential funding agencies. A database of potential funders will be developed, allowing for quick responses to proposal calls. This database will include public and private sector organisations through which funding opportunities can be sourced.

Another important aspect of the sustainable financing of the CLSDP is cost recovery. This is necessary to ensure the availability of a steady stream of funding. It becomes relevant once sources of finance have been identified and the project is ready for implementation. In general, where beneficiaries can be identified and the assistance they receive can be quantified, a Financing Plan which seeks to recover costs primarily from these beneficiaries will be developed. Where possible, all capital and operating cost will be recovered from these beneficiaries. In other cases, no costs or only portions of the costs, including general taxation will be recovered. Cost recovery will include:

- Identifying beneficiaries and quantifying the benefits received
- Identifying year by year net operating costs including principal and interest payments extending over the life of the project
- Determining cost recovery criteria (i.e. what proportion of the capital and operating costs should be recovered from the beneficiaries.)
- Identifying pricing strategies
- Evaluating existing legislation regarding allowable means of taxation and cost recovery
- Assessing past experiences with similar financing strategies
- Determining potential prices of goods or services in order to meet cost recovery criteria
- Determining the ability of potential beneficiaries to pay for the goods or services produced.
- Designing a Plan that is simple and inexpensive to administer i.e. fees, taxes, etc. should be straightforward, easy to collect, enforceable. The cost of collecting fees, taxes, etc. should not become a major cost component of the Plan itself.

Public-private partnerships, including BIDs, Build-Operate-Transfer, and Design-Build-Operate, will also be established as a strategy to ensure the sustainable financing of the Plan.

### 7.2. MONITORING

It is important to establish a monitoring system that keeps stakeholders updated on how well the plan is being implemented. It is proposed that an annual Monitoring Report be produced, documenting major actions undertaken by the implementation team of the CPC or partner agencies and groups, reporting on progress against the various sustainable outcomes (see Table below for list of outcomes) and updating the implementation programme. In addition to this annual report, it is proposed that a continuous and comprehensive public awareness programme be implemented in order to sustain momentum. This should involve, but not be limited to, the use of social media, mass media and oral presentations at public assemblies. This will help the Local Authority and all other stakeholders, including the residents, to remain motivated to continue implementing the Plan.

### 7.3. EVALUATION

Frequently evaluation of the Plan is very important. The extent to which the initiative is deemed a success should be periodically assessed. Consequently, it is important to determine whether or not the objectives are being met and outcomes are being achieved. In other words, the evaluation process helps assess whether Plan objectives and strategic directions are being accomplished. This will help to determine the extent to which the Plan is revised.

## 7. IMPLEMENTATION, MONITORING, EVALUATION AND REVIEW

Thematic Areas	Outcomes	Indicators
Environmental Action	<p>I. The existing damage to the natural environment in the parish is reversed to the maximum extent possible.</p> <p>II. The proper management of environmental resources.</p> <p>III. The parish is disaster and climate resilient.</p> <p>IV. Adequate physical infrastructure is provided to support local societal advancement.</p> <p>V. The parish has an efficient land use pattern. The parish has an efficient land use pattern that integrates with social and economic development and respects the environment.</p>	<p>Acres of reforested lands</p> <p>Water quality</p> <p>Air quality</p> <p>Environmental awareness rates</p> <p>Climate Change awareness rates</p> <p>Access to potable water</p> <p>Access to telecommunication</p> <p>Access to electricity</p> <p>Methods of sewage treatment and disposal</p> <p>Methods of solid waste disposal</p> <p>The frequency and cost of disasters</p> <p>Changes in land use patterns</p>
Social Well-being	<p>I. Basic human needs are met</p> <p>II. People are able to coexist peacefully in communities with opportunities for advancement.</p>	<p>Percentage of Population contributing to the NIS</p> <p>Poverty Rates</p> <p>Crime Rates</p> <p>Literacy Rates</p> <p>Labour force certification rates</p> <p>Housing Demand</p> <p>Housing Quality</p> <p>Number of visits to Healthcare facilities</p> <p>Levels of teenage pregnancy</p> <p>Levels of underage drinking</p> <p>Rate of Happiness</p>
Economic Prosperity	<p>Clarendonians generally have the monies necessary to fulfil all their needs and some of their wants.</p>	<p>Unemployment Rates</p> <p>GDP Rate</p> <p>Consumption Patterns</p> <p>Consumer Confidence Index (CCI)</p> <p>Housing Starts</p> <p>Number of new investments</p>
Good Governance	<p>I. Development takes place in an equitable, efficient and sustainable manner</p> <p>II. High levels of public confidence that the best decisions are being taken for the right reasons.</p>	<p>Awareness of Local Governance Reform</p> <p>Participation rates in CBOs</p> <p>Level of Public Confidence in Governance</p> <p>Public perceptions of the public service</p>

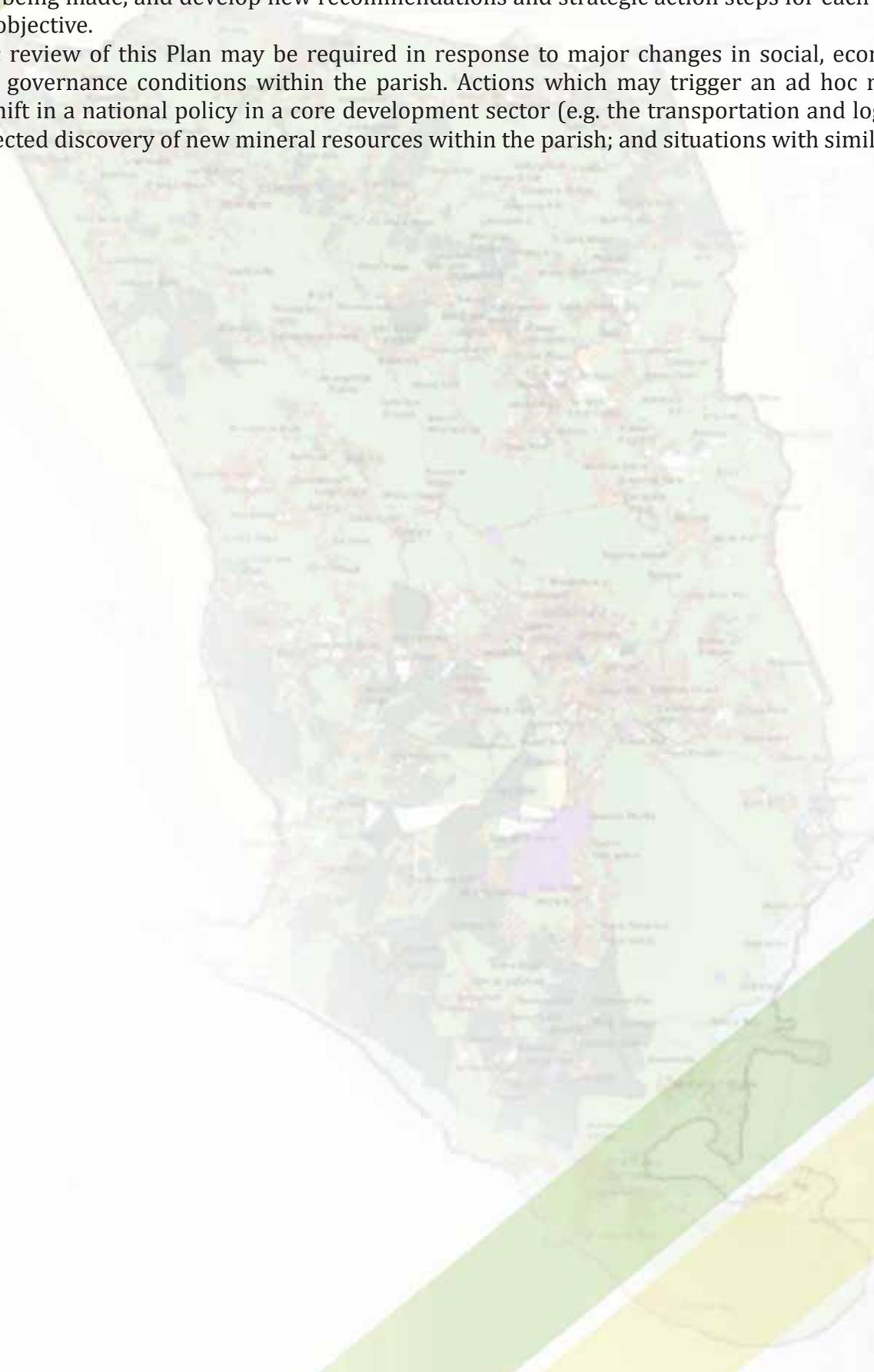
### 7.4. REVISION OF THE PLAN

It is recommended that this Plan be considered for revision every 5 years. The CPC should initiate the review process, which should commence in year four of the Plan implementation. This review process must be similar to the approach taken to develop this initial version; that is, it should involve broad-based stakeholder's participation.

## 7. IMPLEMENTATION, MONITORING, EVALUATION AND REVIEW

The review will seek to eliminate goals and objectives which have been met, update each goal or objective on which progress is being made, and develop new recommendations and strategic action steps for each newly proposed goal or objective.

