

**PORTMORE TO CLARENDON PARK –
HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN**

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PRIME MINISTER

OCT 06 2004

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October 5, 2004

Hon. P.J. Patterson Q.C.
Prime Minister
Office of the Prime Minister
1 Devon Road
Kingston 10

Dear Prime Minister Patterson,

Re: Preliminary Draft Plan

It is with pleasure that I enclose a copy of the Preliminary Draft Plan for your perusal.

Yours sincerely,


.....
Joy E. Douglas
Senior Urban & Regional Planner

Encl.

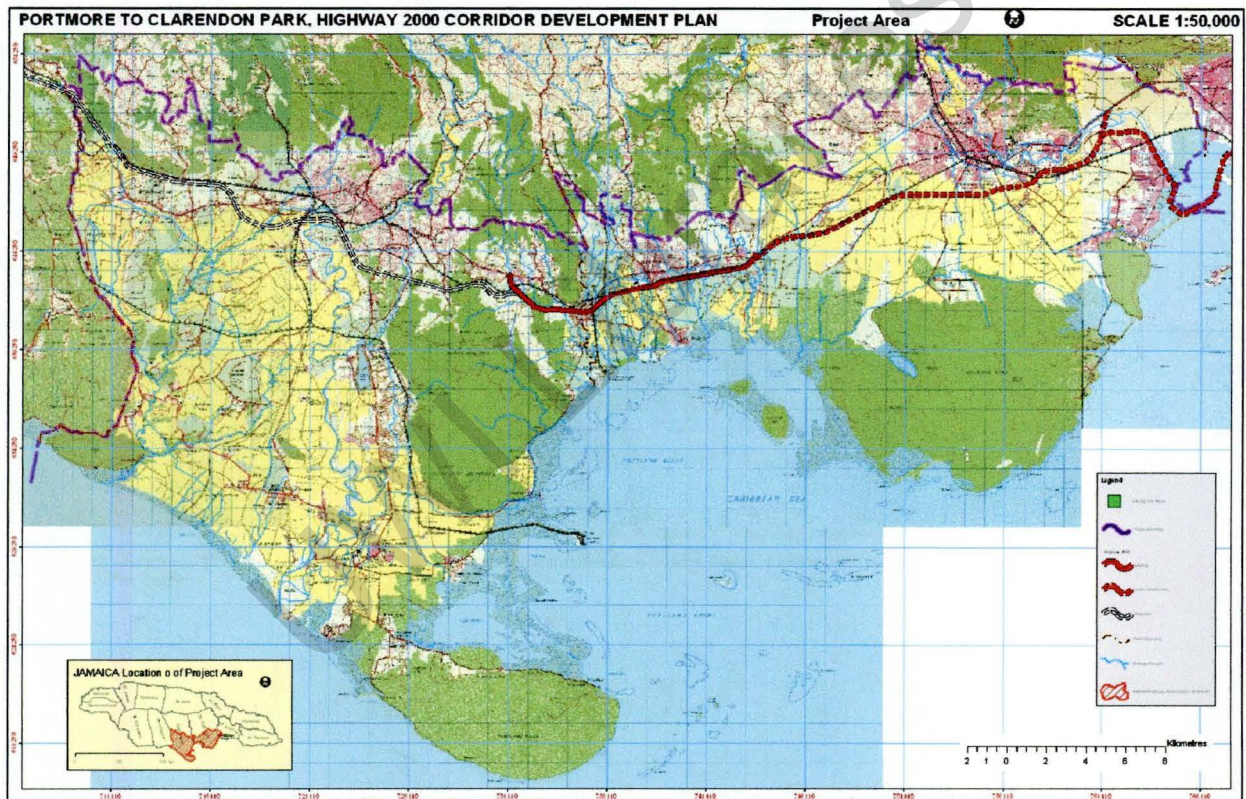
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PORTMORE TO CLARENDON PARK HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN 2004-2025

Preliminary Draft

Volume 1

Main Report



September 20, 2004

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Preface

These volumes represent a preliminary draft of the Portmore to Clarendon Park – Highway 2000 Corridor Development Plan.

It should be emphasized however that the recommendations made in this draft document will stand, but will be elaborated on in the Official Draft Plan.

This is particularly so for the proposed zoning (Map 7) at the 1:50,000 scale, which has established new urban fences for Portmore Municipality, Spanish Town, May Pen, Old Harbour, Esquivel New Town, and Rhymesbury, and has rezoned several areas.

The finalization of the Official Draft Plan awaits the following:

- Finalization of The Economic Base Study being undertaken by PIOJ and STATIN (not expected for completion before mid October, 2004).
- Finalization of all the Draft Reports
- Completion of land use mapping for:
 - Project area at 1:50,000
 - Spanish Town at 1:12,500
 - Portmore Municipality at 1:12,500
 - May Pen at 1:12,500
 - Old Harbour/Old Harbour Bay/Freetown/ Longville Area at 1:12,500

The completion the 1:12,500 maps in particular will facilitate finalization of specific recommendations at that scale.

The following should also be noted:

- There is a deficiency with respect to social information particularly with respect to poverty levels. To date the PIOJ has been unable to produce the Poverty Map for the project area due to data and methodological difficulties. It has been decided to utilize the data base from the PATH programme as a proxy. These data have now been secured from the Ministry of Social Security, and the PIOJ will be requested to assist in the analysis and mapping of those data.
- There are a few agencies that have not cooperated with the plan preparation exercise with respect to the provision of information. The names of these agencies have been supplied to the Ministry of Development, and it is hoped that the relevant information will be forthcoming to facilitate completeness of presentation and integrated analysis.

It should also be noted that the preparation of the Development Plan has been a challenge due primarily to:

- Poor Information Management by many agencies, including poor updating of information;
- Methodological difficulties with respect to how some data is collected; and
- Some resistance to providing information in a timely manner and in the format required.

Having said that, several agencies have extended themselves in the Plan production process. Most notably are:

- Development Bank of Jamaica
- Ministry of Land and the Environment
- Planning Institute of Jamaica
- Department of Forestry
- Water Resources Authority
- NEPA
- Ministry of Transport and Works
- National Works Agency

Joy E. Douglas
Senior Urban & Regional Planner

**PORTMORE TO CLARENDON PARK – HIGHWAY 2000 CORRIDOR
DEVELOPMENT PLAN 2004-2025**

1.0 INTRODUCTION

At the dawn of the Millennium many societies were concerned and conflicted about what the future would hold. There was hysteria and a perception of no future, the “end of the world”, chaos.

Within this context, the Government of Jamaica (GOJ) decided to take a positive futuristic approach, to look at the new millennium as an opportunity, an opportunity for Jamaica to reorganize itself, maximize its physical and human potential, unite as society, and commence a process of reordering based on the creation of new opportunities for economic development, growth, self actualization and sustainability.

In that regard, several millennium projects were identified and conceptualized. One such project was the Highway 2000 project, which is predicated on the notion that infrastructure development, particularly road construction, will act as a major catalyst for economic growth, particularly in areas that did not have the accessibility before.

The Highway 2000 project involves the construction of a four-lane, restricted access toll motorway 233 kilometers in length. The Corridor has been divided into three segments:

Segment 1: Kingston to Mandeville is 76 km

Segment 2: Mandeville to Montego Bay is 91 km

Segment 3: Bushy Park to Ocho Rios is 66 km

Segment 1 is scheduled for completion in 2004. A sub-segment from Bushy Park to Sandy Bay has already been completed and is currently in use.

In order to maximize impact or effect of this project, the Government decided that there was a need to undertake a comprehensive development plan consistent with the phased implementation of the Highway 2000 project, to ensure that the areas contiguous to the highway were reorganized spatially, physically, socially, institutionally, and economically, in a manner that was efficient, stimulating and sustainable (see Plan Area at Maps 1 and 2).

The development plan that has been prepared therefore is predicated on a vision of development and creating an environment that will ensure the unleashing of the fullest potential within the society.

The Plan period is 2004-2025.

1.1 Objectives

- 1. Identification of the planks of economic opportunity and investment to stimulate and support economic security, growth and a high quality of life in the region.** No developed society can place its fortunes in a mono-industrial economic basket. Modern developed societies thrive because they identify and understand the diverse economic opportunities that obtain from knowing the resources that exist and transforming those resources into salable goods and services that are able to compete with comparable goods and services produced domestically and internationally.
- 2. To Excite for Investment.** The plan intends to create a sense of excitement among the political directorate and community leadership about the tremendous possibilities thus encouraging a united coordinated approach across political lines. Excitement for the average man in the street, the average citizen who will see a place for him or herself in the menu of economic opportunities that emanate from the plan. Excitement from private sector interests domestically who will see an alternative to investment in paper, to investment in productive activities within the area. Excitement from international investors who will also see that Jamaica within this area has hung out a sign 'Ready for Business'.
- 3. Economic, Social, and Political Feasibility.** The plan creates a framework and process that will make it possible for the political directorate at both the national and local levels to demonstrate the political will to expeditiously accomplish the plan recommendations.
- 4. Effect institutional and regulatory transformation.** The plan seeks to consolidate a new approach to governance- the country continues to go through the local government reform programme – and this is reflected in the specific proposals made in the plan.
- 5. Ensure orderly development in the area.** The plan therefore manifests the government's resolve in dealing with in a decisive manner, all aspects of physical, spatial and aspatial characteristics that militate against orderly development.

1.2 The Plan Area

The Highway 2000 Development Plan project area is approximately 99,442 hectares. Approximately 42, 000 hectares or forty-two percent (42%) of the land that forms the project area is located in the parish of St. Catherine. This represents 35% of the total area of the parish of St. Catherine. Approximately 57, 000 hectares or 58 percent of the land that forms the project area is located in the parish of Clarendon. This represents forty-eight percent (48%) of the Parish of Clarendon (see Maps 1 and 2).

The development plan covers an area, which has experienced rapid population growth over the past decade. Total population of the study area was 460, 367 in 2001, according to the Population Census undertaken in that same year. This represents an increase of 32 percent above the 1991 population of 346,719. The present estimated population of the project area is 493,063 (a 7% increase since 2001), and represents 64% of the total parish populations of St. Catherine and Clarendon. The population is projected to increase by 58% to 728,548 by 2025.

Approximately 84% of the population in the study area is concentrated in urban communities such as the parish capitals of May Pen and Spanish Town as well as Portmore Municipality, Old Harbour and Hayes. Sixteen percent (16%) percent reside in rural areas, or smaller rural towns. The urban population is estimated to be growing by about 2.97% per annum, compared to the rural population, which is estimated to be growing by 1.3 percent. The latter also contains some pockets of stagnation and decline.

The project area contains 17.3% of the total population of Jamaica, of which St. Catherine accounts for 12.9%, and Clarendon, 4.9%.

For ease of analysis, the project area was divided into Special Areas (see Maps 3 and 4) as follows:

St. Catherine
1. Spanish Town
2. Portmore Municipality
3. McCooks Pen
4. Old Harbour Bay
5. Old Harbour
6. Freetown
7. Rest of Project Area in St. Catherine
Clarendon
8. May Pen
9. Sandy Bay/Green Park
10. Hayes District
11. Longville Park
12. Lionel Town
13. Mitchell Town
14. Salt River/Sandy Bay

15. Rocky Point
16. Portland Cottage
17. Race Course
18. Brokenbank
19. Alley
20. Gimme-Me-Bit
21. Toll Gate/Osbourne Store
22. Rest of Project Area in Clarendon
23. Free Town

2.0 STIMULATING AND MANAGING ECONOMIC GROWTH, INVESTMENT AND DEVELOPMENT

Indicators of economic growth in the southern St. Catherine and southern Clarendon are strong. The investment and development potential of the project area is unparalleled:

- Industrial Minerals Development
- Specialized Manufacturing
- Energy Development
- Agricultural Diversification
- Agro-processing
- New Town Development
- Bauxite/Alumina Expansion
- Housing Development
- Urban Revitalization
- Regional Retail & Wholesale Centre Establishment
- Ecotourism Development
- Heritage Tourism Development
- Soft Adventure Tourism
- Port and Airport Development
- Horse Racing, Breeding and associated Betting and Gaming
- Other Recreational and Gaming Endeavours

The availability of a skilled workforce is critical to the success of economic development. The plan will also address strategies to attract and train a skilled workforce to keep pace with the advancing skill set requirements of industry.

Two variables have emerged as the primary determinants of development in the project area, namely:

- 1. Availability of Water; and**
- 2. Squatting.**

Water – The suite of development opportunities that present themselves in the project area can only be realized if the water that is available is distributed efficiently and cost effectively. The literature suggests that there are limited sources of new water. This therefore means that a policy decision will have to be made in relation to the control and reallocation of water from some of the land uses that are presently unable to utilize available water efficiently and effectively. This is particularly so for agricultural land use. There is also the possibility that the market will reallocate water on the basis of affordability as urbanization and investment in industry increases.

The literature indicates that the agricultural sector, the principal owner and consumer of water at this time, will find it increasingly difficult to farm as the cost

of water increases, if there is continued resistance (particularly from those growing sugar cane), to shift into profitable sub-sectors. Thus there will be an increased tendency to sell agricultural lands and the water sources associated with those lands for non-agricultural land uses that can afford the higher price of water. This therefore means that:

1. A water budget will have to be developed to rationalize the allocation of water for domestic, agricultural, industrial, and tourism, based on the projected needs for the short, medium and long term;
2. The agricultural sector will have to achieve higher efficiency in the use of water for irrigation; and
3. The agricultural land use in the area will have to be diversified into sub-sectors that can afford the higher price of water.

It is also important to note that the resistance to diversifying out of unprofitable crop types may have an unforeseen negative impact with far reaching implications.

Agricultural land use is critical to the maintenance of the hydrological balance within the project area.

The protection of critical aquifers is directly related to the maintenance of suitable crop types on the lands above. This facilitates aquifer recharge and maintenance of water quality.

Squatting – Is an illegal activity and is the greatest contributor to the break-down in Law & Order in the country in general and the project area in particular.

THERE IS NOTHING MORE SOCIALLY, ECONOMICALLY, AND PSYCHOLOGICALLY DIBILITATING THAN SPATIAL CHAOS. SQUATTING REPRESENTS THE HIGHEST FORM OF SPATIAL CHAOS.

The ability of significant segments of the population in the project area (approximately 20% in St. Catherine and 33% in Clarendon) to act with impunity for over a decade in most instances, has eroded the authority of agents of the State to effect development control (i.e. the Parish Council – the Local Planning Authority) or to arrest antisocial or criminal behaviour (i.e. the Police).

Indeed, the very viability of the State will be at risk if this activity is not brought to an end.

Within the project area most of the squatter settlements are concentrated within or adjacent to the main urban centres of Spanish Town, Portmore Municipality, May Pen and Old Harbour. Some of these centres have the highest murder rates in the country.

There is a strong correlation between these settlements, manifestations of antisocial behaviour and criminality. This is a factor that will deter potential investors.

The proposals contained in this plan are therefore predicated on:

- 1. The reallocation of water to favour profitable non-agricultural uses;**
- 2. The diversification of the agricultural sector into products that will continue to protect critical aquifers while at the time being profitable; and**
- 3. The elimination of squatter settlements in the project area.**

2.1 Specific Economic Objectives

- Increasing the wealth of the region through increased numbers of new investment in firms and farms so that the economic and social needs of its citizens are met.
- Increased number of communities experiencing an increase in their assessed valuation.
- Increased revenues from a developed industrial minerals sector.
- Increased revenues from a diversified agricultural sector.
- Increased number of international visitors to the region.
- Increased number of new jobs created paying competitive wages.
- Increased number of people who move above the poverty line.
- Increase number of low income persons whose housing needs are met.
- Increased number of communities undergoing redevelopment and revitalization.
- Increased tax revenues.
- Increased number of profitable businesses.
- Increase in safety and security in the region.

2.2 The Economic Base

The region contains a diversified pattern of land resource use, being comprised of lands devoted to large-scale export agriculture (sugar cane), small domestic food crops and livestock, industrial and commercial uses and residential uses. At least 2,114 establishments have been identified, 1,615, or 78% of which are located in St. Catherine, while 499, or 23% are located in Clarendon. Distribution is the largest sector, containing 62% of the establishments, while Financial, Insurance and Miscellaneous Services account for 21% and Manufacturing 8%. Agriculture, while contributing the bulk of employment, accounts for 2% of the establishments.

The major industries in the Corridor, in terms of value of production and numbers employed are: Sugar, other Agriculture, Bauxite/Alumina, Distribution and Services. Small and micro enterprises predominate, but the main sectors are dominated by large enterprises, including multi-nationals in bauxite/alumina, the Government-owned Sugar Corporation of Jamaica in Sugar, Jamaica Broilers in poultry production and aquaculture, and Super Plus in distribution. There is also a very extensive informal sector, the size of which is impossible to estimate.

Within the project area, it is evident that the growth of many local commercial activities is based on the growth in demand from an expanding population, most of which is employed in industries either located other parishes (e.g. Kingston and St. Andrew), or which export goods and services to the rest of the country and overseas (e.g. Sugar and Bauxite).

Industries are divided into “basic” and “non-basic”: basic industries are industries which export goods and services outside the parish/area, and these constitute the real “engines of growth” in the area; non-basic industries do not export goods or services, and are essentially dependent on the local market for their survival. The income earned by residents from exports to the outside provide a basis for generating local demand for goods and services, and this in turn provides opportunities for local non-basic industries to arise, in many cases, replacing goods and services previously imported from the outside (see Table 2-1).

Table 2-1: Basic and Non-Basic Industries in the Highway 2000 Corridor

	Basic	Non-Basic
Fast	• Production of Broilers • Production of Eggs • Operation of Fish Farms incl. Shrimp farms • Manufacture of Plastic products • Undertakers, Embalmers & Cremators (including funeral parlours)	• Wholesale and Retail Trade, Hotels and Restaurants • Retailers of Food, Beverages and Tobacco • Community, social and personal services • Construction • Government services
Slow	• Bauxite Mining and Alumina Processing • Growing of Sugar Cane • Manufacture of Sugar and Molasses • Horse-Racing and Betting Activities • Rearing of Horses • Manufacture of Food Beverages and Tobacco • Ocean Coastal Water Fishing • Quarrying of Stones, Sand, Clay and Gravel • Health Clubs • Water Transportation (Ports)	• Rearing of Small Stock • Growing of root crops • Agricultural, Animal Husbandry and Horticultural Services • Manufacture of Food Beverages and Tobacco • Transportation • Sports Clubs • Bathing Beaches & Other Public Bathing Facilities • Production and Distribution of Electricity • Collection, Purification & Distribution of Water

2.2.1 Basic Industries

As table 2-1 indicates, the basic industries are further classified as “fast” or “slow”, depending on recent growth trends.

It must be borne in mind that the designation of fast or slow is based primarily on recent performance and known development plans. Global and regional industry trends may also be taken into account, as these do not in all cases coincide with industry plans. This would be the case, for example, where available market opportunities are not being fully

exploited. There may also be cases that can be treated as doubtful, borderline or overlapping. In this analysis these cases are assigned to either “basic” or “non-basic” category for ease of analysis.

The main implication of the above analysis is that the industries listed constitute a source of growth within the regional economy, by virtue of the fact that they generate external incomes from selling goods and services outside of the parish/project area.

In addition to the industries listed, labour services of the population are also of importance. It is the case that a significant percentage of the working population of the project area earns incomes outside, e.g. many residents of Portmore and Spanish Town work in Kingston and St. Andrew.

The capacity of the communities within the project area to survive changing patterns of demand is enhanced by the existence of these types of industries. At the same time, the communities which are highly specialized tend to be vulnerable to loss of employment and income which could occur if any of these basic industries experience severe decline; e.g. the depression of Lionel Town and Caymanas areas is linked to the decline of the sugar industry, while the emergence of new basic industries like Alumina production, fish and poultry farming have prevented more serious economic and social decline. Having a diversified range of basic industries would best mitigate vulnerability to external shocks.

The significance of the classification of fast and slow basic industries is that the former represent advancing sectors while the latter represents those sectors that are missing opportunities for more robust growth. The appropriate policy response should be to encourage the growth of the lagging industries through more effective business strategies, increased investment, and improved efficiency (e.g. through application of technology).

2.2.2 Non-Basic Industries

The main basis of the classification is that these industries contain enterprises that primarily serve a local market. In all cases, the proportion of total sales that is directed to customers within the district or region is higher than 50 percent. This is clearly the case with most Wholesale and Retail Trade, Hotels and Restaurants. Government services similarly are usually provided for the local or regional population. In Manufacture of Food Beverages and Tobacco, this would be less true of the large entities than of small and medium enterprises.

Construction (Building and Construction, Civil and Structural Engineering, and Activities Allied to Construction) may be directed to local consumption, as in most residential construction, or may serve a wider public demand, as in road construction. The impacts on the local economy are in any case short term and are derived from the activities of other expanding industries. Electricity and Water are considered non-basic industries because the production within the project area is likely to be below peak demand, and supplies may be obtained from outside of the area.

The pattern of supply to local markets is probably most marked in the case of the Wholesale and Retail Trade, which is comprised of operations, such as supermarkets, hardware stores, groceries and petrol stations that seek to meet local demand. The growth of these enterprises is usually associated with population growth within the district, and in many cases the enterprises emerged to fill a demand for goods, which was formerly satisfied by residents making purchases outside the district. A typical example is Portmore, where the rapid growth of residential housing and population, in the face of limited commercial enterprises had led initially to persons shopping in Kingston.

Over time, the expanding market opportunities have led to the rise of community-based businesses, in many cases the result of Kingston-based businesses opening local branches, e.g. supermarkets, financial institutions, and petrol stations. Most of these operations realize up to 100 percent of their sales within the Portmore area. The expected increase in Wholesale and Retail operations in areas served by the new highway will also result in expansion of this sector.

Food service organizations such as restaurants and fast food outlets follow a similar pattern. So too with Community and Personal Services, covering a wide range inclusive of repair and maintenance services, health and personal care and passenger transportation. Government services, such as schools, health centers and local offices are usually part of decentralization geared to serve the population of the region.

Small farming operations typically sell produce to markets within the parish, and given their scale, are unable to operate a distribution system outside their area. The exception is farmers who travel to markets in Kingston, though this is less and less evident, as middlemen and higglers have become dominant in the distribution system.

A further classification of “fast” and “slow” non-basic industries suggests that Government services, Agricultural Services and Manufacturing may be classified as “slow” non-basic industries. Government services, while showing fairly steady growth, slow down after reaching certain threshold levels based on population trends, and may be further restricted by fiscal policies and policies of privatization.

Changing land use patterns may restrict agricultural activities. Manufacturing presents a mixed picture, with certain industries (e.g. plastic containers and building materials) advancing, but shows a continuing shift of resources associated with trade liberalization and low competitiveness. If new export-oriented industries emerge, this could improve the prospects of this sector.

The classification of Distribution and Services as “fast non basic” industries suggests that these industries will continue to grow at a rapid rate, based mainly on population trends. However, they are vulnerable to sudden contraction as a result of market developments that are external to the parishes in which they are resident. Wholesale and retail trade, for example, would be seriously affected by a decline in personal incomes that could result from a downturn in bauxite or sugar production.

The classification of slow non-basic industries indicates industries that are highly vulnerable to decline or already in decline. The appropriate policy response is to encourage adjustment through diversification, divestment and redeployment strategies, unless serious “re-engineering” is feasible. The case of small farms is illustrative. Increasingly, these operations will become increasingly uncompetitive and unable to provide a livelihood to their operators. Policies should encourage the increase farm size and commercial farming techniques, as well as the production of exportable crops.

2.2.3 Comments

The project area possesses a highly diversified economic base and is well established as an area of economic growth and concentration of population. The construction of the Highway 2000 will accelerate this trend, given the projected growth of the population both from natural increase and in-migration from the rest of the island. Additional growth will occur in all major economic sectors including: Agriculture, Mining, Manufacturing, Construction, Distribution and Services. The investment plans of major entities, as well as project approvals of the NIBJ and JAMPRO provide an important guide to the projected economic activities.

Sugar continues to face serious challenges in achieving competitiveness and ensuring its long-term sustainability. However, programmes of modernization, expansion of cane and diversification of products are central to the industry’s development plan, while Government remains committed to support the industry because of its social and economic importance within the corridor. The sugar industry will therefore continue to be a significant player on the regional economy in the short to medium term.

The Non-bauxite Mineral Sector has significant opportunities for long-term development as basic industry; however the industry faces major financial constraints in achieving the critical mass required for economic world class production.

The limitations of land area, however, poise serious economic, social and environmental risks and raises questions of sustainability in the long term.

2.3 Agriculture

Approximately 32,000 hectares of land (32% of the total study area) are currently under agriculture, 15,098 hectares (47%) of the lands in agriculture are in St. Catherine and 16,730 hectares (53%) of the lands in agriculture are in Clarendon (see Tables 2-2 and 2-3 and Figures 2-1 - 2-6). The major agricultural activities identified are:

- Sugar (Basic Industry but growing slowly)
- Poultry (Basic Industry and growing fast)
- Fishery (Basic Industry and growing fast in aquaculture and slow for coastal water fishing)
- Dairy (Non-basic Industry and growing slowly)

- Livestock (small ruminants, pigs and beef cattle) (Non-basic Industry and growing slowly)
- Domestic crops (calaloo, cassava, okra and cabbage etc) (Non-basic industry and growing slowly)

Recognizing the importance of the farming sector to national/rural development it is important to increase food production and productivity and implement projects/programmes which target production.

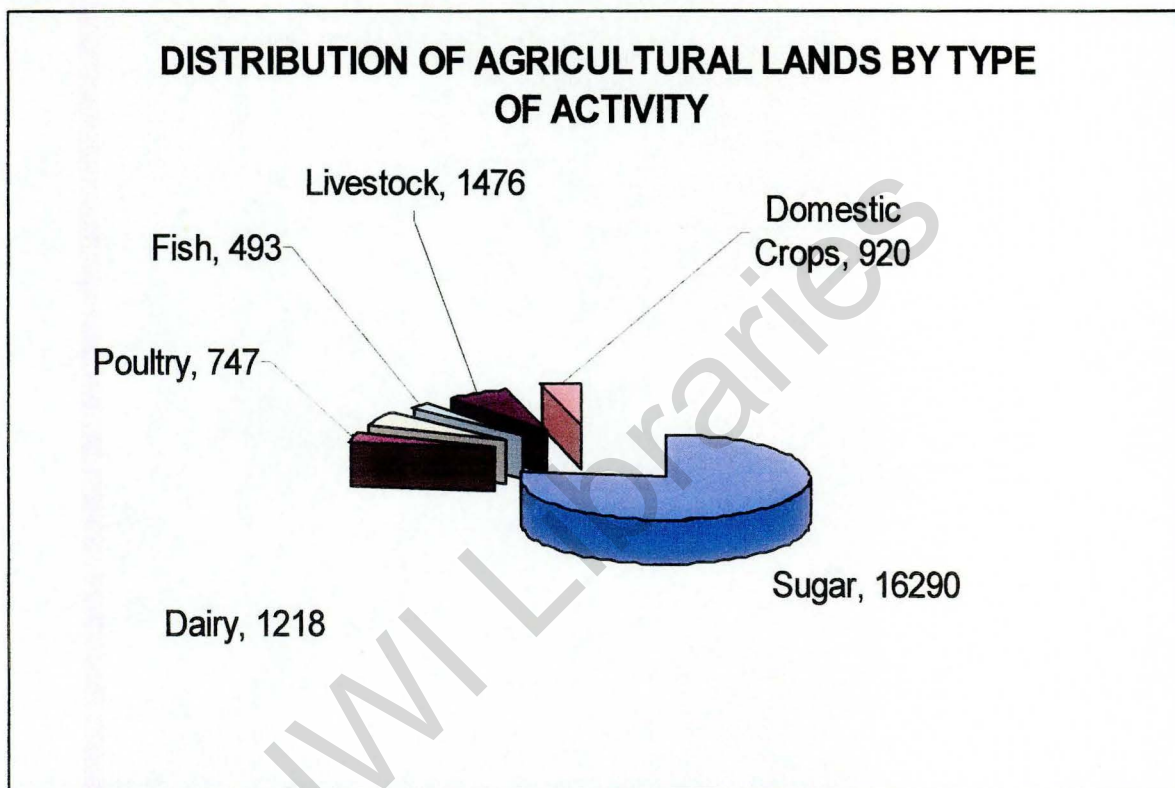


Figure 2-1: Distribution of Agricultural Lands by Type of Agricultural Activity.

Figure 2-2 shows the value of output of the above mentioned activities:

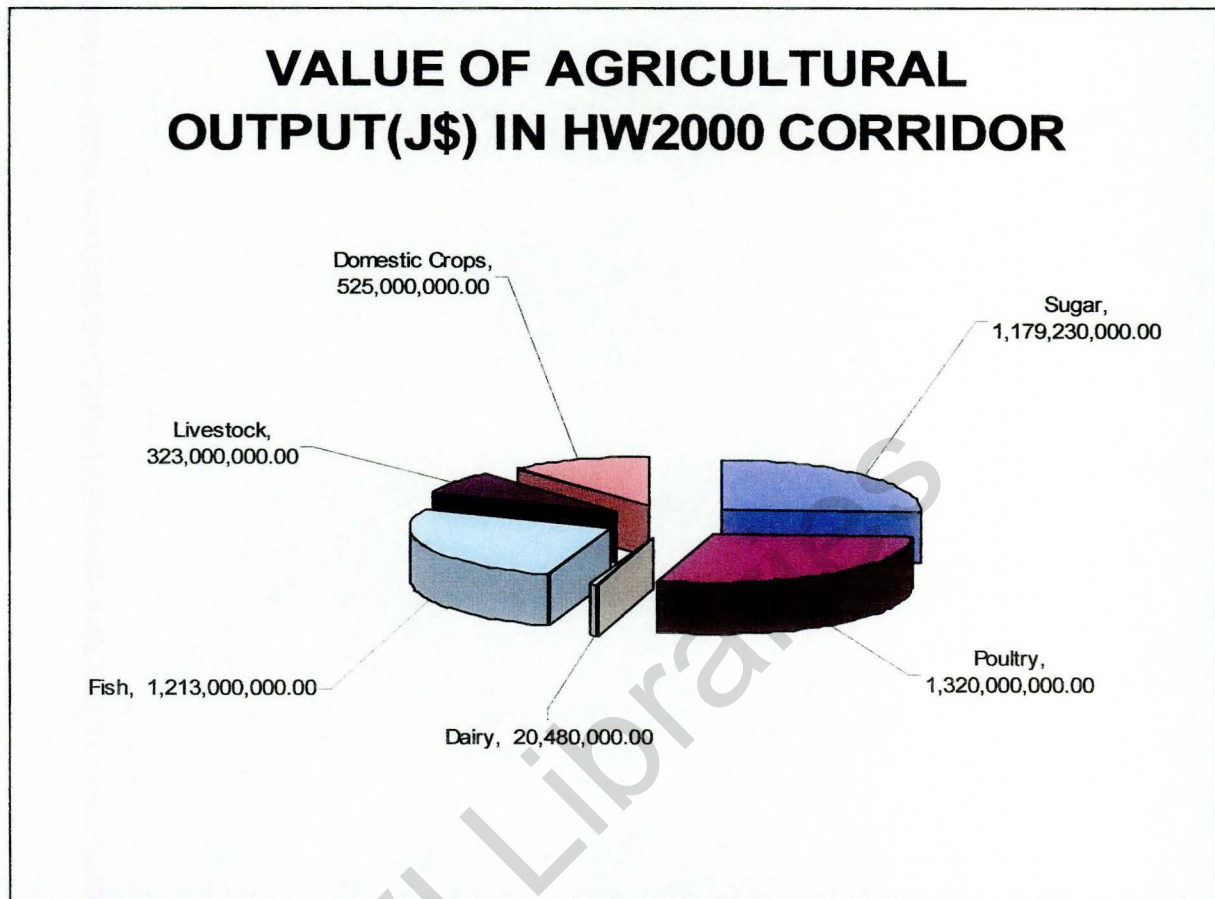


Figure 2-2: Value of agricultural activities along HW2000 Corridor

The figure clearly indicates that sugar, fish and poultry are major agricultural activities in the area with annual value of output in excess of one billion dollars. It is important to note however, that both poultry and fish exceed the earnings from sugar and occupy much less land space.

In determining the future of agriculture in the study area, it is important to note comments made from two (2) seminal references:

“Currently, most of the island’s soils and areas best suited for future consideration of alternative or non-traditional crops are being planted in sugar cane and bananas. In the future, on some of the less efficient operations, consideration may have to be given to the feasibility of replacing sugar cane and bananas with other export market commodities or with crops presently being imported with expenditure of foreign exchange....” (CRIES; 1982)

“Under present conditions of land use and water supply facilities (canals and wells) deficits occur in July, August and September of each year. To reduce these levels of

unmet demand, two parallel strategies will have to be employed: crop diversification and the development of additional water supply.

At present, the dominant crop in the Lower Rio Cobre Basin is sugar cane. The irrigation efficiency for this crop is about 50 percent. Replacing sugar cane with more profitable crops (e.g. vegetables) and irrigating these crops at a higher efficiency (>60%), would yield the following benefits: water would be saved, the unmet demand would be reduced, and the additional revenue would be available for financing the development of new sources for expanding the irrigated acreage.” (Water Resources Authority of Jamaica; 1990)

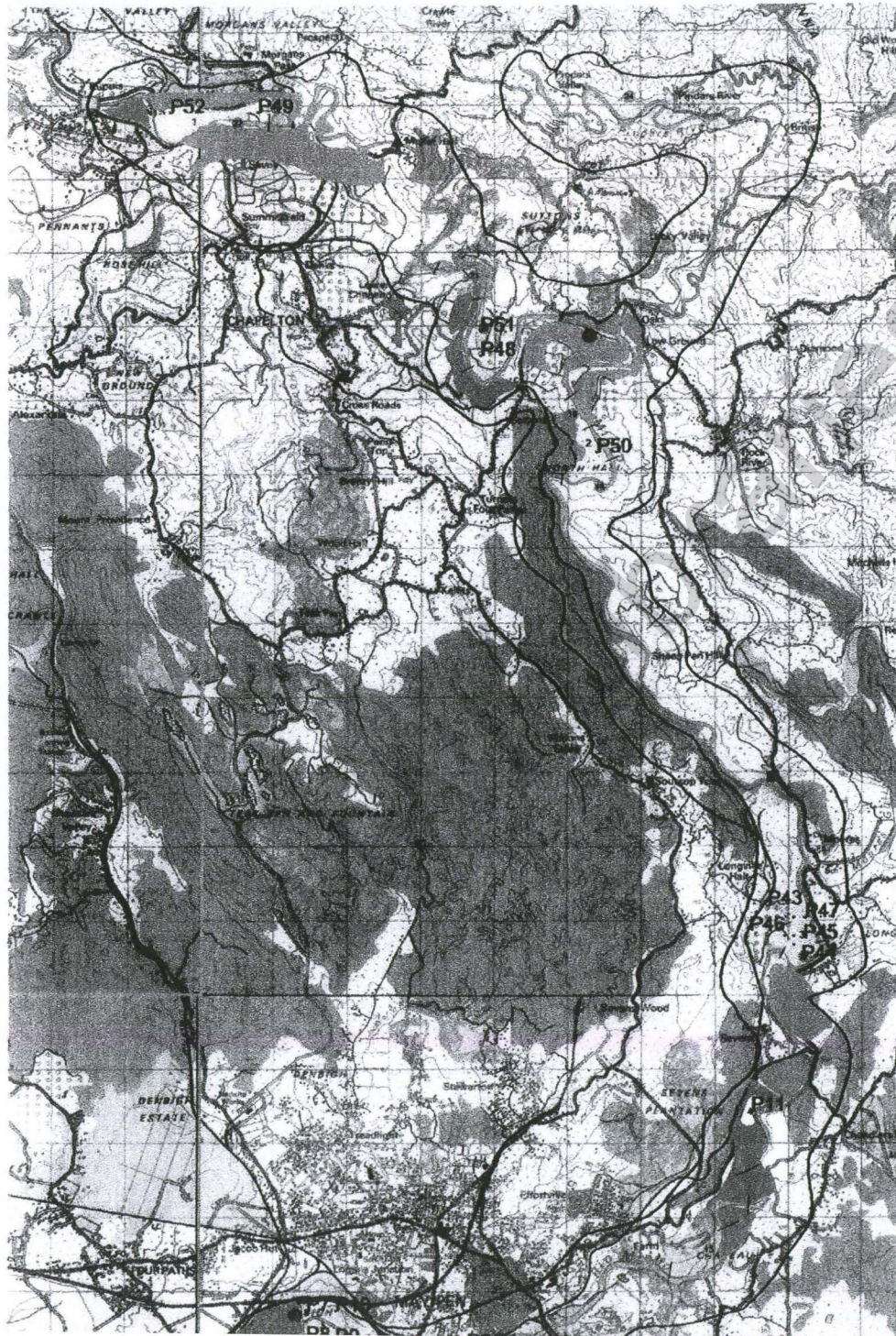
As the Water Resources Development Master Plan (WRA; 1990) also recognized, the viability of agriculture in the study area is therefore inextricably linked to a comprehensive programme of sewage (wastewater) reuse for the irrigation of certain crops and in areas where it will not contaminate the aquifer (e.g. South West St. Catherine plains). The use of effluent for irrigation has the advantage of taking care of the disposal of wastewater, as well as contributing plant nutrients together with irrigation water.

Unfortunately, there are some food groups that Jamaica cannot produce at all, or is unable to produce competitively. These foods have to be imported. The largest single food item that has to be imported is cereal which consists mainly of rice, maize, wheat and flour. This group averages over 80% of total food imports. It should be noted however, that both wheat and maize are raw materials for agro-processing, and therefore any growth in agro-processing will result in concurrent increases in the importation of these commodities.

The second highest category of food imports is fish and meats, averaging 12% of food imports. The single most important food item in this category is poultry, consisting mainly of chicken necks and backs (more than half) and chicken leg quarters. In addition, specialized cuts and meat preparations such as chicken paste are imported for the tourism and the agro-processing sectors. Every effort should therefore be made to see to the continued growth of the poultry industry and aquaculture in the project area.

The Planning Institute of Jamaica (PIOJ) reported that meat and poultry production has been rising steadily; in fact there was a 9.8% increase in the production index for 2003 over 2002. The production index for fish however, recorded a 12.9% decline over the same period. The country is very near self-sufficient for pork and poultry (except necks and backs) and is almost totally self-sufficient for table eggs.

Resources in the Rio Minho Quarry Zone



LEGEND

- Bore Hole
- Boundary of Quarry Licence
- Study Area
- Quarry Location
- Quarry Zone Sign

Resources in the Rio Minho Quarry Zone

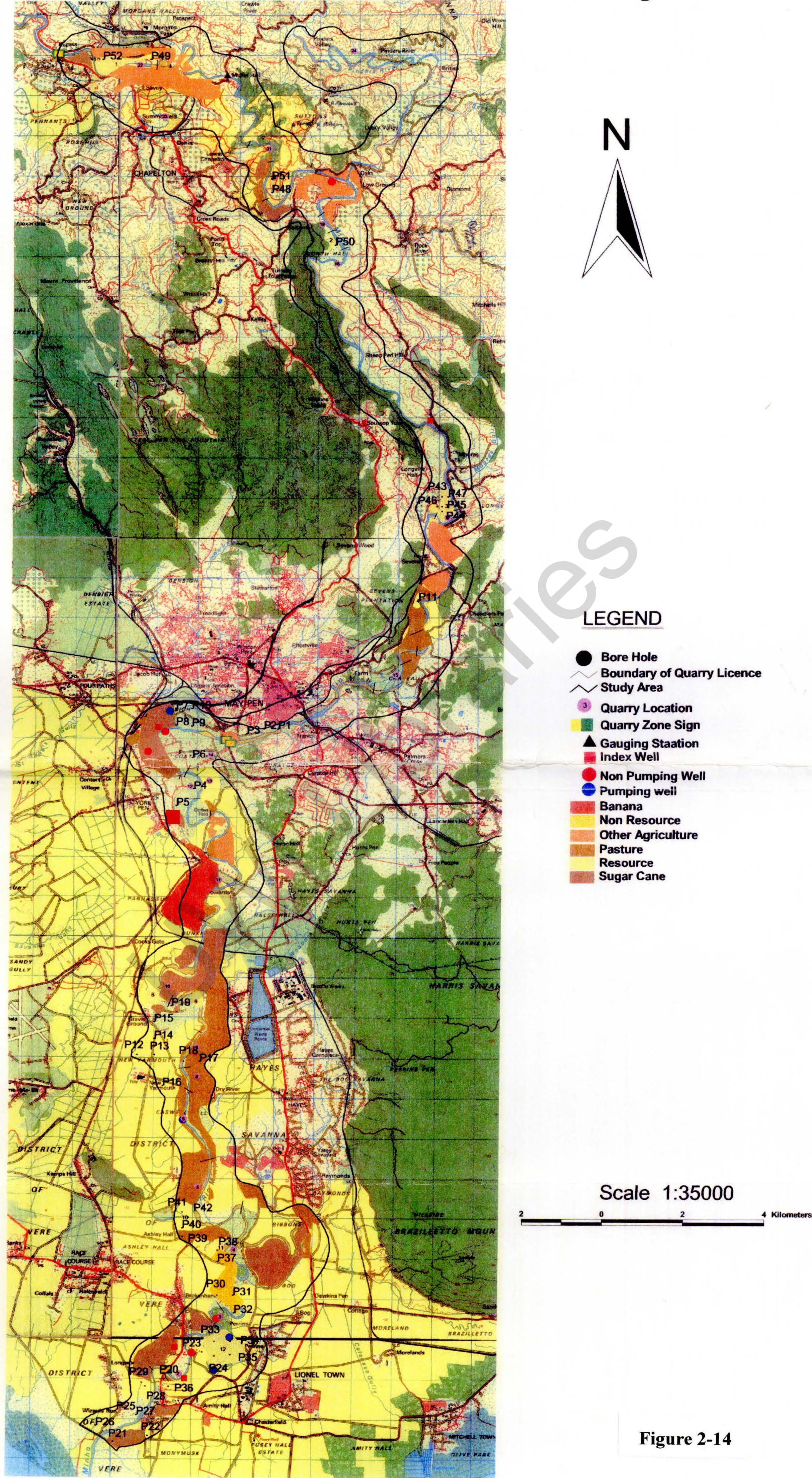


Figure 2-14

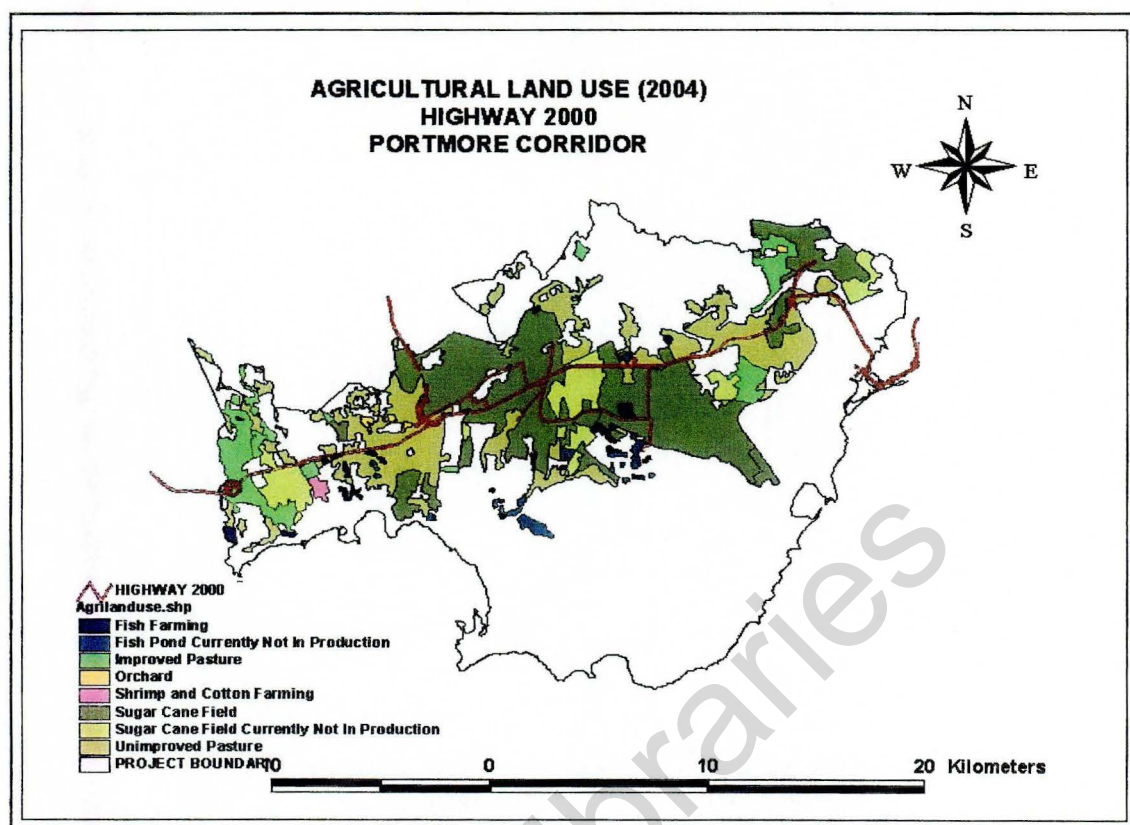


Figure 2-3: Agricultural Land Use (2004) – Highway 2000 Corridor – St. Catherine

Table 2-2: Agricultural Land Use – Highway 2000 Corridor – St. Catherine

Description	Sum_Hectare	Percentage of Total Area
Fish Farming	278	0.66
Fish Pond Currently Not In Production	286	0.68
Improved Pasture	1,476	3.51
Orchard	68	0.16
Shrimp and Cotton Farming	65	0.15
Sugar Cane Field	6,728	16.02
Sugar Cane Field Currently Not In Production	1,446	3.44
Unimproved Pasture	4,751	11.31
Not Under Agriculture	26,902	64.05
Total	42,000	100.00

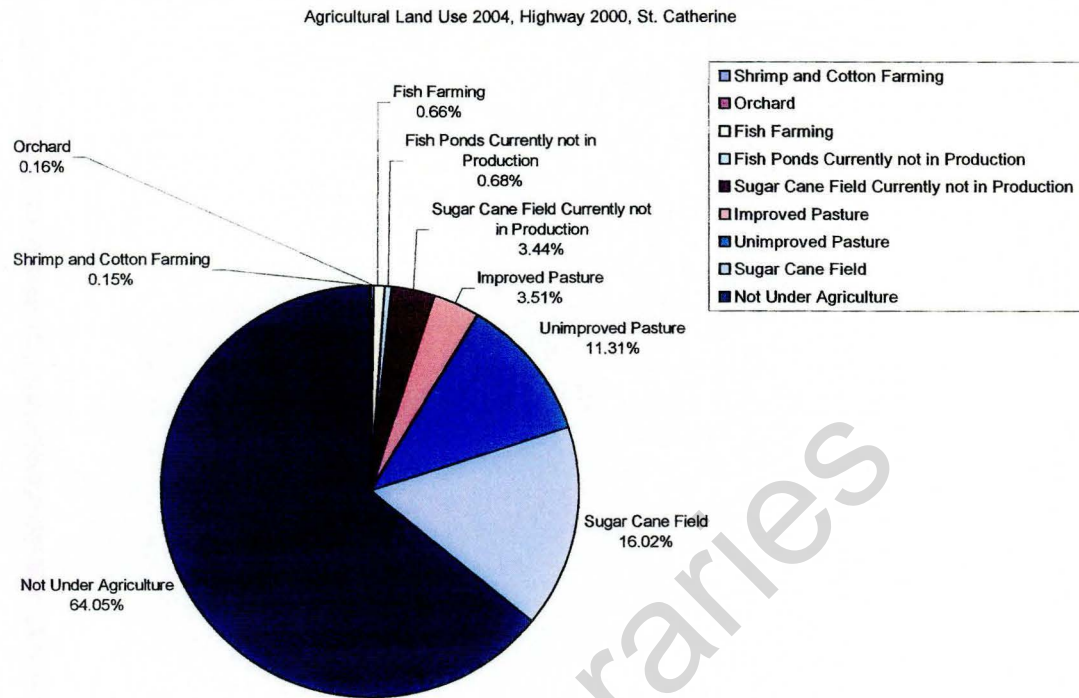


Figure 2-4

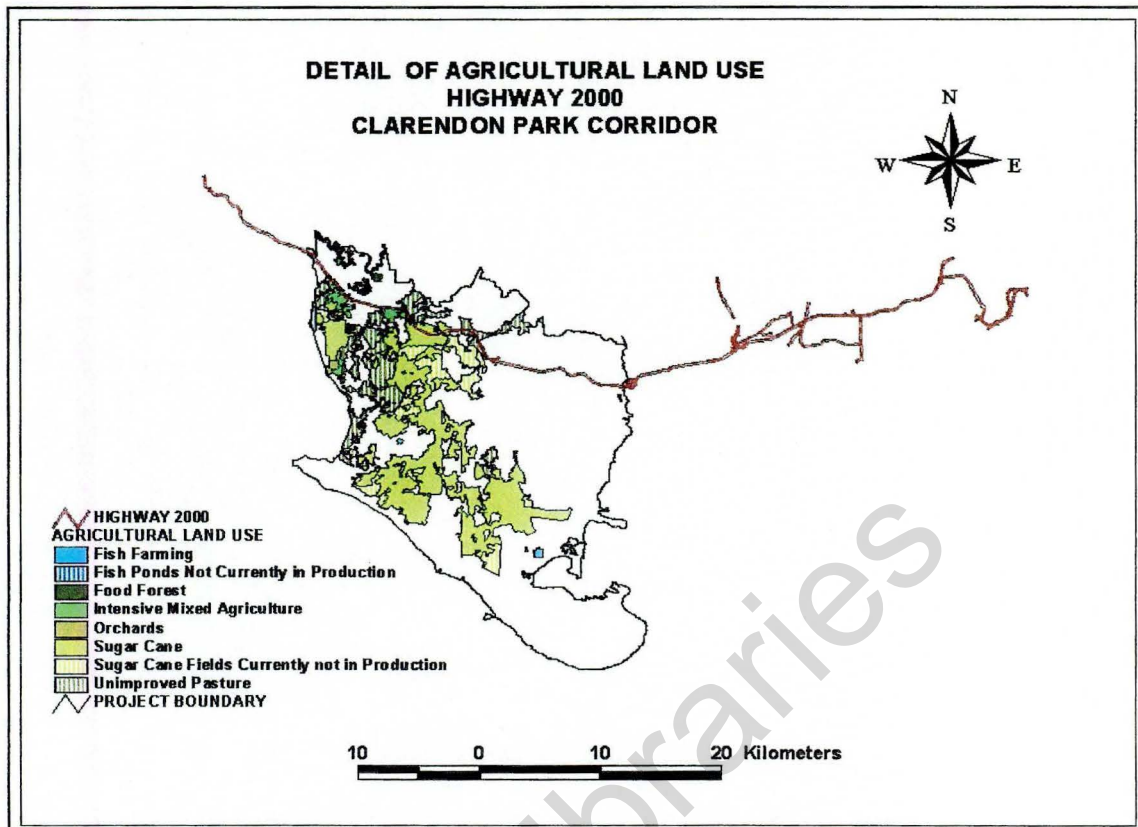


Figure 2-5: Agricultural Land Use (2004)–Highway 2000 Corridor-Clarendon

Table 2-3: Agricultural Land Use – Highway 2000 Corridor- Clarendon

Description	Sum_Hectares	Percentage of Total Area
Fish Farming	115	0.20
Fish Ponds Not Currently in Production	81	0.14
Food Forest	107	0.19
Intensive Mixed Agriculture	638	1.12
Orchards	132	0.23
Sugar Cane	9,562	16.78
Sugar Cane Fields Currently not in Production	2,254	3.95
Unimproved Pasture	3,841	6.74
Not used for agriculture	40,270	70.65
Total	57,000	100.00

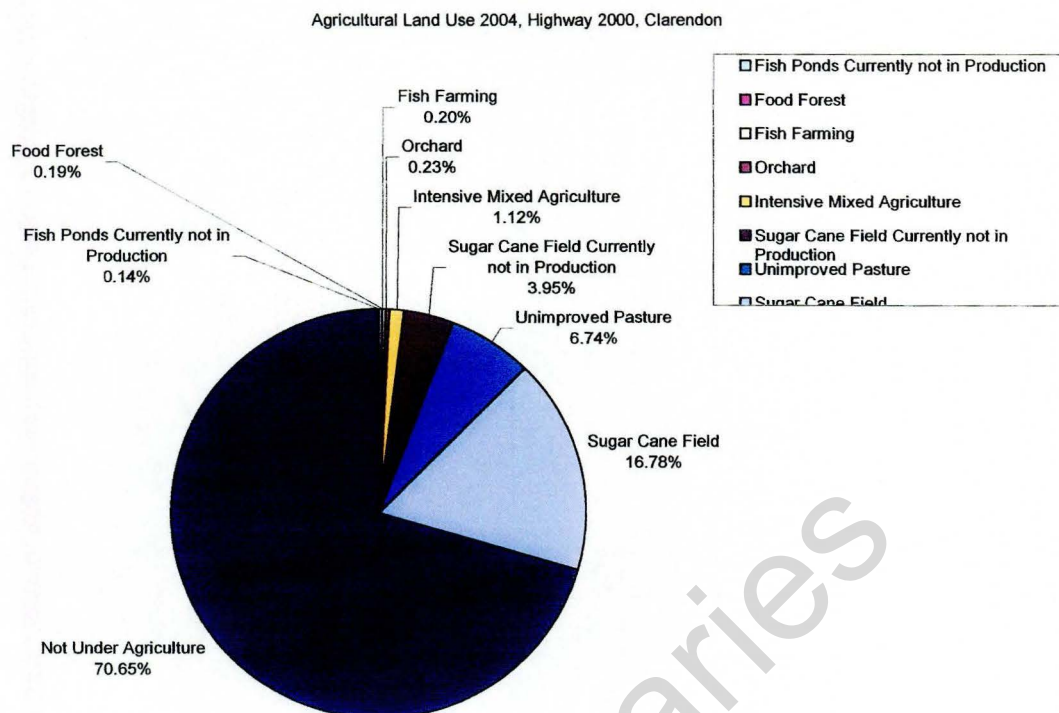


Figure 2-6

The crop activity that utilizes the most agricultural land in the project area is sugar cane. The crop occupies approximately 19,990 hectares of land (or 62% of the land in agriculture) of which only 16,290 hectares (51% of the land in agriculture) was cultivated in 2004 (see Figure 2-1).

Approximately 13,000 hectares of land are currently not in agricultural production for various reasons, chief among which are:

- The inability of local farmers to compete with the cheaper imported products;
- Preadial larceny
- High cost of inputs
- Inadequate market infrastructure
- Government's policy towards certain sub-sectors, in particular the Dairy Sector.

2.3.1 Sugar Industry

The sugar industry within the project area is comprised of cane farming and sugar manufacturing operations. Sugar manufacturing is carried out at two Sugar Corporation of Jamaica (SCJ) factories, Bernard Lodge in St. Catherine and Monymusk in Clarendon. Cane farming is carried out in Clarendon and St. Catherine on SCJ-operated estate farms, as well as at New Yarmouth in Clarendon. The latter, owned by J. Wray and Nephew Ltd, and supplies canes to the Appleton factory in St. Elizabeth, over 50 miles away. There are also cane farmers growing cane on farms ranging in size from 10 to over 200 acres.

It is estimated that 7000 persons, inclusive of contractors are employed directly by the sugar industry, in farm, factory and distillery operations.

Raw sugar is a major export product. Sugar cane is sourced by the SCJ from its own farms, or purchased from cane farmers. New Yarmouth cane is disposed of outside of the parish, to supply the Appleton sugar factory, located in St. Elizabeth. Taken as a composite industry, sugar operations represent a major export of the parish.

The financial difficulties that have plagued the industry since 1974 are rooted in a number of operational problems spanning all segments of this vertical integrated industry. Broadly, these include:

- ✓ Relatively high production cost of sugar
- ✓ Low levels of sugar cane yields
- ✓ Poor quality of sugar cane supplied to factory and high cane to sugar ratio
- ✓ Poor management and supervision
- ✓ Declining sugar prices
- ✓ Low productivity in factory and field operations
- ✓ High interest rates and rising debt burden
- ✓ Inefficient factory operations
- ✓ Under-utilization of factory capacity.

In addition, the industry is facing equally challenging problems in its traditional preference markets overseas. Under the World Trade Organization (WTO) trade agreements as well as agreements reached between the Jamaican Government and the European Union, full liberalization of trade has been deferred until 2009. However, the

combination of import duties and a quota system that will be applied in the interim will have a negative impact on Jamaica's sugar exports.

This, coupled with a failure of the industry to modernize itself, means further erosion of competitiveness and continuing financial losses. At the same time, significant opportunities for industry revitalization exist, provided that the required modernization, rationalization and diversification strategies are successfully pursued. The demonstrated commitment of the Government of Jamaica to the preservation of the industry has been based on the important role it plays in the social and economic life of the country.

The future of the industry depends critically on the policies adopted by the Government of Jamaica, which owns the main assets, as well as the strategies of the Sugar Company of Jamaica, which controls the bulk of manufacturing and cane growing. The vitality of the cane-farming sector in respect of investments in replanting and development of farms is of major short-term importance.

The reduction of production costs is the single most critical factor in the survival strategy of the sugar industry. This relates to manufacturing costs as well as cane production. On the manufacturing side cost reduction is dependent on factory upgrading and rationalization of procurement of canes, while improved performance on the cane farming side is dependent on accelerated and consistent replanting, development of high-quality varieties of cane and efficient field management. In this regard, it should be noted that the impact of the loss of sugar cane lands in terms of equivalent tonnage of cane has been estimated at 12,000 tons. This actually represents about 4.5 % of the estate cane milled by Bernard Lodge. The replacement of these canes is however considered important to the success of the replanting programme.

The investment cost of the required improvements has been estimated at US \$ 96.0 million for factory rehabilitation, while the cost of the replanting programme is \$ 450 million. The Government has made considerable financial contributions in terms of concessions to the Sugar Corporation of Jamaica, writing off of debt and providing of loans to cane farmers; however, the timely implementation of a successful rehabilitation programme continues to be constrained by a number of factors, including: shortage of local private capital, inadequate take-up of available loans by cane farmers, inefficient administration at the industry level and a reactive rather than pro-active policy stance.

The Development Plan of the Sugar Company of Jamaica projects a 15 percent increase in production from 130,000 tonnes in 2004 to 150,000 tonnes in 2005. This will continue an upward trend. In 2003, total production was 109,000 tonnes. The SCJ also intends to set up a refinery to produce 65,000 tonnes of refined sugar, and is exploring other avenues of diversification, including the production of Ethanol, cogeneration of power, distilling and heritage tourism. Crop diversification includes plans to grow peppers and squash on some former sugar lands. Rationalization and modernization of factory and field operations, including expansion of mechanized harvesting, are integral parts of the recovery plan.

Failure to effectively reorganize the industry will lead to its continued deterioration and inability to take advantage of available opportunities. The two privately owned factories, Worthy Park and Appleton have been able to achieve efficient production, and will continue to do so in the near future. A likely scenario is therefore that the sugar industry will continue to show inadequate growth or steady decline, with stagnant cane production and the loss of some acreage. The risk of severe financial crisis and unplanned retrenchment is very real, although Government will continue to play the role of guarantor of last resort, supporting the sugar industry to the limit of its resources. In the context of fiscal constraints in the medium term, however, this will become increasingly difficult.

Programmes of modernization, expansion of cane and diversification of products are central to the industry's development plan. The industry will therefore continue to be a significant player on the regional economy in the short to medium term, employing 80,000 to 100,000 persons directly and indirectly within the project area.

2.3.2 Poultry

Poultry production occupies approximately 747 hectares of land along the corridor. As indicated in Table 2-4 the average annually output of poultry from the project area is approximately 66,000 tonnes which has an annual average value of about \$1.3 billion. Approximately 70% of total national output is produced in this area.

Table 2-4: Poultry Production in the Project Area

POULTRY					
Existing Land Classification	Acreage (ha)	Average annual Production (tonnes)	Value of Production (\$MN)	% of National Output	Recommendations
Land Currently under poultry	747	66,000	1320	70	
Land Currently not in Production		-	-	-	
Land Suitable for poultry (S1-S3)		-	-	-	

Poultry meat is the most important source of animal protein. With increasing consumption, the local industry has grown tremendously over the past decade. However, a massive increase in the importation of cheaper cuts of chicken meat in the recent past seriously threatened the survival of the local industry. This was due mainly to a disproportionate change in demand for chicken breast versus leg quarters in the United

States. The surplus leg quarters were being imported at a price to consumers, below the local production costs.

Government has since instituted a number of measures aimed at ensuring the long term viability of the industry including the temporary imposition of a 260% duty on specified imported poultry products.

Another impediment to the expansion of the industry and ultimately increasing production is the inability to penetrate the U.S. market. This is due to the non-tariff barriers preventing entry into the U.S.A., which is one of the largest export markets.

Total investment in the industry is in excess of US\$80 million dollars; this comprises 1,959 commercial establishments, which includes processing plants, commercial broiler and breeder farms, table eggs farms, hatcheries, feed mills and transport equipment. During 1994 – 2000, the industry converted an estimated 35% of its commercial broiler growing space into tunnel ventilated / high density housing at a cost of approximately US\$30 million dollars. Further, since 1994 over US\$10 million dollars has been spent on processing plant upgrades, and since 1996, hatching capacity has been increasing by 20%. These investments are designed to enhance the efficiency and competitiveness of the industry.

In St. Catherine, poultry farmers with houses accommodating up to 22,500 birds supply on contract to Jamaica Broilers Group, which has its headquarters at Mc Cooks Pen. About 13 poultry farmers in the project area of St. Catherine are currently financed by the Development Bank of Jamaica.

In Clarendon, poultry-rearing is carried out on a limited scale in Rhymesbury and Ebony Park. Poultry farmers in the Clarendon Park, May Pen and Sandy Bay area have contract arrangements with Jamaica Broilers Group. Twenty one (21) poultry farmers in the project area of Clarendon are currently financed by the Development Bank of Jamaica.

Models for this industry are presently been done by the Ministry of Agriculture and will be presented later. Indications are however, that this is a very viable and lucrative industry. An important point to note is that while it requires relatively small amounts of arable lands, the value of the output it generates is huge.

2.3.3 Fish and Shrimp

The Jamaican fisheries sector is comprised of a capture and culture fishery. The Fisheries Sector employs a significant amount of persons both in marine fisheries and aquaculture production. Most persons living in coastal communities rely on marine fisheries for income generation. As a result there are several ancillary occupations generated through fishing. The Jamaican fishery may be described as a coral reef fishery, with most of the species fished being the demersal and deep slope reef finfish. The fishery is primarily artesian but also comprises a quasi-industrial fishery which operates on the offshore banks (Pedro and Morant Banks)

Although the sub-sector contributes less than 1% to total G.D.P. its contribution to employment generation, food security and import substitution cannot be discounted.

Table 2-5 and Figure 2-7 outlines the volume of fish production in Jamaica from 1999-2003.

Table 2-5: Fish Production (MT) in Jamaica (1999-2003)

Type	1999	2000	2001	2002	2003
Finfish	6284	4586	4349	6424	5174
Conch	1366	na	946	550	546
Lobster	330	517	943	309	300
Shrimp	449	37	39	na	na
Tilapia	4500	4500	5000	6200	4200
Other	na	na	51	na	Na
Total Marine Production	8,429	5140	6328	7283	6020
Total Tilapia Production	4500	4500	5000	6200	4200
Total Fish Production	12,484	9,640	11,328	11,483	10,220

Source: Fisheries Division

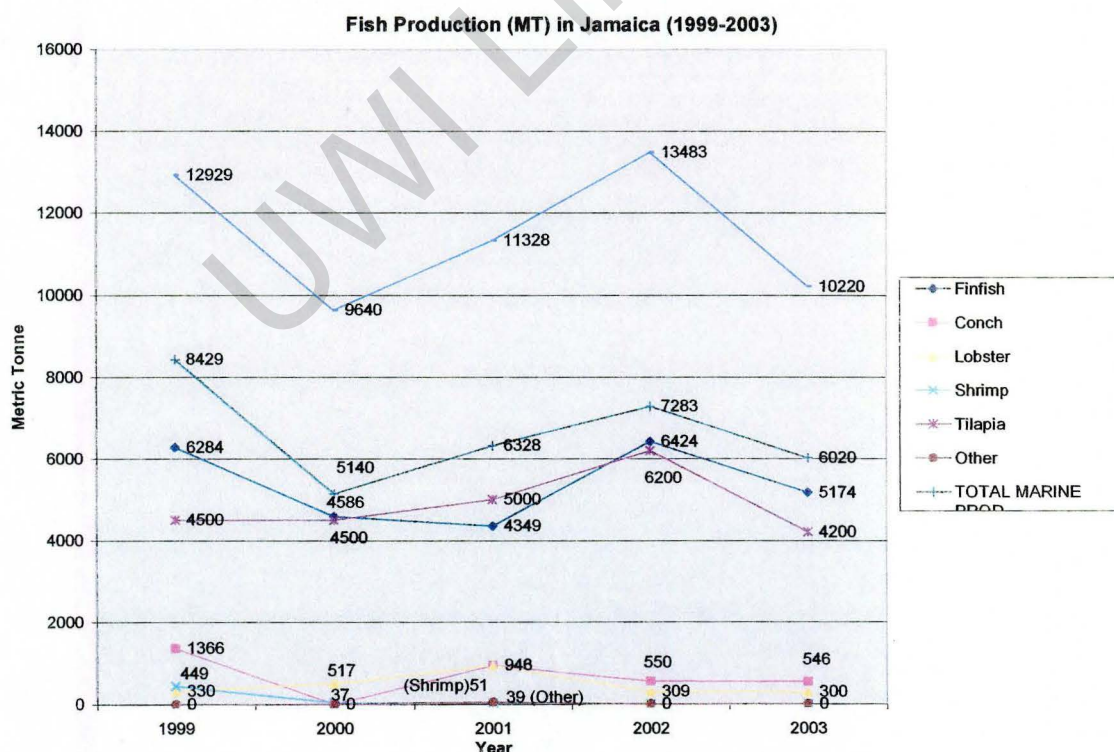


Figure 2-7

2.3.3.1 Ocean Coastal Water Fishing

Fishing provides direct employment for approximately 1,616 persons in St. Catherine and Clarendon, and is the main economic activity in a number of towns and villages along the coast, e.g.: Old Harbour Bay in St. Catherine and Rocky Point in Clarendon.

Years of over fishing the reef have reduced fish stocks below sustainable levels however, and most fishers operate offshore, in areas like the Pedro Banks. The current economics of offshore fishing makes it extremely difficult for small artisanal fishers to survive without Government subsidies, and therefore the long-term prospects of this type of fishing are doubtful.

Marine fishing: Seven Hundred and Seventy Seven (777) or 48% of the fishermen in the project area are located within the parish of St. Catherine. The main fishing beaches in the parish, according to a 1997 and 2003 survey, are:

Fishing Beach	Registered fishers	Registered boats
Passage Fort	6	11
Port Henderson	128	139
Hellshire Bay	98	55
Old Harbour Bay	545	263
Hunts Bay (Causeway)	297	200
Greenwich Town	202	172
Total	786	840

Fishermen operating in the Hunts Bay and Greenwich Town area add a further 499 fishers and 372 boats to the number operating in St. Catherine. Although these are officially located in Kingston and St. Andrew their operations are directly impacted by the Highway corridor.

Clarendon accounts for 839, or 51 percent, of the fishermen operating in the project area. The main fishing beaches, and the numbers of fishermen and boats, based on surveys in 1997 and 2003, are as follows:

Beach	Registered Fishers	Registered boats
Salt River		18
Welcome	43	19
Mitchell Town	21	10
Bournemouth	119	61
Portland Cottage		
Barnswell Dale	2	12
Jackson Bay	9	8
Rocky Point	537	249
Beauchamp	42	18
Knights		3
Farquhar's Beach	66	34
Total Clarendon	839	432

Source: Fisheries Division

2.3.3.2 Operation of Fish Farms

Commercial aquaculture was introduced to Jamaica through a USAID funded project in 1975. The island has climatic conditions suited to year-round production for aquaculture.

The total acreage in fish production within the study area is 830 hectares, average production per annum is 7450 tonnes and the average annual value of production is approximately 1.2 billion, the area accounts for 70% of total output. These findings are summarized in Table 2-6 below.

Table 2-6: Fish Production in the Project Area

FISH					
Existing Land Classification	Acreage (ha)	Average annual Production (tonnes)	Value of Production (\$MN)	% of National Output	Recommendations
Land Currently under fish	493	7450	1213	70	
Land Currently not in Production	367	-	-	-	
Land Suitable for fish (S1-S3)	830	-	-	-	

Sixty-six (66) of the 77 fish farmers in the project area are located in St. Catherine. These operate in fishing districts which include Hill Run, Hartlands, Bushy Park, Lloyds Pen, Nightingale Grove and the general old Harbour area. Jamaica Broilers Group procures supplies of pond fish from contractors in these areas. The Jamaica Agricultural Development Foundation is also involved in shrimp farming on approximately 300 acres and employing 70 persons at Brompton estate. This is one on 5 fish farms being financed by DBJ in the project area of St. Catherine.

