FINAL DRAFT DEVELOPMENT PLAN: A STRATEGIC PLANNING FRAMEWORK FOR METROPOLITAN PORT OF SPAIN

VOLUME 2 IMPLEMENTATION PLAN

THE PORT OF SPAIN CITY CORPORATION

List of Maps, Figures and Projects Drawings

Chapter 1 Purpose of the Plan

1.1 Report Structure

Volume 2: Implementation Plan for the City of Port of Spain Corporation comprises six chapters. Following Chapter 1: Introduction, the vision and long term goals driving the planning process are laid out in Chapter 2. Chapter 3: Municipal Profile offers a detailed overview of key characteristics of the municipal corporation.

The two chapters that follow - Chapter 4: Land Use Strategies and Chapter 5: Projects - provide greater details associated with the implementation of the development concept. The final chapter, Chapter 6: Plan Implementation, discusses essential administrative changes required in support of the implementation of the development concept.

Chapter 2 Vision and Goals: The Port Of Spain City Corporation

2.1 A Community Vision

A Visioning Exercise for the Port of Spain City Corporation was held at City Hall on May 26th 2009. The community was represented by 15 organizations active within the city and included community based organizations, youth groups, organized labour, a village council and staff of the Corporation itself. Political representation included the Mayor of Port of Spain, five Members of Council, and three Aldermen.

While no single vision emerged from the exercise, there were several common elements. Some of the more frequently cited aspirations for the city are:

- A safe, modern city adopting the latest technology in its development
- An aesthetically pleasing eco-friendly environment in which technologically savvy residents and workers develop and maintain the natural and physical environment
- The efficient delivery of goods and services to residents and visitors in a well maintained and an aesthetically pleasing environment
- The development of an orderly and congestion-free city in which residential, recreational, commercial and industrial zones are organized and special use is made of the culture and the natural environment in socializing residents and transients and attention is paid to the vulnerable.

These areas reflect the range of ideas submitted and upon which there was general acceptance or agreement by a majority of stakeholders. It is important to note that many of the issues raised during this consultation process were not related directly to land use, but were focussed on social concerns. The Strategic Regional Planning Framework deals specifically with land-use issues. However, social development issues are considered in the context of land- use planning as they are integral to the reality of the urban environment.

The priority projects and plan implementation outlined in this document reflect these issues to the greatest extent possible.

The issues identified during the City consultation are elaborated below:

Youth Development

This was seen as critical both to the reduction in crime and in preparing young people to deal successfully with the future. Consultation participants stressed the importance of education and involvement of young people in extra-curricular activities such as training in a range of sporting disciplines. Stakeholders agreed that there must be space and institutions for young people to develop and identify the resuscitation of the old institutions like the boy scouts and girl guides as well as new institutions such as computer labs and walk-in after school centers located in the children's neighbourhoods. Additional proposals included training in sporting disciplines and cultural activities.

Social Programs

Stakeholders noted the increase in homelessness and agreed that programs needed to be put in place to rehabilitate street dwellers, encourage a change in lifestyle and improve the conditions of the less fortunate and re-integrate them into mainstream society.

Safety and Security

There was virtually unanimous agreement and concern on the rising levels of crime and the need to control gang violence and crime in the city. Stakeholders felt that a range of programs needed to be put in place to reduce crime and among them were compulsory national service, remedial and skills training programs for dropouts and those wishing to obtain a skill and environmental protection programs in schools and communities throughout Port of Spain. Some participants identified the need to improve the community policing program, establish additional police posts and install and maintain security cameras in some of the high crime communities.

Beautification of the City

There was agreement that the city needed to be beautified and that all stakeholders should be involved. Beautification was seen both as improvement and protection of the natural environment and repair and maintenance of the man-made environment. The utilization of technology featured prominently in the approaches to beautification.

Participants felt that existing squares and parks should be improved and maintained by establishing a policy of green spaces, and that new green spaces could be added in the city. Additionally, if the major water courses such as the Dry River were to be cleaned and maintained they would serve not only as drainage channels but as features of interest in the city. Some participants felt strongly that beautification actions can also be used as youth projects to instil discipline and a sense of responsibility for these spaces by the youth of the area. These projects would include painting of neighbourhood structures, removal of waste, repairs to fences and planting of trees and shrubs.

The approach to treatment of garbage and flooding were also considered and it was generally agreed that in both cases, the application of appropriate technology can be used to resolve these problems. In the case of garbage, the three R's (Reduce, Reuse, Recycle) should be implemented, while for flooding, the use of underground storage systems and retention ponds need to be developed.

Physical Facilities/Infrastructure Improvement

There was general agreement by stakeholders that the physical facilities and infrastructure in the city needs to be improved and updated. Investment in design and implementation of a drainage system was accepted as a means of reducing the frequency of flooding in the city. One participant detailed a solution to the flooding problem which included strategically located water retention systems.

There was agreement on both rehabilitation and redevelopment of different parts of the city. Rehabilitation of roads and sidewalks and expansion of bridges and drains throughout the city are required as the existing infrastructure is in a state of disrepair and/or obsolescence. The re-development of old residential areas and remediation of illegal occupation lands particularly on the hills of Port of Spain are urgent concerns. Additionally, within the communities themselves, there is a large unmet need for recreational facilities including parks, hard courts and green fields. This can be met by the rehabilitation of existing facilities and the development of new facilities.

There was general agreement that a modern City Hall was required to provide an appropriate environment for employees, for the effective delivery of services and for ease of access by the general public. Such a building should be equipped with the latest in communication technology and information should be easily accessible to workers, management and burgesses/visitors.

Manpower Planning

There was agreement that a manpower policy was necessary for the city to obtain the number and type of workers required to run a modern city. Continuous training of staff was seen as one approach to ensure that the organization was equipped with competent staff in all departments. A few stakeholders noted that existing vacancies needed to be filled, particularly in some of the key departments of the Corporation. Finally, the organization needed to recruit new personnel who are technically and administratively competent especially in the area of law enforcement.

Training programs for employees are expected to cover not only their specialist work areas but areas such as industrial relations, customer service and public relations such that employees would develop the right attitude for serving the public as well as dealing with one another within the organization.

It was agreed that the City Corporation must have the autonomy to establish and pursue its program of manpower planning and human resources development without interference from outside.

Transportation (transit-oriented, walkable)

Other elements of the visioning session included the desire for a pedestrian friendly City which is compact and transit-oriented:

- City well served by public transport
- Sheltered/shaded comfortable wait-locations for public transport.
- Shaded sheltered foot- & bike-paths.
- Bicycle paths (especially from east to west)
- Inner city should be closed to heavy traffic. Close-off shopping streets, convert selected streets to bicycled streets.
- No on-street parking

Re-urbanization:

- Many facilities/activities within walking distance ie based on more dense development
- Currently the school population is approximately the same as the residential population. Either move out schools or move in more residents.
- Increase density of activities & residences in nodal areas to facilitate more efficient transport.
- Greatest density of activity is clustered around transportation nodes eg City gate and bus/taxi sub- nodes
- Affordable housing, entertainment, sporting facilities, easy access to inner city.
- Zoning to safeguard requirements of different neighbourhood types, employment, and education.

Clean & Efficient City:

- Modern beautiful city with high technology amenities, public education, better health care, efficient transport. City that takes care of its young and old, a crime-free city with a proper justice system. Important are: proper education, proper maintenance, efficiency, transparency.
- Infrastructure must develop in tandem with the built environment, private & public. Sound infrastructure with eco-friendly development and maintenance -friendly.
- Strong spiritual, social, cultural & political values are to be expressed in infrastructure & public spaces that cater to a safe, resourceful, clean, enterprising City. Schools, infrastructure, environment should all support quality of life and living.
- Environmentally, improve waste-management infrastructure.
- Free the city from both garbage & traffic.
- Garbage to be well accommodated, bins are to be covered. You have to pay people to do these things.
- The Millette plans need to be implemented to come to grips with flooding. Most urgently (and simple) is the need to automate the pumps at Abattoir Street.

Inclusive City: Public Space:

- Great attention to vistas, views and heritage values. Connection to the Gulf.
- Inclusive: City caters to all
- All feel at home or part of the Port of Spain family
- Efficiency creates time for interaction rather than speeding up the pace of life.
- Lots of green and public activity.
- The city should be a cultural and social centre in a positive environment. Extend the waterfront to east and south.
- Resocialize St. James.
- Much public activity, e.g. markets
- Spaces for communal/social activities sprinkled throughout community.

Parks & Recreation Upgrade:

- Restore playing field by the Besson St / St Paul Street back to the youths of the area. The playing field was taken because it was needed by SAUT and a replacement field was to have been provided by the Fernandes compound. That did not come about. SAUT does not seem to use the field and it is now lying idle. Recreation for young people is important.
- Beautiful parks: Recreational play fields near primary schools. Generally spaces for children to play. Columbus Park has been closed. It should be opened again.
- Transform Adam Smith Square into a place children can use. But we need not emphasize only large spaces. We must focus on having children do worthwhile things with their time. That does not always have to happen on playing fields. E.g. computer classes in available small space under somebody's home or in a spare room. Create space for younger generation (both outdoor and indoor).
- Dry River to be restored to a normal river.

Chapter 3 Municipal Profile: Port of Spain City Corporation

3.1 Introduction

The City of Port of Spain (POS), the capital of Trinidad and Tobago, is the administrative, political and commercial centre of the country. Situated between the hills of the Northern Range and the Gulf of Paria, the POS City Corporation has an area of 12.3 km2 (1,345 hectares). This accounts for 0.3% of the land mass of Trinidad, but is home to 4% of the national population, with 49,031 residents in 2000. The city is made up of a substantial Central Business District (CBD) as well as adjacent residential and mixed use districts such as Newtown, Woodbrook, St. Clair, Belmont, St. James and Gonzales.

The city's population has the highest density in the country with 3,996 persons per square kilometre, followed by San Fernando with 2,964 persons per square kilometre. While this density is comparable to some North American cities, it is by no means a high density by world city standards, and – as illustrated by Table 1 - is far lower than the densities evident in the urban core of well-established cities.

Table 1 Population densities in selected major global cities, Port of Spain and San Fernando

City / Urban area	Country	Population	Land area (sq Km)	Density (people per sq Km)
Barcelona (City)	Spain	1,673,075	106.0	15,779
Brooklyn, NYC (Borough)	USA	2,556,598	182.9	13,978
Le Plateau, Montreal (Borough)	Canada	101,054	8.1	12,476
Vancouver (City)	Canada	578,041	114.7	5,335
Miami (City)	USA	424,662	92.0	4,616
Port of Spain (city)	Trinidad	49,031	12.3	3,996
Toronto (city)	Canada	2,503,281	630.0	3,973
San Fernando (City)	Trinidad	55,329	18.7	2,964

The city of Port of Spain is physically and functionally integrated with two neighbouring Municipal Corporations: Diego Martin Regional Corporation to the west and San Juan-Laventille Regional Corporation to the east. Throughout this planning document, the land area which includes these three corporations is referred to as the Port of Spain Metropolitan Area, or Metro POS. Based on statistics available from the Ministry of Local Government, and presented in the table below, Metro POS encompasses an area of 376 km2, and a population of 312,046. This accounts for 8% of Trinidad's total land area, and 27% of the country's total population.

The boundaries of the Port of Spain City Corporation as described in this section are extremely important from an administrative standpoint. The council and staff of the Regional Corporation serve the people that live within these boundaries and are responsive to the concerns that they all share. In many cases though, the issues and projects that are of greatest concern to the population, the councillors, and the staff do not begin and end at the administrative boundary. Issues such as transportation, crime, environmental care and employment all transcend the boundaries of the Port of Spain City Corporation and as such need to be considered more holistically if they are to be resolved for the benefit of residents in the region and the country as a whole.

Map 1 Municipal Corporations of Trinidad

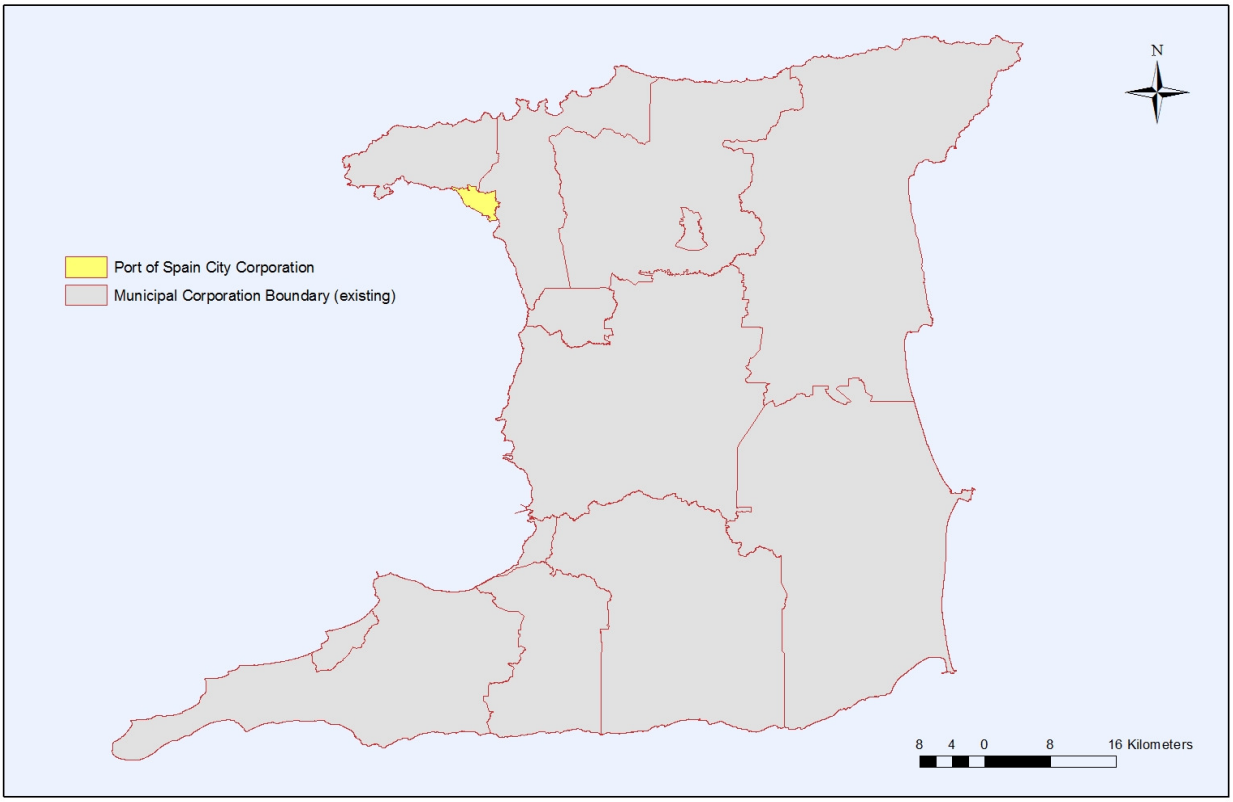


Table 2 Trinidad: Municipal Corporations – Population, area, pop density

NAMES	SQKM	TOTPOP2000	Density
Port of Spain	12.3	49,031	3,996
San Fernando	18.7	55,419	2,968
Arima	11.8	32,278	2,735
Chaguanas	59.4	67,433	1,135
Diego Martin	125.0	105,720	846
Point Fortin	25.1	19,056	760
San Juan/Laventille	238.6	157,295	659
Tunapuna/Piarco	509.4	203,975	400
Penal/Debe	245.0	83,609	341
Couva/Tabaquite/Talparo	722.5	162,779	225
Siparia	494.3	81,917	166
Princes Town	618.8	91,947	149
Sangre Grande	926.2	65,680	71
Mayaro/Rio Claro	812.9	32,143	40

Source: Ministry of Local Government.

3.2 Brief History

Port of Spain was founded near the site of the Amerindian fishing village of Cumucurapo ("place of the silk cotton trees"), located in the area today known as Mucurapo, west of the city centre. The name Conquerabia is also recorded for an Amerindian settlement in this area; this may have been a separate village, another name for Cumucurapo, or the result of miscomprehension by early Spanish settlers, who established a port here - "Puerto de los Hispanioles", later "Puerto de España". In 1560, a Spanish garrison was posted near the foot of the Laventille Hills, which today forms the city's eastern boundary.

The part of today's Downtown Port of Spain closest to the sea was once an area of tidal mudflats covered by mangroves. The first Spanish buildings, constructed in the 16th and 17th centuries, were open mud-plastered ajoupas, interspersed between large silk cotton trees and other trees. The fort was a mud-walled enclosure with a shack inside, a flagpole, two or three cannon, and few Spanish soldiers. The Caribs were transient, travelling to the mainland (now Venezuela) and up the Orinoco River. The French naval commander Comte D'Estrées visited in 1680, and reported that there was no Port of Spain. But in 1690, Spanish governor Don Sebastien de Roteta reported in writing to the King of Spain and in 1699, the alcalde of Trinidad reported to the King that the natives "were in the habit of showering scorn and abuse upon the Holy Faith and ridiculed with jests the efforts of the Holy Fathers".

By 1757, the old capital, San José de Oruña (modern Saint Joseph), about seven miles (11 km) inland, had fallen into disrepair, and Governor Don Pedro de la Moneda transferred his seat to Port of Spain, which thus became Trinidad's de facto capital. The last Spanish Governor of Trinidad, Don José Maria Chacón, devoted much of his time to developing the new capital. He compelled the island's Cabildo (governing council) to move to Port of Spain, and he limited its powers to the municipality. The 1783 Cedula of Population, which encouraged the settlement of French Catholics in the island, led to a rapid increase in the town's population and its geographical extension westwards.

From the small cluster of buildings at the foot of the Laventille Hills, eleven streets were laid out west of the area bounded by the St. Ann's River, thus establishing the grid pattern which has survived in downtown Port of Spain to the present day. Along the seashore was the Plaza del Marina (Marine Square), a parade ground. By 1786, the town had a population of about 3,000. Realising that the St. Ann's River, prone to flooding, was impeding the expansion of the town, Chacón had its course diverted in 1787 so that it ran to the east of the city, along the foot of the Laventille Hills. (During the rainy season the river still had a tendency to overflow its banks, flooding parts of the city; over the decades its channel would be widened and paved. During the dry season the water level drops to a trickle; hence its nickname, the Dry River.) Port of Spain was now able to continue spreading northwards and westwards, encroaching on the surrounding sugar-cane plantations.

In 1797 a British force under General Sir Ralph Abercromby invaded Trinidad. The British landed west of Port of Spain, at what is still called Invaders Bay, and marched towards the town. Realizing his military resources were inadequate to defend the colony and wishing to avoid unnecessary destruction, Governor Chacón capitulated and was able to negotiate generous terms with Abercromby. Port of Spain remained the capital; the new British colonial government renamed most of the streets after British royalty or military figures, but allowed Chacón Street (which followed the old course of the St. Ann's River) to retain its name, in tribute to the former governor.

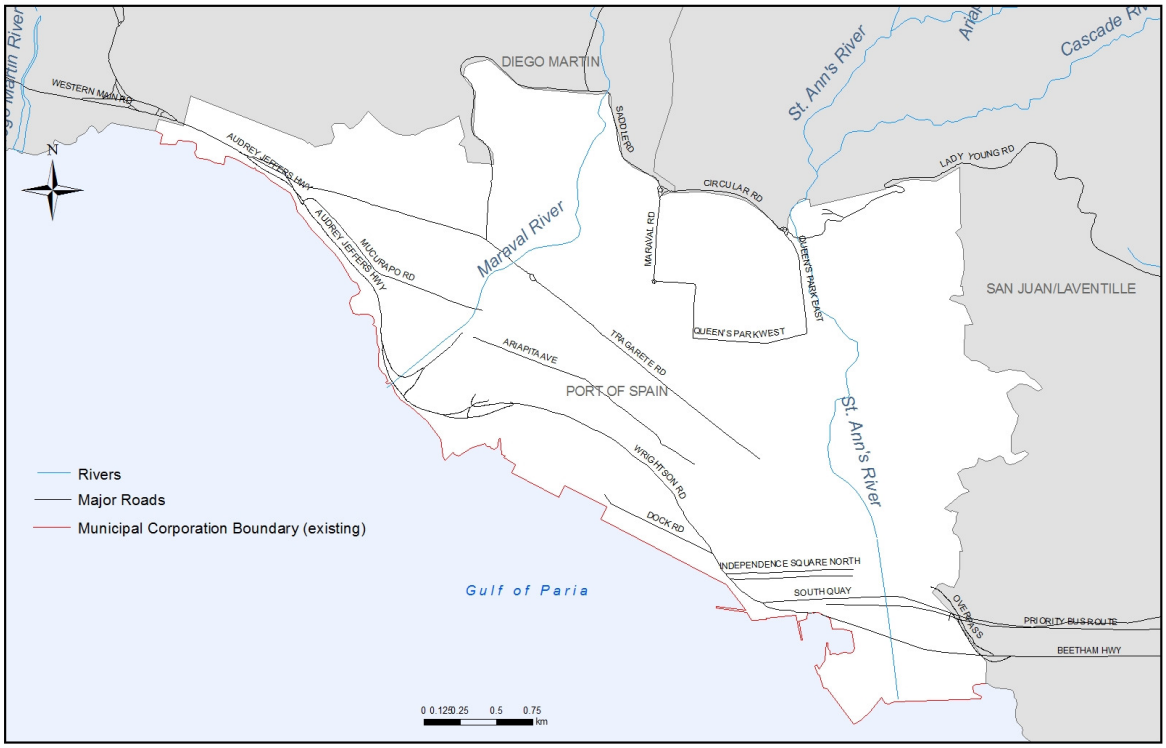
In 1803 Port of Spain began growing southwards, with the reclamation of the foreshore mudflats, using fill from the Laventille Hills. This began with the area immediately east of the diverted St. Ann's River; the district is still called Sea Lots. Gradually the reclamation crept west and the area south of Plaza del Marina became solid land. Further major reclamation efforts took place in the 1840s, the 1870s, and in 1906. In 1935 the Deep Water Harbour Scheme dredged the offshore area along Port of Spain's western neighbourhoods, and the dredged material was used to fill in the area south of Woodbrook. Wrightson Road, linking downtown Port of Spain to its western suburbs, was constructed at the same time. These reclaimed lands

were originally called Docksite, and were home to US forces during World War II; later a number of government buildings were constructed here.

Contemporary Port of Spain has established itself as the capital of the country with official government buildings, offices and institutions; as the centre of business and finance; as having the best harbour facilities in the country; and as the centre for arts & culture.

3.3 Physical Description

Map 2 Port of Spain City Corporation



The city of Port of Spain can be characterized by the historical grid pattern of the roads in the neighbourhoods between the St. Ann's River and the Maraval River. They form a well-designed pattern in the case of Downtown, Uptown, Newtown and St. Clair. In general, the buildings in Downtown and Uptown are erected on the edge of the public space except the older public buildings like churches and the Red House. These older buildings are mostly two or three storey structures. The new office buildings are much higher and reach from six to twenty floors. In Newtown and St. Clair, the buildings are set back from the street. The yards and gardens in front of these buildings make these neighbourhoods pleasant and of a high quality. In Woodbrook and Belmont the street pattern is reminiscent of the area's former role as plantations. The buildings in these neighbourhoods are often one-storey structures surrounded by a garden. Together with the low profile of the streets these neighbourhoods form attractive residential areas.

The buildings located along the main roads have two or three floors, with the front yard used mostly for parking in support of the commercial functions established along these roads. Each of these neighbourhoods is defined by a series of green squares or parks inserted into the overall grid pattern. The one exception to this is Belmont, which is defined by narrower streets, smaller lots and the absence of a street grid.

Further east beyond the St. Ann's River are the foothills of the Northern Range. Here, the roads are narrow, winding up the hillsides. The residences are built against the slopes with considerable open space between them, overgrown with trees.

Downtown/Uptown

The oldest part of the city is the downtown area, between South Quay, Oxford Street (to the north), the St. Ann's River (to the east), and Richmond Street (to the west). The heart of downtown is Woodford Square (formerly Brunswick Square, renamed in the 19th century for British Governor Ralph Woodford). On its northern side are City Hall and the Hall of Justice, seat of the Supreme Court; on its western side is the Red House, seat of Parliament; the Anglican Holy Trinity Cathedral is on its south side, and on the block southwest of the square is the National Library. A number of government offices are located in the immediate vicinity, and the blocks north and west of the Red House are home to many lawyers' chambers.

Woodford Square itself is a green oasis in the heart of the city, with a late-Victorian fountain and bandstand, trees, benches, and lawns. It has famously been the site of many political rallies over the decades; former Prime Minister Eric Williams gave many public lectures here, dubbing it "the University of Woodford Square", and near the eastern gate is a spot which has become Port of Spain's Speakers' Corner.