Additional ad hoc review of this Plan may be required in response to major changes in social, economic, environmental or governance conditions within the parish. Actions which may trigger an ad hoc review include a major shift in a national policy in a core development sector (e.g. the transportation and logistics sector); an unexpected discovery of new mineral resources within the parish; and situations with similar implications.



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## 9. APPENDICES

### APPENDIX 1: The Boundaries of the Parish of Clarendon

- FROM THE POINT of the mouth of the Bowers River (where it meets the Caribbean Sea;
- SOUTHEASTERLY along the coastline to Burial Ground Point;
- SOUTHEASTERLY and SOUTHWESTERLY along the sea coast to where it meets a drain;
- WESTERLY and SOUTHWESTERLY along the sea coast, then turning Northwesterly along the Portland Ridge to the point where the Rio Minho empties into the Caribbean Sea at the border of Longwood and Alley;
- NORTHWESTERLY along the sea coast passing McCarry and Milk River Bays to where it meets Alligator Hole River at the Clarendon and Manchester Parish Boundary.
- NORTHEASTERLY and NORTHERLY along to the point where the Toll Gate/Rest Main road meets at Spring Plain.
- NORTHERLY along the parish boundary passing St. Jago Main Road to where it meets the May Pen to Mandeville Main Road and continuing to a canal (close to Whitney Turn);
- NORTHERLY from this point crossing the Whitney River to and along the Whitney Land Settlement Road and continuing in a straight line passing the western boundary of Belcarres, crossing the Spalding to Christiana main road and the Moravia to Christiana secondary road to where it meets the Yankee River (intersection of Clarendon, Manchester and St. Ann Parish Boundaries);
- EASTERLY along the Yankee River, crossing its intersection with the Cave River at Two Meeting; then continuing along to where the river intersects the Cave Valley to Bog Hole road at the Greenock Bridge;
- NORTHEASTERLY and SOUTHEASTELY along the St. Ann/Clarendon parish boundary to where it meets the eastern boundary of Kellits and Reckford and continuing to the intersection of Macknie to Fort George main road.
- SOUTHEASTERLY from this point to the Pedro River Bridge on the Shooters to Macknie secondary road to the intersection of the Clarendon/St. Ann and St, Catherine parish boundaries.
- SOUTHEASTERLY in an imaginary line along the St. Catherine parish boundary through the forested areas of Crofts Mountain to where the boundary gets close to Crofts River; passing this point to where the line meets the Lookout to Suttons secondary road (where a tributary of the Pindars River crosses the road);
- SOUTHERLY along this tributary (Tinkley Gully), crossing the Kentish secondary road to the Ginger Ridge to Rock River main road;
- SOUTHERLY from this point along another tributary (crossing the Rock River at Gold Mine) and continuing along to where the Little Juan De Bolas River meets the Bellas Gate to Rosewell Main Road;
- SOUTHERLY along this road to the forested area west of Planters Hall and continuing in an imaginary line to a gully that empties into the Bowers River.
- SOUTHERLY along the Bowers River to the starting point.

## 9. APPENDICES

### APPENDIX 2: List of Formal Consultation Workshops

#### 1) Situation Validation and Visioning Workshops

Workshop	Location	Date	Number of Participants
1	Chapelton (Clarendon College)	February 19, 2014	50
2	Frankfield (Frankfield Primary School)	February 26, 2014	53
3	Lionel Town (Church of God of Prophecy)	March 19, 2014	55
4	Milk River (Kemps Hill High)	March 26, 2014	44
5	May Pen (Four Paths-Zada Webley Hall)	April 2, 2014	19
6	May Pen ( May Pen Proper- St Gabriel's Anglican Church Hall)	April 9, 2014	45
7	Kellits (Kellits High School)	April 23, 2014	52
8	Spalding (Spalding United Church Hall)	May 1, 2014	39
<b>Total number of Participants</b>			<b>357</b>

#### 2) Sector Workshops

Workshop #	Sector Name	Location	Date	Facilitator(s)	Number of Participants
1	Natural Environment	MWLECC Office, Half-Way Tree	August 2, 2014	Ann Sutton (CCAM)	18
2	Governance	CPDCBS Office, May Pen	September 3, 2014	Clive Edwards (MLGCD)	12
3	Agriculture and Fisheries	RADA Office, Denbigh	September 16, 2014	Marcia Murray (JAS)	14
4	Fisheries	C-CAMF Office	September 25, 2014		
5	Tourism	CPCDCBS Office, May Pen	October 16, 2014	A 'Sandy' Chung (TPDCo)	5
6	Disaster Management	CPC Office, May Pen	November 10, 2014	Eleanor Coombs (CPC) and Marlon Brown (ODPEM)	16
7	Water	CPC Office, May Pen	December 2, 2014	Latoya Jackson-Morgan (NWC)	7
8	Waste Management	CPDCBS Office, May Pen	March 10, 2015	Richard Sadhi (SPM/NSWMA)	8
9	Education	CPC Office, May Pen	March 25, 2015	Texal Christie (Kellits High School)	9
10	Safety and	National	September 17, 2015	His Worship The	20

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	Security	Youth Service Conference Room, May Pen		Mayor Councillor Scean Barnswell (CPC)	
11	Transportation	CPDCBS Office, May Pen		Round table discussion was used	5
12	<b>Youth and Child Protection</b>	<b>St Gabriel's Anglican Church Hall, May Pen</b>	<b>June 11, 2015</b>	<b>Conference style setting</b>	<b>150</b>
				<b>Total Number of Participants</b>	

### 3) Strategy Validation Sessions

Workshop 1	Location	Target Population	Date	Number of Participants
1	Jamaica Conference Centre, Downtown Kingston	Agencies/ Organizations/ Groups	23/08/2014	40
2	Versalles Hotel, May Pen	Residents and Community Groups	25/08/2016	105
3	CPC Office, May Pen	Political Directorate		
4	CPC Office, May Pen	Political Directorate		

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### APPENDIX 3: List of Easily Achievable Tasks (EATs)

1. The Spalding DA has selected an apiculture project as their EAT. The project which is located in Alston and dubbed “Visionary Bee” is managed by the Spalding DAC. It aims to address the issues of unemployment, poverty and high levels of unattached youth. It involves the training of twelve (12) participants in apiculture and the subsequent commercial production of honey through partnerships with the Ministry of Agriculture, RADA and the Jamaica Agricultural Society (JAS). The project started with ten (10) boxes of bees which multiplied to fourteen; an additional 10 boxes were also purchased bringing the total complement to fourteen. It is expected that these boxes will continue to multiply over time.

The project has been featured in numerous agricultural shows and exhibitions in Clarendon and other parishes, giving participants the opportunity to share best practices. It is expected that at the end of the training course, a new batch of participants will be trained, though the initial set will be retained.

2. The Kellits DA is engaged in the commercial production of ginger as their EAT. The project seeks to address the issues of unemployment and poverty. Under the project, the Kellits DAC has entered into a five (5) year lease agreement for 4 acres of agricultural land in the Sandy River area. The entire property is under cultivation and ten (10) farmers are employed to care for and maintain the farm. The first crop of ginger were reaped in March 2016 and sold to RADA which has guaranteed a secure market for the produce. Profits from the project was used to give start up resources to other farmers in the Development Area.

3. The Frankfield DA's EAT involved the rehabilitation of a multipurpose sports facility in the community of James Hill. The facility which hosts a cricket pitch, football field, netball court and racing track became dilapidated due to a lack of maintenance. This meant that schools and residents in the community and the environs didn't have a venue to host sporting events. The renovation of the facility will therefore impact a wide cross section of the parish, which includes communities outside the DA. It will contribute to social integration, health and wellbeing, and may also help to facilitate the development of professional athletes.

4. The Lionel Town DA, like the Spalding and Chapelton DAs, has selected an agricultural project as their EAT. This project which seeks to contribute to local economic development involves the training of 25 aspiring farmers in animal husbandry and the provision of start-up resources to the participants for commercial rabbit production. The training which was mainly experiential based, and included the care, production and marketing of animals, with an emphasis on rabbits, was conducted by RADA. In subsequent training sessions, each participant was provided with a pair of rabbits and a hutch to enable direct movement into commercial production.



5. The May Pen DA's EAT was the upgrading of the Little Angels Early Childhood Institution in Tollgate. The school which caters to the educational needs of over 40 young children in and around Tollgate required upgrading works to its kitchen and classroom facilities in order to meet the ECI's standard for registration. Upgrading works included the installation of electricity, repairs to walls of the building and the installation of the required standard of plumbing system. The project supports at least one of the specific objectives of this Plan which is the provision of quality educational facilities to support learning.

## 9. APPENDICES

6. The Sedge Pond Skills Training and Literacy Centre was established as the Milk River DA's EAT. The project seeks to address the low literacy rate and unemployment within the DA by equipping residents with skills to make them employable and exposing them to basic literacy. The facility which was a vacant building was retrofitted with electricity and learning materials, including four (4) desktop computers, a multipurpose printer and several white boards. For the initial programme offered by the facility, some ten (10) residents were trained in modern and efficient farming practices, food preparation and cake baking through partnerships with the Jamaica 4H Club. The participants were also exposed to Mathematics, English Language, Civics, Entrepreneurship and Information Technology, with the assistance of community teachers.