Eleven (11) of the fish farmers in the Highway 2000 corridor are based in Clarendon. Jamaica Broilers Group operates approximately 200 fishponds on 60 acres (24.9 ha.) in Spring Plain, mainly producing fingerlings which are sold to contract farmers located around Hill Run in St. Catherine. This activity employs about 20 full-time workers. About 8.4 hectares of fishponds are established at Ebony Park HEART Academy. Fish farming is also carried on in Vernamfield.

Fish Farming in Clarendon has in the past been centred around Mitchell Town; however, the approximately 100 fishponds on 200 acres (80.0 ha.) have not been in operation for the past seven years. During its period of operation, the fish farm was a major employer of labour in the area, providing work for up to 70% of the working population. Recent attempts by an investor to convert some 100 acres to saltwater shrimp farming have reportedly failed to obtain approval from the environmental agency NEPA.

To determine the viability of fish production in the study area three models were done, at 5, 100 and 500 acres, the results of which are summarized at Table 2-7 below.

Table 2-7: Values of Economic Variables

SIZE MODELS	NPV	IRR%
5 Acres	-ve	-
100 Acres	\$159,829,328	54
500 Acres	\$1,206,063,046	94

As seen in the table fish production is not viable at the 5 acre level, while the 100 acre and 500 acre models report positive NPV indicating that at those levels fish production is viable.

2.3.3.3 Challenges

The main challenges facing the sub-sector are:

1. The lack of proper organizational and management skills of fisher folk
2. Inadequate enforcement of fisheries related legislation
3. The Fisheries Division requires institutional strengthening and capacity building to facilitate sound management of the fisheries sector
4. Poor infrastructure for post harvest handling
5. Poor infrastructure for the berthing/docking of fishing boats
6. Coastal and offshore reef fin fisheries are overexploited
7. Competition from other coastal zone users e.g. tourism, shipping, recreation
8. Habitat degradation
9. Piracy at sea
10. Lack of tenure of fishing beach
11. Open access management strategy for marine fisheries
12. Improper fishing practices e.g. use of destructive fishing methods, small mesh sizes etc.

A Ministry Paper entitled “Strategies for the Conservation and Sustainable Exploitation of the Marine Fisheries Sector” was recently developed. It outlined, short, medium and long term strategies for the development of this important sub-sector. Some of the issues outlined include an over exploitation of the inshore fishery characterized by declining catch rates increasing use of illegal fishing methods such as dynamiting and small sized

mesh nets; and inadequate levels of fines for fishermen poaching on Jamaica off shore conch and lobster resources.

The sheer size of the economic exclusion zone available to Jamaica creates opportunities to expand and sustain production of fish to meet local and export market opportunities. In addition, the European Union (EU) accreditation for the export of fish, conch and other marine products has opened the way for Jamaica to increase exports in fish. It should be noted that world demand for fish outstrips current world fish production of approximately 121 million tons, of which, aquaculture accounts for almost 25% of this production. It is estimated that 70 million pounds (fish fillet) is required to satisfy local/regional demand for the fast food and restaurant trade. In comparison to this potential, Jamaica's trade data shows that fish exports were valued at J\$417,467 million; while imports amounted to in excess of J\$1.6 billion.

The Ministry's Plan for the development of the Fisheries Sector includes the following:

- Re-organization of the Fisheries Division and enhancement of proper institutional capacity;
- Establishment of the proper legal framework
- Enhancement fisheries enforcement
- Establishment of a comprehensive fisheries data base;
- Development of management policies for each culture of fishery;
- Management of international conventions relating to the Pedro Bank and other offshore banks
- Rehabilitation of fishing out-stations and infrastructure

The fish farming or aquaculture industry is expected to grow in the medium term, based on expanding domestic demand as well as continued export opportunities. Jamaica Broilers Group, the major producer, plans to expand its operations during the next three years, and is expected to generate additional employment within the project area. The portfolio of investment projects registered by JAMPRO includes two proposed shrimp farming operations in the project area, representing investment expenditures of \$ 396 million, and projected employment of 400 persons.

2.3.4 Dairy

The dairy sector within the corridor occupies approximately 1,218 hectares of arable land. There are 16 functional farms in Clarendon (Dairy production in the area has, however, been on the decline, with the number of dairy farms declining from 52) and 3 in St. Catherine. Some 100 heads of dairy cattle are maintained at the Ebony Park HEART Academy. See production levels at Table 2-8.

The average size farm in Clarendon is 24 hectares while in St. Catherine it is 150 hectares.

Table 2-8: Dairy Production in the Project Area

DAIRY					
Existing Land Classification	Acreage (ha)	Average annual Production (tonnes)	Value of Production (\$MN)	% of National Output	Recommendations
Land Currently under livestock	1,218	1,024	21	5	
Land Currently not under livestock		-	-	-	
Land Suitable for livestock (S1-S3)		-	-	-	

The challenges facing the local Dairy Industry has mainly to do with the increasing competition from cheap imported milk solids. The industry has on several occasions resorted to dumping millions of litres of milk as there was no market for the product. The price received by the farmers (per litre) was less than the cost of production. Local milk production therefore fell from 28 million litres in 1998 to 20 million litres in 2002.

Table 2-9 provides the volume of production (litres) for grades A and B from 1998 – 2002.

Table 2-9: Milk Production (litres) 1998-2002

Years	1998	1999	2000	2001	2002
Grade A	25,068,906	24,889,571	23,772,538	20,969,300	19,692,380
Grade B	2,502,815	2,593,762	1,686,610	1,158,715	771,726
Total	27,571,721	27,483,333	25,459,148	22,128,015	20,464,106

Source: Jamaica Dairy Board

The table indicates that there was an overall decline of 7.5% in milk production between 2001 and 2002, with grade B milk declining by 33.4%. The reduction in grade B milk indicates that small farmers were most severely affected by the declining market conditions and suggests the need for urgent remedial measures to arrest and reverse the erosion of a sector, which has traditionally contributed significantly to rural and socio-economic stability.

The Ministry of Agriculture has instituted the Milk Marketing Project to assist in this regard. The goal of the project is to provide a reliable market for locally produced milk and ultimately increase income to dairy farmers and reduce foreign exchange expenditure on milk solids. This will be achieved through a reduction in the cost of processing and packaging of milk and a reduction in the marketing margin. The project will involve the establishment of milk and milk products and will be implemented by the Jamaica Dairy Farmer's Federation under the supervision of the Ministry of Agriculture.

The major components of the project includes the establishment of a project unit, central dairy plant, four milk collection and chilling centers, twenty retail outlets and acquisition of four collecting tankers and ten (10) vans.

It should be noted that the large dairy farmers depend more on imported feed concentrates than on pasture in the production of milk. However, in the case of small dairy farmers, production is based largely on pasture. It has been decided that the basic thrust of the dairy sector will be to increase milk production through small farmers who need little capital outlay and who have lower cost of production. The focus on small farmers and pastures will help to make milk production more efficient and globally competitive.

Within the project area a number of dairy development projects have being implemented some of which are:

- Rymesfield Development project, for fodder production
- Jamaica Dairy Federation Ice Cream Manufacturing and Marketing Project

2.3.5 Livestock

This sub-sector is mainly directed towards the wider domestic market. Small livestock, including goats and pigs have a more limited local market, being sold mainly in surrounding districts. Apiculture has a potentially wider domestic market, but is restricted by supply constraints.

Table 2-10: Livestock Production in the Project Area

LIVESTOCK					
Existing Land Classification	Acreage (ha)	Average annual Production (tonnes)	Value of Production (\$MN)	% of National Output	Recommendations
Land Currently under livestock	1,476	2,785	323	34	
Land Currently not under livestock	8,592	-	-	-	
Land Suitable for livestock (S1-S3)	9,068	-	-	-	

Livestock is therefore aggregated to include, pigs, sheep and goats and beef cattle. The annual output for each within the project area was, pork (491 tonnes), chivron & mutton (55 tonnes), and beef (2,238 tonnes). The aggregated values are displayed in the Table2-10. The average annual value of production is J\$323MN. The total amount of land that this sub-sector currently occupies is approximately 1,476 hectares, with beef cattle accounting for about 94% of land occupied. Sheep and goats tend to be nomadic and therefore do not occupy a significant area on a permanent basis.

This is a major activity in the Bushy Park, Nightingale Grove and Church Pen area of St. Catherine, and includes cattle, goats, sheep, pigs, poultry and to a lesser extent, horses.

Small stock has replaced cattle as the main form of livestock. One of the major farms in the area has 2,300 heads of goats and 240 pigs. The market includes farmers and householders from the immediate area as well as neighboring parishes, and distribution includes sales through supermarket chains.

There are approximately 1,100 registered race horse owners, and an estimated 350 persons are employed on breeding farms concentrated mainly in the Caymanas, Portmore and Bernard Lodge areas.

Information is not available for the beef sector; therefore analysis of its viability was not conducted. The results from the models for the other two sectors indicate that they are profitable ventures.

2.3.5.1 Beef

The marketing of beef produced locally has emerged as one of the most pressing concerns facing the local livestock industry. A significant decline in the demand for local beef in recent years has impacted negatively on the financial viability of the industry forcing cattle farmers to absorb accumulated losses and to cut production drastically.

Several factors have been cited for the industry's decline, chief among which are, changes in consumers preferences due to health concerns linked to the negative perception of "red meat" as well as the outbreak of Mad Cow and Foot and Mouth diseases in Europe.

Other challenges facing the industry relate to the inability of locally produced beef to compete, both in terms of price and quality, with its imported counterpart. Locally produced beef does not meet international requirements, while production costs are undesirably high. Inability to meet international standards is due to the generally poor state of the slaughtering facilities as well as the unavailability of modern meat processing facilities. In addition to the challenges of slaughtering and processing, the quality of the raw material (live animal), is with few exceptions also of poor quality.

2.3.5.2 Pigs

The pig sub-sector in Jamaica has successfully grown from what was a traditional unorganized operation to a system where almost 90% of pigs are now reared under quality management conditions.

The sub-sector is divided into two distinct segments:

- A large number of small farmers with backyard operations of less than ten (10) pigs each, the majority of whom utilize local feedstuff and produce non-quality pigs.
- Medium to large-scale producers utilizing formulated rations and producing quality pigs.

A pig improvement project has recently launched within the corridor. It is a project which was the initiative of New Port Mills Limited and Donaldson International, who sought funding from the Agricultural Support Services Project to establish a Core Breeding Facility at Bodles Research Station in St. Catherine.

Pig-rearing is being carried out on a limited scale by small farmers in the Rhymesbury area, as well as at Ebony Park in Clarendon.

2.3.5.3 Goats

Since early 1990 the Government through the Ministry of Agriculture has been implementing in collaboration with the European Economic Council (EEC) a goat production programme with the following objectives:

- The organization of goat breeders into a Breeders Association in order to upgrade local breeds;
- The establishment of a revolving buck programme;
- Farmer training in strengthening, skinning and preservation techniques as well as on-farm cheese making.

With the implementation of the above mentioned programme and the formation of the Goat Breeders Society of Jamaica, goat farmers have demonstrated renewed interest. In addition, the Boar and Nubian were introduced to upgrade the local stock and has made a significant level of impact. For example weight gains of upgraded kids over native kids were estimated at 80% in the first year.

The Ministry is currently implementing a project costed at J\$10 million aimed at building on the recent progress made in the industry. Some of the major activities to be carried include:

- Provision of a nutritionist to conduct research into local foods for goats;
- Support to Goat Breeders Society of Jamaica with respect to information and goat husbandry.
- Training in husbandry practices, farm management, record keeping;
- Maintenance of a herd book
- Promotion of specialized cuts;
- Distribution of additional breeding stocks;
- Production of commercial goat ration;
- Hay production;
- Feed lot development, slaughter and processing of goat flesh;
- Promotion of specialized meat cuts;

All of the above will be carried out using the facilities at Bodles in St. Catherine.

In Clarendon, goat-rearing is a major agricultural activity around Mitchell Town, with markets in the surrounding areas. Goat-rearing is also carried out on a limited scale in the Rhymesbury and Ebony Park areas, and is rapidly increasing in the Clarendon Park, May Pen and Sandy Bay areas.

The sub-sector has benefited from several projects by local, regional and international organizations, which have lead to sustained development and distribution of improved breeds. The Ministry of Agriculture (MOA), the Caribbean Agricultural Research and Development Institute (CARDI), Prairie View University, the University of Maryland and RADA, have all provided support to the industry.

The sub-sector generates only 10.3% of the local demand for chevon, which suggest that there is tremendous scope for the further development of the sub-sector.

2.3.5.4 Apiculture

Bee-keeping was also a major economic activity in the Mitchell Town area of Clarendon, prior to its destruction as a result of disease. The Ebony Park HEART Academy operates apiaries on 20 acres (8.0 ha.) of land.

2.3.6 Domestic Crops

A variety of food crops are grown in the area, including:

- Tree crops - ackee, mangoes
- Bananas
- Vegetables
- Other crops

The main producing areas are Bushy Park, Nightingale Grove and Church Pen and Old Harbour in St. Catherine and Kemps Hill, Gimme Me Bit, Vernamfield, Rhymebury, Spring Plain, Ebony Park, Clarendon Park, May Pen and Sandy Bay in Clarendon.

The Domestic Food Crop and Marketing Project was implemented in 1998, in response to a decline in domestic production as a result of a severe period of drought during the previous two years.

The objectives of the project are to:

- ✓ Increase production and productivity of selected crops for both local and export markets
- ✓ Focus on improved technologies of production which have distinct competitive advantages for the production of selected crops.
- ✓ Improve the farmers ability to distribute and market produce by:
 - Providing distribution facilities and standard crates for packaging
 - Develop market links with private sector individuals and large exporters on specific crops.
 - Identify geographic locations to establish crops that are known to have competitive advantages in the market place
 - Establish 67 hectares of demonstration plots in designated locations
 - Undertake research programmes for selected crops included in the project
 - Supply farmers with certified high quality, disease-free seeds and seedlings (tomato, sweet pepper and scotch bonnet pepper).
 - Assist farmers in the preparation of those lands that are to be used in the project.
 - Assist farmers with inputs such as fertilizer etc.

Farmers in the project area have benefited from the project. Table 2-11 outlines the achievements of the project from 2002–2004.

Table 2-11: Domestic Crop Project along HW2000 2001 - 2004

Years	Parishes					
	St. Catherine			Clarendon		
	Area Planted (ha)	Amount Harvested (Tonnes)	Gross Returns (\$'000)	Area Planted (ha)	Amount Harvested (Tonnes)	Gross Returns (\$'000)
2001 – 2002	82	784	14,500	210	1654	35,000
2002 – 2003	58	542	10,162	58	603	14,037
2003 – 2004	42	503	9,470	36	536	11,230

Source: Domestic Food Crop Production and Marketing Project

Some of the areas where the project has been implemented are: Thetford, Bushy Park, Caymanas, Hayes, Denbigh Crawl, Parnassus, and Rymesbury.

The challenges faced by the Domestic Food Crop sector include structural problems such as land suitability. Productivity in the sector is also constrained by the less than adequate access to critical agricultural support services. Foremost of which are marketing, credit, research and extension as well as rural infrastructure such as roads and irrigation. The sector is also at times affected by excessive rainfall or severe drought.

2.3.6.1 Tree Crops

Given the delicate balance that will have to be struck in respect of the allocation of water among the respective sectors and the possibilities of reuse of waste water, it will be important to look at crop types that will utilize less water.

In this regard, it is proposed that tree crops – namely fruit trees and commercial timbers be considered.

2.3.6.1.1 Fruit Trees

The Ministry of Agriculture recognizes the importance of value added production and in particular food processing and the opportunities it creates for the development of the agricultural sector. Through the linkages created with other sectors like Tourism, the Food Industry and prime markets both locally and overseas, value added production can result in significant growth for the agricultural sector.

The “Fruit Tree Crop Project” was established to ensure that future raw material needs for the food processing sector could be adequately met. Orchards were established for ackee, avocado and a range of tropical fruits which can provide the base for a viable food processing industry (see Table 2-12).

This project was implemented island wide the objectives being to:

- a. Increase long-term income by developing and producing commercial orchards of traditional fruit tree crops.
- b. Reduce environmental degradation and encourage long-term conservation measures.
- c. Encourage the development of food processing industry by the provision of raw materials.
- d. Increase the availability and diversity of economically viable and nutritionally important fruit tree species.
- e. Provide foreign exchange through the exports of fresh and processed fruits
- f. Provide employment and income for rural households.

Table 2-12: Fruit Trees Planted within the Study Area 2000-2004

Location	Type of Activity	Area (Hectares)
Bernard Lodge	Ackee	18.00
Bernard Lodge	Cashew	2.00
Bushy Park	Cashew	1.50
Brompton	June Plums	0.50
Brompton	Sour Sop	0.25
Rocky Settlement	Ackee	6.00
Rymsberry	Ackee	1.50
Gimme-me-bit	Ackee	3.20
Osborne Store (Toll Gate)	Ackee	10.00
Amity Hall	Ackee	2.00
Tethford	Ackee	2.00
Colbeck	June Plum	0.50
Colbeck	Avocado	0.25

Source: Fruit Tree Crop Project

2.3.6.1.2 Commercial Timbers

Local and international demand for wood and timber products has been rising steadily, resulting in a resurgence of tree planting projects in the Central America region, notably in Panama, Costa Rica and Belize, on relatively flat land. With its limited land resources, Jamaica had concentrated commercial forest plantation activity on the poorer soils in the mountainous regions of the country where forestry is now placing emphasis on its role in watershed management, biodiversity conservation, outdoor recreation and national park development.

It is proposed that large-scale commercial forest plantations be established in the project area which is relatively flat and very accessible. It would be necessary to select fast-growing species of improved genetic stock and high timber quality, as well as to ensure adequate institutional capability to manage the operations, with technical supervision from experienced forestry professionals.

There is no doubt that forest plantation establishment tends to rely on incentive strategies of one form or another and that plantations are successful when linked to more generous incentive packages. The National Forestry Plan (NFMCP) contains at Appendix 2.6 a revised Forest Policy containing a list of proposed incentives to encourage investment in forestry development activities. The list provides a useful introduction to the kind of incentives that should be in place to facilitate successful large-scale tree planting schemes.

Ideally, these lands will produce highly marketable crops and products while employing a substantial number of persons.

The essential solution then is to create wealth by investing in the land and looking after the investment until it matures in 15 to 25 years. In this regard, the Forestry Department estimates that establishment of one hectare of forest plantation costs J\$66,450 (approx. US\$1,100) for labour and materials over a three-year period. What would be the likely benefits from such an outlay? Perhaps a look at the Panama and Thailand experiences can give some useful indications of market possibilities.

In Panama, it is estimated that the yield of one hectare of Teak plantation during the rotation would be:

- | | | |
|------------|-----------------------|---|
| • 12 years | 8.67 m ³ | worth US\$2,254 for local grade logs |
| • 18 years | 26.40 m ³ | worth US\$24,262 for export grade logs |
| • 20 years | 29.11 m ³ | worth US\$32,926 for export grade logs |
| • 25 years | 128.95 m ³ | worth US\$180,915 for export grade logs |

Thus the total return would amount to US\$240,357 after 25 years.

However, technological advances have been made in Thailand where it is estimated that one hectare of Teak plantation grown from tissue-cultured clones will yield 420 m³ of logs worth US\$168,000 in 15 years, after thinnings at ages 7 and 11 years. In this case the final value may be lower, but the rate of return would be much higher.

Further financial gains could accrue if plantation-grown timber were processed locally and exported to satisfy niche markets. For example, imported plantation-grown Teak sawn lumber is currently being sold in Miami for US\$7.75/board ft., i.e. US\$3,278.25/m³. Similar returns are obtainable from Mahogany which, with Teak, is well known to produce raw material for the highest quality furniture and wood products.

2.3.7 Agricultural Support Services

Since the structural reform of the agricultural sector which began in the 1980's, Government has been making efforts to rehabilitate the sector and at the same time adjust the economy to the growing demands of a more liberalized economy. The Ministry of Agriculture has the mandate to provide the support services which can allow the sector to become more efficient and competitive. While the Ministry has the basic institutional capacity to provide these services, budgetary constraints have limited its capacity to maintain and improve them. They therefore require strengthening and in some cases, development of growth in the sector is to proceed apace.

Against this background, it was considered vital that the government develop a project which could provide a mechanism through which a significant contribution would be made to improve agricultural support services. Consequently, the purpose of the Agricultural Support Services Project (ASSP) is to enhance the competitiveness of Jamaica agriculture in domestic and global markets, and to make a substantial contribution to the goal of increasing the incomes of agricultural producers. This is to be accomplished by developing critical capacities for the development of effective agricultural commodities produced in Jamaica, as well as those traded internationally, and through the development and implementation of high pay off productive projects in selected rural areas (see Table 2-13).

Table 2-13: ASSP Projects in the Study Area

Projects	Location	Acreage (Ha)	Total Invested (\$MN)	Expected Outputs
Tilapia expansion Project (IPU technology)	Longville Park Clarendon	40	8	
Small Ruminant Project	Amity Hall St. Catherine		8.5	
Rymsfield Development Project (Fodder Production for Dairy)	Rymesbury Clarendon		18	
Pig Industry Development Project.	Bodles St. Catherine		53	
Jamaica Dairy Federation Ice Cream Manufacturing And marketing Project	St Catherine		16.5	
Condiment Expansion Project.	Amity Hall St. Catherine		16	
Hill Run Fish Farmers Association, Water Distribution Project.	Hill Run, St. Catherine		22.7	

Source: Agricultural Support Services Project

2.3.8 Marketing

The main challenges to the marketing of local agricultural produce are:

- Inadequate islandwide distribution of products
- Inconsistency in quality and supply to the market
- Poor packaging
- Absence of a synchronized production/demand relationship

The Government is at present trying to address these concerns through the Agri-Business Information System (ABIS), which is a programme being developed by RADA. This system will process data on stakeholders and their activities and be a repository of technical information. ABIS will assist stakeholders to buy and sell produce, and to

forecast key agricultural variables. The system will also boost capacity and competitiveness, while measuring performance.

Another programme that is currently being implemented is the Centralized Marketing System, which is a limited liability company and is operated by the Jamaica Agricultural Society (JAS). The company engages in the wholesale buying and selling of local fresh produce (vegetables and root crops). It purchases top quality fresh produce from the country's farmers using the existing Agricultural Marketing Corporation (AMC) plants as collecting points. Markets for the produce include exporters, retailers, wholesale distributors, higglers and the hotel chain.

2.3.8.1 The Spanish Town Farmers' Market

Direct marketing through farmers' markets, enables the owner of the product to assume full direct-marketing functions in order to complete a sale to the final consumer. Farmers' markets offer many advantages for small-volume producers: opportunities for an increase in income, reduced transportation and distribution costs, an outlet for products that otherwise might not be sold or consumed, and direct interaction with buyers.

Increased transportation costs and consumers' increased awareness of the importance of fresh vegetables and fruit in the diet are creating increased opportunities for marketing local production to consumers through farmers' markets.

A good variety of locally grown, high quality, fresh produce and livestock at competitive prices will be the basis of the proposed facility.

A wholesale marketing area can also be developed in conjunction with the farmers' market which is considered to be complementary to commercial produce wholesaling.

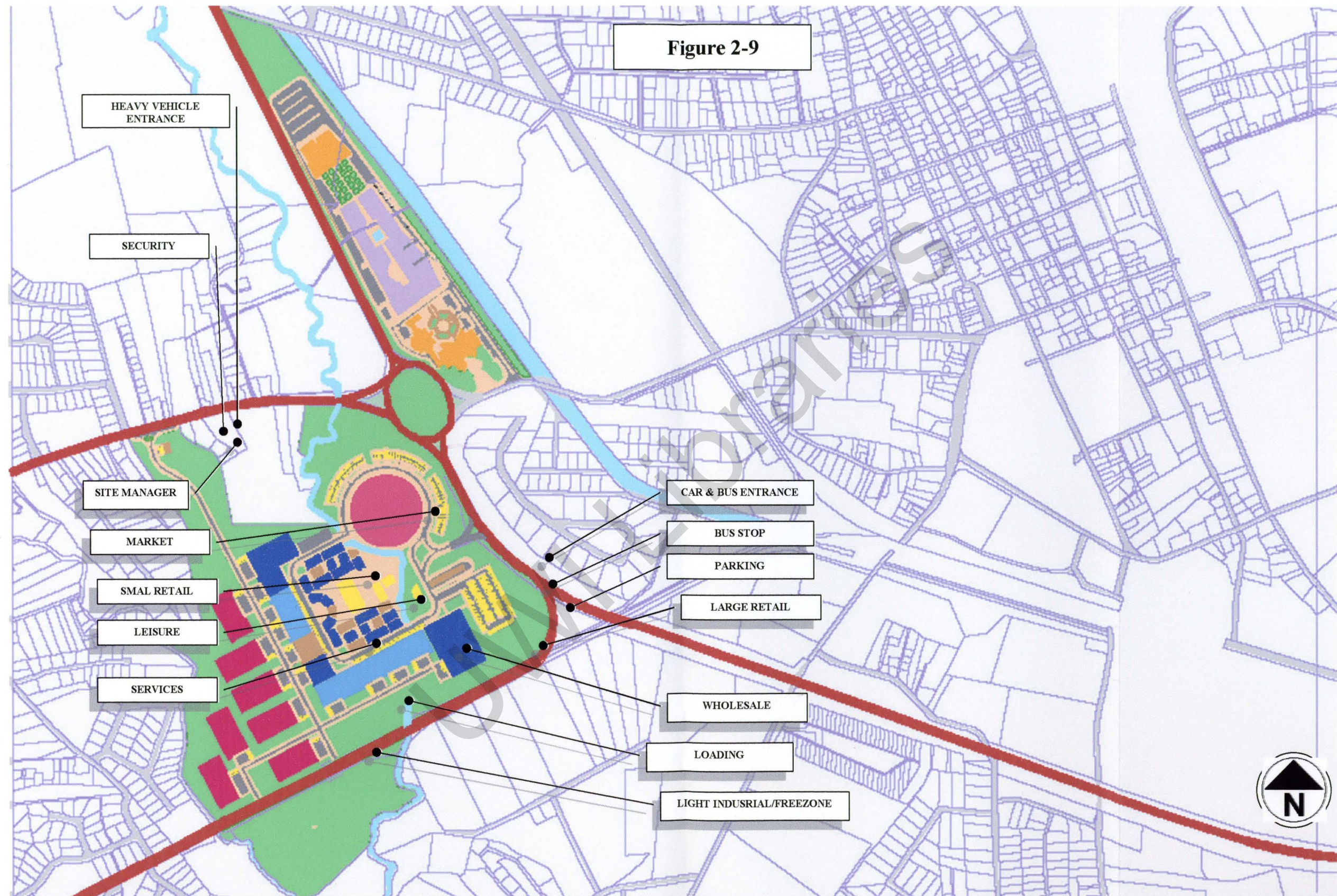
The farmers' market can be developed by the local government in cooperation with local farming private sector interests.

The market will be easy to find, and centrally located, with adequate parking for farmers and customers. It will have a pleasant atmosphere and will have shade and rain protection.

The possible site for such a market that would serve the region is at lands adjacent to the Old Harbour Round-a-bout (see Figure 2-9).

This would not only have direct benefits to farmers, wholesalers, agro-processors, and agricultural supply businesses, but would assist greatly with the business environment in Spanish Town (see revitalization programme for Spanish Town discussed at Section 4.2.2.2).

Figure 2-9



HAROLD MORRISON + ROBERT WOODSTOCK
ASSOCIATES LIMITED

JAMAICA: 15 BEDFORD PARK AVENUE KINGSTON 10 (T) 1 876 929 3990 - 2
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URBAN RENEWAL - SPANISH TOWN & ENVIRONS OVERALL SITE PLAN

Legend

 Market	 Wholesale
 Leisure	 Retail
 Industrial	 Government
 Mixed Use	 Services

Public perception of the town would improve thus improving possibilities for investment and redevelopment.

In addition, the farmers' market can be used as a central location to educate farmers about new technology and agricultural practices, as well as small business development.

If the cluster approach is used to the region, the farmers' market will represent the apex of a "cluster" of farmers, agricultural services, farm and garden equipment manufacturers, food processing, and grocery stores.

2.3.9 Priority Actions

Efforts must be made to promote increased efficiency of agriculture and better integration with industry (agro-industry):

- Water – rationalization and development of programme for reuse of wastewater.
- Rehabilitation and continued maintenance of vital agricultural infrastructure within the corridor, and improvement of services including:
 - Access roads (Extending the NWA Road Rehabilitation Programme)
 - Irrigation works (implementation of NIC Irrigation Development Plan).
 - Research and development institutions (e.g. Bodles research station)
 - Agricultural Training
- Implementation of rehabilitation programme in the Sugar industry (SIA/SCJ Development Plans).
- Active promotion of crop diversification and efficient and sustainable land use practices (e.g. crop rotation where applicable etc.).

Specific programmes to promote the rapid rehabilitation and/or expansion of:

- Aquaculture
- Poultry industry
- Small livestock
- Dairy and beef cattle
- Apiculture
- Fruit Trees
- Commercial Timbers
- Farmers' Market

2.4 The Clarendon Eco-Industrial Zone - Focal Point for Industrial Development

A programme to attract increased investment and industrial development in the project area must be matched by the provision of the requisite locational, physical, infrastructure and social facilities that will ensure efficiency and profitability.

“Good” Industrial lands can be defined as non-prime lands strategically located in relation to infrastructure (i.e. physical fixed assets such as roads, rail, airports, sea ports, telecommunications systems, water distribution systems and sanitation, as well as softer types of infrastructure such as information systems and knowledge bases). Proximity to raw material sources and cost competitive energy supplies is also important.

The area that has been identified to have these attributes is defined at Figure 2-10 and Map 7. The area is approximately 15,054 ha and is served by road, rail, and ports, with the possibility of air access at a reactivated Vernamfield aerodrome.

In addition, the existence of the JPSCo Power Plant and opportunities to develop integrated energy systems through additional capacity in cogeneration and LNG, would make the area an energy producer for the national grid as well as the source of competitively priced energy for industries located there. The success of integrated energy development will however rest largely on the willingness of various institutions and agencies to acknowledge the interconnections linking the development process.

The existence of some industrial land use in the area such as JAMALCO and Monymusk makes the industrial zone compatible with adjacent uses.

Of further importance is the fact that the study area is rich in mineral resources, some of which are not actively being exploited and which can form a major element of the industry mix in the area.

An industry cluster will then be created to include similar and/or related firms that together create competitive advantages for member firms and the local economy. The firms will have significant horizontal and/or vertical linkages or have similar resource and/or labour needs. For example one industry could produce another industry's key components or benefit from material and energy exchanges. Firms in the cluster may interact through purchase-sale relationships; inter-firm collaboration in product development, marketing, or research; or a shared reliance on specialized services and labour markets. Access to technology resources and capital as well as readily available support services, transportation or communications can also be a benefit.

The industrial minerals located within the zone will form the resource base of the cluster (see discussion at Section 2.6).

HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN, PORTMORE TO CLARENDON PARK

Proposed Industrial Zone Scale 1:150,000

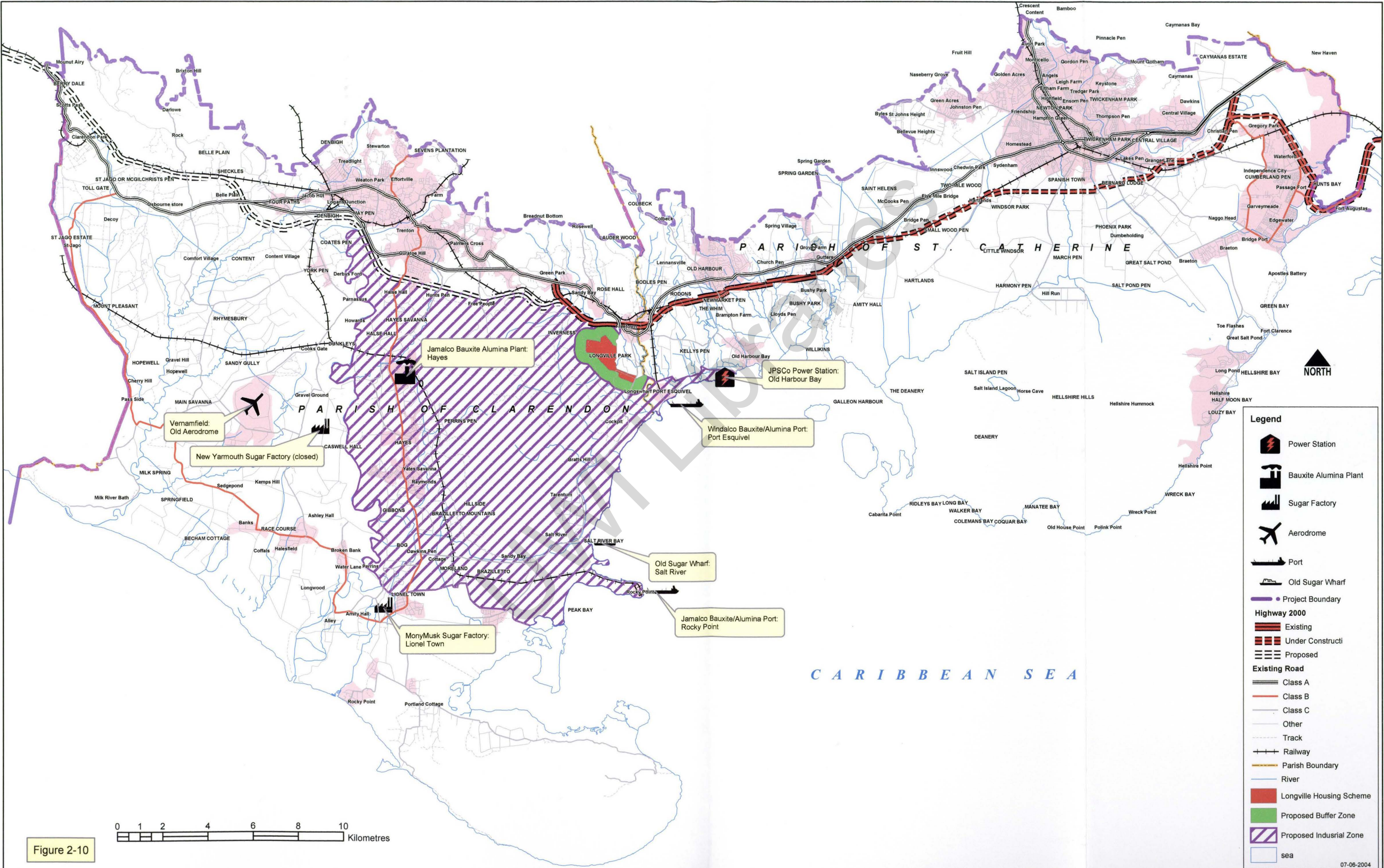


Table 2-14 provides a model for collaboration within the Zone.

Table 2-14: A Model for Collaboration within the Eco-Industrial Zone

Item	
Materials	- Common buying - Customer/Supplier relations - By-product connections - Creating new material markets
Transportation	- Shared commuting - Shared port and shipping - Shared rail and freight - Common vehicle maintenance - Alternative packaging - Integrated logistics
Human Resources	- Human resource recruiting - Joint benefit packages - Wellness programmes - Common needs (payroll, maintenance, security) - Training - Flexible employee assignment
Information/Communication Systems	- Internal communication systems - External information exchange - Monitoring systems - Computer compatibility - Joint MIS system for Zone Management
Quality of Life/Community Connections	- Integrating work and recreation - Cooperative education opportunities - Volunteer and community programmes - Involvement in regional planning
Energy	- Green buildings - Energy Auditing - Cogeneration - Spin-off energy firms - Alternative fuels
Marketing	- Green labeling - Accessing green markets - Joint promotions (e.g. advertising, trade shows) - Joint ventures - Recruiting new value-added companies

Environment, Health & Safety	- Accident prevention - Emergency response - Waste minimization - Multi-media planning - Design of Environment - Shared Environmental Information Systems - Joint regulatory permitting
Production Processes	- Pollution prevention - Scrap reduction and reuse - Production design - Common Subcontractors - Common equipment - Technology sharing and integration

2.4.1 Priority Action

It is proposed that a detailed study be undertaken to determine the mix of industries best suited for the Zone.

2.5 Manufacturing

The manufacturing sector continues to adjust to more liberalized market conditions; several traditional local industries have contracted. The remaining manufacturing operations are considered to be more competitive and will enjoy expansion. For example: plastic products, food and beverages. The increasing population of the region will continue to provide strong demand for the products of these industries: e.g. the increased demand of the construction industry for PVC pipes, demand from food processors, distributors and the food service industry for plastic packaging materials and containers, the demand of households for processed foods and beverages.

2.5.1 St. Catherine

Food Processing: Agro processing activities in St. Catherine include: fish; bammies, pancake mix, fruit syrup; seasoning and sauces. Raw materials are sourced within the parish as well as from Manchester, Trelawny, St. Elizabeth and St. Thomas. Main markets are domestic, outside the parish, with some exporting overseas.

Beverages: The beverage industry includes the manufacture of beverages such as soft drinks. The large manufacturing plant located at White Marl is owned by WISYNCO Group. It is vertically integrated with a plastic containers plant, also owned by WISYNCO, from which a supply of pet bottles is sourced.

Tobacco: The cigarette manufacturing plant at Twickenham Park, owned by the Cigarette Company of Jamaica (Carreras), is the only entity involved in this industry. It currently employs ... workers, and provides employment to contract farmers located in the parish of Clarendon.

Garments: There are no large garment manufacturers in the parish. Garment factories that formerly produced items on contract for the US market have been closed.

Furniture and Wood Products: The Furniture sub-sector in the St. Catherine project area includes the manufacture of furniture and bedding at Naggo Head.

Chemicals and Plastic Products: Chemicals include the production of salt and other chemicals in Spanish Town. Enterprises in the plastic products industry include manufacturers of plastic containers for household and industrial users and PVC pipes for the construction industry.

2.5.2 Clarendon

Food Processing: Processing operations include:

Canned calaloo, ackee and breadfruit
Patties, loaves and mince
Fish
Curry powder and dry pepper
Honey
Rotisserie chicken
Orange juice
Ham, bacon, sausage and smoked chicken
Preserves-jams and jellies
Bakeries (5 establishments)

At least 10 companies are engaged in the processing of agro products in the Clarendon project area. These all source their raw materials locally, and for the most part supply the domestic market. One company exports 95 percent of its products.

Chemicals and Plastic Products: Jamaica Bags in May Pen, which manufactures plastic bags for supply to agricultural and other enterprises in the parish and island wide, is an important producer in the area. This company was formerly integrated with the local sisal industry, from which its main raw material was obtained. Changing technology and market conditions led to its conversion to PVC some 25 years ago.

2.5.3 Investment Projects

Investment projects in the Manufacturing sector identified by JAMPRO in the project area are valued at \$ 633 million, and include projects in Furniture, Dairy Products, Rum and Alcoholic Beverages, Carbonated Beverages and Baked Products. Prospective employment is estimated at least 85 persons.

Other investment projects in the Manufacturing sector include:

- Manufacture of marble and alabaster products, which is expected to generate 15 jobs from and investment of \$ 8.4 million.
- Manufacture of inorganic fertilizer (\$ 276 million and 20 jobs).
- Manufacture of liquefied natural gas (LNG) for industrial use – feasibility study (\$ 79.5 million, and 2 jobs).
- Manufacture of energy and road construction materials.
- Plastic containers (\$ 200 million, and 25 jobs).
- Labels (\$ 24 million and 10 jobs).

2.5.4 Priority Actions

Competitive local manufacturing should be actively encouraged. This can be done without resorting to inefficient and unrealistic protection. Key measures for the short, medium and long term include:

- a. Review of the National Industrial Policy (NIP) with a view to identifying competitive industries in the light of emerging market conditions.
- b. Effective use of Government-owned lands to ensure the development of adequate sites for manufacturing industries (e.g. industrial parks). This should be done in collaboration with private investors to minimize the fiscal impact.
- c. Encouragement of more competitive production in sectors in which competitive advantage can be achieved, by promoting investments in production of local raw materials e.g. Non-metallic mineral products (e.g. cement, ceramics) Food processing (e.g. spices, sauces, beverages)

2.6 The Minerals Industry

The Industrial Minerals Sector includes primary raw materials such as limestone, dolomite, shale, sand and gravel, hard rock (andesite, dacite, etc.), marble and semi-precious stones. Products such as cement and other mineral-based bonding agents, construction aggregates and marl fill, industrial lime, construction blocks, caustic soda, ornamental stones, among others are derived from these raw materials.

The bauxite/alumina works, although excluded, comprise the Bauxite/Alumina Sector - the most mature and organized segment of the minerals industry. It is therefore necessary to understand the opportunities that this sector presents and capitalise on their possible benefits to the industrial minerals sector. Significant use can be made of current bauxite/alumina infrastructure, including rail network and ports. The experience garnered in community relations, negotiating with the government and the strong connections with international markets are other areas from which this young sector may benefit.

The Bauxite/Alumina Sector is currently performing very well and is poised for significant expansion. The development will, of necessity result in increased demand for **industrial lime** in line with alumina production as it is established that one tonne of lime is needed for every 12 – 13 tonnes of alumina produced. Therefore, the short to medium term success of the Industrial Minerals Sector is likely to be closely tied to that of the bauxite/alumina sector.

2.6.1 The Bauxite/Alumina Sector

JAMALCO and WINDALCO are the two companies involved in bauxite mining and alumina production. The bauxite/alumina industry is a vertically integrated industry controlled by multinational corporations with some Government participation (JAMALCO/Clarendon Alumina Production Company).

The output of alumina produced by the JAMALCO plant in Clarendon and shipped from Rocky Point was tonnes in 2003. The total capacity of the plant is for 000 tonnes. This is expected to increase to 000 tonnes after an expansion programme projected for 2004. WINDALCO shipped an estimated 000 tonnes from its port facility at Port Esquivel.

The entire output of the bauxite/alumina industry is exported to smelters in the United States and Europe.

The industry, being capital-intensive does not employ a large number of workers, but there is significant indirect employment of local contractors for haulage and other services. The derived demand for lime, a limestone product, should also be taken into account.

The bauxite/alumina industry enjoys good prospects for growth in the medium term. The planned expansion of the Clarendon Alumina Producers plant by JAMALCO, is expected to be completed by mid- 2007, with alumina production capacity reaching 2.65

million tonnes. This will increase Jamaica's alumina capacity by more than 33 per cent, resulting in tax and royalty revenues of over US\$ 44 million, and the annual expenditure of an additional US\$ 30 million (2004 J\$ 1.83 billion) in the local economy for services and materials. The total value of this investment is US\$ 690 million, and the construction phase employment will peak at 2,500 jobs, including 350 welders, 350 pipe-fitters, 200 welder/pipe-fitters, 100 heavy riggers, 150 electrical/instrument technicians, 100 construction technicians, 150 millwrights, and 100 equipment operators.

Since JAMALCO is committed to utilizing local resources as far as possible, the expansion will result in increased demand for a wide range of services, including:

- 1 Accommodation and Entertainment
- 2 Banking facilities
- 3 Security services
- 4 Transportation
- 5 Medical Services and Equipment
- 6 Food services
- 7 Communication
- 8 Purchasing
- 9 Fabrication
- 10 Mobile and construction equipment and cranes
- 11 Other services and downstream industries

The project will also bring social, technical and training and employment benefits to residents of the area.

Issues for resolution include: the high capital cost and high construction cost, the technical complexity of the operations, maintaining labour productivity and industrial peace and the availability of local support services. JAMALCO also needs to finalize adequacy and security of tenure of its bauxite reserves, assurances of stable tax environment. The proposed expansion is expected to bring economic benefits to the operating area and the country and boost the profitability of the CAP plant.

2.6.2 The Non-Bauxite Mineral Sector

The Non-bauxite Mineral Sector has significant opportunities for long-term development as basic industry. However the industry faces major financial constraints in achieving the critical mass required for economic world class production.

The non-bauxite/alumina minerals sector in the project area is comprised of the Industrial Minerals Sub-Sector. The sector has contributed significantly to national development, especially in the areas of construction and infrastructural works. It is the source of employment for large numbers of small operators, several large entities, including the country's sole cement manufacturing plant and, through import substitution, saves the country over US\$100 million annually. The sector continues to experience numerous management challenges expressed through limited application of best practices in quarry

engineering and management, persistent illicit quarrying in some localities, limited access to port facilities, inadequate marketing strategies, limited funding for research and development, among others. However, if properly developed it is capable of contributing considerably more to employment, foreign exchange earnings, GDP and government revenues.

Within the project area, entities involved in the industry are typically micro to small (annual production of 250,000 tonnes and between 250,000 and 499,000 tonnes, respectively); less than 25 percent are medium (500,000 to 1,000,000 tonnes annually) and large (over 1,000,000 tonnes annually) (see Table 2-15 and Figure 2-11 for the location of mining and quarry leases).

The sector is estimated to employ over 1,500 persons and contributes indirectly to the employment of at least 7,500. An estimated 750 persons are believed to be employed in illegal mining activities.

The contribution of the sector to GDP, officially cited as less than 1 percent, is believed to be understated due to suspected under-reporting of production figures and the impact of illegal operations, among other factors.

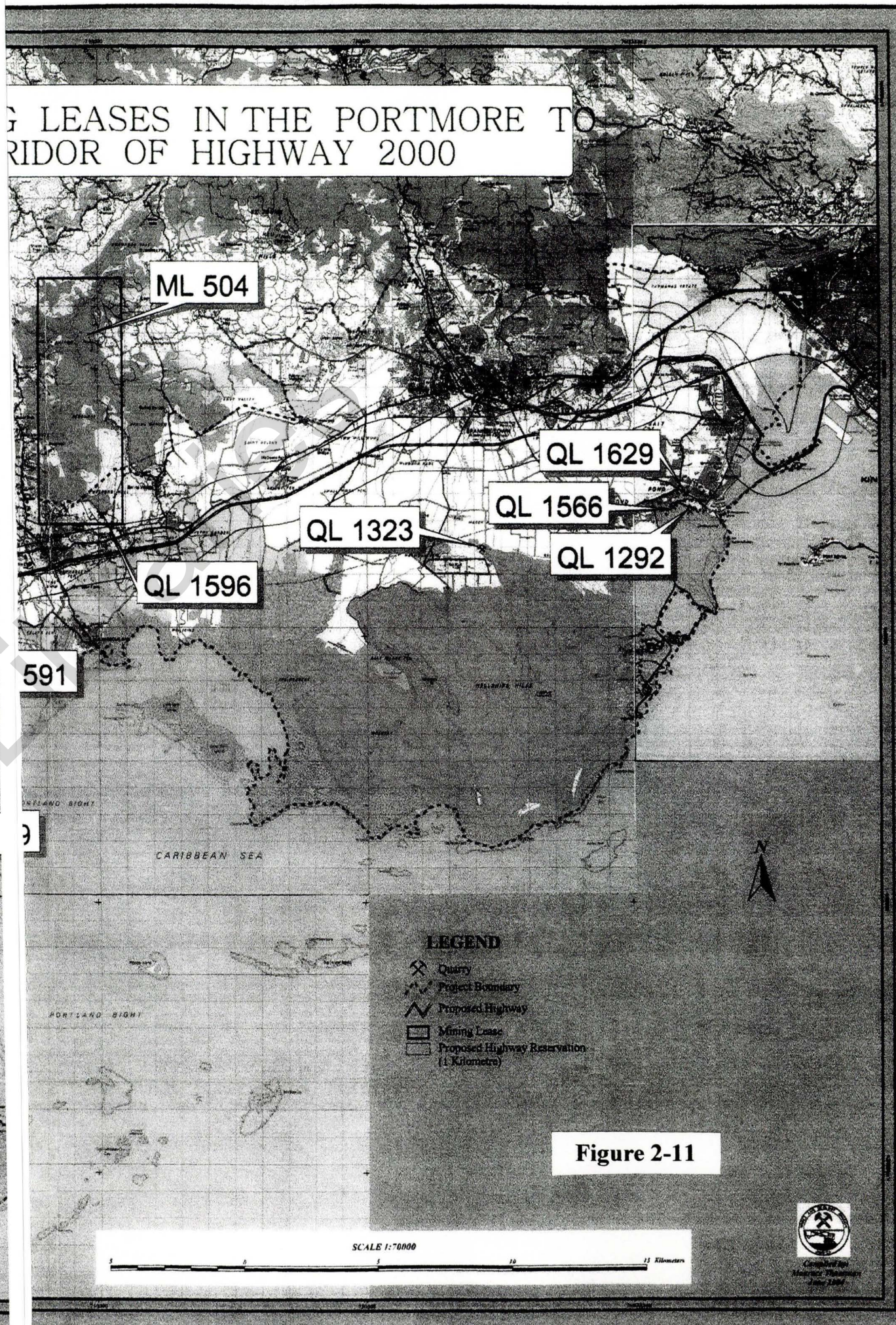
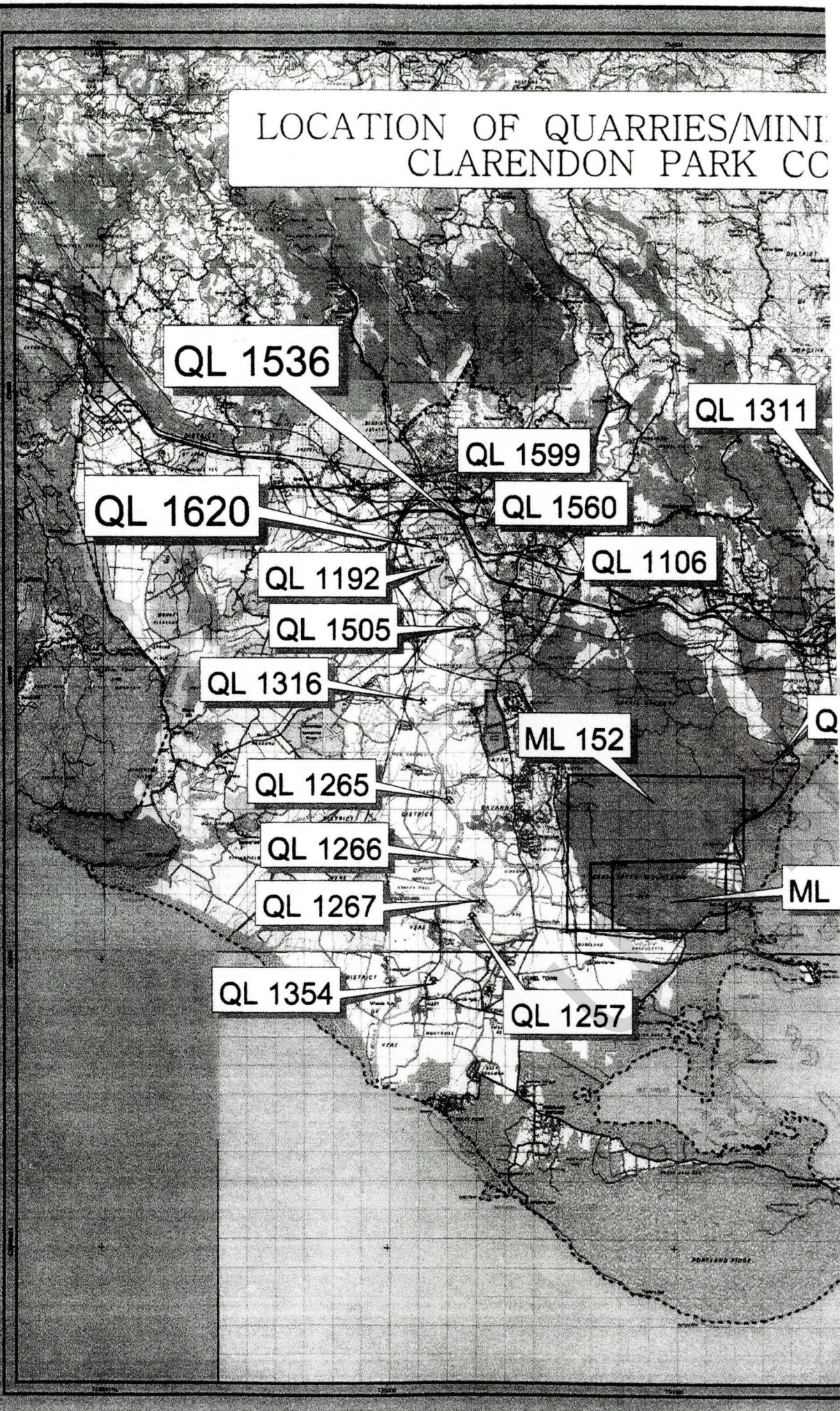
In excess of 95 percent of the output is consumed within the domestic economy. Less than 3 percent of the sector's output is exported, and annual direct foreign exchange earnings are estimated to be below US\$ 15 million. In the project area, given the high cost of transportation, the products tend to be supplied to local users and to districts surrounding the production facilities, particularly in the construction industry. Significant overseas market opportunities, particularly for limestone products, have been identified by industry experts.

2.6.3 Development of the Industrial Minerals Sector

The mineral resources within and adjacent to this segment of Highway 2000 are significant, valuable and need to be protected and fully developed.

The Industrial Minerals Sector can aid the general development of the project area and its watershed communities. Consequently, serious plans need to be crafted in response to the region's growing population and the pending winding down of the Bauxite/Alumina Sector within another 35 years. Development of the industrial minerals sector represents a major option to enable continued development after bauxite. Further, the sector's current development serves to complement current expansion within the wider minerals industry, especially within the bauxite/alumina sector.

LOCATION OF QUARRIES/MINING LEASES IN THE PORTMORE TO CLARENDON PARK CORRIDOR OF HIGHWAY 2000



LOCATION OF QUARRIES/MINING LEASES IN THE PORTMORE TO CLARENDON PARK CORRIDOR OF HIGHWAY 2000

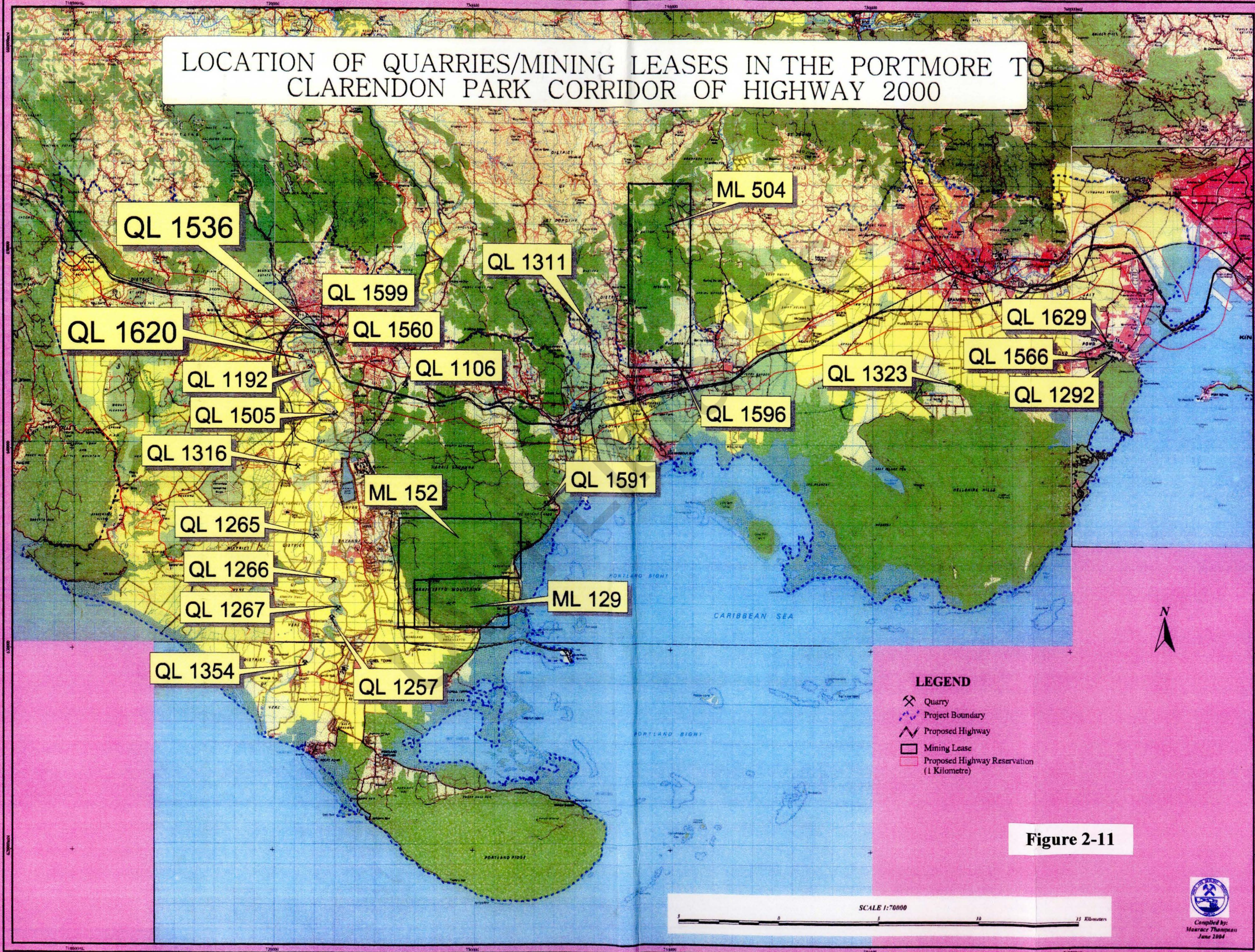


Figure 2-11

ACTIVE MINERAL PROSPECTS PRESENT IN THE PROJECT AREA

NAMES OF APPLICANT	TYPE OF MATERIAL	LICENCE TYPE & #	APPLICANTS ADDRESS	STATUS	LOCATION	PROD.	ESTIMATED VALUE
Robert Gore	Sand	QL 1599 (Gore)	1Oval Rd, Kingston 5	active	Rio Minho, Clarendon	17200	4300000
	Marl	QL 1610		In-active	Lot 6 Cue Gardens, Clarendon	closed	
	Sand	QL 1505		In-active	Halse Hall, Clarendon	closed	
	Sand & Gravel	QL 1536		Refused	Rio Minho, west of May Pen Bridge, Clarendon	?	
	Sand & Gravel	QL 1560		active	Rio Minho, west of Glenmuir Bridge, Clarendon	14430	3608250
	Limestone	QL 1566		In-active	Green Bay Pen, St. Catherine	?	
Paul Chin Trucking	Limestone	QL 1257	Lot 107, Paisley Housing Scheme, Clarendon	active	Lower Rio Minho, Water Lane, Clarendon	?	
	Limestone	QL 1292		In-active	Port Henderson, St. Catherine	?	
	Sand & Gravel	QL 1267		active	Rio Minho, 'Bog' Clarendon	?	
	Sand	QL 1316		active	Bet. Bowens & Dunkleys, Clarendon	?	
	Limestone	QL 1629		Ceased	Congrieves Park, St. Catherine	?	
Edwin Bolo Singh	Limestone	QL 1106	1 Trenton Rd, P.O. Box 191, May Pen, Clarendon	active	Rhules Pen, Clarendon	?	
Hemsley Johnson	Sand	QL 1192	York Pen, York Town P.A. Clarendon	active	Darby's Fording, Clarendon	?	
Dennis Lawson	Sand & Gravel	QL 1631	9-11 Ballater Ave., Kingston 10	active	Sevens Estate, Longville, Clarendon	9952	3488000
	Sand	QL 1265 (Gore)		active	Dry River, Clarendon	37259	9314750
	Sand	QL 1266 (Gore)		active	Rio Minho, Bog, Clarendon	?	
Devon Ellis/Orville Brown	Limestone	QL 1591	Cockpit Dist. Salt River P.O. Clarendon	active	Cockpit, Clarendon	?	
Mogul Construction Ltd.	Limestone	QL 1323	2A Goodwood Terrace, Kingston 10	active	Hill Run, St. Catherine	3032169	606435800
	Limestone	QL 1596		In-active	Church Pen, Old Harbour, St. Catherine	?	
	Sand	QL 1354		In-active	Needham, Water Lane, Clarendon	?	
Faurens Ltd.	Sand & Gravel	QL 1311	17 Norbrook Way, Kingston 8	active	Colebeck, St. Catherine	?	
Black Brothers Inc.	Limestone	QL 1385	5 Greenvale Rd, Mandeville.	active	Ferry, St. Catherine	?	
	H. B. Sand & Stone	QL 1620		Ceased	Rio Minho, Clarendon (H.B.sing)	?	
Jasper Marshall	Marble	EPL 517	11 Clieveden Ave., Kingston 6	active	Content, St. Catherine	?	
Old Harbour Minerals Inc.	Dolomitic Limestone	SEPL 504	C/O Lawson Blvd, Four Paths P.O., Clarendon	active	Thatchford Hall, Clarendon	?	
Keith Anthony Scott	Marble	ML 127	33 Norbrook Dr., Kingston 8	active	Orange Grout, St. Catherine	?	
Industrial Mineral Resources Ltd	Marble	ML 129	42 Beechwood Ave., Kingston 5	active	Braziletto Mt. Clarendon	?	
Faurens Ltd.	Marble	ML 140		active	Colbeck, St. Catherine	?	
	Limestone	ML 146	C/O Jamaica Venture Fund, Wyndham Hotel, 77Knutsford Blvd, Kgn.5	active	Teak Pen, Clarendon (Rugby)	352,126	70,425,200
	Lime	ML 152	C/O Myers, Fletcher & Gordon, 21 East Street, Kingston	active	Braziletto Mt. Clarendon (Chem. Lime)	144,380	28,876,000
Rugby Jamaica Lime	High Purity Limestones	ML 146	C/O LOJ Center, 9th Floor, Suite 909, 28-48 Barbados Ave, Kgn 10	active			
William Shagoury		QL 1656	P.O. Box 23, May Pen Clarendon	active			
New Era Homes		QL 1698	Shop 1&2, Island Life Mall, 6 St. Lucia Ave, Kingston 5	active			
Nassief Deenah		QL 1659	P.O. Box 309, Colebeck, Old Harbour, St. Catherine	active			
Strathairn Construction Ltd		QL 1685	40B East Street, Old Harbour, St. Catherine	active			
Cecil & Paulette McCalla		QL 1600	Colebeck, Old Harbour P.O., St. Catherine	active			
Howard Brown	Sand & Gravel	QL 1301	24 Paisley Ave, May Pen, Clarendon	active	Woodleigh Farms, May Pen, Clarendon		
Jamaica Bauxite Institute			Hope Gardens, Kingston 6				
Jamalco			13 Waterloo Rd, Kingston 10				
Mining & Quarrying Association			P.O. Box 173, Kingston 8				

The Portmore to Clarendon Park Highway 2000 corridor is rich in mineral resources some of which are not actively being exploited. They have to be considered when assessing the mineral resource potential of the outlined project area. Estimated quantities are available for some of these minerals and will be presented. Commercial Marble (159,000,000 mil. t), Sand and Gravel (12,456,513 mil. t), Limestone (aggregate, metallurgical grade, high purity), Lime, Dolomite, Semi-precious minerals, Clays, Placer Potentials (Titanium, Chromium). Quantities stated are of proven reserves. The overall amounts are likely to be substantially higher.

2.6.3.1 Global Trend

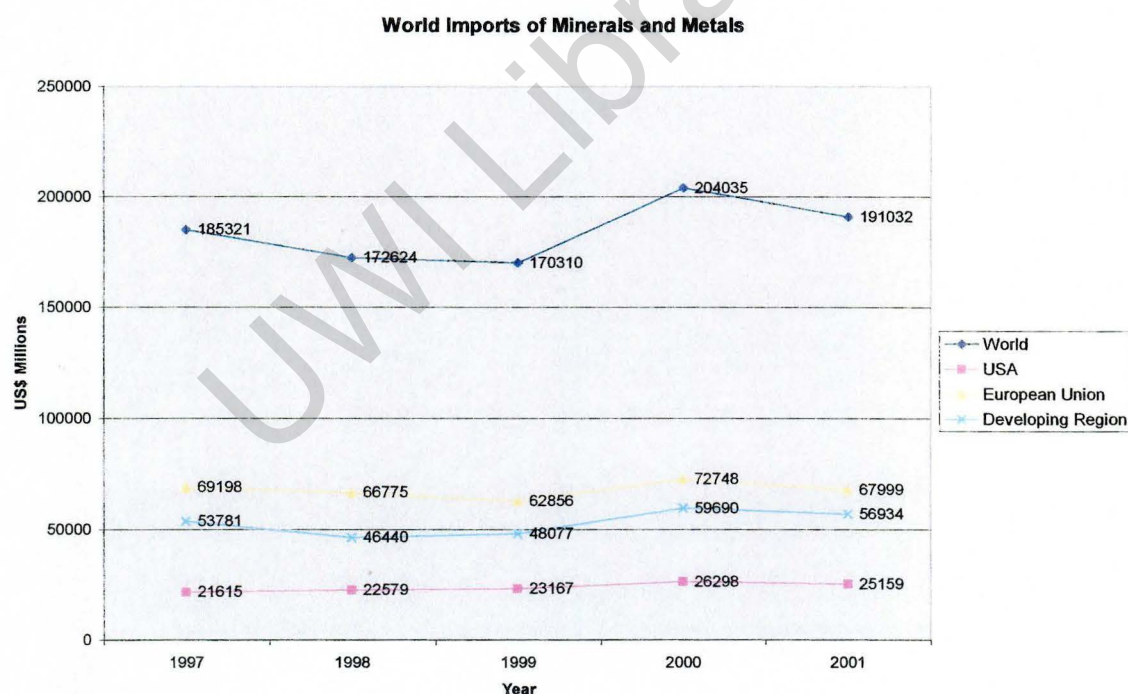
World trends in mineral demand are highly cyclical. Particularly since the 1990's, significant growth in various countries, notably China and India, has resulted in increased demand and higher prices for many minerals, including industrial minerals.

Table 2-16 and Figure 2-12(World Imports of Minerals and Metals (cif)) gives an indication of world import trends for minerals and metals between 1997– 2001.

Table 2-16: World Imports of Minerals and Metals (cif)

Region	1997	1998	1999	2000	2001
(million US\$)					
World	185,321	172,624	170,310	204,035	191,032
USA	21,615	22,579	23,167	26,298	25,159
European Union	69,198	66,775	62,856	72,748	67,999
Developing Regions	53,781	46,440	48,077	59,690	56,934

Source: Handbook of World Mineral Trade Statistics 1996-2001, United Nations, New York 2004.



Source: Handbook of World Mineral Trade Statistics 1996-2001, United Nations, New York 2004

Figure 2-12

Industrial minerals account for just over 13 billion tonnes, or 72% of all solid minerals extracted from the earth's crust (Vladimirov, V. D. 1999). The United States of America consumes 4.7 billion tonnes (2002), or approximately one-third of world production. Annually, every individual in the US consumes an average of 839 kg of crushed stone, 3,731 kg of sand and gravel, and 862 kg of all other industrial minerals combined. The processing and value-added non-fossil mineral industries contributed 1,700 billion dollars or 16.3% of GDP to the US economy (2002). Annually, the US consumes an average of 1.68 billion tonnes of crushed stones and 1.34 billion tonnes of dimension stones of which over 15.68 million tonnes and 6.72 million tonnes, respectively, are imported. Additionally, it imports over 4.48 million tonnes of the more than 1.27 billion tonnes of sand and gravel consumed.

2.6.3.2 Markets

1. Current local demand for industrial lime within the alumina sector exceeds 300,000 tonnes per annum. Based on current and projected developments within the sector, this figure is set to increase by at least 50% over the next four years. The use of ores with higher levels of phosphate and other impurities will require greater quantities of lime.

Additionally, the wider Caribbean currently requires at least 200,000 tonnes of lime annually. Barbados is currently the only other English-speaking Caribbean country with any major lime producing capacity. The region therefore currently imports over 75% of its requirement. With the implementation of the Caribbean Single Market and Economy (CSME), it is expected that Caribbean countries will seek, where possible, to produce more of the commodities they need. This should increase inter-regional trade and cooperation, thus possibly opening additional markets.

Guantanamo Bay, the Cayman Islands and the Turks and Caicos Islands require 80,000 – 100,000 tonnes of construction aggregates annually.

Trinidad's iron and steel industry requires 240,000 tonnes of dolomite annually.

Between ALPART, WINDALCO, Rugby and Chippenham Park Limited, Jamaica has an installed annually capacity of 312,000 – 377,000 tonnes of lime. An additional 20,000 – 25,000 tonnes are imported annually to satisfy demand within the alumina sector. An estimated 50,000 – 150,000 tonnes, in the form of assorted products and derivatives, are imported annually.

The demand for marble, particularly linked to planned developments within the tourism sector, is expected to increase significantly and should benefit the local marble sector. Separately, a concerted effort must be made by the private sector to ensure wider use of marble in ordinary homes. In this particular venture, housing developers, financial houses, marble quarries and the government need to enter an agreement, which will facilitate this plan.

2. Florida requires over 8 million tonnes of aggregates annually for the construction sector.

The mineral reserves of two of the largest US-based aggregate producers, Rinker and Florida Rock, will be exhausted within the next seven years. The companies will need to find new sources of material to allow annual production amounting to 8 million tonnes. Given this expected development, Jamaica may wish to seek to attract them.

Given this expected development, Jamaica may wish to consider options that could attract them.