Two blocks south of Woodford Square is Independence Square (formerly Marine Square), which runs along the breadth of downtown Port of Spain, from Wrightson Road to the west to the Roman Catholic Cathedral of the Immaculate Conception in the east. A pedestrian promenade

running the length of this area is known as Brian Lara Promenade. The section of the square immediately behind the cathedral is called Columbus Square. Before extensive land reclamation in the early 19th century, the city's shoreline ran through Independence Square.

North of downtown, the area occupied in the early 19th century by the Tranquillity sugar estate was formerly residential, but in recent decades has become essentially a district of office buildings, functioning as an extension of the downtown area. Oddly, this part of Port of Spain—between Oxford Street and the Queen's Park Savannah—has no name in common usage, though a century ago it was known as Tranquillity or Uptown. The Port of Spain General Hospital is on upper Charlotte Street, while nearby on Frederick Street is the National Museum and Art Gallery. The recently constructed National Academy for the Performing Arts is built immediately south of the Savannah on the site of the former Princes' Building.

Newtown

Located west of downtown and uptown, Tragarete Road (south), the Queen's Park Savannah (north), Cipriani Boulevard (east), and Maraval Road (west) form the boundaries of Newtown. This was laid out in the 1840s as a largely residential area. Conversion of residences to commercial uses has changed the character of this area to one dominated increasingly by offices and restaurants.

Woodbrook

The large Woodbrook neighbourhood, west of downtown, formerly a sugar estate owned by the Siegert family, was sold to the Town Board in 1911 and developed into a residential neighbourhood, with many of the north-south streets named for the Siegert siblings. In the last twenty years the main east-west thoroughfares, Ariapita Avenue and Tragarete Road, have become almost entirely commercialized, and Ariapita Avenue west of Murray Street has become a relatively upscale dining and entertainment "strip". A few small parks are sprinkled through the neighbourhood; Adam Smith Square and Siegert Square are the two largest.

Just north of Woodbrook along Tragarete Road is the Queen's Park Oval, a major Test cricket ground, which is owned by the private Queen's Park Cricket Club (QPCC). At Woodbrook's south-western end, at the edge of Invaders Bay, is the Hasely Crawford Stadium, the national venue for football and track and field events. Woodbrook is a historic neighbourhood worthy of being regenerated as a residential area. A new landmark located near the boundary with St. James – One Woodbrook Place, appeals to the concept of the New Urbanism.

St Clair

The upscale St. Clair neighbourhood in northwest Port of Spain, between the Queen's Park Savannah and the Maraval River, was developed in the 1880s, 1890s, and 1900s on former agricultural land. It is the location of some of the city's grandest mansions. At its heart, just north of the Queen's Park Oval, is King George V Park. In recent decades St. Clair has become home to various diplomatic missions. Just northwest of St. Clair are two upscale residential neighbourhoods, Ellerslie Park and Federation Park.

Belmont

Belmont was Port of Spain's first suburb. Located to the northeast of the city, it extends from the Savannah in the west, the Lady Young Road to the north, Observatory Street to the south, rising to the watershed of the Belmont and St Francois Valleys to the east. In the 1840–50s, parts of the area were settled by Africans rescued by the Royal Navy from illegal slaving ships.

In the 1880–90s, the population swelled rapidly, and the characteristic Belmont street pattern of narrow, winding lanes connecting a regular well-laid out grid pattern of streets developed. The black professional class built large homes in Belmont as they were excluded from the more expensive neighbourhoods such as St. Clair and Maraval; Belmont became known as "the Black St. Clair". Many of these large homes have been renovated and converted to business use, but some remain in family hands. Never exclusively black, Belmont prided itself on its diverse ethnicity – people of mixed heritage, newly-arrived Chinese shopkeepers, and second-

generation Portuguese immigrants lived, worked and played together in this tightly packed suburb. Sir Ellis Clarke, Trinidad and Tobago's first President, was born and grew up in Belmont.

Belmont was the birthplace and early home of many important Carnival designers and bandleaders, a nurturing ground for steelbands, a source of doctors, lawyers, educators, civil society leaders for all of North West Trinidad. Still maintaining its creative tradition, Belmont is home to many artisans, craftsmen, artists and artistes. It is currently considered a lower middle to middle-class residential neighbourhood.

St James

Port of Spain's last major municipal expansion occurred in 1938, when the St. James district north of Woodbrook and west of St. Clair was incorporated into the city limits. In the late 19th century, Indian indentured labourers on nearby sugar estates established houses here, and St. James gradually became the centre of Port of Spain's Indian population, with many streets named after cities and districts in India. Western Main Road, the area's major thoroughfare, has long been the city's main nightlife district, sometimes nicknamed "the city that never sleeps".

Long Circular Road, which curves north from Western Main Road then east to meet Saddle Road, forms part of the city boundary. Its "circle" encloses Flagstaff Hill, a small rise with the US ambassador's residence at its summit, which lends its name to an area of apartment buildings at its southern foot.

South of St. James and near the seashore at Invaders Bay is Mucurapo, a mostly residential district that also contains the city's second-largest cemetery. It should be noted that V.S. Naipaul, Trinidadian Nobel Prize winner for literature, grew up in St. James.

Gonzales

Gonzales which forms the eastern portion of POS is south of Belmont and north of East Dry River. It has historical roots in post-slavery times. After emancipation in 1834, many freed

slaves refused to accept apprenticeship or the proposed six years of continued labour on the sugar plantations and vowed never to return. Instead the freed and run-away slaves refused to continue in the system of dehumanisation and degradation associated with slavery and so many settled on the outskirts of Port-of- Spain in communities such as Gonzales. The dependence on the informal job trade was developed as many people established themselves as skilled artisans and craftsmen. They became the driving social force that led the process of diversifying the economic base away from the predominant sugar-based economy. Gonzales demonstrates typical characteristics of communities that were established prior to any formal planning processes in Trinidad and Tobago. Over the years this organic nature along with other social and economic constructs has led to existing deteriorating physical conditions in the area, such as poor housing stock, inadequate roads and a lack of open space.

East Dry River

The area located south of Gonzales and east of the St. Ann's River is commonly referred to as East Dry River. Compared to the rest of the city, this area is defined by a relatively high density of population. It is primarily residential in character, with a mix of commercial and institutional buildings interspersed throughout. A significant number of multi-storey public housing has been built in this area over the decades. The area is characterized by relatively low incomes and social marginalization.

The area's narrow winding streets which lead upwards into the hills contrast with the neat grid pattern of downtown, and reflect the history of informal and unplanned settlements. In fact, ten of the eleven informal settlements located on State lands within the City of Port of Spain are located in the East Dry River area.

Table 3 identifies these settlements within the Port of Spain City Corporation administrative boundaries. The analysis (Chapter 3, Vol.1) takes into account the broader "metropolitan" area to include other squatter settlement sites that are situated just outside the administrative boundaries of the capital city. These include thirteen (13) in Diego Martin Regional Corporation

and twenty-one (21) in the San Juan- Laventille Regional Corporation. It is important to emphasize that the Port of Spain City Corporation is more a recipient of the impacts of these informal development than the location of such settlement as
the city of Port of Spain must carry much of the infrastructure networks and downstream effects and remains a key stakeholder in the process of regularization / regeneration.

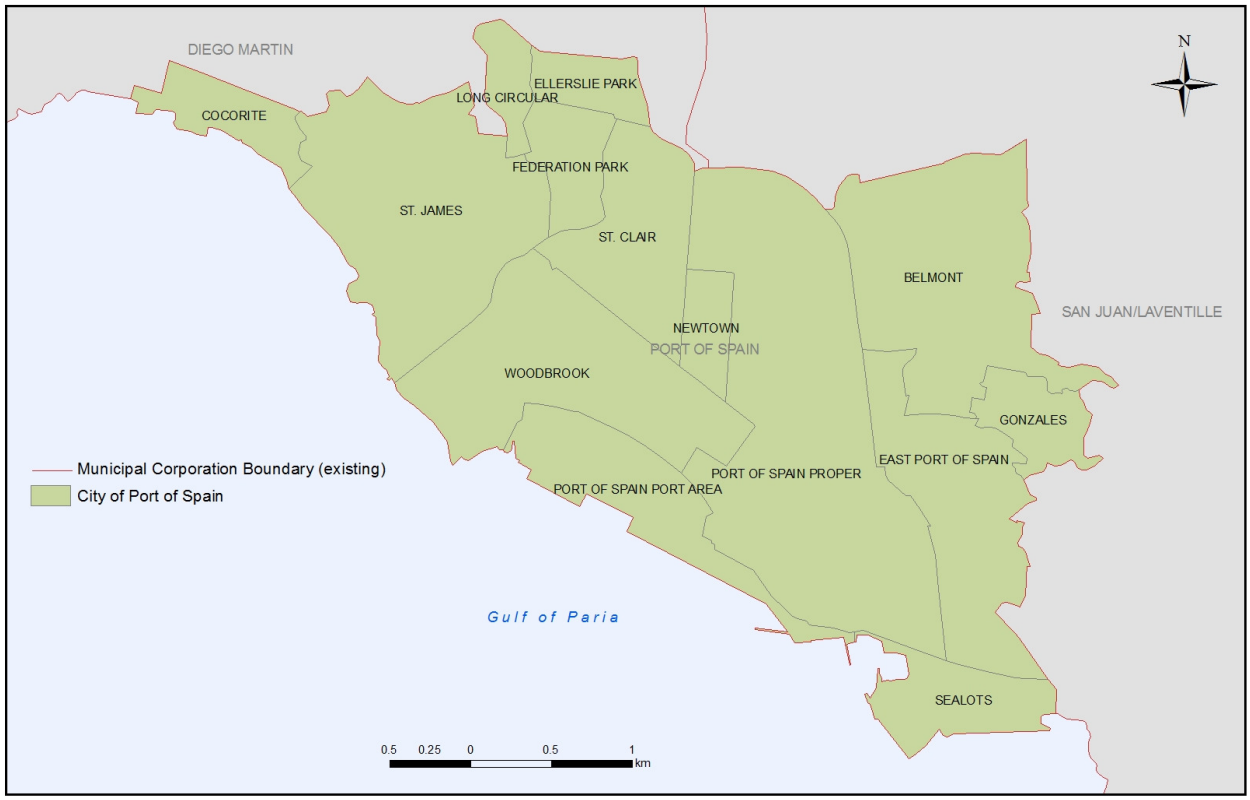
The development plan will have to respond to the threats posed by hillside development and the development of agricultural lands. Chapter 3 (Vol. 1), the analysis of land use shows that a significant portion of the development plan must consider redevelopment of existing urbanised spaces.

Table 3 Informal Settlements in Port of Spain City Corporation

Informal Settlement	Port of Spain Community
1. Clifton Circular Road	East Dry River
2. Clifton Street	East Dry River
3. Clifton Lane	East Dry River
4. Lodge Place	East Dry River
5. St. Paul Street	East Dry River
6. Rose Hill	East Dry River
7. Annisette Street	East Dry River
8. St. Joseph Road	East Dry River
9. Irving Lane	East Dry River
10. Herman Scott Street	East Dry River
11. Alfred Richards Street	St. James

Source: Land Settlements Agency.

Map 3 City of Port of Spain Communities



3.4 Environment

The City of Port of Spain is a highly urbanized area, with little land left undeveloped with the exception of designated parks. Remaining natural features include the Queen's Park Savannah and the coast of the Gulf of Paria. The Savannah has been protected from building on and paving of more of its surface, and by restoration of the historic buildings on the western and northern sides and a new and respectful new development on the eastern and southern sides. The coastline with open connection to parts of the city is a natural and cultural heritage that needs to be to be preserved as well. Recent plans include the development of the Docklands in the Port area of Port of Spain. The coast from the new port area to the Audrey Jeffers /Mucurapo Road intersection is also considered environmentally sensitive and care must be take that any new plans must free this area from new reclamations. Finally, there are two rivers that run through Port of Spain, the Maraval River on the west and St. Ann's River on the east.

The City of Port of Spain is also surrounded by marvellously varied environmental features. To the north is the Northern Range, which forms a grounding and orienting feature to the city as it surrounds it on three sides. To the south of the Port of Spain City Corporation is the Caroni Plain ending at the Bejucal Canal in the south. This is highlighted as a "protected" area in the Land Use Map – Map 8 and is shown in yellow shading. In the areas adjacent to much of the Caroni Plain's eastern extent are agricultural lands, which are shown in the broad land use map with green cross hatching. The map also shows vast agricultural land use through the Tucker Valley to the west of Port of Spain.

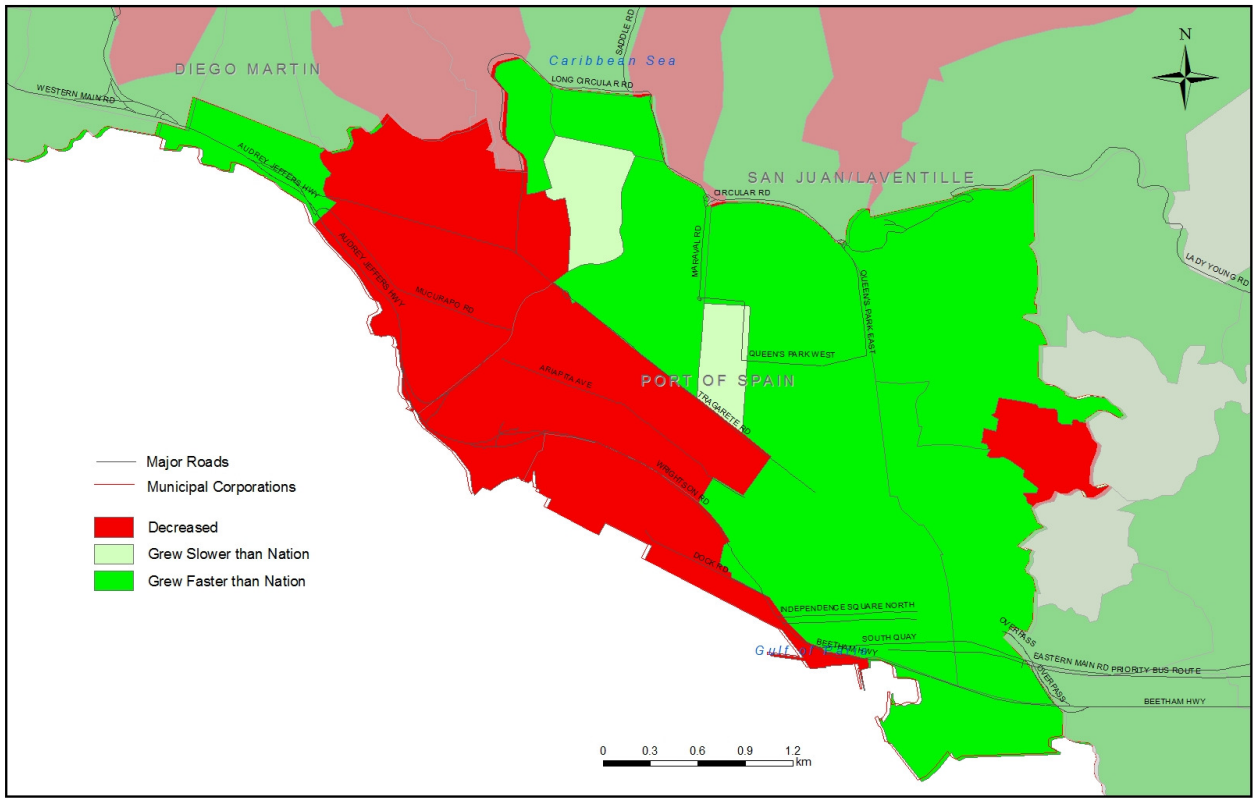
3.5 Demographic Characteristics

Census data has shown that the population within the administrative borders of the city of Port of Spain has increased over a period of 10 years between 1990 and 2000. However, when compared to the growth rate of surrounding areas of Diego Martin and San Juan-Laventille and the national growth rate, Port of Spain has not grown significantly as shown in Table 4. For example, the percent change in population in the capital region between 1990 and 2000 was 3.4%. Diego Martin and San Juan-Laventille experienced a much greater change of 14.5% and 10.8% respectively. A continuation of this trend would suggest that much of the population growth is being consumed by areas outside the boundaries of the City of Port of Spain Corporation and in the suburban developments of Diego Martin and San Juan- Laventille.

Table 4 Metro Port of Spain Population Dynamics

AREA	Population 1990	Population 2000	Increase %
Trinidad and Tobago	1,213,733	1,262,366	4.01
Port of Spain City Corporation	46,901	48,514	3.44
Diego Martin Regional Corporation	91,778	105,120	14.54
San Juan-Laventille Regional Corporation	148,497	164,545	10.81

Map 4 City of Port of Spain Population Change 1990- 2000, by Census Community



Map 4 shows population change between 1990 and 2000. Parts of the city of Port of Spain, especially the inner city and CDB area have experienced a decline in population. This decline is attributable to a combination of conversion of housing to commercial use, and the decrease in household size. In contrast, communities on the periphery of the city have generally experienced an increase in population. Table 5 shows population change in Port of Spain communities in the decade 1990 to 2000.

Map 5 City of Port of Spain Population Density, 2000, by Census Community

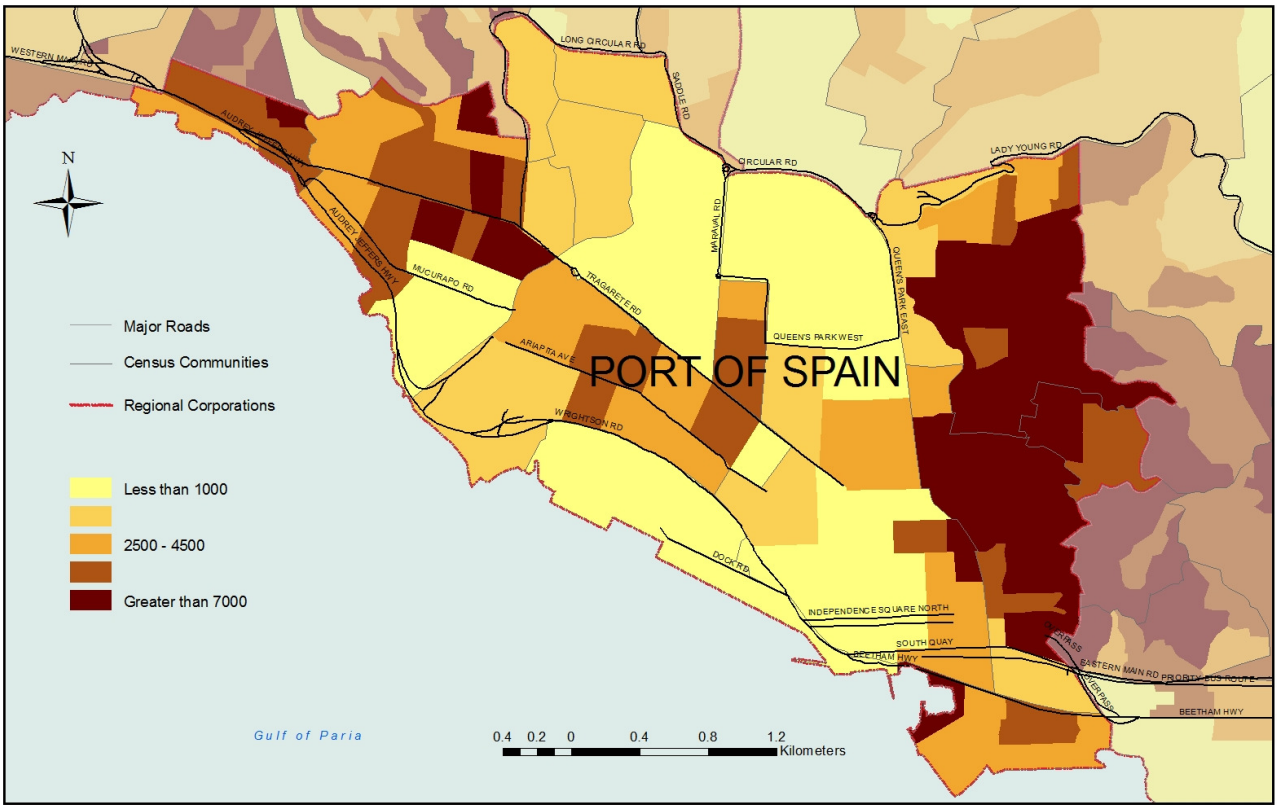


Table 5 Population Growth in Port of Spain Census Communities

Census Community Code	Community	% Growth
1001	Belmont	10.0%
1002	Cocorite	5.5%
1003	Ellerslie Park	23.7%
1004	Federation Park	1.2%
1005	Gonzales	-0.1%
1006	Long Circular	107.1%
1007	Newtown	2.9%
1008	Sealots	19.9%
1009	St. Clair	15.3%
1010	St. James	-7.7%
1011	Woodbrook	-8.3%
1012	East Port of Spain	5.3%
1013	Port of Spain Proper	4.2%
1014	Port of Spain Port Area	-80.0%

Comparing densities of Port of Spain City Corporation, its two neighbouring Regional Corporations and San Fernando City Corporation, Port of Spain has the highest density followed by San Fernando. The neighbouring Regional Corporations of Diego Martin and San Juan-Laventille have densities that are typically suburban. However, these corporations also include large areas of undeveloped land. When comparing residential population, Port of Spain only has 4.7% of the residential population of Trinidad, while Diego Martin with 8.7% is almost double that and San Juan-Laventille with 14.2%, has three times that of the capital. Similarly, San Fernando has a very small population within its borders, and as the Interplan Report on San Fernando shows, there is a greater population just outside the city. Therefore, these numbers speak of a trend that supports a decline in city centre population coupled with increasingly strong suburban population growth.

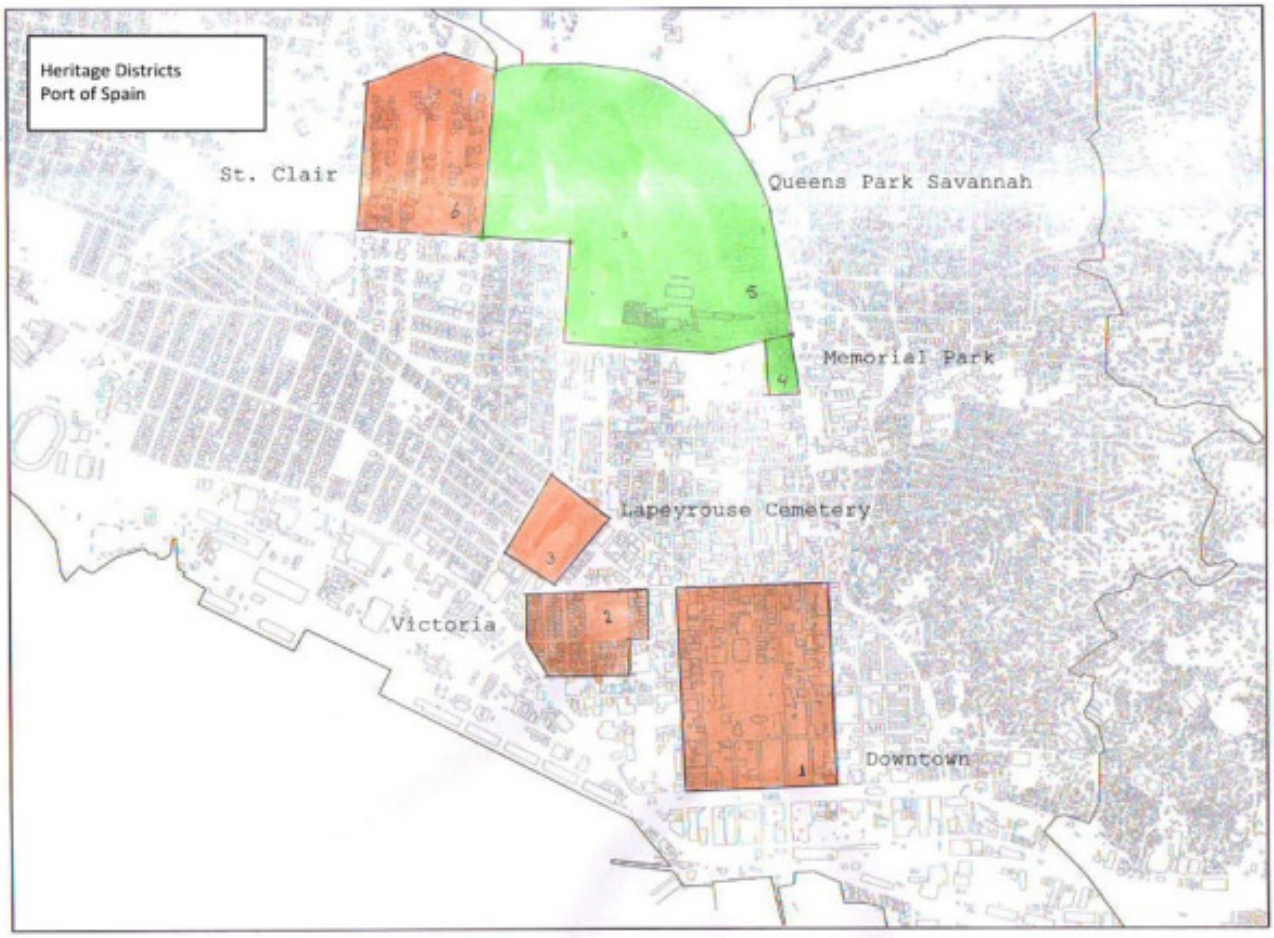
3.6 Heritage & Culture

The history of Port of Spain is described in summary in section 3.2. Figure 1 shows the location of some of the heritage districts of Port of Spain. Buildings located Downtown in the historical core between Independence Square and Park Street and between Richmond Street and Charlotte Street should be protected as a heritage area. Other heritage districts include the surroundings of Victoria Square and St Clair including the Magnificent Seven buildings. These areas stand testimony to the importance of urban design in the early days of town planning. It would be appropriate for the Queen's Park Savannah – as arguably the city's best-known landmark – and Lapeyrouse Cemetery to be included as historic heritage sites. Other districts of historical and cultural heritage significance are Belmont and Woodbrook for which there is no available inventory of historic buildings or sites; and parks such as Woodford Square, Lard Harris Square and Jackson Square.