7. As their EAT, the Chapelton DA has agreed to enter into a partnership with a small local agroprocessing business, Real Country. This business which already employs a couple of residents, is fast emerging, with a growing customer base. Real Country is however unable to satisfy the growing demand for its products, cane juice, due to the absence of a bagging machine. The Chapelton DA has therefore agreed to partner with the business owner to purchase the equipment on condition that it receives a small share of production profits (which will be used to implement other projects in the future) and two (2) additional residents are employed.



## 9. APPENDICES

<b>Cave Name</b>	<b>Area</b>	<b>Type of Cave</b>
Alvin Piece Cave	Banana Ground	Shelter
Arrow cave	Jackson's Bay	Chamber
Beardyman cave	Drummond Castle	Complex shaft
Belmont cave 1	Belmont	Labyrinth
Belmont cave 2	Belmont, Mocho	Chamber
Big Cave	Crofts Mountain	Complex
Bilbo's Cave	Jackson's Bay	Dry passage
Birdgiddie cave	Belmont	Chamber
Birds Roda Cave	Birds Hill	
Birdstand #3	Taylor's Hut	Simple shaft
Birthday cave	Jackson's Bay	Complex chamber
Blind eye Holes	Jackson's Bay	Choked shafts
Boarwood Cave	Jackson's Bay	Complex cave
Bog hole	Palmyra	
Bone pit hole	Jackson's Bay	Choked shaft
Bones cave	Spaldings	
Broomwell cave	Broomwell	
Cabbage Hall caverns	Cabbage Hall	Wet Labyrinth
Clarendon ollege Cave	Chapelton	Shelter
Clarendon Park caves	Clarendon Park	Shelter
Comsie cave	Near Kellits	Chamber
Corner cave	Jackson's Bay	Chamber
Crab cave	Jackson's Bay	Dry passage
Creeper cave	Jackson's Bay	Chamber
Crofts River 1	Crofts River	Complex river passage
Crofts River 2	Crofts River	Complex
Daddy's sink	Belmont	Simple shaft
Daley's bone caves	Portland Ridge	Choked chambers
Daley's Cave	Daley's Grove	Complex shaft
Drum cave	Jackson's Bay	Complex cave
Dung hole	Corner Shop	Chamber cave
Flash's field Holes	Crofts Mountain	Complex cave
Funnel hole	Taylor's Hut	Dry passage
Garden piece holes	Cumberland	Simple shaft
Glendale cave	Kenkoo Hill	
Glendale shelter	Kenkoo Hill	Shelter
Goat Cave	Jackson's Bay	Cave to shaft
God's Well	Round Hill	Blue Hole
Gravel Bay caves	South Portland Ridge	Chamber cave
High Dome Cave	North Portland Ridge	Chamber cave

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<b>Cave Name</b>	<b>Area</b>	<b>Type of Cave</b>
Jackson Bay Caves	Jackson's Bay	complex cave
Jaw bone hole	Taylor's Hut	Choked passage
Kellits Road sinks	Croft's Mountain	Complex shaft
Kenkoo cave	Kenkoo Hill	
Lewis Pen Cave	Jackson's Bay	Shelter
Lloyd's Cave	Jackson's Bay	Complex cave
Mahoe Gardens Cave	Portland Ridge	Shelter
Mahoe Gardens Spring	Portland Ridge	Shaft to a pool
Marne Cave	Crofts River	Chamber
Marne cave shaft	Crofts River	Simple shaft
Marshallecks cave	Content	Cave to shaft
Mistress Bell cave	Victoria Town	Stream passage
Mystery shelter	Jackson's Bay	Shelter
Old Brice Caves	Crofts Hill	Shelter
Old Millers Cave	Crofts Hill	Shelter
Old Woman's Savannah Cave	Crofts Hill	
Pania Hole	Crofts Hill	Cave to shaft
Patrick cave	Mocho Mountains	Dry passage
Peace River cave	Peace River Rising	Resurgence
Peace River sink	Peace River Glade	Impenetrable sink
Pinny cave	Pusey Hall	Shelter
Planter Hill Cave 1	Planters Hall	Dry passage
Planter Hill Cave 2	Planters Hall	Dry passage
Portland Cave 1	Portland Ridge	Dry passage
Portland Cave 2	Portland Ridge	Dry passage
Portland Caves: 6-8	Portland Ridge	Dry passage/chamber
Portland Light Sink	Portland Ridge	Choked shaft
Pot Hole	Portland Ridge	Choked shaft
Potoo cave	Jackson's Bay	Complex cave
Pound Note sink	Pedro River	Choked shaft
Pulpa Spring	Cave Valley	Impenetrable rising
Raymond's cave	Mocho	Chamber cave
Richmond Hill Cave	Portland Ridge	
Richmond park caves	Mocho Mountains	Shaft to a cave
River Head Cave	Bon Accord	Shelter
Rock River Cave	Rock River	
Rosewell cave	Rosewell	Dry passage
Salt Pond Hill	Hellshire Hills	
Salt River Cave	Salt River	Shelter
Salters Hill cave	Kenkoo hill	Dry passage
Savannah River Cave	Crofts Hill	Fissure cave

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<b>Cave Name</b>	<b>Area</b>	<b>Type of Cave</b>
Savannah River sink	Crofts Hill	Choked sink
Sink Glade holes	Crofts Mountain	Complex shaft
Sinking River shaft	Crofts River	Simple shaft
Sinking River sink	Crofts River	Impenetrable sink
Skeleton cave	Jackson's Bay	Chamber cave
Somerville cave	Jackson's Bay	Complex cave
Sunday hole	Cabbage Hall	Stream passage
Taylor's Hut Cave 1	Taylor's Hut	Dry passage
Taylor's Hut Cave 2	Taylor's Hut	Chamber cave
Taylor's Hut Pit	Jackson's Bay	Chamber cave
Three Sandy Bay cave	Portland Ridge	
Tree Root hole	Jackson's Bay	Choked passage
Two Tier Chamber cave	Jackson's Bay	Complex chamber
Victoria Cave	Victoria Town	Complex cave
Warwickshire Cave	MacKnie	Stream passage
Water Jar Cave	Jackson's Bay	Complex cave
Whitney River Cave	Whitney Turn	Impenetrable sink
Wild Goat Cave	Jackson's Bay	Chamber cave
Wild Pine Hole	Crofts River	Shaft to cave
Woodside caves	Mocho Mountain	Simple shaft

### APPENDIX 5: List of Beaches in Clarendon

<b>LOCATION</b>	<b>TYPE OF BEACH</b>
Farquhars	Bathing & Fishing
Jackson Bay	Bathing & Fishing
Rocky Point	Fishing
Welcome	Fishing
Mitchell Town	Fishing
Barmouth	Fishing
Barneswelldale	Fishing
Beauchamp	Fishing

## 9. APPENDICES

### APPENDIX 6: Sewage Treatment Plants in Clarendon

Location	Type	Design Capacity	Daily Discharge	Owner/ Operator	Discharge
Bushy Park	Plant: Secondary-Aerated Lagoon	0.57000	0.6819	NWC	Town Gully
Bushy Park	oxidation ditch, constructed wetland	0.00000			gully
Crofts Hill	Plant: Secondary-Oxidation Ditch	0.00000	0.18184	NWC	evaporation field
Denbigh Industries	Plant: Secondary-Oxidation Ditch	0.00000		Factories Corporation of Jamaica	
Ebony Park	Biodigester-Pond System-wetland-chlorination cha	1.00000	0.687	Tropical Poultry Jamaica	Milk River
Ebony Park Academy	Plant: Secondary-Oxidation Pond	0.00000		HEART - NTA	
Halse Hall	Plant: Secondary-Oxidation Pond	0.00000		NWC	Webbers Gully/Rio Minho
Hayes	facultative pond-maturation pond-constructed wet	0.73000	0.734	National Housing Trust	Cotton Tree Gully
Hayes I	Plant: Secondary-Oxidation Pond	0.27400		NWC	Earth Drain to Cotton
Hayes II	Plant: Secondary-Oxidation Pond	0.76000		NWC	Earth Drain to Cotton
Juici Patty Clarendon	sequence batch reactor	0.11000	0.109104	Juici Patty	irrigation and earthen
Lionel Town	Plant: Secondary-Aerated Lagoon	1.14000		NWC	
Longville Park	Plant: Secondary-Oxidation Ditch	0.00000		NWC	
Longville Park Pen	Oxidation ditch - sand filter	0.00000		Kerrific Enterprises	Palmetto Gully
May Pen Hospital 1	Plant: Secondary-Trickling Filter	0.00000		Ministry of Health	Gully to River
May Pen Hospital 2	Plant: Secondary-Rotating Bio Disk	0.00000		Ministry of Health	Gully to River
Mineral Heights	Plant: Secondary-Contact Stabiliz	1.33000		NWC	Webbers Gully/Rio Minh
New Bowens I	Plant: Secondary-Oxidation Pond	0.00000		NWC	Webbers Gully/Rio Minh
New Bowens II	Plant: Secondary-Oxidation Pond	0.00000		NWC	Rio Minho
Paisley Pen	Plant: Secondary-Oxidation Ditch	0.17100		NWC	Rio Minho
Palmetto Pen	Plant: Secondary-Oxidation Ditch	0.36300		O.D. Ramtallie	Mammee Gully