The US requires over 10 million tonnes of grounded calcium carbonate, significant quantities of precipitated calcium carbonate and 18 million tonnes of lime annually. Huston and the southern USA require over 4 million tonnes of limestone annually to enable high sulphur power plants to meet mandatory air quality standards.

2.6.3.3 Resources

The main commercially exploitable industrial minerals within and in close proximity to the project area are:

1. Limestone of various varieties: hard and soft, including marl.
2. Dolomitized-limestone
3. Recrystallized limestone: commercial marble
4. River-derived sand and gravel

These minerals, particularly the limestones, which, based on their quality, quantity, general location, wide application in industry, market availability, among other factors, appear to be those most likely to attract large-scale investment (see Figure 2-13).

MINERAL RESOURCES IN THE VICINITY OF THE PORTMORE TO CLARENDON PARK CORRIDOR OF HIGHWAY 2000

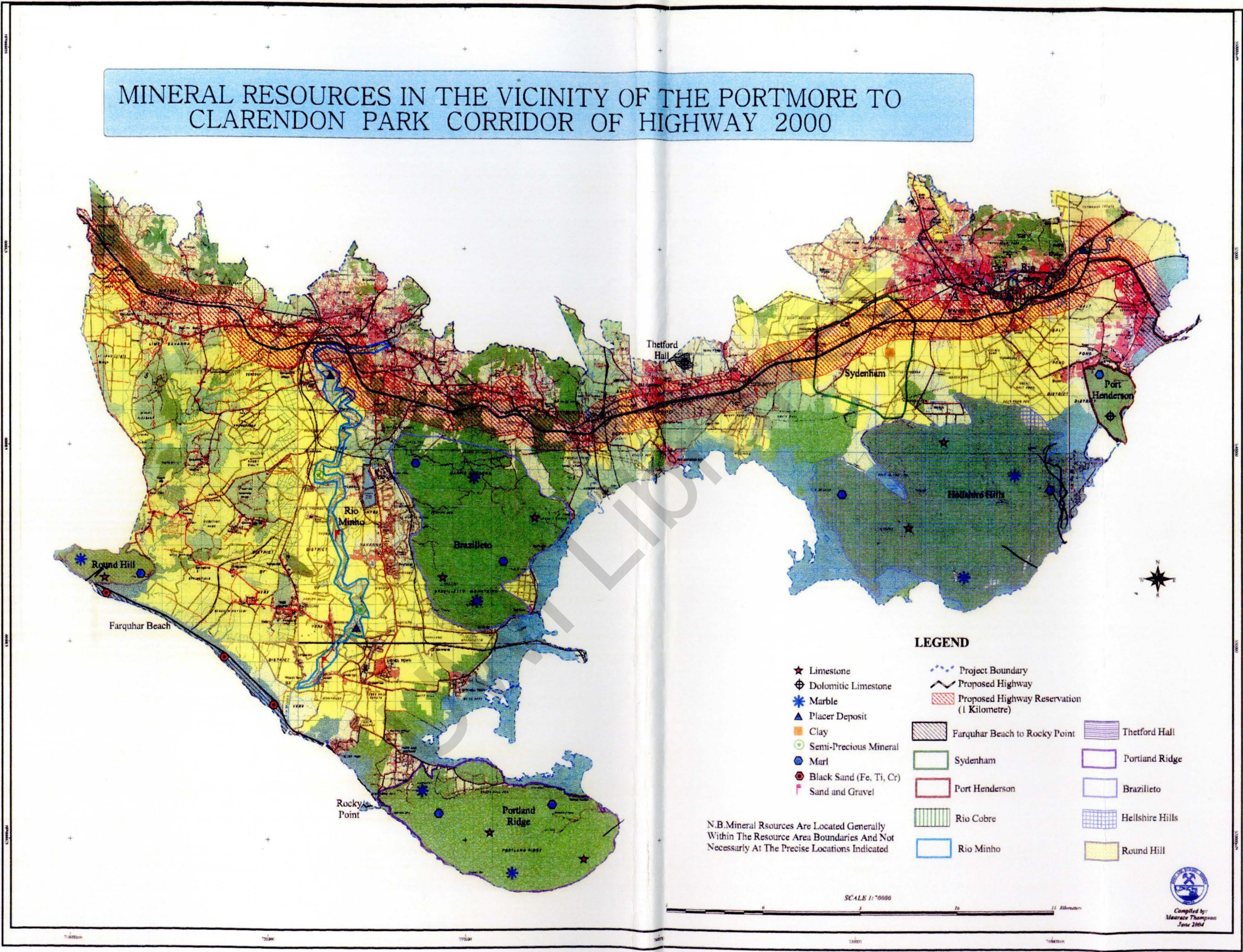


Figure 2-13

The Ministry's Mines and Geology Division estimates the quantities of these materials as outlined in Table 2-17 and Figures 2-13 and 2-14:

Table 2-17: Estimates of Primary Mineral Resources in the Project Area

Resource	Resource Area/Location	Resource Estimate (Million tonnes)
Limestone	Hellshire Hills, Brazilletto Mountains Portland Ridge, Round Hill	82,901.00
Dolomitic Limestone	Tethford Hall, Port Henderson Hills	150.00
Sand and Gravel	Rio Minho flood plain Rio Cobre flood plain (Eg. Lakes Pen)	14.27
Commercial Marble	Hellshire Hills, Brazilletto Mountains Portland Ridge, Round Hill	159.00
Marl	Hellshire Hills, Brazilletto Mountains Portland Ridge, Round Hill Many other areas	40,000.00

Source: Mines and Geology Division, Ministry of Land and Environment.

2.6.3.4 Minal Portion of the Primary Mineral Resources

Vast quantities of Jamaica's limestones consist of almost pure calcium carbonate (99.9%). In terms of quality, these high purity rocks are superior to most similar resources worldwide.

The recoverable quantity of these resources in the project area is estimated at 60% - 75% of the figures presented above.

The quality of between 55% - 70% of the recoverable quantities, especially the carbonates (limestone, dolomite and marble) is, by world standards, deemed to range from good to excellent.

Table 2-15 and Figure 2-11 provides an outline of the Quarry/Mining Leases in the project area as well as the Active Mineral Prospects.

2.6.3.5 Secondary Mineral Resources

The secondary minerals in the area are:

1. Clays
2. Semi-precious stones: quartz minerals (agate, chert, etc.), marble

These minerals are termed secondary based on the current view that they offer less commercial prospects compared with those in the first group.

Table 2-18 gives the quantities and locations of these minerals within the project area:

Table 2-18: Estimates of Secondary Mineral Resources in the Project Area

Resource	Area/Location	Resource Estimate (Million tonnes)
Clays	Sydenham Tulloch - south of Bog Walk	2.12
Semi-precious stones	Rio Minho flood plains	Unknown

Source: Mines and Geology Division, Ministry of Land and Environment

2.6.3.6 Usages of the Mineral Resources

Currently, limestone, sand and gravel are the main resources attracting commercial attention in the project area. They are predominantly used in the construction sector, namely in the form of aggregates and fill, particularly in road construction, building construction and other forms of infrastructural development.

High purity limestone is used to manufacture industrial lime for use in the production of alumina. **In the Lydford area of St. Ann this resource has started to form the base of a promising high-end mineral and mineral products export market.**

The secondary mineral resources currently attract little commercial attention. However, the clays could be used in ceramics, roof tiles and for other purposes.

Note should be taken that chemical grade carbonates with high-end uses are sometimes misused as cheap aggregate and fill in the construction industry.

2.6.3.7 Possible Downstream Activities

The following industrial commodities can be produced by the industrial minerals sector:

1. Industrial lime for:
 - i. Alumina purification
 - ii. Sugar purification
2. Caustic Soda
3. Mineral-based bonding agents: Cement, Grout, Thin-set, etc.
4. Marble – mainly for the housing and decorative sectors
5. Cement-based products: Construction blocks, pipes, tubs, poles, tiles, etc.
6. Whiting (grounded calcium carbonate) which finds wide application in various segments of industry.

It is possible that in this section of the country the sector could generate annual sales in excess of US\$55 million.

2.6.3.8 Employment

The minerals industry is not a major employer of labour. However, it pays some of the highest wages and salaries of all industries.

The industry can, however, generate additional employment through linkages with other sectors. As an example, it produces about 80% of the materials used in the construction industry, which generates over 85,000 jobs. Similarly, people benefit indirectly through the incomes and livelihoods they derive from elaborating and selling products made in part with minerals.

2.6.3.9 Linkages with Existing Industry: Window of Opportunity

The industrial minerals sector has a variety of linkages with existing industrial activities. Specific to the project area, it presents the possibility of increasing the number and value of these linkages.

Currently, the sector is adding value to:

1. **The alumina production and construction sectors** through the provision of raw materials (aggregates, fill) and value-added products (industrial lime, grout, thin-set, construction blocks, marble furniture, marble tiles and various cement products) thus facilitating continued expansion.
2. **Agriculture:** animal feed, sugar purification, soil conditioners
3. **Sanitation** – particularly for public waste reception facilities (dumps)
4. **Bulk Transportation and freight**
5. **Manufacturing** – filler in paints, toothpaste, cleaning agents etc.

Table 2-19 provides an outline of estimated lime demand and supply within the local bauxite/alumina sector through to 2008.

Table 2-19: Local Demand and Supply of Lime in the Mineral Industry

OPERATION	2004	2005	2006	2007	2008
ALPART (Demand) (Alpart Kiln) Variance	130,000 <u>120,000</u> (10,000)	140,000 <u>120,000</u> (20,000)	140,000 <u>120,000</u> (20,000)	140,000 <u>120,000</u> (20,000)	140,000 <u>120,000</u> (20,000)
WINDALCO Demand (Windalco Kiln) Variance	85,000 <u>62,000</u> (25,000)	94,000 <u>62,000</u> (34,000)	146,000 <u>62,000</u> (84,000)	130,000 <u>62,000</u> (68,000)	109,000 <u>62,000</u> (68,000)
JAMALCO Demand (RJLM Kiln) Variance	90,000 <u>105,000</u> 15,000	93,000 <u>105,000</u> 12,000	104,000 <u>110,000</u> 10,000	141,000 <u>120,000</u> (21,000)	252,000 <u>120,000</u> (132,000)
Total Demand	305,000	327,000	390,000	411,000	501,000
Total Variance (Shortfall)	18,000	40,000	98,000	109,000	199,000

Source: Davis, Norman C. (2004). Calcined Lime in Jamaica, RJLM Operations, Jamaica

Table 2-19 indicates that current demand for lime within the alumina sector outstrips production capacity. This situation is likely to continue for several years based on projected growth in the sector. Therefore, to meet the demand it is necessary to expand production capacity, which will positively impact growth in the industrial minerals sector. Failure to do so will result in increased foreign exchange outflows for lime imports, contribute to uncertainty of supplies and loss of employment opportunities.

2.6.3.10 Fundamental Issues Requiring Attention

2.6.3.10.1 Demarcation and Management of Mineral-bearing Lands

The industry, particularly the aspects of mining and mineral beneficiation, needs large tracts of mineral-bearing land and a significant buffer zone within which to operate so as to protect and ensure mineral supplies and minimize possible land-use conflicts. The demarcation and management of mineral-bearing lands are therefore central to the sector's existence and continued expansion. Note must be taken that without these lands and a relatively safe environment (unencumbered by incompatible neighbouring activities – residential, commercial, etc.) the industry's development is likely to be hampered since long term access to the minerals may be compromised.

2.6.3.10.2 Mineral Lands Bank

The establishment of a **mineral lands bank** is important for a successful minerals industry. This will protect mineral-bearing lands from sterilization and enable industrial development.

A **Mineral Lands Bank** is essential to effective land management and to facilitate the sector's sustainability, particularly if serious attempts are to be made to attract large local and foreign capital. The demarcation of particular areas of mineral-bearing lands within the **Barazillette Mountains** and surrounding areas is geared at forming part of this mineral lands bank.

2.6.3.10.3 Clarendon Eco-Industrial Zone: Industrial Minerals Complex

The creation of the Mineral Lands Bank would be in keeping with plans to create the **Clarendon Eco-Industrial Zone**, which would facilitate the development and expansion of the Industrial Minerals Sector. **This area could serve as the major industrial minerals complex linking and driving development along the South Coast, particularly in the parishes of St. Catherine, Clarendon, Manchester and St. Elizabeth.**

Additional factors favouring the creation of an **industrial minerals complex** within this Eco-Industrial Zone include:

- The strategic location.
- The existence of abundant mineral resources, including additional mineral resources in northern St. Catherine and Manchester.
- Close proximity to major transshipment ports.
- Easy access to affordable energy, water and telecommunications.
- Good inland transportation infrastructure.

The establishment of an industrial minerals complex within the **Eco-Industrial Zone** in south Clarendon could create the platform for the effective takeoff of the **industrial minerals sector**. The bauxite/alumina sector, especially its demand for calcined lime, could be the single most important driver effecting development in the industrial minerals sector. Importantly, both sectors could benefit enormously from the synergies that could be forged between them. The expansion of lime production and affiliate industrial activities proximal to the bauxite/alumina plant would benefit from the close proximity to high quality raw materials, markets and easy access to transshipment ports. This could result in significantly lower handling and transportation costs.

This proposed development could enable south-central Jamaica to serve as a major industrial hub for value-added industrial minerals-based industries. Every attempt should therefore be made to effect this development.

2.6.3.10.4 Complementary Locations

There are several other significant mineral-bearing sites across the island that could, with the necessary infrastructure, be strategically developed to augment an industrial minerals complex, similar to that in the proposed Eco-Industrial Zone in Clarendon.

Two of the best examples are **Cane River – Bito, Kingston/St. Andrew** (high purity chemical grade limestone, construction grade limestone, gypsum, hard volcanic rocks, suitable for use on high friction surfaces– runways, highways, etc. and **Lydford, St. Ann** (extremely high purity chemical grade limestone – food, pharmaceutical, metallurgical and construction grade limestone).

2.6.3.10.5 Transport Links

An expanded rail network, inter-linking with existing terminals and the development of a dedicated haul road network are necessary for inland transportation of bulk mineral products. The aforementioned infrastructure will be necessary, especially if operations producing upward of 2 million tonnes per annum are to be established.

Conveyor belts may also be necessary since they are capable of transporting huge quantities of material with limited intrusiveness and little threat to the safety of individuals.

Access to bulk shipment terminals is vital to facilitate export of mineral commodities.

There are two major ports in the area, both owned by alumina companies - **Rocky Point** and **Port Esquivel**. There have, for several years, been ongoing discussions regarding the possible development of a third port at Salt River. However, compared with those owned by the alumina companies, it would be smaller, more maintenance intensive due to heavy silting and involve greater handling of the cargo, thus possibly increasing cost.

The **Salt River port** could be a good addition to the area's port infrastructure. However, should the existing ports be opened to the industrial minerals sector this development may not be economically defensible. Issues supporting this position include:

1. **The existing ports are underutilized in excess of 45%.** This percentage of idle time is sufficient to accommodate exports by the industrial minerals sector for the next 5 – 10 years, and possibly longer. Additionally, even with marked expansion within this sector the existing ports could, with limited expansion, accommodate the load.
2. **Government must now begin to plan for the post-bauxite/alumina period.** Within the next 25 – 35 years it is likely, based on the rate of resource depletion coupled with other factors, the alumina companies may even make less use of the existing ports. In order to improve the performance of these ports it would be in the country's best interest to influence government to ensure that the companies diversify their use.
3. **Serious cost benefit analyses need to be undertaken to justify the construction of a new port at Salt River.** The designs of this proposed port indicate that it will be small: incapable of accommodating vessels above 30,000 tonnes and will require the barging of cargo. These factors – **small size and double handling** – may militate against the facility's competitiveness.

Port Esquivel, with the requisite infrastructure is the favoured option to facilitate the industrial minerals sector. Among other facilities it has:

- Large unused tracts of land for expansion and bulk storage of minerals
- Deep-water port with a draft exceeding 11 metres
- Excellent connection with rail and road network
- Necessary utilities

Should the government fail to secure port access for the industrial minerals sector at either of the bauxite company-owned ports, it will be necessary to construct a designated port without the hindrances highlighted in 3 above.

2.6.3.10.6 Telecommunications

The dismantling of the monopoly held by Cable and Wireless over some aspects of telecommunications will benefit the minerals sector, primarily through access to cheaper services.

The introduction of broadband should greatly increase the speed, quantity and quality of data-transfer, and possibly reduced telecommunications charges.

2.6.3.10.7 Energy and Water

Access to reliable and relatively cheap energy and water supplies is critical.

The **introduction** of energy from **Liquefied Natural Gas (LNG)** could assist in realizing the possibility of cheap energy. This source of energy could lower energy cost by 15% - 30%, which may translate into an overall reduction in production cost by 10% - 20%.

Liquefied Natural Gas as an energy source may offer numerous benefits including:

- lower energy prices
- cleaner production with attendant waste management benefits
- fewer negative environmental impacts, particularly associated with the generation of various gases of sulphur.

Every attempt should be made to introduce LNG for the above-mentioned reasons. However, as this is likely to take several years, the traditional energy supply option of oil-derived power from the Jamaica Public Service Company (JPSCo) or entities generating their own power on site appears set to remain the dominate source until LNG or other cheap, reliable and safe energy supply source(s) become(s) available (see Section 2.8.1).

2.6.3.10.8 Mineral and Mining Education

Although the minerals industry has over the last ten years consistently contributed in excess of 9.0% of GDP (Constant 1986 prices), there are no institutions preparing mining and other minerals-related graduates to manage and develop the industry. This is a fundamental weakness that must be addressed by creating local and or regional entities to provide the requisite training at the highest levels. The Ministry, through the Mines and Geology Division, in collaboration with JAMPRO and European-based training institutions has started the process, but it needs to be greatly expanded.

2.6.3.10.9 Institutional Framework, Legislation and Policy

The legal and institutional framework to direct the sector's development is inadequate compared with that of the Bauxite/Alumina Sector. Specifically, it is deficient in the comprehensive set of incentives and regulatory prerequisites characteristic of the bauxite mining side of the industry.

The era when this segment of the minerals industry was the preserve of small and poorly managed marl pits has been resigned to history. The sector is now a major economic force in many modern economies producing an extensive range of important value-added products. In order to realize this transformation, the country must restructure the legal framework, management and research institutions and other resources.

A. Refining of the legislation pertinent to mining/quarrying

Currently, the different bits of legislation pertinent to the minerals industry are being refined. The objective is to create one central piece of legislation, erasing the distinctions between mining and quarrying, emphasizing the significance of sustainability and attaching greater importance to the manufacturing of value-added mineral and mineral-based commodities.

B. Policy

As we seek to expand the minerals sector, as is evident by ongoing expansion in the bauxite/alumina sector, it is critical that we broaden the scope for economic minerals and the range of products and mineral commodities. Additionally, the country needs to acknowledge the continued importance of minerals to the economy and its development. Government's stated objective of pursuing lower cost energy, coupled with the available high purity carbonate mineral resources offer the opportunity to establish the island as a major producer of high-grade industrial mineral commodities.

In collaboration with private sector and non-governmental organizations this Ministry is developing a National Minerals Policy that will address all aspects of the minerals industry. The policy should greatly assist the sector, particularly from the standpoint of Government's position on incentives, access to mineral-bearing lands, parity between all sectors of the industry, access to ports, research and development, among other issues.

Failure to capitalize on the opportunities encapsulated in establishing an industrial minerals complex as part of the Clarendon eco-industrial zone could result in the continued underdevelopment and under-utilization of the country's mineral resources. This would result in significant increases in the importation of mineral-based products for commercial and industrial applications, increased outflows of foreign exchange, and possible loss of employment creation opportunities.

C. Sustainable Development

One of the greatest challenges facing many national governments is integrating economic activity with environmental integrity and social concerns. During the past decade, the mining and minerals industry has been pressured to improve its social, developmental and environmental performance. Like other parts of the corporate world, companies are now routinely expected to perform to higher standards of behaviour, be more transparent and be open to third-party audit or review.

In keeping with these worldwide trends, Jamaica has enacted new laws and upgraded numerous pieces of legislations to protect its citizens and ensure that environmental integrity is not compromised by any project or development. As such, approval must be given and the requisite environmental and operational permits granted prior to the commencement of any mining or industrial operation.

In a small island developing state such as Jamaica, the future of the minerals industry hinges on its ability to coexist with competing forms of land-use activities. Therefore, the continued existence, development and expansion of the mineral sector must be evaluated on the basis of its contribution to sustainable development. In keeping with worldwide trends, development in the mineral sector should have social, economic, environmental and political justifications, and thus proceed on a path of eco-efficiency.

2.6.4 The Mining and Quarrying Association of Jamaica

This legally incorporated private sector body represents the interest of entities within the Industrial Minerals Sector.

The organization is a trading and professional comprising owners and operators of mineral entities, minerals professionals in the private and public sectors. It recognizes the need for training, retooling the sector, improvement in mining engineering, processing and quality control standards. Partnering with the government to achieve these and other goals aimed at realizing the sector's potential is a major objective of the organization so as to ensure that it is able to successfully compete with our trading partners.

The focus on training and standards is aimed at achieving internationally recognized competencies and ensuring that the sector is able to successfully compete.

2.6.5 Financing

It is proposed to properly brief the local financial sector on the viability of projects within the industrial minerals industry, particularly in regards to the carbonate minerals (limestone, marble, etc.) in the local and foreign markets. This is intended to inform financiers and encourage the granting of long-term concessionary rate financing to effect the necessary development.

2.6.6 Investment Requirements

The minerals sector is capital intensive. However, the size of the required capital investment is a function of several factors, including:

- Size and location of operation
- Type of operation
- Equipment outfit
- Degree of geological and resource complexity

The value-added operations are the most capital intensive, but also most profitable.

Large export-oriented operations producing upward of two million tonnes annually allow for economies of scale, particularly when efficiently managed. These should be the focus of our development.

2.6.6.1 Examples of the Size of Investment Capital Required

2.6.6.1.1 Industrial Lime Manufacturing Operation

Annual production capacity of **over 0.5 million tonnes** will require between **US\$45 million – US\$60 million** to establish.

Note should be taken of the ages of the local lime producing plants ranging from **4 – 54 years**. Internationally, the average economic life of a plant is **30 – 35 years**.

New plants with an annual capacity **below 300,000 tonnes** are not particularly economic.

2.6.6.1.2 Limestone Aggregate Production Operation

Annual production capacity of **over 1 million tonnes** will require between **US\$6.5 million – US\$9.0 million** to establish.

2.6.7 Priority Actions

- Establish a Mining Industry Council comprised of Government and private sector interests.
- Strengthen the planning and regulatory activities of the Ministry of Land and Environment.
- Accelerate the development of the National Minerals Policy, inclusive of industrial zoning provisions and more vigorous promotion of environmentally sustainable mining policies, including measures to promote the wider usage of limestone-based aggregates over river sand.
- Revise incentive legislation (*Mining Industry Encouragement Act*) to provide suitable encouragement to investors in the Industrial Minerals sector. Specifically, measures such as procurement policies and tax measures to encourage the development of national industrial mineral entities should be explored.
- Establish the Clarendon Eco-Industrial Zone and conduct a study to determine the appropriate cluster of industries and requirements for water, energy, transportation, labour, and communications, among others. Special emphasis should be placed on the complementarities between the bauxite/alumina industry and non-bauxite industrial minerals, specifically lime (calcium carbonate).
- Establish a major joint-venture project for the development of an adequate port facility.

- Prepare a Mineral Sector Development Plan with a focus on training, retooling, research and development and value-added commodities.
- Undertake pro-active promotion of foreign investment in the local minerals sector through joint ventures, technology transfer arrangements, technical agreements and other forms of cooperation.
- Establish a market intelligence gathering and marketing entity (private sector).
- Seek to meet domestic requirements (short term), capture the Caribbean market (short – medium term), expand into north American markets (short – medium term), then penetrate South American markets (medium – long term).

2.7 Transport, Storage and Communication

Public Transportation: the public transportation sector is expected to grow with the expansion of population, and will be especially impacted by the construction of the new highway. One likely development is the extension of the JUTC franchise to serve new housing estates along the corridor, and the growth of taxi services.

Rail: The proposed reintroduction of a rail service continues to be a feasible option, particularly for freight.

Ports: The development of port facilities at Rocky Point Salt River or Port Esquivel to meet the needs of the Industrial Minerals sector could become feasible with appropriate Government involvement.

2.7.1 St. Catherine

Public Passenger Transport: This includes the Government-owned Jamaica Urban Transit Company (JUTC), as well private franchise operators and licensed taxis. A large number of informal transport operators are also active in the parish. JUTC has main offices in Spanish Town and maintains depots in Spanish Town and Portmore, two of the four situated across the Kingston Metropolitan Transport Region (KMTR).

There are approximately 400 licensed route taxis operating in the St. Catherine area on routes linking termini such as Bayside, Naggo Head and Waterford (Portmore), Daytona and Monza (Greater Portmore), Hellhire, Spanish Town, Ensom City and Eltham Park (Spanish Town) and Old Harbour -Old Harbour Bay . Approximately 45 stage carriage vehicles (taxis) operate between Spanish Town, May Pen, Old Harbour and Old Harbour Bay.

Ports: Port Esquivel is a shipping facility for alumina produced by WINDALCO at its processing plant in Ewarton.

Rail: The JRC has rail lines from Kingston to Old Harbour, and to Riversdale in St. Catherine, but these are currently out of use pending the reintroduction of rail transport. A rail link operated by the JRC facilitates the movement of the mineral from the Ewarton processing plant to Port Esquivel.

2.7.2 Clarendon

Public Passenger Transport: Three (3) of the 4 Bus Parks in the Portmore to Clarendon Park corridor are located in Clarendon: Vere, May Pen and Milk River. There are approximately 242 licensed route taxis with routes originating in May Pen. About 144, or 60 percent of these licensees, serve communities within the Highway 2000 corridor, such as Old Harbour, Palmers Cross, Toll Gate, Mineral Heights and Mandeville.

In addition, 30 stage carriage licenses are issued to transport operators serving routes between May Pen and Mandeville. An undetermined number of illegal/informal transport operators are also believed to be operating within the area.

Ports: Alumina is exported through the Rocky Point port, operated by JAMALCO, which operates bauxite mining and alumina processing facilities at Halse Hall. Salt River is inoperable at this time. Industrial mineral interests are currently examining the feasibility of establishing shipping facilities for limestone at these sites. The Salt River facilities are currently being divested by the NIBJ.

Airfields: Vernamfield is an old airfield which has the potential for development into an international cargo handling terminal, and an investment project is under consideration.

Rail: Rail lines between Kingston and Mandeville, via May Pen, form part of JRC's Kingston-Montego Bay line. These are currently out of use pending the reintroduction of rail transport under a divestment programme administered by the NIBJ.

2.7.3 The Development of Vernamfield

The Vernamfield complex started life as a United States Air Force Base and in fact the United States Government still has several years left on the lease of this property.

Three (3) reports on the Vernamfield Complex. were reviewed. They were:

- i. **The Millennium Project document commissioned by the Development Bank of Jamaica**
- ii. **A project Feasibility Assessment done by SH&E International Air Transport Consultancy**
- iii. **A report done by the Civil Aviation Authority (CAA)**

The above documents were also submitted to the Airports Authority of Jamaica (AAJ) and they were invited to submit their comments.



Plate # 2-1 – Vernamfield Aerodrome

2.7.3.1 Millennium Report

The Millennium report proposes the development of the Vernamfield Aerodrome into a Cargo Air Park with Free Zone facilities to capitalize on the increasing worldwide flow of e-commerce and business to business commerce (see Appendix I). The park will feature:

- Centralized cargo sorting and clearance centres for freight forwarding and courier services
- Distribution centres with component assembly facilities.
- Commercial Free Zone shopping for an international clientele
- A sixty-room hotel targeting medium price visitors.
- An administrative facility.
- A fully equipped aerodrome with telecommunications centre and flexible runway capacities

- An integrated and fully equipped aircraft maintenance facility with fuel fields, service hangers, ground service equipment and storage facilities
- Facilities to accommodate the JDF Air Wing
- A fire and rescue station with state of the art equipment
- Customs, immigration and security check points that are strategically placed throughout the park.

The facility will seek to attract one of the major air courier companies to establish an international/regional sorting office as well as freight forwarders, Commercial Free Zone operators, Hoteliers, Office, factory and warehouse space providers and restaurant operators.

The project will be developed in three (3) phases as follows;

Phase	Cost (US\$)	Employment
1	225,797,000-00	9,000 jobs
2	224,317,000-00	5,000 jobs
3	450,114,000-00	14,000 jobs

2.7.3.2 SH&E Report

The SH&E report (Appendix II) summarized that a possible Vernamfield redevelopment would:

- Take advantage of excellent location for airport operations, pan-island access, multi-modal links and available labour pool
- Generate an estimated **JAS\$6.75 billion** in construction wages over the five years (construction period) for 5,000 workers
- Generate an estimated **JAS\$2.9 billion** in wages for added contribution over five years
- Produce an additional **JAS\$3.2 billion per year** from a targeted 10% growth in the transport, storage, and communication sector, where each 100 new jobs generate JA\$75 million in yearly wages.
- Produce an additional **JAS\$3.75 billion per year** from a targeted 5% growth in merchandise exports
- Enable a targeted 10% gain in tourism, producing **over 20,000 jobs** generating **JAS\$4.7 billion per year** in wage earnings
- Leverage World Ban CAS capital and proven self financing through user fees and charges.

2.7.3.3 TheCAA Report

The extensive report prepared by the Civil Aviation Authority (see Appendix III), lists a number of issues to be addressed which includes:

- ✓ Strength of the existing runways
- ✓ The viability of developing this complex into an international standard airport and what types of operations would be required and desirable to sustain this development.
- ✓ Potential flight obstructions caused by Round Hill, May Day Mountains, Kenkoo Hill
- ✓ The future of the Gimme-Me-Bit community which is presently located at the end of one of the airstrips.

Of interest, the length of the 3 airstrips is as follows:

Runway	RUNWAY LENGTH			Code
	Nautical Miles	Metres	Feet	
07/25	0.8	1482	4860	3
14/32	0.85	1574	5164	3
18/36	1.2	2222	7300	4

The above figures should be compared with those for the Norman Manley International Airport (NMIA) and the Donald Sangster International Airport (SIA).

NMIA	2716 metres
SIA	2653 metres

Discussions with the Jamaica Defence Force (JDF) indicate that the JDF would be willing to relocate the JDF Airwing to Vernamfield if adequate facilities were provided. These details were included in the Millennium report and include:

- Hangers for the storage and repairs of all aircraft in the JDF's fleet
- An independent fuel field
- Parts store
- Barracks for 150 Officers and ground crew
- Offices, Mess Hall and Medical Station

2.7.3.4 AAJ's Comments

"The proposed redevelopment of the Vernamfield Aerodrome should be considered within the context of Jamaica's National Transportation Policy and the Government's policy of privatizing the two international airports. This should be done as investments in international airports have far reaching implications for a country like Jamaica from strategic and economic perspectives.

If Vernamfield is transformed into a third international airport (accommodating both passenger and cargo traffic), it would no doubt, reduce air traffic activity at the existing airports. This would represent a major change in the fundamental assumptions used in the traffic projections used in the contract negotiations with the private operator at SIA. It is certain that MJB Airports Limited would argue that this development would be a breach of the 30-year Concession Agreement, which was arrived at in the context of one local competitor. Such a facility would also adversely impact on the viability of NMIA and would render this airport virtually impossible to privatize.

If a strategic position was taken before the MJB commitment that Jamaica would be better served by a single centrally located airport that had high speed road connections to the major population and tourism centres, then a Vernamfield international airport could be probably be justified. In this event the existing international airports would be decommissioned and the lands and other assets put to other use. As it stands now, a capital development programme for US\$180,000,000 is already in progress at Sangster, and another of US\$127,000,000 is about to commence at Norman Manley.

In the circumstances, it would appear that if Vernamfield is to be established as an airport, it could be developed as a purpose-built cargo facility for an identified client/investor that can guarantee the requisite cargo volumes and revenues to ensure the viability of the Aerodrome.

Any proposal to redevelop the Aerodrome will need to be confirmed by a comprehensive Market Study.

It has also been suggested that the Vernamfield facility could be developed into a major aircraft repair facility. These possibilities must be investigated more fully to determine their feasibility.”

2.7.4 Priority Action

- A comprehensive Market Study should be undertaken to determine the best development strategy for Vernamfield. This should include the development of the facility into a major aircraft repair facility.

2.8 Electricity Gas and Water

2.8.1 Electricity

JPSCo is the main provider of electricity through the national grid. Cogeneration is undertaken by Jamaica Broilers /ERI and the Sugar Company of Jamaica. Users include private households and industrial enterprises. JPSCo purchases some of its power from cogeneration plants.

2.8.2 The National Energy Diversification Strategy (NEDS)

The Government has determined that Jamaica's long term development sustainability and national economic security depends on its ability to diversify its energy supply mix at the least economic cost/stable prices while fully protecting the environment.

At the moment, the following are the facts:

- Petroleum consumption is about 25 mboe (92% of energy supply mix) (See Table 2-20 and Figure 2-15).
- All petroleum is imported.
- Petroleum import bill at US\$ 813 million (about 62.5% of exports).
- Total exports at US\$ 1,300 million.
- 62% of petroleum used in bauxite/alumina and power sectors.
- Oil price volatility adversely impacts Jamaica's development sustainability and thus national economic security.

Table 2-20: Jamaica's Energy Supply Mix (2002)

<u>Source</u>	<u>MBOE</u>	<u>%</u>
Hydropower	182	0.7
Coal	490	1.9
Petroleum	22,817	90.2
Bagasse	880	3.5
Fuel wood	701	2.8
Charcoal	229	0.9
Total Energy	25,299	100.0

MBOE: thousand barrels of oil equivalent

Source: Office of the Prime Minister, 2004

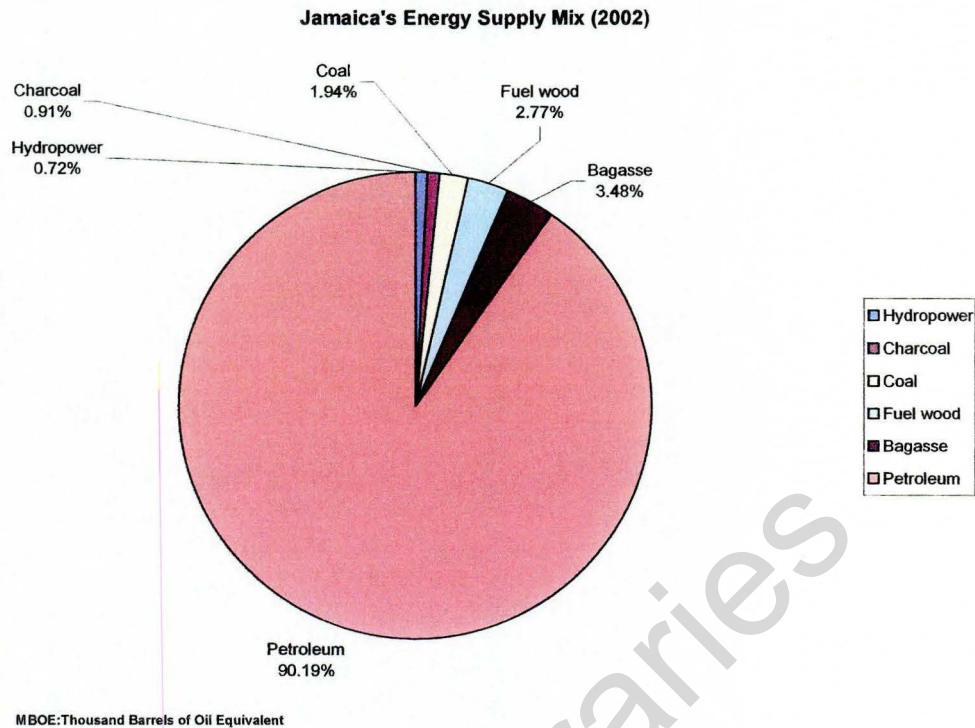


Figure 2-15

To achieve sustainability, Jamaica has developed the National Energy Diversification Strategy (NEDS) and is implementing a project to introduce imported natural gas into Jamaica's energy supply mix.

Jamaica believes that the Natural gas is a fuel of choice for sustainable economic development.

Natural Gas is an efficient fuel, is environmentally friendly and competitively priced.

The proposed Clarendon Eco-Industrial Zone will facilitate the establishment new power plants and the development of new industrial projects.

Table 2-21 provides an indication of the short term energy diversification potential.

Table 2-21: Short Term Energy Diversification Potential

Sector	Million Bbl of Oil Equiv.	LNG Equiv. Mil.Ton	LNG Potential Mil.Ton
Transport	5.4	0.6	–
Power	6.5	0.7	0.4
Bauxite	8.3	0.9	0.6 – 0.7
Cement	0.5	0.1	0.1
Sugar	0.2	0.0	–
Refining	0.3	0.0	–
Total	21.2	2.4	1.1 – 1.2

Source: Office of the Prime Minister, 2004

2.8.3 Water

2.8.3.1 St. Catherine

Water supply systems in the parish of St. Catherine include private wells operated by large farms and manufacturing entities, and the NWC system, sourced from the Rio Cobre and serving sections of Spanish Town and Portmore. The National Irrigation Commission (NIC) also maintains an irrigation system in Southern St. Catherine, with the Rio Cobre as its source.

2.8.3.2 Clarendon

The water supply system of the project area includes private wells, the public NWC system, and irrigation water supplied by the NIC. Users include domestic households and industrial and commercial establishments. The largest agricultural and manufacturing enterprises have access to their own wells.

2.8.3.3 The KMA Water Supply Project

The project covers Greater Spanish Town and South East St. Catherine, and is a key scheme in the Government's development programme (see Figure 2-16).

The project area is located within the Lower Rio Cobre hydrological basin.

Present water supply for Greater Spanish Town (GST) is from surface water through the Spanish Town Treatment Plant and from nine wells in the Western limestone aquifer of the Lower Rio Cobre Basin. In addition, water is transferred from the 1970's Rio Cobre System by a connection across the Rio Cobre river, from the site of the Eastern Headworks Well W.

South East St. Catherine (SESC) is supplied from nine wells in the Lower Rio Cobre alluvial aquifer with supplemental water transferred from the main gravity transmission main of the Rio Cobre system between the Caymanas Balancing Tank and Ferry Pumping Station.

In addition to potable water production, the other primary use of the water sources of the Lower Rio Cobre Basin is for irrigation of agricultural crops on the St. Catherine Plains. Irrigation water is derived from the Irrigation Headworks Dam and from wells throughout the limestone and alluvial aquifers.

The project is being undertaken by the NWC with major financial assistance from the Government of Japan.

The sustainability of the aquifer yield is highly dependent on recharge from surface water irrigation of overlying agricultural land (in actual production). To ensure the long term aquifer yield (in the interests of both the potable water and irrigation sectors), the project proposes to construct a major Artificial Recharge Facility.

In order to protect water resources that are clearly critical to both Greater Spanish Town and South East St. Catherine the plan proposes special protection (see Map 7).

2.8.4 Priority Actions

- The feasibility study being undertaken for the LNG project should consider the industry mix proposed by the feasibility study on the Clarendon Eco-Industrial Park.

2.9 Wholesale and Retail Trade, Hotels and Restaurants

Distribution will continue to be among the fastest growing sectors, driven by population increases and the expansion of urban living. This growth will include wholesale and retailing of food and other household items, hardware, electronic goods, petroleum products, agricultural products and other industrial products. The expansion of distribution will include concentration of holdings by large national retail chains - such as supermarkets and fast food restaurants - as well as the continued persistence of small, micro and informal enterprises in this sector.

The Distribution sector, comprised of wholesale and retail trade is a major contributor to the local economy of the project area, experiencing rapid growth in recent years, probably at a higher than the national rate due to the rapid growth of population. The entities include supermarkets, grocery stores, hardware stores, petrol stations, manufacturers' representatives and other trading operations. Small and micro enterprises make up the majority of these entities, with a very large number of informal operators. The establishment of local branches of national retail chains, e.g. supermarkets and petrol stations, is a growing trend.

There are no major hotels in the project area, as tourism is not a major industry. However, restaurants and other food services have expanded to meet the growing demand, especially in the major settlements such as Spanish Town, Portmore, May Pen and Old Harbour. These are mainly small and micro business size, with the opening of franchised operations of national and international fast food enterprises a growing trend.

No reliable data on the number of persons employed in wholesale and retail establishments within the project area are immediately available. However, the largest entities employ at least 1,000 persons.

The Distribution sector serves a mainly local market within the parishes of their location, in many cases replacing suppliers from outside the area as outlets are established in new locations.

2.9.1 St. Catherine

There are several entities identified in the distribution sector in the parish of St. Catherine. These are distributed as follows:

- Groceries
- Supermarkets
- Hardware stores
- Petrol Stations
- Electronics
- Furniture
- Dry Goods
- Other general merchandise

There are no major hotels in St. Catherine. However, small hotels, guesthouses/lodging houses, are concentrated in Spanish Town and Portmore. The number of restaurants has grown in pace with population growth, with the large food franchise operations (fast food restaurants) expanding their operations in all the main population centers, e.g. Spanish Town, Portmore, Old Harbour and May Pen. Bars are predominantly small or micro-enterprises, with a significant number of informal operations.

2.9.2 Clarendon

There are some entities identified in the distribution sector in the parish of Clarendon. These are distributed as follows:

- 1 Supermarkets (35 establishments)
- 2 Groceries
- 3 Food shops (498 establishments)
- 4 Meat shops (5 establishments)
- 5 Hardware stores
- 6 Petrol Stations
- 7 Electronics
- 8 Furniture
- 9 Dry Goods
- 10 Other general merchandise
- 11 Itinerant vendors (219 operators)

Approximately 127 restaurants have been identified in Southern Clarendon, concentrated mainly in the May Pen area, which contains 50 establishments; smaller concentrations are to be found in Hayes (13), Rocky Point (12) and Lionel Town (10). About 14 of a total of 150 bars are located within May Pen, while Lionel Town, Rocky Point and Hayes contain 22, 21 and 20 respectively. There are no major hotels in this area, except for a hotel and spa at Milk River, which is currently being divested by the NIBJ. However several smaller hotels, guest houses and lodging houses are to be found in the May Pen area.

2.10 Financing, Insurance, Real Estate and Business Services

Financial services including commercial banks and other savings institutions, insurance services, money market institutions and other financial services are expected to expand into the area to serve the growing populations.

Similarly, other industries in the services sector normally grow in direct proportion to population growth, and are therefore expected to expand significantly.

While informal entities will continue to predominate, more and more large enterprises will base operations within the area in order to take advantage of expanding demand.

This sector is comprised of the following industries:

- 1 Commercial Banks
- 2 Insurance Companies
- 3 Building Societies
- 4 Credit Unions
- 5 Money Market institutions
- 6 Remittance and Bill Payment agents
- 7 Cambios

- 8 Real Estate agencies
- 9 Professional Services
- 10 Personal Services e.g. Barbers, hairdressers, etc.
- 11 Health Care
- 12 Other Services

Financial institutions such as the Commercial Banks, Building Societies, Credit Unions and Money Market institutions have been expanding their services in the project area in recent years through the opening of branch operations in major communities.

The service sector employs a significant number of informal operators, perhaps in excess of the number employed in the formal sector.

The volume of production of services within the project area may be estimated from the number and size of deposits, the value of transactions and investment portfolios of residents. These figures are however not readily available. Estimates, based on national totals and relative population size of the project special areas will provide a rough guide to the size of operations.

The financial institutions serve a mainly local market within the districts of their location, and in surrounding areas.

2.11 Community, Social and Personal Services

The services sector should be seen as a potential new “export engine”. This requires effective measures to promote its growth.

The relevant services, including: Government, Social and related Community Services, Recreation and Cultural Services and Personal and Household Services will grow in response to population increases. However Government services will be affected by fiscal constraints

2.11.1 St. Catherine

2.11.1.1 Government Services

Schools, health facilities, public works, and other central and local Government services account for a significant amount of employment. The types of such facilities in the parish of St. Catherine are:

- Schools
- Health Centres
- Public Works
- Labour and Social Security
- Youth and Community Development
- Parish Councils/municipal offices
- Fire services

- Agricultural Services
- Police stations

2.11.1.2 Sanitary and Similar Services

Sewerage and sanitation services managed by the NSWMA, Parish Councils, and in some communities by NGOs such as Citizen's Associations are available in most towns.

2.11.1.3 Social and Related Community and Personal Services

These include:

- Barbers and hairdressers
- Health care/medical services
- Business and Professional services (engineers, accountants, consultants etc.)

2.11.1.4 Recreational and Cultural Services

These include:

- **Horse Racing:** The Caymanas area is the center of the island's Horseracing Industry, which includes the breeding of horses as well as the operation of a racetrack at Caymanas Park.

Caymanas Track is owned by NIBJ and presently operated by Caymanas Track Limited (CTL).

As an agricultural based entertainment industry, horse racing is unique. Through the breeding, training, care, feeding and racing of horses, the industry not only produces jobs, income, economic activity and tax revenues, it also generates tremendous demand for agricultural products and the need for significant areas of farmland and green space in St. Catherine.

Local racing comprises track and off track betting. The main revenue driver for this business line is an expansion in the number of racing meetings and increase in ticket prices.

Currently, there are ninety-five (95) race meetings per annum.

The average attendance at Caymanas Park per race day is around 6,000 – 8,000 patrons with a peak attendance of over 10,000 for special 'stakes' events. Approximately 1,000 patrons of the total attendance are VIP's and horsemen.

The industry employs hundreds of persons directly and indirectly.

- **Golf Course** at Caymanas
Caymanas was built in the mid 1950's and was Jamaica's first major 18-hole championship course. It is known for its elevated trees and greens.
- **Bathing** at Half Moon Bay (Hellshire) and Port Henderson
- **Theme Park:** at Spring Village owned by the Guardsman Group.
- **Night clubs** and other places of entertainment: Port Henderson Road.
- **Jamworld Entertainment Park** in Portmore
- **Other:** Informal attractions

2.11.2 Clarendon

2.11.2.1 Government Services

Government services include local offices or facilities of Central and Local Government authorities such as:

- i. Schools
- ii. Health Centres
- iii. Public Works
- iv. Labour and Social Security
- v. Youth and Community Development
- vi. Parish Councils/municipal offices
- vii. Fire services
- viii. Agricultural Services
- ix. Police stations

Schools, health facilities, public works, and other central and local Government services account for a significant amount of employment.

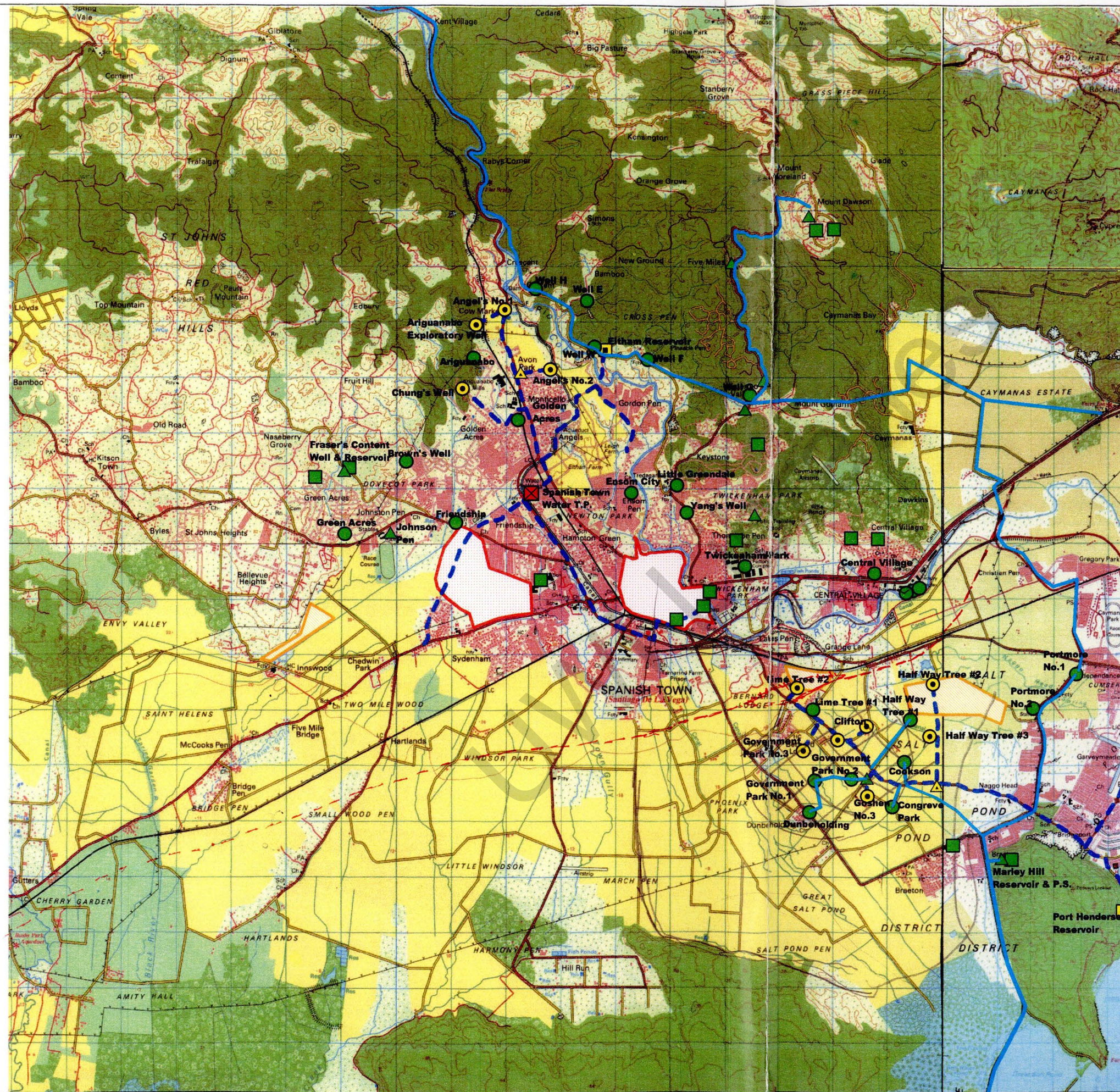
2.11.2.2 Sanitary and Similar Services

NSWMA is responsible for public sanitation services in the parish.

2.11.2.3 Social and Related Community Services

These include:

- Barbers and hairdressers
- Health care/medical services
- Business and Professional services (engineers, accountants, consultants etc.)



LEGEND

- Existing trunk main.
- Water treatment plant.
- Existing well.
- Proposed well.
- Proposed reservoir.
- ▲ Existing pumping station.
- ▲ Proposed pumping station.
- Existing Reservoir
- Proposed trunk main.
- Recharge area.
- Mains replacement area.

--- Approx Alignment of H2K

National Water Commission

KMA Water Supply Project

LAYOUT OF EXISTING FACILITIES
AND PROPOSED PROJECT
COMPONENTS (LOT 2)

 NIPPON KOEI CO.,LTD.

 MWH

Drawing

Figure 2-16

2.11.2.4 Recreation and Cultural Services

These include:

- **The Milk River Spa:** The property is located 12 miles off highway A2 at the foot of the Carpenter's Mountain and at the beginning of the Vere Plains. The baths are potentially one of Jamaica's premier natural attractions. The property of Milk River Baths dates back to the 18th Century. The original property was some two thousand odd acres which was willed to the Government of Jamaica for the benefit of the people of the land. There are presently some 228 acres of the estate remaining, although only some 14 acres is currently utilised. The development consists of a public mineral bath with recreational/hotel facilities and a swimming pool complex.

At this time there are six public mineral baths and three private baths, as well as an outdoor mineral swimming pool. There are twenty (20) Guest Rooms and a dining room. The facilities are primarily patronized by non-resident Jamaicans. Many local people visit the spa, especially at weekends, but Europeans visitors are becoming more common. For overnighters the Spa is free, otherwise a small charge is made.

The Spa is located within the Milk River Hotel. Water flows from the rocks above the hotel at a constant 120 degrees. It is extremely saline but also rich in mineral salts and has a high radioactivity. It is reputed that the therapeutic properties of the spring are not surpassed by any other mineral spring in the world. Many people claim to have been cured of arthritic complaints, muscular problems, skin disease and a wide range of ailments.

The following is a comparison with other well-known spas of world-wide reputation:

- 9 time as active as Bath, England
- 50 times active as Vichy, France
- 3 Three times as active as Karlsbad, Austria
- 54 times as active as Baden, Switzerland

The facility is presently in poor condition, as the decision to divest has resulted in little or not improvements being undertaken. Current problems include poor road conditions, sewage disposal, access to potable water and flooding.

The hotel complex, on 69 acres of land, is currently available for divestment. Several previous attempts at divestment have been unsuccessful, because the property can only be leased not sold.

- The Monymusk Gun Rod and Tiller Club, at Salt River; and
- The Motorcycle Racing track at Vernamfield.

2.11.3 Breadnut Valley Skills Training Institute

With the pending expansion of its mining operations, the JAMALCO bauxite company will need to increase its staffing of higher skilled persons, in particular welders, pipe fitters and millwrights. To meet its impending demand JAMALCO has spearheaded a joint initiative between other bauxite mining companies in the island and HEART/NTA. This initiative will entail the establishing of a training facility at an expired mining plant, Breadnut Valley. The Breadnut Valley facility is owned by JAMALCO and is located north-west of May Pen.

The training programme is expected to be carried out in two phases. Phase one will have training being provided for workers for JAMALCO and is expected to run for approximately 3 years, with over 2,600 persons being trained. Phase two will have training for workers for the rest of the bauxite industry.

For its part JAMALCO will provide the physical structure needed for the training facility and HEART/NTA would provide the training equipment and the trainers.

This facility, while physically just northwest of May Pen and therefore outside of the project area, has a direct bearing on the ability of the area to achieve its development potential.

It is proposed that a study be undertaken to determine the skill requirements of existing industries in the project area as well as the cluster of industries to be attracted to the proposed Clarendon Eco-Industrial Zone, and that discussions be held with JAMALCO to allow training in the additional skill areas required.

The general thrust toward a more integrated industrial development for southern Clarendon should also be seen as an opportunity not only to prepare workers for industry, but to prepare young persons for self employment. In this regard, the facility should also provide training in business development and information technology. This element of the programme could be developed in conjunction with the Jamaica Business Development Centre (JBDC).

In addition, the redevelopment of Spanish Town (see Section 4.2.2.2) and May Pen (see Section 4.2.2.3), as well as the development of a New Town in the Old Harbour/Old Harbour Bay area (Esquivel) (see Section 4.2.4), will herald an unprecedented construction boom, resulting in a demand for thousands of skilled craftsmen and construction workers.

The Breadnut Valley Skills Training Institute and the other HEART/NTA training facilities in the region will have to be placed in a position to respond to these demands.

2.11.4 Caymanas Track Development

There is an ongoing attempt to diversify the offerings at Caymanas Park to meet Governments objectives “to provide a modern first class racing/entertainment complex, which would facilitate the future self-sustainability of the horseracing industry in Jamaica.”

This is important given the following:

- The empirical evidence suggests that the horse racing industry does not currently reach a large portion of its potential customer base in Jamaica.
- There is therefore a need to broaden the appeal of horse racing by developing high quality facilities with a wider variety of amenities.
- There is a need to develop leisure and entertainment-based projects at the race track. These include casinos, restaurants, and other entertainment projects.

Jamaicans spent approximately J\$17.7 billion on horseracing and J\$13.3 billion on the lottery. The various lottery games have grown in popularity as the games have become more exciting and persons have more access to retailers.

Prospective developers have been invited to bid on the development of the facility. Some of the possible developments are as follows:

Gaming: This is the introduction of a new business line in the development of the facilities at the racetrack. The facilities would be similar to that in Las Vegas (USA) and would include casinos and gaming machines.

In a 2002 study undertaken by Penn State for the owners of Pennsylvania’s four horse racing tracks, the recent public interest in slot machines at the tracks was assessed. The results of the study were compelling and showed the creation of thousands of new jobs, increase in personal income, increase in the value of goods and service statewide, and increased taxes to state and local governments.

Simulcast Racing: The possibility exists to have simulcast racing, to expand audio and video signal of live racing from overseas locations particularly the United States and Europe.

Sports Wager: Opportunities to place bets on non-horse racing sporting activities. These include European soccer, American football and basketball.

Live Entertainment: 4-5 live shows per annum. An aggressive marketing plan will offer the entertainment complex to tourists staying throughout the island. With the completion of Highway 2000, there will be easy access to the facility.

Food and beverage: High-class food outlets and restaurants providing a wide variety of local and international dishes.

Breeding Programme: One of the most crucial elements to the viability of the industry is the availability of horses to engage in competitive racing. The current stock is insufficient to sustain the number of races that the industry would like to have. The stock will be increased for racing in the short-term by importing between 200 and 300 horses of which at least 75% will be female racehorses. These horses will be leased to interested parties under an auction system. This will lead to a wider base of horse ownership and in turn, will generate additional interest from a wide cross-section of persons throughout the island. Eventually, a large portion of the fillies imported will be put into breeding stock. It is estimated that within five years the racehorse population will grow by a minimum of 50%.

The upgrading and diversification of the facility at Caymanas Park would have a significant multiplier effect in the regional economy.

Every effort should be made to the successful implementation of this project.

2.11.5 Milk River Spa

The site has great potential for future growth, particularly if it is repositioned to appeal to the health market and a suitable divestment package can be agreed. Mineral spas are becoming increasingly fashionable and are being incorporated into new resort developments. The spa at Milk River has a long history and the buildings have an historic character that can be reflected in any redevelopment proposals. The site also has good accessibility to population centres at May Pen, Mandeville and Kingston, and is close to several other attractions and beaches in the local vicinity. It will be important that scale and form of any new development on the site respects both the existing architectural character of the hotel, and its superb natural setting.

The spa was identified as one of the government's millennium projects (see outline at Appendix IV).

Plans are in the pipeline for the development of Milk River into a Pool, Museum and Spa Resort. The proposed development was conceived as a multi-faceted Jamaican-style environment, which combines health, lifestyle, special needs, relaxation, recreation, and dietary and medical treatment within one aesthetically pleasing ambiance. The objective of the development plan is to capitalize on the health properties of the spring and to introduce Jamaica into the field of health and resort tourism.

The resort is expected to have some 136 rooms and employ 133 persons. The facility is expected to host such things as:

- Spa Complex,
- Aquatic Centre,
- Life Skills Centre,
- Yoga Dance and Dome Studio
- Arts and Craft Centre
- Gaming Lounge

- Amphitheatre
- Medical Centre, and
- Villas

The development is expected to cost approximately US\$34.7 million.

2.11.6 Cultural Heritage Tourism in Spanish Town

(See full discussion at Section 4.2.2.2)

2.11.7 Priority Actions

- Continued promotion of investment in the Information Technology sector.
- Continuation and upgrading of training programmes under HEART/NTA, ensuring that they are targeted towards competitive industries.
- Undertake a study to be undertaken to determine the skill requirements of existing industries in the project area and the industries in the proposed Clarendon Eco-Industrial Zone, and the full development of the Breadnut Valley Skills Training Institute to provide the required training.
- Identification of other service industries for development, e.g. Health care, education and security services with a view to encouraging exports of these services.
- The Highway 2000 Corridor, with its concentration of population and support institutions, should be developed as a source of trained manpower.
- Promotion of tourism in the corridor, which will now become more accessible to visitors to traditional resort areas. Investment by Private sector entities in viable projects in areas such as cultural heritage tourism should be encouraged and supported by TPDCo.

2.12 The Informal Sector

The level of informal activity and the estimated size of the informal sector are higher within the Portmore-Clarendon Park corridor, when compared with the national level.

Informal activities are dominated by services, followed by agriculture, transportation and distribution, construction and installation, and mining and quarrying

Some of the informal activities involve servicing of markets external to their immediate locality, that is, are basic activities, while some service a localized market exclusively. In the parish of St. Catherine, informal activities in mining and quarrying are considered

“basic”, since the bulk of their output is marketed outside of the parish ; meanwhile activities such as transportation (route taxis) are considered “non-basic”, since these mainly serve intra-parish needs.

Informal activities within the corridor most likely to be impacted by the highway include: food services, transportation, construction, agriculture, mining and quarrying, and distribution. The impact is not uniformly positive, as in some cases, the construction of the highway will involve the diversion of business from roadside operations (e.g. food service, automotive, agricultural sales). The positive impacts include increased demand for products and increased employment.

3.0 THE PEOPLE

3.1 Demographic Analysis

The development plan covers an area, which has experienced rapid population growth over the past decade. Total population of the study area was 460,367 in 2001, according to the Population Census undertaken in that same year. This represents an increase of 32 percent above the 1991 population of 346,719. The present estimated population of the project area is 493,063 (a 7% increase since 2001), and represents 64% of the total parish populations of St. Catherine and Clarendon. The population is projected to increase by 58% to 728,548 by 2025 (see Table 3-1 and Figure 3-1).

St. Catherine, however, has seen the most significant change in population over the years. According to the 2001 Population Census, St. Catherine grew by 26.3 per cent, almost three times the growth observed for Jamaica as a whole. St. Catherine grew by 100,336 persons over the censal period.

Clarendon has also made significant contribution to the growth in the central region of the island. Between 1991 and 2001, the population of Clarendon grew by 22,322 persons or about 10.4 per cent.

The growth of these two parishes is a direct result of high levels of internal movements resulting from the development of urban centres. These include towns such as Portmore Municipality, Old Harbour, Old Harbour Bay (St. Catherine); and May Pen (Clarendon).

May Pen has seen the highest growth rate for any parish capital. That parish capital grew by 24.2 per cent between 1991 and 2001, increasing the overall parish wide population by 2.5 percentage points. This growth is significant for what is generally classified as a rural parish.

However, the most outstanding growth witnessed over the period was the further development of the Portmore community. In 2001, Portmore combined with Hellshire, grew faster than the parish capital, Spanish Town. Old Harbour is second to Portmore in growth rate in the parish. This population is steadily growing and is spilling into the Old Harbour Bay area.

Table 3-1: Current and Projected Population of Project Area

Special Area	Total	Percentage of Total Population	Projected Population		
			2010	2015	2025
Total St. Catherine	357,363	72.48%	431,090	507,146	556,271
1. Spanish Town	140,637	28.52%	149,651	159,242	175,905
2. Portmore Municipality	166,845	33.84%	173,142	179,413	191,068
3. McCooks Pen	1,947	0.39%	2,020	2,097	2,258
4. Old Harbour Bay	8,374	1.70%	17,502	18,972	22,292
5. Old Harbour	29,835	6.05%	78,577	136,729	152,992
6. Freetown	764	0.15%	806	850	945
7. Rest of Project Area in St. Catherine	8,961	1.82%	9,392	9,843	10,811
Total Clarendon	135,700	27.52%	151,000	160,114	172,277
8. May Pen	68,392	13.87%	76,959	81,666	86,675
9. Sandy Bay/Green Park	6,894	1.40%	8,119	8,816	9,576
10. Hayes District	12,587	2.55%	12,989	13,403	14,273
11. Longville Park	1,399	0.28%	1,471	1,546	1,707
12. Lionel Town	3,392	0.69%	3,188	3,082	2,988
13. Mitchell Town	1,753	0.36%	1,756	1,760	1,767
14. Salt River/Sandy Bay	593	0.12%	603	612	632
15. Rocky Point	4,390	0.89%	4,810	5,035	5,519
16. Portland Cottage	2,469	0.50%	2,513	2,558	2,649
17. Race Course	3,415	0.69%	3,461	3,508	3,604
18. Brokenbank	2,062	0.42%	2,101	2,141	2,223
19. Alley	1,548	0.31%	1,685	1,758	1,913
20. Gimme-Me-Bit	1,794	0.36%	1,800	1,806	1,817
21. Toll Gate/Osbourne Store	7,238	1.47%	7,914	8,652	9,462
22. Rest of Project Area in Clarendon	16,886	3.42%	20,789	22,951	26,694
23. Free Town	888	0.18%	842	820	778
Total Project Area	493,063	100.00%	582,090	667,260	728,548

Source: Population Unit, PIOJ August 2004

Population of Project Area - 2005

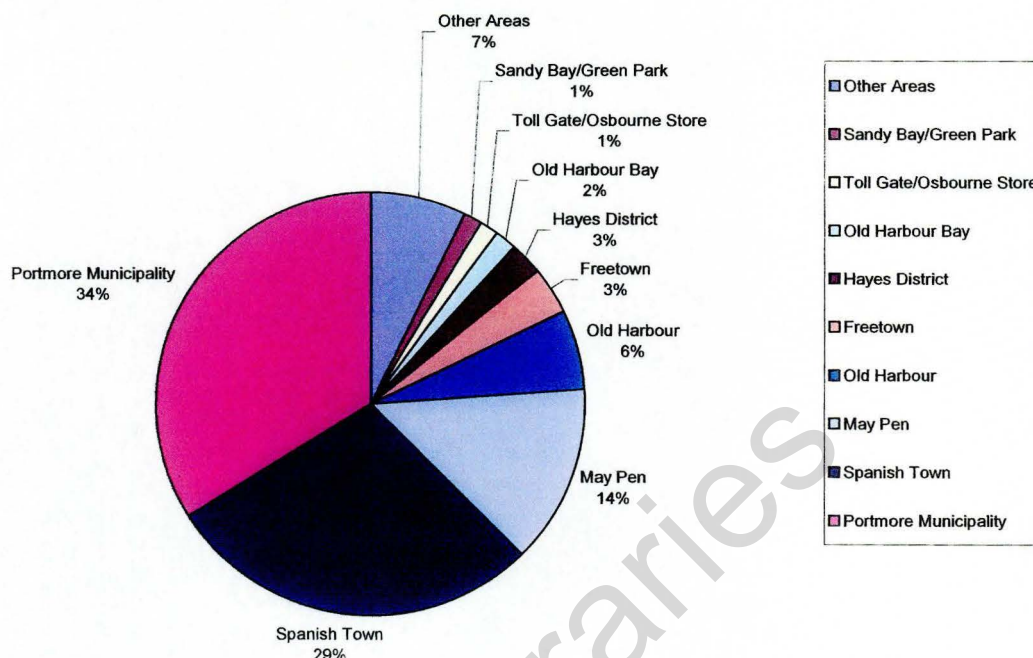


Figure 3-1

Age and Sex distribution are two important components in demographic analysis. The sex ratio is one such demographic variable. The sex ratio measures the sex composition of the population; it is also referred to as the male to female ratio. This is expressed as the number of males for every 100 females.

3.1.1 Sex Structure

The data show that between 1991 and 2001, the study area in St. Catherine had a lower sex ratio than Clarendon (see Table 3-2). The sex ratio in St. Catherine declined to 90.9 males per 100 females in 2001 from 91.9 males per 100 females in 1991. Clarendon, on the other hand experienced an increase to 97.8 males per 100 females in 2001 from 97.5 males per 100 females in 1991. The 2001 Population Census indicates that the parish of St. Catherine had an excess of females while Clarendon recorded an excess of males. This remains true for the study area in St. Catherine but that for Clarendon reported an excess of females which differs from the total parish picture.

Table 3-2: Analysis of Sex Distribution by Parish 1991 and 2001

Parish	1991		2001	
	Masculinity Proportion	Sex Ratio	Masculinity Proportion	Sex Ratio
Jamaica	49.04	96.24	49.22	96.94
St. Catherine	47.9	91.9	47.6	90.9
Clarendon	49.4	97.5	49.5	97.8

The female population grew by 0.3 percentage point to 52.4 per cent in 2001 from 52.1 per cent in 1991. The sex ratios presented in Table 3-3 by five-year age groups show that there is male prevalence in the 0-4 and 50-54 age groups in 1991 for the study area of St. Catherine. The structure changed slightly in 2001 to show an excess of males in the 0-9 age groups. The sex structure of the population shows that the population in St. Catherine has made very little change over the period.

**Table 3-3: Sex Ratios (Males per 100 Females) by Specified Age Groups
Census Years 1991 and 2001**

Age Group	St. Catherine		Clarendon		Jamaica	
	1991	2001	1991	2001	1991	2001
0-4	100.1	103.6	103.0	102.3	103.2	103.7
5-14	98.6	101.2	97.3	98.6	101.3	102.6
15-29	90.4	90.5	96.2	95.8	95.1	96.0
30-44	86.4	82.3	96.7	95.0	93.7	92.2
45-59	97.4	90.1	100.7	103.1	98.1	101.2
60+	68.6	71.2	86.7	87.8	84.1	86.5

In Clarendon, there has been no change in the structure of the population either as there was a fairly equal overall distribution between the sexes. However, in 1991, a more in-depth analysis of sex ratios showed there was an excess of males in the following age groups: 0-4, 40-49 and 60-69; while in 2001, the excess shifted to the 0-4, 10-14, 50-59 and the 70-79 age groups. This differs from the pattern which pervades across the other parishes and the island in general where the older age groups are dominated by women. This is the case in Clarendon as a result of the dominance of agriculture, industry, and construction.

3.1.2 Age Structure

The age structure of the population is similar to the sex structure in that it is principally determined by past fertility patterns. Patterns of migration also impact on the age and sex structure of the population. It is evident from the distribution by age and sex that fertility rates have declined in both St. Catherine and Clarendon. This is clearly seen in the age groups 0-29 years. Occurring simultaneously with the decline in the younger age groups has been the increase in the proportion of the older age groups. The increase in the older age groups has been more pronounced for the female population than for males in both parishes (see Tables 3-4 and 3-5 and Figures 3-2 to 3-5).