Heritage districts Port of Spain are:

1. Downtown
2. Victoria Square
3. Lapeyrouse Cemetery
4. Memorial Park
5. Queens Park Savannah
6. St. Clair

Figure 1 City of Port of Spain Heritage Districts



Landmark buildings of Old Port of Spain (as shown in Figure 2)

1. The Magnificent Seven
2. President's House
3. Queen's Hall
4. Grand Stand
5. Red House
6. Trinity Cathedral
7. The Cathedral of the Immaculate Conception

Figure 2 City of Port of Spain Landmark Buildings

There are several facilities for accommodation of cultural events within the city of Port of Spain. Some are official, some commercial and others are used informally. They include: Museums, Queens Hall, the National Academy for the Performing Arts; the St James Amphitheatre, the atrium at Long Circular Mall; the Queen's Park Oval - the mecca of cricket in Trinidad and now the venue for large music concerts; several art galleries (located at Aldegonda Park, Mucurapo Road, Jamaica Boulevard and Roberts Street); community centres; churches, mosques and temples; pan yards and mas camps; schools and playgrounds.

The street together with open space, however, remains the space of first choice for public festivals and celebration. Carnival is celebrated by masquerader and spectator alike through the streets of the city for two days and at selected open-air sites during the weeks before; Hosay tadjas are carried in procession through Western Main Road, St James for three nights; the Savannah is the venue for concerts, kite-flying at Easter, walkathons and marathons, public-awareness events and just chilling-out or liming as Trinidad's major cultural pastime is called. Steelband concerts are held in open-air panyards, steelband competitions in the Savannah.

Policy makers rarely consider the street and the park as cultural space and as a result, provision for safe and healthy enjoyment of and participation in these events is patchy at best and deplorable in the norm. In Latin-America, the plazas are alive in the evenings with entertainment, families in throngs, young people and the elderly. This is encouraged and supported by the city authorities who ensure safety and free enjoyment of public space. Comparable heavily-used sites in Port of Spain are the Pitch Walk around the Queen's Park Savannah and the Brian Lara Promenade downtown. It would be a boon to citizens' quality of life if all city parks were publicly supported in such use.

3.7 Local Economic Base

Today, Port of Spain sits as Trinidad and Tobago's most developed and sophisticated centre. The city serves as the country's primary retail and administrative centre, while it has been the capital of the island since 1757. It is also an important financial services centre for the Caribbean and is home to two of the largest banks in the region. Port of Spain has also emerged as a leading city in the Caribbean region. In April 2009, the heads of state and government from 34 countries of the Americas gathered at the Hyatt Regency Trinidad for the Fifth Summit of the Americas, while the city played host to the Commonwealth Heads of Government Meeting (CHOGM) in November 2009. The pre-Lenten Carnival is the city's main annual cultural festival and tourist attraction.

The city is also home to the largest container port on the island and is one of several major shipping hubs of the Caribbean, exporting both agricultural products and manufactured goods.

Vision 20/20 report gave an overview of Trinidad's economic conditions in 2003 where Port of Spain had a very low unemployment rate of 5.6% compared to a national rate of 16.5%. When compared to the neighbouring Regional Corporations, some interesting disparities were found, where Diego Martin had an unemployment rate of 2.6% and San Juan-Laventille experienced a very high unemployment rate of 11%. In terms of standard of living, residents of Port of Spain enjoyed an above average monthly income of some $4,806 compared with the national average of $4,418; Diego Martin residents earned the highest average monthly income of $6,351 compared with San Juan-Laventille at $3,924. As suggested in Table 6, residents of Port of Spain enjoy a good quality of life, compared to the national average. Again, Diego Martin residents enjoy an even higher standard of living when compared to Port of Spain and San Juan-Laventille.

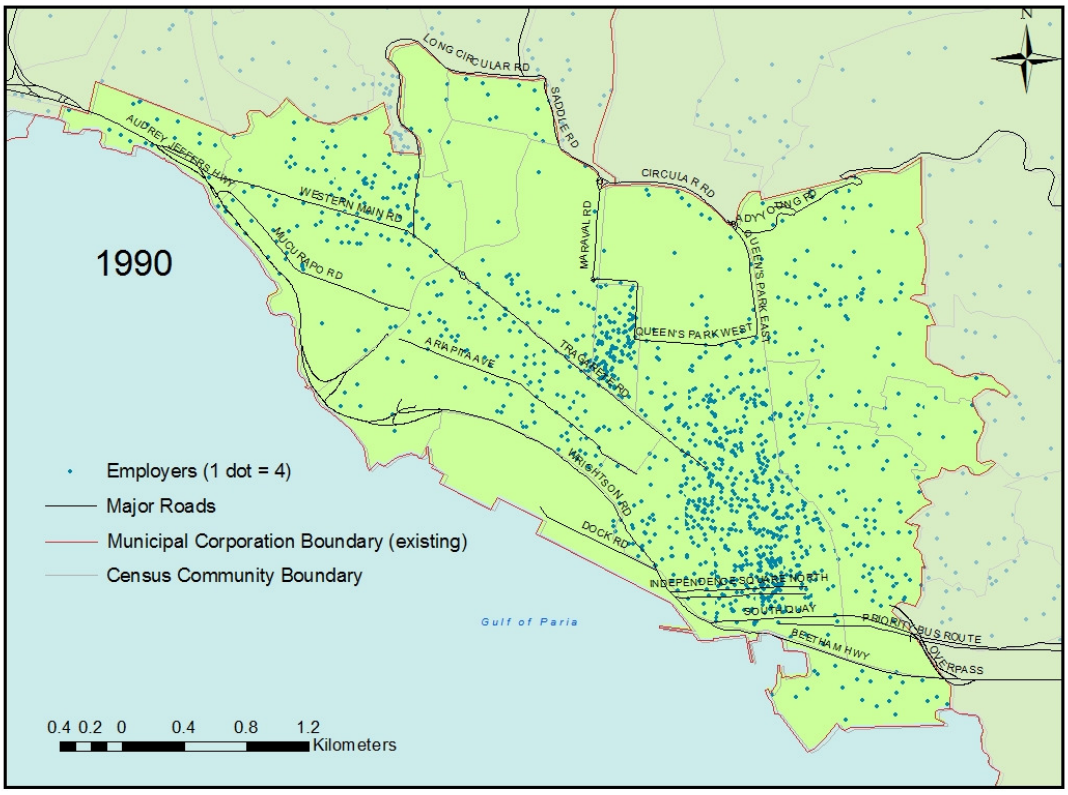
Table 6 Selected Quality of Life Indicators

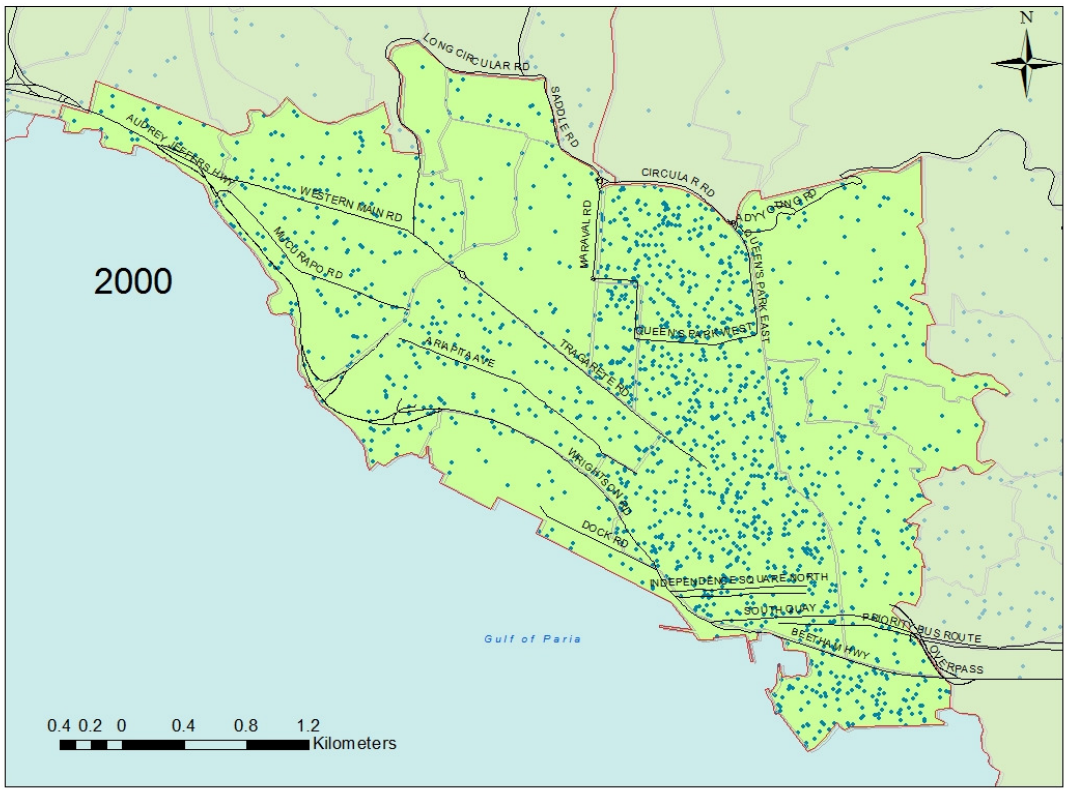
Quality of Life Indicators	Port of Spain	Diego Martin	San Juan-Laventille	Trinidad & Tobago
Water piped into dwelling/yard	89.2	68.1	69.7	69.4
Toilet Facility- water borne	81.1	75.0	68.5	67.0
Electricity	95.5	97.6	91.9	92.0
Telephone	69.4	67.7	57.7	54.8
Air Condition	8.1	15.2	2.7	4.4
Stove (Electric/Gas)	98.2	98.0	97.6	97.4
Microwave	19.8	34.8	17.1	19.7
Refrigerator	88.3	90.7	84.7	83.6
Personal Computer	8.1	16.2	4.2	5.3
Water Tank	18.9	57.4	44.4	56.6
Motor Vehicle	24.3	42.7	30.6	35.4

Source: Vision 20/20: Regional Development and Sustainable Communities Report, Population and Housing Census, 1991

Although Trinidad's economy is based on natural gas and oil, no heavy industrial sites are located in the city of Port of Spain. However, the major oil and gas companies and some service companies have located their headquarters in the city to be in close proximity to government services, infrastructure and the high quality of life available to many residents of Port of Spain. While many others are based in San Fernando and Point Lisas in the South, some of the oil and gas company headquarters located in Port of Spain include BPTT, BGTT (British Gas), BHP Billiton, EOG Resources, Fluor, Repsol YPF, Atlantic LNG and Baker Hughes. Employment in the Port of Spain area is therefore characterized by a high reliance on private sector employment - especially in the non-financial services sector, trade and government service.

Map 6 City of Port of Spain Employers, 1990 and 2000, by Census Community



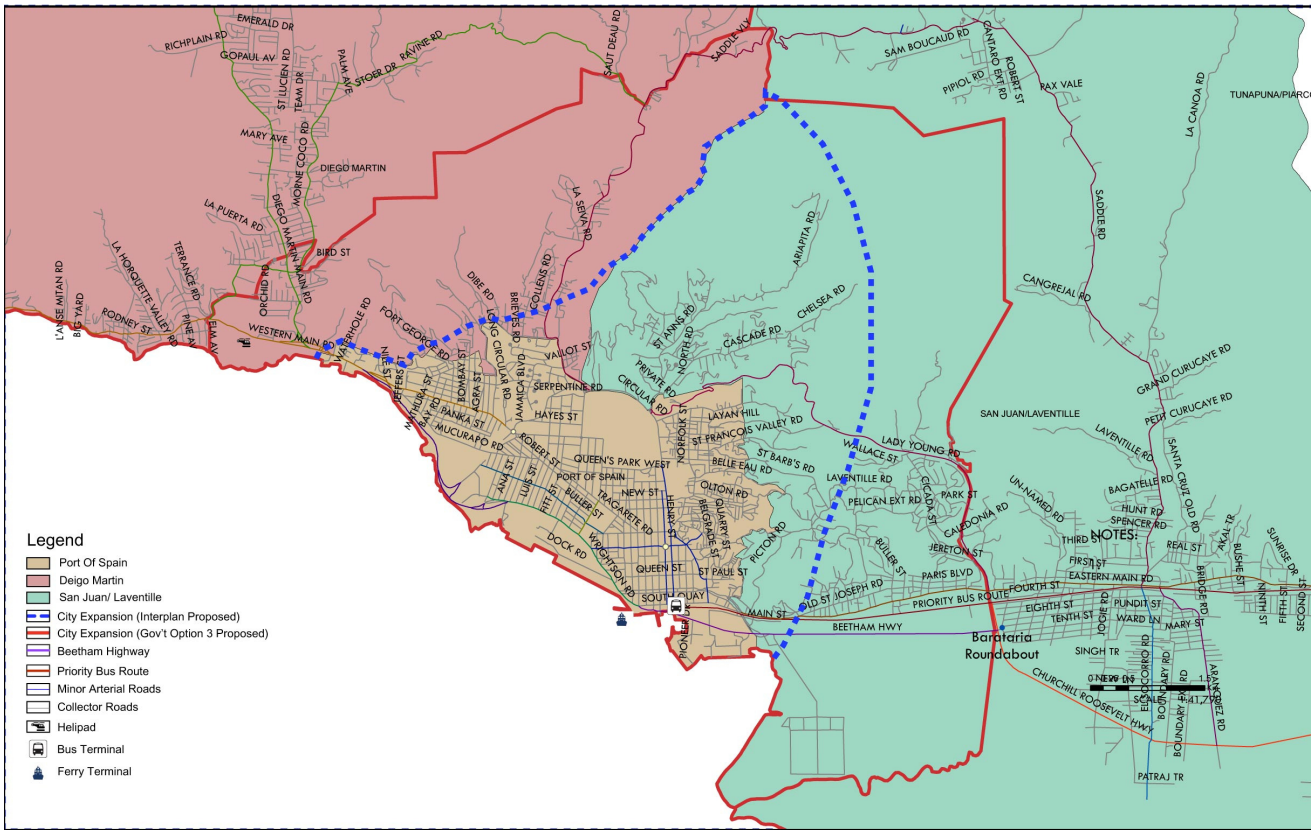


Map 6 illustrates the distribution of commercial and institutional employers within and around Port of Spain. A very striking, though not surprising, aspect of this distribution is the concentration of employment in the downtown core. A comparison of this distribution in 1990 and 2000 suggests that there was a further concentration of commercial and institutional activity in the downtown core urban neighbourhoods. This trend is linked to a substantial loss of residential population in the urban neighbourhoods and increased traffic congestion throughout the city and region.

The map also suggests that there is a wide and varied distribution of businesses that fall outside of Port of Spain City Corporation boundaries. These reflect a response to the rapidly growing suburban populations. This suggests a need to consolidate business activities in more compact areas.

3.8 Infrastructure

Map 7 Transportation Network



Port of Spain Road Transportation Network

Road networks form the lifeline of a city, connecting people to their places of work, play and homes. Roads in Port of Spain, Map 7 above, can be classified into three categories: Primary Arterial, Minor Arterial and Collector. Collector roads circulate traffic within the city.
In Port of Spain, these include:

- Queen's Park Savannah
- Long Circular Road
- Tragarete Road
- Ariapita Avenue

Arterial Roads on the other hand circulate traffic inside as well as through the city and links the city to surrounding regional transportation network, whereby it the City of Port of Spain is intimately connected to the Regional Corporations of Diego Martin and San Juan-Laventille.

The primary arterial roads that link the city of Port of Spain with Diego Martin and San Juan - Laventille are:

- Churchill-Roosevelt Highway
- Beetham Highway
- Wrightson Road,
- Audrey Jeffers Highway
- Western Main Road
- Diego Martin Highway

The minor arterial roads that link the city of Port of Spain with Diego Martin and San Juan - Laventille include:

- Eastern Main Road
- Lady Young Road
- Diego Martin Main Road, and Saddle Road.
- Morne Coco Road

Social Infrastructure and Community Facilities

The city of Port of Spain is home to a disproportionate share of facilities and amenities for social and community life. Map 16 Distribution of social & community facilities included in the planning analysis section of volume 1 shows clearly the concentration of many amenities in the core of Port of Spain. The increasing density of development is occurring without adequate provision of residential population, which are deficient at present. While this offers convenient amenities for local residents, the negative side effect is a contribution to increased traffic congestion, and lower quality of life for residents in neighbouring municipal corporations of Diego Martin and San Juan/Laventille. For example, the disproportionate concentration of schools in the Port of Spain Proper (46 altogether) has resulted in a lack of educational facilities being distributed more equally across the city's neighbourhoods. As seen in Table 7, Port of Spain has an excess of 11 schools and 3 Post Offices. On the contrary, the city seems to be lacking in some social and recreational amenities like Neighbourhood Recreations Grounds and Community Centres.

Table 7: Community Infrastructure Gap Analysis Matrix – City of Port of Spain

Amenity / facility	Area required for each (sq. m)	Required sq. m / residential unit	Threshold dwelling units / amenity	Total dwelling units (2000 Census)	No. required	No. available	Gap
Neighbourhood Recreation Ground	15000	25	600	14984	25	14	11
Regional Recreation Ground	80000	40	2000	14984	7	n/a	n/a
Primary School	15000	37.5	400	14984	37	34	3
Junior and Senior Secondary School	30000	12	2500	14984	6	17	-11
Community Centre A	3000	1.5	2000	14984	7	2	5
Community Centre B	1400	3.5	400	14984	37	0	37
Community Centre C	100	0.25	400	14984	37	2	35
Police Post	1500	0.75	2000	14984	7	10	-3
Fire Post	1500	0.75	2000	14984	7	3	4
Health Centre A	1000	0.25	4000	14984	4	1	3
Health Centre B	7000	3.5	2000	14984	7	3	4
Health Centre C	450	0.25	1800	14984	8	4	4

Chapter 3 of volume 1 analyses the issue of social and community infrastructure in the Metropolitan Port of Spain context. It addresses which area residents enjoy equitable access to a range of indicative facilities. These include emergency services, such as police and fire; health services; sports and recreation amenities including sports facilities, recreation grounds and parks; community centre and libraries; educational facilities; and essential retail services such as post office and ATMs. There are opportunities throughout Metropolitan Port of Spain to adjust the geospatial distribution of social & community infrastructure to match the shifting distribution of population throughout the region. This will be done by a settlement classification system which has the capacity to appropriately match the level of facilities and services required for a settlement, be it a district, centre, village or neighbourhood. For instance, by international planning standards, a neighbourhood should have at least 1,000 households or 3,500 inhabitants to allocate a school to it. This approach makes for a more appropriate analysis to match a settlement with the type of facilities and amenities it should offer.

Waste Water and Treatment

Table 8 shows the percent distribution of type of toilet facility connected to dwelling units in Trinidad. Port of Spain has the highest percentage of homes with Water Closets (WC) linked directly to a sewer line. At the same time, the sewerage system is in the worst condition of all infrastructure elements. In some sections there are damaged, clogged and uncovered manholes choked and broken sewers mains, malfunctioning and poorly maintained lift stations. The sewerage system in the Downtown Port of Spain area is in a particularly poor condition and a recent study has demonstrated a need for widespread rehabilitation and replacement of the secondary and tertiary pipes." (Halcrow Conceptual National Development Plan, 31)
Poor maintenance of sewage facilities is affecting river water quality (Halcrow Conceptual National Development Plan, 8).

Central Port of Spain is served by a sanitary sewer network with sewage moving in local sewers to collectors and then on to a waste water treatment plant that is located east of the city. While the treatment plant is a new facility, the distribution network is outdated and requires major reconstruction and/or rehabilitation to accommodate existing and new development. In East POS, a low incidence of household water connections results in a majority of households using standpipes and pit latrines.

The sewage treatment works were in a poor condition and were consequently over-loaded with sewage and unable to cope with the demand placed upon it and as a consequence large quantities of untreated sewage were being discharged to the Caroni River and Gulf of Paria on a daily basis. (HCNDP, 31). This situation has subsequently been rectified with commissioning of the new sewage treatment plant at Beetham.

Table 8: Percentage Distribution of Dwelling Units by Type of Toilet Facility and Municipality 1980-2000

Area	WC linked to Sewer			Septic Tank/Soakway			Pit/Latrine			Other		
	'80	**'90**	**'00**	**'80**	**'90**	**'00**	**'80**	**'90**	**'00**	**'80**	**'90**	**'00**
Trinidad and Tobago	19.95	21.96	21.72	-	-	50.20	58.05	41.31	26.78	0.07	0.07	0.09
POS	65.38	72.14	73.79	-	-	9.77	27.58	20.00	14.92	0.05	0.19	0.07
DM	-	-	37.47	-	-	39.21	-	-	21.94	-	-	0.08
SJL	-	-	33.15	-	-	41.94	-	-	22.90	-	-	0.11
San Fernando	76.66	81.50	50.04	-	-	39.68	14.30	9.79	8.64	0.01	0.06	0.05

Source: Population and Housing Census, 1980 & 1990

Water Supply

Trinidad is blessed with abundant rainfall and as noted in The National Conceptual Development Plan, there should not be any difficulty in meeting demands for water in the islands of Trinidad and Tobago if properly managed. As a result, only 8% of water needs to be abstracted from groundwater for drinking purposes in Trinidad. In terms of access, about 84% of total population has access to piped water, either through house or yard connections or through public standpoints in 2000. For Port of Spain, access to water directly into the dwelling or into the yard is higher than the national average, as seen in Table 9.

Table 9: Percentage Distribution of Dwelling Units by Type of Water Supply and Municipality 1980-2000

Area	Public Piped into Dwelling			Public Piped into Yard			Private Piped into Dwelling			Private Catchment not Piped			Public Stand Pipes		
	'80	**'90**	**'00**	**'80**	**'90**	**'00**	**'80**	**'90**	**'00**	**'80**	**'90**	**'00**	**'80**	**'90**	**'00**
Trinidad and Tobago	44.4	55.02	60.53	15.83	12.1	8.76	4.04	4.23	4.46	1.82	5.15	8.36	25.39	15.04	9.58
POS	67.36	75.35	80.88	17.72	10.21	5.00	4.54	3.95	2.19	0.16	0.48	0.45	9.48	8.84	10.10
DM	-	-	59.95	-	-	3.38	-	-	4.68	-	-	3.51	-	-	13.18
SJL	-	-	62.4	-	-	6.29	-	-	4.99	-	-	3.90	-	-	14.47
San Fernando	91.7	91.36	86.3	4.8	1.77	2.61	0.15	0.28	2.19	0.20	0.40	0.78	2.54	4.81	5.44

Source: Population and Housing Census, 1980 & 1990

Electricity & Telecommunications

The supply of electricity to the area and distribution within the area is quite good and generally reliable. For example, 95.5% of POS households are connected to the grid line, compared with the national average of 92.0%. In terms of telecommunication, the Area Exchange has adequate capacity and the telephone service is generally good and reliable. In POS, 69.37% of households have a telephone line connected to their homes, compared with a 54.79% national average. Within the last year however TSTT has had difficulty satisfying the demand for telephones to new homeowners and for additional lines to existing customers. Some of this need has been met by the widespread use of personal cell phones, the number of which in circulation is more than twice the number of landlines, making Trinidad a saturated market for this facility. Additionally a landline service is also offered by the major TV cable company. While some underground cabling exists for electricity and telecommunications/cable service, the bulk of the infrastructure that these companies use to deliver these services is above ground and consists of wires strung along posts at the edge of the street. Water and gas pipelines are below ground.