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Palmetto Pen	Septic tank - gravel filter-sand filter-anoxic c	0.20200	0.202	O.D. Ramtallie	Mammee Gully
Pridees	Plant: Secondary-Oxidation Pond	0.00000		NWC	
Rocky Point	not known	0.00000	0.013638	Clarendon Alumina Works	sea outfall
Sevens Plantation	Oxidation ditch-clarifier-wetland-chlorination	2.60200	2.602	York Pat Limited	Gully
Toby Heights	septic tank-gravel filter-buried sand filter-ano	0.39400	0.394	Ministry of Water and Housing	Palmetto Gully
Twin Palms	Plant: Secondary-Oxidation Ditch	1.63000	1.63656	COLGLO Equities Limited	Irrigation
Kennedy Grove	Oxidation Ponds				

### APPENDIX 7: Membership of the Parish Disaster Committee

The Executive of the Parish Disaster Committee is comprised of:

- The Mayor
- The Deputy Mayor
- Senior Police Officer
- Senior Medical Officer
- Senior Fire Officer
- Inspector of Poor
- Parish Council Secretary/Manager
- Senior Officer MLSS
- Representative from Jamaica Information Service
- Parish Disaster Coordinator

Other members include:

- Custos
- Councillors (21)
- Director of Finance
- Director of Planning
- Director of Administration
- Regional Coordinator (ODPEM)
- Superintendent: Roads & Works
- Parish Manager: National Works Agency
- Telecommunication Companies
- National Water Commission
- Ministry of Agriculture
- Jamaica Public Service
- Red Cross
- Salvation Army
- Adventist Development Relief Agency (ADRA)
- Voluntary Organizations
- Zonal Committee Chair Persons
- Private Sector Groups
- Environmental Group
- Members of Parliament/Caretakers

## 9. APPENDICES

### APPENDIX 8: List of Areas Prone to Flooding in Clarendon

List of Areas Prone to Flooding		
▪ Aenon Town	▪ Alley	▪ Longville
▪ Leicesterfield	▪ McNie	▪ Brompton Hill
▪ Bog Hole	▪ Water Lane	▪ Alley Downer
▪ John's Hall	▪ Morgan's Forrest	▪ Nine Turns
▪ Cave Valley	▪ Race Course	▪ Jack Munday
▪ Trout Hall	▪ Kemps Hill	▪ Oliver Gardens
▪ Mason River	▪ Banks	▪ Long Wood
▪ Sandy River	▪ Preddie	▪ Longville Park
▪ Morgan's Pass	▪ Milk River	▪ Hayes
▪ Grantham	▪ Coffals	▪ Halse Hall
▪ Frankfield	▪ Comfort	▪ New Bowens
▪ Osbourne Store	▪ York Town	▪ Free Town
▪ Vernamfield	▪ Toll Gate	▪ Gayle
▪ Hayesfield	▪ Four Paths	▪ Mitchell Town
▪ Farquhar*	▪ Swansea	▪ Portland Cottage*
▪ Sedge Pond	▪ Lionel Town	▪ Rocky Point*
▪ Rhymesbury	▪ West Park	▪ Cockpit
▪ Gimme-me-bit	▪ Bushy Park	▪ Green Bottom
▪ Alston	▪ Clarendon Gardens	▪ New Town
▪ Wood Hall	▪ Race Track	▪ Palmers Cross
▪ Mt. Providence	▪ Pennant Wood	▪ Mineral Heights
▪ Alexander	▪ Effortville	▪ Sandy Bay
▪ Goshen (sink hole)	▪ Bucknor	▪ Breadnut Bottom
▪ Mocho	▪ Rose Hall	▪ Rosewell
▪ Hazard	▪ Château	▪ Mundel Town
▪ May Pen	▪ Juno Gully	▪ Main Ridge

\* Areas prone to coastal flooding

## 9. APPENDICES

### APPENDIX 9: List of Squatter Settlements in Clarendon

- Banana Board
- Belle Plain Great House
- Brooks Common, off Treadlight St.
- Brooks Land, Treadlight
- Bucknor
- Bucks Common, May Pen
- Bucks Haven
  
- Bull Head
- Burnt Ground/Dampy
- Bushy Park
- Canal Reserve
- Canaan Heights, May Pen
- Clarendon College
- Clarendon College Land, Chapelton
- Clarendon Park - Scotts Pass
- Clumsy Land Lease, Chapelton
- Goshen
- Cuba, May Pen
- Dampy - Cross
- Decoy
- Denbigh
- Ebony Park
- Ebony Park (adjacent Ebony Park H/Scheme)
- Emerald Heights
- Evans Meadows, May Pen
- Farquhar's Beach
- Farquhar Beach (Milk River)
- Foga Road, Denbigh
- Forest Reserve, Danks
- Havana Heights (Jacob Hut)
- Hayes (Corn Piece)
- Hosey Property, Spalding
- Infirmary Land
- James Hill
- JRC Line Clarendon
- Juno Crescent, May Pen
  
- Long Gully, Effortville
- Manchester Avenue, Denbigh
- Methodist Church Lands
- Muirhead Avenue
- On the Rocks, Hazard Dr. (Sunshine Gardens)
- Over Line, May Pen
- Paisley Pen - West of Hazard Drive
- Palmyra
- Land Lease
- Lionel Town - King Street
- Peace River
- Public Lemilcs Yard
- Pusey Hall
- Portland Cottage / Food for the Poor
- Rasta Gully, Free Town
- Raymond's, Capture Land
- Reagan City (Juno Crescent)
- Rectory Lands, May Pen
- Rhules Pen (Palmer's Cross)
- Rhules Pen (Unity Farms)
- Rhymesbury P.L.L. York Town
- Ritchies Land Settlement
- Rocky Settlement
- Rose Hall, Race Track, May Pen
- Rose Hall, Free Town
- Salisbury (Brixton Hill)
- Salt River
- Seven's Heights, Sevens
- Sevens Bush
- South Coast
- Springville
- St. Toolies, Tollgate
- Unity Farms
- Vernamfield
- Water Wells
- Western Park (Harris Street)
- Windsor Avenue, May Pen

## 9. APPENDICES

### APPENDIX 10: The Capacities and Enrollment in Schools in the Parish (2011)

School Name	Capacity	Enrollment
Alley Infant	165	98
May Pen Infant	250	436
Evelyn Mitchell Infant	-	103
Alley Primary	555	461
Alston Primary and Infant	225	82
Anderson Town Primary	290	59
Arthurs Seat Primary	130	48
Ashley Primary & Infant	190	165
Bailleston Primary	415	180
Brandon Hill Primary	410	274
Brixton Hill Primary and Infant	220	215
Bunkers Hill Primary	190	122
Coffee Piece Primary	205	91
Collington Primary	130	28
Denbigh Primary	640	1,044
Effortville Primary	235	376
Elgin Primary	145	66
Frankfield Primary & Infant	590	1,016
Free Town Primary	225	616
Gimme-me-bit Primary	155	140
Gravel Hill Primary	155	118
Hazard Primary	450	853
James Hill Primary	540	444
Kellits Primary	635	709
Kilsyth Primary & Infant	330	291
Long Look Primary	115	65
Main Ridge Primary	135	26
May Pen Primary	1,000	2,370
Milk River Primary	165	138

Mineral Heights Primary	600	1,425
Mitchell's Hill Primary	95	60
Mitchell Town Primary	170	180
Mocho Primary & Infant	165	268
Moravia Primary	250	188
Morgan's Forest Primary & Infant	195	228
Morgan's Pass Primary	105	77
Mount Airy Primary & Infant	270	101
Mount Carmel Primary	165	68
Mount Providence Primary	145	166
Park Hall Primary & Infant	185	150
Pindars Valley Primary	155	118
Pleasant Valley Primary	145	102
Prospect Primary	200	102
Race Course Primary	290	657
Red Hills Primary	205	75
Richmond Park Primary	235	185
Ritchies Primary	185	274
Rock Primary	205	204
Rosewelll Primary	240	83
Salt Savannah Primary & Infant	220	237
Sanguinetti Primary	280	240
Scotts Pass Primary & Infant	145	216
Simon Primary & Infant	170	98
Smithville Primary	705	258
Spaldings Primary	595	1001
Thompson Town Primary & Infant	260	399
Treadlight Primary	240	393

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Tweedside Primary	100	87
Victoria Primary	180	227
Wanstead Primary & Infant	220	43
Watsonston Primary	855	903
York Town Primary	500	743
Aenon Town All Age	225	364
Beulah All Age	370	563
Chapleton All Age	415	770
Crooked River All Age	290	188
Cumberland All Age	195	159
John Austin All Age	255	303
Johns Hall All Age	270	105
McNie All Age	765	712
Mount Liberty All Age	180	345
Portland Cottage All Age	180	222
Rock River All Age	345	262
Staceyville All Age	205	292
Sunbury All Age	205	272
Toll Gate All Age & Infant	280	434
Trout Hall All Age	155	224
Wood Hall All Age	205	161
Chandlers Pen Primary & Junior High	340	285
Crofts Hill Primary & Junior High	505	665
Cross Primary & Junior High	675	704
Four Paths Primary & Junior High	515	575