As it pertains to the growth in population, the largest increase occurred between 1991 and 2001 in both parishes in the 30 years and over age groups. The highest proportionate increase in both parishes occurred in the 45-59 age group.

Table 3-4: Percentage Distribution of the Population (study area) of St. Catherine and Clarendon by Broad Age Groups and Sex: Census Years 1991 and 2001

Age Group	St. Catherine		Clarendon	
	1991	2001	1991	2001
Male				
0-4	11.7	11.2	13.0	11.8
5-14	23.6	22.0	24.9	23.3
15-29	32.0	27.5	28.0	25.8
30-44	18.2	21.8	15.8	18.9
45-59	9.2	11.3	9.2	10.4
60+	5.3	6.2	9.1	9.8
Female				
0-4	10.8	9.8	12.3	11.2
5-14	22.0	19.7	24.9	22.6
15-29	32.4	27.7	28.4	26.3
30-44	19.6	24.0	16.0	19.5
45-59	8.6	11.5	8.9	10.0
60+	6.6	7.3	9.5	10.4

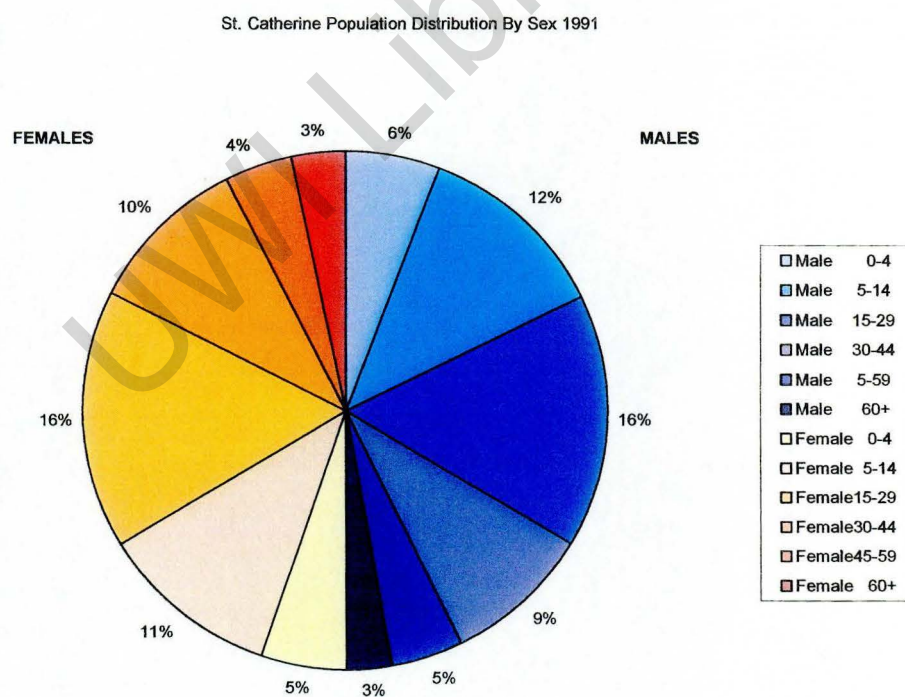


Figure 3-2

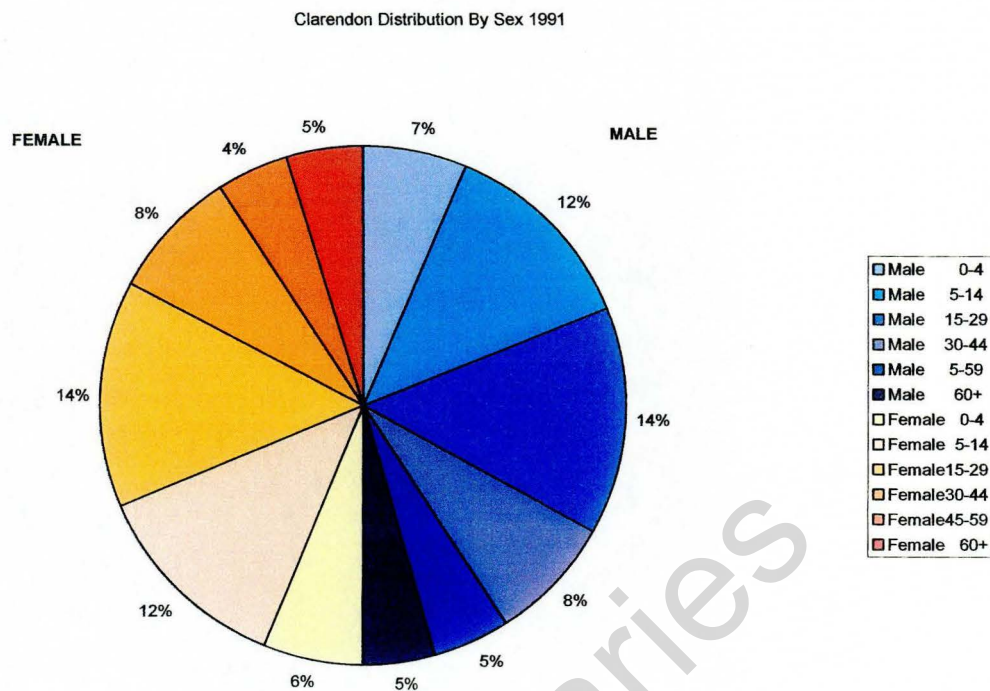


Figure 3-3

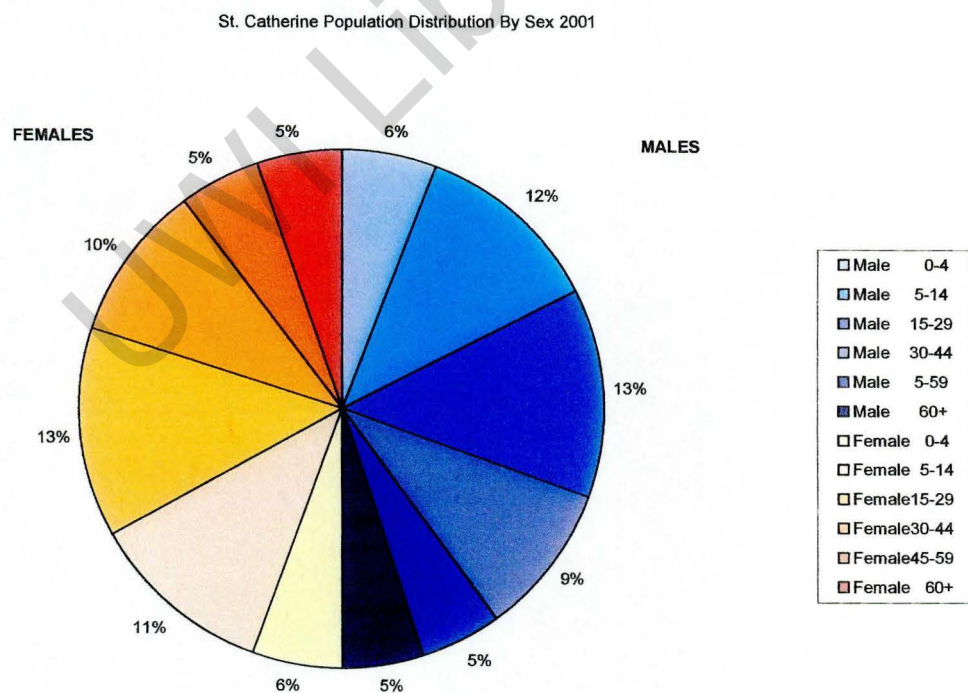


Figure 3-4

Clarendon Population Distribution By Sex 2001

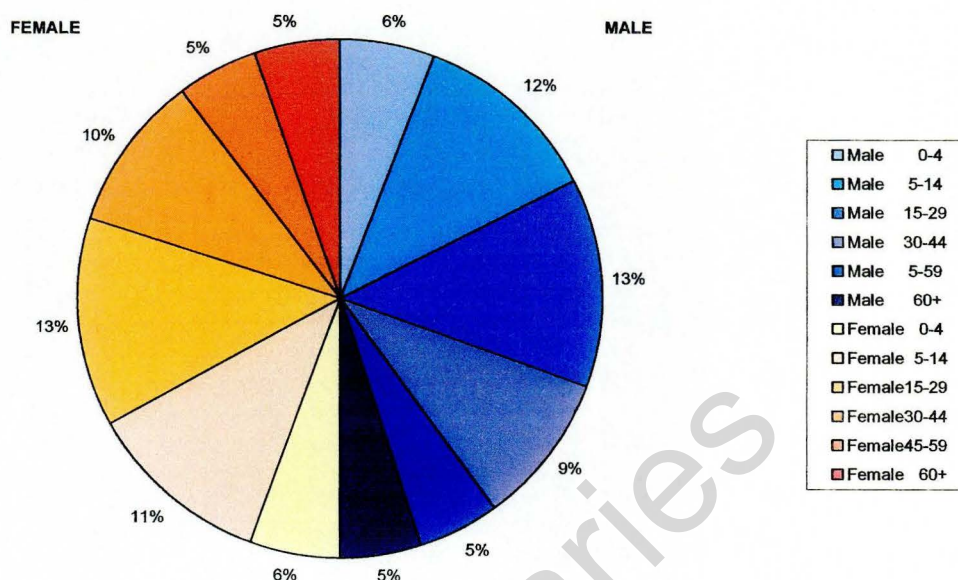


Figure 3-5

Table 3-5: Change in Age Groups: 1991-2001

Age Group	St. Catherine				Clarendon				Jamaica			
	1991	2001	Absolute Change	% Change	1991	2001	Absolute Change	% Change	1991	2001	Absolute Change	% Change
0-4	26063	35085	9022	34.6	13287	14572	1285	9.7	274708	272818	-1890	-0.69
5-14	52979	69410	16431	31.0	26223	29034	2811	10.7	556608	570750	14142	2.54
15-29	74908	92159	17251	23.0	29814	33053	3239	10.9	692570	674795	-17775	-2.57
30-34	43970	76539	32569	74.1	16720	24271	7551	31.1	398064	537923	139859	35.13
45-59	20675	38110	17435	84.3	9500	12898	3398	35.8	219726	286575	66849	30.42
60+	13789	22715	8926	64.7	9869	12828	2959	30.0	238991	264773	25782	10.79

The population pyramid is one the most effective methods of illustrating the age and sex structure of the population. The pyramid shows the population for 2001 superimposed on the structure for 1991 to present the changes between the periods. The pyramid depicts a contracting base and expanding older age groups. The structure presents a vivid picture of the ageing population in the study area of these parishes which is characteristic of the general Jamaican population (Figures 3-6 and 3-7).

**Population Pyramid for the Study Area in St. Catherine,
1991 and 2001**

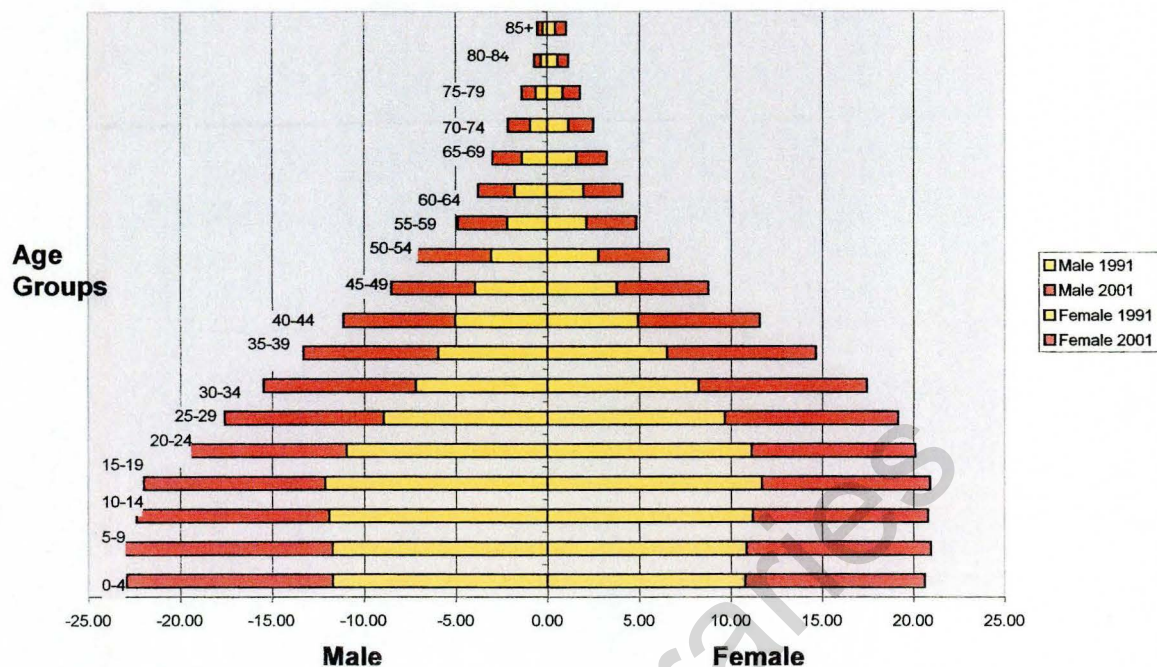


Figure3-6

**Population Pyramid for the Study Area in Clarendon,
1991 and 2001**

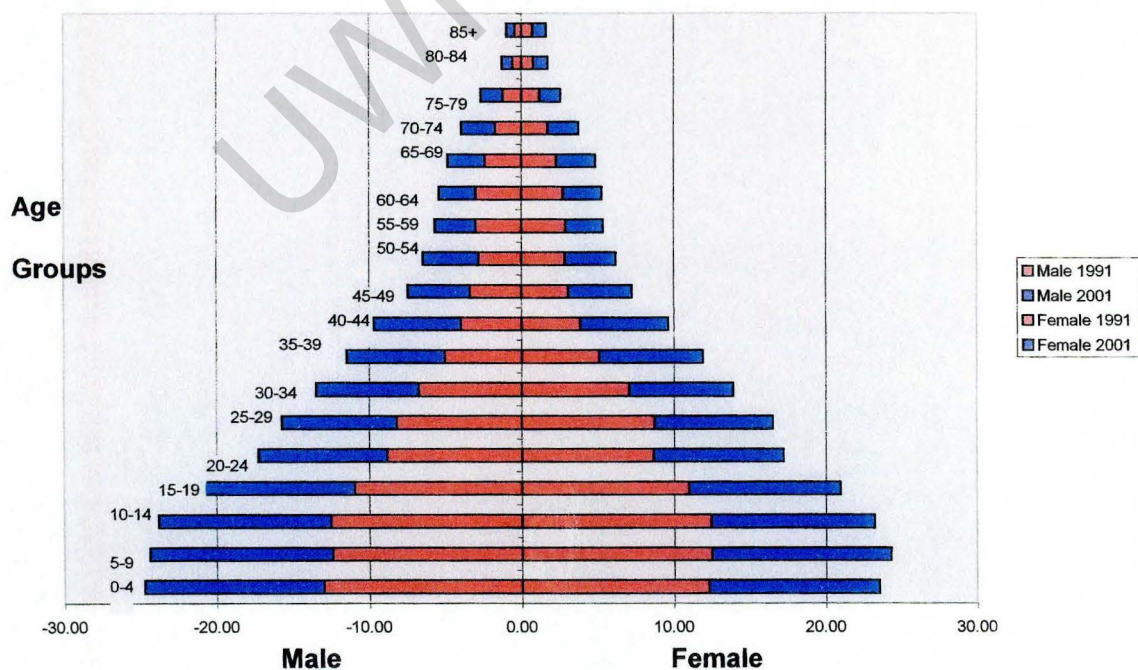


Figure 3-7

3.1.3 Median Age

The median age is the age at which the population is divided into two equal parts. Populations with medians under 20 years are considered “young”. Medians between 20-29 years are considered “intermediate” and those 30 years and over considered as “old”. An examination of the median ages shows that there has been a steady increase in the median age of the population. This is congruent with the ageing of the national population which has been a feature for the past thirty years.

Median ages for both study areas show that Clarendon has a younger population than St. Catherine over the period. Data from the Population Census 2001 indicates that Clarendon (parish population) has the youngest population in the island, while St. Catherine is among the oldest. In 2001, the female population in the study area of Clarendon had a high median age (25.20 years) and the male population in St. Catherine with a high 20.66 years (Table 3-6).

**Table 3-6: Median Age of the Population by Parish:
1991 and 2001**

Parish	Total		Male		Female	
	1991	2001	1991	2001	1991	2001
St. Catherine	20.36	25.02	20.22	20.66	20.50	20.20
Clarendon	20.13	20.53	20.10	20.48	20.50	25.20
Jamaica	21.7	24.3	21.1	23.7	22.3	25.0

3.1.4 Dependency Ratios

Dependency ratios take into consideration the variations in the proportions of children (0-14 years), aged persons (65+ years) and persons of working age (15-64 years). 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 the productive portion of the population must bear. It is noteworthy that some persons in the “dependent” population are producers while persons in “productive ages are economically dependent” (Tables 3-7 to 3-9).

The data show that between the two periods, there were declines in the younger groups and increases in the older cohorts. This is a reduction in the dependent youth population; an increase in the productive population; and an increase in the elderly dependent population (see Table 3-7).

Table 3-7: Percentage of Parish Population in Major Age Groups, 1991 and 2001

Parish	Percentage of Population					
	Under 15 years		15-64 years		65+ years	
	1991	2001	1991	2001	1991	2001
St. Catherine	34.0	31.3	62.0	64.0	4.0	4.7
Clarendon	37.5	34.5	55.9	57.9	6.5	7.6
Jamaica	34.9	32.4	57.7	52.7	7.4	7.7

Between 1991 and 2001 in both parishes, there has been a decline in dependency ratios. The total dependent population in St. Catherine declined by 5.3 percentage points. Clarendon experienced a greater decline (8.3 percentage points) than St. Catherine over the period. The youth dependency ratio which relates to those under 15 years to the 15-64 years fell to 48.8 per 100 in 2001 from 54.9 per 100 in 1991 in St. Catherine. In Clarendon, the youth dependency ratio declined to 59.4 per 100 in 2001 from 68.9 per 100 in 1991.

The declining trend continued for the elderly dependent population (65 years and over). Declines were more drastic in Clarendon than St. Catherine over the period. **The declining dependency ratios are an indicator that both parishes have experienced significant growth in the productive population (15-64 years). This is a direct result of the effects of migration and declining fertility and mortality (Tables 3-8 and 3-9).**

Table 3-8: Dependency Ratios by Parish Population: 1991 and 2001

Parish	Dependency Ratios					
	Total		Youth		Elderly	
	1991	2001	1991	2001	1991	2001
St. Catherine	61.5	56.2	54.9	48.8	6.5	7.4
Clarendon	80.9	72.6	68.9	59.4	17.3	13.2
Jamaica	73.3	66.7	60.5	53.9	12.8	12.7

Table 3-9: Percentage Change in Total Dependency Ratios: 1991-2001

Parish	1991	2001	% Change
St. Catherine	61.5	56.2	5.3
Clarendon	80.9	72.6	8.3
Jamaica	73.3	66.7	6.6

3.1.5 Educational Attainment

Educational attainment is defined as the highest grade completed within the most advanced level attended. Level of educational attainment has improved significantly over the period in both the Clarendon and St. Catherine study areas. This is evident in the declines in the proportion of the population which has only attained a primary level education compared with increases in the proportion of the population both male and female that has attained secondary, higher level education. Importantly, the proportion of the population which did not have any schooling or did not report their level of education over the period also experienced a decline (Tables 3-10 and 3-11 and Figures 3-8 to 3-11).

Examination of the gender differentials revealed that there are higher proportions of women than men with secondary and tertiary education. Consequently, there are greater proportions of men who have attained only a primary level education and who have no formal schooling at all over the period.

Table 3-10: Percentage Distribution of the Clarendon Study Area by Educational Attainment

Level of Education	1991		2001	
	Male	Female	Male	Female
Pre-Primary	3.9	4.0	4.8	4.8
Primary	50.6	49.0	32.7	30.2
Secondary	29.1	31.7	45.1	45.3
University	0.6	0.4	1.3	1.7
Other Tertiary	n.a.	n.a.	2.7	5.0
Other	0.5	0.6	1.7	2.3
No Schooling	12.3	11.3	10.2	9.6
Not Reported	3.0	3.0	1.5	1.1
Total	100.0	100.0	100.0	100.0

Portmore to Clarendon Park – Highway 2000 Corridor Development Plan 2004-2025

Percentage Distribution of the Clarendon Study Area by Educational Attainment 1991

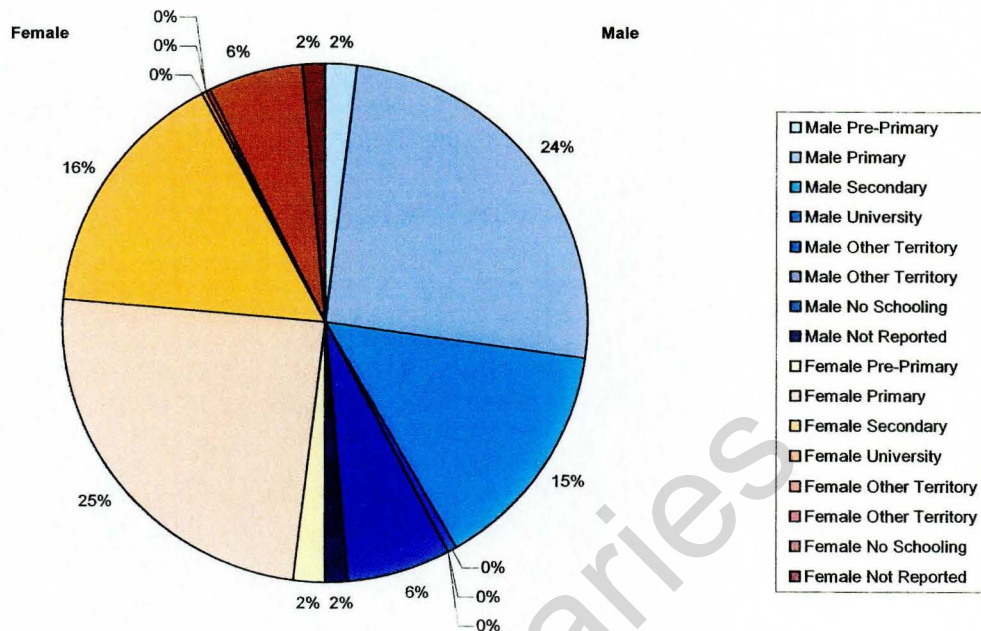


Figure 3-8

Percentage Distribution of the Clarendon Study Area by Educational Attainment 2001

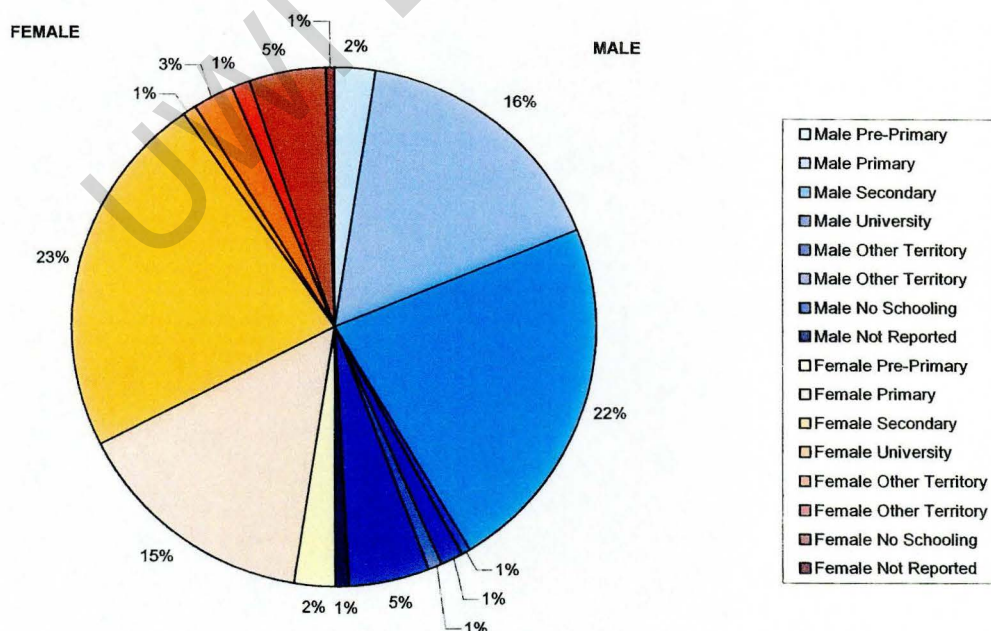


Figure 3-9

Table 3-11: Percentage Distribution of the St. Catherine Study Area by Educational Attainment

Level of Education	1991		2001	
	Male	Female	Male	Female
Pre-Primary	4.0	3.8	4.4	3.8
Primary	44.1	41.7	25.9	23.4
Secondary	34.3	37.9	44.8	43.2
University	1.4	1.6	3.7	4.9
Other Tertiary	n.a.	n.a.	6.5	10.9
Other	1.3	1.5	2.7	3.6
No Schooling	10.4	9.3	2.4	1.9
Not Reported	4.5	4.2	9.6	8.3
Total	100.0	100.0	100.0	100.0

Percentage Distribution of the St. Catherine Study Area by Educational Attainment 1991

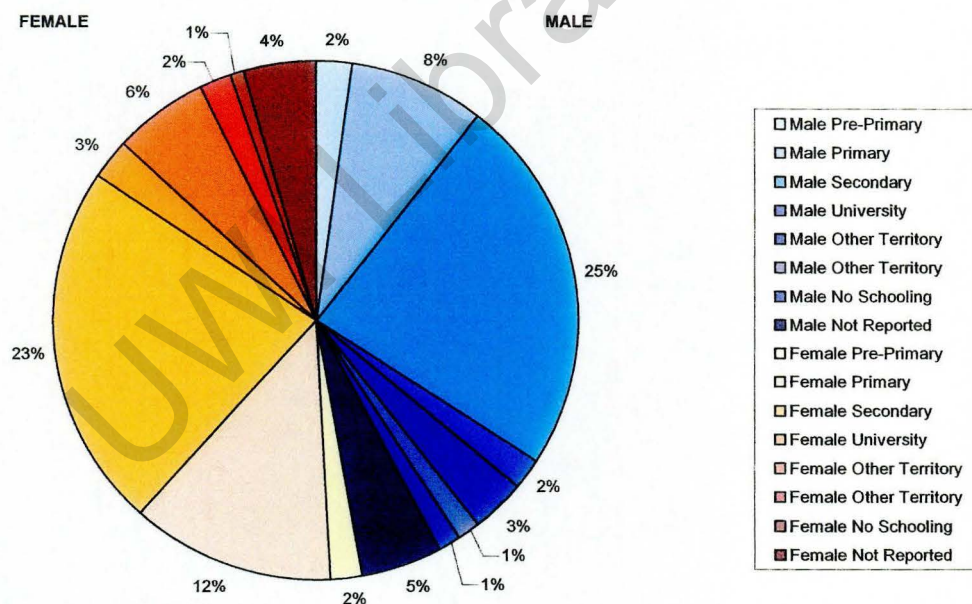


Figure 3-10

Percentage Distribution of the St. Catherine Study Area by Educational Attainment 2001

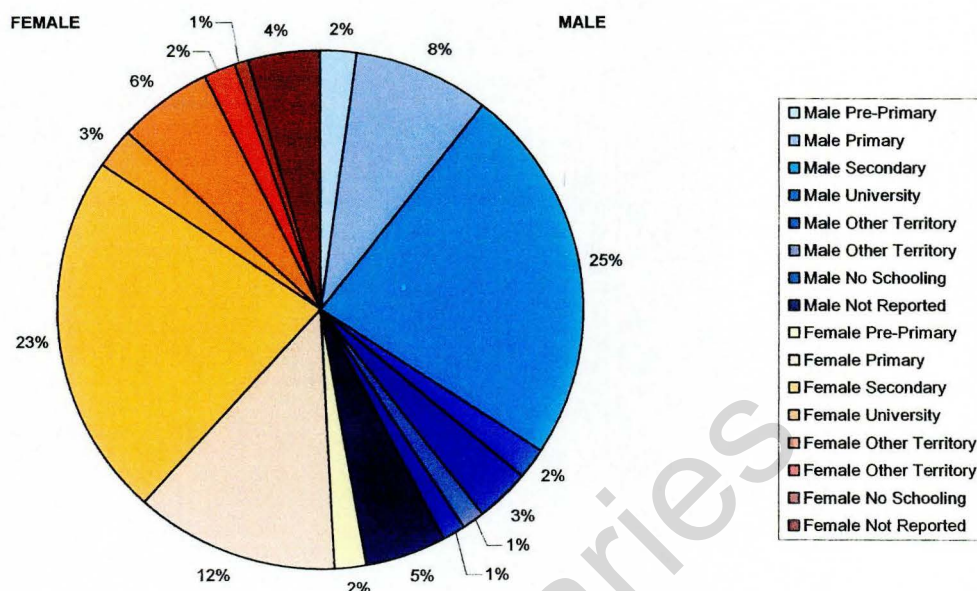


Figure 3-11

3.1.6 Religion and Ethnicity

Data on religion in Jamaica over time have shown that traditional denominations have lost significant ground to new evangelical movements. Denominations such as Anglican, Baptists and other traditional groups have declined since 1960 and simultaneously there have been increases in the membership of Seventh Day Adventists, Church of God and Pentecostal (Table 3-12 and Figures 3-12 and 3-13). This is the trend in the general Jamaican population.

Two other observations from the data relate to the “Other” (10.2 per cent / 10.8 per cent) and “No Religion” (22.3 per cent / 24.2 per cent) groups which indicate that approximately one in every five persons in the study population fall in these categories. The proportion of the population in both study areas is also an indication of the diversity in religious groups in Clarendon and St. Catherine.

This trend has serious implications for the land requirements of these non-traditional denominations for church construction. This fact is placing significant pressure on community open space in many municipalities as well as the conversion lands zoned for the productive sector and is an issue that has to be rationalized, through the appropriate disincentives.

Table 3-12: Percentage Distribution of the Study Area by Religious Affiliation, 2001

Religious Affiliation	Clarendon	St. Catherine
	2001	2001
Anglican	2.2	2.7
Baptist	8.3	5.4
Brethren	1.4	0.6
Church of God in Jamaica	3.4	5.9
Church of God of Prophecy	5.7	4.6
New Testament Church of God	6.3	5.9
Other Church of God	12.3	9.5
Jehovah's Witness	1.9	1.4
Methodist	1.5	1.3
Moravian	0.1	0.3
Pentecostal	9.2	10.0
Rastafarian	1.0	0.7
Roman Catholic	1.0	3.1
Seventh Day Adventist	8.6	9.6
Unite Church	2.2	1.1
Baha'i	0.01	0.01
Hinduism	0.1	0.04
Islam	0.01	0.06
Judaism	0.02	0.01
Other Religion/Denomination	10.2	10.8
No Religion/Denomination	22.3	24.2
Not Reported	2.2	3.2
Total	100.0	100.0

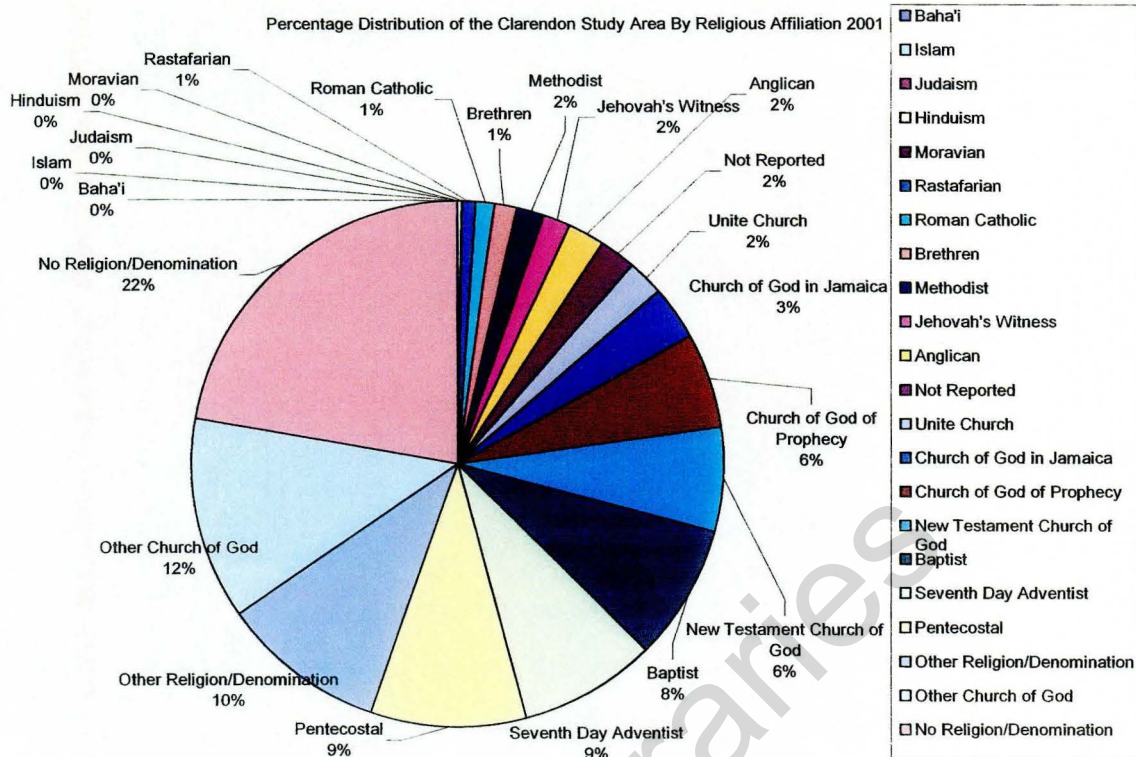


Figure 3-12

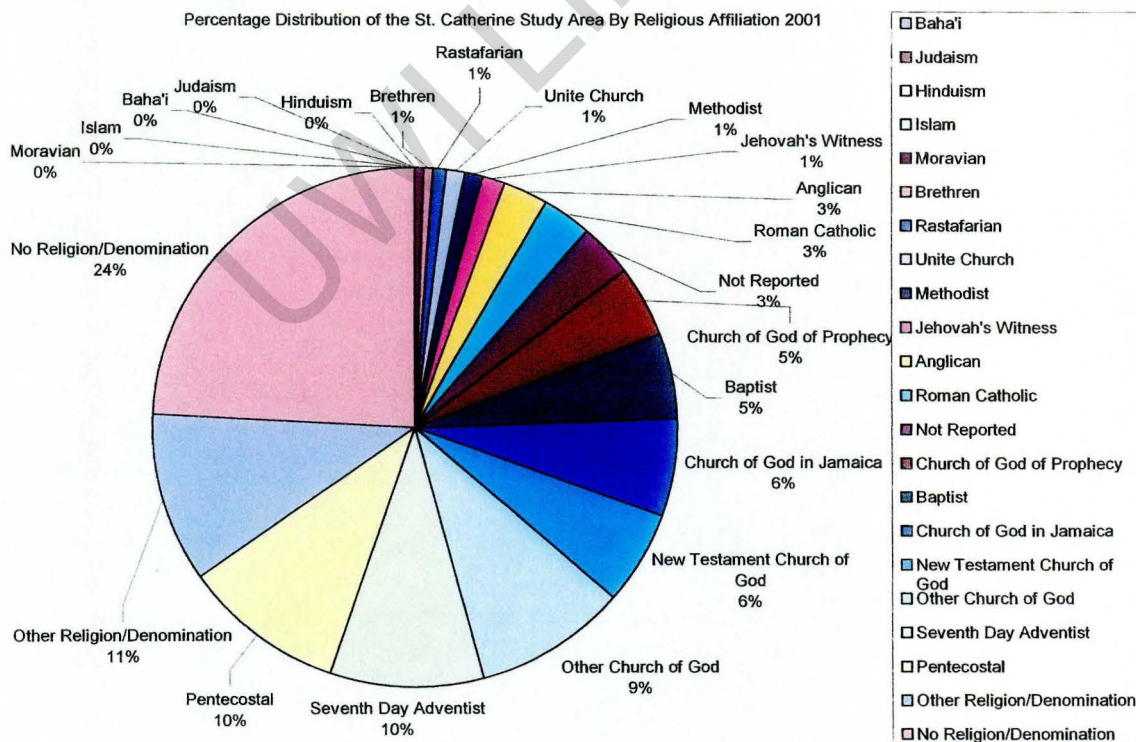


Figure 3-13

The data for ethnicity includes a range of racial groups (Table 3-13 and Figures 3-14 and 3-15). The data presented show that the majority of the population in the study area is black: Clarendon, 91.1 per cent and St. Catherine (91.2 per cent). The “Mixed” population in both study areas is also an interesting feature as it is greater in proportion than the remaining ethnic groups, with Clarendon (5.5 per cent) and St. Catherine (6.6 per cent).

Table 3-13: Percentage Distribution of the Study Area by Ethnic Origin, 2001

Ethnic Origin	Clarendon	St. Catherine
Black	91.1	91.2
East Indian	2.3	1.1
Chinese	0.1	0.1
White	0.1	0.03
Mixed	5.5	6.6
Other	0.1	0.07
Not Reported	0.8	0.9
Total	100.0	100.0

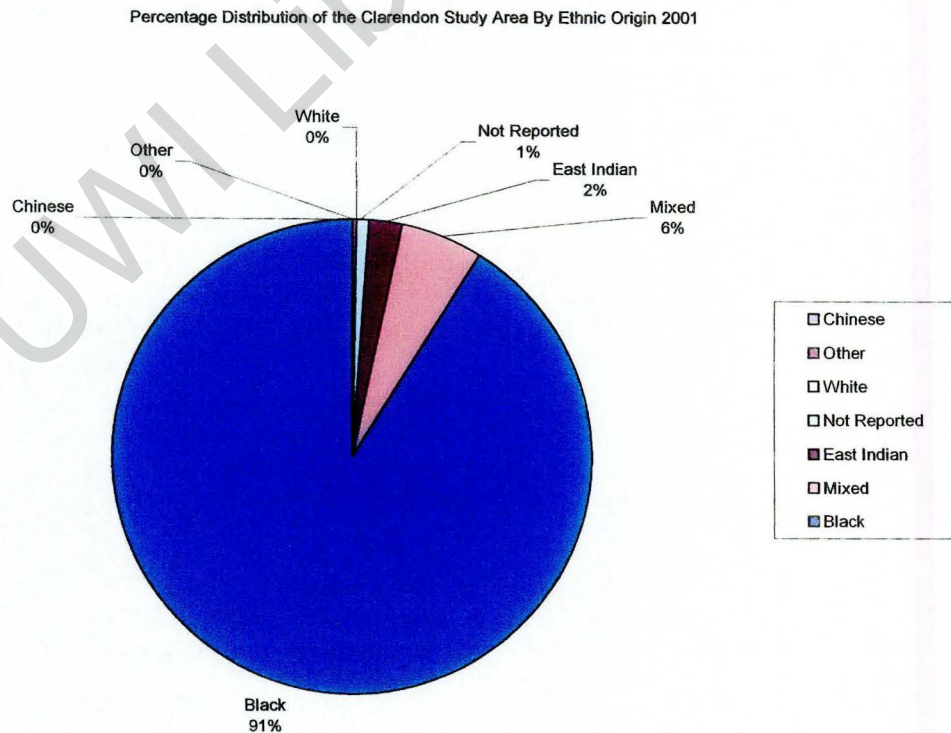


Figure 3-14

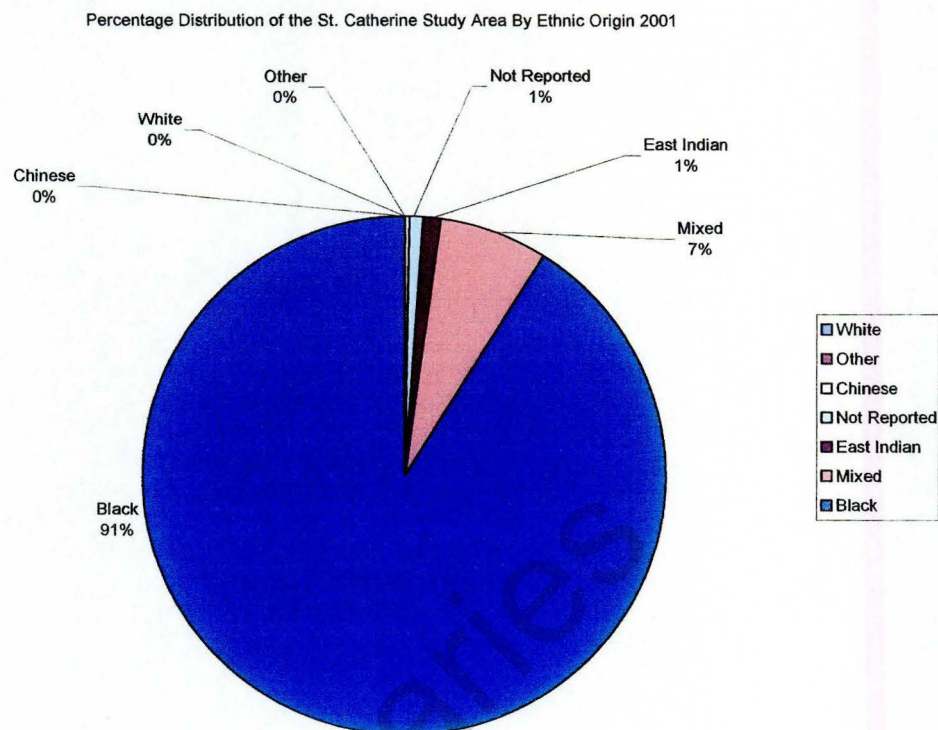


Figure 3-15

3.1.7 Households

The household analysis focuses on the living conditions of the population by examining availability of facilities for household use and solid waste management (garbage disposal). Other aspects of the housing are addressed in Section 4.0.

Table 3-14 and Figures 3-16 and 3-17 indicate that for St. Catherine, the number of households grew by 65 percent between 1991 and 2001.

The most dramatic growth occurred in the Portmore Municipality, which grew by 94%.

Table 3-14: Households by Special Areas, St. Catherine

Area	1991	2001
St. Catherine	55,819	92,196
Spanish Town	25,818	37,661
Total Portmore Municipality	22,071	42,779
Old Harbour	4,179	6,609
Old Harbour Bay	1,414	1,847
McCook's Pen	398	517
Freetown/St. Catherine	160	2,574
Rest of Study Area in St. Catherine	1,779	209

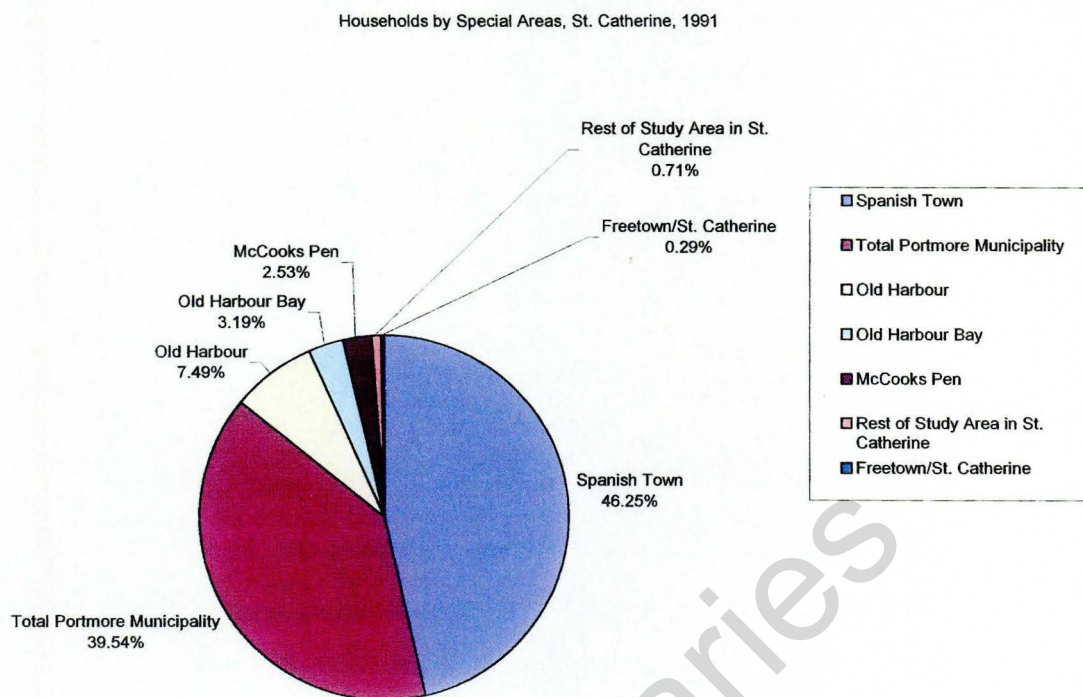


Figure 3-16

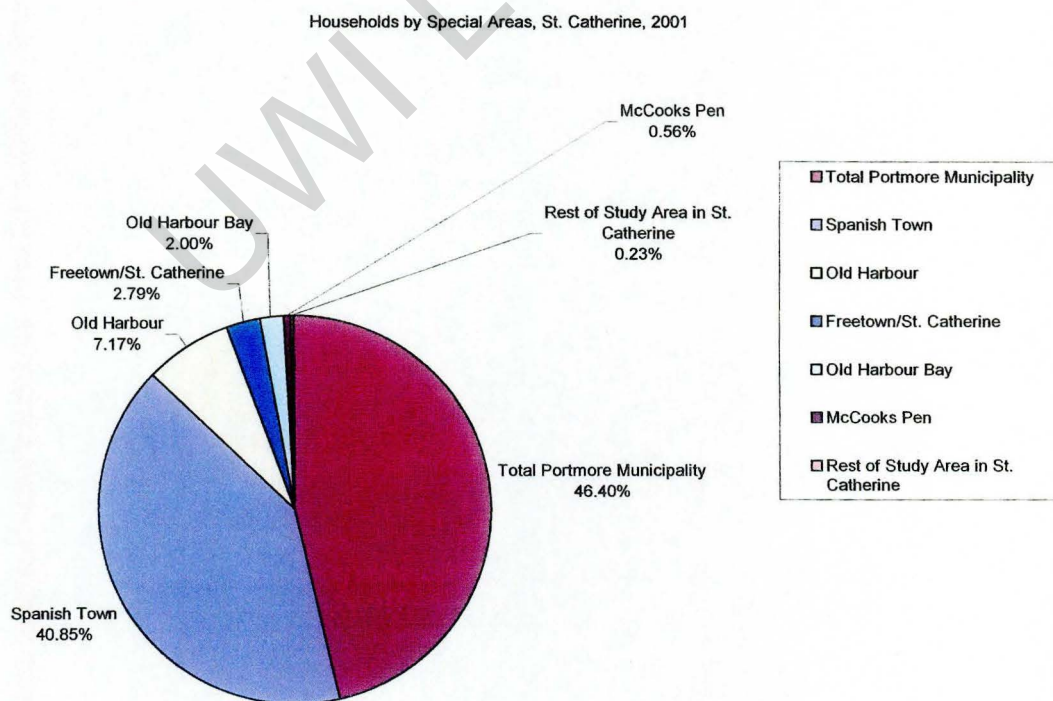


Figure 3-17

For Clarendon, the number of households grew by 32 percent between 1991 and 2001. Households in May Pen grew by 34%, while those in Lionel Town and Free Town declined by 9 percent and 13 percent respectively (Table 3-15 and Figures 3-18 and 3-19).

Table 3-15: Households by Special Area, Clarendon

Area	1991	2001
Clarendon	27,145	35,701
May Pen	12,745	17,129
Sandy Bay/Green Park	932	1,675
Hayes District	2,771	3,417
Lionel Town	1,200	1,088
Mitchell Town	472	553
Longville Park	0	526
Salt River/Sandy Bay	168	175
Rocky Point	938	1,179
Portland Cottage	627	685
Race Course	932	1,006
Brokenbank	527	619
Alley	344	457
Gimme-Me-Bit	451	518
Toll Gate/Osbourne Store	1,375	2,014
Freetown	240	271
Rest of Study Area in Clarendon	3,423	4,389

Portmore to Clarendon Park – Highway 2000 Corridor Development Plan 2004-2025

Portmore to Clarendon Park Highway 2000 Corridor Development Plan Households by Special Areas, Clarendon, 1991

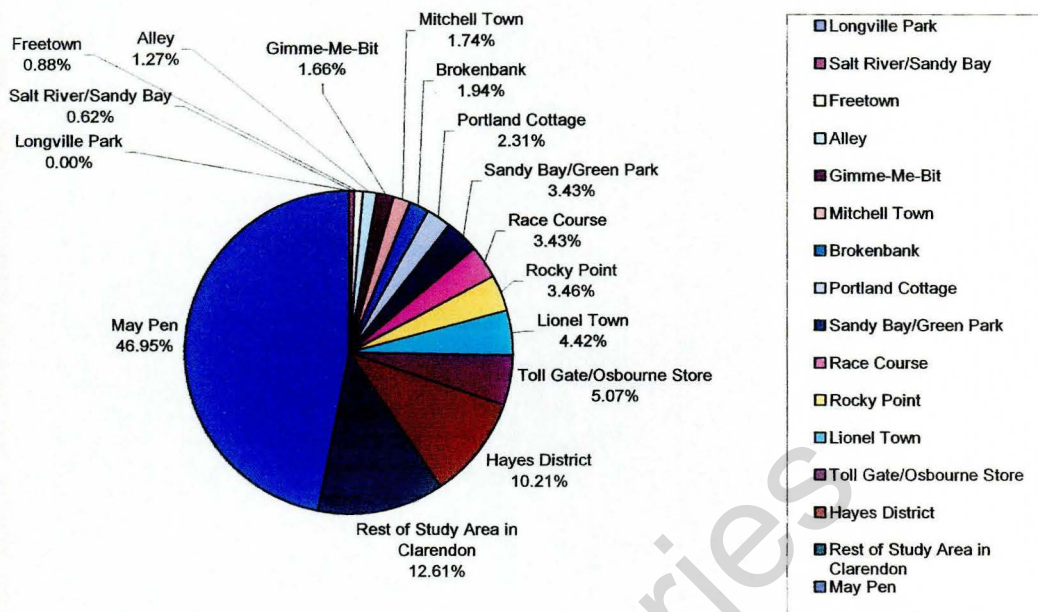


Figure 3-18

Portmore to Clarendon Park Highway 2000 Corridor Development Plan Households by Special Areas, Clarendon, 2001

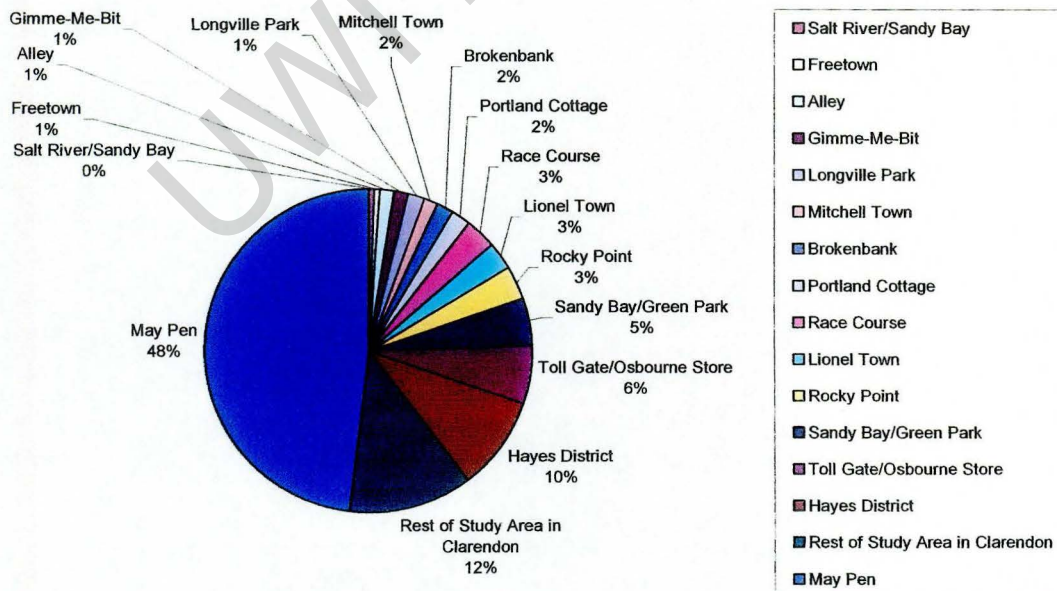


Figure 3-19

3.1.7.1 Type of Lighting

Analysis of the data over the ten-year period showed that there has been an increase by 15.6 percentage points in the number of households in St. Catherine that have electricity as their main source of lighting (Table 3-16 and Figure 3-20). There was an exception in the Port Henderson area which reported kerosene as its main source of lighting - 57.0 per cent in 1991 to 61.8 per cent in 2001.

Table 3-16: Percentage Distribution of Households by Source of Lighting, St. Catherine 1991 and 2001

SOURCE OF LIGHTING	St. Catherine		Clarendon	
	1991	2001	1991	2001
	%	%	%	%
Electricity	78.4	94.0	61.0	83.3
Kerosene	18.8	3.4	37.4	13.7
Other	0.3	0.3	0.2	0.7
Not Reported	2.5	2.3	1.4	2.3
Total	100.0	100.0	100.0	100.0

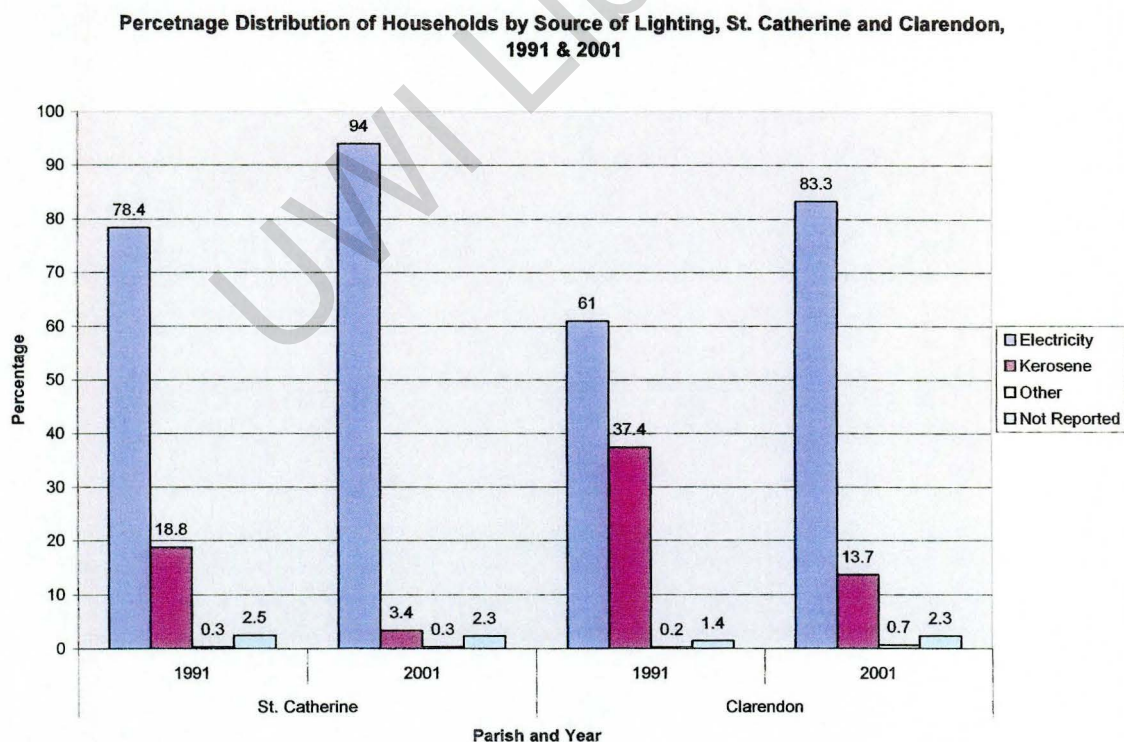


Figure 3-20

In Clarendon, in 1991, almost six of every ten households, that is 61.0 per cent had electricity as their main source of lighting compared with 83.3 per cent in 2001; an increase by 22.3 percentage points (Table 3-16 and Figure 3-20).

Use of kerosene fell by 23.7 per cent from 37.4 per cent in 1991 to 13.7 per cent in 2001. The community distribution for the parish indicates that there was an increase in the number of rural communities gaining access to electricity. Kerosene use in 1991 which was considered very high in communities such as Rocky Point (57.9 per cent), the Rest of the Project area (52.6 per cent), Salt River (51.2 per cent) and Portland Cottage (50.7 per cent) was reduced drastically by 2001 as a result of the increase in electricity supply to these areas.

The proportion of households which did not report their source of lighting or had another source, increased over the period and led us to question the source of lighting being accessed.

3.1.7.2 Fuel Used for Cooking

There has been a significant increase (26.5 percentage points) between 1991 and 2001 in the number of households in St. Catherine that use gas as their main source of fuel for cooking. Simultaneously there has been a decline in the number of persons using wood, charcoal and kerosene (Table 3-17 and Figure 3-21).

The majority of households in St. Catherine, including Spanish Town, and most areas in Portmore used gas as their source of fuel. However, in 1991, Port Henderson (51.7 per cent), Old Harbour (69.5 per cent), McCook's Pen (55.0 per cent) and Freetown (69.4 per cent) cited wood/charcoal as their main source of fuel. This changed dramatically in 2001 as over 50.0 per cent of households in these areas were now using gas as their main type of fuel.

Table 3-17: Percentage Distribution of Households by Type of Fuel, St. Catherine and Clarendon 1991 and 2001

TYPE OF FUEL	St. Catherine		Clarendon	
	1991	2001	1991	2001
	%	%	%	%
Gas	65.5	92.0	34.1	74.4
Electricity	0.5	0.7	0.6	0.4
Wood		0.9	n.a	4.6
Wood/Charcoal	26.9		59.3	n.a
Kerosene	5.7	0.2	4.6	0.3
Charcoal		4.1	n.a	17.6
Other	0.3	0.5	0.4	1.2
Not Reported	1.1	1.6	1.0	1.5
Total	100.0	100.0	100.0	100.0

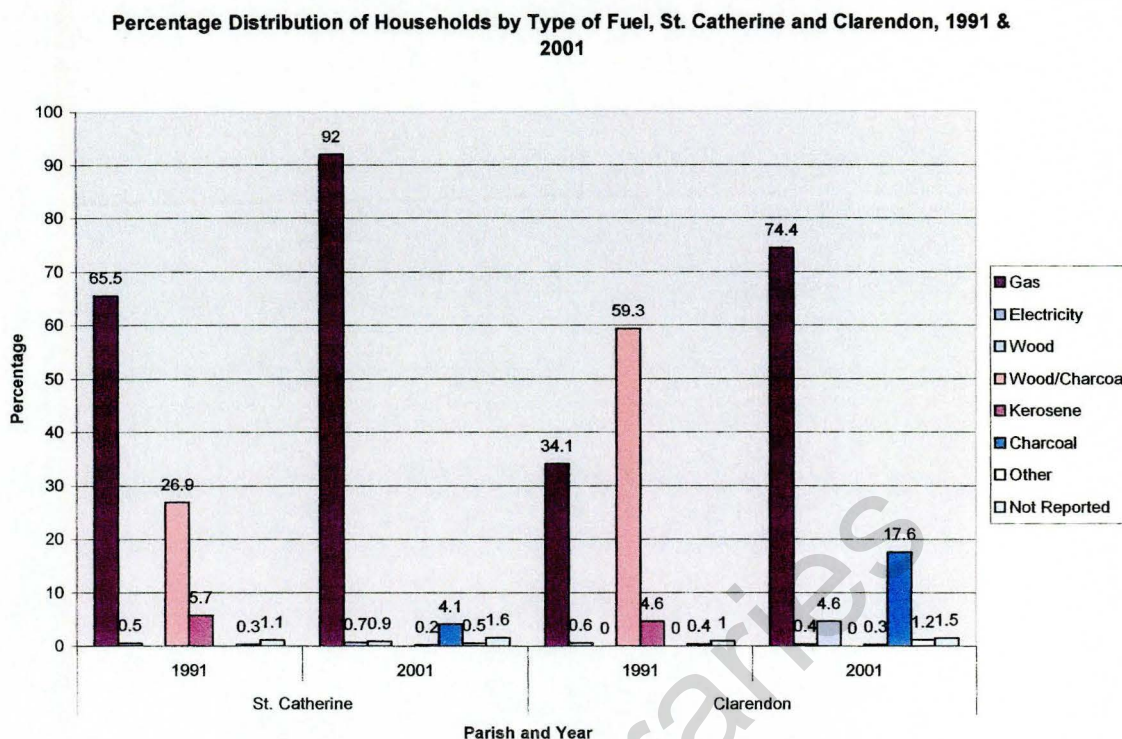


Figure 3-21

In 1991, the data indicated that more than half (59.3 per cent) of the households in Clarendon used Wood/Charcoal as the main source of fuel for cooking (Table 3-17 and Figure 3-21). The distinction must be made, however, that the capital, May Pen and Lionel Town were the only communities in the study area in which this method was not their primary source. These communities reported a high usage of gas as their main fuel source.

The remaining communities in the parish are predominantly rural and this is the main reason for the use of wood/charcoal. However, in 2001, this changed dramatically as 74.4 per cent of households reported gas as their main source of fuel; an increase by 40.3 percentage points. Only 17.6 per cent of households now indicated that charcoal was used as their fuel source.

3.1.7.3 Garbage Disposal

The question of garbage disposal was included for the first time in the census in 2001 as a growing concern for the impact of environmental issues on health. This refers specifically to the collection and disposal of solid waste produced by each household. According to the census, the response categories were designed to take into account all possible types of garbage disposal which exist in Jamaica.

Collection of garbage by public agency accounted for 77.4 per cent of all households in St. Catherine (see Table 3-18). Burning was the second most utilized source of garbage disposal accounting for 18.3 per cent of all households. This was the primary source of disposal in areas such as Port Henderson (86.3 per cent); Old Harbour Bay (56.4 per cent); McCook's Pen (68.5 per cent); Freetown (77.0 per cent); and the Rest of the Project area in St. Catherine (62.4 per cent).

Approximately 1.5 per cent of households utilized dumping as their main source of disposal through dumping in their own yard (0.1 per cent), at a municipal site (0.7 per cent) or other types of dumping (0.7 per cent).

Table 3-18: Percentage Distribution of Households by Method of Garbage Disposal, St. Catherine and Clarendon 2001

GARBAGE DISPOSAL		St. Catherine	Clarendon
		%	%
Public Collection	Regular	66.5	26.3
	Irregular	10.9	12.0
	Private Collection	0.2	0.5
	Burn	18.3	57.2
	Bury	0.4	0.4
	Sea/River/Pond	0.6	0.2
Dumping	In own Yard	0.1	1.0
	Municipal Site	0.7	0.4
	Other	0.7	0.7
	Other Method	0.3	0.2
	Not Reported	1.3	1.1
	Total	100.0	100.0

From the 2001 Census, Clarendon has been identified as one of six parishes where burning was the most utilized method of garbage disposal (Table 3-18). Burning was the method of choice for approximately 57.2 per cent of households in the study area of Clarendon. The majority of communities in the study area in Clarendon with the exception of Longville had more than 60.0 per cent of their garbage burnt. Approximately 97.7 per cent of households in Longville had their garbage collected through the regular public collection system. Collection by a public collection agency or private source accounted for 38.8 per cent of households.

3.2 The Youth Perspective

As a forward looking planning instrument, attempts were made to gauge the youth perspective with the project area through:

- A consultative process with youth; and
- A Participant Observer Exercise with Youth

Both activities were undertaken in the Portmore Municipality as representative of the project area.

3.2.1 The Portmore Youth Consultation

The event was held on Saturday July 17, 2004 at the Portmore HEART Academy. Over 120 youth participated. The programme was coordinated by the plan production team in conjunction with the Social Development Commission (SDC) and the Police Training School, Twickenham Park.

Senior Superintendent of Police Mary Royes, head of the Police Training School chaired the event.

It is important to note that the suggested involvement of SSP Royes and other members of the Police Training School originated from a young man 'Don' residing in the Gregory Park community who has had several 'brushes' with the law.

3.2.1.1 The Main Issues Facing Youth

The five main problems facing youth were selected (see Table 3-19). Unemployment raised the most concern, followed by crime/violence, sexual activity among youths, lack of opportunities for educational advancements and lack of motivation. Practical solutions were also advanced.

Table 3-19: The Five Main Problems Facing Youth

Priority	Problems	Problem Description	Alternative Solutions
1	Unemployment	Lack of skill, Lack of jobs Lack of incentives	Increased skill training Increased job creation Increased motivation
2	Crime & Violence	Peer pressure Poor policing	More positive programs More effective policing
3	Sexual Activity	Unprotected sex Early sexual exposure Broken homes Peer pressure	Easier access to contraceptives Sex education in schools Counseling for parents Counseling for youths
4	Lack of Educational Advancements	Financial problems Poor quality of training	More information on loans Efficient training institutions
5	Lack of motivation	Low income and high redundancy rates	Improved job conditions

3.2.1.2 SWOT Analysis

The SWOT Analysis is an examination of the various strengths, weaknesses, opportunities and threats of the Portmore youth as well as youth in general. Table 3-20 shows a summary of the results of the analysis undertaken by the youth.

Table 3-20: SWOT Analysis

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Viable resource	Immaturity	The future is for the Youth	Crime/violence/drugs
Largely numbers	Peer pressure	Globalization	Teenage pregnancy
Assertive	Poor organizational skills	Sport/Entertainment	Peer pressure
More versed with technology	Impatience	Education	Physical, psychological, and sexual Abuse
Posses desire for positive change	Lack of financial resources	Support from friends & family	Political tribalism
Talented/creative	Lack of motivation	Youth clubs	Lack of housing
	Ignorance	Training facilities	Lack of jobs or targeted wealth creating opportunities
	Failure to utilize available resources		

3.2.1.3 The Main Stakeholders who can help with the Challenges

Various institutions, organizations and individuals are actively involved with the development of the Portmore youth. These include HEART Portmore, NHT, JPS, NYS, UDC, SDC, as well as churches, schools and parents.

The youth expressed the view that the following organizations/individuals have a much greater role to play:

- The Police
- Members of Parliament
- Councillors
- Service Clubs

3.2.1.4 The Youth Vision of Portmore

According to the Portmore youth, there are a number of changes they would like to see take place in their community. Their proposed vision for Portmore in the year 2015 includes:

- A more peaceful community
- Portmore becoming a fully functional Municipality
- Parks and recreational areas
- Tourist attractions (theme parks)
- A multi-purpose sports facility
- A public hospital
- Better drainage systems
- Increased public sanitary facilities
- Better road conditions
- Increased night life activities (clubs etc.)
- Additional street lights
- University Campus
- A Five-Star Hotel
- A Stadium.

4.0 SETTLEMENT AND HOUSING

This Plan will promote orderly development through the following:

- Establishment of rigid urban fences or urban growth boundaries to promote “smart growth” so as to simulate economic development while preserving agricultural lands and open space.
- All urban centres will prepare Area Plans and Urban Designs. This will set the standard against which development proposals will be assessed for approval. Prototypical designs will be developed to ensure conformity, particularly for small developments. Larger developments will still have to adhere to the general design principles established.
- Building more compactly and increasing densities will be encouraged through the Urban Designs. The ‘Oaklands Model’ will form the basis of this approach.

Compact development such as was undertaken at Oaklands (in Kingston) over a decade ago, helps reduce infrastructure and development costs, provides more opportunity for pedestrian access, promotes densities that can be served more efficiently by public transportation, and results in more affordable housing.

Compact or Mixed Use Developments will include condominiums, duplexes, quad units and single family homes, with the designation and development of open space and recreational facilities. These facilities will include soccer fields, tennis courts, basketball courts, playground equipment, community centre, and some commercial space. Fire station, police post as well as basic school and elementary school will be provided based on the scale of the development.

It is important to recognize that a large gap still exists between housing need, effective demand and the supply and financing of housing.

Private developers are playing a significant role in the provision of housing in the project area and the National Housing Trust (NHT) is the most active public sector player in housing.

The absence of a Housing Policy and Strategic Housing Plan to meet housing needs and ensure that those needs are met within the context of up-to-date Area Plans and Urban Designs has contributed to spatial imbalance and significantly reduced aesthetics.

The formulation of a Housing Policy and Strategic Housing Plan by the end of 2004 is a recommendation of this Plan.

The following will also be necessary to ensure spatially balanced and orderly development:

- A revision of the National Physical Plan.
- Preparation of Parish Development Plans and Orders to guide land use development so as to bring the entire island under the Town and Country Planning Act.

4.1 The Housing Stock

The Population Census is the best indication of the housing stock at this time. However, there is limited information on the actual condition of the housing stock, so while we do have a fairly good idea of the numbers of units, we do not have adequate information on the condition of the housing stock. A survey of Squatter settlements undertaken and discussed at Section 4.4 also provides some indication of the quality of the housing stock. It is a challenge however to determine housing need.