Drainage System

The responsibility for providing drainage infrastructure is assumed by the Drainage Division of the Ministry of Works and the Municipal Corporations of the Ministry of Local Government. Throughout Trinidad, seasonal flooding has caused incidents of property damage and disruption of economic activity. Major river channels in urban areas have in principle been designed to accommodate storm-flows with a 25-year recurrence interval. However, prevailing development practices have tended to lead to increasingly large flood-flows. These increasingly larger discharges are a result of practices that focus on drainage rather than accommodating storm runoff through a balanced mix of temporary storage and discharge capacity. "Drainage improvement works" may then actually lead to increased frequency and severity of flooding.

The map of flood locations reproduced below shows a number of vulnerable points in the MetroPOS area, including substantial flooding within the City of Port of Spain. The problems with the drainage system include the inadequacy of existing box culverts and street side drains.

The capacity of the network is further reduced by sedimentation and debris that is carried by the Maraval and St. Ann's Rivers. It is estimated that 30% of the existing outfalls are clogged with sediment deposits. GENIVAR prepared a Drainage Master Plan that identified corrective measures that should be taken to eliminate this problem in the Downtown area. Central Port of Spain receives surface water runoff from a very large territory. While the river corridors of the Maraval and St. Ann's Rivers have been modified to accommodate this runoff, flooding persists following periods of heavy rainfall. The problem is compounded by low-lying areas near Independence Square and Wrightson Road which are occasionally near high tide levels.

The 1981 Millette Report attributes flooding in Port of Spain to a mismatch between design discharges and available discharge capacity[1]. Installed capacity is often reduced by sediment deposition and/or debris blocking channels/inflow openings. Sediment deposition reduces the cross section and increases the hydraulic roughness of channels, especially if vegetation establishes on sediment deposition. The report identifies 24 areas of known flooding (fig.5.1 in the Millette Report) and 19 locations of sediment deposition (fig.6.1 in the Millette Report), which causes a reduction of drainage capacity.

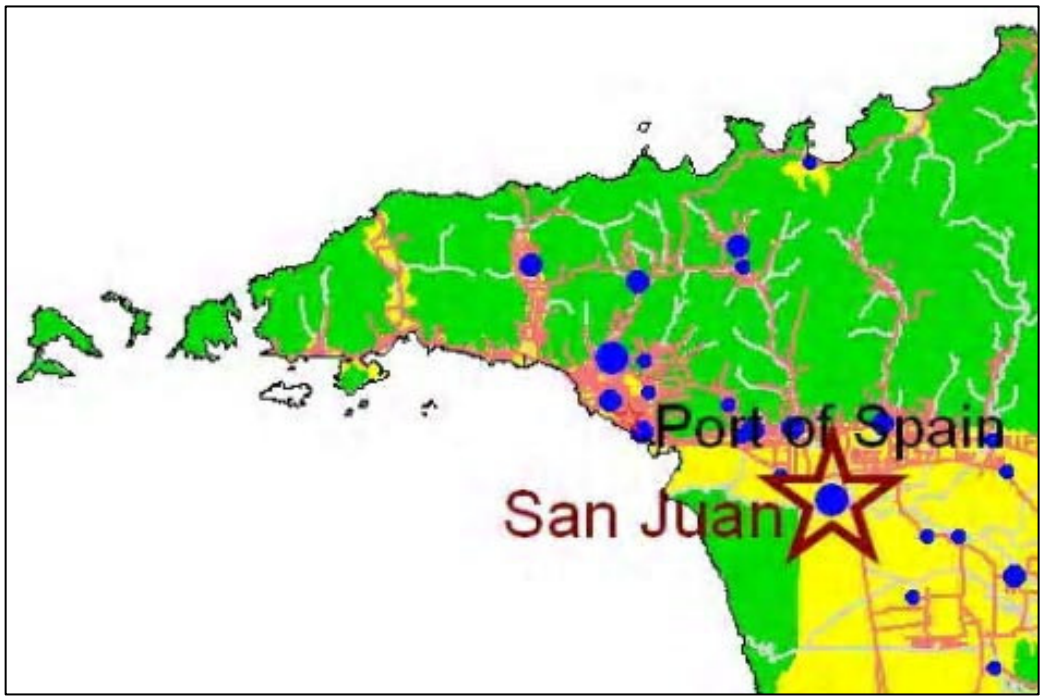
Causes of blockage by sediment include localized flat gradients, changes in channel sections; tides; and coastal land reclamation. In the case of this last factor, long lengths of low gradient drainage channels are required to convey runoff to the sea across land that has been reclaimed seaward of the original coastline. These channel-sections are consequently prone to sedimentation, leading to flooding problems further inland. Causes of blockage by debris include channel constrictions or bends and vegetation growing in un-maintained channels.

[1] Excerpt from 1981 Port of Spain Drainage Study by Millette Engineering. The Report comprises three volumes that together form Phase I of the project. The study area coincides with the boundaries of the Port of Spain Corporation but the project includes assessment/analysis of runoff from Drainage Basins outside the limits of Port of Spain, notably the St. Ann's & Maraval Rivers.

Inadequate drainage infrastructure contributes to frequent flooding in the City of Port of Spain, especially in low-lying areas near the sea front. Flooding occurs at gradient change and near sea level and is associated with sedimentation of channels, and debris from upstream development. Flooding during peak rainfall periods also reflects the limited capacity of many existing water courses, though the capacity of the Maraval River is adequate within the boundaries of Port of Spain. Flooding is exacerbated by hillside developments reducing vegetation cover & increased impermeable surfaces, limiting adsorptive capacity of natural environment. As a result, water races down the hillside causing extensive erosion and land slippage in hillside areas and flooding on the plain. Erosion on the Hillsides ends up as sediment deposition in drains which further exacerbates flooding. Figure 3 shows the major flood locations in Metro-POS.

A more detailed discussion of flood risks and water management issues is presented in Volume 1 Chapter 3.

Figure 3 Flood locations in Metropolitan Port of Spain

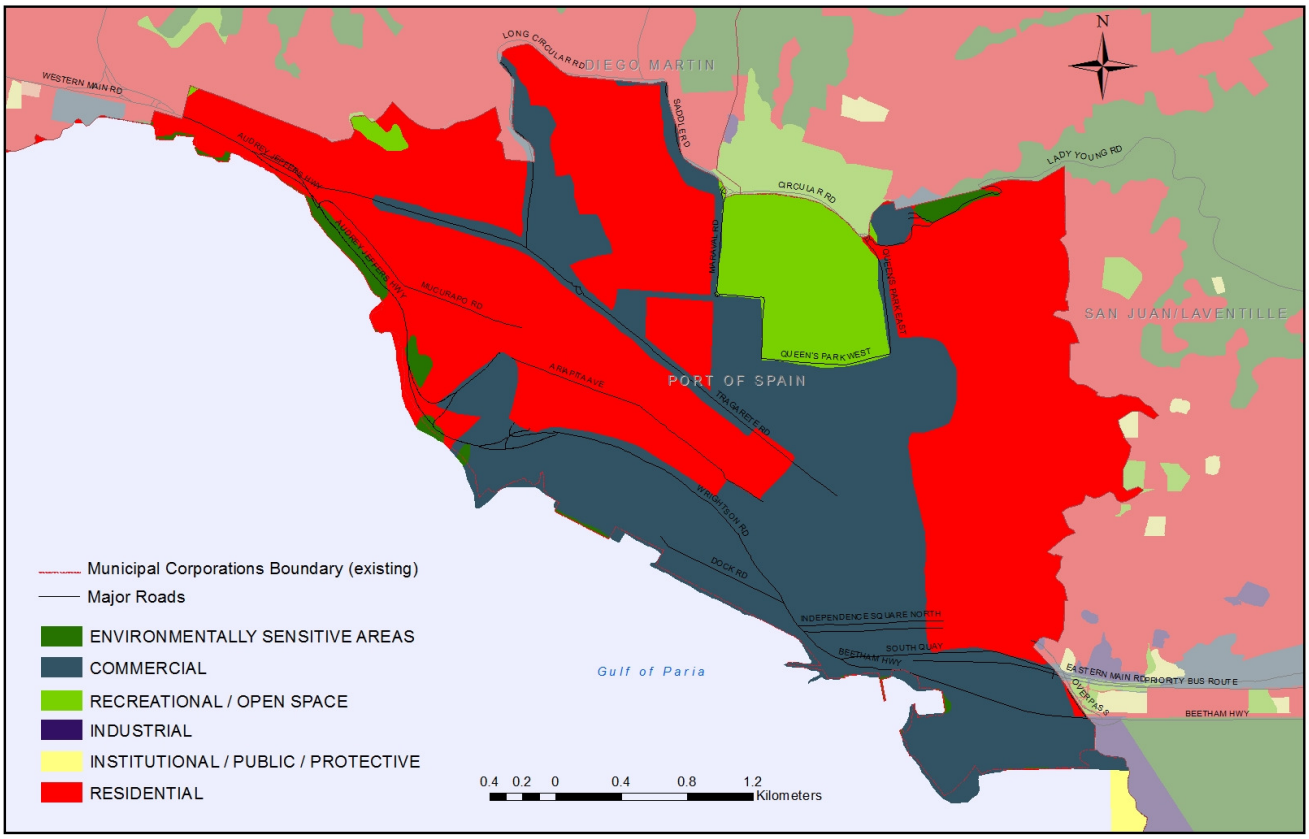


Reproduced from F. Canisius and C. Nancy. Department of Surveying and Land Information, Faculty of Engineering, University of the West Indies, St. Augustine, Trinidad and Tobago. *http://www.urisa.org/canisius* The size of the blue circle indicates the number of occurrences of flooding. San Juan is the focus of this study.

3.9 Existing Land Use

Land use planning in Trinidad and Tobago is governed under the Town and Country Planning Act Chapter 35:01 and administered through the Town and Country Planning Division. The Town and Country Planning Act has its roots in the public health and housing legislation of Victorian England. In Trinidad and Tobago, planning law is seen as one of our major tools for environment management, to accommodate concerns such as the environmental limits to growth and the adverse affects of development on the natural environment.

Map 8 City of Port of Spain Existing Land Use



Below, Table 10 shows the percentage of area according to land use in POS.

Table 10 Port of Spain City Corporation: Existing Land Use by area

Port of Spain City Corporation

Land Use Class	Area sq. m.	Area sq. km.	Area hectares	%
Agriculture	0	0.00	0	0
Commercial	4413734	4.41	441	42
Environmentally Sensitive Area	50379	0.05	5	0
Industrial		0.00	0	0
Institutional	0	0.00	0	0
Recreational / Open Space	653413	0.65	65	6
Residential	5445445	5.45	545	52
Total	10562972	10.56	1056	100%

In essence, the current City of Port of Spain is highly urbanized, with over 50% of its territory used for residential purposes. The rest of the land is used for commercial /institutional/ industrial uses (42%) and Recreational/ Open Space (6%). Industrial land use is generally limited to the port area. There is no significant agricultural land use within the city boundary. These numbers emphasize the unavailability of Greenfield sites left within the city boundaries for new development. Considering the modest densities in most of the city, the implications for the future of Port of Spain are clear: any new development within city boundary will have to take the form of either in-fill or redevelopment of existing built areas.

3.10 Land Development Opportunities & Constraints

Limited land for development

There is very limited 'greenfield' uncommitted sites within Port of Spain. There is limited land for development in East POS where existing settlement is at capacity. The high density of development is major constraint on future large scale development.

The Waterfront area may provide some housing land but much of the resultant housing may be high cost housing, not affordable to the majority of Port of Spain residents

Lack of low-income housing

Lower income groups are normally unable to afford houses or plots in the formal sector and have been forced to enter or remain in the informal spontaneous housing sector. (HCNDP, 36)

Inadequate open space & poor maintenance of existing open space

An open space system stretching from the Brian Lara Promenade to Queen's Park Savannah, including an existing network of well-planned & located parks and civic spaces is one of the city's primary assets. Quality of public spaces is an important factor in fostering civic pride and attracting investment. In Port of Spain, however, most parks and civic spaces are poorly maintained and their design and equipment have not kept pace with socio-economic changes in their surrounding neighbourhoods.

Similarly, Queen's Park Savannah is both the green heart of city and the main venue for Carnival events. It currently faces conflicting uses and expectations (for example, it is a car park for events and 'wreckered' cars, a venue for walking, jogging, vending, kite-flying, sporting events, carnival, loud-event centre, and family-outings). Additional attractions are the well-documented heritage buildings at its fringe, the Emperor Valley Zoo & Botanical Gardens. The Savannah suffers from rising traffic volumes – as it is a conduit from Maraval, St Ann's /Cascade, Belmont /Lady Young Rd into the Port of Spain CBD.

There are also health & safety issues arising from air & noise pollution, vehicle/pedestrian crossing hazards. Additionally, the Savannah is under complex & fragmented management & administration ownership structure

Urban Design and Landscape

Port of Spain is gifted with the visual amenity of the sea and mountains with the possibility of recreation along river corridors & mountains. Steep mountains, two river valleys and the sea offer an outstanding landscape setting for city. But, only mountains contribute to the urban design in present-day POS. The grid layout of streets from Spanish times gave views of the mountains and an orientation within the city, but this view has recently been blocked for much of the city by the massive and imposing structure of the new National Academy for the Performing Arts located at the south-eastern edge of the Savannah. However, the river corridors are merely drainage canals, and the sea is lost after landfill and industrial port development.

The East Central POS Special Development Area: This straddles the St. Ann's River, is bounded west by Charlotte St, north by Belmont Circular Rd, east by Observatory Street & the St. Ann's River, and on the south by Independence Square. This is the historic centre of the City. But it is close to the impoverished hillside communities to east, has a large concentration of public housing apartments and a perception of crime in the area. It is most degraded part of Central POS and the most challenging to revitalize.

Streetscapes are important for an attractive, efficient and convivial urban environment for pedestrians, public transport, private cars and delivery vehicles. None of the Central POS streets do this well. Instead, streets offer poor accommodation for pedestrians, especially the disabled (sidewalks in disrepair, few sidewalk ramps at intersections and the existing few are steep, narrow and dangerous to potential users, there are no pedestrian lights and no audible pedestrian crossings) Roads are not accessible to all, pavements are lacking or unusable; the physically challenged, the aged and the young are particularly vulnerable

Education & Schools of learning

The population decline between 1960 – 1990 resulted in POS being oversupplied with most community facilities, including schools at all levels. The T&CPD 1987 plan established for 1995 a need for an extra 8,468 primary and 6,757 high school places.

Transportation Hub

The Transport sector affords several opportunities, but faces major challenges. Port of Spain is the most important transport pole in Trinidad. Historically, as a centre for trade, government and culture, it is a source of major traffic generators serving those functions, including government ministries, large financial institutions, and large companies (Clico, Royal Bank Trinidad & Tobago, Neal & Massy, Republic Bank, Tatil). It is essential to maintain and develop POS as a national transport hub. The city also demonstrates several features of major congestion and its effects.

Cultural Tourism

Port of Spain has a rich history of colonial architecture: Spanish, French and British eg: The Magnificent Seven on Queen's Park West. The city also boasts of some outstanding new buildings.

An area with powerful historical and current cultural association is East POS. It is the heartland of the community-based panyards. An integrated cultural focus on Picton Hill eg a Steelpan Institute would serve to recognise and elevate this significant element of national life.

The flat area of Belmont with its historical associations and built structures should be designated as a Heritage Village. In the hillside areas, there are a few shango yards which have been researched and documented by the social historian, the late Andrew Carr. These are significant in the social and religious history of both free and formerly enslaved African communities of Belmont.

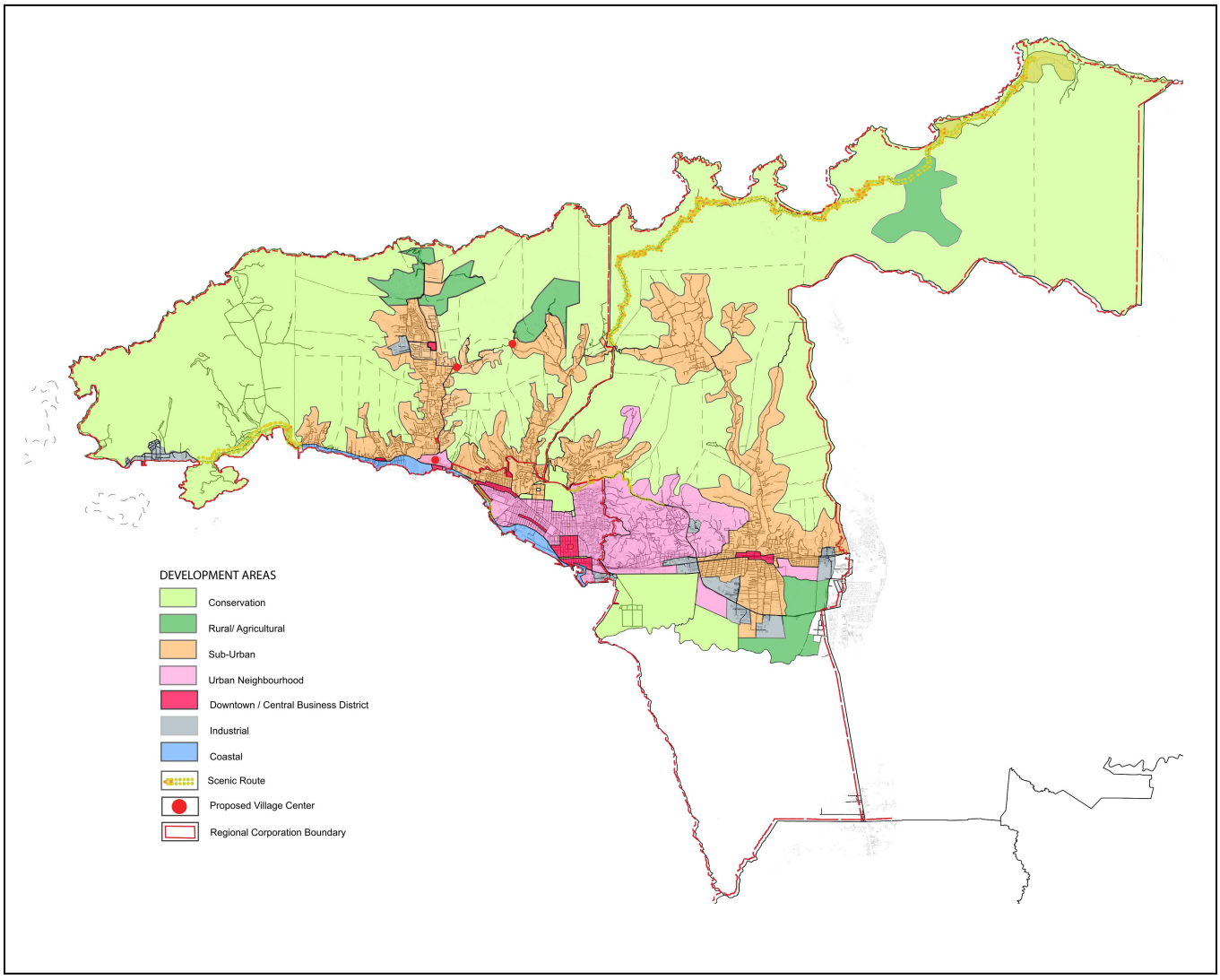
Chapter 4 Land Use Strategies for the Port Of Spain City Corporation

4.1 Overview of Land Use Strategies

This chapter elaborates on the Development Concept presented in Volume 1, by laying out a series of seven land use strategies designed to lead to the implementation of the Concept. It is critical to acknowledge that the City of Port of Spain has its own unique issues and challenges to address in the next 20 years of its growth. This makes it imperative for the Corporation to adopt the strategies outlined in this chapter as its own. However, these strategies are intended to be considered from a metropolitan perspective, reflecting the reality that these issues that are not constrained by administrative boundaries.

The starting point for these strategies is the spatial definition of the Metropolitan Port of Spain Area in terms of seven distinctive geographic areas- referred to as Planning Policy Areas. These areas, represented in Map 20, are used to refine the way in which land use strategies are to be implemented. Finally, a series of indicators and benchmarks are presented as a means of monitoring and reporting on the implementation of the overall Development Plan. These indicators offer quantifiable criteria for measuring the implementation of the land use strategies and associated policies. Specific projects emerging from these strategies and the overall Development Concept are presented in Chapter 5 of this volume.

Map 9 Metropolitan Port of Spain Planning Policy Areas



The seven Planning Policy Areas summarized in Tables 11 and 12, reflect the variation and intensity of built development and land use evident across the Metropolitan Area and in the Port of Spain City Corporation. Note that the breakdown of land use policy areas in the table excludes those natural areas supporting little population. Consistent with principles of land use planning and urban design, the division of Metro-POS into these areas reflects the goal of maintaining and enhancing a coherent and sustainable form and identity at a metropolitan scale.

Table 11 Metropolitan Port of Spain Land Use Policy Areas

Area #	Name	Classification	% of land area	% of 2000 pop	% of 2020 Pop
1	Natural	• Protected areas/Environmentally Sensitive Areas: Nature reserves, forest reserves, Swamps/wetlands • May include established parklands within urban or suburban boundaries • Consistent with TCPD Land Use Policy Designations	1.6%	0.8%	0.6%
2	Rural	• Classified Rural settlement (based on GIS analysis) • Agricultural lands (from TCPD land use maps) • Matches Census Communities Boundaries	47.4%	3.5%	3.4%
3	Industrial	• Centres with a concentration of employment linked to heavy or light industry that does not support local residential areas • Matches Census Communities Boundaries	1.7%	1.3%	2.4%

Area #	Name	Classification	% of land area	% of 2000 pop	% of 2020 Pop
4	Suburban	• Unlike rural area, principal land use is residential • Residential and employment densities are generally lower than inner-city and downtown areas. • Matches Census Communities Boundaries	39.8%	45.5%	38.5%
5	Urban Neighbourhood	• Mixed use area immediately adjacent to the Downtown • Predominantly residential, but typically experiencing conversion to commercial • Matches Census Communities	8.7%	47.4%	47.9%
5a	Unauthorized Hillside Development	• A sub-set of suburban, natural and urban neighbourhoods • Located in hillside areas • Census communities with a predominant amount of unauthorized development	8.0%	21.7%	16.6%
6	Downtown	• Includes accepted definition of the Central Business District • Includes adjoining areas predominantly commercial in character, with high employment densities • May match “Downtown” or “City proper” census communities	0.8%	1.4%	7.2%
7	Coastal	• Defined by distance from shoreline to major coastal road (where one exists) OR buffer area of 100m where no road exists	0.05%	0.8%	1.9%

Table 12 City of Port of Spain Land Use Policy Areas

Area #	Name	Classification	% of land area	% of 2000 pop	% of 2020 Pop
1	Natural	• Protected areas/Environmentally Sensitive Areas: Nature reserves, forest reserves, Swamps/wetlands • May include established parklands within urban or suburban boundaries • Consistent with TCPD Land	0.0%	0.0%	0.0%
2	Rural	• Classified Rural settlement (based on GIS analysis) • Agricultural lands (from TCPD land use maps) • Matches Census Communities Boundaries	0.0%	0.0%	0.0%
3	Industrial	• Centres with a concentration of employment linked to heavy or light industry that does not support local residential areas	0.0%	0.0%	0.0%
4	Suburban	• Unlike rural area, principal land use is residential • Residential and employment densities are generally lower than inner-city and downtown areas. • Matches Census Communities Boundaries	12.5%	3.6%	3.1%
5	Urban Neighbourhood	• Mixed use area immediately adjacent to the Downtown • Predominantly residential, but typically experiencing conversion to commercial • Matches Census Communities Boundaries	58.9%	87.5%	72.3%

Area #	Name	Classification	% of land area	% of 2000 pop	% of 2020 Pop
5a	Unauthorized Hillside Development	• A sub-set of suburban, natural and urban neighbourhoods • Located in hillside areas • Census communities with	0.0%	0.0%	0.0%
6	Downtown	• Includes accepted definition of the Central Business District • Includes adjoining areas predominantly commercial in character, with high employment densities • May match "Downtown" or "City proper" census communities	28.6%	8.9%	24.6%
7	Coastal	• Defined by distance from shoreline to major coastal road (where one exists) OR buffer area of 100m where no road exists	5.5%	1.2%	2.6%

Implementation of the Development Concept in each of the Planning Policy Areas is informed by a series of Land Use Strategies. These strategies reflect the actions to be taken to move the existing land uses and densities to a future desired state, and originate from three sources:

1. Community visioning sessions, which called for strategies such as stopping unplanned development, providing adequate space for growth, addressing traffic congestion and addressing flooding;
2. The development concept of the Regional Development Plan presented in Chapter 4 (Vol. 1)
3. The Greater Port of Spain Squatter Regularization Study, which offers guidance related to managing informal settlement through Conservation (including relocation), Containment/in-situ upgrading, and Regeneration/Redevelopment.