Garlogie Primary & Junior High	385	218
Green Park Primary & Junior High	450	826
Hayes Primary & Junior High	1260	1252
Leicesterfield Primary & Junior High and Infant	330	205
Moore's Primary & Junior High	275	163
Osbourne Store Primary & Junior High	690	743
Rest Primary & Junior High	550	189
Alston High	600	744
Bustamante High	600	1125
Central High	1600	2001
Clarendon College	1,600	1622
Claude McKay High	600	1130
Denbigh High	1000	1665
Edwin Allen High	1800	2409
Foga Road High	800	777
Garvey Maceo High	1200	1493
Glenmuir High	1,000	1796
Kellits High	1,000	1001
Kemps Hill High	800	1326
Knox College	1,200	1267
Lennon High	1,000	951
Spalding High	1,400	1707
Thompson Town High	800	960
Vere Technical High	1,400	1874

### APPENDIX 11: Potential Tourist Attractions in Clarendon

City/ Town	Location	Site Name	Category	Sub-Category
Arthur's Seat	Arthur's Seat	Tom Redcam's House and School	Built Heritage	Historic Site
Bull Head	Bull Head	Cudjoe Trail	Cultural	Historic Character

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Mountain	Mountain		Heritage	
Hayes	Hayes	Hayes	Cultural Heritage	Cultural Group
Hayes	Off Main Road	Halse Hall	Cultural Heritage	Residential
Jackson's Bay	Jackson's Bay	Jackson's Bay Caves	Natural	Land Feature
James Hill	James Hill	Claude McKay's Birthplace	Cultural Heritage	Heritage Site
James Hill	James Hill School	Claude McKay Marker	Cultural Heritage	Heritage Site
Kellits	Kellits	Kellits Sugar Works	Built Heritage	Industrial
Mason River	Mason River	Mason River Botanical Station	Natural	Botanical
May Pen	Denbigh Showground	Denbigh Agricultural Show	Event	Agricultural
May Pen	Town Centre	Clock Tower	Built Heritage	Monument
Milk River	Milk River	Gods Well	Natural	Land Feature
Milk River	Milk River	Milk River Bath and Hotel	Natural	Water Feature
Portland Bight	Portland Bight	Portland Bight Protected Area	Natural	Land Feature
Portland Bight	Portland Bight	Portland Point Lighthouse	Built Heritage	Maritime
Rock River	Rock River	Rock River Great House	Built Heritage	Residential
Rock River	Rock River	Sugar Estate Ruins	Built Heritage	Industrial
Salt River Hill	Salt River	Amerindian Site	Cultural Heritage	Prehistoric Site-Amerindian
Salt River Road	Salt River	Windmill Tower	Built Heritage	Industrial
Suttons	Suttons	Suttons Sugar Estate	Built Heritage	Industrial
The Alley	The Alley	St Peter's Church	Built Heritage	Religious Building
The Alley	The Alley	Windmill and Town Centre Buildings	Built Heritage	Industrial
Trout Hall	Trout Hall	Trout Hall Plantation	Built Heritage	Industrial
Whitney Turn	Whitney Turn	Whitney Turn Aqueduct	Built Heritage	Infrastructure
Wood Hall	Wood Hall	Museum	Cultural Heritage	Heritage Site
			Heritage	

## 9. APPENDICES

### APPENDIX 12: Development Areas, Communities and Districts of Clarendon

DA	Communities	Districts
<b>KELLITS (4)</b>	<b>1. Kellits (11)</b>	Comsee, Good Hope, Jericho, Kellits (Proper), Sevens Ground, Shooter, Rhoden Hall, Sandy River, Reckford, Mason River, Tate
	<b>2. Crofts Hill (12)</b>	Arthur's Seat, Corner, Crofts Hill (Proper), Dagger's Lane, Guava Ground, Hickley, Ludlow, Morant Sister, St. Johns, Bamboo Lane, British, Lampson
	<b>3. Brandon Hill (5)</b>	Brandon Hill (Proper), Content, Top Hill, Turtle Pond, Bull Head
	<b>4. Colonel's Ridge (5)</b>	Mahoe Hill, Johnnies Hill, Colonel's Ridge (Proper), Crawle, Dawkins Land
<b>FRANKFIELD (8)</b>	<b>5. James Hill (10)</b>	Bog Hole, Bunkers Hill, Carty Hill, Dawkins, Desire, James Hill (proper), Nairne Castle, Salem, Fairburn, Anderson Town
	<b>6. John's Hall (3)</b>	Johns's Hall Proper, Hemsley, Cumberland
	<b>7. Crooked River (9)</b>	Crooked River (Proper), Crooker River Top, Orange Hill, Ballards River, Brae Head, Bryant's Piece, Red Hills, Pumpkin, Red Lands
	<b>8. Frankfield (10)</b>	Andrew Hill, Cabbage Hill/ Guinea Corn, Commissary, Ettrick Hall, Frankfield (Proper), Lampard/Lime Kiln, Waterworks, Nine Turns, Cow Pen, South Wood
	<b>9. Orange Hill (3)</b>	Orange Hill (Proper)/Top Orange Hill, Longlook, Hope Well
	<b>10. Peckham (4)</b>	Fairy Hill, Peckham (Proper), Wisbeach, Tweedside
	<b>11. Trout Hall (5)</b>	Lampard, Park Hall, Trout Hall (Proper), Trout Hall Pass, Collington
	<b>12. Grantham (6)</b>	Grantham (Proper), Morant /Logie Green, Sheckles, Union/Jericho, Woodside, Hill Top
<b>SPALDING (9)</b>	<b>13. Aenon Town (3)</b>	Aenon Town Proper, McKoy, Borobridge
	<b>14. Morgan's Forest (3)</b>	Morgan's Forest (Proper), Gayle Town, Longbough
	<b>15. Alston (6)</b>	Alston (Proper), Bailleston, Harwoods, Malcolm Town, Morgans, Boothe Town
	<b>16. Cumberland (3)</b>	Cumberland (Proper), Belcarres, Sunbury
	<b>17. Spalding (7)</b>	Bryant's Land, Nine Miles, Santa Hill, Spalding (Proper), White Shop, Spalding Hill, Bullocks
	<b>18. Sanguinetti (5)</b>	Sanguinetti (Proper), Dykes Hill, Low Woods, Fearon, Logie Green
	<b>19. Ritchies (4)</b>	Ritchies (Proper), Shop Hill, Fairview, Glenwoods Spring,
	<b>20. Silent Hill/Moravia (8)</b>	Silent Hill (proper), Long Fearon/Ferry, Morrison Hill, Walder, Moravia (Proper), Top Alston, Lower Moravia, Yankee
	<b>21. Coffee Piece (5)</b>	Red Ground, Copperwood, Coffee Piece (Proper), Sunshine, Leicesterfield
<b>CHAPELTON (9)</b>	<b>22. Morgan's Pass (2)</b>	Morgan's Pass (Proper), Friendship
	<b>23. Beckford Kraal (6)</b>	Beckford Kraal (Proper), Blackwoods, Elgin, Iron Gate, Sweeney Top, Alexandria
	<b>24. Coxswain (10)</b>	Cotton Ground, Coxswain (Proper), Crawle River, Low Wood, Oakes, Pindars Valley, Prospect, Ward Hill, Morant Wood, Lucky Valley
	<b>25. Turners (5)</b>	Sutton, New Road, Turners (Proper), Four Paths, Ennis Hill
	<b>26. Pennants (4)</b>	John Austin, Mt. Hindmost, Main Ridge, Pennants Proper/Kuputs
	<b>27. Rock River (13)</b>	Garden Wood, Mitchell's Hill, Morris Hall, Rock River, (Proper), Simon, Diamond, Tommy King, Tanarchy, Low Ground, Content, Mount Zion, Lime Hall, PXE