Tables 4-1 and 4-2 indicate that the total housing stock is presently estimated at 136,994 units, with 98,719 (72%) located in St. Catherine and 38,225 (28%) located in Clarendon. The distribution between, and growth within the urban centres is also illustrated in Figures 4-1 and 4-2.

**Table 4-1: Housing Units by Special Areas,
St. Catherine 1991, 2001, and 2005 (projected)**

Area	1991	2001	2005
St. Catherine	37,295	60,794	98,719
Spanish Town	19,593	29,585	38,850
Total Portmore Municipality	11,118	20,890	46,090
Old Harbour	3,502	5,843	538
Old Harbour Bay	1,136	1,552	2,313
McCook's Pen	325	458	8,242
Freetown/St. Catherine	138	178	211
Rest of Study Area in St. Catherine	1,483	2,288	2,475

Source; PIOJ, 2004

Housing Units by Special Areas, St.Catherine, 1991, 2001, and projected 2005

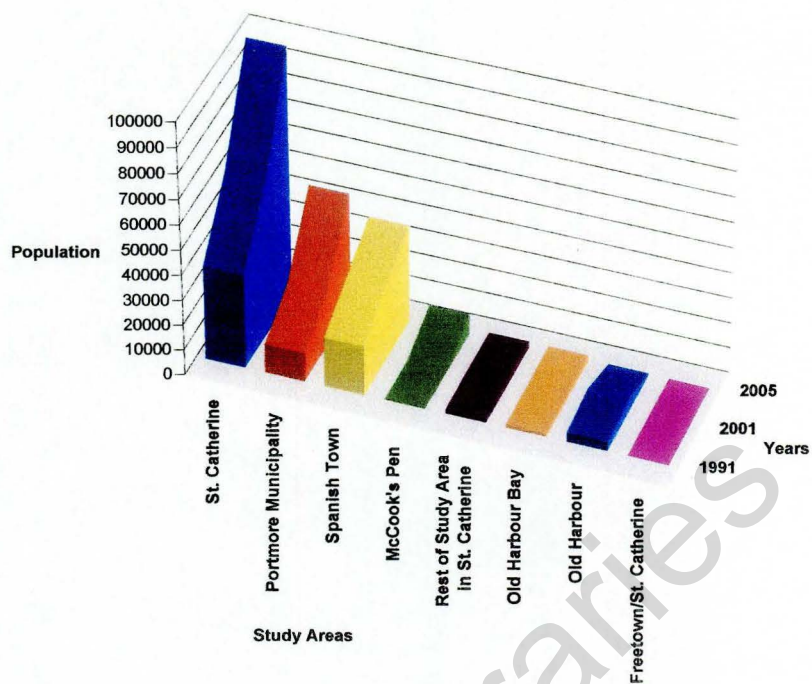


Figure 4-1

**Table 4-2: Housing Units by Special Areas,
Clarendon 1991, 2001, and 2005 (projected)**

Area	1991	2001	2005
Clarendon	26,120	31,732	38,225
May Pen	10,134	14,472	19,265
Sandy Bay/Green Park	1,645	1,485	1,942
Hayes District	2,434	3,941	3,546
Lionel Town	907	915	394
Mitchell Town	418	499	955
Longville Park	-	379	394
Salt River/Sandy Bay	147	159	167
Rocky Point	736	942	1,237
Portland Cottage	494	627	695
Race Course	757	850	962
Brokenbank	614	510	581
Alley	513	347	436
Gimme-Me-Bit	400	460	505
Toll Gate/Osbourne Store	685	1,805	2,039
Freetown	206	247	250
Rest of Study Area in Clarendon	6,120	3,947	4,757

Source: PIOJ, 2004

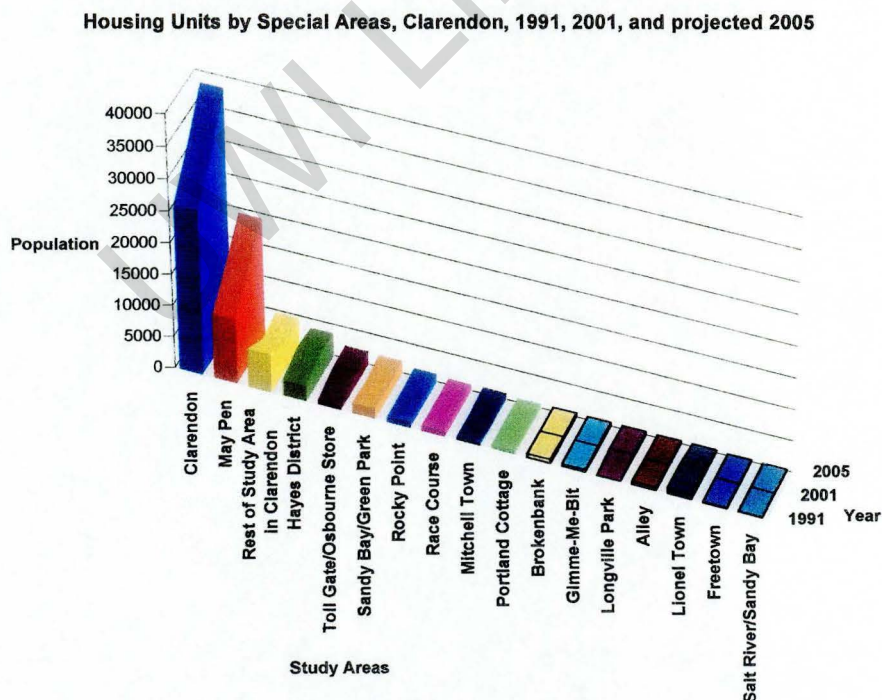


Figure 4-2

As Table 4-3 and Figure 4-3 indicates, in 1991, the St. Catherine area was predominantly characterized by housing units which were separate house/detached (84.5 per cent) - including duplex houses separated by a garage). In Spanish Town and Old Harbour areas, 91.0 per cent and 95.0 per cent of all housing units were separate house/detached respectively. In the Portmore area, the same remains true, except for the following areas where housing units were primarily classified as Apartment Buildings and Townhouses: Waterford, Portsmouth, Westchester, Westmeade, Bridgeview, Southboro, Braeton and Marine Park.

Table 4-3: Percentage Distribution of Housing Unit by Type for St. Catherine and Clarendon 1991 and 2001

TYPE OF HOUSING UNIT	St. Catherine		Clarendon	
	1991	2001	1991	2001
Separate house/detached	84.5	67.8	94.3	93.2
Semi-detached	5.9	n.a	2.9	-
Apartment Building/Townhouse	7.5	n.a	0.5	-
Attached	n.a	30.7	na	4.8
Improvised Housing Units	1.0	0.1	0.9	0.2
Part of Commercial Building	0.6	0.3	1.0	0.6
Other	0.1	0.1	0.1	0.1
Not Stated	0.4	1.0	0.3	1.1
Total	100.0	100.0	100.0	100.0

Percentage Distribution of Housing Unit by Type for St. Catherine, 1991

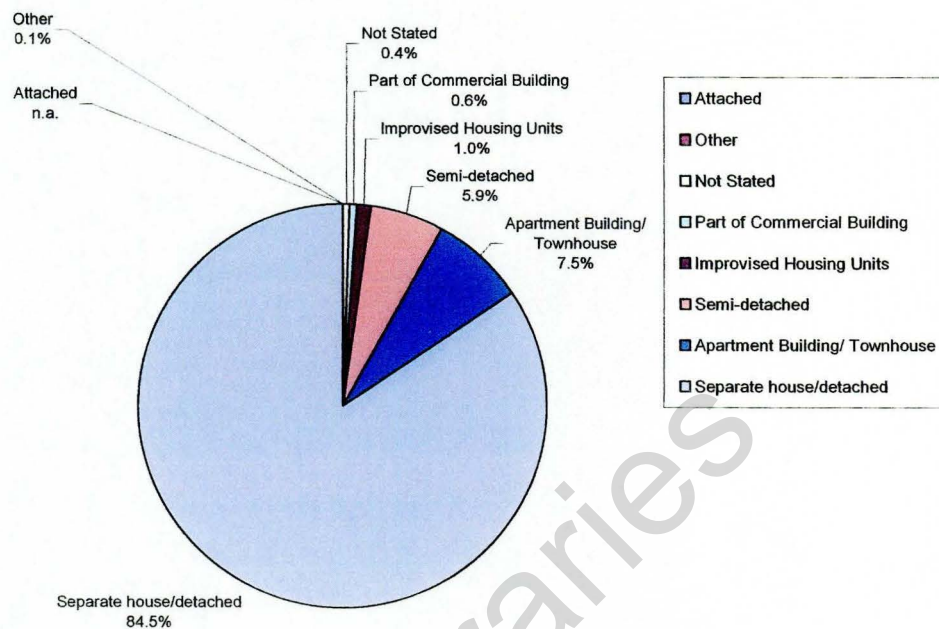


Figure 4-3

Percentage Distribution of Housing Unit by Type for St. Catherine, 2001

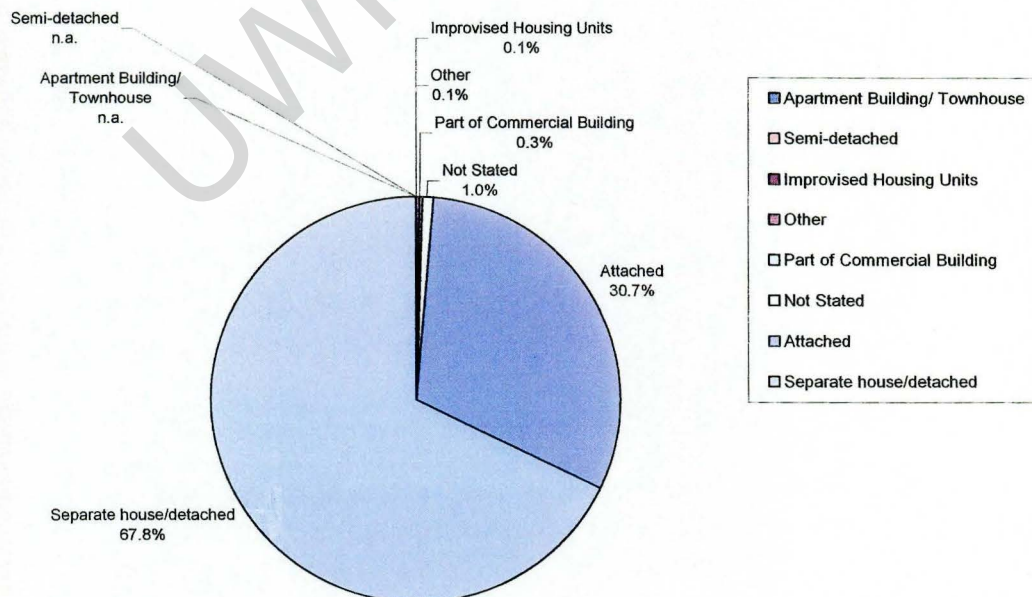


Figure 4-4

In 2001, however, the number of separate/detached housing units declined and almost 1 in every 3 housing units were attached. This was primarily so in the newly developed Portmore communities. The proportion of improvised housing units in the area declined from 1.0 per cent to 0.1 per cent over the period. This is puzzling given the level of squatting in the area (see Section 4.4). Significantly, there was an increase in the number of housing units that were not stated over the period (see Figure 4-4).

For Clarendon, between 1991 and 2001 was similar to that of St. Catherine, characterized primarily by separate/detached housing units. All communities in the study area had at least nine in every ten housing units separate/detached. In 2001, there was a decline in the number of housing units being reported as improvised units and part of commercial buildings. This appears to be at odds with the level of squatting in the area (see Section 4.4). However, there was an increase in the number of housing units which were not stated (see Table 4-3 and Figures 4-5 and 4-6).

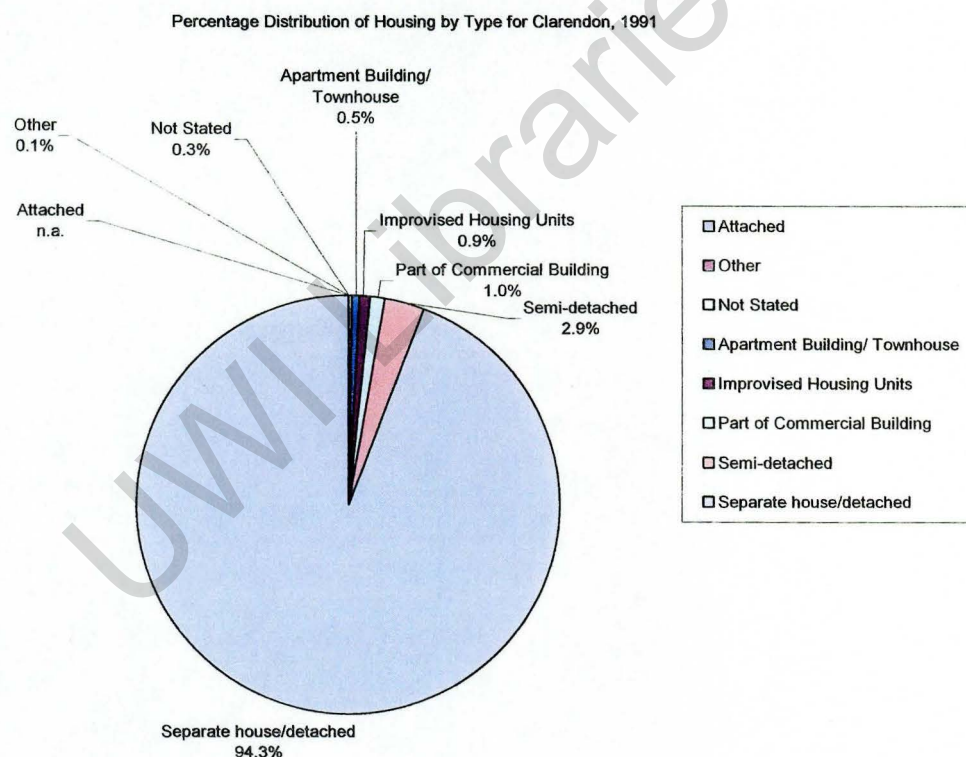


Figure 4-5

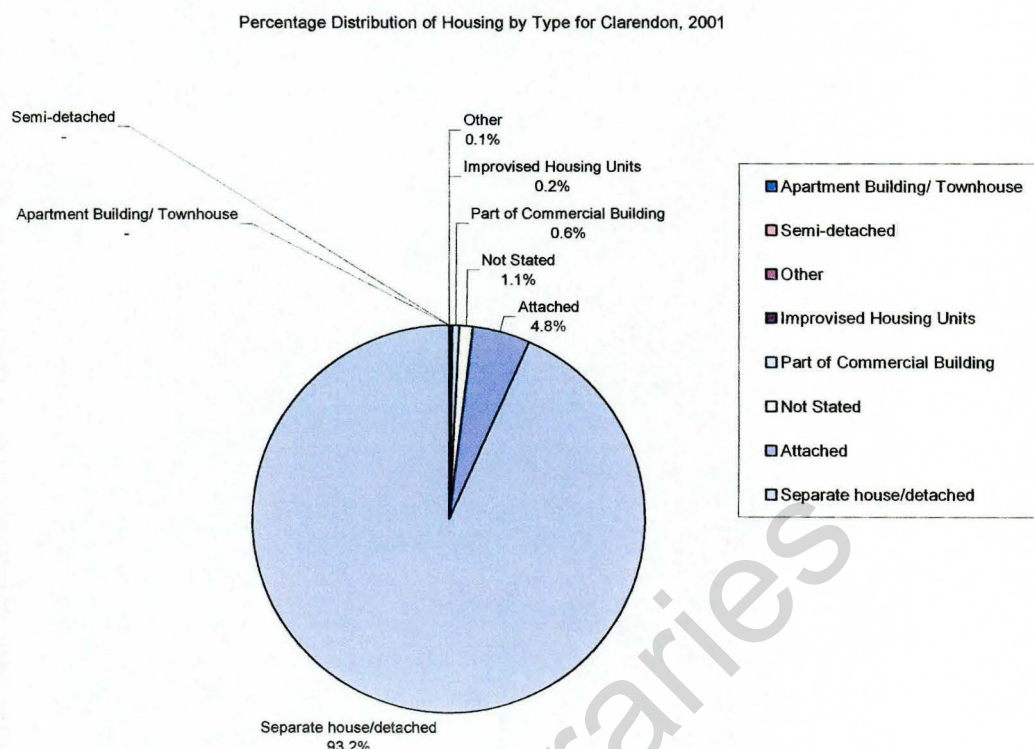


Figure 4-6

4.1.1 Tenure

For 1991, there was no available data for ownership of land. By 2001, the largest number of dwellings in St. Catherine were owned or rented by their occupants (42.0 per cent and 34.6 per cent respectively) especially in the communities in Portmore and Old Harbour (see Table 4-4 and Figure 4-7).

Without specific reference to the study area for 1991, it can be assumed that general ownership of dwellings throughout the period has increased. The incidence of squatting particularly in this area has been quite controversial. Only 1.6 per cent of all dwellings in the St. Catherine area have been reported as squatting. Of the total number of dwellings reported as having squatters, 30.6 per cent were in the Spanish Town area. Recent findings from the Squatter Settlement Survey have found that a significantly greater proportion of squatting pervades this parish, particularly in the Spanish Town area. Findings from this Survey are discussed at Section 4.4.

It can be assumed as well that the 2.0 per cent non-response rate for the area may be due to squatting. According to the report of the census, it must be noted that, a person may be squatting on the land, but the house is owned and this may be the case for several households and dwellings in the area.

Table 4-4: Percentage Distribution of Dwellings by Tenure, St. Catherine and Clarendon 2001

TYPE OF TENURE	St. Catherine	Clarendon
	%	%
Owned	42.0	54.1
Leased	4.9	1.9
Rented	34.6	20.9
Rent-free	14.4	20.4
Squatted	1.6	1.4
Other	0.5	0.2
Not Reported	2.0	1.1
Total	100.0	100.0

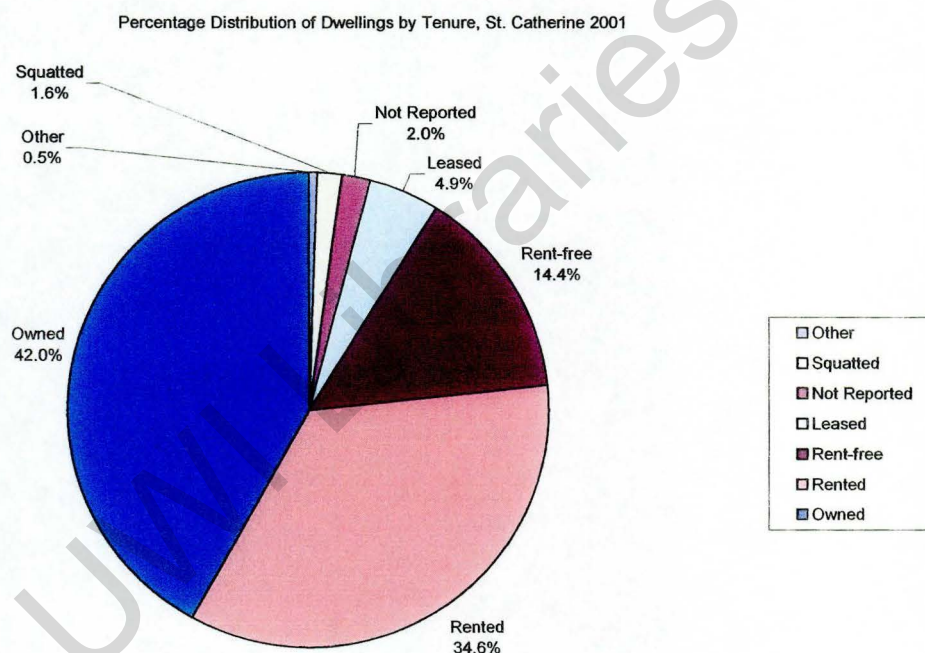


Figure 4-7

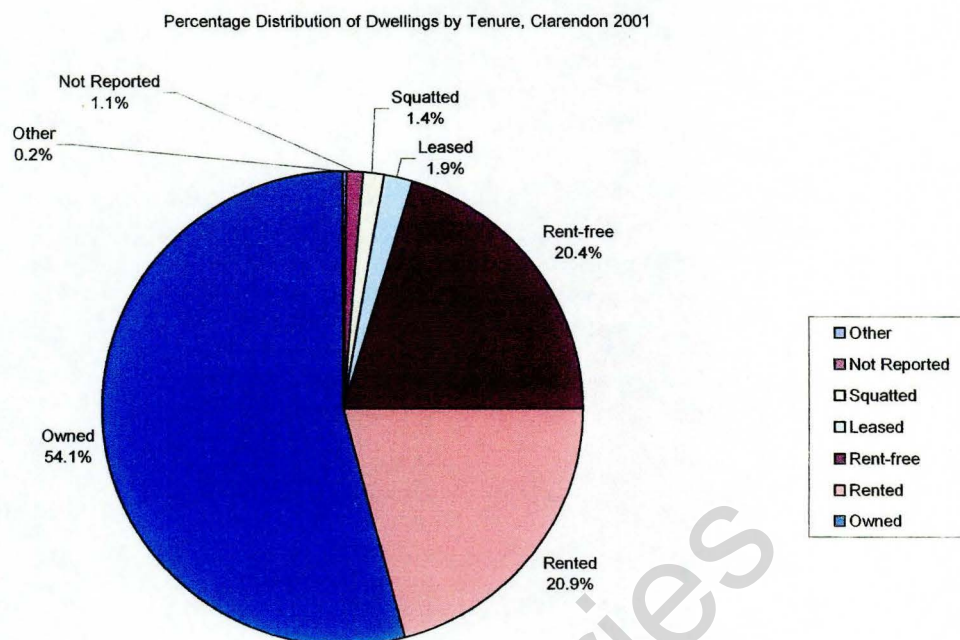


Figure 4-8

The data showed that just over half of the dwellings in Clarendon (54.1 per cent) (see Table 4-4 and Figure 4-8) were owned by persons residing in this area. Dwellings which were rented or classified as rent-free were among the second highest by tenure, 20.9 per cent and 20.3 per cent respectively. Only 1.4 per cent of dwellings in the Clarendon study area were reported as having squatters. Communities such as Longville (80.4 per cent) and Portland Cottage (65.4 per cent) had a greater proportion of their dwellings being owned than all other communities in the parish. The area classified as the Rest of the Project area in Clarendon had the highest proportion of squatters, with an average higher than that of the total study area (2.9 per cent).

4.1.2 Material of Outer Walls

In relation to material of outer walls in the St. Catherine study area, concrete and blocks and wood were the dominant types. Approximately 87.3 per cent and 10.3 per cent of all housing units were made of concrete and blocks; and wood and concrete respectively.

It is important to note that the communities in Portmore report over 90.0 per cent of all housing units as being built with concrete and blocks and this is one of the highest uses of concrete reported in the island. The use of wood was reported at 22.7 per cent, with approximately 45.0 per cent wooden units in the Spanish Town area. This is related to the historic core of the town.

Of significance also, was the high proportion of the use of wood in the Port Henderson and Newlands areas of Portmore. Three in every four housing units in Port Henderson are made solely from wood and another 36.0 per cent in Newlands. This is attributed to the establishment of a squatter settlement with individuals engaged in fishing in Port Henderson.

Approximately 80.3 per cent of all housing units in the area were made of concrete including blocks. Another 10.3 per cent were made from wood, while 5.5 per cent was made from a combination of wood and concrete.

4.1.3 Type of Roofing Material

Metal Sheetting or Zinc is the dominant type of roofing material used in the St. Catherine area (57.8 per cent). Concrete roofing was the second largest type of roofing material. Housing units in Portmore primarily were made from this material with the exception of units in Garveymeade made from shingle-wood (76.5 per cent); Port Henderson, Old Braeton, Braeton Newtown, Naggo Head and Newlands which all have over 70.0 per cent of units being roofed by zinc. Areas such as Old Harbour, Old Harbour Bay, Freetown and the Rest of the project area in St. Catherine all report high percentage of roofs being made from metal sheetting.

Metal Sheetting was found to be the most commonly used type of roofing material in Clarendon. Approximately 88.1 per cent of housing units utilized this material for roofing by most communities in the study area. Concrete had the second highest usage with 8.8 per cent of housing units using this material. The Longville community reported having 97.7 per cent of its housing units using concrete as their sole roofing material. Irrespective of this, 1.4 per cent of housing units did not state the type of material used for housing.

4.1.4 Kitchen Facilities

The issue of kitchen facilities does not refer to the actual space, but access to the facilities, namely a sink and a waste pipe, and is a good indicator of the standard of the housing unit. Approximately 81.8 per cent of all households in St. Catherine have access to their own kitchen facilities while 5.4 per cent share facilities, whether it both sink and waste pipe or one of the following. About 10.8 per cent reported that they did not have access to any kitchen facility at all, and is a good indication of squatting. This was the trend in all areas in the St. Catherine study area (see Table 4-5).

Table 4-5: Percentage Distribution of Households by Availability and Type of Kitchen Facility, St. Catherine and Clarendon 2001.

TYPE OF KITCHEN FACILITY		St. Catherine	Clarendon
		%	%
SHARED	Sink and Waste Pipe	2.7	2.7
	No Sink and Waste Pipe	3.6	3.6
	Sink and No Waste Pipe	0.1	0.1
NOT SHARED	Sink and Waste Pipe	41.4	41.4
	No Sink and Waste Pipe	35.5	35.5
	Sink and No Waste Pipe	1.0	1.0
	No Kitchen Facility	14.0	14.0
	Not Reported	1.7	1.7
	Total	100.0	100.0

Access to kitchen facilities in Clarendon was fairly good as 84.3 per cent of households indicated that a kitchen was available for use; 77.9 per cent did not have to share facilities, while only 6.4 per cent of households shared facilities. Approximately 14.0 per cent of households did not have access to any kitchen facilities at all whether shared or not shared. This distribution was the trend right across the communities in the parish (see Table 4-5).

4.1.5 Bathroom and Toilet Facilities

Table 4-6: Percentage Distribution of Households by Type of Toilet Facility, St. Catherine 1991

TYPE OF TOILET FACILITY	St. Catherine
	%
Pit	34.1
Water Closet linked to Sewer	47.1
Water Closet not linked to Sewer	11.9
Other	0.2
None	1.3
Not Stated	5.4
TOTAL	100.0

From the 1991 Census, only two questions were asked in relation to this area: the availability of toilet facilities and the type of toilet facilities. It was reported that 71.7 per cent of households in the St. Catherine area did not share toilet facilities (which means that over 28% either shared or had none), and this was evident right across the areas, with the exception of Port Henderson/Fort Augusta, where 54.4 per cent of all households reported that they had no toilet facilities.

Based in the 1991 data, of all households, 59.0 per cent have a water closet; however, only 47.1 per cent were linked to a sewer. It is interesting to note that 34.0 per cent; approximately 1 in 3 households in the St. Catherine study area had a pit as their toilet facility. The Portmore area was different from the general St. Catherine population as over 90.0 per cent of all communities had water closets linked to a sewer. This resulted from Portmore being the most recently developed community at the time. The Old Harbour and Old Harbour Bay areas were characterized by access to water closets that were not linked to a sewer (see Table 4-6).

Table 4-7: Percentage Distribution of Households by Availability of Toilet Facilities, Clarendon 1991

AVAILABILITY OF TOILET FACILITIES	%
Shared	25.0
Not Shared	70.8
No Facility	3.2
Not Stated	1.0
TOTAL	100.0

In Clarendon in 1991, about one in every four households shared their toilet facilities. Approximately 70.8 per cent of households did not have to share their facilities which were predominantly the case in most households (see Table 4-7). However, 3.2 per cent in the parish did not have access to a toilet facility. Communities such as Race Course (39.8 per cent), Alley (39.2 per cent) and Brokenbank (32.8 per cent) had the highest distribution of households who had to share their toilet facilities. It is important to note that Rocky Point (22.2 per cent) and Salt River (16.1 per cent) reported the highest cases of unavailability of toilet facilities in this study area. There was no data which stated the type of toilet facilities to which these households had access.

Based on the data for 2001, the majority of households (78.1 per cent) in St. Catherine had access to some kind of toilet facility which was not shared: water closet (66.2 per cent), Pit (11.5 per cent) and facility not reported (0.4 per cent) (see Table 4-8). Only 17.1 per cent of households shared toilet facilities. This trend applied throughout the area with the exception of Port Henderson and Old Harbour which had 49.0 per cent and 37.5 per cent of the population respectively using a pit as their toilet facility. In Port Henderson, 25.5 per cent shared and 23.5 per cent did not share, while in Old Harbour 14.4 per cent shared and 23.1 per cent did not share this facility.

Table 4-8: Percentage Distribution of Households by Availability and Type of Toilet Facilities, St. Catherine and Clarendon 2001.

AVAILABILITY AND TYPE OF FACILITY		St. Catherine	Clarendon
		%	%
SHARED	Water Closet	8.4	5.2
	Pit	8.6	13.8
	Not reported	0.1	0.1
NOT SHARED	Water Closet	66.2	42.0
	Pit	11.5	20.2
	Not Reported	0.4	10.8
NOT REPORTED	Water Closet	1.3	0.9
	Pit	0.9	1.7
	Not Reported	1.0	1.0
	No Facility	1.6	4.3
	Total	100.0	100.0

In 2001, there was an increase in the proportion of households which did not have to share toilet facilities (73.0 per cent) in Clarendon (see Table 4-8). Subsequently, there was a decline in the proportion which shared facilities (19.1 per cent). Water Closets were used predominantly in communities such as May Pen, Lionel Town, Toll Gate/Osbourne Town and Longville. Clarendon is among the eight parishes which report a prevalent use of pit toilets; whether shared (13.8 per cent) or not shared (20.2 per cent). Pit toilets were used predominantly in areas such as Race Course, Rocky Point, Alley and Portland Cottage. It should be noted that there was an increase in the proportion of households which indicated they did not have access to toilet facilities. This is an issue that should be addressed for both health and environmental reasons.

Table 4-9: Percentage Distribution of Households by Availability and Type of Bathroom, St. Catherine and Clarendon 2001

AVAILABILITY AND TYPE OF BATHROOM		St. Catherine	Clarendon
		%	%
SHARED	Fixed Bath or Shower	6.7	4.0
	No Fixed Bath or Shower	4.1	5.8
	Bath or Shower not Reported	0.2	0.2
NOT SHARED	Fixed Bath or Shower	76.5	44.1
	No Fixed Bath or Shower	1.2	30.0
	Bath or Shower not Reported	1.0	1.0
	No Bath Facility	7.3	12.1
	Not Reported	3.0	2.8
	TOTAL	100.0	100.0

The information reported for the availability and type of bathroom facility showed that 78.7 per cent of households did not share their bathroom facility, 76.5 per cent of which had a fixed bath or shower (Table 4-9). Approximately 11.0 per cent of households had to share bathroom facilities. The data showed that 10.3 per cent of households in the St. Catherine area did not have access to bathroom facilities whether shared or not or they did not report their facility. Once again, Port Henderson and Old Harbour were the only communities in St Catherine which did not share a facility, but did not have either a fixed bath or shower available. All other areas in the study were characterized by having access to their own bath or shower.

In Clarendon with respect to bathroom facilities, 75.1 per cent of households did not have to share bathroom facilities, 10.0 per cent sharing and approximately 12.1 per cent did not have facilities at all (Table 4-9). Of this proportion, 44.1 per cent had access to a fixed shower or bath within the household. This was the general trend among households, with the exception of the Rest of the Project area which indicated that 33.0 per cent of households had no bath facility therefore these areas are in dire of this facility to improve their standard of living.

4.1.6 Number of Rooms

As Table 4-10 and Figure 4-9 indicate, the number of households in St. Catherine occupying one room remained almost unchanged for the period 1991 to 2001, while for Clarendon there was a decline of 4.5 per cent in this category.

It is important to note however, that for both St. Catherine and Clarendon over 40% of the households occupy units of two rooms or less. Indeed, for Clarendon the figure is over 50 percent.

This indicates a high level of overcrowding.

Table 4-10: Percentage Distribution of Households by Rooms Occupied, St Catherine and Clarendon 1991 and 2001

NUMBER OF ROOMS	St. Catherine		Clarendon	
	1991	2001	1991	2001
	%	%	%	%
1	23.6	23.1	34.0	29.5
2	17.6	14.9	23.4	20.9
3	31.2	26.9	20.2	20.2
4	16.6	18.6	11.2	13.1
5	5.7	8.0	5.9	7.5
6	2.5	3.5	2.5	3.7
7	1.5	1.6	1.9	1.6
8	n.a	0.7		0.9
9	n.a	0.3		0.3
10 and Over	n.a	0.2		0.4
Not Reported	1.3	2.2	0.9	1.9
Total	100.0	100.0	100.0	100.0

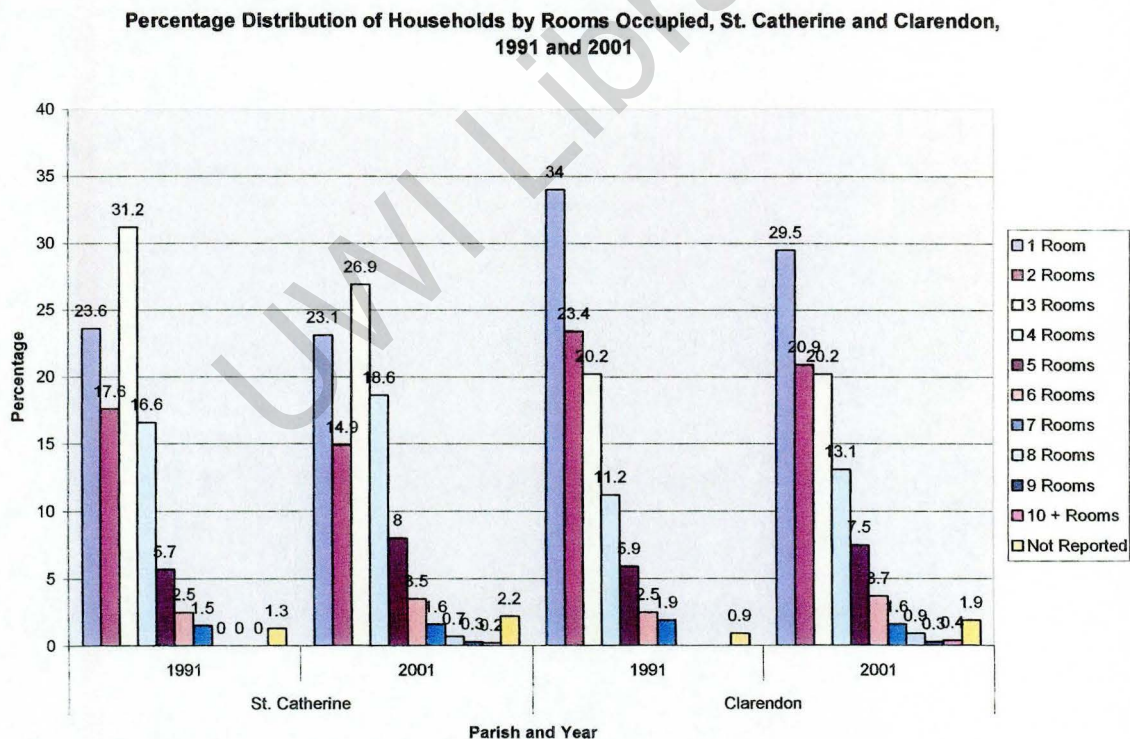


Figure 4-9

4.1.7 Source of Water

As it pertains to the source of water supply, precedence is given to the source used for “...cooking and drinking over the source of bathing washing and other uses”. In 1991, approximately six in every ten households in St. Catherine had water piped into their dwellings regardless of whether it was a public or private source (Table 4-11 and Figure 4-10). Another 27.9 per cent had water piped directly into their yard, while 2.4 per cent had water from a standpipe.

Only 4.4 per cent of the St. Catherine area had their source of water from neither a public or private source- Spring/River, ‘Other’ nor ‘Not Reported’. Communities in St. Catherine reported over 70.0 per cent of households with public water piped into dwelling. However, the following communities were excluded, since their main source of water was public, being piped only into yard: Gregory Park; Naggo Head; Newlands; Old Harbour; Old Harbour Bay; and McCook’s Pen.

On examining the changes between 1991 and 2001, the data showed that the increase of water being piped into dwellings over the period was simultaneous with the decline of water being piped into yards. The proportion of households with water being piped into dwellings increased by 9.4 percentage points over the period. Consequently, there was a decrease in the number of households who got their water from a standpipe or catchment (public source). However, there was an increase in the number of households who did not report their source of water. This could be attributed the increase in illegal sourcing of water from the National Water Commission over the years. This trend in the communities continued from 1991 up to 2001 with the exception of Port Henderson/Fort Augusta with approximately one in every three households (31.9 per cent) reporting ‘Other’ as their main source of water supply.

Table 4-11: Percentage Distribution of Households by Source of Water for Domestic Use, St. Catherine and Clarendon 1991 and 2001

SOURCE OF WATER		St. Catherine		Clarendon	
		1991	2001	1991	2001
		%	%	%	%
Public Source	Piped Into Dwelling	59.7	68.9	33.6	44.3
	Piped Into Yard	27.9	18.1	32.1	23.3
	Standpipe	2.4	1.1	15.0	10.9
	Catchment	1.5	1.0	2.6	1.7
Private Source	Piped Into Dwelling	3.3	3.6	4.0	6.9
	Catchment	0.8	1.4	4.2	4.3
	Spring/River	0.2	0.1	0.5	0.3
	Other	3.4	3.0	7.4	6.0
	Not Reported	0.8	2.8	0.6	2.3
	TOTAL	100.0	100.0	100.0	100.0

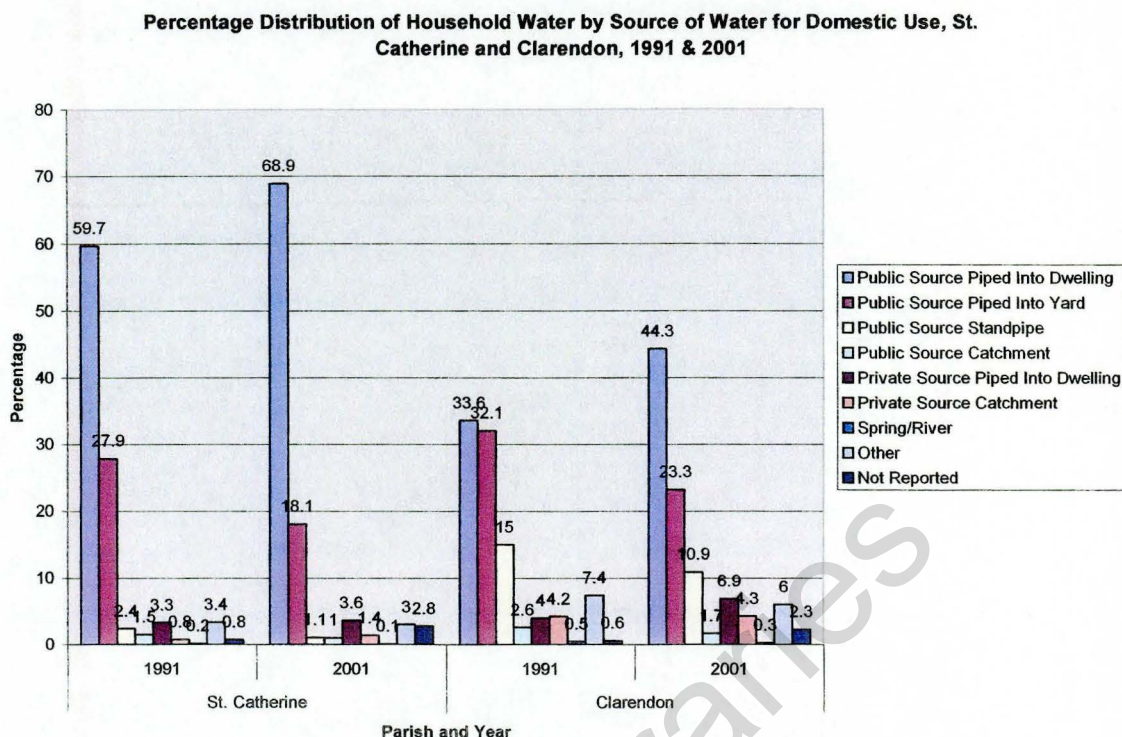


Figure 4-10

The proportion of households with public sources of water in Clarendon remained very high although there was a slight decline over the period (Table 4-11 and Figure 4-10). There has, however, been an increase (10.7 percentage points) in the proportion of households who have water piped directly into their dwellings. Simultaneously, there was a decline in the proportion of households who used a standpipe and catchment as their main source of water. More in-depth analysis showed that rural communities had higher distribution for water piped into their yards rather than water piped into their dwellings.

In 1991, communities such as Portland Cottage and the Rest of the Project area were more predisposed to accessing a standpipe for water than any other community in the parish. However, this trend was reduced drastically in 2001 as these communities reported an increase in the proportion of households with water piped into dwelling and yard. An increase in the proportion of households who did not report their source of water supply was also evident over the period.

4.2 Settlement Strategy

4.2.1 Policy and Institutional Framework

The National Physical Plans of 1970-1990 and 1978-1998 articulated a National Settlement Strategy as an attempt to influence the direction of growth. The national goals and objectives which underpin the comprehensive settlement policy outlined are:-

- To relieve some of the anticipated population pressure and concomitant problems of urban growth in the Kingston area.
- To provide a wider choice of living environments throughout the island, than now exists.
- To achieve a more equitable distribution of benefits, by providing a better quality and wider range of urban type facilities and amenities throughout Jamaica.
- To provide alternative employment sources.
- To advance national self-sufficiency by encouraging integrated regional development.
- To provide a physical guide for the most rational use of public funds and private investment, as well as available land space.
- To lay the basis for future productivity, through the development of the physical infrastructure and human resources.
- To ensure satisfaction of the needs of future generations through conservation, rehabilitation, protection and careful management of the natural environment.

Given these specific objectives, a plan was developed by first considering 1,150 settlements, to which the following criteria were applied.

1. Present size and shopping importance
2. existence and size of parochial market
3. existing accessibility
4. extent of economic growth potential factors:
 - a. agriculture
 - b. industry
 - c. tourism (including domestic tourists)
 - d. mineral industries
 - e. fishing
 - f. commercial forestry
 - g. breadth of economic base and employment diversification.
5. presence of water supply
6. presence of electricity and telephone
7. number of post-primary facilities (existing or approved)
8. number of other community facilities (existing or approved)
9. existence and level of the services provided by the ministry of agriculture
10. existence and size of government-owned land for urban expansion
11. absence of physical constraints to development

Two hundred and fifteen (215) of these centres were then selected for further study and one hundred and twenty (120) eventually chosen for concentrated development. There are ninety-six (96) district centres, seventeen (17) sub-regional centres, six (6) regional centres and one (1) national centre. These are shown on Figure 4-11.

Within the context of the six (6) planning regions shown on Figure 4-12, there is a regional centre to serve each region. The number of sub-regional and district centres within each region is determined by physical conditions and the economic and social needs of the regions.

Each centre selected should function as the stimulus and focus of regional development and together they should all operate to form a system of service centres for the entire island. The smallest centre chosen, the District Centre, serves a scattered population in an area within ten to fifteen minutes driving time, or one to two hours walking time.

The following would therefore apply to the project area:

St. Catherine

Sub-Regional Urban Centres

- Spanish Town
- Old Harbour
- Hellshire Hills

Clarendon

Regional Urban Centres

- May Pen

Sub-Regional Urban Centres

- Lionel Town

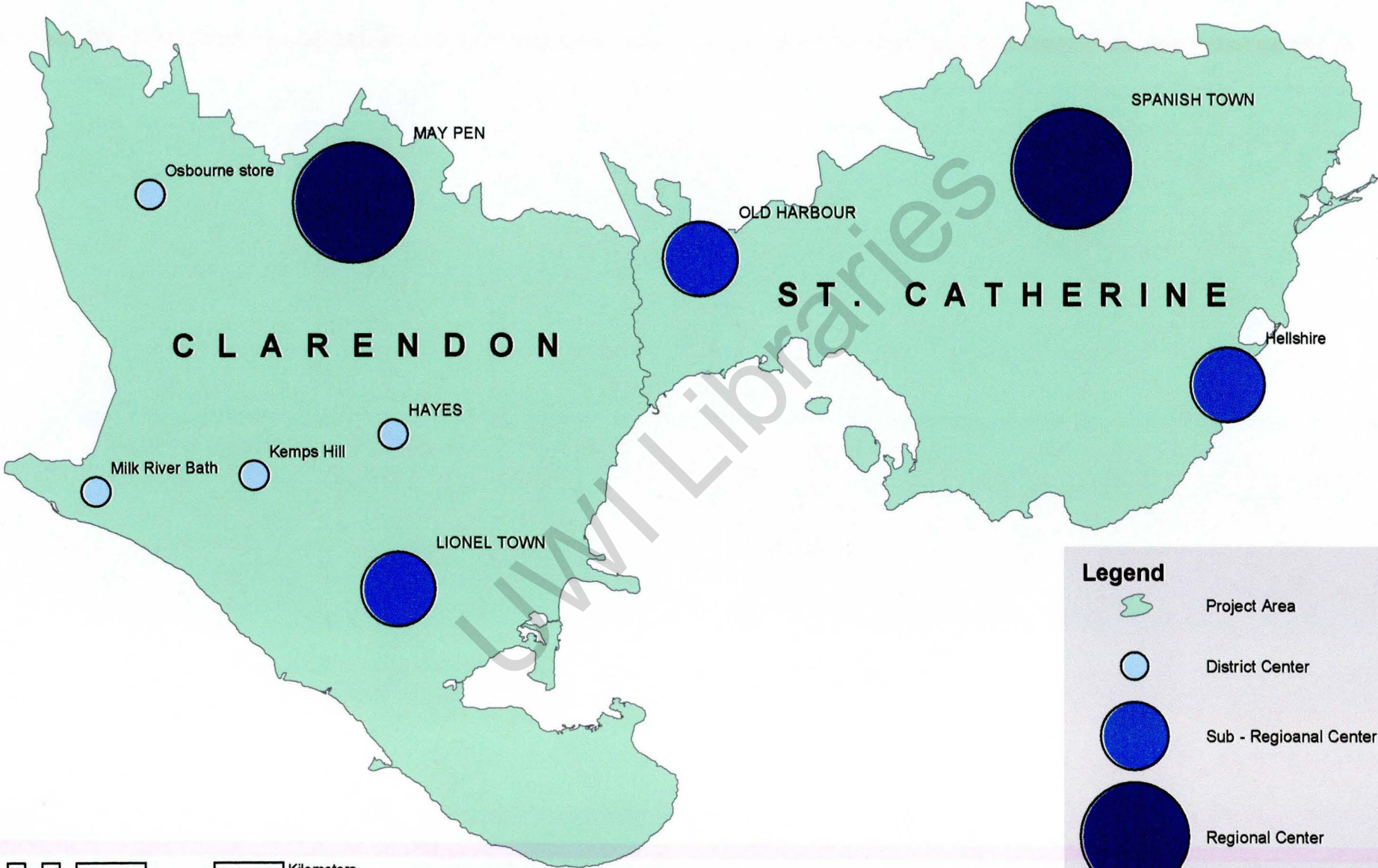
District Towns

- Osborne Store
- Hayes
- Kemps Hill
- Milk River

It has been recognized that the Strategy has not been highly successful. This can be primarily attributed to an institutional inability to systematically link information related to economic growth and investment to spatial planning.

For example, the country does not engage in a systematic programme of regional accounting, so an understanding of the economic base of regions and sub-regions is not possible as a matter of course.

Settlement Hierarchy



0 1.5 3 6 9 12 Kilometers

Figure 4-11 Settlement Hierarchy

This is fundamental to the ordering of human settlements. It is quite clear that the decline of the sugar industry has affected the anticipated role of May Pen and other settlements in Clarendon. Similarly, economic factors, as well as changes in housing strategies have impacted on the projected role for Hellshire in St. Catherine.

Spanish Town on the other hand was upgraded to a Regional Urban Centre, while May Pen continues to struggle to achieve that status.

The advent of a New Town in the project area at Esquivel (Old Harbour/old Harbour Bay/Freetown) will also see that settlement emerging as a Sub-Regional Centre

The idea of a Settlement Strategy continues to be important as it helps to counteract the tendency towards urban sprawl. It will therefore be important for the Settlement Strategy to be revised as the plan is implemented.

4.2.2 Rationalization of Major Settlements

4.2.2.1 Portmore Municipality

The priority of the Portmore Municipality is to ensure that the land uses within its boundaries fosters social and economic cohesion, through the provision of a superior living environment.

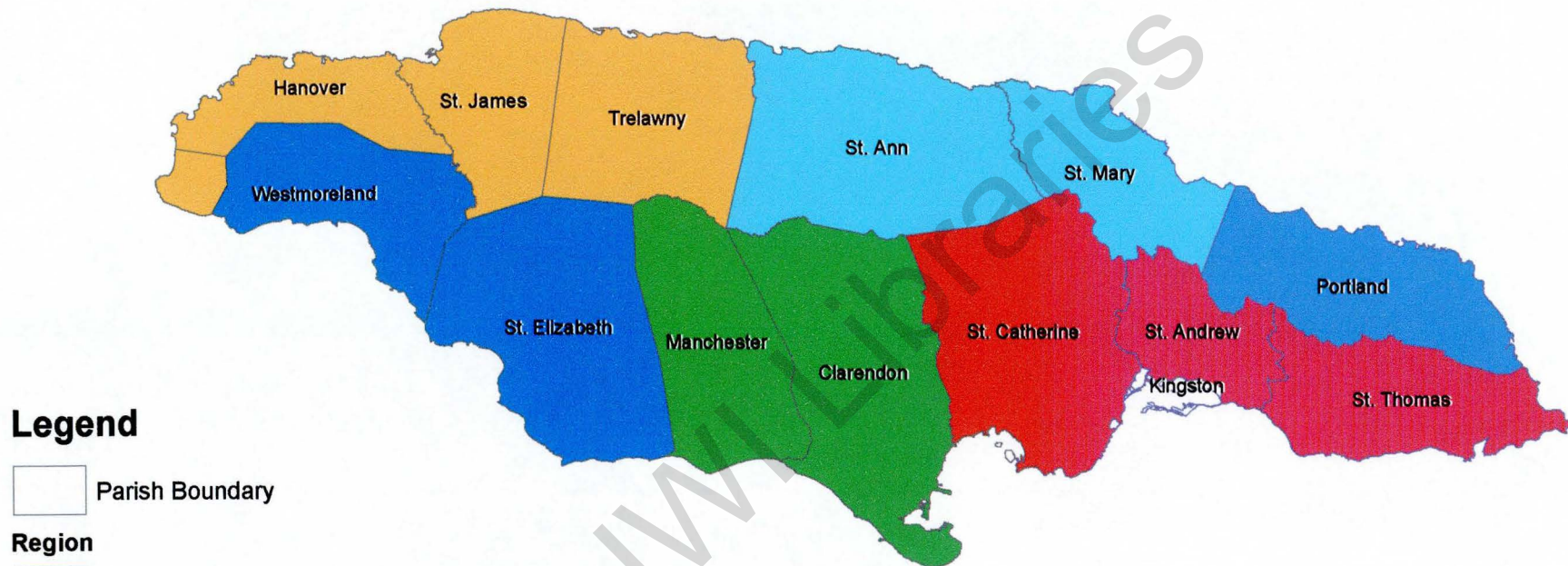
It is proposed that the boundary of the Municipality be rationalized (see Map 7) and that the vacant lands remaining be utilized to provide the social, administrative, and recreational services as well as the economic and employment opportunities needed.

No new housing development will be allowed within the urban fence of Portmore Municipality with the exception of the Hellshire area and areas identified for squatter settlement upgrading.

Those developments will have to be redesigned to adhere to the high density compact principles established in the Plan.

(Details of Rezoning to follow).

Planning Regions



Legend

 Parish Boundary

Region

 A - St. James-Hanover-Trelawny Region

 B - Westmoreland - St. Elizabeth Region

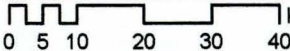
 C - St. Ann - St. Mary Region

 D - Manchester - Clarendon Region

 E - Kingston Region

 F - Portland - St. Mary Region

Figure 4-12 Planning Regions

 Kilometers
0 5 10 20 30 40

4.2.2.2 Spanish Town – Renaissance I

Spanish Town's upgrading from a Sub-Regional Center to a Regional Center demonstrated the growth of the Town's importance from a national perspective. As a Regional Urban Centre, Spanish Town provides major services to areas such as Bog Walk, Old Harbour, Kitson Town, McCooks Pen and other areas of southern St. Catherine.

Although Spanish Town has been eclipsed by Portmore as the dominant population centre in the parish of St. Catherine (see Table 3-1), the town can still maintain its status as a Regional Centre through the provision of services to an expanding catchment area.

The town also holds the distinction of being the former capital town of Jamaica, and remains one of Jamaica's most historic and cultural tourism attractions, with ranking as a potential World Heritage Site.

The environment of Spanish Town can be described as "dilapidated" and a significant portion of the population can be described as "poor" squatters (see Section 4.4).

Spanish Town will therefore only achieve its true potential through a comprehensive programme of Revitalization and Gentrification dubbed "RENAISSANCE I."

4.2.2.2.1 Revitalization

Revitalization is the process of enhancing the physical, commercial and social components of neighbourhoods and the future prospects of its residents through private sector and/or public sector efforts. Physical components include upgrading of housing stock and streetscapes. Commercial components include the creation of viable businesses and services in the community. Social components include increasing employment and reductions in crime.

It is anticipated that the process of revitalization will foster gentrification.

4.2.2.2.2 Gentrification – Making Spanish Town "The Best Place to Be, the Best Place to Live"

Gentrification is the process of converting an aging area in a city into a more affluent middle class neighbourhood, as by remodeling dwellings, resulting in increased property values and in displacement of the poor i.e. the reversal of the fortunes of historic neighbourhoods.

This is important for the following reasons:

- Tax revenues are the lifeblood of cities and towns, and a cost to its residents and businesses. Expanding the tax base is particularly critical since over the years the town has both lost many higher income tax payers while increasing the number of lower-income residents who need city services.
- The greater the income mix, the greater the deconcentration of poverty.
- Gentrification takes place because capital returns to the inner-city, setting up opportunities for residential relocation and profit.
- Gentrification brings about a change to a neighbourhood based on the influx of 'different' people to those that already – a new class of highly educated, highly skilled and highly paid residents.
- The actual capitalized ground rent (Land value) of a plot of land given its present use and the potential ground rent that might be gleaned under a 'higher and better' use.
- Thus land developers, landlords and 'occupier developers' will realize the potential profits to be made by reinvesting in abandoned inner-city properties and preparing them for new inhabitants.
- Gentrification is not simply the renovation of an abandoned housing stock; new residential developments are very much a part of a gentrification landscape.

For Spanish Town there is an opportunity for urban economic restructuring around Heritage Tourism, Art and Culture, Regional Marketing and Entertainment.
"Imagine a city using the organization of spectacular urban spaces as a means to attract capital and people."

This is supported by the following:

- There are a growing number of 25-35 year old professionals that will continue to place a tremendous demand on housing supply.
- Existing areas such as St. Jago Heights, Spanish Town, Caymanas Estate, Portmore Municipality, and Kingston provide a captive market for the goods, services and attractions that can be developed in the town.
- By 'Buying into history' in the inner-city the new middle-class are expressing their social distance from the classes below, and constructing an identity based on "consumption as a form of investment, status symbol and means of self-expression". Cultural Capital'.

4.2.2.2.3 Heritage Tourism

Visiting historic and cultural sites is one of the most popular tourist activities today. The development of a Spanish Town Historic District as part of a comprehensive programme of Revitalization will bring tremendous economic and social benefits to the town and region.

In developing the product the following should be noted however:

- **The importance of how to attract immediate revenue should be understood before resources are invested in preservation because the underlying rule of thumb is that preservation must be economically sustainable.**
- We need authenticity and quality. Sacrificing quality is not necessary to attract immediate tourists and group tourist. We need to generate revenue today. Three years from now is too late for many.

4.2.2.2.4 A Regional Retail and Wholesale Centre and Farmers' Market

Spanish Town needs to take advantage of its strategic location to perform the services as a Regional Retail and Wholesale Centre and Farmers' Market (see discussion at Section 2.3.8.1).

4.2.2.2.5 The Way Forward

The St. Catherine Parish Council, private sector interests and civic leaders of Spanish Town are committed to the transformation to Spanish Town. The following Steps have been taken:

- Reconfiguration of the Urban Fence of Spanish Town (see Map 7).
- Designation of a Zone within "Old" Spanish Town that will form the basis of the first Investment District for the revitalization programme (see Figure 4-13). All the civic and administrative functions will be transferred to a 'receiving' zone, and the historic buildings will be made available for the revitalization programme.
- Zoning of an area to be developed as the New Civic, Administrative and Commercial Centre of Spanish Town (see Figure 4-14), and the development of preliminary design concepts for key parcels in that Zone (see Figures 4-15 and 4-16).
- Establishment of a **Spanish Town Redevelopment Company** designed along the lines of successful Redevelopment Companies of North America such as the Urban Redevelopment Authority of Pittsburgh, Pennsylvania, U.S.A. This Company will be a public/private sector partnership, and will manage the programme of redevelopment and revitalization with the authority emanating from the Local Planning Authority (see Appendix V).



Legend

— River

Spanish Town Historic District

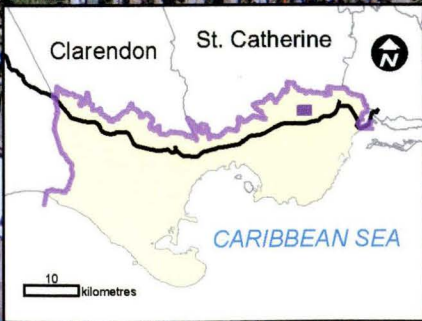


Figure: 4 - 13

HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN, PORTMORE TO CLARENDON PARK

Renaissance Spanish Town New Civic Administrative Commercial Zone

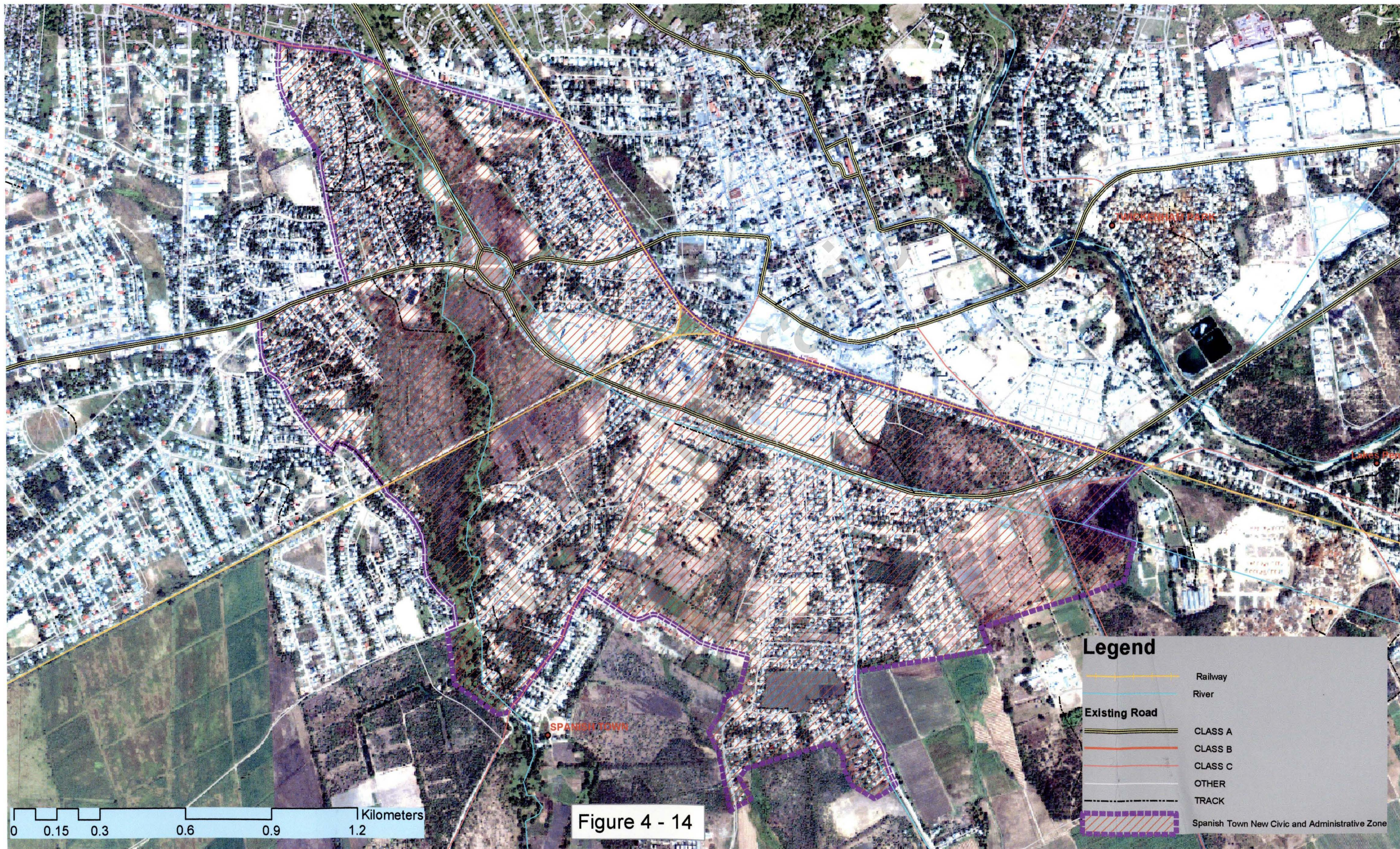
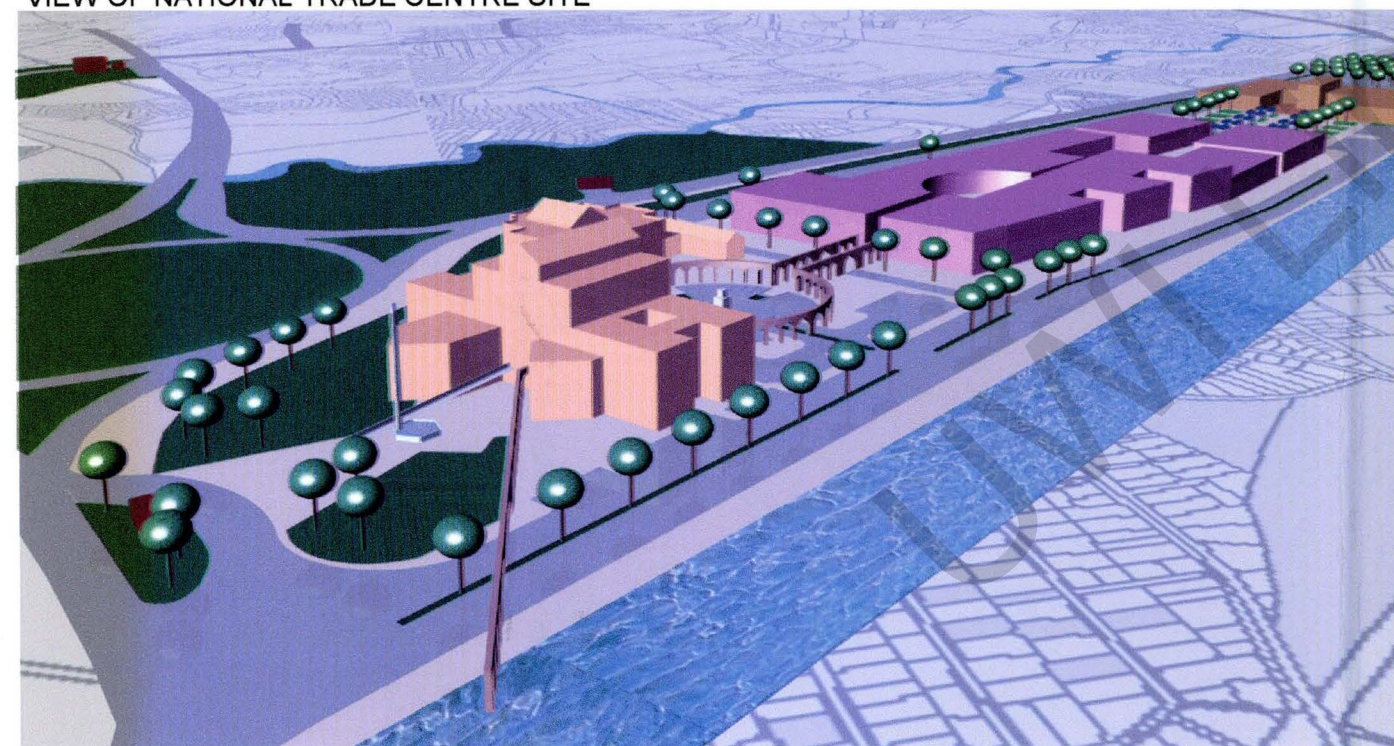


Figure 4-15.



VIEW OF NATIONAL TRADE CENTRE SITE



VIEW OF CIVIC CENTRE SITE



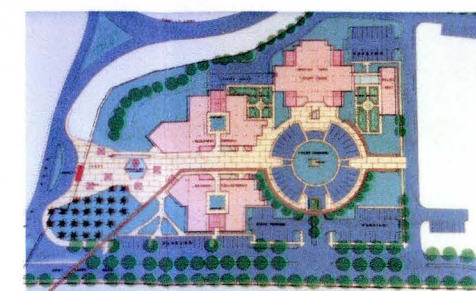
OVERALL VIEW FROM KINGSTON



OVERALL VIEW FROM BOGWALK



PERSPECTIVE - CIVIC CENTRE

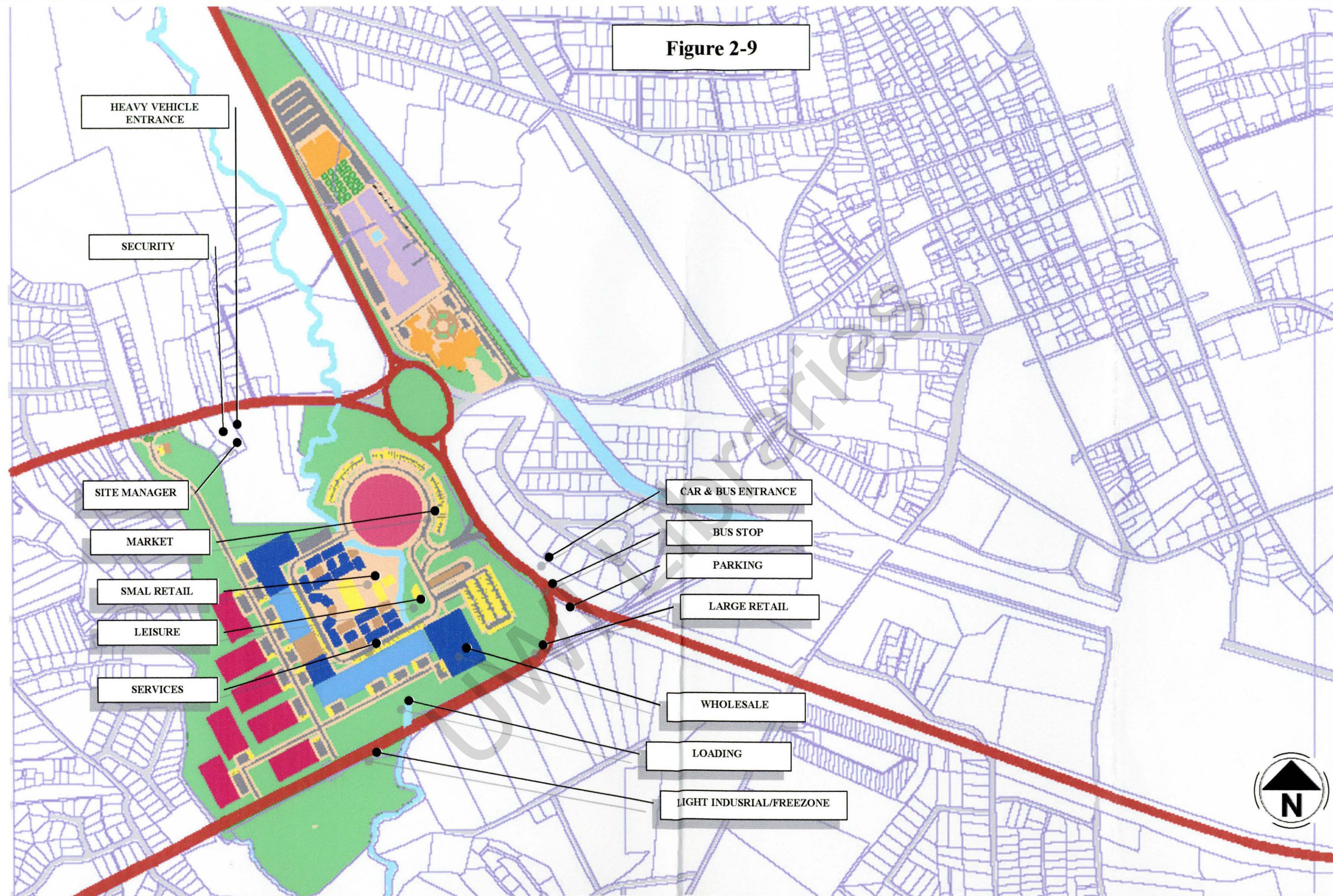


SITE PLAN - CIVIC CENTRE

Legend

Market	Wholesale
Leisure	Retail
Industrial	Government
Mixed Use	Services

Figure 2-9



HAROLD MORRISON + ROBERT WOODSTOCK
ASSOCIATES LIMITED

JAMAICA: 15 BEDFORD PARK AVENUE KINGSTON 10 (T) 1 876 929 39 00 - 2
BARBADOS: PINFOLD STREET BRIDGETOWN ST. MICHAEL (T) 1 246 426 11 22

URBAN RENEWAL - SPANISH TOWN & ENVIRONS

OVERALL SITE PLAN

Legend

 Market	 Wholesale
 Leisure	 Retail
 Industrial	 Government
 Mixed Use	 Services

It is anticipated that thousands of jobs will be created for construction workers, craftsmen, service provision, and persons wishing to work in the new tourism related enterprises.