The seven land use strategies are summarized in Table 36 and as follows; and are also discussed in the remainder of the chapter:

1. Contain urban development in order to minimize unauthorized hillside development and suburban residential and commercial sprawl
2. Achieve a more compact and higher density urban form
3. Achieve more equitable access to community & social infrastructure and services
4. Reduce congestion through an integrated regional transportation system
5. Support mixed-use employment centres
6. Develop a water management and flood control system
7. Introduce urban design in order to enhance the aesthetic and functional quality of public space

4.2 Land Use Strategy 1: Contain Urbanization in order to Minimize Hillside Development and Suburban Sprawl

At the core of the strategy is the identification of a location for a Green Belt and Growth Control Zone and determining how these should provide long-term opportunity for growth. This reflects the ongoing need to identify areas for future growth to be serviced by the municipal corporation. In terms of a zone of controlled development, the Northern Range and Caroni Swamp form the natural barriers to expanding the area of built development. A 'No-Build Zone' would also be established in relation to significant non-urban areas with intermittent villages and rural settlements. This will support greater efficiency of land use, as well as contributing to the protection of agricultural lands and environmentally sensitive areas. At the same time, the loss of first class agricultural land is in conflict with the need for urban development, as both need flat land. The strategy will need to reconcile and/or balance this contradiction. Ultimately, containment will be achieved by drawing a strong constraint line around the built area and maintaining this line at least till the next planning period.

A second critical part of the containment strategy focuses on addressing informal settlement in the Metro-POS area[2]. Informal settlement in the Metro-POS area was characterized in Chapter 3 (Vo. 1) in terms of three settlements types:

- Upper watershed areas
- Middle watershed areas
- Lower watershed areas

Work carried out by Interplan for the Land Settlement Agency identified an overall approach to squatter regularization tailored to each of these three settlement typologies. This approach is summarized in Figure 4 and further described below.

[2] Elements of the containment strategy focused on informal settlements are drawn from a report produced by Interplan for the Land Settlements Agency, Ministry of Planning, Housing and the Environment. The report was produced as part of a project which proposed a mechanism for regularization of tenure of informal urban settlements on public and private lands, by putting in place the conditions necessary for regularization of tenure.

Figure 4: Core Strategies by Settlement Typology

UPPER WATERSHED AREAS	MIDDLE WATERSHED AREAS	LOWER WATERSHED AREAS
		
Conservation Containment	In situ Upgrading Limited Relocation	Comprehensive Redevelopment Relocation or Decanting

Strategy 1: In Situ Upgrading

This approach includes a strategic set of interventions to allow for the longer-term and gradual redevelopment of a site. Steps to be taken include a community plan, and the acquisition/expropriation of lands needed for rational public infrastructure upgrading. The primary focus should be on those sites considered most sensitive to long-term development pressure. The basic strategy would be to put in place the conditions necessary to trigger long-term redevelopment. At a minimum this would involve regularizing the road layout, with the provision of basic public infrastructure.

Regularization of the lot layout would be beneficial, but would depend on the scope for participation by established residents. In some cases, lot reconfiguration could be achieved with the concurrence of existing occupants, and without needing to formally address issues of land "ownership."

This first strategy would be considered in all cases, with the understanding that a site must meet with all of the following criteria in order to be deemed suitable for comprehensive (in situ) upgrading:

Environmental Hazard: A site would be deemed unsuitable for upgrading where significant environmental hazards are present and cannot be mitigated; or where the site occupies an environmentally protected zone.

Legal Framework: Upgrading would be difficult if the necessary legal tools are not available to undertake all infrastructure works within in a settlement. Works on private lands is one such case.

Community Engagement: Infrastructure upgrading undertaken without meaningful dialogue with the community would not be considered a recommended approach. This is particularly important where a community is organized and established, and particularly difficult where a community is not organized.

Institutional leadership and coordination: A workable institutional delivery model would have to be in place in order to lead and coordinate the activities of multiple agencies to be involved in undertaking the infrastructure works.

Engineering Standards: Proposed new standards for water, sanitation, drainage, roads, transport, where existing standards cannot be met without mass relocation.
Urban Form: Upgrading could not take place where the proposed urban form is considered unacceptable.

Strategy 2: Relocation

A strategy of public-sector led relocation would generally relate to individual households, rather than entire areas. Relocation of individual households would be a preferred strategy under the following conditions:
Environmental hazard: A site would be deemed unsuitable for upgrading where significant environmental hazards are present and cannot be mitigated; or where the site occupies an environmentally protected zone
Engineering Standards: Acceptable standards for water, sanitation, drainage, roads, or transport cannot be met without relocation of households
Public Rights of Way: Where lot setbacks must be reclaimed or existing structures removed in order to accommodate a public right of way or any needed public works.

Relocation would be based on a collective bargaining model. This would involve engaging communities in the negotiation process to establish options and preferred directions.

Strategy 3: Conservation

The community planning process would be used to establish priorities, and develop a long term management framework where the vision is to promote watershed conservation of a designated area. The assumption is that further development is not desirable due to environmental risk/hazard to downstream residents. Rather than the removal of all residents, the intent would be to maintain a rural settlement form with the possibility of a low-intensity agricultural uses. The objective would also be to create a vested interest on the part of residents by providing some form of tenure security. In this case, mass relocation is not to be

pursued as an option, as the area would eventually return to its current condition if no other measures are taken.

A shared environmental stewardship model is proposed, based on a combination of upgrading and title for existing squatters to reflect a desire to minimize impact on the environment. Tenure options, developed more fully below, could include collective leasehold, with conditions in the lease tied to environmental stewardship. Established high income settlements would also share a vested interest in minimizing environmental impacts. In this case, providing tenure serves as a tool for watershed management.

This strategy is generally anticipated to be most relevant to existing settlements in low-density, upper watershed areas. In these cases, the level of infrastructure provision would reflect the long-term vision of retaining these areas for conservation or low-impact agricultural uses. Issues of tenure security are important, but not for long-term redevelopment. Instead, the role of tenure security is to create strong vested interest on the part of residents in assuming "ownership" of the area in order to support a mandate of watershed conservation. Limited relocation would be necessary where certain environmental and health hazards are in place, or where public rights of way must be established.

Strategy 4: Redevelopment

Comprehensive Redevelopment involves increasing the residential density of unplanned settlement in order to respond to strong demand for affordable housing within the MetroPoS Area. This could be achieved through a combination of public and private sector intervention. The circumstances under which redevelopment would be justified would depend on a number of converging factors described below.

In the short-term, redevelopment of unplanned areas for the purpose of constructing state subsidized housing would be appropriate in certain circumstances:

- The presence of large parcel(s) of State lands
- The cost of in-situ environmental mitigation is high
- Relatively low level of historical investment in infrastructure and housing
- Low density of housing

There still remain questions of housing typology and urban form, community engagement, and community planning but the redevelopment decision can trigger a range of new options.

In the long-term, the combination of infrastructure upgrading and increased security of tenure would contribute to the gradual redevelopment of other areas. Higher-density, lower watershed areas, accounting for a small proportion of the settlements would also benefit from this approach.

4.3 Land Use Strategy 2: Achieve a More Compact and Higher Density Urban Form

The intended outcome of this second strategy is achieve a more compact, mixed use, higher density urban form. This will involve adding 42,400 new residential units over the full extent of the Metropolitan Port of Spain area, as proposed in Development Concept presented in Volume 1. This includes 34,100 new units to accommodate new population growth, and a further 8,300 units to replace housing requiring major repairs. This strategy will maximise the efficiency of existing infrastructure. Until now, development has been relatively ad hoc and dispersed, with the State in the role of permitting/not permitting proposals. This approach will require a change in the structure of urban housing and mixed-use sites in urban areas, with higher ratios of smaller housing units & multiple housing units, and higher ratios of residential rental to ownership. Where new residential areas are concerned, attention should be given to provide housing of the type, size and price that is needed.

Volume 1, Analysis and Development Concept chapters, addressed the need for intensification of residential areas, particularly within the city of Port of Spain. Intensification of existing neighbourhoods will involve in fill of vacant lots or redevelopment of existing housing stock, to be replaced by higher density and commercial/residential/institutional mixed-use projects. For example, replacement of older housing stock with higher density development would be expected to take place in the 9 area intersections and 6 transport corridors identified in Chapter 4 (Vol. 1). The redevelopment of roads, buildings, functions, and transport modes at nine urban area Intersections would provides space for 3,200 dwelling units with an average of 400 du per location. Along transport corridors, redevelopment incorporating good urban design will enhance function and appearance and improve municipal corporation revenue base. Six corridors will offer space for 200 dwelling units each in total 1200 dwelling units.

A program of replacing older housing stock with higher density mixed use development would subsume the current trend of replacing older residential with strictly commercial uses. Areas like Belmont, Woodbrook, St James, Sea Lots and the Central Market each requires different treatment. The goal is to densify the residential use in these areas. The way to achieve this goal will depend on the structure of the urban fabric, the quality of the buildings and the cultural heritage of the locations and buildings.

Where the land ownership pattern is a few parcels with a low-intensity of use, the strategy should involve mixed-use sites well integrated into the existing urban fabric and transportation network. For example, this would involve redeveloping parcels devoted to surface parking in the CBD, which would provide for an estimated 1,000 dwelling units and 50,000 square meters of commercial space.

Depending of the willingness of the commercial property owners, a further 1,000 dwelling units could be introduced by implementing a policy to encourage new construction or renovation to create housing above ground-level shops.

In more suburban areas, the relationship between housing, agriculture and natural land in communities such as Santa Cruz and Aranguez has to be made clear. This will involve establishing clear nodes for development, such as in Cantaro Village and La Pastora in Santa Cruz, with a mix of services, commercial uses and housing in 3-4 storey walk-ups and town houses.

4.4 Land Use Strategy 3: Achieve More Equitable Access to Community & Social Infrastructure and Services

This strategy aims to identify inequities in access to basic community facilities and services across the full extent of the Metropolitan Area. Using a Settlement Area approach described in the planning analysis (Vol. 1), this will involve investing in under-served areas and relocating facilities where this action is warranted.

Facilities included in this strategy includes schools, community centres libraries, parks, green space, recreational facilities, and banking facilities as identified in the Gap Analysis Matrix and the spatial distribution of community facilities. The strategy involves increasing accessibility to range of social, cultural & commercial services. The strategy is built on a recognition and more careful analysis of the difference in growth of the number of inhabitants within different areas of Metropolitan Port of Spain. This would include understanding the changing demographic makeup of the population, notably with respect to age and household size.

The settlements approach involves clustering adjoining neighbourhoods to form an urban village with a the minimum number of inhabitants required to support a community centre, a health centre and some retail functions such as a grocery store, bank and post office. Ideally this type of a facilities node would be located at the junction of access roads to the neighbourhoods. It is possible to use this urban settlement structure for new developments. This strategy will also entail connecting existing parks and open spaces to create linear park structures with paths for non-motorized traffic. Another strategy would be to locate schools

near the boundaries of new residential development so that the school will be accessible to children of neighbouring housing developments.

As discussed during the Port of Spain Community Visioning session, the development of community facilities should also be pursued within the framework of a policy of inclusiveness, including:

- A modern beautiful city, high technology amenities, public education, better health care, and efficient transport.
- A city that takes care of its young and old, a crime-free city with a proper justice system.
- Important are; proper education, proper maintenance, efficiency, transparency.
- Infrastructure must develop in tandem with the built environment, private & public. Modern city, sound infrastructure, eco-friendly development and maintenance - friendly.
- Strong spiritual, social, cultural & political values are to be expressed in infrastructure & public spaces that cater to a safe, resourceful, clean, enterprising City.
- Schools, infrastructure, environment should all support quality of life and living.
- Environmentally, improve waste-management infrastructure.
- Garbage to be well accommodated, bins are to be covered.

4.5 Land Use Strategy 4: Reduce Congestion through an Integrated Transportation System

Volume 1 Development Concept outlined several actions to be taken to enhance connectivity and improve the flow of traffic within the major sub-systems of the Port of Spain Metropolitan area. In addition to these interventions, the transportation strategy involves addressing non-vehicular transportation. The strategy includes upgrading the road network and road quality, and addressing gaps in network deficiency. The eventual mix of multiple modes and routes must be for all members of the travelling public, regardless of their abilities or disabilities, capable of delivering the required person and goods capacity, flexible enough to accommodate on-going changes in transport preferences and needs, reliable, affordable, in terms of capital and operating costs, and respectful of the environment. This will involve linking land use with Transit Oriented Development (TOD) associated with the land use strategy.

A Clear Road Hierarchy

The road network should reflect as much as possible the intended function and purpose of each type of roadway. Arterial roads are the main transport routes within the road hierarchy. Their function is for movement, and they operate under the following conditions: there is no direct access to premises; any development is set well back from the highway; all access to premises are provided via collector roads; the number of intersections is minimised; pedestrians are not permitted; and there is no stopping or parking on the carriageways. On some arterial roads there may be a relaxation of the direct access and pedestrian constraints, and in exceptional circumstances large individual developments may have direct access, and there are known as secondary or minor arterial roads, to differentiate them from primary or major arterial roads.

Collector roads are immediately below arterial roads in the hierarchy. The needs of moving traffic still predominate but they also contribute to access requirements. They serve to feed traffic onto and off the arterial roads. They operate under the following conditions: direct access to premises should only be permitted where large traffic generators exist; motorists need to be aware of pedestrians as these roads will be within or close to residential areas; the

road is only for local traffic and through-movements should be made awkward and inconvenient; parking may be allowed, but alternative off-road provision is preferable; and public transport stops may be located on the carriageway but should be near well- defined crossings.

Local roads are for access only. They function under the following conditions: vehicle flows must be kept to a minimum; all unnecessary traffic should be eliminated; vehicle speeds should be kept low by careful and deliberate inclusion of obstructions to create meandering alignments; roads should be kept short where possible; cul-de-sac and loop roads should be used wherever possible to deter through-traffic; intersections should be three-legged (where three roads meet) rather that four-legged and kept compact to aid pedestrian movement; and, parking and stopping within the street is permitted, although adequate provision should be provided within individual properties.

Public Transportation

Investments in public transportation are also required. One goal is to improve accessibility of the city centre by a regular public bus service, especially between Port of Spain and the suburbs to the west and north and East Port of Spain. Private motorization alone cannot cope with the growing demand for efficient and affordable travel, and increasing mobility requires high performance transit systems. Strategies to manage travel demand are now more critical to better transportation operations and system performance than strategies to increase capacity (supply) of infrastructure facilities.

Promoting mobility through increasing vehicular traffic limits both the freedom of mobility and the quality of life. For mobility to be sustainable, transport should be understood as a mechanism to maximise access and not as a mechanism to just move vehicles themselves. Well-organised and managed public transport is the only form of transport available to all persons. One option to implement this development would be to arrange through the PTSC for the

contracting and management of Maxi-Taxis as part of the overall bus system to provide proper schedules, location of stops, amenities at terminals, and information on routes and schedules.

Accessibility for people with reduced mobility: Accessibility needs of people with reduced mobility, disabled people, elderly people, families with young children, and the young children themselves must be included: they should have easy access to urban transport infrastructure. Accessibility also refers to the quality of access that people and business have to the mobility system, comprising infrastructure and services.

Dedicated School Bus Transport

Commuters experience a major drop in traffic congestion when school is on vacation. Any optimal solution to the transportation problem must take account of this phenomenon. During the school holidays the competition for space aboard unscheduled and unreliable public transport is reduced. The trips for work are therefore more organised and available within more predictable periods. A dedicated school bus transport service would ensure safe, efficient and reliable transport is available for students. School children would benefit from educational opportunities and social, sporting and cultural activities through easy accessibility to public transport.

In the longer term, plans may be made to create subsidiaries of the prestige school in other areas in order to encourage decentralization. Perhaps a better move may be to create zoning, whereby parents would have to send their children to schools within the zones in which they live.

Air quality improvements

The main environmental issues are related to the generation of carbon dioxide, air pollutant emissions and noise. It is suggested that measures be developed to improve the environmental performance of their public transport vehicles by procuring cleaner vehicles and offering economic incentives to private operators.

Traffic Management within Urban Centres

The following are proposed for the urban centres of Port of Spain, Diego Martin and San Juan Laventille:

1. There would be no stopping on main roads in urban centres 50 metres before or after intersections.
2. Specially designated stopping bays for transit vehicles would be painted along specific routes.
3. Commercial malls have replaced civic function of cities and have the potential to become transit hubs.
4. Pedestrian priority and markings would be promoted.
5. A system of dedicated traffic and parking wardens would be instituted for ticketing offenders of the strategies described above. These wardens would operate in urban areas on foot and bicycles.
6. Taxis and maxi-taxis occupying stands in urban areas have long out-grown the capability of holding their numbers required, reducing the traffic-carrying capacity of the roadway. This cannot be sustained. Any plan for public transport must provide off-street facilities in a reorganised fashion. This component would be handled by the Transit Authority.
7. Loading and Off-loading by commercial vehicles on the main routes in urban centres cannot be permitted, especially during peak period. Investigations would be conducted to limit these activities to between 6:00pm and 6:00am.

Parking Management

Many people still do not realize that, when addressing traffic congestion problems, vehicle parking issues are more significant contributors than traffic volumes. Park-and-ride is a concept where potential parkers are intercepted at the perimeter of, or further away from the urban centre. If this parking is relatively inexpensive, convenient, and directly connected to a shuttle service from the parking sites into very close proximity to the ultimate destination of the user, the concept would be successful. The location of park-and-ride facilities is critical to their effectiveness. The most effective is nearest the origin of the journey. Park-and-ride facilities are required on the fringes of urban centres. Consideration could be given to creating park-and-ride facilities in association with a re-developed transit hub for taxis and maxi taxis and PTSC. Satellite park-and ride facilities could also be considered in peripheral areas.

Other Travel Demand Management Measures

Consideration should also be given to developing the concept of alternative work hours, such as (1) Staggered hours: different work groups are assigned to begin at different times (2) Flexi-time: allows employees to choose their own schedules within company- set guidelines (3) Compressed work-week: Four-day work weeks allow employees to complete 40 hours of work in four 10-hour days.

Aspects particular to Port of Spain identified during consultation

- All locations well served by public transport, and by shaded sheltered foot- & bike-paths.
- Green / trees
- Inner city should be closed to heavy traffic. Close of shopping streets, convert selected streets to bicycled streets.
- Restrict access by cars and on-street parking in commercial nodes to be pedestrianised
- Sheltered/shaded comfortable wait-locations for public transport.
- Comfortable transit nodes, shade, shelter, benches.

- Shaded/sheltered cycle/pedestrian paths
- Bicycle paths (especially from east to west)
- Service activities with more efficient transport, public transport, pedestrian movement and bicycles.
- Walking-streets, beautiful like a beautiful garden (Eden) to cater for resident & transient population.
- Entire centre should be closed off to traffic. This will assist in health of citizens. Bicycle paths and recreational facilities. Pavements to facilitate pedestrians (no potholes/broken manhole covers).

4.6 Land Use Strategy 5: Develop a Water Management and Flood Control System

It is critical to acknowledge that Port of Spain is situated at the base of many of the watershed systems within the metropolitan area, where significant proportion of the population and property of the metropolitan area are located. This makes it imperative for Port of Spain to develop a Water and Flood Management System. However, this strategy must be considered from a metropolitan perspective, as water management and flooding issues are not confined to individual municipal administrative boundaries.

The primary emphasis in the Port of Spain Metropolitan area is on managing the incidence and severity of floods. A response to the increased risk and incidence of flooding and landslides would comprise a system of zoning to guide the land user and approval agencies, as indicated below:

1. **Steep slope zones:** The consequences of development on steep slopes is especially worrying in view that the discharge-increases due to accelerated runoff may be especially pronounced on steep slopes, and the land-slide risks associated with steep slopes. The landslip risk is especially great on slopes steeper than 32°. Slopes will be zoned in two categories: Permanent tree cover is recommended for slopes above 30°, together with great vigilance to detect and mitigate gully

development. Slopes between 15° and 30° should only be developed in the context of stringent application of appropriate slope stabilization measures.

2. **Low-land zones & bypass channel alignments:** Zoning plans should identify "low lands" that require drainage through pumps/sluices combined with storage. In a number of low-lying locations however high-level water is currently allowed to flow into the more difficult to drain lower areas. That should be rectified. For example, this has been implemented in El Socorro where water from north of the Churchill Roosevelt Highway (CRH) flows to the Caroni River by gravity while water from south of the highway is pumped out to the Caroni River. The need for such zoning and bypass channelling has been identified in POS drainage studies.

3. **Zones where flood-storage capacity is needed:** Zoning plans should identify areas where storage capacity needs to be created to augment the discharge capacity of pumps/sluices. In low-lying "impeded drainage" areas where water must be removed either through sluice gates or through pumps, significant storage volume is needed. That has often been inadequately anticipated, so that storage needs to be retrofitted, often at great cost. Zoning plans should highlight such retrofit needs to alert planning authorities to the need of combing proposed projects in the zoned area with the required retrofitted drainage for a larger area. Such cellar capacity is needed towards the western end of South Quay or Independence Square.

4. **Flood plain zoning:** Areas that are at risk of flooding should be zoned in order to ensure that appropriate land-uses choices are made and appropriate management strategies are applied. Flood plain zones are differentiated according to their frequency of inundation and according to whether during the period of inundation they predominantly only store standing/slow-moving water or whether the inundated area significantly contributes to discharge of moving water. In all instances land-use within flood-risk zones is to be restricted to activities that are compatible with the indicated risk of flooding. As may be opportune, non-flood-compatible uses may be sited in these areas once they are adequately flood-proofed (All entry points located above flood-level).

5. **Frequent flood risk zones:** These would tend to be allocated to uses such as recreation areas, public green space, forms of agriculture that will not suffer heavily from short periods of inundation or spaces earmarked for dry-season-use. This would tend to apply to flood risks up to the 25-year design flood.

6. **Infrequent flood risk zones:** Recognizing the flood-risk of already settled areas is one way of in future reducing flood-damage by ensuring that new construction takes the flood-risk into account and by informing disaster preparedness planning. The locational advantages of building in flood-risk zones may outweigh the cost of infrequent flooding. Building regulations may serve to minimize damage when flooding does occur. Such areas would tend to be subject to flooding associated with hurricane- and tsunami events but above the estimated 25-year flood-level.

7. **Flood storage zones:** These are areas that may be inundated by standing/slow moving water.

The use restriction in these areas will be that filling the land, as a form of flood proofing is restricted. Filling is in principle forbidden but may be permitted where compensatory measures are paid for through the permitting fee. Fencing that will allow floodwaters to flow onto the property is permitted. Permit conditions for filling should be informed by what is needed to compensate for said capacity loss and include for payment to fund works to compensate for said capacity loss. This would apply to filling lands in flood prone areas (e.g. immediately north of CRH in Barataria/Aranguez, between Beetham Highway and Eastern Main Road, encroachment onto high water beds of rivers generally).

8. **Flood conveyance zones:** These are areas that where the inundating water flows sufficiently to significantly contribute to the discharge capacity of the river system. As with the flood-storage zones, filling is in principle not permitted but in addition, no barriers (walls or fencing) are permitted across the direction of flow.

9. Safe zones: "Safe zones" on flat easily accessible land but outside of the flood-risk zones, steep slope zones and other such reserves will lend themselves for locating new development with high safety requirements such as e.g. schools, hospitals, geriatric homes, telephone exchanges community centres.

10. Zones of abrupt gradient change: This occurs where there is an abrupt gradient change, e.g. as discussed above under "sediment storage zones" or where reclaimed land abuts the natural land. These areas are especially vulnerable to both flooding and heavy sediment deposits at times of extreme floods. At inland locations the land should be allocated to parkland so that floodwaters and sediment deposition do not lead to great nuisance. At the transition from natural land to reclaimed land, the reclaimed land should be separated from the old land by a wide water-feature that will accommodate the storm runoff with absolutely minimal gradient. The available storage volume in the wide water feature serves as a buffer volume for both floodwater and sediment. The area is accessible to floating equipment that can clear accumulated sediment at a fraction of the cost that is associated with wheeled equipment. Wherever further significant reclamation is contemplated along the coast, it is recommended that the new-to-be-reclaimed land is not attached to the old land but is separated by a wide strip of water.