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	<b>28. Wood Hall (4)</b>	Wood Hall (proper), Mt. Providence, Post Road, Coco Walk
	<b>29. Summerfield (7)</b>	Danks Savoy, Summerfield (Proper), New Ground, Rose Hill, John's Spring, Peter King, Ashley
	<b>30. Chapelton (6)</b>	Chapelton Proper, Sangster Heights, Mullet Hall, Cross Roads, Sutton Road, New Danks
<b>MAY PEN (34)</b>	<b>1. Smithville (12)</b>	Barbeque, Corn Hill, Matinee, Middle Quarter, Over Road, Smithville (Proper), Top Quarter, Wakesfield, Windsor, Bryant's Piece, Sunbury, Effort
	<b>2. Ashley (5)</b>	Ashley (Proper), Bagatelle, Green Park, Eden, Darlow
	<b>3. Thompson Town (5)</b>	Bloomwell, Gloucester, Thompson Town (Proper), Victoria, Wanstead (Peace River)
	<b>4. Brixton Hill (5)</b>	Brixton Hill (Proper), Goshen, White Chapel, Mocho Road, Mt. Valley
	<b>5. Dawkins (7)</b>	Belmont, Bowens Gate, Settlement 1, Cedars, Dawkins (Proper), Settlement 2, Reid
	<b>6. Richmond Park (5)</b>	Refuge, Crawle, Richmond Park (Proper), Stewarton, Whitney
	<b>7. Mount Airy (2)</b>	Church Valley, Mt. Airy (Proper)
	<b>8. May Pen Proper (18)</b>	Bucks Haven, Sewell Crescent, Love Lane, Church Street, Morris Avenue, Sharp Avenue, Duke Street, Fernleigh, Avenue, Main Street, Bucks Common/heights, Manchester Avenue, Mount Clair, West Park, Bucks Avenue, Cordage Drive, Howard Avenue, Sevens Road, Bryant's Crescent
	<b>9. Bushy Park (5)</b>	Meadow Lands, Bushy Park Mews, Evans Heights, Central Avenue, Bushy Park H/S
	<b>10. Bucknor (9)</b>	Rectory Land, Stewarton, Bailey's Avenue, Canjam, Mt. Industry, Johnson Road, Smokey Hole, Breezy Castle, Craig Town
	<b>11. Treadlight (2)</b>	Treadlight Common, Treadlight (Proper)
	<b>12. New Denbigh/Race Track (7)</b>	Havannah Heights, Woodside, Pennant Wood, Rose Hall, Terrier Town, Denbigh, Harbour Hill
	<b>13. Old Denbigh (10)</b>	Cemetery Road, Allan Street, Anderson Street, Norman Street, Evans Heights, Denbigh Crescent, Gratton Avenue, St. Georges Street, Foga Road, Jacob's Hut
	<b>14. Effortville (6)</b>	Oliver Gardens, Coolie Town, Sevens, Farm, Overline, Long Gully
	<b>15. New Longsville (2)</b>	Mundle Town, New Longsville (Proper)
	<b>16. Curatoe Hill (3)</b>	Curatoe Hill (Proper), Coates Pen, Caanan Heights Proper
	<b>17. Sandy Bay (5)</b>	Palmetto Pen, Sandy Bay (Proper), Rose Hall, Palmetto Meadows, Inverness
	<b>18. Rosewell (3)</b>	Breadnut, Beaches, Long Point
	<b>19. Chatteau (2)</b>	Chatteau (Proper), Birds Hill
	<b>20. Moores (4)</b>	Moores Proper, Longsville, White Marl, Coolie Town
	<b>21. Freetown (3)</b>	Freetown (Proper), Rose Hall, Toby Abbot/Heights
	<b>22. Longville Park (3)</b>	Phase 1, Phase 2, Phase 3
	<b>23. Mineral Heights (3)</b>	Phase 1, Phase 2, Phase 3/Mineral Heights Manor
	<b>24. Palmers Cross (12)</b>	Green Meadows, Green Bottom, Rhules Garden, Kennedy Grove, Palmers Cross (Proper), Rhules Pen, Savannah Cross, Mid Island Estate/Dampy, Top Cross, Webb Lane, Twin Palms, Inverness Gardens
	<b>25. Paisley (4)</b>	New Paisley, Old Paisley, Hartwell Gardens, Juno Crescent
	<b>26. Hazard (7)</b>	Hopefield, Hazard (Proper), Sunny Acres, Mira Mara Mews, Inglewood, Sunny Side, Trenton Rd
	<b>27. Osbourne Store (9)</b>	Osbourne Store (Proper), Comfort, Swansea, Agronomy, Belle Plain, Belle Pond, Naseberry Street, Rock Halt, Red Road
	<b>28. Tollgate (11)</b>	Toll Gate (proper), Decoy, Ebony Park, Race Course, St. Jago Road, New Lands, Clarendon Park, Bailey's Town, Duke Street, McGilchrist Palms, Queen Street

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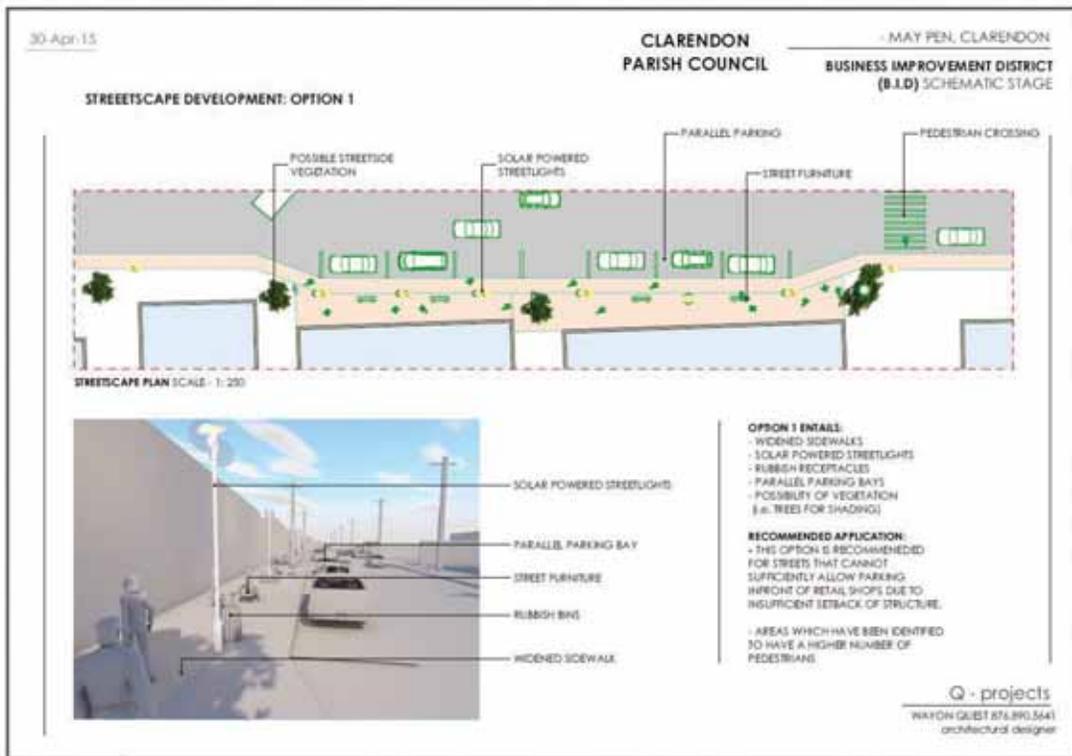
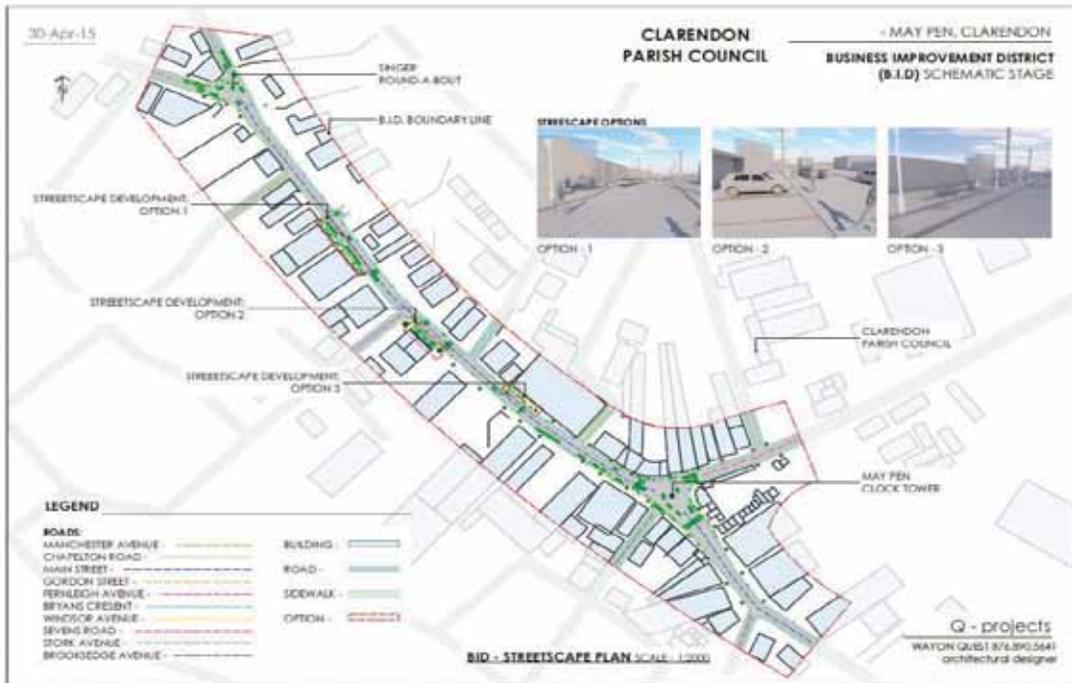
	<b>29. Four Paths (7)</b>	Four Paths (proper), Sheckles, Denbigh Kraal, Clarendon Gardens, Cherry Tree Lane, Dunn Cane/Settlement, Georges Pen
	<b>30. York Town (6)</b>	York Town (proper), Rhymesbury, Bullards Content, Howells Content, St. Andrew, Parnassus/ Settlement
	<b>31. Rock (2)</b>	Folly, Rock Proper
	<b>32. Pleasant Valley (1)</b>	Pleasant Valley Proper
	<b>33. Glenmuir (4)</b>	Glenmuir Heights, Glenmuir Housing Scheme, Jackson Street Denbigh Crescent
	<b>34. Cockpit (1)</b>	Cockpit Proper
<b>MILK RIVER(6)</b>	<b>35. Race Course (11)</b>	Kemps Hill, Coffals, Hayesfield, Camdem, Race Course (proper), Sedge Pond, Banks, Springfield, Water Well, Joe Walters Street, Cosmo Gardens
	<b>36. Gravel Hill (3)</b>	Gravel Hill (proper), Cow Pen, Corne
	<b>37. Water Lane (7)</b>	Water Lane (proper), Ashley Housing Scheme, James Village, Jungle, Top Hill, Gibbs Town, Hermitage
	<b>38. Gimmi-mi-bit (5)</b>	Gimmi-mi-bit (proper), Crooks Gate, Gravel Ground, Vernamfield, Rowington
	<b>39. Milk River (12)</b>	Milk River (proper), Scott, Farquhar's Beach, Rest, Preddie, Pass Side, Clifton, Hope, Gibraltar, Harrison Town, Cherry Hill, Duncan Heights
	<b>40. Longwood</b>	Longwood Proper
<b>LIONEL TOWN (8)</b>	<b>41. Mitchell Town (1)</b>	Mitchell Town (proper)
	<b>42. Lionel Town (6)</b>	Lionel Town (proper), Housing Scheme, Capture Land, Settlement, Monymusk, Hillside
	<b>43. Portland Cottage (16)</b>	Portland Cottage (proper), Freetown, Dry Hill/Arrow Hill, Hunters Village, Jackson's Bay, Twickenam Town, Sandy's Spot, Coconut Walk, Watson Town, Baldwin Cottage, Wildman Town, Shooters, St Andrews, Harmony Hall/Penn, Content, Shearers Height
	<b>44. Salt River (4)</b>	Bratt's Hill, Salt River (proper), Braziletto Settlement, Tarentum
	<b>45. Alley (4)</b>	Alley, Gayle, Downer, Amity Hall
	<b>46. Rocky Point (2)</b>	Rocky Point Proper, Rocky Settlement
	<b>47. Hayes (11)</b>	Cornpiece, Cornpiece Settlement, Savannah, Hayes (proper), New Town Phase I, New Town Phase II, Raymond's Dam, Raymond's, Land Lease, Top Hill, Monymusk Housing Scheme
	<b>48. Halse Hall (4)</b>	Top Halse Hall, Bottom Halse Hall, Hunts Pen, New Bowens
<b>7</b>	<b>78</b>	<b>462</b>