4.2.2.3 May Pen – “The Modern Company Town”

The draft May Pen Development Plan of 1995 recognized the following:

- Land use and space allocation within May Pen presents several unfavourable and undesirable characteristics such as urban sprawled expansion leading to diseconomies in the provision of services, access and egress, below optimum land use and a somewhat amorphous structure.
- Relative to the Development Order of 1965 May Pen's development is inconsistent with the proposals and recommendations, particularly in terms of neighbourhood expansion for creating adequate residential development and its complimentary activities e.g. open space.

The following developments within the parish now provide an opportunity for May Pen to embark on a redevelopment programme similar to the neighbouring Spanish Town:

- The JAMALCO Expansion
- The development of the Clarendon Eco-Industrial Zone
- The Development of the Vernamfield Cargo Aerodrome
- The Development of the Milk River Pool, Museum & Spa Resort

The Clarendon Parish Council (the Local Planning Authority) will pursue a course of action similar to its neighbouring St. Catherine Parish Council and establish a May Pen Redevelopment Company.

Unlike Spanish Town, May Pen does not have a distinct motif that can form the basis of the redevelopment programme.

The following are some suggested elements:

- A town gateway
- A piazza – around water with several neighbourhoods nearby.
- A plaza – where people from different walks of life –or work- can meet, talk, move on, and get someplace else with relative ease.
- Quiet streets. Places to breathe and reflect with benches in an outdoor area with sun or shade.
- Tree lined avenues and gardens. They constitute an important hygienic factor, and they also afford the charm of landscape elements in the middle of the town and provide a contrast with architecture.

The redevelopment of the town will focus on the following sectors:

- Accommodation & Entertainment
- Banking Facilities
- Security Services
- Transportation
- Medial Services & Equipment
- Food Services
- Communication Purchasing
- Education and Training
- Low-cost industrial parks for companies that may not be able to afford the high-end Clarendon Eco-Industrial Zone.

The approach will try to create a sense of community and connection. A well planned town creates a vibrant community – **“We are proud of where we are.”**

4.2.3 Residential Subdivisions and their Impact on Viable Urban Design

Laying waste to much of the countryside in the study area, developers have constructed sprawling housing developments. This is a serious threat to any attempt at developing compact efficient urban centres and a system of public open spaces (see Section 9.0).

In addition the auto-oriented subdivisions are being laid out with a totally inadequate range of open spaces.

Most subdivisions are laid out without even considering the need for more than private and semi-private open spaces. Most road standards for rights-of-ways and pavement in subdivisions inadequately address the visual, spatial, emotional, and functional characteristics needed to create the most basic of public open spaces -- a proper street.

The subdivisions of equally sized single family lots with homes of equal square footage are burgeoning. There are no street trees and, typically, no sidewalks. Worse, there is no place to walk to.

Jamaicans are being programmed and, in too many cases, are required to drive to everywhere and everyplace. The society is therefore becoming more auto-dependent. In newer residential subdivisions, one must drive to access any local open spaces, as well as shops, jobs, and entertainment. There is, additionally, no sense of civic place or public realms in most subdivision plans.

The subdivisions are designed to clearly separate socio-economic groups from one another. Large lots in one place, medium sized lots in another, and smaller ones in a third. Rarely are neighbourhoods or community open spaces incorporated to help bring the diverse neighbourhoods together.

If subdivisions were designed properly they could reduce the number and length of trips and, thereby, the impact on the roads. It is an extremely short-sighted investment strategy not to develop a higher quality of life and a sense of pride and fellowship by providing their fundamental open spaces.

Table 4-12 provides a summary of the approved and pending subdivisions in the project area.¹ As the Table indicates, just over 2,600 housing solutions will be provided for 2005. This means that less than 30% of the housing need would be met.

Government Initiated Housing Projects in the Area

Count	PROJECT NAME	PROJECT LOCATION	DEVELOPER	OWNER	STATUS	TENURE / USE	VOLUME / FOLIO	AREA (hectares)	PROJECT TYPE	PERMIT STATUS	PROPOSED START - END DATE
1	Angels 2	Angels, St. Catherine	New Era Homes 2000	Minister of Housing		Residential	353/30	21	460 housing units / Joint Venture	Aproved under the Housing Act	
2	Aviary	Rest Pen, Old Harbour	WIHCON	WIHCON		Residential/ own	1255/749		597 two bedroom units		
3	Bernard Lodge	Bernard Lodge	National Housing Trust			Residential			Joint Venture / serviced lots	still pending	2004 - 2005
4	Bernard Lodge	Portmore, St. Catherine	WIHCON						Proposed gated community		
5	Bernard Lodge Block E	Bernard Lodge	New Era Homes 2000	Commissioner of Lands	Transfer in progress	Residential		48.7	Joint Venture / proposal		
6	Beverly Flats	Portmore, St. Catherine	Beverly Flats Land Dev. Ltd	Minister of Housing		existing informal settlement	1062/521	1.55	NHDC/Operation Pride; 73 lots		June 2004 - October 2004
7	Braeton Meadows	Portmore, St. Catherine	Braeton Meadows Land Dev. Ltd	Minister of Housing		existing informal settlement	1109/416, 1262/694, 411/68	1.68	NHDC/Operation Pride; 62 lots		June 2004 - October 2004
8	CAYMANAS ESTATE	St. Catherine	SUGAR INDUS. BOARD c/o NATL. INVESTMENT	Urban Development Corporation		Residential	664/12		49 lots	Approved NEPA 28.6.99	
9	Cedar Grove, Phase 2	Grange lane, St. Catherine				Residential/ own	1083/307	10.9915	104 Residential/ serviced lots	Aproved under the Housing Act	
10	Cedar Grove Phase 1	Grange lane, greater Portmore, St Catherine				Residential/own	948/112	26.057	203 serviced lots	Aproved under the Housing Act	Jun-99
11	Cedar Grove, Phase 1	Grange lane, greater Portmore, St Catherine				Residential/own	948/112	41.63	334 serviced lots	Aproved under the Housing Act	Jun-99
12	Clarendon New Town	Harris Savannah, Clarendon	National Housing Trust					4452	residential community		
13	Cookson pen-Bushy Park	Portmore, St. Catherine	Mount Royal Development Co. LTD	Minister of Housing		Residential	1297/293	8.76	34 commercial lots	Aproved under the Housing Act	
14	Cow Park	Lakes Pen, St. Catherine	WISYNCO	Commissioner of Lands	Transfer in progress	Agri/Ruinat		26.31	Warehouse distribution outlet / Light industrial		

Government Initiated Housing Projects in the Area

Count	PROJECT NAME	PROJECT LOCATION	DEVELOPER	OWNER	STATUS	TENURE / USE	VOLUME / FOLIO	AREA (hectares)	PROJECT TYPE	PERMIT STATUS	PROPOSED START - END DATE
15	Ebony Park	Ebony Park, Clarendon	Ebony Park Land Dev. Ltd	Minister of Housing		existing informal settlement	1322/405	26	NHDC/Operation Pride; 120 lots		Sept 2005 - Aug 2006
16	Eltham	Spanish Town	WIHCON			Residential/ own	1328/344	12	410 studios		2004 June - 2004
17	Gravel Heights	Near Tredegar Park, St.Catherine	Gravel Heights Provident Soc. Ltd.	Commissioner of Lands	Instrument of transfer being prepared	existing informal settlement	703/41	23.9	NHDC/Operation Pride; 423 lots		
18	Hampton Meadows	St.Catherine	S B & L Reality Jamaica LTD			Residential/ own	1017/383 & 1021/638	34.42	334 housing units/10 commercial shops	No approval under housing act received	
19	Hellshire Gardens	Hellshire Gardens	National Housing Trust			Residential	1142/237		Joint Venture /		2004
20	Morris Park	Grange Lane, St. Catherine	NF Barnes Construction Equipment Ltd	Newton F Barnes	Commencing	Residential/ own	1286/655	29.75	397 Serviced lots	Approved NEPA 5.12.03	
21	Naggo Head-Congrieve Park	St. Catherine	Consortium Housing Development LTD			Residential/own	1109/416	5.53	80 serviced lots	Approved under the Housing Act	01-Jul
22	Old Harbour Villas Extensions	Old Harbour, St. Catherine	KFM Developers LTD			Commercial	175/264	3.6	Joint Venture / 92 housing units	Approved under the Housing Act	Not completed
23	PART OF BUSHY PARK	St. Catherine		Constance Alberga			1203/88		119 lots	Approved NEPA 10.10.01	
24	PART OF ELTHAM FARM NOW CALLED ELTHAM ACRES	St. Catherine	GORE DEVELOPMENTS LIMITED				820/95		501 lots	Approved NEPA pending	
25	PART OF PUSEY HALL PEN CALLED PORTLAND RIDGE	Clarendon		Commissioner of Lands		Agri/Residential			23 lots	Approved NEPA pending	
26	PART OF PUSEY HALL PEN CALLED PORTLAND RIDGE	Clarendon		Commissioner of Lands		Residential			85 lots	Approved NEPA 4.2.04	
27	PART OF ROSE HALL	Clarendon		Commissioner of Lands		Residential			56 lots	Approved NEPA pending	
28	PART OF TWICKENHAM PARK	St. Catherine		MINISTRY OF WATER AND HOUSING [Nadine Isaacs]			1251/996		438 lots	Approved NEPA 6.2.03	

Government Initiated Housing Projects in the Area

Count	PROJECT NAME	PROJECT LOCATION	DEVELOPER	OWNER	STATUS	TENURE / USE	VOLUME / FOLIO	AREA (hectares)	PROJECT TYPE	PERMIT STATUS	PROPOSED START - END DATE
29	Portmore Villa 2	Portmore, St. Catherine	Portmore Villas Land Dev Ltd	Minister of Housing		unoccupied	664/11, 1154/546	59.1	NHDC/Operation Pride; 450 lots		Nov 2004 - Nov 2005
30	Raymonds	Near Hayes, Clarendon	Raymonds Land Dev. Ltd	Minister of Housing and Frome, Monymusk (1 acre)	Transfer in progress	existing informal settlement	983/292, 26/73	34.5	NHDC/Operation Pride; 289		Dec 2004 - Dec 2005
31	REST PEN/OLD HARBOUR	St. Catherine	OLD HARBOUR ESTATE LTD.			ruinate	1255/749		426 lots	Approved NEPA 12.11.01	
32	Spanish Villa	Corlettes Rd, Portmore, St. Catherine	Spanish Villas Land Dev. Ltd	Commissioner of Lands	Instrument of transfer executed by Commissioner of Lands	existing informal settlement	1269/892, 1151/639	8.2	NHDC/Operation Pride; 195 lots		Aug 2004 - March 2005
33	Toby Abbot	Toby Abbot, Clarendon	Toby Abbots Development Company Ltd	Minister of Housing		Residential		40	Joint Venture / 410 serviced lots	Aproved under the Housing Act	
34	Twickenham Park	Twickenham Park	National Housing Trust	Commissioner of Lands			1251/996		288 two bedroom, 416 three bedroom, 231 two bedroom Townhouses	Aproved under the Housing Act	2003 - August 2006
35	Vineyards Estate	Bushy Park, St. Catherine	WIHCON			Residential/own	1340/967	77	306 lots		
36	Vineyards Estate	Bushy Park, St. Catherine	New Era Homes 2000	New Era Homes 2000	under construction	Residential/ own					
37	WARWICK CASTLE KNOWN AS INSWOOD	St. Catherine	SUGAR INDUSTRY HOUSING C/O N.I.B.J				1141/821		95 lots	Approved NEPA 4.9.99	
38	Washington Meadows	Portmore, St. Catherine	Washington Mews Land Dev. Ltd	Cable and Wireless Ja		existing informal settlement	987/287	1.83	NHDC/Operation Pride; 53 lots		
39	Whitewater	Sydenham, St. Catherine	Can Cara Development Ltd		under construction	Residential/ own	1309/331 & 1309/332	40.23	719 two bedroom units	Aproved under the Housing Act	

4.2.4 New Town Development

The possibility of developing a New Town in the project area was examined and the following rationale was agreed:

1. The inability of existing urban centres to provide the quality of live required.
2. The overwhelming 'push' factors of the KMA.
3. Provides an opportunity for the creation of an attractive city that is functional and conforms to zoning policies.
4. Facilitates the creation of a safe and secure environment – promoting love of nature, freedom of expression, health, recreation and education.
5. Provides the possibility for adequately and strategically placed common space that is developed and usable.
6. Combines the best aspects of town and country e.g. the promotion of Urban Farming
7. Provides an opportunity to test the viability of Local Government Reform Programme as a new approach to governance - public awareness and involvement, freedom of choice, promotion of strong cultural values, community management, and a willingness to pay for all services.
8. Provides an opportunity to promote an integrated viable economic base
9. Provides the ability to derive the advantages that a Greenfield site offers such as the provision of site characteristics required by new investors – i.e. lot sizes, unencumbered by adjacent conflicts (e.g. squatting etc.), provision of services as well as an opportunity to test new technologies and designs particularly related to energy efficiency.
10. Facilitates easy movement and access.
11. Promotes efficient use of resources.

4.2.4.1 Alternative Site Analysis

Five possible sites were examined utilizing a checklist agree to with the project Technical Committee.

The sites were as follows (see Figure 4-17):

1. McGilchrist Pen/Rhymesbury
2. Inverness
3. Old Harbour/Old Harbour Bay
4. Amity Hall
5. Hellshire

Details of the analysis can be seen at Appendix VI.

The Old Harbour/Old Harbour Bay site emerged as the most desirable New Town site.

HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN, PORTMORE TO CLARENDON PARK

Proposed Alternative Newtown Sites

N

Scale 1:150,000

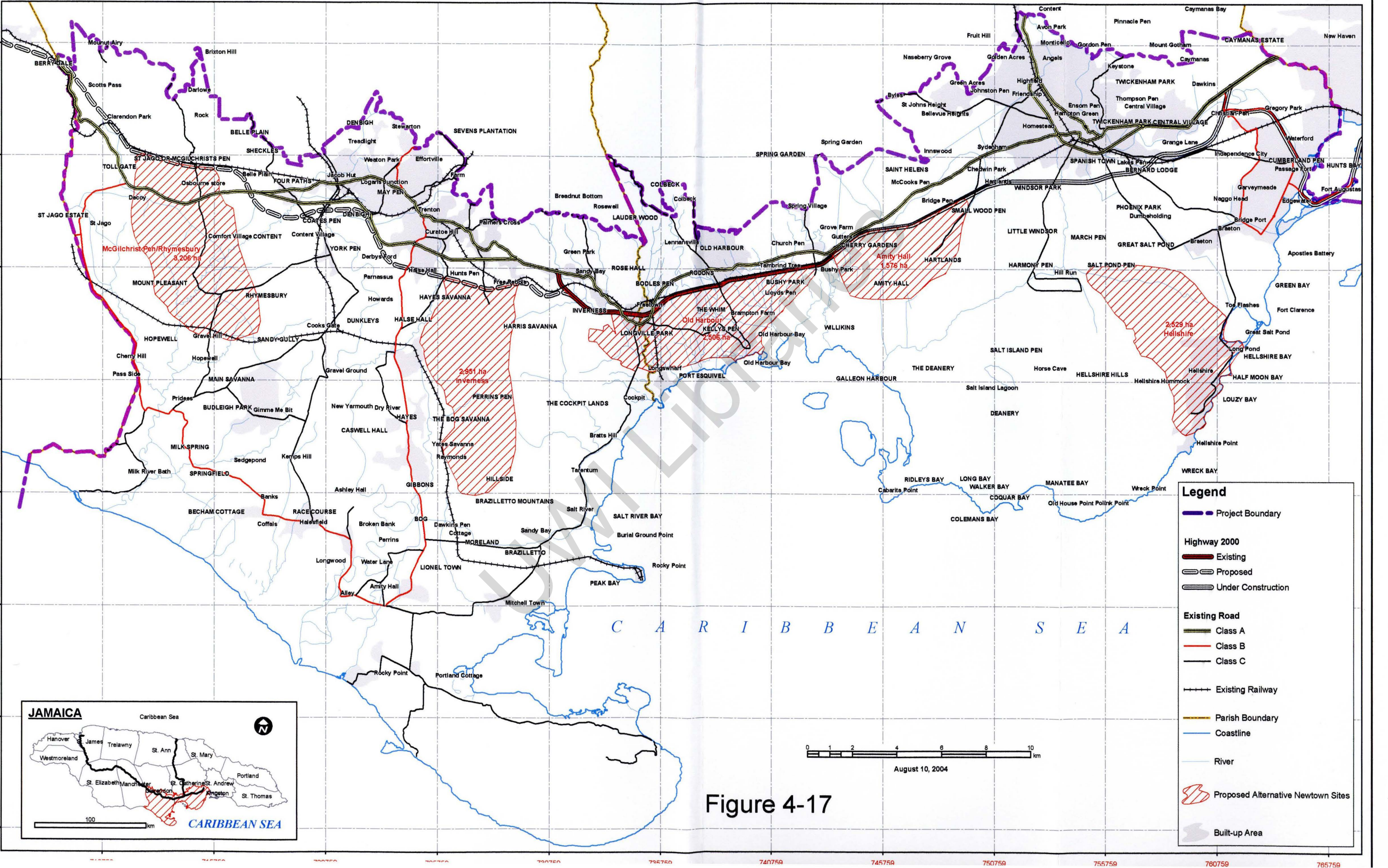


Figure 4-17

4.2.4.2 Esquivel - The New Town

Covering 2,506 hectares, the New Town will be called Esquivel, named for Juan de Esquivel, Spanish adventurer, born in Spain about 1480; died in Jamaica about 1519. When Ovando was appointed to succeed Bobadilla as governor of Hispaniola, Esquivel went to the Island as one of his lieutenants.

In 1509 Diego Columbus sent Esquivel with seventy men to take possession of the island of Jamaica on his behalf. He was successful and founded the seat of government on the spot where Christopher Columbus had been shipwrecked in 1503, and named it Sevilla Nueva, but had to move due to the area's climate and swampy conditions. He then founded present day Spanish Town, which became a beautiful city, with 500 homes and several churches.

Esquivel introduced a Spanish breed of cattle, hogs, and horses, and several kinds of vegetables. He was highly extolled for prudent and temperate behaviour.

Port Esquivel is also named for him.

Consistent with the name of the New Town, there will be a strong marine/maritime orientation. The town will be oriented to the coast and the rich marine biota of Portland Bight.

Central Government and the St. Catherine Parish Council will appoint a Development Corporation for a period of twenty-five (25) years to manage the New Town's physical, economic and social development.

The Corporation will commission architects and planners to prepare a Master Plan and Urban Design. Engineers and contractors will be employed to build the infrastructure.

A programme of incentives will be developed to attract business and workers with a promise of better housing and residential environment.

The following market segments will be targeted:

A. The Retiree Market

Esquivel can provide retirees with a quality of life superior to that of other countries, streamline the regulatory environment to make it more attuned to the needs of elders and the retirement industry, and engage in a formal marketing effort to attract amenity seeking retirees. Esquivel's competitiveness in attracting retirees will be difficult to match: warm weather throughout the year, lower cost of living, close to the major population centres of Kingston, Spanish Town and May Pen.

Retirement is a stable growth industry. Jobs and businesses needed to sustain this industry run the gamut from hospitality to health care, from janitorial workers to neurosurgeons.

Esquivel can be an attractive place to retire, and to provide the business and social service infrastructure that will make retirement a sustainable industry.

In addition to financial benefits, there are numerous social benefits such as senior volunteerism, donations to charities, support of the arts and civic participation.

The retirement industry is clean, and its benefits are spread to other high job creating industries such as hospitality, construction, and health care.

From an environmental perspective, the retirement industry is cleaner than traditional manufacturing, mining or agriculture. It has a low intensity of use of natural resources.

It fosters residential construction.

A health care industry based on the mature market for its technical and financial viability is entirely possible.

Esquivel will:

- Encourage “age-restricted” communities that sell mostly to people 55 and over (up to 80%).
- Enhance incentives to attract health care professionals (Jamaican professionals abroad to return).
- Roadways will have wide lanes, good signage and pedestrian friendly features.

Opportunities for seaside recreation, golf courses, hiking and other recreational endeavours will be developed.

B. The New Town and the New Economy

The driving forces of the New Economy are ideas and knowledge – or intellectual capital. Competitive firms use the knowledge and innovation to launch specialized products in an international marketplace.

Two such sectors will be encouraged in Esquivel to complement the Clarendon Eco-Industrial Zone.

- Information/Electronics. The telecommunications industry.
- Biotechnology, Life Sciences. The Bodles Agricultural Research Station will be transformed into a Research and Testing Facility. Agricultural and food genomics, medical genomics and clinical research, and bioinformatics will form the basis of this facility.

C. Research and Development

An Industrial Minerals Technologies Research Institute will be established in the Esquivel New Town to complement the Clarendon Eco-Industrial Zone. The Institute will be joint venture between the private sector in the zone, the UWI and the Department of Mines and Geology.

The research work of the Institute will be:

- Finding new applications for industrial minerals of Jamaican origin
- Minimizing the environmental impact from the production of industrial minerals
- Minimizing production cost particularly related to energy.
- Maintaining high grade industrial minerals.

D. Other Market Segments

Other segments that will be targeted are:

- Returning Residents
- Young Professionals
- The vacation home market
- Eco and Soft Adventure Tourism Interests
- Boating/Yachting Interests
- Company Executives (requiring a livable environment with a short commute to Kingston or the Clarendon Eco-Industrial Zone.

4.2.4.3 Proposed Developments and Implications for Settlements

Table 4-13 provides a listing of settlements recommended for relocation for the following reasons:

- Hayes – Within Clarendon Eco-Industrial Zone. Residential land use and industrial land use are incompatible. This history of the antagonistic relationship between this settlement and the JAMALCO Plant is well known.
- Salt River – Also within the Clarendon Eco-Industrial Zone.
- Rocky Point and Portland Cottage – The recent passage of Hurricane Ivan demonstrated that these communities are highly vulnerable to storm surge. The socio-economic level of the residents of these communities requires almost 100% aid from the State for reconstruction. This is not a cost that could be sustained repeatedly.
- Gimmie-me-bit – The development of Vernamfield Aerodrome to full economic potential is dependent on the removal of this settlement.

Table 4-13: Formal Settlements – Candidate Sites for Relocation

Parish	Name of Settlement	Net Number of Units*	Net Population*
Clarendon	Hayes	3,511	14,098
	Salt River	167	632
	Rocky Point	1,203	5,349
	Portland Cottage	551	1,929
	Gimmie-me-bit	505	1,817
Total		5,937	23,825

* Less squatter settlement units

** Less Squatter Population

4.3 The Housing Market

4.3.1 What is the Housing Need?

There is very little information on housing conditions throughout Jamaica and the project area. Table 4-15 begins an attempt to determine the housing need for the project area.

As the Table indicates, approximately 52,000 units will be needed either completely new or substantially upgraded over the period 2005-2010 (i.e. 10,400 per year).

Table 4-15: Housing Need 2005-2025

	2005-2010	2010-2025
Population at End of Period	582,090	728,2025
Population at start of Period	493,063	582,090
Population Increase	89,027	146,458
Housing Stock at Start of Period	136,944	168,387
New Households*	24,593	40,458
Replacement**	21,180	13,700
Relocation of formal Settlements***	5,937	-
Backlog****	-	-
Total Housing Need	51,710	54,158
Housing Stock at End of Period	168,387	222,545

* Household size is assumed at 3.62

** Includes substandard units (total squatter units less the number to be replaced outside the project area (see Section...)) that will require relocation and new construction or substantial upgrading and obsolete (1%).

*** See Section.....

****This is not known. It is assumed that there is an overlap with replacement. As of 2010 units not produced to meet the need for the period 2005-2010 will constitute the backlog.

4.3.2 The Supply of Housing

The programme of the National Housing Trust (NHT) provides a good indication of the supply of housing within the project area.

Table 4-16 and Figures 4-18 to 4-20 outlines NHT involvement in the study area for the past 27 years.

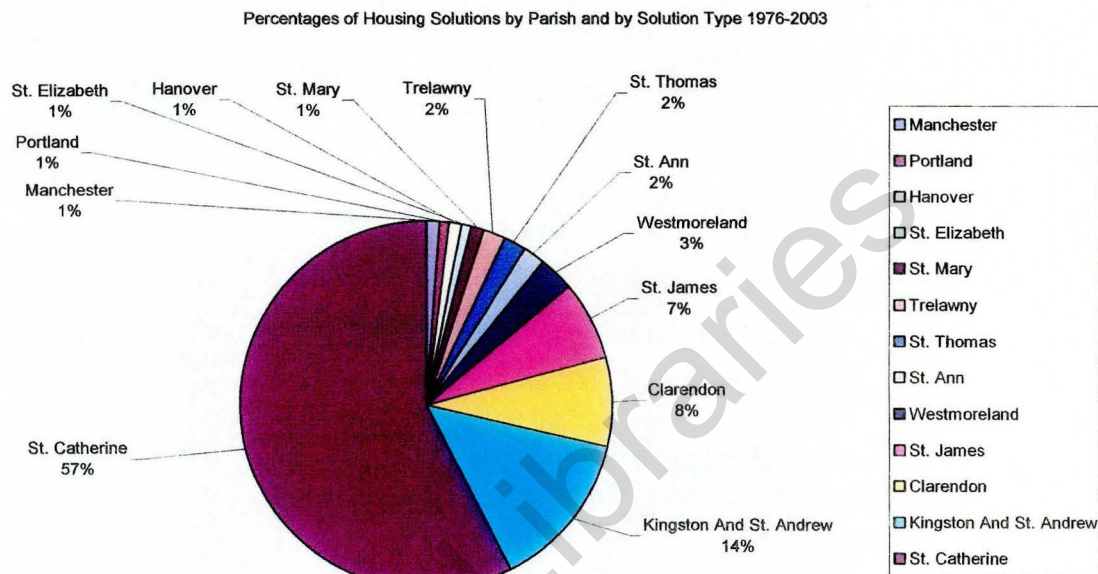


Figure 4-18

As Table 4-16 and Figure 4-18 indicates, for the past 27 years 26,546 housing solutions have been built in St. Catherine and 3,685 in Clarendon (most would have been in the project area). For St. Catherine alone, this represents 58% of all the housing solutions built by the NHT across the entire island, with only Kingston & St. Andrew coming in a distant second at 14%. Clarendon ranks third islandwide at 8%.

It would appear that St. Catherine has received a disproportionate amount of housing solutions when compared with the rest of the island. The NHT would also possibly represent the single largest contributor to rapid urbanization of that parish (particularly South East St. Catherine).

It would therefore stand to reason that the NHT bears a significant responsibility in ensuring that “Total Communities” are created out of the residential subdivisions.

Table4-16: National Housing Trust - Summary of Housing Solutions by Parish and by Solution Type

PARISH	START-A-HOME/ SHELL UNIT		HOUSE SHOP		SERVICED LOT		STUDIO		1 BEDROOM		2 BEDROOM		3 BEDROOM		TOTAL	
KINGSTON & ST. ANDREW	20	0%	--	0%	204	3%	1,736	28%	419	7%	3,740	60%	148	2%	6,267	14%
ST. CATHERINE	493	2%	--	0%	1,016	4%	9,162	35%	419	2%	13,408	51%	2,048	8%	26,546	58%
CLARENDON	180	5%	--	0%	1,056	29%	647	18%	206	6%	1,303	35%	293	8%	3,685	8%
MANCHESTER	--	0%	--	0%	157	46%	30	9%	50	14%	102	30%	6	2%	345	1%
ST. ELIZABETH	--	0%	14	3%	90	19%	--	0%	71	15%	301	63%	--	0%	476	1%
WESTMORELAND	261	22%	--	0%	447	38%	--	0%	--	0%	467	40%	--	0%	1,175	3%
HANOVER	--	0%	--	0%	144	34%	60	14%	--	0%	222	52%	--	0%	426	1%
ST. JAMES	35	1%	--	0%	709	21%	1,122	33%	--	0%	1,507	45%	--	0%	3,373	7%
TRELAWNY	--	0%	--	0%	437	53%	--	0%	--	0%	395	47%	--	0%	832	2%
ST. ANN	78	8%	--	0%	237	25%	10	1%	--	0%	639	66%	--	0%	964	2%
ST. MARY	--	0%	--	0%	36	7%	40	7%	20	4%	447	82%	--	0%	543	1%
PORTLAND	--	0%	--	0%	100	24%	--	0%	--	0%	316	76%	--	0%	416	1%
ST. THOMAS	265	30%	--	0%	49	6%	50	6%	--	0%	412	47%	101	12%	877	2%
TOTAL	1,332	3%	14	0%	4,682	10%	12,857	28%	1,185	3%	23,259	51%	2,596	6%	45,925	100%

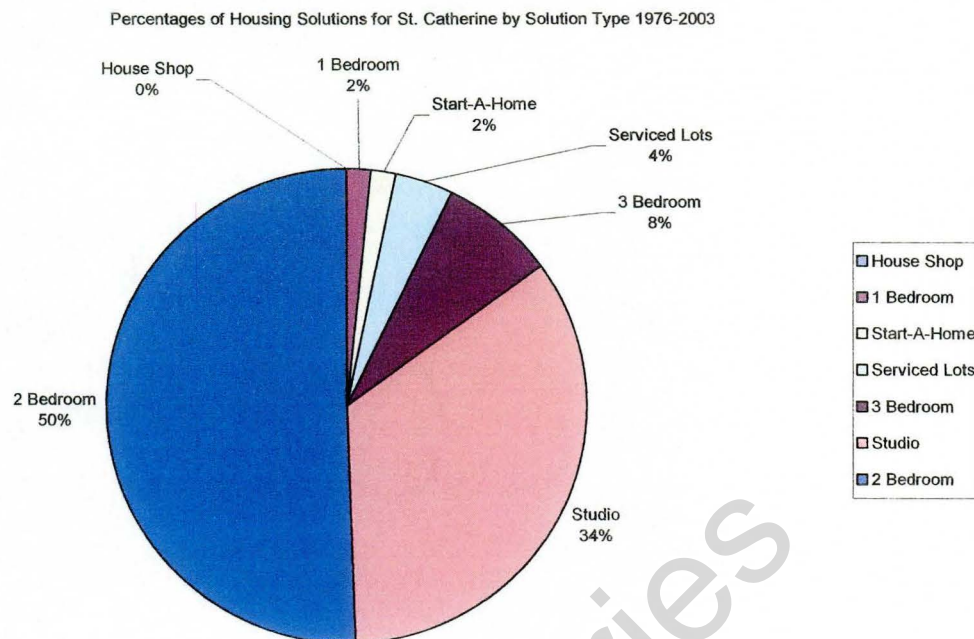


Figure 4-19

Table 14-16 and Figure 4-19 indicates that two bedroom units was the most frequently provided housing solution (51%), followed by studios (35%) in St. Catherine.

This is in sharp contrast with Clarendon where while the most frequently provided unit was the two bedroom unit (35%) the second most frequently provided solution was the serviced lot (see Table 4-16 and Figure 4-20).

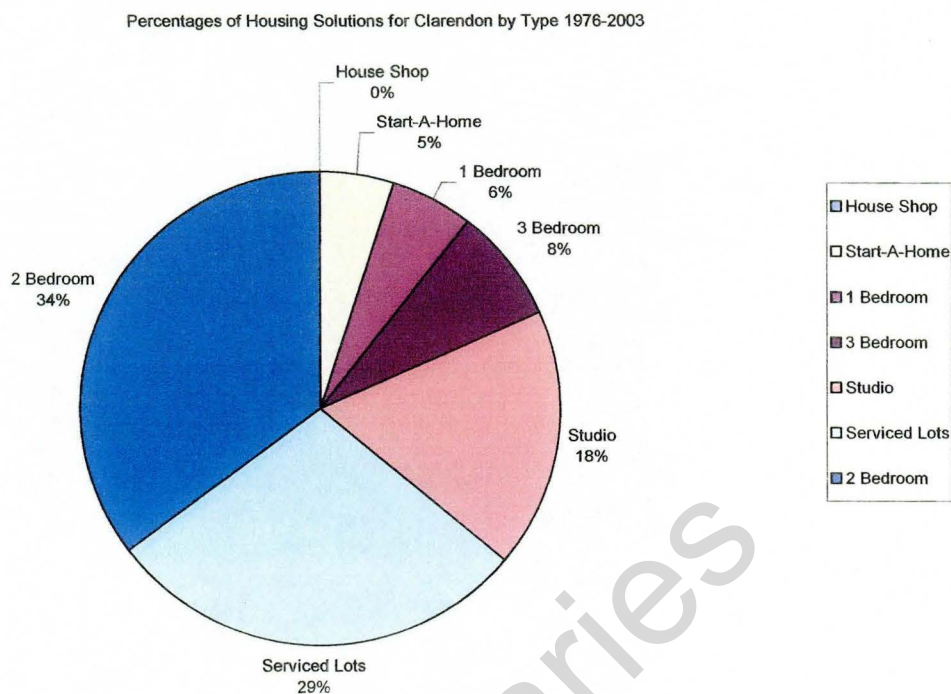


Figure 4-20

4.3.3 Housing Demand Analysis

The National Housing Trust's Market Demand Surveys are a good indicator of housing demand.

Surveys conducted in 2004 for St. Catherine and Clarendon has been utilized.

Table 4-17 and Figures 4-21 and 4-22 indicate that approximately 47% of respondents in Clarendon and 52% in St. Catherine felt that the NHT should build stand alone two (2) bedroom units. It is important to note however that approximately 26% of respondents in Clarendon and 23% in St. Catherine felt that the NHT should build apartments or townhouses. This supports the notion that homeowners are prepared to live in denser more compact types of developments.

Table 4-17: Type of Units the NHT should build

Type of units the NHT should build	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
Studio	460	17.7%	379	16.8%
Stand alone 2 bedroom	1214	46.7%	1177	52.3%
Apartment	304	11.7%	245	10.9%
Townhouse	370	14.2%	267	11.9%
*Other (see details below)	253	9.7%	182	8.1%
TOTAL	2601	100%	2250	100%

Source: NHT Market Demand Survey, 2004

Types of units the NHT should build, Clarendon responses

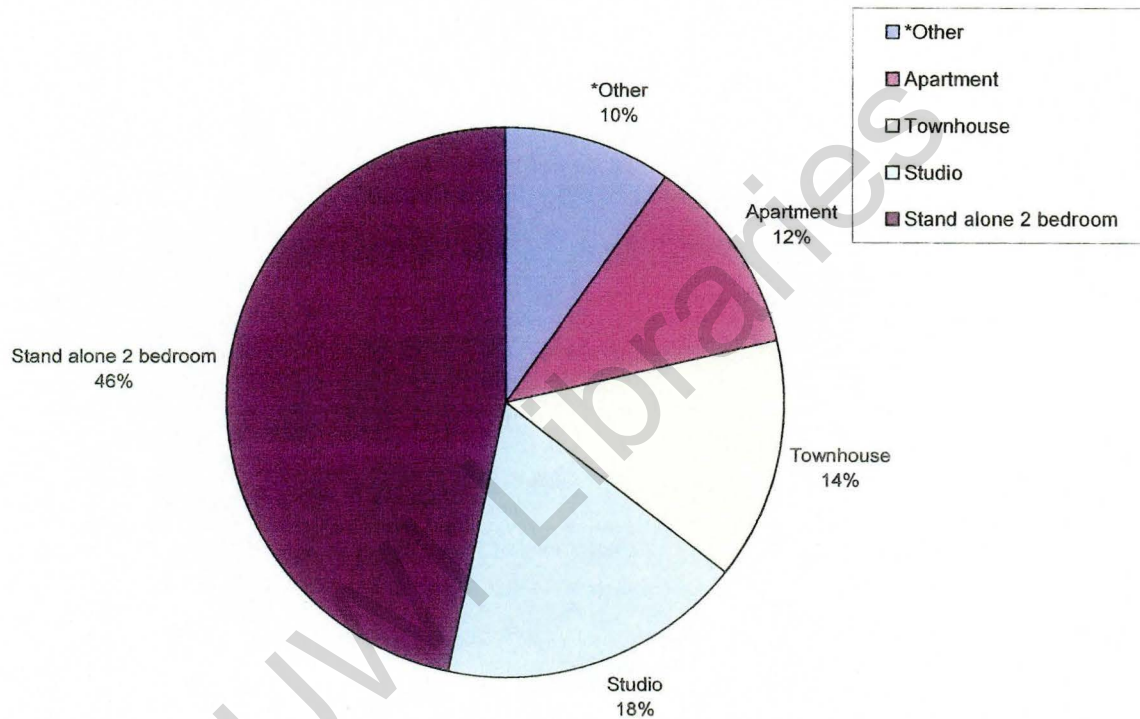


Figure 4-21

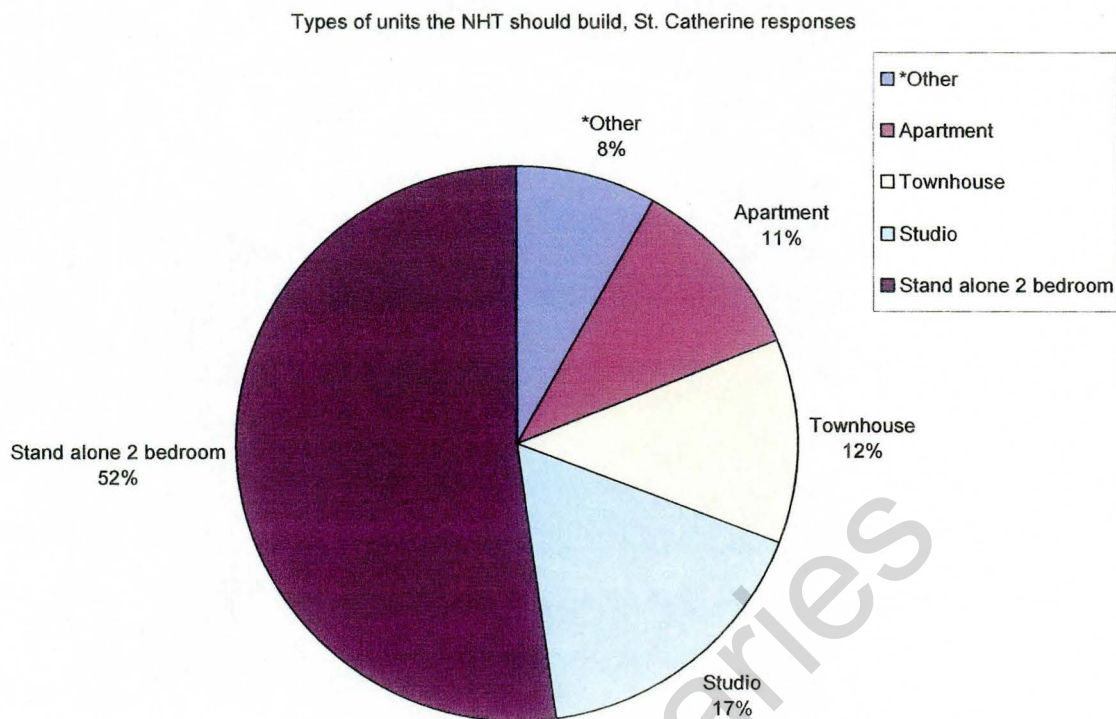


Figure 4-22

Of the 'Other' type of units that respondents felt that the NHT should build, approximately 87% in Clarendon and 74% in St. Catherine felt that three bedroom units should be built. The fact that there were respondents desirous of having units with over four bedrooms built again supports the position that settlement development should provide a good mix of housing solutions (Table 4-18).

Table 4-18: *Other type of Units to build

Type of unit	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
1 bedroom	12	4.7%	18	9.9%
2 bedroom semi-detached	1	0.4%	3	1.6%
Attached 2 bedroom	1	0.4%	2	1.1%
Duplex	0	0.0%	1	0.5%
3 bedroom	204	80.6%	135	74.2%
4 bedroom	16	6.3%	9	4.9%
5 bedroom	2	0.8%	0	0.0%
6 bedroom	1	0.4%	0	0.0%
More than 6 bedroom	1	0.4%	0	0.0%
2 family house	0	0.0%	1	0.5%
A combination of houses	7	2.8%	4	2.2%
Not adequately stated	8	3.2%	9	4.9%
TOTAL	253	100%	182	100%

Source: NHT Market Demand Survey, 2004

Table 4-19 and Figures 4-23 and 4-24 indicates that respondents were in varying stages of preparation to buy land or do housing construction. Of note is the fact that 20% of respondents in Clarendon and 18% in St. Catherine were actively building a unit or making improvements/additions to unit or buying land or a unit.

Table 4-19: Plans to buy Land or do Housing Construction or Repairs over the next Five Years.

Plans over the next five years	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
No plans	440	29.5%	375	27.6%
Building unit or making improvements/ additions to unit	151	10.1%	77	5.7%
Buying land	110	7.4%	81	6.0%
Buying a unit	37	2.5%	82	6.0%
Have made plans to buy land/house (e.g. Saving for deposit or purchasing material etc.) but have not started yet	112	7.5%	131	9.6%
Have made plans to build or make improvements/ additions (e.g. Saving for deposit or purchasing material) to units but have not started yet	144	9.7%	142	10.4%
Would like to buy land/house but have made no plans	315	21.1%	322	23.7%
Would like to build unit or make improvements/additions to unit but have made no plans	181	12.1%	149	11.0%
TOTAL	1490	100%	1359	100%

Source: NHT Market Demand Survey, 2004.

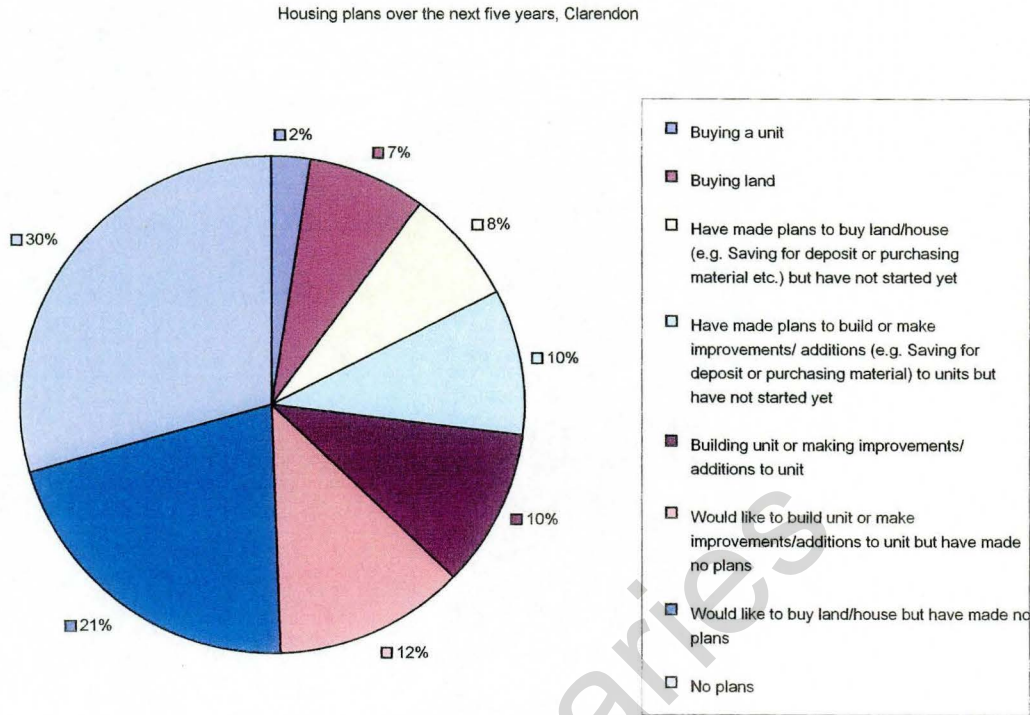


Figure 4-23

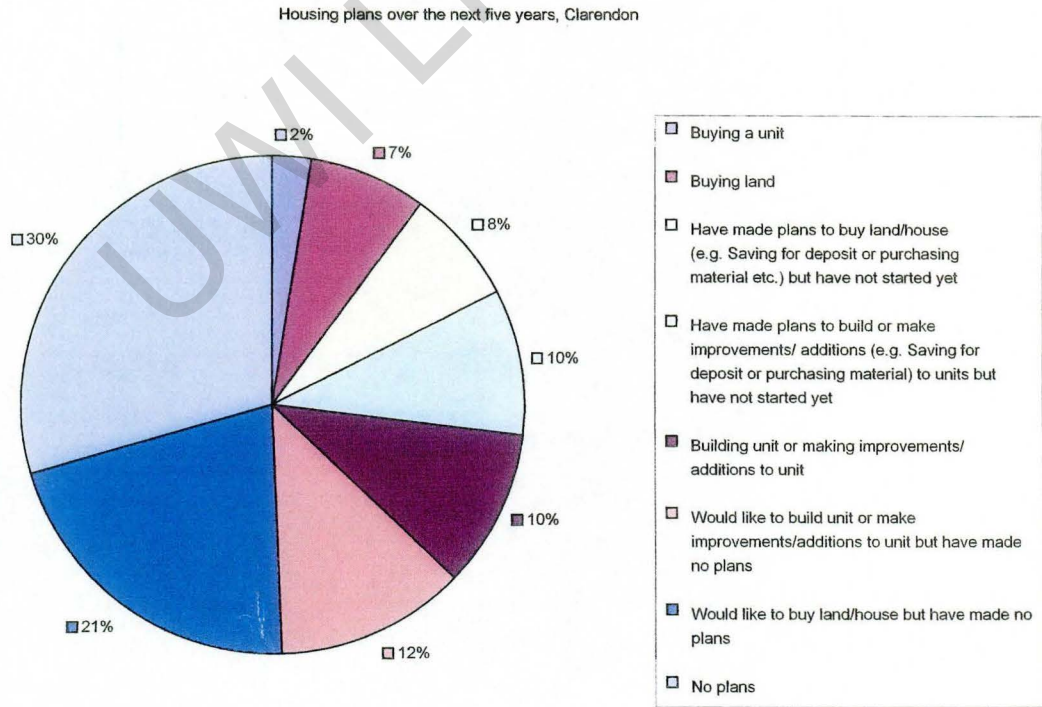


Figure 4-24

It is important to note (Table 4-20 and Figures 4-25 and 4-26) that 33% of respondents in Clarendon and 41% in St. Catherine indicated that they either cannot afford to borrow or do not think that they can get a loan. Affordability is clearly an issue that continues to significantly affect the effective demand for housing.

Table 4-20: Reasons for not intending to change Housing situation within the next Five Years.

Reason for not intending to change housing situation within the next five years	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
Already own a home	133	20.5%	101	23.5%
Can't afford to borrow	161	24.8%	153	35.6%
Waiting to start family first	17	2.6%	10	2.3%
Living with family/will get family house	89	13.7%	14	3.3%
Finishing education first	41	6.3%	44	10.2%
Do not think that they can get a loan	55	8.5%	23	5.3%
Do not want to borrow	124	19.1%	70	16.3%
*Other (see table below)	29	4.5%	15	3.5%
TOTAL	649	100%	430	100%

Source: NHT Market Demand Survey, 2004

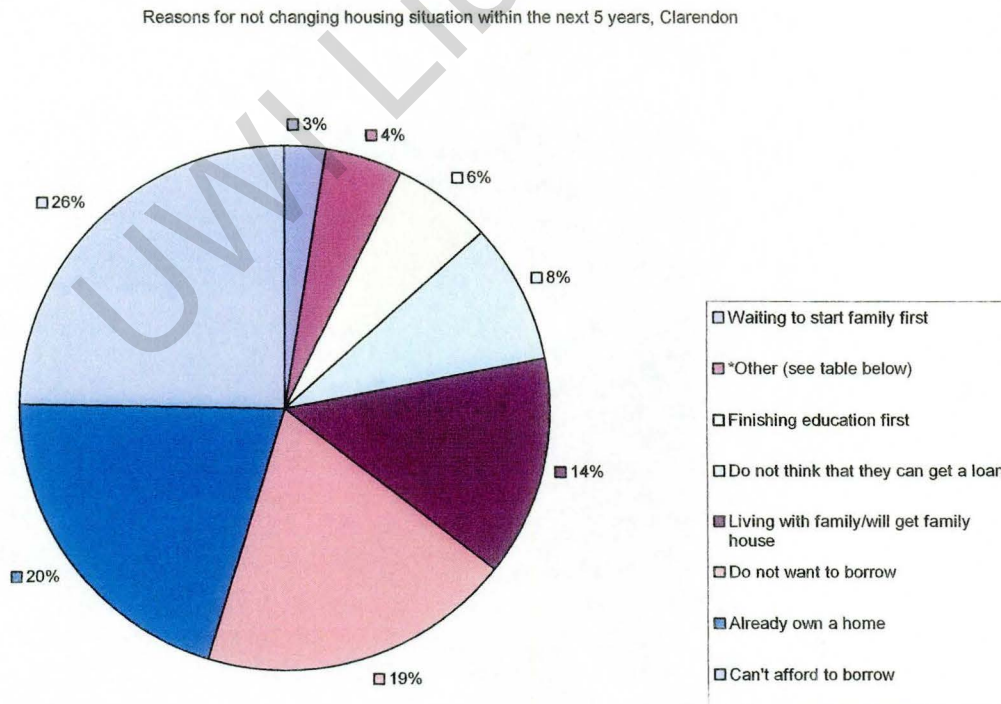


Figure 4-25

Reasons for not intending to change housing situation within the next 5 years, St. Catherine

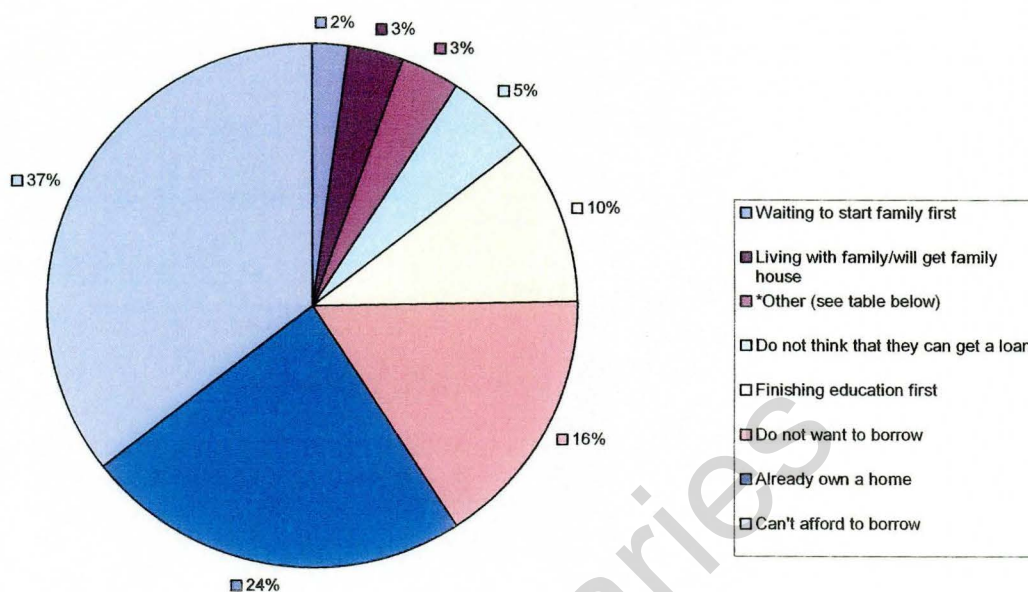


Figure 4-26

Although representing only 3.5% of respondents in St. Catherine, Table 4-21 provides an insight into some of the 'Other' reasons for not intending to change housing situations.

Table 4-21: *Other Reasons

Reasons	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
Do not want to borrow	No data	No data	1	6.7%
Too old	No data	No data	2	13.3%
Will be migrating/ possible migration	No data	No data	5	33.3%
Do not know what the future holds	No data	No data	1	6.7%
Do not have money/unemployed	No data	No data	6	40.0%
TOTAL	No data	No data	15	100%

Source: NHT Market Demand Survey, 2004

Table 4-22 and Figures 4-27 and 4-28 indicates type of units that those in the market would like to buy. It should be noted that when compared to Table 4-17 a higher percentage wished to buy stand alone 2 bedroom units. This could be a further reflection of the affordability issue, as a lower than average number of those respondents wanted to buy the studios.

Table 4-22: Type of Units those in the Market would like to buy

Type of units	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
Studio	10	7.5%	25	7.5%
Stand alone 2 bedroom	86	64.7%	234	70.5%
Apartment	3	2.3%	8	2.4%
Townhouse	13	9.8%	25	7.5%
*Other (see table below)	21	15.8%	40	12.0%
TOTAL	133	100%	332	100%

Source: NHT Market Demand Survey, 2004

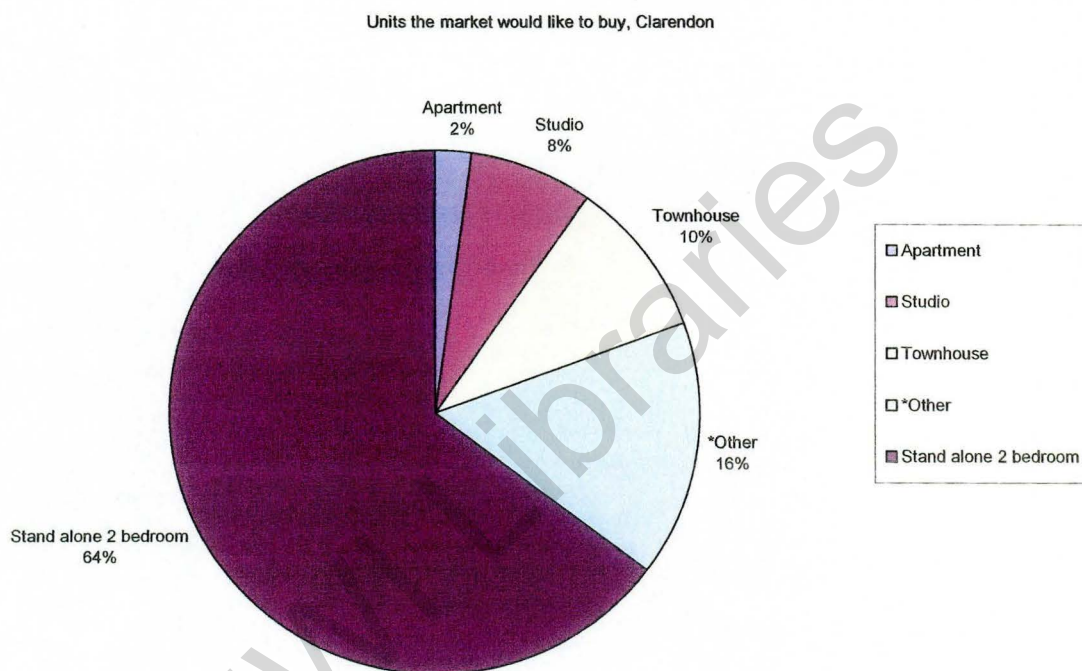


Figure 4-27

Units the market would like to buy, St. Catherine

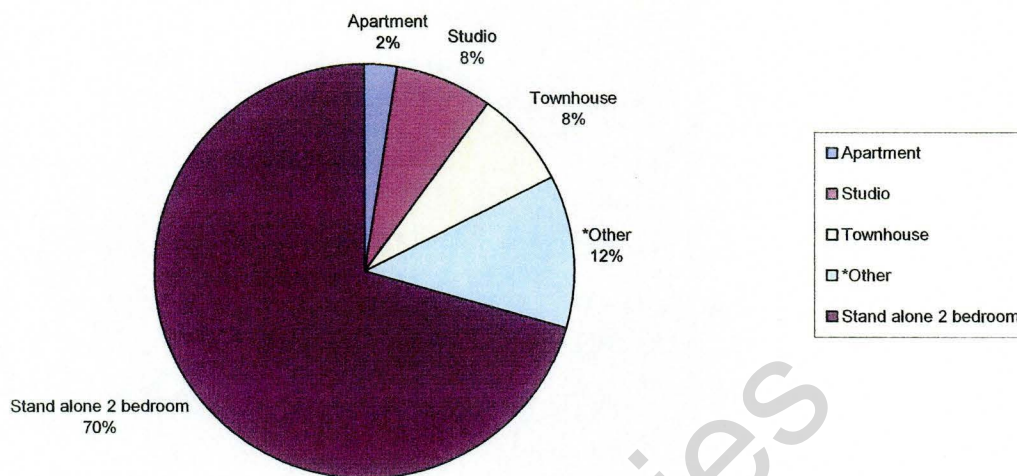


Figure 4-28

Table 4-23 provides an indication of the 'Other' type of units that respondents who were in the market wanted to buy.

Table 4-23: *Other type of units

Type of units	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
1 bedroom house	0	0.0%	1	2.3%
3 bedroom house	17	81.0%	33	75.0%
4 bedroom house	3	14.3%	6	13.6%
5 bedroom house	0	0.0%	2	4.5%
6 bedroom house	0	0.0%	1	2.3%
Not adequately stated	1	4.8%	1	2.3%
TOTAL	21	100%	44	100%

Source: NHT Market Demand Survey, 2004

There is a significant disparity (Tables 4-24 and 4-25 and Figures 4-29 and 4-30) between the parishes in respect of the amount of money those in the market think they can afford to pay for mortgage.

The Tables indicate a greater income disparity in Clarendon than is the case in St. Catherine given the fact that for Clarendon 40% could afford mortgages below \$4,500, 33% mortgages between \$5,000 and \$9,000, 16% mortgages between \$10,000 and \$14,000 and 11% mortgages \$15,000 and over, while for St. Catherine 33% could afford mortgages below \$4,500, 27% mortgages between \$5,000 and \$9,000, 22% mortgages between \$10,000 and \$14,000 and 19% mortgages \$15,000 and over.

Clarendon would therefore require a more diverse mix of housing solutions than would St. Catherine.

Portmore to Clarendon Park – Highway 2000 Corridor Development Plan 2004-2025

Table 4-24: Amount of money, those in the market think they can afford to pay for mortgage each month

Amount	Clarendon		St. Catherine	
	No. of Responses	Percentage	No. of Responses	Percentage
\$0.00	2	0.6%	45	8.8%
\$200.00	0	0.0%	1	0.2%
\$400.00	0	0.0%	1	0.2%
\$500.00	2	0.6%	1	0.2%
\$600.00	0	0.0%	1	0.2%
\$1,000.00	17	5.4%	6	1.2%
\$1,500.00	5	1.6%	3	0.6%
\$2,000.00	47	14.8%	31	6.1%
\$2,500.00	4	1.3%	4	0.8%
\$2,503.00	0	0.0%	1	0.2%
\$3,000.00	31	9.8%	40	7.9%
\$3,500.00	1	0.3%	2	0.4%
\$4,000.00	18	5.7%	28	5.5%
\$4,006.00	0	0.0%	1	0.2%
\$4,500.00	0	0.0%	1	0.2%
\$5,000.00	63	19.9%	54	10.6%
\$5,500.00	1	0.3%	0	0.0%
\$6,000.00	13	4.1%	33	6.5%
\$7,000.00	10	3.2%	15	2.9%
\$7,500.00	0	0.0%	2	0.4%
\$8,000.00	15	4.7%	24	4.7%
\$9,000.00	2	0.6%	9	1.8%
\$10,000.00	44	13.9%	87	17.1%
\$10,500.00	1	0.3%	0	0.0%
\$11,000.00	0	0.0%	1	0.2%
\$12,000.00	4	1.3%	18	3.5%
\$13,000.00	0	0.0%	4	0.8%
\$14,000.00	2	0.6%	0	0.0%
\$15,000.00	8	2.5%	39	7.7%
\$16,000.00	0	0.0%	2	0.4%
\$17,000.00	0	0.0%	2	0.4%
\$18,000.00	1	0.3%	3	0.6%
\$20,000.00	10	3.2%	24	4.7%
\$24,000.00	1	0.3%	0	0.0%
\$25,000.00	4	1.3%	10	2.0%
\$28,000.00	0	0.0%	1	0.2%
\$30,000.00	5	1.6%	4	0.8%
\$40,000.00	1	0.3%	2	0.4%
\$41,000.00	0	0.0%	1	0.2%
\$42,000.00	1	0.3%	0	0.0%
\$50,000.00	3	0.9%	5	1.0%
\$60,000.00	0	0.0%	2	0.4%
\$100,000.00	1	0.3%	0	0.0%
\$200,000.00	0	0.0%	1	0.2%
TOTAL	317	100%	509	100%

Table 4-25: Amount of money, those in the market think they can afford to pay for mortgage each month

Amount	Clarendon	
	No. of Responses	Percentage
\$5,000.00	63	19.9%
\$2,000.00	47	14.8%
\$10,000.00	44	13.9%
\$3,000.00	31	9.8%
\$4,000.00	18	5.7%
\$1,000.00	17	5.4%
\$8,000.00	15	4.7%
\$6,000.00	13	4.1%
\$7,000.00	10	3.2%
\$20,000.00	10	3.2%
\$15,000.00	8	2.5%
\$1,500.00	5	1.6%
\$30,000.00	5	1.6%
\$2,500.00	4	1.3%
\$12,000.00	4	1.3%
\$25,000.00	4	1.3%
Other amounts	19	6%

Amount	St. Catherine	
	No. of Responses	Percentage
\$10,000.00	87	17.1%
\$5,000.00	54	10.6%
\$0.00	45	8.8%
\$3,000.00	40	7.9%
\$15,000.00	39	7.7%
\$6,000.00	33	6.5%
\$2,000.00	31	6.1%
\$4,000.00	28	5.5%
\$8,000.00	24	4.7%
\$20,000.00	24	4.7%
\$12,000.00	18	3.5%
\$7,000.00	15	2.9%
\$25,000.00	10	2.0%
\$9,000.00	9	1.8%
\$1,000.00	6	1.2%
\$50,000.00	5	1.0%
Other amounts	41	8.1%

Source: NHT Market Demand Survey, 2004

Mortgage capabilities of the market, St. Catherine

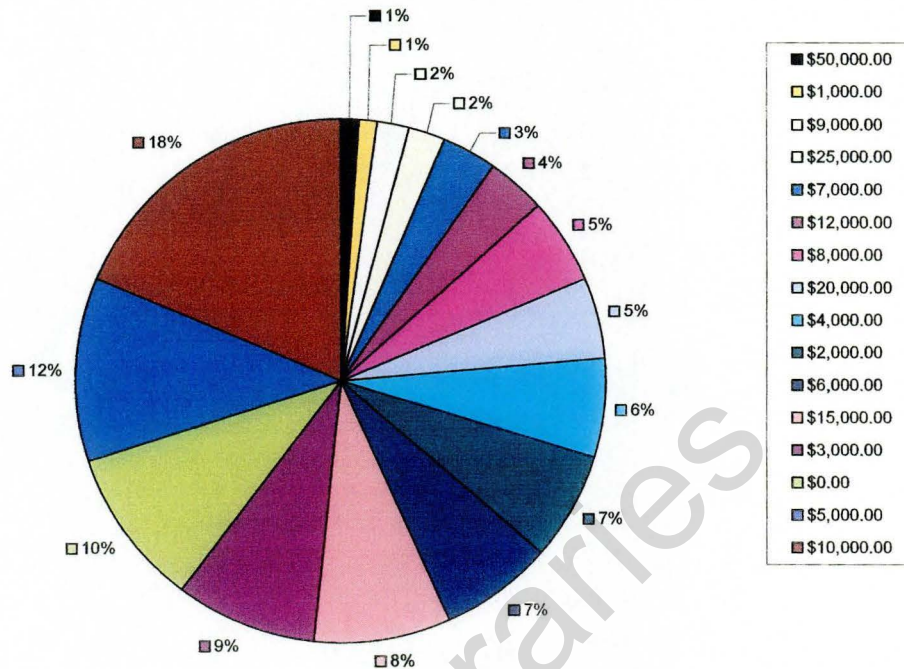


Figure 4-30

4.3.4 The Future Provision of Housing

As stated earlier a policy of compact high density developments will be encouraged through the Urban Designs. The ‘Oaklands Model’ will form the basis of this approach. Subdivisions that are not “complete communities” with the attendant social and economic infrastructure will not be considered for development.

Compact or Mixed Use Developments which include condominiums, duplexes, quad units and single family homes, with the designation and development of open space, recreational facilities and other services will be the standard.

No new housing development will be allowed outside of the defined urban fences.

4.4 Squatter Settlements and the Implications for Integrated and Orderly Development

4.4.1 What are Squatter Settlements

There are three important characteristics that help in the understanding of squatter settlements: (1) The Physical, (2) The Social; and (3) The Legal.

Physical Characteristics: A squatter settlement, due to its inherent “non-legal” status, has services and infrastructure below the “adequate” or minimum standard. These services include infrastructure such as water, sanitation, electricity, roads and drainage.

Social Characteristics: Squatter settlement households belong to the lower income group either working as wage labourers or in various informal sector enterprises. On an average, most earn wages at or near the minimum wage level.

Legal Characteristics: The settlement is characterized by the fact that there is no legal ownership of the land parcel on which the housing unit is constructed.

It is generally felt that squatting is the result of rapid growth and development of urban centres.

Urbanization results in:

- The increasing shortages of land for housing
- Increased pressure on existing urban social and physical infrastructure
- An increase in the cost of land (in and around the urban centre)
- Urban sprawl
- An excess in labour supply as employment opportunities cannot keep pace with the rate of movement of labour into urban areas.

The two sets of factors facing the squatters are therefore:

Internal

- Lack of collateral and financial assets
- Low income jobs

External

- The high cost of land
- Access to public services and facilities
- Location of employment opportunities primarily in and around urban centres
- The governments’ inability to provide affordable serviced lots for low-income housing; and
- The cost of meeting the existing building standards, rules and regulations.

Figure 4-25 highlights the impacts of squatter settlements.

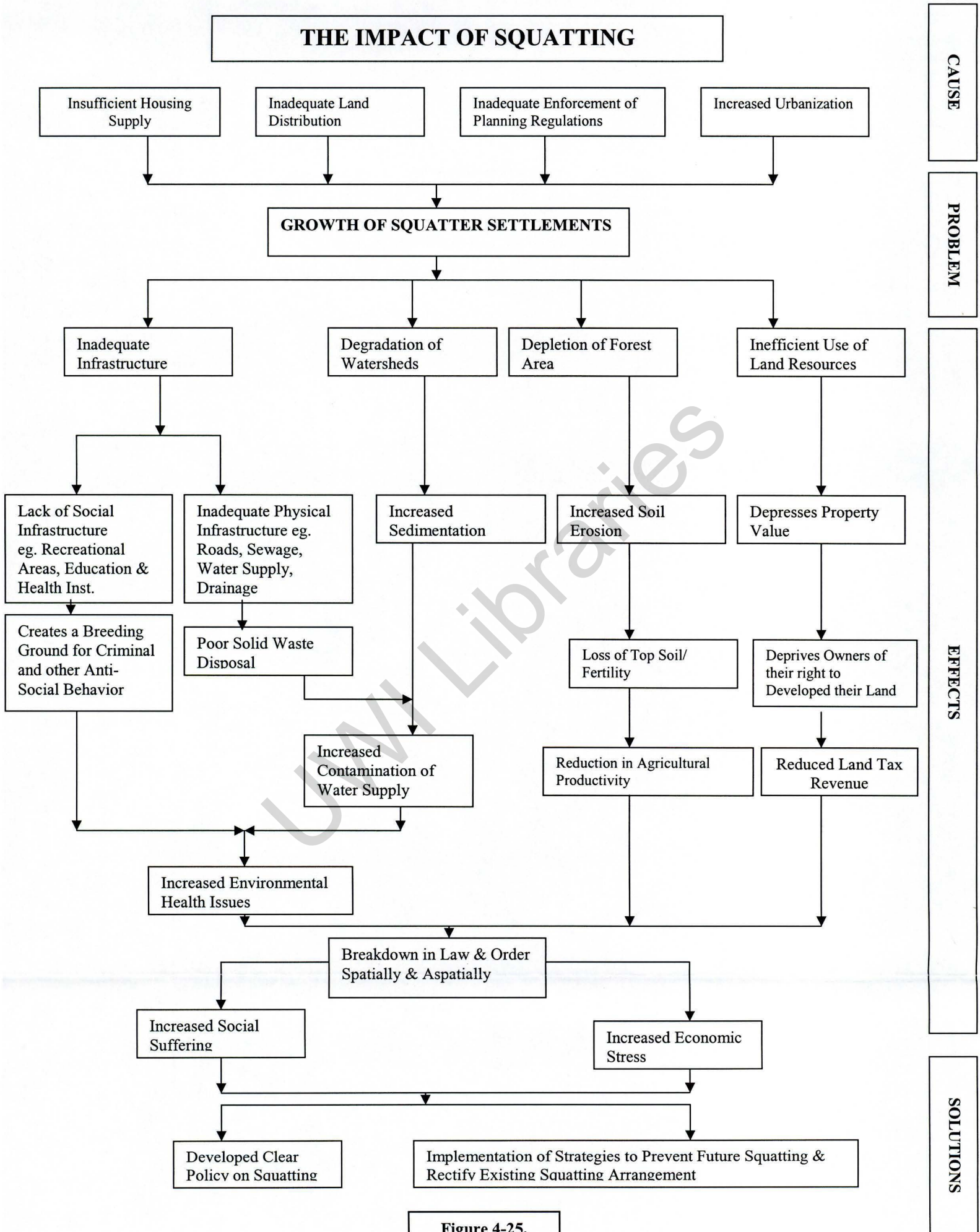


Figure 4-25.