11. Zones to limit exposure to, and facilitate planning for, extreme events: Storms larger than the design storm for best Return on Investment (R.O.I.) will occur and should be planned for by identifying the possible extent of extreme flooding taking such measures as are warranted to reduce the impact of such an extreme event when it does occur. For design purposes such an extreme event is generally taken as the Probable Maximum Storm (PMS) that is the estimated physical limit of possible rainfall, rather than a RI-related rainfall.

12. Zones that anticipate Sea-Level Rise: Recent publications of sea-level rise estimates indicate a need to review the earlier estimates. Under hurricane conditions, wind-set-up

combined with a sharp drop of atmospheric pressure may raise sea level several metres. Tsunamis may generate similar sea levels.
The possibility of such occurrence is small, probably in the 500- to 2000-year range. Investments in facilities that are of crucial importance for society's continued functioning should be informed by the flood risk so that they may be sited elsewhere or flood-proofed against such an event. For other investments placed in the flood-zone, the extent of damage in a flood-event should be limited through low-cost measures that are practicable (e.g. raise the level of electrical panel and outlets, entrance levels to the sewage system).

Preventing Flooding Associated with Reclamation

The transition between the naturally formed land and new reclamation areas is an abrupt gradient change that can be referred to as "sediment storage zones". As a result we are currently experiencing frequent flooding associated with sediment deposition along the Eastern Main Road, in Laventille, the northern edge of Independence Square, along Wrightson Road and along the Western Main Road, notably in Cocorite.

Wherever further significant reclamation is contemplated along the coast, it is recommended that the new-to-be-reclaimed land is not attached to the old land but is separated by a wide strip of water. This water-feature in the townscape is to allow discharge of flood-flows at a very minimal gradient and also to afford a liberal volume for sediment storage so that cleaning up does not need to take place immediately after each major rainstorm. The causeway/bridge connections between the mainland and reclaimed land must be dimensioned to allow passage of floating dredges and barges.

Planning for Extreme events

Storms larger than the design storm for best Return On Investment (R.O.I.) will occur and should be planned for by identifying the possible extent of extreme flooding taking such measures as are warranted to reduce the impact of such an extreme event when it does occur.

For design purposes such an extreme event is generally taken as the Probable Maximum Storm (PMS) that is the estimated physical limit of possible rainfall, rather than a RI-related rainfall.

In addition to zoning, an important strategy is the development of linear parks along major waterways. Over time, land that is basically within the high-water bed of rivers will not be built upon again when the current buildings come to the end of their useful life. The following zones will support the goal of reducing the severity of flooding, as well as having a subsidiary effect on improving water quality.

River preservation / restoration zones

To maintain rivers as areas of high biodiversity, rivers should be set in linear parks that allow access for maintenance, overflow from Frequent Recurrence Interval channel to Long R.I. Channel, (the full width of inundated park-land comprises the Long R.I. Channel). Rivers should be landscaped to maintain desirable ecological functions and may include those infrastructural elements in the corridor that do not clash with the environmental function of the linear park.

Parkland zones are to be identified along rivers. Urban rivers and watercourses are opportunities for both recreation and more effective flood control mechanisms. Treat rivers as the front door to housing. Better use of rivers as drains, to ensure there is more continuous use of rivers. The linear park zoning along existing rivers serves to preserve the option of gradually transforming the existing situation to a linear park.

Expanding the Rivers into linear parks would involve the following actions:

- In new developments let rivers set in linear parks be the policy
- In existing situations, undo encroachments onto the river reserve by persons bordering on the reserve. On voluntary basis come to agreements that private green space may be managed as an element of the communal waterway.

- In long term plans zone areas designated to become linear parks as such. This would include buying properties that are within the high-water bed.
- Through betterment capture ensure that the associated increase in value of riverbank properties benefits the community.

Advantages of such a transition of current river form to a river set in a linear park are:

- The river in linear park can accommodate high storm flows without flooding buildings
- Facilitate access to river channels for easier maintenance
- Allow storm water to be accommodated in large cross- sections with lower flow velocities so that boulders and vegetation can replace erosion-resistant concrete revetments
- Allow, a greater amount of in-system-storage, which contributes to lower discharges
- Form habitats for fauna and accommodate pathways for fauna that spends part of its lifecycle in different location
- Accommodate recreation functions
- Add to the amenity of the urban area

Implicit in the reliance on linear parks along watercourses is the need to address and reduce pollution of these water ways. Pollution prevention and reduction would rely on the following tools:

1. **Water Quality Volume (WQV) zones:** Zones for locating water quality retention ponds need to be identified downstream of potential pollution sources. These will often be combined with flood storage zones. Sediment storage zones are a form of WQV-zones. In this case, zoning must identify sediment storage zones there where abrupt decrease in channel gradient leads to sediment deposition and flooding. These locations must be sufficiently liberally

dimensioned that the design discharge may pass these locations even when heavily silted up by a load that may be associated with a hurricane event.

2. **Hot Spot concentration zones:** Zones are to be identified for accommodating heavy polluters - polluting industrial activities that are anticipated to generate runoff that cannot be satisfactorily treated with grassed filter strips, WQY-retention ponds or rain gardens. This will ensure that the required treatment facilities serve the polluters more efficiently.

4.7 Land Use Strategy 6: Introduce Urban Design in Order to Enhance the Aesthetic and Functional Quality of Public Space

Urban design has as its goal the achievement of improved quality of life through interventions at various scales, from the regional, to the site-specific. The following discussion of the role of urban design in municipal planning in Trinidad is based on an analysis of trends in the Netherlands, Latin America and Trinidad and Tobago, as well as a review of the 2009 report by Lichfield Consultants. At a high level, the role of urban design can be understood in terms of providing a balance of sufficient built and non-built spaces; paying attention to perception and aesthetics; and demonstrating concern for a sustainable environment.

The urban design approach under consideration relies on a holistic view of regional development, incorporating transport, drainage, water conservation & optimisation, open space, housing layouts, streetscapes, and solid waste management, among others. From the perspective of urban design, the Development Plan can be viewed as the skeleton which planners and Municipal Corporations can flesh out. However, planners can suggest what clothes the finished body can wear.

As a starting point, urban design must be incorporated at various scales of development, from the scale of the municipal corporation, to neighbourhoods and developments, and specific sites and plots. At a municipal scale, urban design considerations include morphology, structure,

Identity and perception. Issues at a neighbourhood scale include orientation, gateways, route identification, landmarks and open and closed spaces.

Different urban design applications are appropriate for different scale and sites. Urban design issues are relevant to development plans for cities and boroughs as well as for rural areas. A generic treatment may be more appropriate for larger-scale urban areas, whereas more customized treatment may be necessary for smaller local areas. For example, historic areas, urban coastal areas, and areas of built significance may require specialized treatment.

An important consideration in integrating elements of urban design and urban landscape design includes the level of detail. At a smaller scale, urban design addresses texture and colour coded pavements, cycle paths and roadways; the unifying role of tree species lining routeways, and the deliberate placement of large new building structures in relation to existing structures.

A further consideration is the role of significant physical features in the local landscape, which should inform and be incorporated into urban design. eg: the waterfront as an urban feature.

The Lichfield report (2009) on Urban Design Principles for Trinidad and Tobago links the goals set out in Vision 2020 and how urban design can be used to achieve “developed country” status by 2020. Urban design plays an essential part in developing sound infrastructure and maintaining a healthy environment, which in turn, directly affect the quality of lives. As mentioned in the Lichfield report, urban design is primarily about understanding everyday places, recognizing and promoting the good, and removing the bad. In this regard, urban design is treated as a cross-cutting component relevant to all dimensions of this plan’s Development Concept.

The current regional development planning process involves identifying key interventions for priority urban design treatment. These are developed more fully in the context of priority projects, described in Chapter 5 of this volume. Each project is informed by urban design

criteria, guidelines for an urban design framework and illustrative typologies. More detailed urban design analysis and intervention is expected to occur as part of the local area planning process, which involves public participation (the the local experts) to address what needs intervention and the professional experts (such as urban designer consultants and planners) who can offer how the intervention is to be addressed. This process is commonly referred to as the "Placecheck"[3] method for identifying changes to public spaces to make it function better.

Although urban design is not a common tool used in planning in Trinidad, and the Caribbean, there is great potential to use it as a guideline to develop a local identity appropriate for Trinidad's environment and climate. Supporting the beautification of Port of Spain and its gateways so as to provide an enhanced first impression of the city is one of the urban design possibilities. A second is to support cultural heritage, the preservation of the built and natural cultural heritage of Trinidad and Tobago. The preservation and restoration of the urban elements of heritage are easy means of capitalizing on opportunities, taking the form of the protection and enhancement of architectural heritage.

The preservation and enhancement of natural, built and cultural heritage are all integral to an overall urban design framework. Heritage can be found as material and immaterial, as artificial and as natural. It can also be a single building or just the structure of buildings together or the shape of a not-built area. The preserving of the natural and cultural heritage is important for the identification of the inhabitants with their environment. It also forms a good setting for the reception of visitors.

The environment is a primary resource base for tourism and sustainable usage must be practised. Culture is also an important resource for tourism – authenticity must be maintained and the culture further supported and promoted. A cultural conservation and enhancement approach focused on encouraging the revitalization of indigenous expressions of culture and heritage and the maintenance of the country's unique cultural identity needs to be developed.

[3] For more information on "Placecheck" refer to website: http://udesigntt.org/

At the scale of commercial nodes or centres, another important aim of urban design is to create an attractive environment for pedestrians, well serviced by public transport, with off-street parking provision. This aspect of urban design supports broader principles of sustainability consistent with a compact urban form and more efficient transportation management. A partnership between the public and private sectors will form a basis for strong growth and reinvigoration in the commercial performance of the downtown core.

Principles of urban design are also to be applied to areas of open space within the urban fabric. Where appropriate, the goal is to retain and enhance strong landscape features and make provision for informal recreation wherever possible.

Some urban design considerations in shaping significant spaces include: Sky index, Open space index, Arresting features, Relationship of foreground /background, Depth of view, Ascent and descent, Convexity and concavity, Human scale.

Characteristics of the style of building and landscape requires attention to architecture, materials and colours, perimeter structures, street furniture and the diversification of spaces, roads, squares and parks.

In the area of Sustainable Urban Design, attention must be paid to landscape and soil conditions, flora and fauna, water management, traffic systems, energy supply, waste management and housing developments.

Possible guidelines to build sustainability include the use of renewable materials, avoiding the use of heavy metals, isolating against heat, emphasizing safety and accessibility.

4.8 Land Use Planning Policies

This section identifies a series of land use planning policies to be developed in relation to each of the seven land use planning areas identified above: Natural, Rural, Industrial Suburban, Urban Neighbourhood, Downtown and Coastal. Each recommended policy is accompanied by an indicator or benchmark. Policies and indicators relate to seven dimensions of the development concept presented in Chapter 4 (vol.1): Containment of growth; Residential intensification; Commercial intensification; Social Infrastructure Investment; Water Management; Transportation Management; and Urban Design Guidelines.

The combination of policies and indicators is presented in tabular form. These include the following:

- Land use mix : % of allowable land uses
- Dwelling Density : Dwelling units/hectare
- Employment Density : Jobs/ha
- Facilities ratio : facilities/1000 pop
- Water management : Reduced incidence of flooding ; Concentration level by key pollutant
- Transportation: Improvement to road capacity and/or critical intersection; Change in modal split
- Urban design: inclusion of urban design guidelines in local area plan or project

Table 13: Planning Policy Area 1 Natural

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth Generally no development. No industrial, institutional, commercial or residential with exceptions only. Some recreational uses may be permitted. Will also include designated Conservation Areas. Existing built development to be considered legal non-conforming – program for removal should be put in place, as well as relocation of existing informal settlement. Where Natural areas are not formally designated as protected or reserved, one or more Growth Control Zones may be designated. This takes the form of an interim moratorium on new residential and commercial development during the life of the current plan. **2. Residential intensification** No residential development permitted. Farmhouses/agricultural work housing can be considered. **3. Commercial intensification** No commercial development permitted. **4. Social Infrastructure Investment** No social infrastructure intended to support residential population. **5. Water Management** Checkdams and agro-forestry in upper watershed areas to support flood control; River management practices as set out in the water management strategy. **6. Transportation Management** No additional access to be provided. **7. Urban Design Guidelines** Refer to guidelines for natural areas in *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government)	**1. Land use mix** % of allowable land uses: • 2% recreational • 98% Protected Nature **2. Dwelling Density** Dwelling units/hectare: 0 **3. Employment Density** Jobs/ha: 0 **4. Facilities ratio** facilities/1000 pop: 0 **5. Water management** Reduced incidence of flooding: Concentration level by key pollutant: **6. Transportation** Improvement to road capacity and/or critical intersection: n/a Change in modal split: n/a **7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines

Table 14: Planning Policy Area 2 Rural

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth Primarily agricultural, with limited residential development associated with rural settlements and recreational activity. Intended to rural in character. Protected agricultural lands. Growth Control Zones: Areas outside existing built area where residential development is restricted on an interim basis, during the life of the current plan. **2. Residential intensification** Residential development is limited to infill or large lot development within rural settlements. New development to be in keeping with rural character and maintaining a rural settlement density. **3. Commercial intensification** Limited to commercial infill in rural settlements in keeping with rural character, or development needed to sustain a rural village population **4. Social Infrastructure Investment** No planned social infrastructure investment, with the exception of passive recreation amenities in open space. **5. Water Management** Checkdams and agro-forestry in upper watershed areas; linear parks in lower watershed area; River management practices as set out in the water management strategy, including pollution control for agricultural runoff. **6. Transportation Management** No planned investment in transportation infrastructure. **7. Urban Design Guidelines** Refer to guidelines for natural areas in *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government); Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the rural residents in making decisions about interventions on improving the relationship between the built, agricultural and natural areas.	**1. Land use mix** % of allowable land uses: • 2% recreational • 5% residential (ribbon) • >90% agricultural **2. Dwelling Density** Dwelling units/hectare: Max. density of 0.4 units/ha **3. Employment Density** 1 Job/ha **4. Facilities ratio** Facilities/1000 pop: 0 **5. Water management** Reduced incidence of flooding: Concentration level by key pollutant: **6. Transportation** Improvement to road capacity and/or critical intersection: n/a Change in modal split: n/a **7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods.

Table 15: Planning Policy Area 3 Industrial

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth Land use dominated by industrial purposes, including an internal road network to support industrial activity. Additional land use to be designated for open space and worker housing. **2. Residential intensification** Limited to housing for employees & families **3. Commercial intensification** Employment investment related to industrial use. No commercial nodes/centres for a retail nature. Limited to commercial activity required for local purposes. **4. Social Infrastructure Investment** No planned social infrastructure investment, with the exception of passive recreational amenities in open space. **5. Water Management** River management practices as set out in the water management strategy, including pollution control for industrial runoff. **6. Transportation Management** Internal road network to support industrial activity; Focus on a functional hierarchy of highways – arterial – collector to ensure commercial traffic can rely on highways. **7. Urban Design Guidelines** Refer to guidelines for natural areas, where open space is to be used for recreation purposes. Refer to *Urban Design Principles. Generic Urban Design Framework for TrinIdad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government); Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the residents and workers in making decisions about interventions on improving the open and residential space in an industrial area.	**1. Land use mix** % of allowable land uses: • 75% Industrial estate • 25% public space, including 20% natural/open space and 5% residential **2. Dwelling Density** Dwelling units/hectare: 10 dwellings per hectare, lower than suburban **3. Employment Density** Depending on sector. Higher for manufacturing, lower for petrochemical. Not retail. **4. Facilities ratio** Facilities/1000 pop: 0 **5. Water management** Reduced incidence of flooding: Concentration level by key pollutant: **6. Transportation** Improvement to road capacity and/or critical intersection: n/a Change in modal split: n/a **7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods

Table 16: Planning Policy Area 4 Suburban

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth The focus is on managed growth of new suburban development, including residential & commercial land uses. Land uses are primarily residential, with some commercial and community facilities and services.	**1. Land use mix** min/max % of allowable land uses: Public space: 40%, incl. streets/parking/playgrounds; Private space: 60%, including Residential: 50% and Facilities/Services/Retail: 10% (includes social infrastructure and retail centres)
2. Residential intensification Existing development guidelines for residential development should be reviewed. In suburban areas, medium- to high-rise residential buildings in the commercial nodes are appropriate. For the remaining suburbs, minimum target should be for townhouses and single-family houses with a density of at least 15 du/ha gross. Minimum three (3) floors for multi-family dwellings should be permitted and encouraged. A total moratorium on government involvement in construction of single-family units in all development areas.	**2. Dwelling Density** Dwelling units/hectare: Min: 15 dwellings/ha Max: 60 dwellings/ha
3. Commercial intensification Commercial nodes/centres to support facilities / services / retail, consistent with Development Concept	**3. Employment Density** 10-100 jobs/ha
4. Social Infrastructure Investment Ensure equal access to facilities, consistent with facilities Matrix gap analysis.	**4. Facilities ratio** Facilities/1000 pop
5. Water Management River management practices as set out in the water management strategy, including pollution control for residential wastewater. Linear parks in lower watershed area.	**5. Water management** Reduced incidence of flooding: Concentration level by key pollutant:
6. Transportation Management Focus on a functional hierarchy of highways – arterial – collector. Need to ensure traffic can rely on highways to by-pass residential areas. Some areas designed for public transport / bicycling, but not as intensive as Downtown / Urban Neighbourhood.	**6. Transportation** Improvement to road capacity and/or critical intersection: Change in modal split:
7. Urban Design Guidelines For site-specific interventions, including linear commercial and parks/open spaces. Refer to Land Use Strategy 7 and to *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government); Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the residents and other stakeholders in making decisions about interventions on improving the public space in a residential area.	**7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods

Table 17 Planning Policy Area 5 Urban Neighbourhoods

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth Emphasize residential land use, with limited conversion to commercial. Accommodate open space through plazas, sidewalks, small parks. **2. Residential intensification** Existing development guidelines for residences should be reviewed. In and around the city centre the policy should be multiple-storey, mixed-use development and along the waterfront only apartments are allowed. Allow a minimum three (3) floors for multi-family dwellings. A total moratorium on government involvement in construction of single-family units in all development areas. **3. Commercial intensification** Limit commercial conversion of residential to ensure commercial density remains lower than downtown. **4. Social Infrastructure Investment** Ensure equal access to facilities, consistent with facilities Matrix gap analysis. **5. Water Management** River management practices as set out in the water management strategy, including pollution control for residential wastewater. Linear parks in lower watershed area. **6. Transportation Management** No longer focused on highways. Arterial and collectors are the focus. Lots of attention for Public Transit; Pedestrian and Bicycling **7. Urban Design Guidelines** Strong reliance on urban design guidelines for public and private development, including public space, open space, commercial districts, and private developments. Refer to Land Use Strategy 7 and to *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government); Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the residents and other stakeholders in making decisions about interventions on improving the public space in an urban neighbourhood.	**1. Land use mix** min/max % of allowable land uses: 50/50 public/private Private: 25% residential; 25% facilities/commercial **2. Dwelling Density** Dwelling units/hectare: Min 40- max 80 dwellings per ha **3. Employment Density** Jobs/ha: Approximately 250 jobs/ha **4. Facilities ratio** Facilities/1000 pop **5. Water management** Reduced incidence of flooding: Concentration level by key pollutant: **6. Transportation** Improvement to road capacity and/or critical intersection: Change in modal split: **7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods

Table 18 Planning Policy Area 6 Downtown

Policies to be addressed within the Policy Area	Indicators & Benchmarks
1. Containment of growth Achieve a stronger mix of commercial and residential, with institutional uses. Accommodate open space through plazas, sidewalks, small parks. **2. Residential intensification** Existing development guidelines for residences should be reviewed. In and around the city centre the policy should be multiple-storey, mixed-use development and along the waterfront only apartments are allowed. Allow 4–6 floors on sites exceeding 0.4 ha. Use upper floors for residential and mixed use structures wherever possible to accommodate residential development. **3. Commercial intensification** Ensure downtown core retains a vibrant commercial function in relation to suburban and inner-city areas. **4. Social Infrastructure Investment** Ensure equal access to facilities, consistent with facilities Matrix gap analysis. Rely on mixed use buildings. May require relocation of some facilities from downtown core, depending on impact of increase in population. E.g. Downtown schools are a substantial traffic congestion generator. There are more school places in downtown San Fernando than the resident population requires. Strongly recommend to denominational boards to relocate the 5 downtown prestige schools out of the centre. With 1,000 new dwelling units in the downtown, there will be a need for one school to cater for that growth. **5. Water Management** River management practices as set out in the water management strategy, including pollution control for residential wastewater. Linear parks in lower watershed area. **6. Transportation Management** Encourage space-efficient transport modes (public transit and non-motorized) through a range of measures; promote high-value trips into downtown by rationing vehicular access & parking. Primary emphasis on pedestrianization and public transit shuttles. **7. Urban Design Guidelines** Strong reliance on urban design guidelines for public and private development, including public space, open space, commercial districts, and private developments. Refer to Land Use Strategy 7 and to *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government); Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the business owners, residents and other stakeholders in making decisions about interventions on improving the public space in the CDB.	• **Land use mix** min/max % of allowable land uses: 50/50 public/private 10% residential 40% commercial • **Dwelling Density** Dwelling units/hectare: 50-100 min/ max • **Employment Density** Jobs/ha: 400 jobs per hectare • **Facilities ratio** Facilities/1000 pop • **Water management** Reduced incidence of flooding: Concentration level by key pollutant: • **Transportation** Improvement to road capacity and/or critical intersection: Change in modal split: • **Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods

Table 19: Planning Policy Area 7 Coastal

Policies to be addressed within the Policy Area	Indicators & Benchmarks
Where coastal area exists in Natural or Rural Policy Areas, land use strategies for these policy areas prevail.	
1. Containment of growth Requires designated setback from highwater mark and shoreline cliffs. Two-fold purpose: protect coastline within a buffer extending from shoreline to road, and maximize residential densities immediately outside this protective buffer, especially in urban areas. Recommended profile of Urban Coastline includes: Shoreline - Beach/mangrove – Road – Nature – Development.	**1. Land use mix** % of allowable land uses: 75% public – parking/beach/road 25% residential/commercial/facilities
2. Residential intensification In areas 4,5,6: Apartment buildings along coastal road, ground floor commercial / with multi-story residential. Minimum 5 floors, but allow six (6) floors, with building mass reduced relative to coastal views. Achieve highest residential densities in urban coastal area.	**2. Dwelling Density** Dwelling units/hectare: 0 in natural, rural and industrial areas 60 du/ha in all other parts
3. Commercial intensification In areas 4,5,6: Ground floor commercial in minimum 5 story buildings.	**3. Employment Density** Jobs/ha: 25-250 Jobs / ha
4. Social Infrastructure Investment Ensure equal access to facilities, consistent with facilities Matrix gap analysis. Social Facilities could be built along the linear development, including as part of mixed use buildings.	**4. Facilities ratio** Facilities/1000 pop
5. Water Management Focus on reclamation policies for coastal areas.	**5. Water management** Reduced incidence of flooding Concentration level by key pollutant
6. Transportation Management Proposed coastal road from North to Downtown; mirrors existing coastal road south of downtown. Area in-between is pedestrianized.	**6. Transportation** Improvement to road capacity and/or critical intersection: n/a change in modal split: n/a
7. Urban Design Guidelines Strong reliance on urban design guidelines for public and private development, including public space, open space, commercial districts, and private developments. Refer to Land Use Strategy 7 and to *Urban Design Principles. Generic Urban Design Framework for Trinidad & Tobago.* (2009, Lichfield Consultants for Ministry of Local Government) Refer to "Placecheck" (http://www.placecheck.info/) guidelines as a tool to engage the public in making decisions about interventions on improving coastal area.	**7. Urban Design** Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods

Chapter 5 Projects

5.1 Urban Design Framework

This section presents projects and proposed local area plans proposed for the City of Port of Spain. These projects reflect stakeholder priorities, where these are deemed relevant and appropriate to the development concept. Projects connect strategies with specific locations within the Metropolitan Port of Spain area. Each project is defined in terms of goals, an assessment of the present situation, and an outline of the plan. Project design reflects the inclusion of urban design principles and where appropriate, “local experts” need to be consulted with in the intervention ideation process. Where appropriate, one drawing is provided for each project.