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### APPENDIX 13: List of CBOs in Clarendon

TYPE	LIONEL TOWN	MILK RIVER	MAY PEN	SPALDING	FRANKFIELD	CHAPELTON	KELLITS	TOTAL	PERCENT
Providence/ Friendly Societies	0	0	0	0	0	0	0	0	0.0
Agricultural Group (AG)	0	0	0	0	0	0	0	0	0.0
(BS)	0	1	0	0	0	0	0	1	0.4
Business Association (BA)	0	0	0	0	0	0	0	0	0.0
Citizen Association (CA)	15	4	24	2	1	4	2	52	18.3
Culture/Heritage Club (CC)	0	0	2	0	0	0	0	2	0.7
Community Based Org (CBO)	1	1	0	0	0	0	0	2	0.7
Community Development Committee (CDC)	8	6	19	4	3	4	1	45	15.8
Community Group (CG)	1	0	5	2	0	0	1	9	3.2
Consultative Committee (ConC)	0	0	0	0	0	0	0	0	0.0
Child Support Group (CSG)	0	0	1	0	0	0	0	1	0.4
Disability Association (DA)	0	0	0	0	0	0	0	0	0.0
Development Committee (DC)	1	0	0	0	0	0	0	1	0.4
District Development Committee (DDC)	0	0	2	0	0	0	0	2	0.7
Dance Group (DG)	0	0	0	0	0	0	0	0	0.0
Education (EDU)	0	0	1	0	0	0	0	1	0.4
Environmental Group (EG)	0	0	0	0	0	0	1	1	0.4
Emergency response (ER)	0	0	0	0	0	0	0	0	0.0
Football Club (FC)	0	1	3	1	0	1	0	6	2.1
Farmers group (FG)	1	1	2	2	0	0	1	7	2.5
Fishermen's Organization (FO)	0	0	0	0	0	0	0	0	0.0
Health Committee (HC)	0	0	0	0	0	0	0	0	0.0
Home Economics (HE)	0	0	0	0	0	0	0	0	0.0
Housing Scheme Committee (HSC)	0	1	0	0	0	0	0	1	0.4
Jamaica Agricultural Society (JAS)	1	0	1	1	0	1	0	4	1.4
Management Committee (MC)	0	0	0	0	0	2	0	2	0.7
Men's Group (MG)	0	0	0	0	0	0	1	1	0.4
Music Group (MUS)	0	0	1	0	0	0	0	1	0.4
Non-Govt. org. (NGO)	0	0	0	1	0	0	1	2	0.7
Neighbourhood Watch (NW)	0	0	2	0	0	0	0	2	0.7
Operation Pride (OP)	0	0	0	0	0	0	0	0	0.0
Political Group (PG)	0	0	1	0	0	0	0	1	0.4
Production Marketing Org (PMO)	1	0	1	2	1	0	1	6	2.1
Past Student Association (PSA)	0	0	0	0	0	0	1	1	0.4
Police Youth Club (PYC)	3	2	10	0	1	3	2	21	7.4
Religious Group (RG)	0	0	0	0	0	0	0	0	0.0
Returning Residents Group (RR)	0	0	0	0	0	0	0	0	0.0
Sports Club (SC)	0	4	17	0	0	2	1	24	8.5
Senior Citizens Association (SCA)	1	0	2	0	0	2	0	5	1.8
Social group (SG)	0	0	0	0	0	0	0	0	0.0
Service Org (SO)	0	0	5	0	0	0	0	5	1.8
Taxi Association (TA)	0	0	1	1	0	0	0	2	0.7
Vocational Training Centre (VTC)	0	0	3	0	0	0	0	3	1.1
Women's Group (WG)	0	0	0	0	0	0	2	2	0.7
Youth Club (YC)	5	5	17	12	7	14	5	65	22.9
Youth Fellowship (YF)	0	0	0	0	0	0	0	0	0.0
Development Area Committee (DAC)	1	1	1	1	0	1	1	6	2.1
<b>TOTAL</b>	<b>39</b>	<b>27</b>	<b>121</b>	<b>29</b>	<b>13</b>	<b>34</b>	<b>21</b>	<b>284</b>	<b>100.0</b>
Percent	13.7	9.5	42.6	10.2	4.6	12.0	7.4	100.0	

Appendix 14: Preliminary Concept Design for May Pen Streetscape



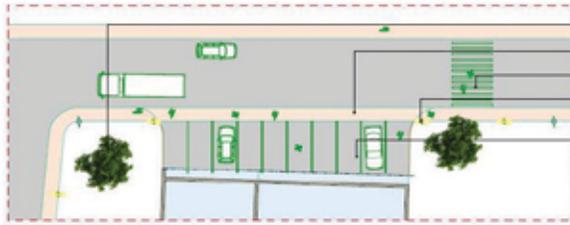
# 9. APPENDICES

30-Apr-15

CLARENDON  
PARISH COUNCIL

- MAY PEN, CLARENDON  
BUSINESS IMPROVEMENT DISTRICT  
(B.I.D) SCHEMATIC STAGE

## STREETSCAPE DEVELOPMENT: OPTION 2



STREETSCAPE PLAN SCALE - 1: 250

- POSSIBLE STREETSIDE VEGETATION
- PEDESTRIAN PATH
- PEDESTRIAN CROSSING
- SOLAR POWERED STREETLIGHTS
- STOREFRONT PARKING



- SOLAR POWERED STREETLIGHTS
- STOREFRONT PARKING
- PEDESTRIAN PATH
- SIDEWALK
- PEDESTRIAN CROSSING

- OPTION 2 ENTAILS:**
- MINIMUM WIDTH SIDEWALK
  - SOLAR POWERED STREETLIGHTS
  - RUBBISH RECEPTACLES
  - STOREFRONT PARKING
  - POSSIBILITY OF VEGETATION (i.e. TREES FOR SHADING)

**RECOMMENDED APPLICATION:**

- THIS OPTION IS RECOMMENDED FOR STREETS THAT CAN SUFFICIENTLY ALLOW FOR PARKING IN FRONT OF RETAIL SHOPS DUE TO SUFFICIENT SETBACK OF STRUCTURE.

- AREAS WHICH HAVE BEEN IDENTIFIED TO HAVE A LOWER NUMBER OF PEDESTRIANS.