4.4.2 Characteristics of Existing Squatter Settlements

A study was undertaken that involved the following:

- Utilization of data from the draft National Squatter Report 2003, prepared for the Ministry of Land and Environment by the Urban and Regional Planning Programme, Faculty of the Built Environment, University of Technology (UTECH).
- Examination of the IKONOS Image
- Ground truthing and the use of informants.
- Utilization of the NLA database to identify property owners.

While the study was not exhaustive, it is felt that most of squatter settlements were covered.

The study identified Ninety-four (94) squatter settlements - sixty-five (65) in St. Catherine and twenty-nine (29) in Clarendon (see Figures 4-31 and 4-32). Profiles have been prepared for each settlement (see Appendices VII and VIII).

Tables 4-26 and 4-27 provide a summary of squatter settlements by parish by some important parameters, and recommends what should be done with each settlement.

The data shows that approximately 108,000 individuals reside in squatter settlements in the project area in approximately 19,000 units.

Of significance is the fact that squatting accounts for approximately 13% of the housing stock in St. Catherine and 19% in Clarendon.

It is also important to note that private land owners bear the brunt of the squatting and are deprived of the benefits of landownership by squatters (see Table 4-29)

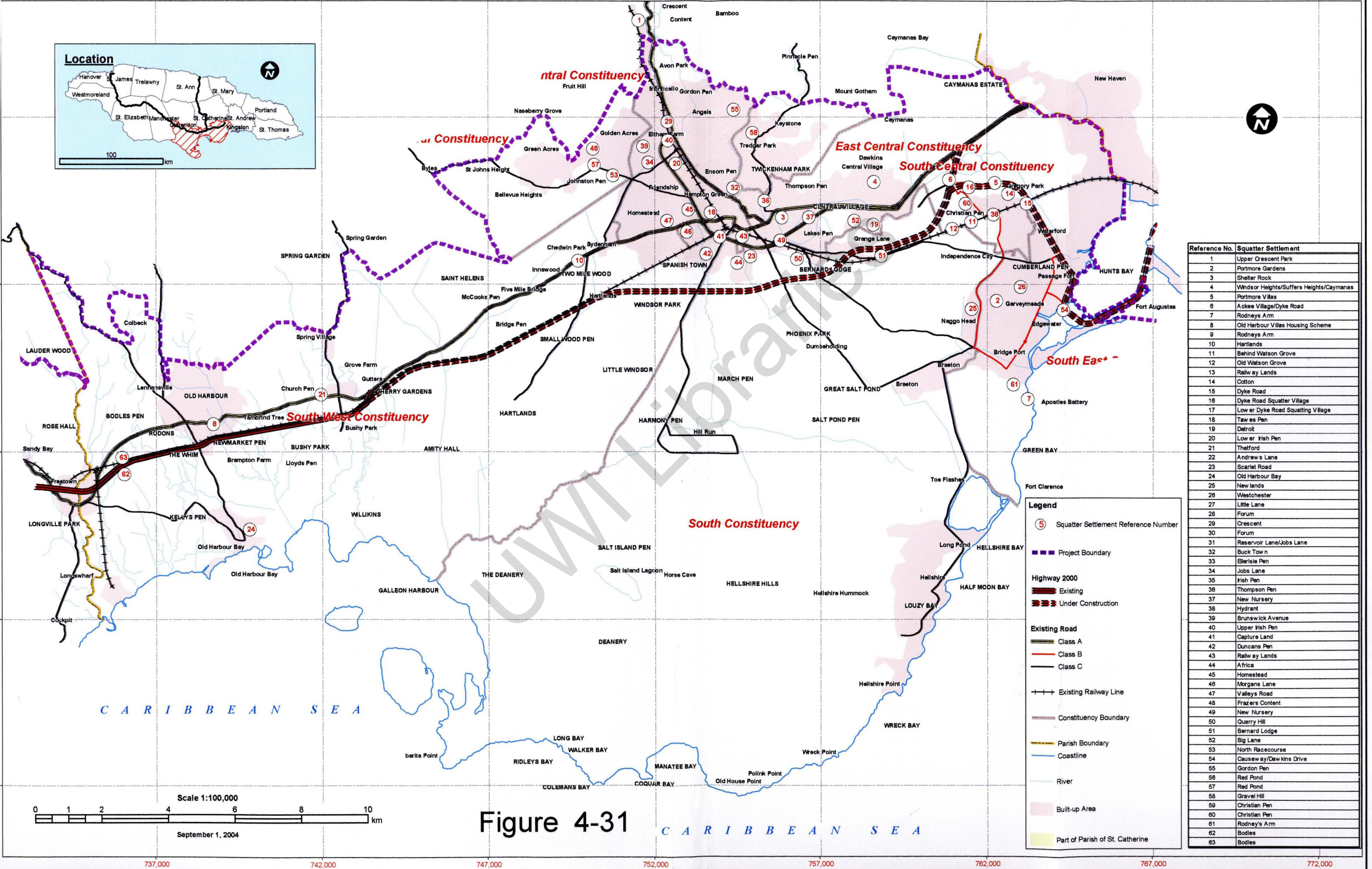
4.4.3 Existing Squatter Settlement Policy

There is no National Squatter Settlement Policy and there is no agency at either the National or Local level with responsibility for Squatter Settlements.

There is legislation and programmes that have implications for squatter settlements. Namely:

The Land Acquisition Act 1947: The purpose of the Act is to enable the Minister of Lands to acquire any piece of land that is needed for public use. The Commissioner of Lands is directed by the Minister to take proceedings for the acquisition of the land.

The Housing Act 1969: the Act is designed to empower the government to acquire land for the purpose of providing suitable housing on the same land. The Act requires the



Reference No.

Squatter Settlement

1	Upper Crescent Park
2	Portmore Gardens
3	Shelter Rock
4	Windsor Heights/Suffers Heights/Caymanas
5	Portmore Villas
6	Ackee Village/Dyke Road
7	Rodneys Arm
8	Old Harbour Villas Housing Scheme
9	Rodneys Arm
10	Hartlands
11	Behind Watson Grove
12	Old Watson Grove
13	Railway Lands
14	Cotton
15	Dyke Road
16	Dyke Road Squatter Village
17	Lower Dyke Road Squatting Village
18	Tawes Pen
19	Detroit
20	Lower Irish Pen
21	Thetford
22	Andrews Lane
23	Scarlet Road
24	Old Harbour Bay
25	New lands
26	Westchester
27	Little Lane
28	Forum
29	Crescent
30	Forum
31	Reservoir Lane/Jobs Lane
32	Buck Town
33	Ellerlie Pen
34	Jobs Lane
35	Irish Pen
36	Thompson Pen
37	New Nursery
38	Hydrant
39	Brunswick Avenue
40	Upper Irish Pen
41	Capture Land
42	Duncans Pen
43	Railway Lands
44	Africa
45	Homestead
46	Morgans Lane
47	Valleys Road
48	Frazers Content
49	New Nursery
50	Quarry Hill
51	Bernard Lodge
52	Big Lane
53	North Racecourse
54	Causeway/Dawkins Drive
55	Gordon Pen
56	Red Pond
57	Red Pond
58	Gravel Hill
59	Christian Pen
60	Christian Pen
61	Rodney's Arm
62	Bodles
63	Bodles

Legend

⑤

Squatter Settlement Reference Number

Project Boundary

Highway 2000

Existing

Under Construction

Existing Road

Class A

Class B

Class C

Existing Railway Line

Constituency Boundary

Parish Boundary

Coastline

River

Built-up Area

Part of Parish of St. Catherine

Figure 4-31

CARIBBEAN SEA

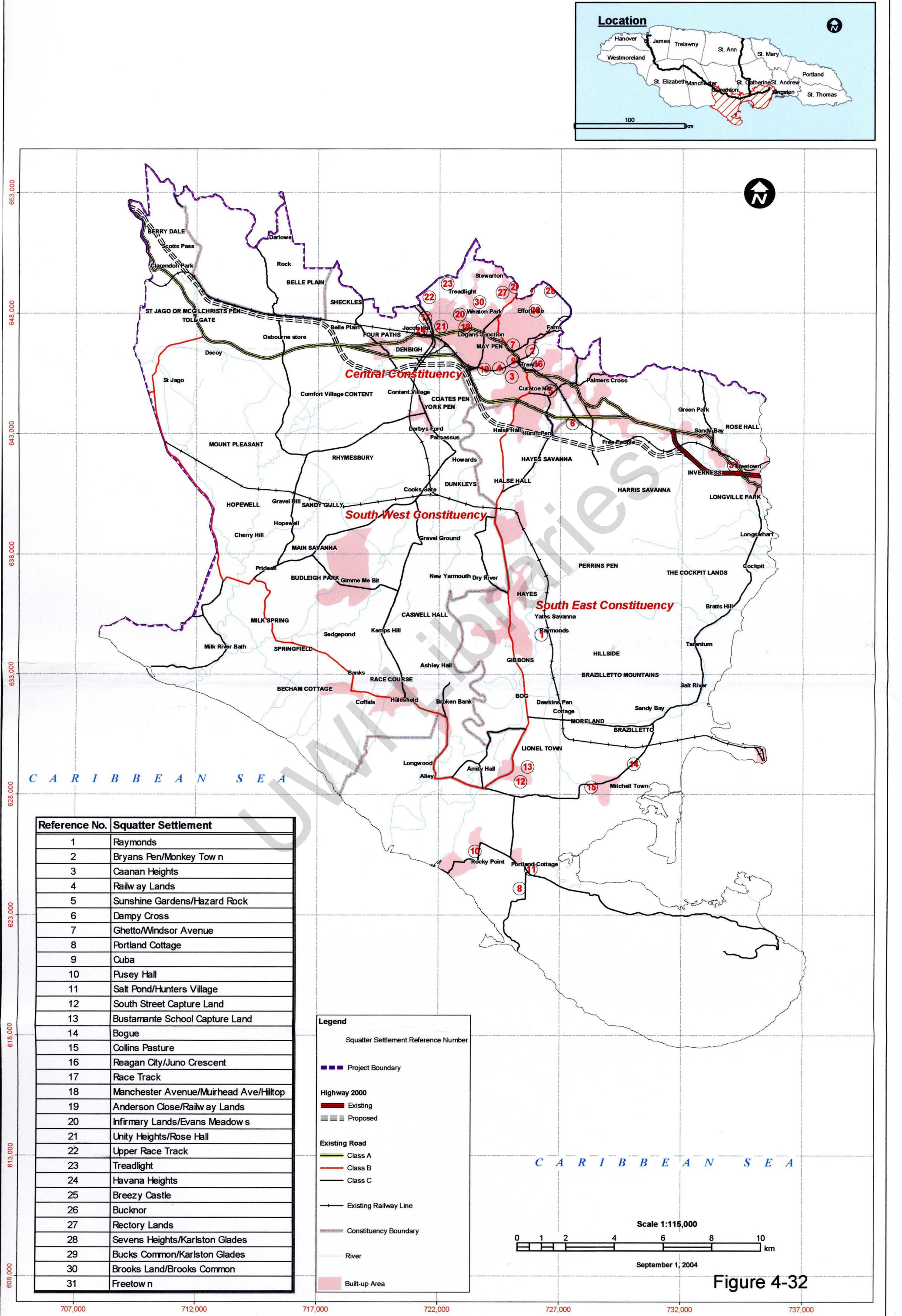


Table 4-26: Squatter Settlement Recommendations – St. Catherine

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
1.	Gravel Hill	58	St. Catherine East Central	Keith Knight	Lauriston	Daphne Innerarity	Government/Private	24.3	150	750	Relocate	-	-
2	Ackee Village & Dyke Road	6	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government	0.2	5	25	Relocate	-	-
3	Christian Pen - East	60	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government/Private	8.0	160	800	-	Upgrade	-
4	Christian Pen - West	59	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government/Private	2.4	68	340	-	Upgrade	-
5	Portmore Villa – Dyke Road	5	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government	19.4	60	300	-	Upgrade	-
6	Railway Lands – Gregory Park	13	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government/Private	1.5	38	190	-	-	-
7	Behind Watson Grove – Gregory Park	11	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government	0.5	8	40	Relocate	-	-
8	Old Watson Grove – Gregory Park	12	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government	1.3	12	-	(Abandoned)	-	-
9	Cotton – Gregory Park	14	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	N/A	10.9	260	1,300	-	Upgrade	-
10	Dyke Road	15	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Private	1.7	30	150	Relocate	-	-
11	Lower Dyke Road Squatter Village	17	St. Catherine South Central	Sharon Hay-Webster	Gregory Park	Camille Buchanan	Government	11.3	215	1,075	-	Upgrade	-
12	Shelter Rock	3	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Government/Private	23.7	379	1,895	Relocate	-	-
13	New Nursery - East	37	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Government	7.5	178	890	Relocate	-	-
14	New Nursery - West	49	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Government	5.0	48	240	Relocate	-	-
15	Big Lane – Central Village	52	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Government Private	25.1	225	1,125	-	Upgrade	-
16	Little Lane – Central Village	27	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Private	2.6	61	305	-	Upgrade	-
17	Detroit – Central Village	19	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Private	11.4	214	1,070	-	Upgrade	-
18	Andrews Lane – Central Village	22	St. Catherine South Central	Sharon Hay-Webster	Twickenham Park	Donovan Guy	Private	2.9	82	410	-	Upgrade	-
19	Windsor Heights/Suffers Heights	4	St. Catherine South Central	Sharon Hay-Webster	Greendale	Norman Scott	Government/Private	200.9	2,275	11,375	-	-	Relocate/Upgrade
20	Thompson Pen	36	St. Catherine South Central	Sharon Hay-Webster	Greendale	Norman Scott	Private	12.1	90	450	Relocate	-	-

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
21	Frazer's Content	48	St. Catherine West Central	Kenneth Baugh	Bellevue	Alvin Beckford	Private	49.8	630	3,150	-	-	Relocate/Upgrade
22	Red Pond East	56	St. Catherine West Central	Kenneth Baugh	Bellevue	Alvin Beckford	Private	2.6	23	115	Relocate	-	-
23	Red Pond West	57	St. Catherine West Central	Kenneth Baugh	Bellevue	Alvin Beckford	Private	3.3	42	210	Relocate	-	-
24	Quarry Hill	50	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	N/A	13.4	84	420	-	Upgrade	-
25	Bernard Lodge	51	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Private	4.2	38	190	Relocate	-	-
26	Railway Lands	43	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Government/Private	14.6	250	1,250	Relocate	-	-
27	Duncan's Pen Spanish Town by Pass Road	42	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Government/Private	30.3	150	750	Relocate	-	-
28	Africa-March Pen Road	44	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Government/Private	46.6	590	2,950	Relocate	-	-
29	Hydrant – Gregory Park	38	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Government	1.8	41	205	Relocate	-	-
30	Scarlett Road – March Pen Road	23	St. Catherine South	Fitz Jackson	Bernard Lodge	George Williams	Government/Private	26.0	400	2,000	Relocate	-	-
31	Portmore Gardens	2	St. Catherine South	Fitz Jackson	Naggo Head	Michael Wint	Private	19.7	250	1,250	Relocate	-	-
32	Thetford	21	St. Catherine South West	Everald Warmington	Church Pen	Gervail Weir	Private	2.4	50	250	Relocate	-	-
33	Bushy Park	64	St. Catherine South West	Everald Warmington	Church Pen	Gervail Weir	Private	1.6	15	75	Relocate	-	-
34	Bodles North	63	St. Catherine South West	Everald Warmington	Old Harbour South	Hilda May Johnson	Government/Private	0.6	7	35	Relocate	-	-
35	Bodles South	62	St. Catherine South West	Everald Warmington	Old Harbour South	Hilda May Johnson	Government/Private	2.2	17	85	Relocate	-	-
36	Old Harbour Bay	24	St. Catherine South West	Everald Warmington	Old Harbour South	Hilda May Johnson	Private	19.4	170	850	-	-	Relocate/Upgrade
37	Old Harbour Villa	8	St. Catherine South West	Everald Warmington	Old Harbour Central	Esworth Frankson	Government/Private	44.4	300	1,500	-	Upgrade	-
38	Beggars Bush/Morgan's Lane	46	St. Catherine South West	Everald Warmington	Sydenham	Lloyd Grant	Private	16.0	303	1,515	Relocate	-	-
39	Forum Beach South	30	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	0.3	11	55	Relocate	-	-
40	Forum Beach North	28	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	0.5	22	110	Relocate	-	-
41	Causeway/Hunt's Bay	65	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	1.2	107	60	Relocate (Jam World)	-	-

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
42	Causeway/Dawkins Drive	54	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	1.2	25	125	Relocate	-	-
43	Rodney's Arm - Upper	7	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	0.9	13	65	Relocate	-	-
44	Rodney's Arm – Central	9	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	0.7	15	75	Relocate	-	-
45	Rodney's Arm - Lower	61	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government	0.3	10	50	Relocate	-	-
46	Newlands	25	St. Catherine South East	Paul Robertson	Edgewater	Colin Fagan	Government/Private	29.0	642	3,210	-	Upgrade	-
47	Westchester	26	St. Catherine South East	Paul Robertson	Westchester	Claudine Blake	Private	4.2	53	265	Relocate	-	-
48	Dyke Road Squatter Village	16	St. Catherine South East	Paul Robertson	Waterford	Errol Lynch	Government	18.8	84	420	-	Upgrade	-
49	Buck Town/Nugent Street	32	St. Catherine Central	Olivia Grange	Ensom City	Hopeton Rose	Private	3.3	57	285	Relocate	-	-
50	Gordon Pen	55	St. Catherine Central	Olivia Grange	Ensom City	Hopeton Rose	Private	12.3	780	3,900	-	Upgrade	-
51	Reservoir Lane & Jobs Lane	31	St. Catherine Central	Olivia Grange	Hampton Green	Theresa Turner	N/A	3.3	57	285	-	Upgrade	-
52	Jobs Lane	34	St. Catherine Central	Olivia Grange	Hampton Green	Theresa Turner	Private	5.8	100	500	Relocate	-	-
53	Lower Irish Pen	20	St. Catherine Central	Olivia Grange	Hampton Green	Theresa Turner	Government/Private	11.0	285	1,425	-	Upgrade	-
54	Upper Irish Pen	40	St. Catherine Central	Olivia Grange	Hampton Green	Theresa Turner	Private	8.3	57	285	Relocate	-	-
55	Irish Pen-Old Harbour Road Round-a-bout	35	St. Catherine Central	Olivia Grange	Homestead	Owen Palmer	Private	2.7	65	325	Relocate	-	-
56	Valdies Road – Old Harbour Road	47	St. Catherine Central	Olivia Grange	Homestead	Owen Palmer	Government/Private	31.1	600	3,000	-	Upgrade	-
57	Homestead	45	St. Catherine Central	Olivia Grange	Homestead	Owen Palmer	Government/Private	28.6	624	3,120	Relocate	-	-
58	Ellerslie Pen	33	St. Catherine Central	Olivia Grange	Spanish Town	Everton Morrison	N/A	6.5	252	1,260	Relocate	-	-
59	Tawes Pen	18	St. Catherine Central	Olivia Grange	Spanish Town	Everton Morrison	Government	10.8	370	1,850	Relocate	-	-
60	Capture Land – Spanish Town By-Pass Road	41	St. Catherine Central	Olivia Grange	Spanish Town	Everton Morrison	Private	2.1	42	210	Relocate	-	-
61	Lakes Pen East	10	St. Catherine Central	Olivia Grange	Spanish Town	Everton Morrison	Government/Private	14.6	107	535	Relocate		
62	Lakes Pen West	66	St. Catherine Central	Olivia Grange	Spanish Town	Everton Morrison	Private	6.3	145	725	Relocate		
63	Crescent	29	St. Catherine Central	Olivia Grange	Crescent	Norris Grant	Government/Private	13.2	208	1,040	-	Upgrade	-

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
64	Upper Crescent Park	1	St. Catherine Central	Olivia Grange	Crescent	Norris Grant	N/A	13.2	283	1,415	-	-	Relocate/Upgrade
65	Brunswick Avenue	39	St. Catherine Central	Olivia Grange	Crescent	Norris Grant	Government/Private	84.0	520	2,600	-	Upgrade	-

SUMMARY

Total Area Squatted on	985.8 Hectares		<u>Property Owner</u>	
<u>Relocation</u>				
Total No. of Units:	5,151		Private	22
Total Estimated Population:	25,220		Government	17
			Government/Private	21
<u>Upgrade</u>			N/A	5
Total No. of Units	4,905		Total	65
Total Estimated Population	24,525			
<u>Relocate/Upgrade*</u>				
Total No. of Units	2,728			
Total Estimated Population	13,640			
TOTAL				
No of Units	12,784			
Estimated Population	63,385			

* These numbers to be finalized after negotiations with key stakeholders i.e. NEPA, Parish Councils, MPs and Councillors

Table 4-27: Squatter Settlement Recommendations – Clarendon

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
1	Rhymesbury P.L.L.	N/A	Clarendon South West	Charles Learmond	York Town	Uphell Purcell	N/A	N/A	7	49	-	Upgrade	-
2	Breezy Castle	25	Clarendon Central	Lester Henry	May Pen North	Melvin Jones	Private	28.7	170	840	-	Upgrade	-
3	Rectory Lands	27	Clarendon Central	Lester Henry	May Pen North	Melvin Jones	Government/Private	30.2	2,000	12,000	-	-	Relocate/Upgrade
4	Bucks Common/Karlston Glades	29	Clarendon Central	Lester Henry	May Pen East	Inly Blake	Private	212.7	880	7,040	-	-	Relocate/Upgrade
5	Sevens Heights	28	Clarendon Central	Lester Henry	May Pen East	Inly Blake	Private	11.2	120	720	-	Upgrade	-
6	Hazard Rock/Sunshine Gardens	5	Clarendon Central	Lester Henry	May Pen East	Inly Blake	N/A	9.7	500	3,000	Relocate	-	-
7	Bryans Pen/Monkey Town	2	Clarendon Central	Lester Henry	May Pen East	Inly Blake	Government/Private	1.2	80	720	Relocate	-	-
8	Koolie Town/Regan City	16	Clarendon Central	Lester Henry	May Pen East	Inly Blake	Private	7.6	100	800		Upgrade	-
9	Railway Lands	19	Clarendon Central	Lester Henry	May Pen West	Leopold Hylton	Government/Private	1.2	14	84	Relocate	-	-
10	Ghetto/Windsor Avenue	7	Clarendon Central	Lester Henry	May Pen West	Leopold Hylton	Government	0.2	25	150	Relocate	-	-
11	Cuba	9	Clarendon Central	Lester Henry	May Pen West	Leopold Hylton	Private	0.1	-	-	Abandoned	-	-
12	Canaan Heights	3	Clarendon Central	Lester Henry	May Pen West	Leopold Hylton	Government/Private	5.0	750	3,750	-	Upgrade	-
13	Railway Lands	4	Clarendon Central	Lester Henry	May Pen West	Leopold Hylton	Government	0.7	15	75	Relocate	-	-
14	Brooks Land/Brooks Common	30	Clarendon Central	Lester Henry	Denbigh	Trevor Morris	Private	49.9	1,000	7,000	-	-	Relocate/Upgrade
15	Evans Meadows/Infirmary Lands	20	Clarendon Central	Lester Henry	Denbigh	Trevor Morris	Government	13.2	50	300	-	Upgrade	-
16	Manchester Avenue	18	Clarendon Central	Lester Henry	Denbigh	Trevor Morris	Government	1.8	20	200	Relocate	-	-
17	Unity Heights/rose Hall	21	Clarendon Central	Lester Henry	Denbigh	Trevor Morris	Private	2.7	32	256	Relocate	-	-
18	Raymonds	1	Clarendon South East	Rudyard Spencer	Hayes	Sean Barnswell	N/A	14.2	35	175	Relocate	-	-
19	Dampy Cross/Unity Farm	6	Clarendon South East	Rudyard Spencer	Palmer's Cross	Nerpatrick Smith	Private	21.8	120	600	-	Upgrade	-

	Name	Map Ref.#	Constituency	Member of Parliament	Polling Division	Councillor	Owner	Area (Hectares)	No. of Units	Estimated Population	Recommendation		
											Relocate	Upgrade	Relocate/Upgrade
20	Freetown/Rose Hall	31	Clarendon South East	Rudyard Spencer	Palmers Cross	Nerpatrick Smith	N/A	17	20	100	Relocate	-	-
21	Race Course	N/A	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	N/A	N/A	N/A	Relocate	-	-
22	Salt River	N/A	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	N/A	N/A	N/A	Relocate	-	-
23	Pusey Hall	10	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	13.7	34	170	Relocate	-	-
24	Portland Cottage	8	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	42.7	120	600	Relocate	-	-
25	Salt Pond/Hunters Village	11	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	Government	4.3	24	120	Relocate	-	-
26	South Street Capture Land	12	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	Government	2.2	31	155	Relocate	-	-
27	Bustamante School	13	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	Government	1.6	32	160	Relocate	-	-
28	Bogue	14	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	2.3	5	25	Relocate	-	-
29	Collins Pastures	15	Clarendon South East	Rudyard Spencer	Rocky Point	Winston Maragh	N/A	5.3	17	85	Relocate	-	-

SUMMARY

Total Area Squatted on 501.2 Hectares

Relocation*

Total No. of Units: 1,004
Total Estimated Population: 6,075

Upgrade

Total No. of Units 1,317
Total Estimated Population 8,376

Relocate/Upgrade*

Total No. of Units 3,880
Total Estimated Population 29,920

TOTAL

No of Units 6,201
Estimated Population 44,371

* Information not available for some settlements

Property Owner

Private 8
Government 7
Government/Private 4
N/A 10

Total 29

demolition of unsanitary buildings, or the repair and reconstruction of any buildings on the site.

Sites and Service Housing Programme: This was a programme sponsored by the World Bank to help the government provide housing solutions for low-income groups.

Land Settlement Project: This was a programme initiated by the government to provide land for agricultural purposes in rural areas.

Programme for Resettlement and Integrated Development Enterprise (Operation PRIDE) 1995: The programme aims to providing land for a large percentage of the population that cannot access affordable land for housing, agriculture, commercial and light industrial use. The programme is 'identified by the government as one of the better means of providing workable solutions to reduce the incidence of squatting in Jamaica. The programme seeks to embrace, where feasible, additional numbers of squatter communities for regularization with upgrading of infrastructure and housing.'

National Land Policy 1996: The National Land Policy for Jamaica provides guidelines for the proper management of land in the country.

Relocation 2000: A programme initiated in 2000 to remove persons from selected squatter settlements to greenfield sites. The three main 'sending' sites are:

- Mona Commons – no 'receiving' site identified
- Seville – 'receiving' site is Belair
- Railway Lane – 'receiving' site is Providence

4.4.4 The Solution to Squatter Settlements in the Project Area

As stated earlier, squatting is an illegal activity. This Plan adopts a "Zero Tolerance" approach to this practice.

The proposals put forward are intended to progressively contain and eliminate all squatting in the project area, by an ordered programme of relocation and upgrading.

Steps will be immediately taken to ensure that there is no additional squatting in existing settlements, and that a programme is put in place to prevent the establishment of any new squatter settlements.

4.4.4.1 Policy and Institutional Framework

Consultations held at the National and Local level suggests that the following agencies should be jointly responsible for squatter settlements:

- **Parish Council** – assist in resolving existing squatter settlements by 1) Monitoring to ensure that they do not expand 2) Assist with the relocation and upgrading programmes and Taking the primary responsibility for ensuring that new settlements are not established.
- **Ministry of Housing** – taking the lead in the programme of relocation and upgrading.
- **Ministry of Land and the Environment** – Immediate identification of government lands suitable for integrated community development to facilitate relocation programmes and the development of a database of such lands for future settlement development consistent with Regional and Area Plans.
- **NGOs** – assist in the immediate relocation and upgrading programme. Facilitate the development of public-private sector partnerships to ensure the provision of affordable housing in future formal residential developments.

These partners should engage in a formal process of developing a Squatter Settlement Policy as a matter of **URGENCY**.

4.4.4.2 Programmes

Tables 4-26 and 4-27 provide recommendations for each squatter settlement. Table 4-28 summarizes this further to emphasize the implications with respect to total number of units and the estimated affected population.

Table 4-28: Squatter Settlement Recommendations

Action	St. Catherine	Clarendon	Total Project Area
<u>Relocation</u>			
Total No. of Units	5,151	1,004	6,155
Total Estimated Population	25,220	6,075	31,295
<u>Upgrade</u>			
Total No. of Units	4,509	1,317	5,826
Total Estimated Population	24,525	8,376	32,901
<u>Relocate/Upgrade</u>			
Total No. of Units	2,728	3,880	6,608
Total Estimated Population	13,640	29,920	43,560
<u>Total</u>			
Total No. of Units	12,784	6,201	18,985
Total Estimated Population	63,385	44,371	107,756

Table 4-29 provides a summary of squatter settlements by property owner. It is instructive to realize the extent to which private property owners have been adversely affected by squatting.

Table 4-29: Property Ownership Summary

Property Owner	St. Catherine	%	Clarendon	%	Total Project Area	%
Private	22	34	8	28	30	32
Government	17	26	7	24	24	25
Government/Private	21	32	4	14	25	27
N/A	5	8	10	34	15	16
Total	65	100	29	100	94	100

The programme to be immediately put in place would not see relocation of entire settlements, but rather the treatment of each household separately.

In that regard, a comprehensive programme will be developed with the NHDC to offer individual households security of tenure and alternate housing solutions both outside and within the project area as follows (Table 4-30):

Table 4-30: Locations External to the Project Area where Housing Solutions can be provided for Squatters

Parish	Location	No. of Units Available
Manchester	Duff House on Alligator Pond Road	200
	Sevens Estate	N/A
St. Elizabeth	Gilnox	500
	Galleon Bay	400
Westmoreland	Galloway (Savanna-la-mar)	200
St. James	Vaughn's Field (near Maroon Town)	2,000
	Montpelier	600
Trelawny	Gremont (on Long Pond Estate)	300
St. Andrew	Summit Heights (Red Hills)	N/A
St. Thomas	Poorman's Corner	N/A
	Friendship Pen	N/A

It is therefore projected that 5,000 units (to house 28,350 persons) will be provided outside the project area.

Given the fact that all squatter settlements have not been documented, it is estimated that 1,500 units would be constructed within the study area to house approximately 8,500 persons.

Some of the possible locations within the study area are indicated at Table 4-31.

Table 4-31: Locations within the Project Area where Housing Solutions can be provided for Squatters

Parish	Location	No. of Units Available
St. Catherine	Quarry Hill	100
	Naseberry Villas	200
	Dunbeholden	200
	Spanish Villas (March Pen)	N/A

The lots would be in the region of \$250,000 to 500,000. The NHT would make available funds for construction and mortgage. The beneficiaries would have to register as self employed contributors in order to benefit from the 2% special category and a condition that would be enforced is that they could not receive their titles unless they register with the NHT.

Some of the squatter settlements that must be given priority attention in the programme (i.e. to be removed within year 1) are as follows:

St. Catherine

- New Nursery West
- Railway Lands
- Duncan's Pen
- Africa
- Scarlett Road
- Beggars Bush/Morgan's Lane
- Irish Pen – Old Harbour Round-a-bout
- Homestead
- Ellerslie Pen
- Tawes Pen
- Capture Land
- Lakes Pen East
- Lakes Pen West

It is also anticipated that housing solutions will be made available through the following developments:

- The Western Extension of Spanish Town
- The Esquivel New Town
- The Redevelopment of May Pen
- Integrated development in McGilchrist Pen

It should also be noted that the settlements recommended for upgrading or relocation/upgrading will have to be subject to subdivision design adhering to the same principles applied in the Area Plan and Urban Design undertaken for each urban centre.

Provision can be made for incremental upgrading based on affordability.

5.0 WATER RESOURCES

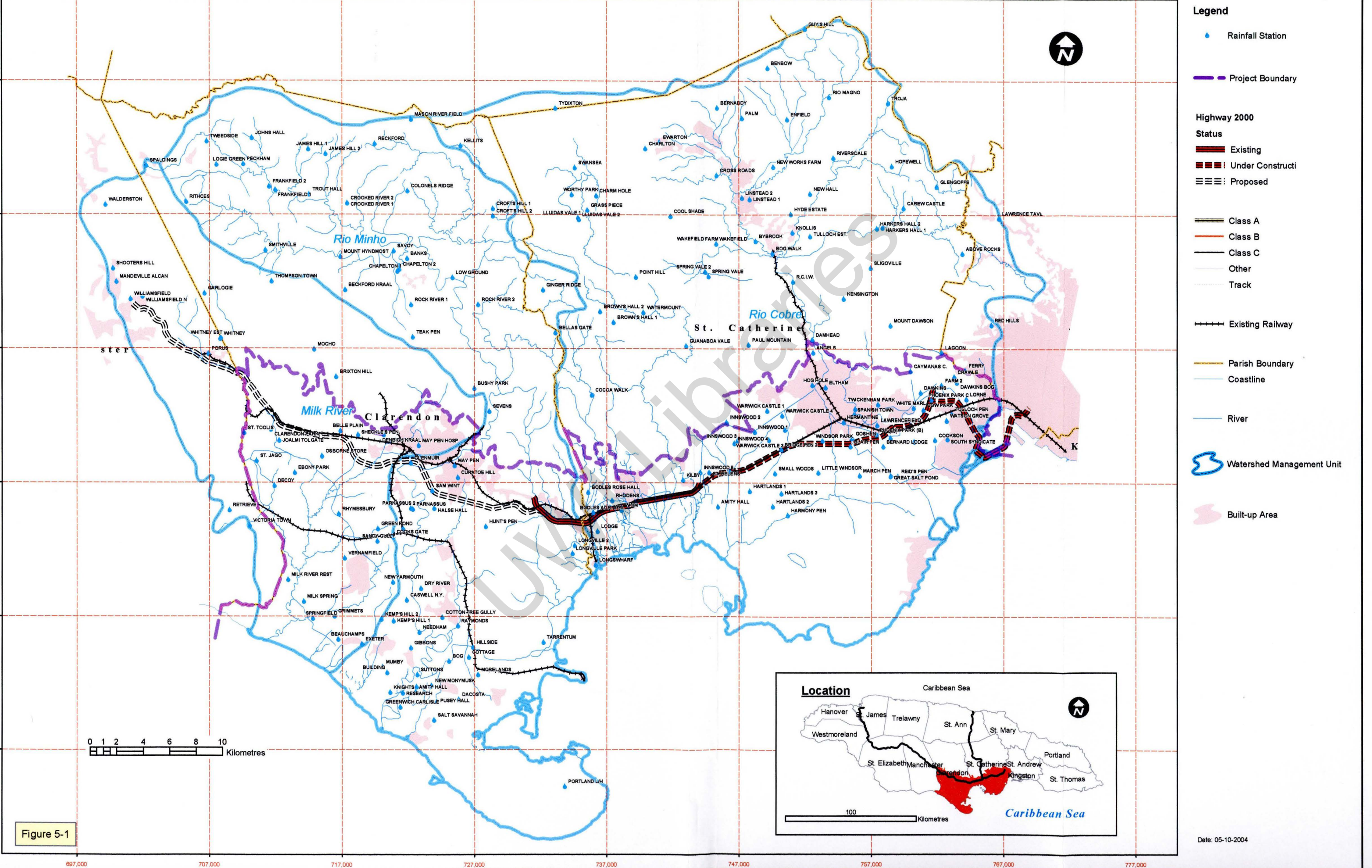
The country is elongated along a WNW-ESE alignment. It has a maximum length of 235 km (146 miles) and its width varies from 35 km (22 m) to 82 km (51 miles). The Portmore – Montego Bay segment of HW2K approximately parallels the railway line between Kingston and Montego Bay. It divides the project into north and south sections.

The study area transects (3) of the 14 parishes, (2) of the 10 hydrologic basins and (3) of the 26 Watershed Management Units (WMUs) that comprise the country (see Figure 5-1).

- The parishes are St. Catherine, Clarendon and Manchester. The parishes were (3) of the (5) parishes that were declared “Disaster Areas” by the Prime Minister on 2002 June 4 after the damage-causing flood rains in the latter third of 2001 May.
- The basins are Rio Cobre and Rio Minho (Basin No. 3 and 4 respectively).
- The WMUs are Rio Cobre (No 19) that is equivalent to the Rio Cobre Basin and the Ro Minho and Milk River WMUs (Nos. 20 and 21) that are (2) of the (3) that form the Rio Minho Basin.

Table 5-1 and Maps 5 and 6 provide an indication of domestic water demand for 2005 – 2025.

(This draft report is presently being reviewed by the WRA).



PORTMORE TO CLARENDON PARK - HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN - DOMESTIC WATER DEMAND

136729	146300	152992	3281850
18972	20565	22292	921140
2097	2176	2258	214170
9843	10315	10811	985710
850	896	945	84040
81666	84133	86675	7523120
8816	9188	9576	758340
13403	13832	14273	1384570
3082	3034	2988	373120
1760	1763	1767	192830
1546	1624	1707	153890
612	622	632	65230
5035	5272	5519	482900
2558	2603	2649	271590
3508	3556	3604	375650
2141	2182	2223	226820
1758	1834	1913	170280
1806	1811	1817	197340
8652	9048	9462	796180
22951	24752	26694	1857460
820	799	778	97680
			0
			0
			0
			0
			0

6.0 POLLUTION CONTROL AND WASTE MANAGEMENT

6.1 Waste Treatment

The project area, similar to other areas in Jamaica, faces environmental challenges due to inadequate treatment of sewage from malfunctioning treatment systems, possibility of groundwater and potable water source pollution from discharges of untreated or partially treated sewage.

The following also contribute to the problem:

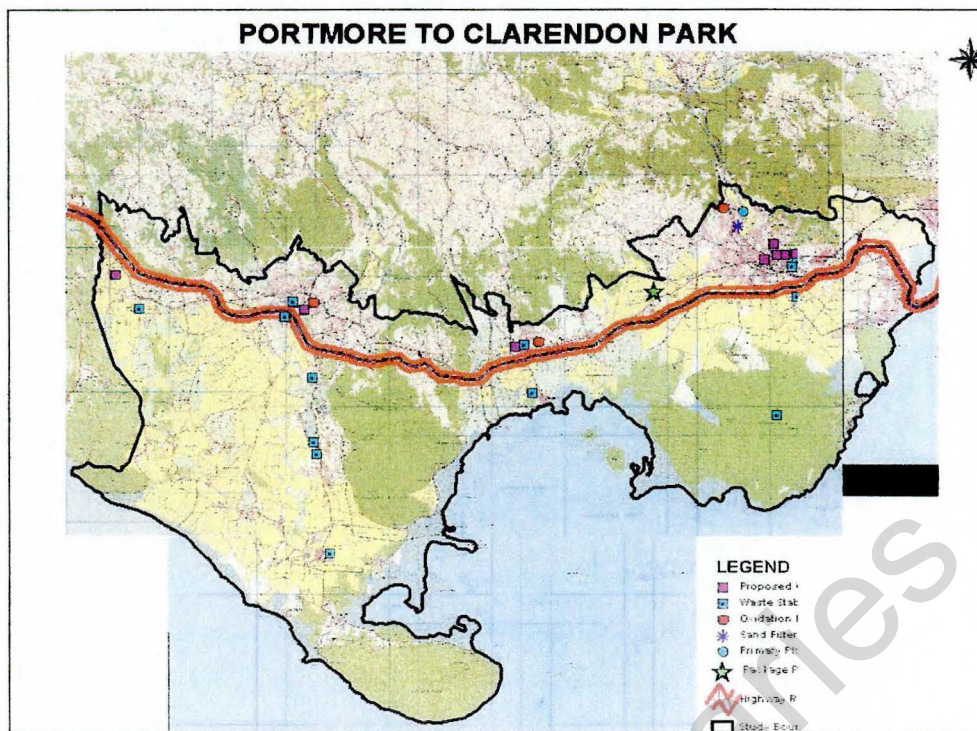
- Developers allocating inadequate setback for waste treatment systems.
- Inefficient operation and maintenance of waste treatment facilities.
- Absence of effective air pollution control equipment and also absence of any at stacks and boilers in industrial facilities.
- Motor vehicle emissions releasing sulphur oxides, nitrogen oxides and particulate matter into the air.
- Increase in skin irritations, cardiovascular disease and upper respiratory tract diseases in some communities where there is continued exposure to air emissions from industrial facilities.
- Oil and grease discharges from petroleum filling stations, garages, restaurants and power generating plants.
- Disposal of solid waste inclusive of batteries.

6.2 Waste Water Treatment Requirements

The emission of air discharges from agricultural activities, motor vehicles, industrial activities and burning of garbage together with effluent and sludge discharges from man's use of pesticides, fertilizers, agro-chemicals, mining activities, agro-processing, sewage, septage, leachate from dumpsites, waste treatment facilities, commercial and residential developments in the Portmore to Clarendon Park Segment of the Highway 2000 Project threaten air quality, groundwater, surface water and coastal waters.

6.3 Sewage

Domestic wastewater discharge is one of the most significant threats both to public health and coastal and marine ecosystems because of its organic and nutrient content, its promotion of oxygen depletion in receiving water bodies, growth of aquatic plants and introduction of pathogens to the environment. All sewage treatment facilities collect sewage and change it using natural or imposed means to generate sewage effluent for discharge into the environment with a quality that is required to comply with the NRCA Sewage Effluent Standards. Figure 6-1 provides the location of the facilities in the project area.



Source: Environmental Health Unit, Ministry of Health

Figure 6-1: Sewage Treatment Facilities within the Project Area

There are currently three categories of Sewage Effluent Standards that apply in respect of the following:

1. Facilities in existence as of January 1, 1997 or received planning permission by December 31, 1996.
2. New Facilities
3. Sewage Effluent used for Irrigation

In Table 6-1 are the Standards for those facilities that were in existence as of January 1, 1997 or had received planning permission by December 31, 1996. The limits set for each parameter are based on the limits of their technologies.

Table 6-1: Sewage Effluent Standards for Existing Plants

PARAMETER	EFFLUENT LIMIT
Biochemical Oxygen Demand	20 mg/L
Total Suspended Solids	30 mg/L
Nitrates (as Nitrogen)	30 mg/L
Phosphates	10 mg/L
Chemical Oxygen Demand	100 mg/L
pH	6-9
Faecal Coliform	1000 MPN/100 mls.
Residual Chlorine	1.5 mg/L

Because all the sewage treatment facilities must comply eventually with **ONE** Standard within three years of the gazetting of the Wastewater and Sludge Regulations, provision is made for their compliance on a phased basis over a 3-year period.

The facilities in St. Catherine that are described currently as existing are required to comply within two years of gazetting while those in Clarendon have a two and a half year period for compliance.

The Standards for which **All** facilities are expected to comply are presented in Table 6-2.

Table 6-2: NRCA Sewage Effluent Standards for New Plants

PARAMETER	EFFLUENT LIMIT
Biochemical Oxygen Demand	20 mg/L
Total Suspended Solids	20 mg/L
Total Nitrogen	10 mg/L
Total Phosphorous	4 mg/L
Chemical Oxygen Demand	100 mg/L
pH	6 – 9 pH units
Faecal Coliform	200 MPN/100 mls
Residual Chlorine	1.5 mg/L
Floatables	not visible

Application of both treated sewage effluent and stabilized sludge will be allowed for beneficial purposes (see Standard at Table 6-3). Treated sewage effluent may be used for the irrigation of lawns and food crops will be approval of the Ministry of Agriculture.

Table 6-3: Natural Resources Conservation Authority (NRCA) Effluent Standard for Sewage Used For Irrigation

Parameter	Standard Limit
Oil & Grease	10 mg/L
Total Suspended Solids (TSS)	15 mg/L
Residual Chlorine	0.5 mg/L
Biochemical Oxygen Demand (BOD ₅)	15 mg/L
Chemical Oxygen Demand (COD)	<100 mg/L
Faecal Coliform	12 MPN / 100mls.

There are no Standards applicable to sludge generated from sewage but from and industrial wastewater.

6.4 Industrial Wastewater

Industrial wastewater is discharged either directly or indirectly into water bodies and into the soil posing threats to surface, coastal and ground water quality. Owners and operators of facilities that discharge industrial wastewater are required to obtain from the regulatory Agency a licence to discharge the effluent generated the quality of which should comply with the relevant Trade Effluent Standards as presented in Table 6-4.

Table 6-4: NRCA Trade Effluent Standards

PARAMETER	TRADE EFFLUENT LIMIT
Ammonia/ammonium measured as NH ₄	1.0 mg/L
Barium	5.0 mg/L
Beryllium	0.5 mg/L
Biological oxygen demand (BOD)	<30 mg/L
Boron	5.0
Calcium	No standard
Chemical Oxygen Demand (COD)	100 mg/L or 0.1 kg/1000 kg product
Chloride	300 mg/L
Colour	100 TCU
Cyanide (free)	0.1
Cyanide (Total as CN)	0.2
Detergent	15 mg/L
Dissolved oxygen (DO)	>4 mg/L
Faecal Coliform	<100 MPN/100 ml
Fluoride	3.0 mg/L
Iron	3.0 mg/L
Magnesium	No standard
Manganese	1.0 mg/L
Nitrate as NO ₃	10 mg/L

Oil & Grease	10mg/L or < 0.01 kg/1000 kg product
PH	6.5 – 8.5
Phenols	5.0 mg/L
Phosphate as PO ₄	5 mg/L
Sodium	100 mg/L
Sulphate	250 mg/L
Sulphide	0.2 mg/L
Temperature	±2° of ambient
Total Coliform	<500 MPN/100 mls
Total Dissolved Solids (TDS)	1000 mg/L
Total Organic Carbon (TOC)	100 mg/L
Total Suspended Solids (TSS) (maximum monthly average)	50 mg/L
Total Suspended Solids (TSS) maximum daily average	<150 mg/L
Trace Metals:	
Zinc	1.5 mg/L
Lead	0.1 mg/L
Cadmium	0.1 mg/L
Arsenic	0.5 mg/L
Chromium	1.0 mg/L
Copper	0.1 mg/L
Mercury	0.02 mg/L
Nickel	1.0 mg/L
Selenium	0.5 mg/L
Silver	0.1 mg/L
Tin	-
Total Heavy Metals	2.0 mg/L

Because the quality of the industrial effluent is subject to variation based on the sector from which it is generated, the use of it beneficially, such as for irrigation, will be subject to scrutiny by the Agency in collaboration with the Ministry of Agriculture and other relevant public sector agencies.

(The Draft Report from NEPA is presently being reviewed).

7.0 PUBLIC HEALTH, SAFETY AND NOISE

7.1 Law Enforcement

The Ministry of National Security exercises overall responsibility for the security and defence of Jamaica through the national forces. The country's national forces consist of the Jamaica Defense Force (JDF) which provides military service, and the Jamaica Constabulary Force (JCF) that provides general policing.

The Jamaica Constabulary Force is responsible for the maintenance of Law and Order, the prevention and detection of crime, the protection of life and property, the investigation of alleged crime, and the enforcement of all Criminal Laws in the country jurisdiction.

7.1.1 Police Stations and Policing

Policing and crime fighting operations are carried out by special units under the direction of area commanders or other designated officers. :

7.1.2 Prisons

The punishment and rehabilitation of offenders is carried out by the Department of Correctional Services within the Ministry of National Security and Justice. The Department of Correctional Services is comprised of a head office in Kingston, seven adult correctional centres, five juvenile correctional centres (formerly approved schools) and 17 correctional services, probation, aftercare, parole and prevention offices island-wide.

Within the project area boundary there are three (3) adult correctional centres (Spanish Town Tambrine Farm and Fort Augusta), parole and prevention offices.

7.1.3 Related Institutions

The Jamaica Constabulary Force has its main training facility located in Twickenham Park, St. Catherine. The Jamaica Police Academy administers the recruitment and training of entrants to the Force. A wing of the academy caters to the Island Special Constabulary and District Constabulary Forces.

7.1.4 Private Security Firms

Much of the project area is served by private security firms. The majority of customers currently being served by private security firms are commercial, institutional and educational companies. Services are concentrated around major towns within the project area such as May Pen, Spanish Town and the Portmore Municipality.

7.2 Health Services

Public Health services in the project area falls under the South-East Regional Health Authorities (SERHA) and Southern Regional Health Authorities (SRHA) of the Ministry of Health. The South-East regional authority is responsible for the overall administration of all health facilities for the St. Catherine portion of the project area and SRHA responsible for the Clarendon portion of the project area.

7.2.1 Hospitals

Hospital services are provided through general and specialist facilities. Hospitals are classified A, B or C according to the level of service and the size of the population served:

Type C Hospitals are basic district hospitals. In-patient and out-patient services are provided in general medicine, surgery, child and maternity care. Basic x-ray and laboratory services are usually available. The May Pen Hospital and the Lionel Town Hospital are classified as Type C hospitals in the project area.

Type B Hospitals are situated in the larger urban centres. They provide in-patient and out-patient services in the four basic specialties; general surgery, internal medicine, obstetrics and gynaecology and paediatrics. Within the project area there is one such facility, the Spanish Town Public Hospital

Type A Hospitals are multi-disciplinary. They are the final referral points for secondary and tertiary services. The Kingston Public Hospital and the Cornwall Regional Hospital are examples of such institutions.

7.2.2 Clinics/Health Centres

In addition to the public hospitals there are public health facilities distributed throughout the project area.

7.2.3 Private Facilities

Within the project area there are also a variety of private healthcare facilities, and private medical centres that are operated by general practioners some of which are home based and other located in plazas. There are a total of 4 private healthcare facilities in the project area, three (3) of which are in the parish of Clarendon and one (1) in St. Catherine.

7.3 Fire Safety

7.3.1 Fire Hazards

In 2001 there were 230 fires occurring in the parish of Clarendon which resulted in three deaths. The estimated loss from these fires was \$924,227,000.00 and the estimated property loss was \$2,316,000.00. Generally, lower Clarendon has more incidents of fire than the northern section of the parish.

7.3.2 Fire Protection

Fire protection is the responsibility of the respective parish council through the Ministry of Local Government Community Development and Sport. The overall services are administered by the Jamaica Fire Brigade. The functions of the Jamaica Fire Brigade are:

- i. Extinguishing fires
- ii. Protecting life and property endangered by fire or other disasters
- iii. Inspecting buildings to ensure that reasonable steps are taken from the prevention of fires or other disasters

As August 2004 there were 4 fire stations within the project area, with a compliment 139 fire fighters (Table 7-1) and 4 fire trucks.

Table 7-1: Staff Compliment and Number of Trucks by Main Town

Station	Number Of Fire Fighters	Number Of Fire Trucks
Old Harbour	22	1
Spanish Town	32	1
Waterford	45	1
May Pen	40	1
Total	139	4

7.4 Geologic and Seismic Hazards

Jamaica is considered to be vulnerable to earthquakes due to its geographic location. The island is situated near the northern edge of the Caribbean Plate which is thought to be moving in an east-north easterly direction with respect to the North American Plate (ODPEM 2004). Earthquake activity in Jamaica is a direct result of various types of movements taking place within boundary zones of the Caribbean Plate. It has been pointed out that Jamaica may experience up to two hundred felt earthquakes in any one year.

The damage resulting from an earthquake in Jamaica is controlled by the site geology. Two Geological Processes are Important:

1. Ground Amplification (Ground Shaking) is a term which describes the actual trembling or jerking motion produced by the earthquake waves. The site geology

affects the degree of shaking in general. The severity of shaking is greater on sites underlined by unconsolidated sediments than sites on rocks.

2. Ground Failure includes all processes where ground fails in response to ground acceleration from an earthquake. Two processes have been identified:
 - a) Liquefaction
 - b) Landslides.

Both are known to have occurred in Jamaica. In Jamaica, shaking has been the most frequent cause of earthquake damage whereas ground failures or a combination of ground failure and shaking has been the most serious cause of damage.

Potential direct and indirect hazards resulting from seismic activities include the following:

Direct Hazards	Total or partial collapse of structures due to poor design and construction materials.
	Falling debris and dust from rubble.
	Transportation casualties due to collapse of bridges etc.
	Floods from collapsed dams or river banks.
	Release of hazardous materials.
	Landslides.
Indirect Hazards	Tsunamies, loss of life by inundating low-lying coastal areas.
	Fires.
	Release of hazardous material.
	Electrocution.
	Exacerbation of chronic diseases

7.4.1 Building and Site Standards

Currently, there are no specific standards set to mitigate seismic and geological hazards. However, applications for construction that are located in areas identified as being particularly vulnerable to natural hazards on a map of Disaster prone areas of Jamaica done in 1977 at a scale of 1:125,000 are sent to relevant agencies for their comments.

7.5 Flood Hazards

The entire island of Jamaica is considered to be vulnerable to hurricanes. Jamaica's geology, neotectonics, topography and seasonal high rainfall make it susceptible to a number of natural hazards, including flooding and many types of slopes failures.

Of all natural hazards capable of producing a disaster, a flood is the most common in causing loss of life, human suffering inconvenience, widespread damage to buildings, structures, crop, infra-structure, and other national assets. Severe weather conditions

which lead to intense rainfall such as tropical depressions and hurricanes often lead to flooding.

Within the project area there are several communities which are considered to be flood prone areas (Table 7-2 and Figure 7-1). Within St. Catherine there are 14 communities and 50 in the Clarendon portion of the project area. These flood prone areas are:

Table 7-2: Flood Prone Communities in St. Catherine and Clarendon

ST. CATHERINE		SOUTH WEST CLARENDON	
EWARTON	FERRY	▪ Alley Bridge	▪ Osbourne Store
▪ Linstead - sections of Bog Walk	▪ Worthy Park	▪ Comfort	▪ Coffals
▪ Tredegar Park	▪ The Needle	▪ Farquhar	▪ Water Lane
OLD HARBOUR BAY	SPANISH TOWN	▪ Alley Downer	▪ Swansea
▪ Bog Walk	▪ Guanaboa Vale	▪ Rhymesbury	▪ Toll Gate
▪ Riversdale	▪ Dorothy	▪ Gayle-Monymusk	▪ Kemps Hill
OLD HARBOUR ROAD (VICINITY OF WILLODENE)	PORTMORE	▪ Race Course	▪ Four paths
▪ Amity Hall	▪ Passage Fort Drive	▪ Banks	▪ Vernamfield
▪ Nightengale Grove	▪ Caymanas Gardens	▪ Hayesfield	▪ Lionel Town Milk River Sedge Pond
WILLODENE		▪ York Town	
▪ Luidas Vale			
▪ Caborita Point			

CENTRAL CLARENDON		SOUTH EAST CLARENDON	
▪ Western Park	▪ Juno Gully	▪ Longwood	▪ Inverness Gardens
▪ Pennant Wood	▪ Jack Monday	▪ Green Bottom	▪ Freetown
▪ Race Track	▪ Longville	▪ Portland Cottage	▪ Halse Hall
▪ Bucknor	▪ Mundel Town	▪ Mitchell Town	▪ New Town
▪ Rose Hall	▪ May Pen	▪ Breadnut Bottom	▪ Cockpit
▪ Effortville	▪ Chapleton Road	▪ Hayes	▪ Mineral Heights
▪ Chatteau	▪ Clarendon Gardens	▪ Rockly Point	▪ New Bowens
▪ Olver Gardens		▪ Rosewell	▪ Sandy Bay

7.6 Noise

Jamaican towns and cities are regarded as 'noisy' by international standards. Noise interferes with the perception of wanted sound and is likely to be physiologically harmful. Chronic exposure to noise can affect human welfare both physiologically and psychologically. This exposure may be as a source of annoyance, and may create communication problems leading to elevated stress levels. It may be associated with behavioral and health effects.

7.6.1 Protection of Noise Sensitive Development

In the absence of national noise standards, NEPA uses the WHO standards.

The location of noise sensitive development should be given special consideration. Land uses considered to be noise sensitive include the following:

- i. Housing,
- ii. Hospitals,
- iii. Court houses,
- iv. Educational establishments,
- v. Churches, and
- vi. Offices

Several techniques may be used to reduce the impact of noise on developments, these include the use of:

- **Berms/barriers:** This entails the use of aesthetically appealing landscaped mounds to block and reduce the level of noise reaching noise sensitive developments.
- **Enclosures:** Enclosures may be used as a means of protecting noise sensitive developments. This involves a structure surrounding such developments that would block intrusive noise out.
- **Low noise surfaces:** Low noise road surfaces are becoming more and more widely used as a noise control measure on major roads. Such surfaces are reputed to reduce noise levels by 2-4dBA relative to dense-graded asphalt (DGA).
- **Vehicular noise emission standards:** Regulations aimed at restricting the level of noise by setting a standard for vehicle being driven on public roads.

7.7 Hazardous Materials

The Public Health Act is the main body of legislation for the management of solid, hazardous and medical waste. The Natural Resources Act ensures solid, hazardous and medical waste is properly collected, managed and disposed of. Hazardous wastes are, according to existing laws, the responsibility of the generator, who must store them appropriately and direct them toward a safe and recognized elimination site.

7.8 Highway Safety

During the period of January 1, 2004 to March 22, 2004 there were 3 fatal accidents and 3 persons killed in southern St. Catherine and 6 fatal accidents and 7 deaths in the parish of Clarendon. This is a decrease from the same time period for the previous year (2003).

(This Report is still in preliminary draft form)

8.0 TRANSPORTATION AND INFRASTRUCTURE

Over the last few years, there have been substantial transport infrastructure developments over the entire island of Jamaica however, the full expected benefits have not been realized due mainly to the continued rapidly expanding unplanned developments in the vicinity of these projects.

The results of these unplanned developments are seen in the traffic chaos and chronic traffic congestion which many Jamaicans must now face every working day. Mobility is critical to maintaining a healthy economy, and developments cannot be sustainable if the prevailing transport systems do not allow for reasonable access to goods and services.

Expanding at a much greater rate than even the population of the area, has been the number of vehicles inspected by the Island Traffic Authority. For the period 1994 to 2003 motor cars have increased by 238%, trucks/buses by 65% while motorcycles have seen a reduction of 61% (see Table 8-1 and Figure 8-1).

Table 8-1: Number of Units Inspected by the Island Traffic Authority

Years	St. Catherine & Clarendon				
	Motor Car	Trucks/Buses	Motor Cycles	Trailers	Total No. of Units
1994	7,864	5,703	551	84	14,202
1995	11,575	6,250	496	58	18,379
1996	12,530	6,761	443	74	19,808
1997	16,270	7,229	168	63	23,730
1998	15,072	6,355	273	56	21,756
1999	19,110	6,143	249	70	25,572
2000	19,552	8,904	239	102	28,797
2001	25,204	10,167	252	101	35,724
2002	23,611	7,235	318	129	31,293
2003	26,612	9,429	214	39	36,294

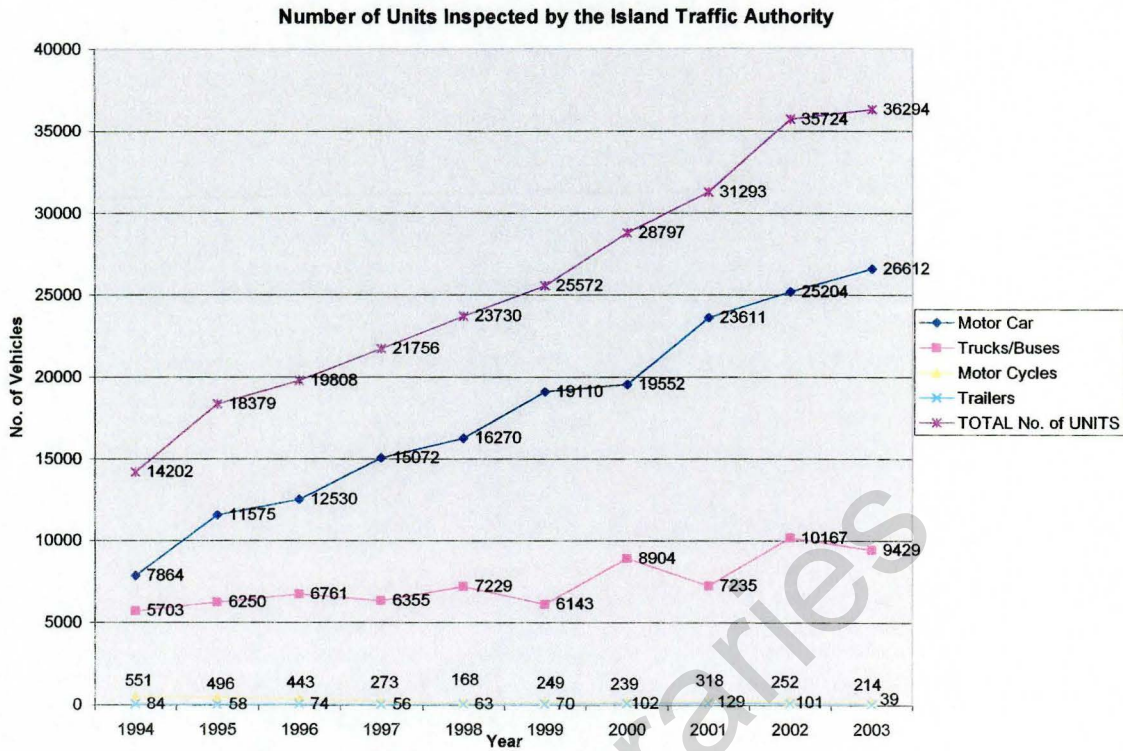


Figure 8-1

It is therefore no surprise that the National Works Agency (NWA) reports that the following main roads are congested – Sandy Bay, Old Harbour, Spanish Town Bypass, Braeton Road, Causeway – and many more are on the brink of being classified as congested (see Tables 8-2 to 8-4).

Table 8-2: ADT figures for Locations in St. Catherine

TRAFFIC COUNTS IN ST. CATHERINE - Average Daily Traffic {ADT}				
COUNT SITE	ROAD NAME	ADT	YEAR	Traffic Flow
Old Harbour(Bushy Park)	Gutters Old Harbour RBT	18,205	< 2002	
Christian Pen(Bridge)	Naggo Head to Dawkins Pen	19,680	< 2002	
Tambrine Farm	Spanish Town-Port Henderson	7,484	< 2002	
Ferry	Twickenham RBT to Ferry	59,974	< 2002	
Salt Island Road	Salt Island Road	3,378	< 2002	
West of Pedestrian Bridge	Spanish Town Bypass	28,083	< 2002	
Twickenham Park	Twickenham Park- Ferry	40,159	< 2002	
Out of Spanish Town	Twickenham Park - Old Harbour	13,541	2002	Eastbound
Into Spanish Town	Twickenham Park - Old Harbour	12,233	2002	
Out of Spanish Town	Twickenham Park-Old Harbour RBT	8,987	2002	Westbound
Into Spanish Town	Twickenham Park-Old Harbour RBT	7,321	< 2002	
Angels 1	Spanish Town – Bogwalk	7,000	2002	Northbound
Angels 1	Spanish Town – Bogwalk	8,100	2002	Southbound
Hampton Green	Old Harbour RBT-Angels Junction	10,000	2002	Northbound
Hampton Green	Old Harbour RBT-Angels Junction	9,000	2002	Southbound
Mandela Jose Marti	Mandela Highway (@ Jose Marti)	24,689	2002	Westbound
Mandela Jose Marti	Mandela Highway (@ Jose Marti)	24,790	2002	Eastbound
Old Harbour RBT	Old Harbour RBT – Gutters	15,434	2003	Eastbound
Old Harbour RBT	Old Harbour RBT – Gutters	19,867	2003	Westbound
Fairfield Road	Fairfield Road	2,272	2003	Northbound
Spanish Town - Bamboo – Byles	Spanish Town – Bamboo	3,246	< 2002	
Bamboo to Worthy Park	Bamboo to Worthy Park	1,826	< 2002	
Fairfield Road	Fairfield Road	1,910	< 2002	Southbound
Spanish Town - Bamboo – Byles	Spanish Town – Bamboo	3,158	< 2002	

Table 8-3: ADT Figures for Locations in Clarendon

TRAFFIC COUNTS IN CLARENDON - Average Daily Traffic {ADT}				
COUNT SITE	ROAD NAME	ADT	YEAR	Traffic Flow
Osborne Store	Whitney Turn -Four Paths	10,791	< 2002	
Hayes- May Pen	May Pen to Hays	7,183	< 2002	
Bustamante Highway	Four Paths -Freetown	13,074	< 2002	
Toll Gate C/Park	Whitney Turn -Four Paths	10,331	2002	
Sandy Bay	Four Paths -Freetown	15,484	< 2002	
Longville	Free Town to The Alley	1,770	2003	Southbound
Longville	Free Town to The Alley	1,700	2003	Northbound
Springfield	The Alley to Rest	300	2003	
The Alley	The Alley to Rest	2,700	2003	

Table 8-4: Roads in the project area with service levels of “D”, “E” & “F”

LEVELS OF SERVICE (LOS)		
"D"	"E"	"F"
Hayes to May Pen	Bushy Park	Sandy Bay
Toll Gate		Old Harbour
Braeton Parkway		By Jose Marti School
		Spanish Town Bypass
		Old Harbour Road
		Breton Road to Texaco Station.
		I-95 (Portmore)
		Causeway

LOS A

Free flow operations where the speed of an individual vehicle is controlled by the desire of the driver and the prevailing weather conditions. There is no interference from other vehicles and the density is not greater than **10 passenger cars per km per lane with an average spacing of 160 metres** between consecutive vehicles.

LOS B

Traffic is moving under free flow conditions however, the density increases to **16 passenger cars per km per lane with an average spacing of 100 metres** between consecutive vehicles. There is some restriction on the ability to make lane changes or enter the traffic stream, however drivers should not find it difficult to make such maneuvers and a high level of physical and psychological comfort is still provided to the drivers.

LOS C

Speeds are at or near the free flow limits, but freedom to manoeuvre is noticeably restricted. Lane changes require greater vigilance by the driver since the density is now **20 passenger cars per km per lane with an average spacing of 65 metres** between consecutive vehicles

LOS D

Speeds begin to decline slightly with increasing flows, and density increases somewhat more quickly. Freedom to manoeuvre is more noticeably limited, and drivers experience reduced physical and psychological comfort. The density is now **32 passenger cars per km per lane with an average spacing of 50 metres** between consecutive vehicles. There is little space to absorb disruptions and minor incidents can be expected to create queuing.

LOS E

Operations are volatile because there are virtually no gaps. The **average spacing between consecutive vehicles is 35 metres**. There is little room to manoeuvre and lane changes or merging traffic will result in a disturbance of the traffic stream. Minor incidents result in immediate and extensive queue buildup. Road capacity is reached at its lower boundary where density depends on free flow speed.

LOS F

Operation is under breakdown conditions, and a uniform moving flow cannot be maintained. The flow conditions are such that the number of vehicles that can pass a point is less than the number of vehicles arriving at that point.

When a roadway reaches LOS F conditions the roadway is considered CONGESTED

8.1 Road Network

There are 173 Kilometres of Class A roads, 116 Kilometres of Class B roads and 138 Kilometres of Class C roads to be found within the project area. These figures do not include parochial and farm roads (Figure 8-2).