Map 21 presents the proposed projects in terms of the City of Port of Spain’s municipal electoral districts. The ten projects included in this chapter were further reviewed and prioritized to determine a starting point for project implementation. Results of the priority setting exercise are reviewed in Table 20. Each of the priority projects identified in the following table are further sub-divided into project components. Project components that can be initiated immediately are highlighted in red.

Map 10 Priority Projects and Local Area Plans, by municipal electoral boundaries

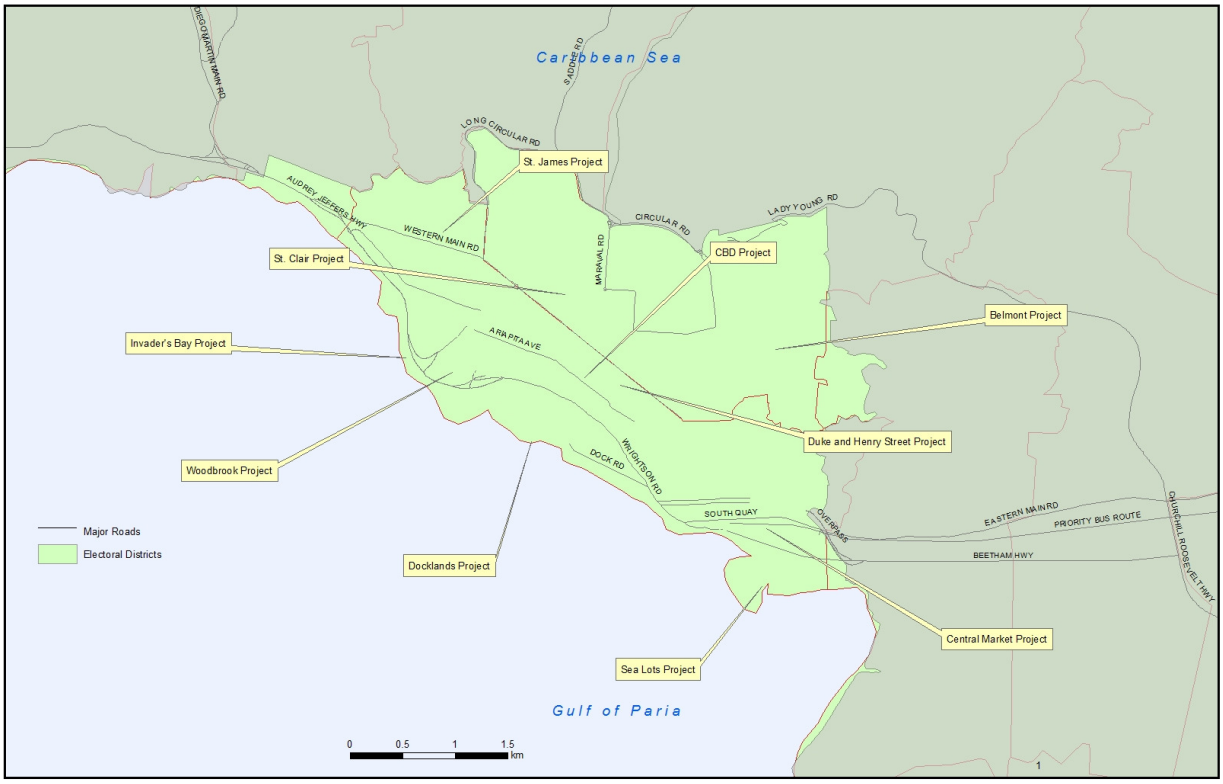


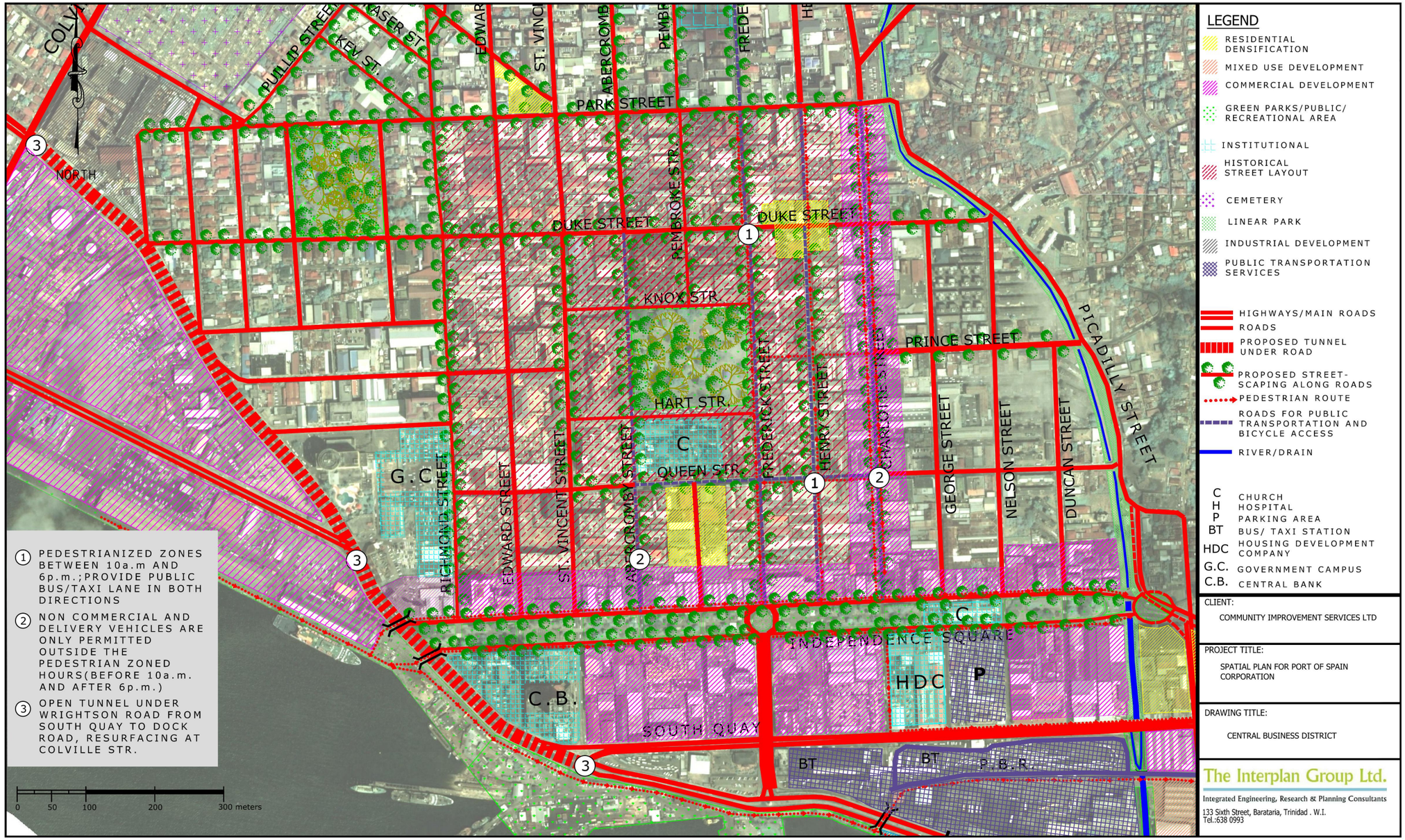
Table 20: Priority Setting Criteria

Project	Components	Priorities					Timing
		Technical/ Legal Readiness	Cost	Advances Concept	Requires Local Area Plan	Stakeholder priority	
Downtown	1. Pedestrian area	✓	low	✓		✓	Immediate
	2. Landscaping	✓	low	✓		✓	Immediate
	3. densification		med	✓	✓		Short term
	4. Traffic system		high		✓		med/long term
Woodbrook	1. local area plan	✓	low	✓			Immediate
	2.acquisition of lots and design	✓	med	✓			immediate
	3. Building houses		med	✓	✓		short
	4 impl traffic system	✓	med	✓			med/long
Docklands	1. Develop transfer industrial estate		high	✓	✓		
	2. local area plan	✓	low	✓			
St James	1. local area plan	✓	low	✓			
West Port of Spain	1. local area plan	✓	low	✓			
Newtown – St Clair – Western Uptown	1. LAP with CDP status for parkway	✓	low				
	2. Acquire parkinglots	✓	med	✓			
	3. Design and build high dense houses		med	✓	✓		
Belmont	1. Define a try-out area	✓	low				
	2. Acquire inner block space		high		✓		

Project	Components	Priorities					Timing
		Technical/ Legal Readiness	Cost	Advances Concept	Requires Local Area Plan	Stakeholder priority	
	3. refurbish surrounding streets		**high**				
Central Market	1. local area plan	✓	**low**	✓			med/long term
Sea Lots	1. Develop transfer industrial estate		**high**	✓	✓		med/long term
	2. Local area plan	✓	**low**	✓			med/long term
Gonzales	1. Utilities and access	✓	**med**				Immediate

5.2 Project 1 Downtown

Project 1 - Downtown



Goals

Stop the deterioration of the downtown area by creating a mixture of functions especially through residential redevelopment.

In the development scenario build 2,000 new dwelling units in the downtown area.

Increase retail job opportunities by creating 50,000 square meters floor area of retail space

Create an attractive public space by refurbishing streets and by decreasing the importance of cars in the street scene.

The most important pre-condition to achieving this goal is a better transport system and a better traffic system. These are described in chapter 4 (vol.2).

Present situation

In the downtown area there are many open lots with parking as its single use.

Curbside street parking is allowed on one side on alternate days, but on many streets cars are parked on both sides with the tow-away and fine penalty randomly enforced

In the evening the streets are empty, the shops and offices are closed, and there is no social surveillance and no liveliness on the streets.

Public transport is available at Citygate; taxi stands are on Independence Square and maxi taxis are not allowed within the downtown area.

Plan

Transport system

Improve the situation for pedestrians and prohibit long term on-street parking.

The area enclosed by and along Frederick St and Henry St, from Duke St to Independence Square to be a pedestrianised zone during the daytime between 10.00 am and 06.00 pm and on Saturdays up to 02.00 pm.

Vehicular delivery of goods and services, except emergency services, is to be prohibited during these times.

Provide a public bus/taxi lane in both directions, even crossing the pedestrian route.
Queen St, Park St, Charlotte St and Abercromby St to be accessible only to public transport and bicycles. Vehicles owned by proprietors of adjacent commercial buildings and residents of residential buildings to be permitted access only outside pedestrian zone hours.

Landscape

Connect the several green parks and squares by tree rows along the streets to bring shade to sidewalks.
Lapeyrouse Cemetery, Victoria Square, Woodford Square, Lord Harris Square, Independence Square and the Savannah, Jackson Square, King George V Park and the QRC Sports Ground together with the park along Serpentine Road form a beautiful green pattern.
The historical street layout can be the foundation of a connecting green structure. Two greened rectangles can ripple outwards from around Woodford Square. Queen St, Henry St, Duke St and St. Vincent St form the first; Independence Square, Charlotte St, Park St and Richmond St form the second. Trees should frame both these squares, each square with its own distinctive type of tree.
Additionally, a number of streets play an important connecting role within the city both in a physical sense and visually as lines of sight: Frederick Street, significant because it connects Woodford Square with the Lighthouse and the Savannah; Abercromby St and Pembroke St, connecting Woodford Square with Lord Harris Square; Prince St leading to the St. Ann's River and Fort Chacon, Laventille; Park St and Duke St link with Victoria Square. These connecting streets should have their own type of trees to create a distinct sense of place.

Traffic system

The new waterfront buildings on Wrightson Road deserve a lot of space around them, yet it is the narrowest strip downtown. It is a cramped space, the highway is 6 lanes over a short distance and there are many junctions and intersections connecting with the City centre.

The limited free space on the Gulf side should be jealously guarded. Encroachment at this specific site by more waterfront project buildings or with reclamation, or by a causeway highway / railway should be discouraged.

Build a partly open tunnel under Wrightson Road from South Quay/Eastern Main Road, connecting to Dock Road and resurfacing at Duke St/Colville St. Extend Dock Rd as a highway in an open tunnel to the junction of Audrey Jeffers Highway with Wrightson Road. The accessibility of the Central Business District has to be improved by building the planned 4-lane, two-way traffic Maraval and St Ann's Parkways with limited access.

Densification

Underused areas such as car park lots are ideal sites for redevelopment into low and high-income residences.

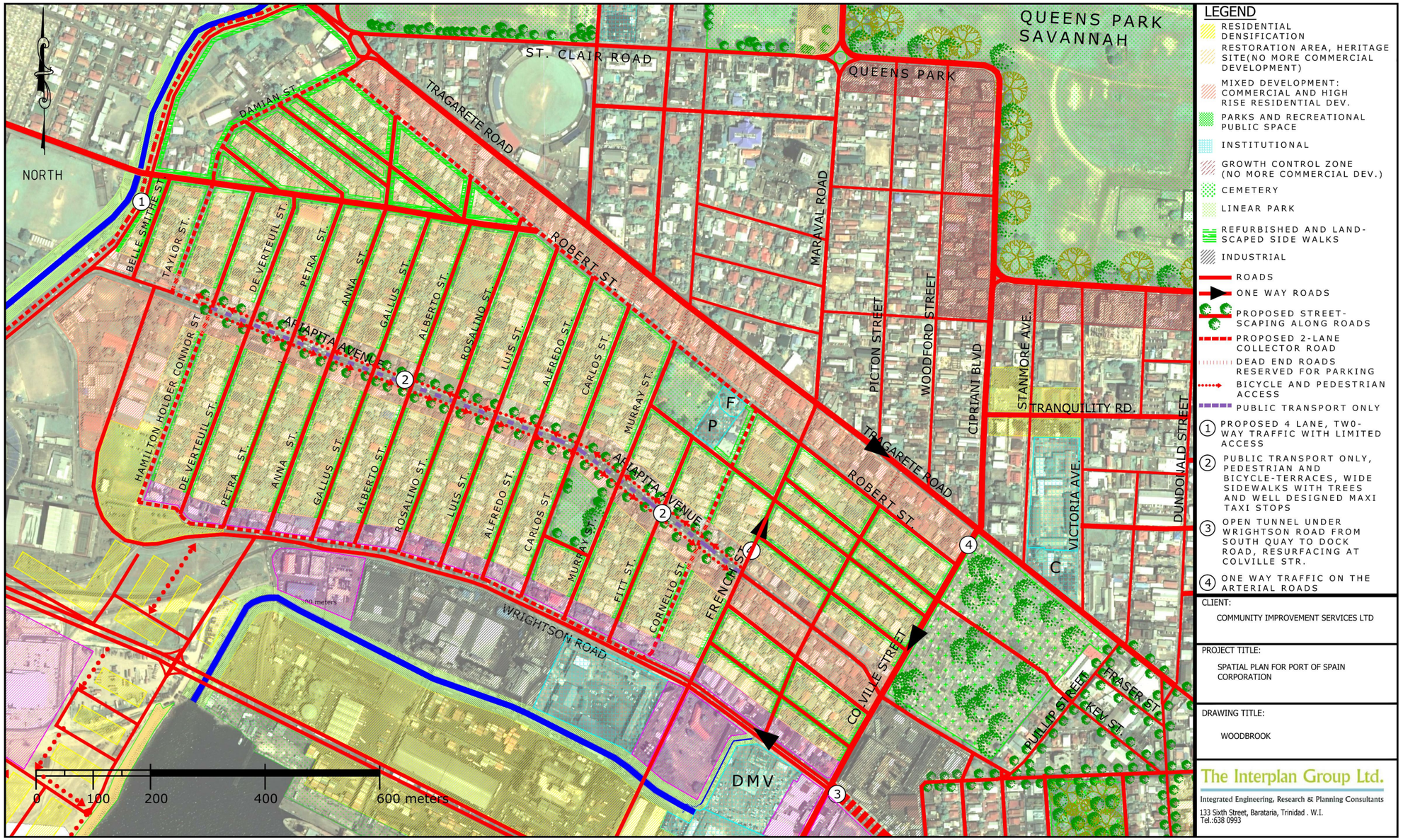
Courtyard buildings with a gateway from the street to parking behind lends itself to a better mix of land use; shops and small business units occupy the ground floor with apartments on three floors above.

This standard should be used flexibly, modified for corner sites or along streets on all the open air parking places downtown and uptown. A quick survey revealed that there is approx. 2500 linear metres of open space along streets. With an average length of 7.40 m for an apartment, there is space for up to 1000 apartments. Identified for this kind of development are: the intersection of Duke St and Henry St; along both Queen St and Independence Square between Frederick St and Henry St; and along Tranquillity Street between Cipriani Boulevard and Victoria Avenue.

Many downtown shops have under-used space on the first and second floors. To convert this to residential use, external access to the apartments can be made by open staircases and walkways from existing passageways between the buildings. In this way, an estimated 1,000 apartments can be created.

5.3 Project 2. Woodbrook

Project 2. Woodbrook



Goals

Restore the residential designation of this area by densification.

Find space for 4400 dwelling units.

Improve the traffic system with measures that lets the traffic circulate more freely and limit the use of residential streets for shortcuts.

Provide for a public transport route in the middle of the area, so it will be easily accessible for all residents.

Enhance economic development along the transport corridors

Present situation

The large Woodbrook neighbourhood, west of downtown, formerly a sugar estate owned by the Siegert family, was sold to the Town Board in 1911 and developed into a residential neighbourhood, with many of the north-south streets named after the Siegert siblings. In the last twenty years the main east-west thoroughfares, Ariapita Avenue and Tragarete Road, have become almost entirely commercialized, and Ariapita Avenue west of Murray Street has become a relatively upscale dining and entertainment "strip". A few small parks are sprinkled through the neighbourhood; Adam Smith Square and Siegert Square are the two largest.

Just north of Woodbrook along Tragarete Road is the Queen's Park Oval, a major Test cricket ground, which is owned by the private Queen's Park Cricket Club (QPCC). At Woodbrook's western end, at the edge of Invaders Bay, is the Hasely Crawford Stadium, the national venue for football and track and field events. Woodbrook is a historic neighbourhood and an attractive place to establish all kinds of commercial companies. As a result of this commercial attractiveness the resident population is falling and there are unused lots awaiting sale or development. At the same time, for the remaining residents, living conditions are made worse by traffic, parking and with the commercial use of former residences, a loss of a sense of community.

Plan

In Woodbrook there are currently 60 unused lots. If, instead of the usual one or two, 6 du were to be built on each lot, the density would rise from 17du/ha to 60 du/ha. This would yield 360 new du in the first year. At the present rate of acquisition and development, this process would take about five years. Within that five year period, set a target of 240 lot acquisitions each with an average of 1.5 du, a total of 360 existing du. The current residents will have priority in renting one of the new du in the area. In the seventh year there will be a start-up of 1440 du. In the eighth year, a final 180 lots have to be acquired and 270 houses have to be demolished and 1,080 du built. In the tenth year, 600 houses demolished and 3,500 du built. This would yield a net gain of 2,900 du with 600 du replaced.

Along the transport corridors of Tragarete Road and Ariapita Avenue the policy of redevelopment with apartments above the commercial ground floor will enhance the liveliness of these streets and improve community safety through social surveillance. This policy provides for the development of 250 dwelling units in each of these streets.

Intersection Development at Wrightson Road between Hamilton Holder St and Ana St after the Docklands Highway is completed can provide space for 400 du.

Stop commercial development except on Ariapita Avenue, Tragarete Road and Wrightson Road. Protect the zones directly north and south of these thoroughfares from demolition for parking and from commercial encroachment. In the transport zones along Tragarete Road and Ariapita Avenue the policy of redevelopment with apartments above the commercial ground floor will enhance the liveliness of these streets and improve community safety through social surveillance.

Plant trees in Lapeyrouse Cemetery and connect this with the squares downtown.

Declare a land use zoning system requiring off-street parking on driveways, and for retaining deep building setbacks to allow front garden space to be used for parking. Promote verandas and roof and window projections. Institute a system of restoration funding. For example, a revolving loan system with low interest rates for restoration of historic residences and repayments used by the lending agency to fund other restoration work.

Improve the transport system in two phases.

Phase 1

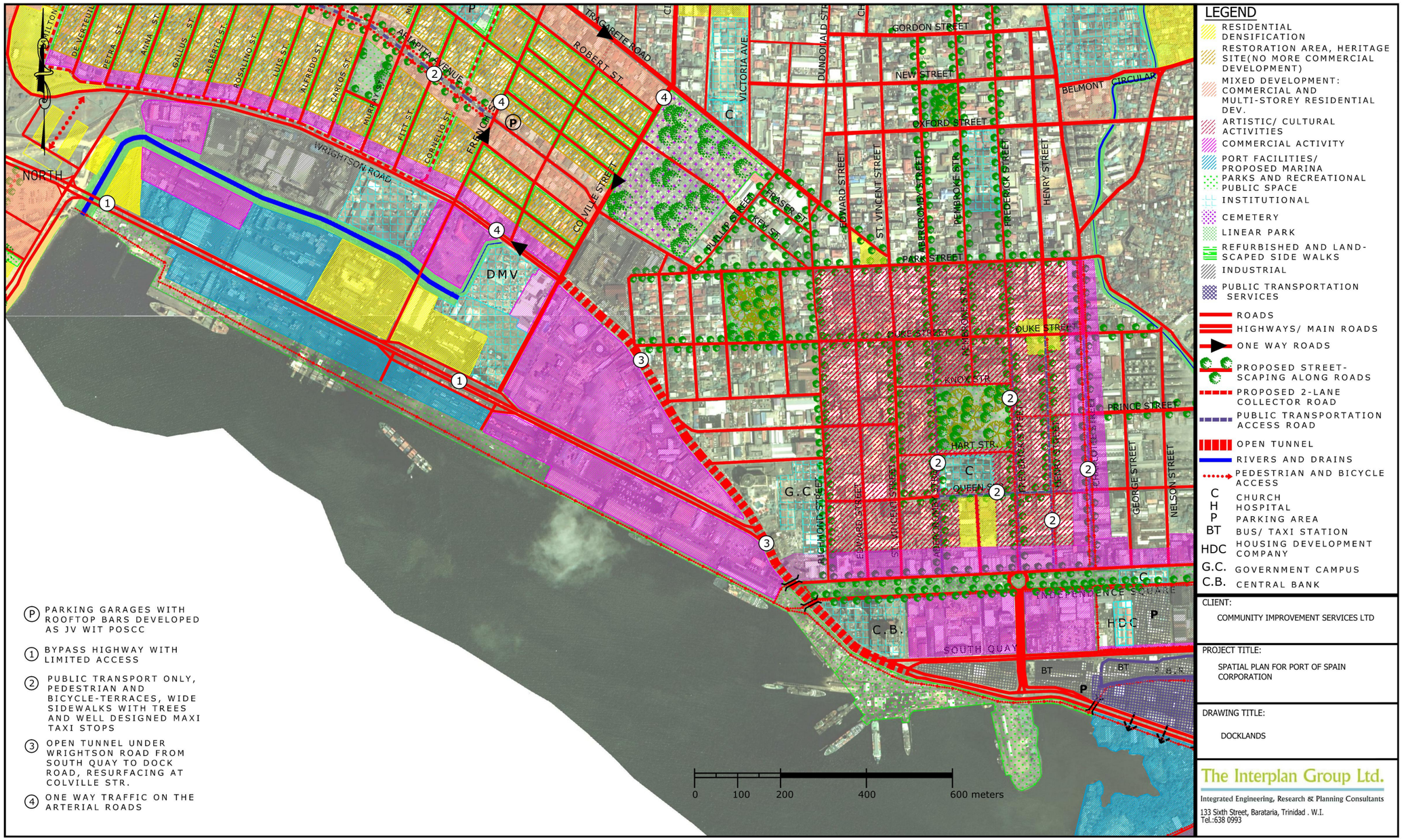
Implement one-way traffic on the arterial Roads: Colville St, Tragarete Road, Ariapita Avenue and French St. The traffic will circulate more freely at the intersections with traffic lights and the capacity will increase. This will eliminate the need to use residential streets as shortcuts.

Phase 2

After the highway bypass through the Docklands is completed the southern lanes of Wrightson Road can have an arterial function together with Tragarete Road, Colville St and French St. Access to these roads will be via only collector roads, namely, for Woodbrook, Roberts St, Warren St, Damian and Taylor St, O'Connor and Hamilton Holder St. The northern lanes of Wrightson Road along with Cornelio St. and Ariapita Avenue can be refurbished for use by public transport only and for pedestrians and bicycles – terraces, wide sidewalks shaded with trees and well designed bus and maxi taxi stops. The short lengths of the streets between Roberts St and Tragarete Road will be dead-end streets and provide parking places for the businesses on Tragarete Road. The residential streets can be refurbished with wider sidewalks, at least 1.80 metre wide; free of obstacles; with parking zones, rows of trees and, where space allows, a stretch of grass.