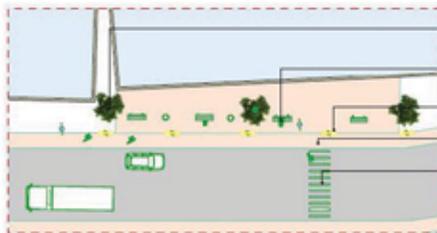
Q - projects  
WAYON QUIST 876.890.5641  
architectural designer

30-Apr-15

CLARENDON  
PARISH COUNCIL

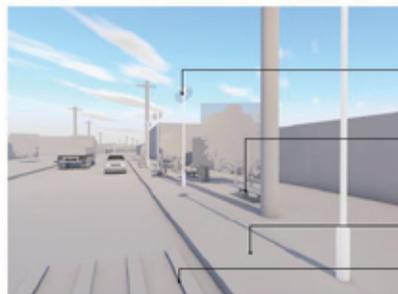
- MAY PEN, CLARENDON  
BUSINESS IMPROVEMENT DISTRICT  
(B.I.D) SCHEMATIC STAGE

## STREETSCAPE DEVELOPMENT: OPTION 3



STREETSCAPE PLAN SCALE - 1: 250

- POSSIBLE STREETSIDE VEGETATION
- STREET FURNITURE
- SOLAR POWERED STREETLIGHTS
- SIDEWALK
- PEDESTRIAN CROSSING



- SOLAR POWERED STREETLIGHTS
- STREET FURNITURE
- SIDEWALK
- PEDESTRIAN CROSSING

- OPTION 3 ENTAILS:**
- MAXIMUM WIDTH AVAILABLE SIDEWALK
  - SOLAR POWERED STREETLIGHTS
  - RUBBISH RECEPTACLES
  - NO PARKING ZONE
  - POSSIBILITY OF VEGETATION (i.e. TREES FOR SHADING)

**RECOMMENDED APPLICATION:**

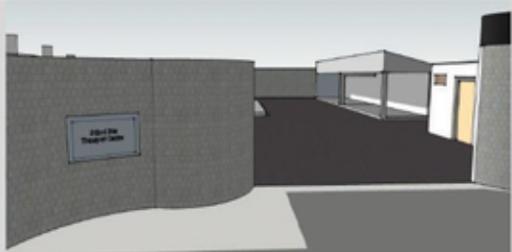
- THIS OPTION IS RECOMMENDED FOR STREETS THAT CANNOT SUFFICIENTLY ALLOW PARKING IN FRONT OF RETAIL SHOPS DUE TO INSUFFICIENT SETBACK OF STRUCTURE.

- AREAS WHICH HAVE BEEN IDENTIFIED TO HAVE A HIGH NUMBER OF PEDESTRIANS.

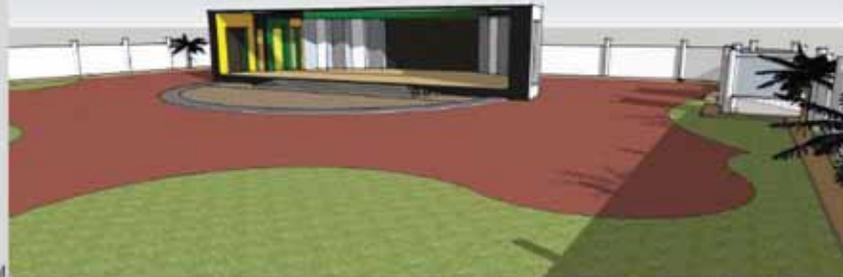
Q - projects  
WAYON QUIST 876.890.5641  
architectural designer

**APPENDIX 15: Preliminary Concept Design of City Park and School Transportation Centre**

**City Park & Transportation Preliminary Layout**



# 9. APPENDICES



Park Cathedral



Timber Flooring for Cathedral



Paved Concrete walkway



# MEET THE TEAM OF THE CLARENDON LOCAL SUSTAINABLE DEVELOPMENT PLAN

## **Project Management Committee**

Clarendon Municipal Corporation  
Mrs. Sophia Virgo-Facey- Sugar Transformation Unit  
Mr. Phillip Brown- Sugar Transformation Unit  
Mr. Baldwin McKenzie- Social Development Commission  
Miss Ingrid Parchment- Clarendon Parish Development Committee Benevolent Society (CPDCBS)  
Miss Eurica Douglas- National Association of Parish Development Committees (NAPDEC)  
LSDP Secretariat

## **Core Team**

Miss Melbourne McPherson- Project Manager  
Mr. Horane Stewart- Long Range Planner  
Miss Chaille Rodriques- Administrator  
Miss Nickala Thompson- Director of Planning  
Mr. Rowhan Blake- Chief Executive Officer  
Miss Eurica Douglas- General Manager, NAPDEC  
Miss Ingrid Parchment- Chairman, CPDCBS

## **Consultants**

Dr. Ann Sutton- Conservation Ecologist  
Mr. Ryan Wallace- Spatial Planner/ Physical Planner  
Miss Yasheka Jathan-Thompson-

## **Steering Committee**

Clarendon Municipal Corporation  
Ministry of Local Government and Community Development

Planning Institute of Jamaica  
Office of Disaster Preparedness and Emergency Management  
Urban Development Corporation  
Ministry of Economic Growth and Job Creation  
National Environment and Planning Agency  
National Land Agency  
Clarendon Chamber of Commerce  
Sugar Transformation Unit  
CariLED  
Social Development Commission  
CPDCBS  
NAPDEC

## **Intern**

Tana-ania Spencer- Regional and Urban Planning

## **Land use survey Technicians**

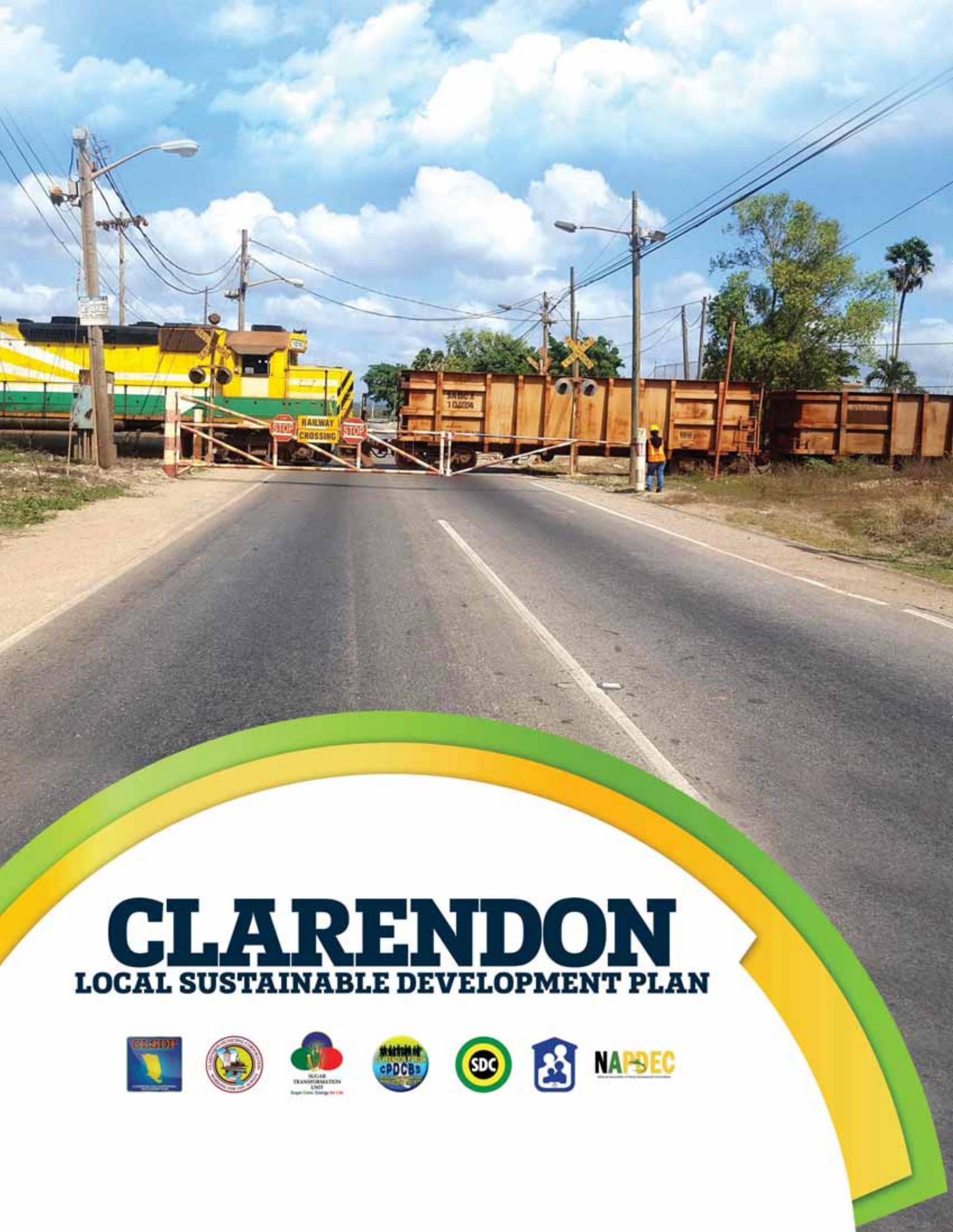
Miss Shadae Allen- Supervisor  
Miss Renee Mamby  
Miss Anika McFarquhar  
Mr. Oshane Coleman  
Mr. Romario Davis  
Miss Raymaria Campbell  
Mr. Owen Elliot  
Mr. Malcolm McDonald  
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Miss Latanya Messam  
Mr. Colonie Heron  
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# CLARENDON

LOCAL SUSTAINABLE DEVELOPMENT PLAN



NAPDEC