HIGHWAY 2000 CORRIDOR DEVELOPMENT PLAN
Transportation - Main Road Classification

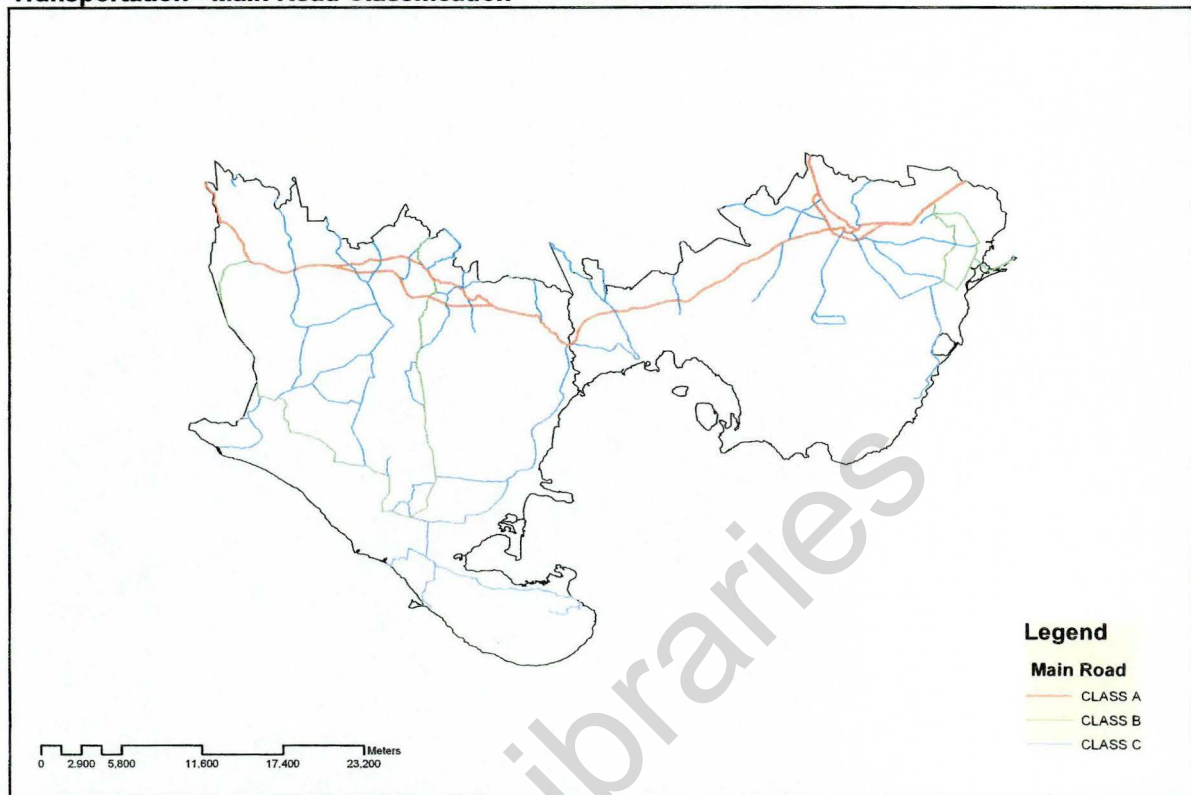


Figure 8-2

The NWA however advises that only 14% of these roads can be considered in “good” condition, 17% “fair” and 69% considered in “bad” condition (Figure 8-3). It is to be noted that the Toll Road concession agreement restricts the NWA from effecting any works that could be considered to “attract” traffic away from the Highway. Implementing solutions to reduce the current congestion in the town centres of Spanish Town, Old Harbour and May Pen will be a major challenge for the NWA and the Local Authorities.

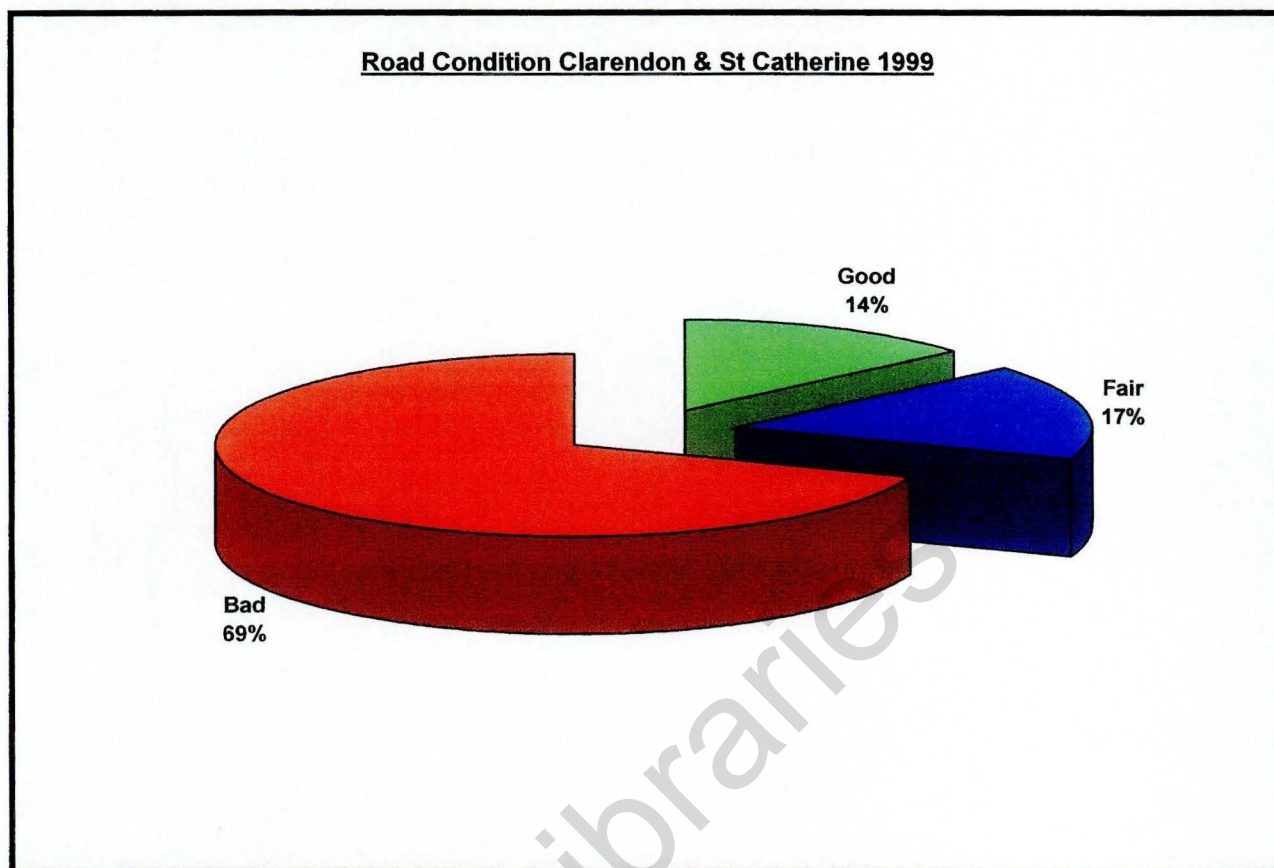


Figure 8-3

The existing road network provides reasonable access to most areas within the project area. The main concern as stated above is the state of these roads and whether or not sufficient funds will be made available to maintain them in an acceptable state.

As soon as a decision is made re the location and type of developments that will take place within the project area, a Transport Impact Assessment Study (TIA) will be necessary to assist in determining:

- a) **Whether or not new roads are required and their projected costs**
- b) **What existing roads will require upgrading and their projected costs**
- c) **The projected cost for bringing the existing roads that will not be upgraded to a reasonable state**
- d) **The projected annual costs to maintain all roads in the project area**
- e) **How these new or upgraded roads will link with Highway 2000**

Having determined the road network requirements, it will be necessary to have discussions with the toll road operators to ensure that there is a mutual understanding to the effect that these road network improvements will not reduce traffic on Highway 2000.

Special attention will have to be paid to the town centres of Spanish Town, Old Harbour and May Pen to relieve the current congestion levels and make these town centres an attraction and not places to be avoided.

8.1.1 The Impact of the Road Network on Surface Hydrology

A substantial section of the Highway will pass through flood prone areas especially in Clarendon. Construction of a paved roadway such as Highway 2000, significantly adds to the surface water run off which can adversely affect the already flood prone areas.

The detailed designs for the sections of the highway to be constructed through Clarendon are yet to be completed. The designers have however indicated that the final design in addition to addressing standard drainage issues, will take into account the potential flooding problems and the fact that the highway could act as a dam and intensify the flooding problems in the areas located north of the highway. The development of the Clarendon area may also require a major flood mitigation project for the Rio Minho River.

The NWA currently has the following flood mitigation projects in the pipeline:

St. Catherine	Hartlands, Portmore, Bushy Park, & Grove Farm
Clarendon	Drains in May Pen, Jacobs Hut to Rhymesbury, & Toll Gate to Ebony Park

In addition, the developers of Highway 2000 have requested the NWA to examine the Town Gully in Spanish Town.

The transportation sector is a substantial source of income for many project area residents and as such any adjustments must be carefully handled to minimize possible dislocations. Guideline must be established for the types of public transportation services to be instituted and the infrastructure required to support an effective system. Otherwise, public transport could become ineffective and be a major contributor to congestion in town centres and on main arterial roads.

8.2 Public Transportation System / Private Vehicles/Commercial Traffic

If sustainability is to be a hallmark of the development in the project area, then public transport must play a major role in the development. Congestion reduction as well as reducing the areas required for car parks – thus freeing up more areas for green space and commercial activities – are but a few of the benefits of an effective public transport system.

An effective public transport system requires accurate origin and destination information coupled with sound public transport principles. Guidelines should be developed by the Transport Authority to assist in determining the vehicle types to be used in any given locale. Factors such as service frequency, route distances, road size and condition, and most importantly, the numbers of persons to be transported are the main ones to be considered.

The overriding principle should be to use the minimum number of vehicles whilst maintaining a reasonable service frequency. This principle would not necessarily meet the approval of the political directorate as public transport is seen by many as a solution to the chronic unemployment problem that exist throughout the island, especially in the rural areas. *(A closer examination of the issues would lead to the conclusion that the cost of congestion [delay costs] and the infrastructure cost of the measures that seek to relieve these congestion points, plus the financial and capacity burden placed on our health services by many of these operators who often drive recklessly in seeking to maximize the number of daily trips, resulting in many accident, is far more than the benefits accrued by these operators).* Possibly some of the resources that have been spent as a result of the operations of such a large number of public transport operators could have been spent more productively by identifying alternate income sources for many of these individuals.

One of the major challenges for any major development in the project area will be the management of the public transport system. Difficult decisions will have to be made, which will result in some dislocation, however, if the present system of issuing road licences to any and all vehicle types continues, public transport will shortly (if not already) become the major contributor to the congestion problems in the town centres and the major thoroughfares within the project area.

Within the project area, the following types of public transport operate:

- | | |
|---------------------|----------------------------------|
| ▪ Hackney Carriage | Portmore, Spanish Town & May Pen |
| ▪ Stage Carriage | All areas |
| ▪ Express Carriage | Portmore & Spanish Town |
| ▪ Contract Carriage | All areas |
| ▪ Route Taxis | All areas |

The dominant public land transport operators outside of the Kingston Metropolitan Transport Region (KMTR) are Route Taxis and Stage Carriage purveyors.

The Transport Authority states that the number of **legal route taxis** operating within the project area is nine hundred and twenty seven (927), with a total seating capacity of four thousand four hundred and eleven (4411) (see Table 8-5).

Table 8-5: Route Taxis Authorized by the Transport Authority to Operate in Project Area

ROUTE TAXIS			
Origin	Destination	No. of Vehicles	No. of Seats
Spanish Town	Bayside	41	218
Spanish Town	Ensom City	22	102
Spanish Town	Eltham Pak	104	476
Spanish Town	Naggo Head	86	417
Spanish Town	Old Harbour	132	594
Spanish Town	Old Harbour Bay	16	68
Spanish Town	Damhead	113	513
Spanish Town	Kitson Town	77	344
Naggo Head	Waterford	44	208
Naggo Head	Daytona	12	56
Naggo Head	Hellshire	10	48
May Pen	Old Harbour	35	166
May Pen	Palmers Cross	13	56
May Pen	Toll Gate	44	200
May Pen	Free Town	7	28
May Pen	Four Paths	4	192
May Pen	Rock River	18	85
May Pen	Mineral Height	32	132
May Pen	York Town	16	70
May Pen	Thompson Town	14	64
May Pen	Mandeville	20	82
Old Harbour	Old Harbour Bay	30	128
Old Harbour	Brown Hall	2	9
Old Harbour	Bellas Gate	1	9
Old Harbour	Bannister	14	58
Old Harbour	Barton	6	26
Old Harbour	Ginger Ridge	3	12
Old Harbour	Redground	11	50
	Totals	927	4,411

The Transport Authority also advises that the number of **legal stage carriage** vehicles operating within the project area is two hundred & four (**204**) with a total seating capacity of two thousand four hundred & twenty (**2420**) (see Table 8-6).

Table 8-6: Stage Carriage Vehicles Authorized by the Transport Authority to Operate in Project Area

STAGE CARRIAGE OPERATORS			
Origin	Destination	No. of Vehicles	No. of Seats
Spanish Town	May Pen	43	490
Spanish Town	Old Harbour	1	11
Spanish Town	Old Harbour Bay	1	11
Spanish Town	Browns Hall	3	39
Spanish Town	Chapleton	4	47
Spanish Town	Christiana	7	81
Spanish Town	Frankfield	1	11
Spanish Town	Milk River	2	26
Spanish Town	Point Hill	2	26
Spanish Town	Porus	7	83
May Pen	Thompson Town	1	11
May Pen	Frankfield	13	155
May Pen	Kellits	46	540
May Pen	Christiana	11	140
May Pen	Mandeville	20	229
May Pen	Spauldings	30	389
Other	N/A	12	131
Totals		204	2,420

It is to be noted however that in addition to the above authorized operators, there are approximately twelve hundred (1,200) additional authorized units that pass through the project area, usually en route to Kingston from locales outside of the project area.

The Transport Authority estimates the number of illegal operators (route taxis and stage carriage) as follows:

Portmore	905 vehicles
Spanish Town	440 vehicles
Old Harbour	2,014 vehicles
May Pen	495 vehicles

No transportation system can be effective with this level of illegal operations and therefore it is not surprising the levels of congestion (both in town centres and on main roads) and the frequent safety violations, including reckless and dangerous driving, that are observed daily. **The number of illegal operators also suggests the possibility that the legal operators cannot meet the transportation needs of the residents and**

therefore the process for determining the number of licenses to be issued require reviewing.

8.2.1 Public Transport Facilities

There are four (4) bus parks and nineteen (19) taxi stands located within the project area.

The Bus Parks are located in the following towns:

**Vere
May Pen
Milk River
Spanish Town**

None of these locations provide adequate facilities for either the commuters or the operators. For example, the **Vere** facility with a total land space of two thousand seven hundred and sixty square metres (**2760 sq. m {30,660 sq. ft.}**) and a capacity for approximately seventy (70) vehicles. Eighteen months ago the park was bursting at its seams however, today it is currently underutilized. The park has:

- **No kerbs or platforms (a major safety issue)**
- **No sheds or seating for commutes**
- **No destination signs or markings**

The **May Pen** facility has a total land space of two thousand one hundred and ninety square metres (**2190 sq. m {24,288 sq. ft.}**) and a stated design capacity for one hundred (100) vehicles. It is currently accommodating only 60-70% of that capacity. However, there is no space for any additional units. This park also has:

- **No kerbs or platforms (a major safety issue)**
- **No sheds or seating for commuters**
- **No destination signs or markings**
- **No restrooms for commuters**

Of the nineteen (19) taxi stands identified within the Portmore and Spanish Town areas, thirteen (13) are informal and only six (6) formally designated taxi stands. The Transport Authority considers seven (7) of these taxi stands overcrowded, eight (8) to be operating at capacity, and four (4) with capacity for additional vehicles.

A visit to Spanish Town, Old Harbour or May Pen and to a lesser extent Portmore especially during peak hours will quickly bring to the fore the significant impact that public transport vehicles have on the levels of congestion in these town centres. A review of the methods of providing public transportation within the project area is necessary to ensure that:

- 1. The service is an efficient energy consumer**
- 2. The congestion effects of the public transport vehicles are minimized**
- 3. Negative impacts on the environment is minimized**
- 4. Land use is optimized**

A more integrated approach in addressing public transport issues is necessary if **SUSTAINABLE DEVELOPMENT** is to be achieved. This integrated approach will only be possible when

- i. **The Ministry of Transport and Works has in place a national master transportation management plan**
- ii. **The necessary framework is established that ensures that national, regional and local development plans are guided by the master plan**
- iii. **The issue of responsibility and ultimately accountability for public transport facilities throughout the island is addressed.**

The National Transport Plan should establish targets for commuting to town centres and special development areas by transport mode. The target would indicate what percentage of commuters are expected to access a particular area by

- **Public Transport (largest %)**
- **Private Motorcar**
- **Non Motorized Transport**

Having established these ratios, the network and infrastructure system should be designed to facilitate the achievement of the stated goals. For example, if a large percentage of commuters are expected to travel by public transport, but no facilities (terminals, bus lanes, sheltered bus stops, etc.) are provided, or insufficient seats provided, it is highly unlikely that commuters will take public transport.

8.2.2 Bicycle/Pedestrian Facilities

With the ever increasing number of motorized vehicles operating in the island, safety is now a major issue and many individuals who would possibly consider biking or walking as an option do not, as these modes are deemed as hazardous.

Much public education and public relations would be required to not only advise residents of the facilities, but also educate motorists of the rights of pedestrians and bicycle riders. Facilities for securing bicycles throughout the business districts and at industrial sites would also be required. A sometimes forgotten fact is that the vast majority of persons taking public transport at the beginning and end of their journey operate as pedestrians. Safe, commuter friendly pedestrian facilities are therefore a pre-requisite for a successful public transportation system.

A review of the current programmes or facilities that encourage non motorized and pedestrian traffic reveals that this area has basically been neglected not only in the project area, but throughout the entire island as well.

Within the four town centres in the project area (Portmore, Spanish Town, Old Harbour and May Pen), no examples of pedestrianization or any major traffic calming projects were seen. Projects of this nature would however be difficult to implement in the Old Harbour or May Pen town centres, as both are essentially one street towns. Efforts at

introducing traffic calming measures were observed in some areas; however their overall effects have been limited.

Plans for any development in the project area must therefore take into account pedestrians and non motorized traffic and include facilities to encourage greater use of these modes of transport.

8.2.3 Rail

With respect to the residents that commute daily into the city of Kingston, rail has the potential of capturing a large portion of the market that currently travels by road. This will only happen however if the rails service can offer a comparable service that is reliable and cost effective. It is not envisaged that this will happen in the near future due to the following:

- a) **The concession agreement signed between the Government of Jamaica and the Toll Road Operators**
- b) **The current cost of revitalizing the commuter rail system, which unless heavily subsidized, cannot compete with road transportation in relation to cost.**

8.2.4 Facilities for the Disabled

Fortunately, some steps have been taken to ensure that our communities of disabled citizens have access to transportation services. Unfortunately however, these opportunities are mainly available in the capital city Kingston.

It is therefore necessary that the planning for our public transportation system take into account the transportation needs of these citizens. In addition, the transport plan should provide guidelines for the local authorities in respect to required transport related facilities, including the allocation of designated parking spaces, and these should be a requirement for development approvals.

To adequately meet the needs of the disabled community, it is necessary to know the locations of these individual and their transportation needs. A survey will have to be conducted within the project area in conjunction with the Ministry of Health and the Government Agency with special responsibility for disabled persons.

8.2.5 Aviation

There is no public air service operating within the project area. There is a private airstrip operated by WINDALCO at Port Esquivel and the Vernamfield aerodrome. In addition, there are a number of illegal airstrips within the project area which operate as clandestine bases for the movement of illegal drugs and other contraband items.

The pre-feasibility studies and reports that have been done on the development of the Vernamfield Complex indicate that there is a possibility that this aerodrome can be developed into a special purpose cargo/maintenance centre.

However, before any firm recommendation can be made regarding this development, more work is required to include identifying and obtaining some commitment from prospective clients that would utilize the facility. (See Section 2.7.3)

8.3 Goods Movement

8.3.1 Railway

The carriage of goods was one of the premier reasons for the introduction of the railway into Jamaica in the early 1840's.

At its peak, the Jamaica Railway Corporation (JRC) operated its services on over four hundred & twenty (420) kilometres of track. However, due to natural disasters and failing fortunes, operations were curtailed as follows:

- **Closure of the Frankfield line in 1972**
- **Closure of the Port Antonio line in 1979**
- **Closure of the line between Mandeville and Montego Bay in 1992**

In 1992, the JRC ceased passenger and freight operations. Currently, WINDALCO leases locomotives from the JRC and operates trains between Ewarton and Port Esquivel and between Kirkvine and Port Esquivel. These trains transport alumina from the bauxite refining plants to Port Esquivel and fuel oil and caustic soda from Port Esquivel to the bauxite plants, and utilize approximately ninety five (95) kilometres of tracks. Another bauxite company JAMALCO operates a private rail service within the project area. This rail service transports bauxite from its mining areas to their shipping port at Rocky Point and caustic soda and fuel oil from Rocky Point to the refining plant.

No information as to the status of the railway privatization negotiations was forthcoming from the National Investment Bank of Jamaica (NIBJ), who has the responsibility for the divestment of Government entities. As such, the JRC advised that they were unable to provide any future operational or development plans.

The railway is ideally suited for the transportation of bulk cargo. Dangerous cargo should not be transported on public roads where possible. There is a fairly extensive rail network within the project area which extends to two (2) ports. The possibility of making greater use of rail transport for any future developments that require bulk transportation or the transport of dangerous cargo should be considered and lands should be identified near to the existing rail network to locate these facilities.

The rail network will have a critical role to play in the development of the proposed Clarendon Eco-Industrial Zone and the development of the Industrial Minerals Sector in South Central Jamaica.

8.3.2 Trucking

The data included in Table 8-7 shows the tremendous expansion of the trucking industry over the past 10 years. There is a major trucking lobby in force which has to a great extent influenced the future of the railway and the greater use of marine vessels for the transportation of bulk items from the capital city Kingston to other sections of the island.

Table...compares the number of trucks/buses that the ITA inspects in St. Catherine and Clarendon with the total inspected for the entire island.

Table 8-7: Comparison of the Number of Trucks/Buses Inspected in Project Area and All Island

Year	All Island	St. Catherine	Clarendon	Total Project Area	% of All Island Total
1994	41,312	2,681	3,022	5,703	13.80%
1995	56,100	2,972	3,278	6,250	11.14%
1996	59,547	3,170	3,591	6,761	11.35%
1997	61,482	3,736	3,493	7,229	11.76%
1998	59,373	3,487	2,868	6,355	10.70%
1999	55,596	3,405	2,738	6,143	11.05%
2000	62,634	5,984	2,920	8,904	14.22%
2001	50,520	6,703	3,464	10,167	20.12%
2002	56,053	3,968	3,267	7,235	12.91%
2003	55,555	6,446	2,983	9,429	16.97%

The percentage of trucks/buses inspected in the two parishes in the project area is just above average expected market share (14%) however as was mentioned earlier, a significant number of the trucks/buses that operate within the project area are inspected at ITA centres in Kingston.

The damage done to many road as a result of overloaded trucks is evident. This begs the question as to why current weight restrictions have not been more rigidly enforced.

The Concession Agreement for the operation of Highway 2000 has in effect strengthened the role of trucking with respect to the transportation of goods through the project area and for the majority of Jamaica. The need therefore for adequate regulation and management of this transportation sub-sector is now critical.

8.3.3 Sea

There have been some discussions on the greater use of marine transportation throughout the island for bulk goods such as flour, rice and cement. This process would still require road transportation to deliver the goods from the port to their final destination.

No studies were obtained on this issue, nor were sufficient information obtained to enable any rational discussions to be held or prudent recommendations made in respect of this issue.

There are 3 fixed marine terminals in the project area with the following activities:

PORT	ACTIVITIES	
	Export	Import
Port Esquivel	Alumina	Caustic Soda, Fuel Oil, Cement
Salt River		
Rocky Point	Alumina	Caustic Soda, Fuel Oil

In addition, the Jamaica Public Service (JPSCo) has an unloading station in Old Harbour Bay for fuel for its power generating station. Discussions are also in place to import grain through Port Esquivel.

The NIBJ has advised that the Salt River Terminal is about to be divested and the prospective buyer intends to develop the facility as a recreational terminal with the possibility of berthing for small commercial fishing operators.

This should be reviewed in light of the proposed establishment of the Clarendon Eco-Industrial Zone (see Section 2.4).

8.3.4 Air

The majority of the air traffic into the project area would be out of the capital Kingston and the distances involved and the existence of Highway 2000 would suggest that air traffic into the project area would be minimal.

The exception to the above would be if the Vernamfield Aerodrome is developed into a major air terminal. The expected traffic however would be international, therefore its effect on road transportation, in respect to personnel movement would be minimal. What a developed Vernamfield Aerodrome would affect, is the number of goods vehicle accessing the complex leading to a substantial increase in goods traffic. The road network that links the Vernamfield complex to Highway 2000 would therefore have to be developed to meet any increased traffic, especially goods traffic that a developed complex may require.

8.4 Policy and Planning

The long awaiting National Transport Policy must be formalized soon and a National Transport Plan developed that guides national, regional and local transport developments. In addition, a number of related policy changes will be required to support some of these transport related initiatives. The issue of standards and their enforcement must be given priority and a framework must be established that will facilitate compliance by all implementing agencies.

There is an urgent need to identify a specific position within the Ministry of Transport & Works who will be responsible for, and be held accountable for transport management issues. One of the main functions of this individual would be the coordination of the policies of the Transport Ministry with those of other Ministries/Agencies. There is an urgent requirement for greater coordination between the government agencies that are responsible for transport related issues, and there is a need for these agencies to develop a closer working relationship between the agencies responsible for Energy, The Environment and Land Use. This will facilitate a more integrated approach to solving our transportation needs whilst at the same time protecting our environment and minimizing the energy demands of transportation.

A first step in this regard is to have the following publications formalized/updated and ensure that they are fully coordinated with each other:

- **The National Transport Policy**, which has been in draft form for some time now;
- **The Road Manual** prepared by the NWA, which is also in draft form; and
- **The National Development Manual**, which is currently being revised

The use of all transportation modes for the movement of goods is possible within the project area. This must be thoroughly investigated and a detailed through a feasibility that looks at all the proposed major developments (see Section.....). Facilities to encourage the greater use of non-motorized mode of transportation should also be implemented as well as ensuring that disabled persons have full access to transportation services and all facilities in the project area.

8.5 Financing

The issue of funding for transport related projects has always been contentious; however it is now necessary to consider non traditional methods for raising the required funds to implement these projects.

From all accounts, the current budget allocations will not allow the NWA to address all the issues relating to road and gully maintenance in the project area. In addition, NWA's budget does not include provisions for the upgrading of the many substandard sub-division roads within the project area.

The idea of a special fuel tax hypothecated for transportation related expenditure (***road & gully maintenance, public transport, road safety etc***) has been proposed for some time now but has not, for various reasons found acceptable by the Government. It is however expected that the current high oil prices will fall when the current crisis in Iraq is resolved and oil production worldwide becomes stable once more. Consideration should be given to maintaining the current prices of fuel when costs begin to fall and hypothecating this additional revenue for transportation related expenditure.

This measure would not only result in additional revenue to the government, but would also have the following effects:

- a) **Improvement in the public transport services offered island wide**
- b) **A reduction in the expansion of the private motorcar stock, which is a tremendous burden on foreign exchange expenditure (purchase, maintenance & fuel)**
- c) **A reduction in the requirement to expand existing roads or construct new ones to meet the demands of the expanding stock of motor vehicles.**

9.0 CONSERVATION AND OPEN SPACE

The notion that the concept of conservation applies only to biological features i.e. flora and fauna is not only incorrect but demonstrates a lack of understanding of the ecosystem.

The process of planning attempts to ensure that critical areas are preserved and managed in a manner that maintains development options and quality of life.

In this regard, the following categories of features will be the subject of a conservation strategy for the project area due to their local, regional or national significance:

- a) Class I and II soils for agricultural use.
- b) Physiographic Features – such as deep water access, particularly as it relates to suitability for port facilities and related industrial development. Coastlines and waterways are also of concern.
- c) Key Commodity Resources – such as sand, gravel, marble, and limestone to ensure that they are not preempted by urban development.
- d) Water Supply Protection and Development (aquifers) is of particular concern.
- e) Key renewable resources – wildlife habitats, forest reserves.
- f) Natural Processes of significance – ground water recharge areas, surface hydrology, wildlife migration, natural plant community succession.
- g) Areas of natural hazards – floodplains, seismic damage potential.
- h) Areas of induced hazards – such as air traffic hazards.
- i) Landscapes of historic sites and places (buildings, trails, cemeteries, archaeological sites) or of current cultural and landscaping purpose – urban expansion, community definition, general scenic amenity, community separation, separation of land use conflicts, utility ways and transportation corridors.

These areas of significance present an array of valued attributes and meet a number of potential goals.

The Plan approach is therefore based on multiple-use management.

9.1 Renewable Resources

The biological resources within the project area include flora and fauna contained in dry limestone forests, grasslands, scrubland, wetlands, ponds, rivers and streams. The presence of areas of high biodiversity, endemic and endangered species within the project area indicate that guidelines will have to be put in place to protect the biological resources.

9.1.1 Vegetation

Vegetation within the project area includes:

- Mangrove Wetlands
- Marshes
- Dry Limestone Forest (low-lying and upland)
- Scrubland
- Pasture
- Logwood Forests
- Sugarcane and agricultural crops

Vegetation types are useful as habitats, food, noise buffer, air purification, recreation, and scenic value. There are no areas of primary vegetation or natural forest along the highway 2000 corridor from Bushy Park to Sandy Bay. Most of the areas have been disturbed for housing and agriculture. In several areas the scrubland was dominated by *Acacia* species. However, two endemic species were identified – wetlands and dry limestone forests.

9.1.1.1 Wetlands

The main area of wetlands is in the Portland Bight Protected Area.

Fringing mangrove is present from Cougar Bay to Milk River Bay. Wetlands also are present in the Flashes adjacent to the Great Salt Pond. These wetlands, especially those of the Portland Bight are of extreme importance for:

- Nursery Areas – fish, crabs, shrimp, crocodile, etc
- Source of Nutrients to coastal waters. Among the most productive ecosystems in the world wetlands constantly export organic matter to other coastal ecosystems
- Habitat for migratory and resident bird species
- Stabilization of coastlines
- Resources – food, wood, for human use
- Ecotourism/Recreation

9.1.1.2 Dry Limestone Forests

The three large areas of dry limestone forest in the project area are the Hellshire Hills, Braziletto Mountains and Portland Ridge. Additionally there is a small area of dry limestone forest at Kemps Hill (Table 9-1). The Hellshire Hills has the largest area of pristine dry limestone forest in Jamaica, approximately 11,400 hectares, and is a declared

Forest Reserve under the Forestry Act. The Hellshire Hills is also part of the Portland Bight Protected Area and has several rare and endangered species.

Table 9-1: Areas of Dry Limestone Forest

Area	Area (ha)
Hellshire Hills	11, 400
Portland Ridge	4,200
Brazillette Mountains	3,000

9.1.1.3 Endangered and Endemic Species

Endangered species present in the project area are shown in Table 9-2. These species are located mainly in forested and wetland areas. The Jamaican hutia is one of the rarest animals in the world.

Table 9-2: Endangered Species within the Project Area

Name	
Jamaican hutia/Indian Coney <i>Geocapromys brownii</i>	Hellshire Hills Portland Ridge
Jamaican Boa/Yellow snake <i>Epicrates salflavus</i>	Hellshire Hills, wetlands, dry scrub forest
Jamaican Iguana <i>Cyclura collie</i>	Hellshire Hills
Skink <i>Mabuya mabouya</i>	Hellshire Hills
American Crocodile <i>Crocodylus acutus</i>	Wetlands, estuaries and rivers
West Indian Manatee <i>Trichechus manatus manatus</i>	
Hawksbill Turtle <i>Eretmochelys imbricate</i>	Coral reefs and bays
Green Sea Turtle <i>Chelonia mydas</i>	Shallow waters inside coral reefs

The project area also has a high level of endemism. Table 9-3 gives examples of several endemic species present.

Table 9-3: Examples of Endemic Species within the Project Area

Common Name	Scientific Name	Location
AviFauna		
Jamaica Euphonia	Euphonia Jamaica	Dry Limestone Forest
Jamaica Lizard Cuckoo	Saurothera vetula	Dry limestone forest
Mangrove cuckoo		
Jamaican vireo		
Sad flycatcher		
Jamaican woodpecker		
Jamaica Becard		
Jamaican owl	<i>Pseudoscops grammicus</i>	
Jamaican hutia/Indian Coney	<i>Geocapromys brownii</i>	
Jamaican Boa/Yellow snake	<i>Epicrates salflavus</i>	
Jamaican Iguana	<i>Cyclura collei</i>	
Skink	<i>Mabuya mabouya</i>	

The Hellshire Hills has 53 endemic species of flowering plants. However, there is limited information on the flora and fauna of the Braziletto Mountains and Kemps Hill. Developments which require the removal of large tracts of forest will impact adversely on species which are forest dependent. Studies undertaken in the McGilchrist Pen area report that 12 of the 33 species found were endemic, with the endemism and biological diversity more pronounced in the upland limestone forests

9.1.1.4 Protected Areas

The only protected area within the development area is the Portland Bight Protected Area, which was declared a protected area under section 5 of the NRCA Act in 1999. In 2003 the Caribbean Coastal Area Management Foundation (C-CAM) was delegated the management functions for the PBPA (except the power to make regulations). C-CAM is pursuing a co-management approach for the management of the PBPA which includes the various stakeholders that utilize the resources of the PBPA. This co-management model is aimed at facilitating the effective management of the high plant and animal diversity present in this protected area.

The public participation strategy involves the integration of interest groups within and external to the PBPA that utilize resources of the PBPA or produce pollutants which impact on the area.

Sustainable development will be pursued through the ongoing participation of the management of the resources by stakeholders involved in fisheries, tourism, conservation, industry, enforcement, wood extraction/coal burning, community development and governance. Proposed developments within the PBPA must conduct an

environmental impact assessment if requested and this EIA must involve the C-CAM and the co-management institutions. Co-management councils such as the Portland Bight Fisheries Management Councils (PBFMC) formed in 1995 provide a medium for fishermen to participate in the discussions concerning fisheries management. This group has proposed regulations to NEPA. The regulations are now being prepared for the PBPA and proponents of development for the PBPA must be aware of the requirements of these regulations.

This therefore has implications for the proposed Clarendon Eco-Industrial Zone.

The UDC has also submitted a management plan to the NRCA for management of the Hellshire Hills and Goat Island.

9.1.1.4.1 Ecosystem

The PBPA has a variety of ecosystems including:

- Dry limestone forests
- Mangrove Wetlands
- Coral Reefs
- Sea grass Beds
- Caves
- Marshes
- Rivers

9.1.1.4.2 Geology

The Portland Bight Protected Area has a combination of white limestone, (the Newport Formation), coralline material and sand and alluvium. The Hellshire Hills, Brazillito Mountains and Portland Ridge consist of the Newport Formation. The alluvial areas consist mainly of older alluvium deposits of the Liguanea Formation. The offshore cays consist of coralline material and sand. Along the coast from Hellshire to Portland Ridge are mangrove and salina, which are marshy areas with calcareous sand and silt with salt crusts and rotting mangrove roots (and occurring in low lying bays around the coastline).

9.2 Archaeological and Cultural Resources

Archaeological and cultural resources include:

- Bushy Park Aqueduct, a declared monument
- Bernard Lodge Lime Kiln
- Little Goat Island – remains of world war site
- Deep Well dug during slave era at McGilchrist Pen
- Taino Sites
- Spanish Town

9.3 Open Space

The inextricable link between nature as an amenity and nature as a human need is well known. **People need nature.** Environmental quality and quality of life equals economic success. Top quality workers demand a top quality living environment. That means affordable housing, good infrastructure, and plenty of open space that provide opportunities for recreation and culture. Lifestyle matters to talented people who have a choice of locations. This is no doubt a contributing factor in the overseas migration of Jamaican professionals, as they seek to access top quality living environments. It also affects the country's ability to attract and retain foreign investment and the highly qualified foreign labour that often accompanies such investment. The Rand McNally *'Places Rated Almanac'* is considered the primer for finding the best places to live in North America. It is interesting to note the criteria used for ranking:

- The most affordable places to live
- The fastest-growing job markets
- The safest neighbourhoods
- The best public schools
- The best health care
- The richest cultural life
- The best places to enjoy the outdoors
- The most convenient transportation
- The sunniest climates

Positive places do more than create a positive sense of being. Positive places engender positive emotions and behaviour. People want to see those landscapes which give them positive emotions included in where they live, work and play.

Perhaps the dominant expressed rationale for using open space is the need for a place of contemplation and solitude. People are drawn to parks and gardens, natural landscapes to sit passively or to engage more actively in exploratory behaviour.

Our values for open space may be elusive. It may be a desire for solitude or intimacy, challenge or repair, transcendence or escape.

9.3.1 The Benefits of Open Space

Research on the physiological role of open space centers on the manner in which direct or vicarious experience with the vegetated landscape reduces stress, arousal, and anxiety.

If reduced stress results from passive experiences of the natural environment, we can only assume that the effects of active exploration would be greater.

Landscapes should encourage (1) a sense of calm or balance; (2) a sense of escape that allows one to be distracted from one's problems; (3) a sense of perspective or self-

awareness that permits one to see their own problems as less threatening or debilitating; (4) the opportunity to work the problems through; and (5) an opportunity for reflection.

The idea that calmness or balance is crucial to a restorative experience is an echo of the oft-stated desire for solitude or peace, but it has been suggested that there are significant gender differences. Studies show that female adolescents and adult women are more likely to seek such places as compared with male adolescents and adult males. The places identified as significant by women were those that were private, but located in a public setting, with a view, water, and vegetation. This therefore suggests a need for places which combine an enclosed small-scale place and an open large-scale space to support the complementary feelings of security and freedom.

For males landscape and scenic values are secondary to the desire for a particular type of social interaction centered on family or other forms of recreation.

This therefore raises crucial questions for planners, politicians and preservationists who allocate funds and legislate open space, and whose views of landscape may differ radically from those of the users. Are landscapes— whether developed or preserved-- to be planned on the basis of ecology, economics, and use patterns alone, or do we also need to account for their meaning in psycho-cognitive, behavioral and symbolic terms, to current *and* projected users?

9.3.2 Defining Open Space

The types of open spaces range from extensive natural areas that host relatively few people per acre to the green belts that surround towns or a river walk through the heart of a town.

There are six (6) basic types of open space. These include:

- private
- semi-private
- semi-public
- neighbourhood
- community, and
- regional open spaces.

Some open space types are clearly definable, while others exhibit characteristics which overlap the various categories. This plan will focus on neighbourhood, community and regional open spaces that are public open spaces that are required to enhance the positive sense of well being and to provide a range of recreational opportunities and civic parks not able to be owned or maintained by most individuals.

Neighbourhood Open Spaces include small parks, boulevard medians, and garden paths which visually link the private spaces with the neighbourhood parks and the larger community open spaces. It includes all the open spaces which link to all other types.

Neighbourhood parks are typically small (less than one acre) and must be located within a maximum of five minute walk from any resident. Size and facilities of these neighbourhood parks are dependent on the number of units and are designed to respond to the changing demographics of neighbourhoods.

Community Open Spaces include larger neighbourhood parks, public greens, parkways along larger streets (most fronted by houses), medians on larger boulevards, bicycles paths, greenways, jogging paths, stream corridors, cemeteries, and field sport recreational facilities. Community open spaces are within a five to fifteen minute walk or a quick bicycle ride from any resident's home. Some of these types of open spaces will be located on the edges neighbourhoods. These are sized to match the population within the service area and are flexible to accommodating a range of demographics.

Regional Open Spaces include municipal, national parks, protected areas, and forest reserves. Stream corridors, seashores, mountain ranges, bays, and large natural holdings are examples of public regional open space. Most agricultural lands and many woodlands are considered regional, but they are privately held. This open space type should be located on the edges of larger towns and cities and be accessible by private vehicles, bicycles, and public transportation, and be accessible to those who live and work on their edges.

Although it is important to look at the region's environmental resources as integrated systems, it is also necessary to define the individual resources that require protection. These include:

- Water quality (including public drinking water supplies, rivers, streams, and wetlands)
- Air quality
- Ecological systems/ habitat
- Natural corridors
- Scenic quality
- Agriculture and forestry

9.3.3 Threats to Open Space

It is very easy to shy away from requiring a range of open spaces for economic reasons. Some will maintain that public open spaces are expensive to maintain and people may not use them enough to justify costs. Because of the lack of an appropriate range of open spaces available and accessible to most residents in the appropriate locations, people have become conditioned to existing without and therefore it is not seen as a priority or a sufficient line item in the budget. The irony is that pressure is always put on money for road improvements and maintenance.

Many older urban residential areas, and non-residential areas alike, have inadequately maintained or, worse, have removed critical open space features, such as street trees and parkways, for wider roads. Street trees have grown old and have not been adequately

maintained. New trees have not been planted. Sidewalks have deteriorated. Parks are unkempt.

Lacking a complete network of open spaces certainly limits the opportunities for the individual to interact with them. The less exposure to positive open spaces, the more neutral or negative will be the individual's response and corresponding sense of well being. Places perceived as negative tend to generate negative behaviour.

Subdivisions are a major threat to open space (see Section...), and most commercial standards are even more appalling. Seldom located within walking distance of housing, usually set too far back from the rights-of-way, and fronted by parking lots, they fail to relate to the street in a positive manner. Often pedestrian linkages and access are neglected. Most landscaping is quite pitiful. How many parking lots have you seen with little or no landscaping, or that which exists is insignificant? Again, you can "put the park back into the *parking* lot by requiring one tree for every four parking spaces.

People will take a car if the facility is beyond a reasonable walking distance of 1,500 feet. They have no choice but to drive if there are no sidewalks or paths to walk on or where the open spaces are not accessible by foot.

Planners and developers will have to demonstrate a better understanding of the relationship between the walking pedestrian and one of the primary features of the open space network.

9.3.4 Strategies for the Development and Maintenance of Open Space

The principal strategy to be used for the development and management of open space will be to rely on a programme to develop and maintain a hierarchy of aesthetically pleasing but durable and cost efficient landscapes. In this regard, the emphasis will be on the creation of edible landscapes.

9.3.4.1 Edible Landscaping

Edible landscaping is the use of food-producing plants in the constructed landscape, principally the residential landscape. Edible landscapes combine fruit trees, bushes, vegetables, herbs, edible flowers and ornamental plants into aesthetically pleasing designs. In Jamaica this could include Banana, Cherry trees, June Plums, Coconut, Pineapple, Grapefruit, Pomegranate.

Edible landscaping is as old as gardening itself and has undergone a recent revival. Ancient Persian gardens combined both edible and ornamental plants. Medieval monastic gardens included fruits, vegetables, flowers and medicinal herbs. Plans for 19th century English suburban yards, which modeled themselves after country estates, often included edible fruits and berries.

The urban parks and other community open spaces will be designed around Permaculture forest gardening principles. All vegetation will be both edible and perennial. With a projected development period of between 3-5 years, the parks, verges and other open space will become a low maintenance-high yield system, completely open to the public to enjoy.

UWI Libraries

10.0 PUBLIC SERVICE AND UTILITIES

10.1 Waste Water Collection and Treatment

The National Water Commission (NWC) helps to ensure Jamaica's environmental health by collecting, treating and disposing of wastewater from the following sources:

- Domestic Sources: This includes Black water, which is water that contains faecal matter (from toilets and latrines); and Grey water, which is used water from *washbasins and kitchen and bathroom sinks*.
- Industrial Sources: Used water from both heavy and light commercial entities.
- Storm water: Runoff water from rains. In Jamaica storm water should not be allowed to flow into the wastewater sewers, although it is known to happen.
- Infiltration:

The National Water Commission is the primary provider of wastewater or sewage services in Jamaica and collects wastewater from over 600,000 persons across the island.

There are many different ways of treating sewage but the most appropriate method for a particular area needs to be determined after careful consideration. The National Water Commission utilizes waste stabilization ponds wherever possible. This is so because waste stabilization ponds use natural processes and therefore have lower maintenance and operating costs. These ponds are also less susceptible to breakdowns and are very effective in achieving effluent quality standards prior to the point of discharge into the environment.

Table 10-1 provides information on some of the sewage treatment facilities operated by the NWC within the project area.

Table 10-1: Sewage Treatment Facilities Operated by the NWC in the Project Area

Treatment Plant	Parish	Type of Facility	Capacity (mgd)
Bushy Park Housing	Clarendon	Aerated Lagoon	0.15
Hayes No. 1 Housing	Clarendon	Waste Stabilization Ponds	0.07
Hayes No. 2 Housing	Clarendon	Waste Stabilization Ponds	0.2
Paisely Pen Housing	Clarendon	Oxidation Ditch	0.05
Crofts Hill	Clarendon	Oxidation Ditch	0.05
Lionel Town Housing	Clarendon	Aerated Lagoon	0.04
Mineral Heights Housing	Clarendon	Contact Stabilization	0.35
Blackwood Gardens	St. Catherine	Waste Stabilization Ponds	0.15
Bridgeport	St. Catherine	Contact Stabilization	2
Caymanas Gardens	St. Catherine	Waste Stabilization Ponds	0.27
Charlemont	St. Catherine	Oxidation Ditch	0.16
De la Vega City Housing	St. Catherine	Waste Stabilization Ponds	
Ensom City Housing	St. Catherine	Contact Stabilization	0.5
Hamilton Gardens	St. Catherine	Oxidation Ditch	0.2
Horizon Park	St. Catherine	Oxidation Ditch	1.25
Independence City	St. Catherine	Contact Stabilization	3.5
Knollis Housing	St. Catherine	Slow Sand Filter	0.03
Lime Tree Grove	St. Catherine	Aerated Lagoon	0.1
New Works	St. Catherine	Slow Sand Filter	0.02
Nightingale Grove	St. Catherine	Oxidation Ditch	0.1
Red Ground Housing	St. Catherine	Oxidation Ditch	0.05
Tawes Pen Housing	St. Catherine	Contact Stabilization	0.06
Twickenham Park	St. Catherine	Extended Aeration	0.25

Source: NWC

10.2 Utility Services

10.2.1 Gas – Liquefied Petroleum Gas

Liquefied Petroleum Gas (LPG) is a hugely versatile gas. There are two types of LPG gas - propane and butane.

Propane has a lower boiling point than butane so it will continue to convert from a liquid to a gas even in very cold conditions. When stored as a liquid in a tank, it exerts a greater pressure than Butane at the same temperature. So Propane, as an LPG gas, is most suitable for exterior storage and use. Its ability to operate in low temperatures makes it the most suitable LPG gas fuel for many applications.

For the consumer, it's widely used for domestic central heating and cooking, especially where mains gas is not around. It is a popular fuel for rural locations where a self contained LPG gas supply is essential. In industry, propane is used for fuelling roadside emergency lighting, heating bitumen for road building and roofing, firing furnaces and welding equipment. The relatively clean exhaust from LPG gas makes it highly suitable for powering fork-lift trucks in warehouses. Farmers too find propane essential for agricultural uses such as heating poultry and livestock sheds, crop drying and weed burning. And of course LPG also provides fuel for all kinds of transport.

Clean burning, LPG has a vast array of uses both in and outside of homes. Some of the common uses of LPG inside homes are:

- Air-conditioning
- Hot-water supply
- Refrigeration
- Cooking
- Lighting.

Industrial applications are also similar to those of natural gas, and include production and manufacture of:

- Gas and chemicals
- Ferrous and non-ferrous metals
- Engineering equipment and ships
- Heavy clay and ceramics
- Glass
- Food and drink Electrical goods
- Vehicles
- Textiles, leather and clothing
- Paper and print.

LPG is also used on building and civil engineering sites, in agriculture, for heating and cooking in caravans and boats and as a fuel for internal combustion engines including cars, vans, buses, generators/pumps

Currently there is no existing grid to facilitate the generating and distribution of LPG in the project area.

10.2.2 Electric Power

The Jamaica Public Service Company Limited (JPSCo.) is the monopoly provider of electricity services in Jamaica.

One of the JPSCo's four main power plant is located in the project area, this is the Old Harbour Power Station. The Old Harbour Power Station produces over 220 MW of electricity, and is the largest plant in JPS' generating system.

10.2.3 Telecommunications

Countries and sectors equipped with the requisite telecommunications systems have been rapidly moving into post-industrial, information-based economy growth. For developing countries such as Jamaica, a modern telecommunications infrastructure is not only essential for domestic economy growth, but is critical for participation in increasingly competitive world markets and for attracting new investments to the country.

In order to stay abreast with the rest of the world Jamaica telecommunications policy seek to utilize telecommunications industry development as an engine of growth that will contribute to the achievement of sustained revitalization the Jamaican economy. The Government's main policy goals are:

- Extension of the wired and wireless networks to encompass the entire geographical and demographic spread of the country.
- Ensuring infrastructure build-out and service provision on the basis of profitability of the operating companies, but also bearing in mind the need for universal access to disadvantaged sectors, including services to remote (and uneconomic) areas, the disabled and the elderly;
- Availability of high quality services across a range of telecommunications providers;
- Access by the business and public sectors to the best available innovations in telecommunications facilities and services at costs that are internationally competitive, so as to stimulate economic and social development through growth of the industry;
- Ensuring appropriate domestic and international connectivity arrangements that are seamless, efficient and cost competitive; and fostering a legal and regulatory environment that is responsive, accountable and socially sensitive to the needs of the public, to investors and to emerging technologies. Liberalization of the local

telecommunications market is one means to achieve these goals. Jamaica will introduce competition in the telecommunications market in order to:

- Foster business facilitation and encourage new entrants and value-added services;
- Promote greater use of information and communication technologies (ICT) in the Public Service, non-government and other organizations and private sector businesses;
- Facilitate greater efficiency in industry and commerce; and
- Provide wider consumer choice.

Improved telecommunications will mean improved efficiencies in other productive sectors. Few domestic businesses and no international activities could operate competitively without modern telecommunications. The primary benefits include reduced transport costs, reduced transaction costs, and improved marketing information

10.3 School Services

Education provides the mechanism whereby future generations will acquire the knowledge, skills and values to meet the challenges of the future, apply the concepts and values of sustainable development and become contributing and responsible members of society. Improving the overall education level of the population and providing opportunities for skills upgrading and retraining are ways in which the educational system can support the continued prosperity of the project area and instill sustainable values and lifestyles.

For the academic year 2001/2002 the government school system had a total of 70 schools in the project area covering pre-primary, primary and secondary education levels.

10.3.1 Early Childhood Education

Early childhood education is concerned with the development of children up to age five. The institutions involved are infant schools and infant departments in primary, all-age schools and Junior High Schools catering to children in the age group 4 to 5 years, as well as day care centers, Nurseries, kindergarten and basic schools catering for those in the age group 3 to 5 years.

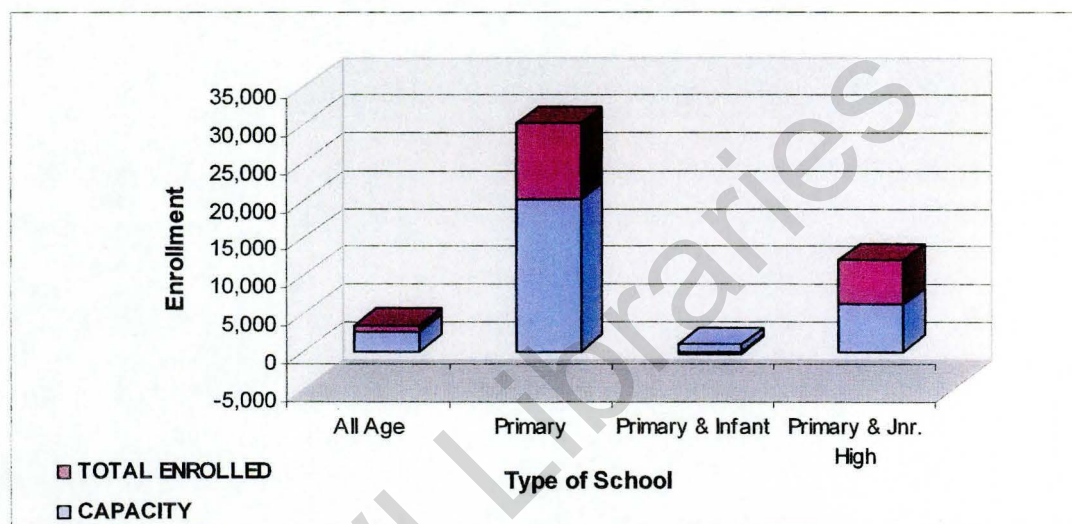
10.3.2 Primary Education

Primary education is offered to children age 6 to 11 years in grades one to six of primary, all-age, primary and junior high and preparatory schools. There are 53 primary level schools in the project area.

The Ministry of Education has set a 4.83 kilometers (3 miles) radius as the catchment area for primary level schools. This limit reflects the furthest distance a child is expected

to travel for primary level education. Spatially there is a sufficient number of primary level schools in the project area. However, there is a problem with overcrowding in a large number of these schools. Enrollment figures for the academic year 2000/2001 shows that of the 53 primary levels schools 33 have enrollment numbers in excess of their capacity, indicating instances of overcrowding. This implies that overcrowding is a matter of insufficient physical infrastructure in these schools, rather than insufficient number of schools. Figure 10-1 below shows the levels of overcrowding for the various primary level schools in the project area.

Figure 10-1: TOTAL CAPACITY AND ENROLLMENT BY TYPE OF SCHOOL 2000-2001



10.3.3 Secondary Education

The secondary education programme of the Ministry of Education is concerned with educating students from grades seven to 13 in high and comprehensive schools.

There are two cycles offered at this level. The first cycle is for three years and is provided in grades 7 to 9 for students 12 to 14 years old. The second cycle is for two years is provided in grades 10 to 11 for students 15 to 16 years old. Some institutions offer a further two years at grades 12 and 13.

The intended catchment area for secondary schools is a 8.01 kilometers (5 mile) radius of any secondary level school. A review of the spatial distribution of secondary level schools in the project area shows that spatially there is a sufficient number of secondary level schools in the project area. Similar to the primary level schools, secondary level schools in the project area are also experiencing overcrowding. Eleven of the seventeen secondary schools have enrollment number in excess of their capacity. This also implies that overcrowding is as a result of inadequate physical space at these schools.

Despite the current strategies being employed by the Ministry of Education to introduce shifts schooling some schools there still exist the problem of overcrowding.

Consequently expansion of existing facilities or the constructing of new facilities should be looked at to alleviate this problem for both the primary and secondary level schools.

10.3.4 Post Secondary

Post secondary education includes formal academic and vocational/skills training past the secondary level. This includes *tertiary level* education which is offered to persons who have successfully completed secondary education and is desirous of pursuing further studies. Vocational/technical skills training is offered to persons seeking to learn a technical skill outside of the technical secondary level schooling, such facilities include HEART NTA training facilities.

10.3.5 Land for School Facilities

Under the Ministry of Education PESP programme a Primary school will be constructed in Hillshire. In addition lands adjoining Cumberland High School in Portmore have been earmarked for a primary school as well as lands in Longville for a secondary school.

The Portmore Community College currently housed at the Portmore HEART Academy is in the process of acquiring lands for a new location, one that would be better able to accommodate their current enrollment numbers and their future plans of expansion.

10.4 Libraries and Cultural Facilities

The Jamaica Library Service, on behalf of the Ministry of Education and Culture administers the School Library Service. The Jamaica Library Service aims to transmit knowledge and understanding by providing and promoting access to recorded knowledge through public school libraries.

In addition the enhancement of and access to cultural opportunities are necessary to maintain and improve the quality of life in the Region.

10.4.1 Library Facilities

Library facilities in the project area consist of both the St. Catherine and the Clarendon parish libraries, and the Portmore municipality branch library located in Greater Portmore.

10.4.2 Community and Cultural Facilities

Under the Ministry of Local Government, Community Development and Sport there is the Community Development Services which seeks to identify Government's policy for assisting in the development of local communities, by effecting structures and systems,

which will activate meaningful self-help programmes. The programme is carried out by the Social Development Commission (SDC), whose mission is to develop the capabilities of citizens within communities. The SDC assists communities to identify and prioritise their social, economic, cultural and recreational needs and taking collective action through self-help and in partnership with both Government and non-governmental organizations, to satisfy those needs.

10.5 Cemeteries

The laws regulating the management of public cemeteries with Jamaica requires the local authorities to be specifically responsible for the physical infrastructure in terms of:

- Enclosing the cemeteries with suitable fencing and ensure proper sewage and drainage are available to keep the cemeteries dry.
- Ensuring proper maintenance of the cemeteries, buildings and fences.

11.0 LAND USE AND ZONING

See Map 7 with proposed zones. This chapter to be completed.

UWI Libraries

12.0 POLICY, INSTITUTIONAL AND REGULATORY FRAMEWORK

12.1 Actions Emanating from the Plan

The Plan proposes to perform at a target of 80% of applications being determined in 8 weeks (with the exception of major projects).

This will be done by:

1. Delegation of minor and uncontentious decisions
2. Wider use of IT facilities
3. Upgrading of outdated administrative systems
4. Close monitoring of progress on applications
5. Encouraging pre-application; and
6. Encouraging pre-application negotiation on proposals.

These measures will improve both the speed and quality of decisions.

12.1.1 Delegation

The Parish Councils and Municipality will use powers of delegation to officers for decisions on householder applications and so processed them more quickly. All minor decisions will be taken at officer level and only referred to committee if there are significant objections. Increased delegation will assist officers in building good relations with the public.

12.1.1.1 Action

Preparation of a guidance document entitled, 'Development Control: Delegation Agreements', based on best practice in this area. This will encouraged the maximum use of delegation as part of an improved customer service.

12.1.2 Improved IT

There is tremendous cost and time benefits to be derived from good quality IT systems. This includes improvements through IT monitoring of progress on consultation responses. Well thought out, standardized forms can help to reduce delays in processing applications caused by applicants providing poor quality and incomplete information. Consideration can also be given to the greater use of the Internet to improve information dissemination and decision-making.

12.1.2.1 Action

Development of a good practice guide entitled, 'The One Stop Shop Approach to Development Consents'. This will include the development of a computer system for providing initial advice on the different consents likely to be needed to undertake particular types of development.

12.1.3 Negotiation and Public Involvement

The Parish Councils and Municipality will engage in pre-application negotiations. This may take time but will lead to good quality development and good customer relations. Teams will be established to work on particular sites or types of development. Professional Associations such as architects, planners, environmentalists and engineers will be directly involved.

12.1.4 Consultation

The late submission of comments by statutory consultees causes delays in processing applications. This is to be further streamlined.

12.1.5 Development Plans

The principle of a "rolling" plan, involving a continuous process of monitoring and review is to be pursued by the Councils and Municipality. Once plans are in place, partial alterations will be undertaken related to particular areas or types of development.

12.1.6 Fees for Planning Applications

Fees for planning applications will be adjusted to match the resources spent by authorities on handling particular types of proposals as outlined above.

12.1.7 Training for Councillors

Councillors need to be better informed about the planning system. This lack of knowledge hampers decision making.

12.1.7.1 Action

A syllabus on planning training for councillors is to be developed. This will identify the key topics on which training should be given and emphasize the importance of councillors being given a continuing programme of planning training to keep their knowledge up to date.

12.1.8 Enforcement

Enforcement legislation is to be strengthened. Enforcement action will be simplified and less resource intensive.

12.2 The Present Planning System in Jamaica

The planning legislation of Jamaica provides for a planning system with national management and control of planning. Adopted in 1957, it mandates the preparation and adoption of a national physical development plan and regulation through a system of development orders throughout the country to carry out the intent of the national physical development plan.

In an attempt to rationalize the planning process the government has established the National Environment and Planning Agency (NEPA). This new agency represents an amalgamation of the Natural Resources Conservation Authority which has a statutory mandate for the conservation, protection and proper management of the natural resources of Jamaica; the Town and Country Planning Authority which has the statutory mandate to ensure the orderly planning of Jamaica and the Land Development and Utilization Commission with a statutory mandate to ensure that prime agricultural lands are kept in agricultural production in the interests food security and self sustainability.

The Ministry of Land and Environment (MLE) is leading the development of a new Town and Country Planning Act for the country. In the meantime, the current Act provides the legislative framework for planning in the country.

The Act establishes the Town and Country Planning Authority with responsibility for physical planning in Jamaica. A national agency, the Authority is appointed by and reports to the minister responsible for physical planning. The planning process is also informed by an advisory planning committee enabled by the Act to advise the Minister on planning matters under the provisions of the Act.

The Act provides for the preparation of a national physical plan. The most recent plan – National Physical Plan, 1978-1998, includes recommendations and strategies for an overall national development strategy and background studies on:

- Physical planning
- Population characteristics
- Settlement structure
- Housing
- Community facilities
- Conservation
- Agriculture, forestry and fisheries
- Mineral resources
- Tourism

- Manufacturing
- Public utilities (water, electricity, telephone system)
- Transportation

The plan provides a detailed review of development conditions and infrastructure required by Jamaica's economy activities, communications and population nation-wide.

At the local level, planning is not undertaken except by NEPA when preparing development orders, during which time parish councils are consulted.

12.3 Development Control Mechanisms – Development Orders

The Town and Country Planning Act provides for the creation of “development orders” to regulate the development of land. A development order can address all matters related to land use in a community or region including:

1. The preservation of land for roads, the construction of roads and the closing or diversion of existing roads;
2. In relation to buildings and structures, regulating and controlling their design, the purpose for which they may be used and the class or classes of structure which may be built on any land;
3. In relation to community planning, the control of zoning for specific uses, regulating the layout of housing areas and the siting of community facilities such as shops, schools, meeting halls and play centres;
4. The provision of amenities by preserving land as open spaces, for burial grounds, communal parks, bird sanctuaries and the protection of marine life, the preservation of buildings, sites and object of archaeological or historical interest, the preservation of forests, woods and trees, shrubs, plants and flowers;
5. Prohibiting or regulating the deposit of waste materials, the disposal of sewage and the pollution of rivers, lakes, ponds and the seashore;
6. Prescribing provisions to facilitate the establishment, extension or improvement of works by statutory undertakers in relation to power, lighting, water supply, sewage, drainage, sewage disposal, refuse disposal or other public service;
7. Prescribing provisions to facilitate the establishment, extension or improvement of systems of transport;
8. Regulating the allocation of sites in relation to transport and making provisions for the improvement of telephonic and other means of communication and the allocation of sites for use in relation to such communication;
9. Providing for and regulating the making of arrangements for the purpose of the development order by the Authority with a local authority, or by owners and other persons.

Where available, the development orders provide the basis for review of development applications. Development orders have not been prepared for all areas of the country. In the case of St. Catherine and Clarendon there are confirmed Coastal development orders for these two parishes.

Until recently development orders have been structured as technical documents without a policy based guidance framework. Moreover, most are out of date (as is the case of St. Catherine and Clarendon). There are however plans to prepare new development orders that will cover each parish.

12.4 Preparation of Regional and Urban Plans

Development Orders are to be completed for each parish, and this Plan will facilitate that process.

In undertaking the study and preparing the plans, the local sustainable development planning (LSDP) approach has been adopted. The principles of LSDP are:

1. Transparency and accountability
2. Long-term planning
3. Local and national partnerships
4. Participation
5. Environmental stewardship
6. Sustainable livelihoods
7. Social equity
8. Concern for the future
9. Subsidiarity
10. Inter-disciplinary decision making

In order to facilitate the process parish development committees (PDC) have been created at the local level. These committees were formed to:

1. Develop the common vision for growth and development in the parish.
2. Assist the parish council in monitoring government agency delivery of services for the parish.
3. Serve as a forum for community input into capital and operating spending by the parish.
4. Foster participation by all sectors representing community interests.

12.5 Guidelines to Developers

Guidance to both public and private sectors will be provided through the regional and urban plans. The Government will channel infrastructure development into selected areas as a means of encouraging private sector development in them. Additionally, the manual for Development (1982) contains guidelines related to standards which will be useful for the private sector.

12.6 Other Principal Laws Relating to Physical Planning

1. The Local Improvements Act

This Act states that anyone wishing to layout land or building or other purposes for lease or sale must provide a plan which shall be submitted to the Local Authority for approval. The Government Town Planner and the Chief Technical Director of the Ministry of Works must be consulted in regards to all subdivision matters. However, the Government Town Planner has no say in the final decision. Some areas which come under the Local Improvements Act are not covered by the Town and Country Planning Law unless they fall in a “called-in” area.

Through the Local Improvements Act, therefore, physical development of land can be controlled.

2. The Parish Councils Building Act

Provides for parish councils to make bylaws for building erection, alternation and repair (and thus enabling councils to control building development where there are no development orders in force).

3. The Urban Development Corporation Act

Under the Urban Development Corporation (UDC) Act, UDC seeks to acquire, develop and dispose of lands in designated areas. Before development can take place, however, a development plan which may be commented on by the Local Authorities must be submitted to the Ministries responsible. The UDC has the advantage of being able to bypass the ‘red tape’ with which other developers must contend.

The fact that the Local Authority does not of necessity comment on the development plans prepared by the UDC presents a physical planning disadvantage in that UDC’s plans might be in contravention with the Local Improvements Act.

4. The Housing Act

Under the Housing Act the Minister of Housing can acquire, hold and dispose of land and other property. He can, after considering the housing conditions of any area define this area on a plan and declare it a housing area, slum clearance area or an improvement area. Although any objections or representations from the Local Authority into whose territory any of the abovementioned areas fall are heard, they do not necessarily control the Minister’s decision.

5. The NRCA Act

The Act provides for environmental permitting and environmental impact assessments.

6. The Beach Control Act

The Beach Control Act comprises:

- (i) The Beach Control (Protected Area) Order of 1966 which prohibits the pursuit of such activities as fishing, disposal of refuse, water skiing, dredging, destruction or removal of marine life artifacts from the floor of the sea in protected areas.
- (ii) The Beach Control (Crown License) Regulations, 1956, which state that before any equipment, apparatus or structure may be established on the foreshore a license must be obtained.
- (iii) The Beach Control (Commercial Recreational Beach) Regulations, 1960 which state the manner in which a beach should be used to ensure its care and protection.
- (iv) The Beach Control Authority (Licensing) Regulations of 1956, which require that any person desirous of identifying and establishing a beach must first obtain a license to do so.
- (v) The Beach Control (Safety Measures) Regulations of 1957 which declare the safety measures which should be taken and observed by license of each beach.

7. The Tree Preservation Order

The Tree Preservation Order which falls under the Town and Country Planning Act provides for:-

- (i) The prohibition of tree destruction without the permission of the Local Authority;
- (ii) The replanting of trees in a manner prescribed under the Order.

8. The Forestry Law

The Forest Act, 1996, replaced the Forest Act 1937 with functions that include:

- (ii) giving the Government permission to acquire and declare lands other than Crown Lands Protective Areas;
- (iii) the protection of land (and the plant and animal life found thereon) under forest reserves from illegal destruction;
- (iv) establishing and maintaining recreational facilities in forest conservation areas;
- (v) preparing and implementing a national forest management and conservation plan.

9. The Watershed Protection Act

Under the Watershed Protection Act, the Watershed Protection Commission has the power to prohibit, regulate or restrict the planting of crops in watershed areas. The law however, allows for the exploitation of the land by the Agricultural sector, providing that the establishment of guidelines are adhered to.

10. The Wild Life Protection Act

Under the Wild Life Protection Act it is illegal for the birds, fish or animals within any game sanctuary, or any protected animal or bird to be hunted and killed, or for the nest and/or breeding ground of such birds, fish or animals to be disturbed and/or destroyed.

11. The Mining Act

The Mining Act prohibits the development of a mining industry on land reserved for public use or for a burial ground or within a hundred yards radius of such areas. The law also prohibits the establishment of mining on public/private and corporate lands without the consent of the Commissioner of Mines. It further provides for restoration of mined-out lands to a state where it is at least productive as it was prior to mining.

The implementation of the law is dependent on the penchant of the Commissioner and as such can have either a positive or a negative effect.

12. The Quarries Act

The Quarries Act states that every person who operates a quarry should first obtain approval from the Commissioner of Mines. This approval is renewable after a five-year period. Where an existing quarry presents a threat to the environment or to persons under the Act, a notice can be served on the operator of such a quarry for its closure.

The Town and Country Planning Department (now part of NEPA) is one of the agencies responsible for the processing of applications for quarrying.

13. The Idle Land Act

This Act was promulgated to allow the inspection of properties which are 100 acres (40.5ha) and over in order to take action against those having fifty acres (20.3ha) or more idle. When an idle land notice is served on a property, the owner is given three months to prepare and submit to the Land Development and Utilization Commission (LDUC) (now part of NEPA) plans for development of the Idle land. If action is not taken within a specified period after this plan is approved, the owner is served an idle Land order which permits the compulsory purchase of this land by Government for public use.

12.7 The Application Review Process

The NEPA Planning agency has the responsibility to review development applications and subdivisions against the provisions of development orders. In those areas where development orders are not available, NEPA uses a Manual for Development (1982), providing planning standards to assist in the review. The use of the development manual constitutes “material considerations” in reviewing development applications. It sets out general requirements and policies related to development, procedures for sub-divisions and development permission, and development standards.

Applications for development are received at the parish councils and referred to NEPA for review and recommendations. A group of applications (defined as call-ins) are reviewed and approved by the Town and Country Planning Authority under the provisions of the Act.

The Jamaican planning system is estimated to handle about 4,000 applications per year, of which about 2,000 are subdivisions. In cases where a change of use is required or there is a “call-in” by the Town and country Planning Authority, the Town and Country Planning Authority determines the applications based on the recommendations from NEPA. It is estimated that the Town and Country Planning Authority deals with about 30 such applications per month

The local authority serves as the local planning and building authority. As such, it receives and processes development applications and grants those applications that are not sent to Town and Country Planning for approval. However, NEPA provides recommendations to the parish councils for all such applications. For applications requiring an environmental permit, the parish council receives the application but refers it directly to NEPA for review (since an application cannot proceed without an environmental permit if the nature of the application requires an environmental permit)

In the case of building and improvements, applications are processed and determined at the parish council, without reference to referrals to NEPA.

Studies have shown that applications have been outstanding for one to two years. The majority of applications outstanding are residential (about 62%) followed by subdivision applications (about 20%).