5.4 Project 3. Docklands

Project 3 – Docklands



Goal

Restore the connection between the urban area and the Gulf of Paria.

Improve the traffic system by building a bypass Highway.

Build 6000 low and high-income new dwelling units with all required facilities.

Present situation

Along the shore the land use is related to the harbour facilities. Between Dock Road and Wrightson Road there are big commercial establishments which have no relationship with the harbour. In the approved Waterfront Master Plan relocation of the harbour is proposed.

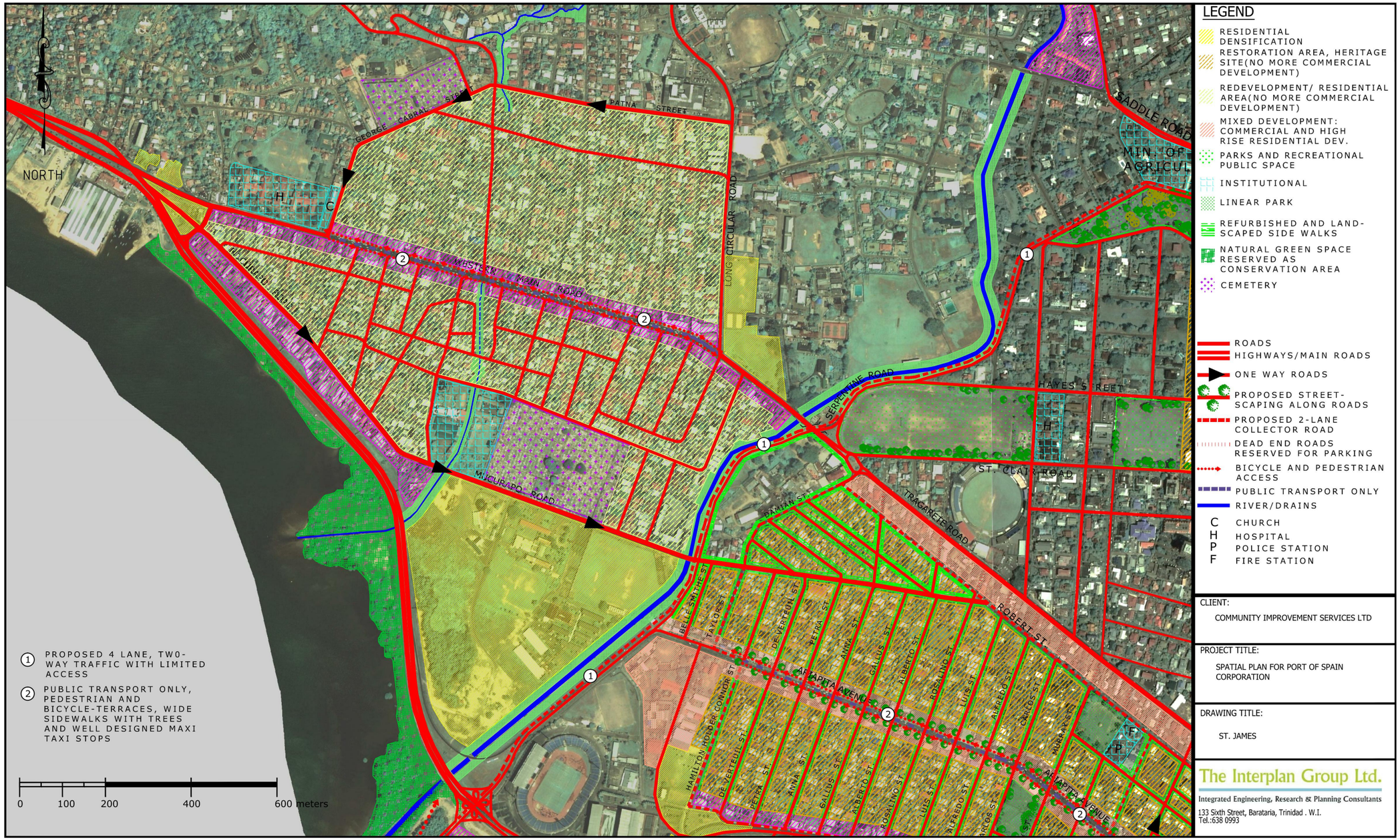
A lot of the heavy traffic on the Wrightson Road is harbour related. Relocation will diminish traffic congestion on this road.

Plan

When the harbour activity is transferred east near the mouth of the Caroni River, 100 ha will be available for new development. By extending the urban fabric of Woodbrook over the dockland area to the coastline, views to the Gulf can be restored. There will be space for 6000 dwelling units with a density of 60 du/ha next to 75,000 sq meters of commercial use and services as well as two schools for the residents of this neighbourhood. A canal in a green setting will prevent flooding and provide a supply of cool water for the power plant. A diversion of the highway roughly along Dock Road, via a mostly open tunnel will make it a limited access highway. The promenade of the waterfront project can be extended to Invaders Bay.

5.5 Project 4. St James

Project 4 – St James



Goals

Improvement of the urban fabric while creating open space and a higher density of residential use is the major challenging task for the redevelopment of St James.
The commercial function of the Western Main Road has to be enhanced and a public transport corridor made.

Present situation

Port of Spain's last major municipal expansion occurred in 1938, when the St. James district north of Woodbrook and west of St. Clair was incorporated into the city limits. In the late 19th century, Indian indentured labourers on nearby sugar estates established a settlement here, and St. James gradually became the centre of Port of Spain's Indian population, with many streets named after cities and districts in India. Western Main Road, the area's major thoroughfare, has long been the city's main nightlife district, sometimes nicknamed "the city that never sleeps".

Long Circular Road, which curves north from Western Main Road then east to meet Saddle Road, and end at Maraval Road forms part of the city boundary. Its "circle" encloses Flagstaff Hill, a small rise with the US ambassador's residence at its summit, which lends its name to a townhouse complex at its southern foot.

South of St. James and near the seashore at Invaders Bay is Mucurapo, a mixed residential and commercial district that also contains the city's second-largest cemetery.

Lack of green open space and parking areas is one of the consequences of St James' high built-up density. But there has also been a decrease in population since 1990 shrinking the basis for existing facilities.

The transformation of St James is inevitable. This area of circa 33 ha has an inadequate traffic system, insufficient facilities and an average residential density of only 60 du/ha, although it is

fully built up. A redevelopment program has to be set up to replace all the buildings, except those along Western Main Road. At a density of 80 du/ha, there is space for 2600 new dwelling units. The gain will be 600 du since 2000 existing houses will have to be demolished. This density is only possible if there is a good public transport, walking and bicycling paths. The arterial roads for St James will be the renewed George Cabral St and Patna St on the north side of St James, and Mucurapo Road on the south side, both with a two-lane one-way traffic system. Western Main Road between Long Circular Road and George Cabral St can be refurbished for public transport, bicycles and pedestrians. Cars can be parked in big parking lots at the entrances to the area or underneath apartments. Transport Corridor Development along Western Main Road and Intersection Development near Long Circular Mall and south of Woodbrook Cemetery can provide space for 1,000 dwelling units.

5.6 Project 5. Invaders Bay

Project 5 – Invaders Bay

Goals

Build as many residential units as possible on this piece of land.

It is the only immediately available land of significance within the Port of Spain City Corporation.

Incorporate in the planning strategy the possibility of an ecological and nature- friendly environment.

Present situation

Invaders Bay is land reclaimed by the deposition of material dredged from the harbour. It has a surface of 30 ha and is located just south of Movietowne, a multi-function mall complex node with a multiplex cinema, a casino, an open-air entertainment space, a conference hall, some shops, bars and restaurants. There is good accessibility from the Audrey Jeffers Highway as well as from Ariapita Avenue. In the Urban Masterplan for Port of Spain part of this area is proposed as an ecological site. In the Waterfront Masterplan the proposal includes commercial development, such as offices, conference buildings and a hotel.

Plan

With 80 du/ha, this area can provide space for 2400 dwelling units along with essential facilities such as a supermarket and two schools.

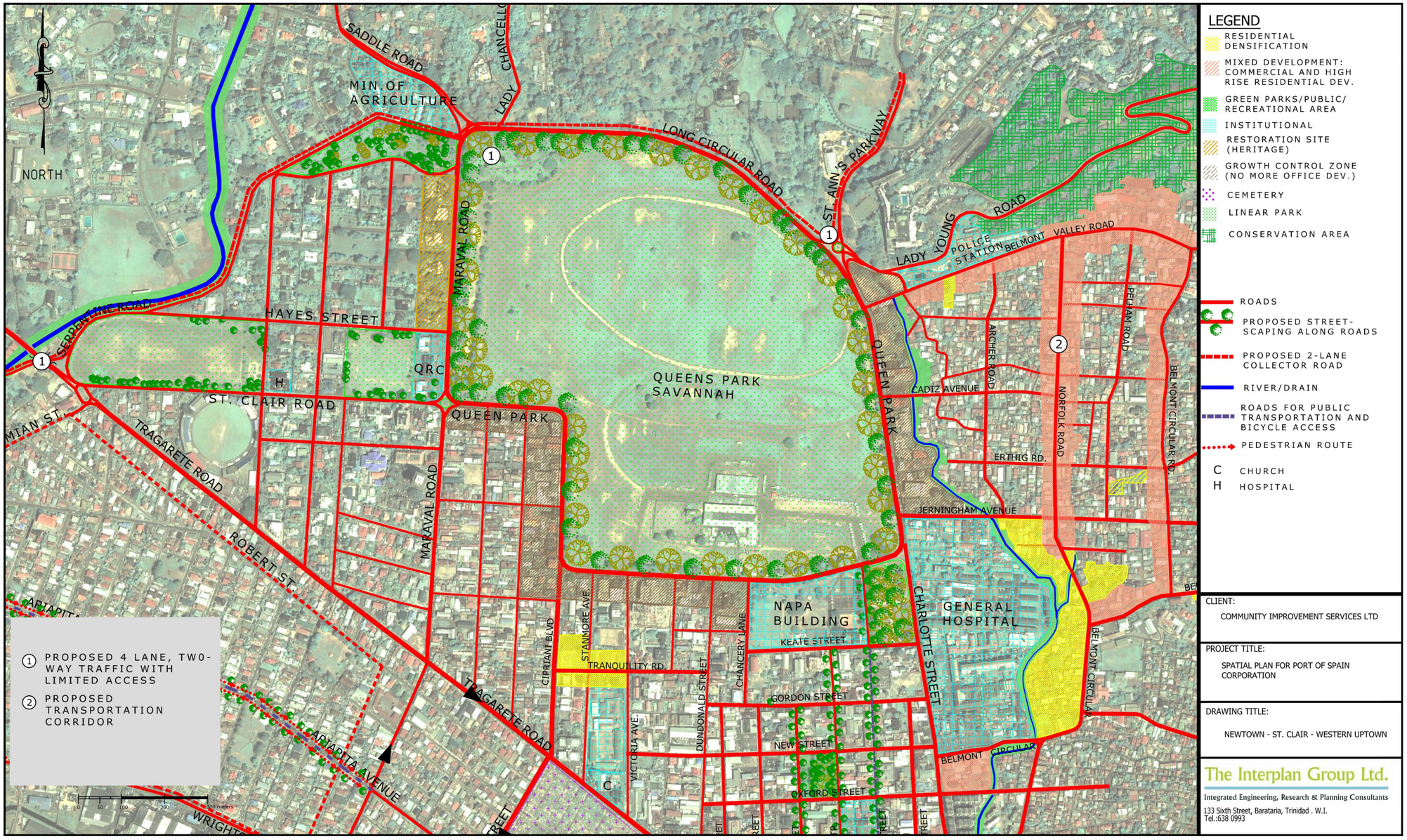
The blueprint for development should be as follows:

1. The access road for the development leads parallel to the highway from the access to Movietowne to the new junction of the Audrey Jeffers Highway and the Maraval Parkway.
2. From this collector road four roads run into the residential areas, two just east and west of Movietowne extending halfway to the shoreline; two on the outskirts extending to the coast, curving along the coast towards the middle but are not connected to each other.
3. Between the ends of these two arms, locate the schools and a coastal recreation zone.
4. Bicycle paths can run from the residential areas to the schools and to the new facilities that are planned behind the present Movietowne buildings.

5. A part of the coastline may be developed for private use, but a significant part has to be accessible to the public.
6. This Gulf of Paria coastal strip must also accommodate a natural gently sloping shore with indigenous vegetation.
7. All buildings should be as ecological as possible regarding energy use and supply, materials that can be reused, with measures to reduce water consumption and reuse and trees to provide for shade and amenity as well as for reducing the carbon footprint.

5.7 Project 6. Newtown – St Clair – Western Uptown

Project 6 – Newtown – St Clair – Western Uptown



Goals

A better mixture of land use should be achieved by densification of the residential function. The traffic system has to be improved by building the Maraval Parkway and by creating a road hierarchy

Present situation

Laid out in the 1840s and situated west of downtown and uptown, Newtown is bounded by Tragarete Road (south), the Queen's Park Savannah (north), Cipriani Boulevard (east), and Maraval Road (west). The upscale St. Clair neighbourhood in northwest Port of Spain, between the Queen's Park Savannah and the Maraval River, was developed in the 1880s, 1890s, and 1900s on former agricultural land. It is the location of some of the city's grandest mansions. At its heart, just north of the Queen's Park Oval, is King George V Park. In recent decades St. Clair has become home to various diplomatic missions. Just northwest of St. Clair are two upscale residential neighbourhoods, Ellerslie Park and Federation Park.

Plan

Intersection Development at Park St-St. Vincent St and the surrounding area can provide space for up to 100 dwelling units. This area is a communications hub, a gateway to the city centre. It is characterised by taxi stands, and underutilised land and buildings.

Here there is an opportunity for significant improvement to the townscape through reconstruction of the area between Park Street, Tragarete Road and Philip Street and through densification by development of residential units on the parking area at Cipriani Boulevard.

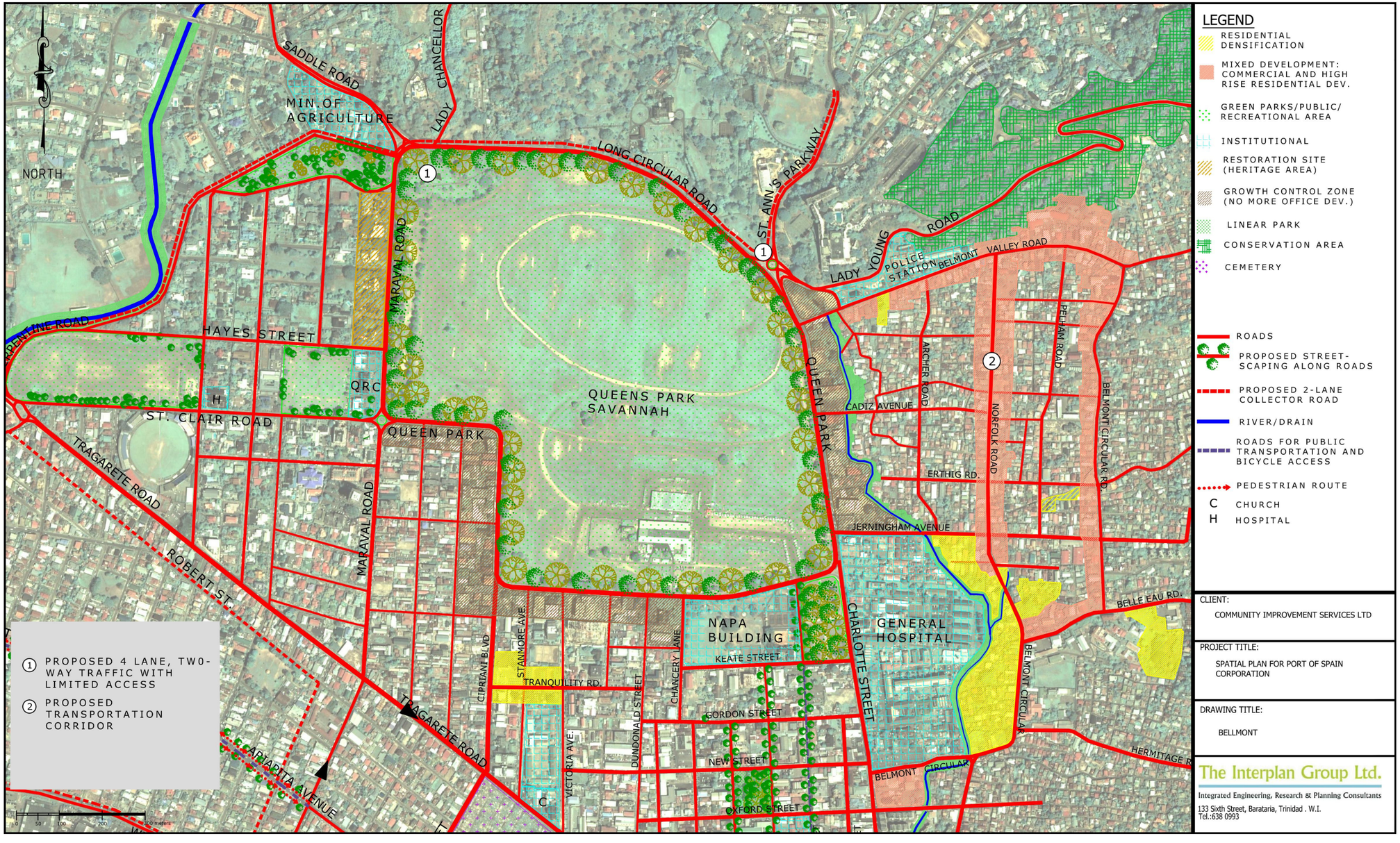
Restoration of the historical Magnificent Seven combined with new offices behind them that can fund the restoration. Prohibit new office development around the Savannah.

The Maraval River forms an important part of the open space network. Moreover it is an important channel for storm water drainage. The riverbanks should be greened and reserved for natural vegetative cover, recreation and rainwater storage.

The proposed 4-lane, two-way Maraval Parkway will provide access to the city centre. Where space is limited, the Parkway could be elevated, especially where it crosses arterial roads. The design may incorporate an elevated crossing of the Maraval River to use available land space and release ground level for an attractive natural park. The results of traffic calculations will determine whether the Maraval Parkway ends at St Clair Avenue or follows Serpentine Road to the St Clair roundabout.

5.8 Project 7. Belmont

Project 7 – Belmont



Goals

In this neighbourhood 750 houses should be built to accommodate population growth; use 250 lots occupied by old single houses to develop three times that number of du. Add a further 250 dwelling units in addition to commercial development along the Jerningham Avenue transport corridor.

A traffic system has to be developed which takes into account the many narrow lanes and lack of adequate parking facilities.

Present situation

In northeast Port of Spain, Belmont, at the foot of the Laventille Hills, was the city's first suburb. In the 1840–50s, parts of the area were settled by Africans rescued by the Royal Navy from illegal slaving ships. In the 1880–90s, the population swelled rapidly, and the characteristic Belmont street pattern of narrow, winding lanes developed. The black professional class built large homes in Belmont, as they were excluded from the more expensive neighbourhoods such as St. Clair and Maraval; Belmont became known as "the Black St. Clair". Many of these large homes have been renovated and converted to business use, but some remain in family hands. Belmont currently is a lower middle to middle-class residential neighbourhood. It was the birthplace and early home of many important Carnival designers and bandleaders. The traffic congestion in this area is a result of lack of parking facilities and narrow lanes. There are four large secondary schools in Belmont. Many students live outside Belmont; the volume of private vehicles generated by twice-daily drop & pick-up is the cause of massive congestion during term time.

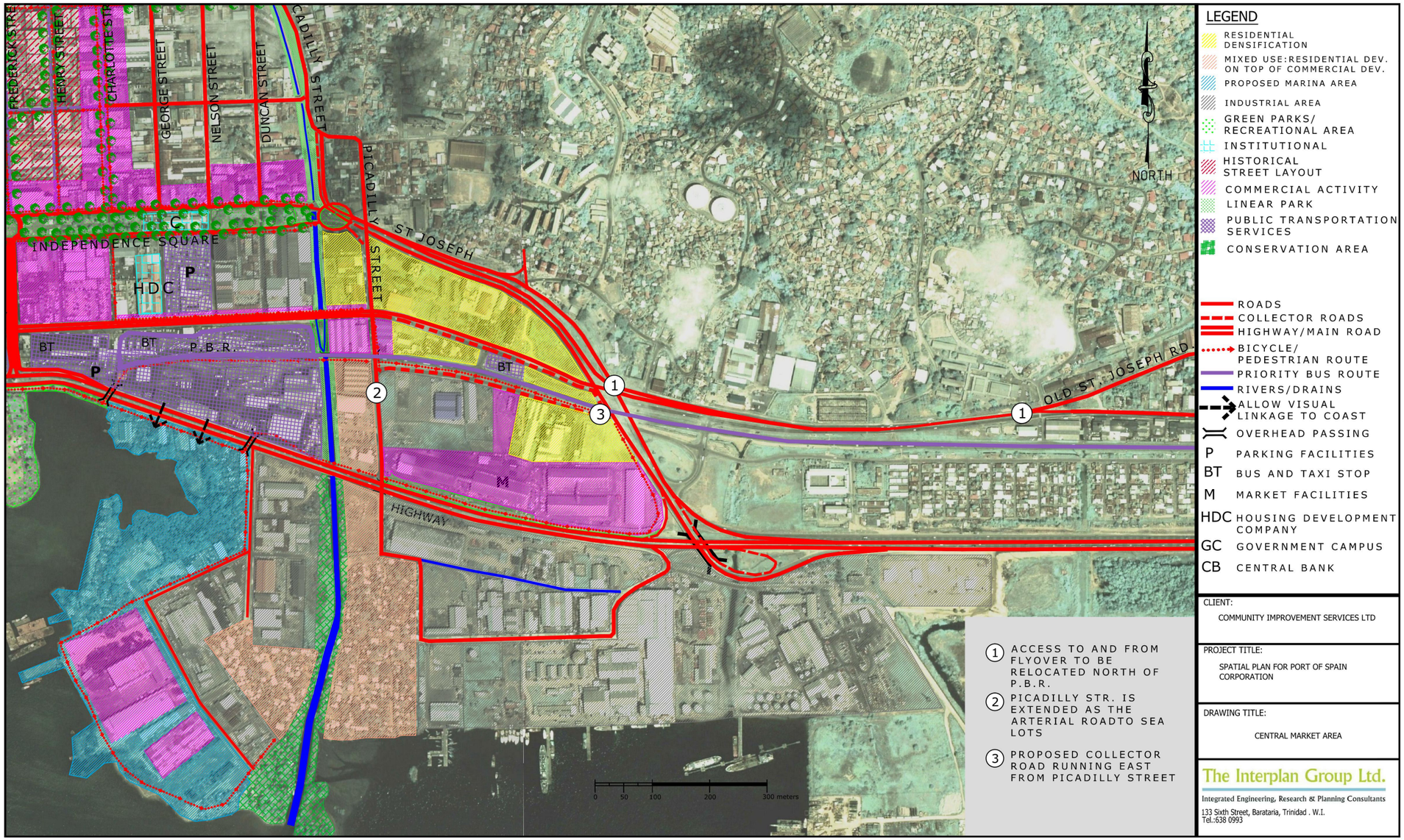
Plan

1. In Belmont many buildings are now in disrepair, are deteriorating and being replaced by new, modern buildings. ‘Sense of place’ is being eroded.
2. Government should acquire some older ‘heritage’ buildings, refurbish & refit to use as offices and NGO space.

3. This will have a ripple effect, encouraging owners of similar buildings to do the same. Some incentive may be needed other than just example.
4. There is also the issue of narrow streets, inadequate parking, and small lot-size.
5. Preservation of heritage areas can be enforced if there are planning standards, which are derived from the way the heritage buildings are located on the lot, the height and the layout of the facade.
6. Developers must provide justification for demolition; if a building is to be retained, the planning agency must set clear standards & guidelines re keeping the façade etc.
7. On the other hand, the density of the area was high in 2000 but is very low nowadays as appears from the unused lots and buildings. By consolidation of lots it is possible to densify the use and also the population of this community.
8. A pilot plan to upgrade a part of Belmont and to increase the residential density of this community is needed.
9. In ten years there should be 1000 new dwellings of which 250 are replacement and 750 new houses.
10. Many of the blocks of houses have deep lots in which second houses have been built behind the front houses. If it is possible to acquire such properties one can provide for parking facilities. Where there is sufficient parking facilities for a block of houses, parking in the lanes will be prohibited. Then it is possible to reassign the narrow lanes to one-lane roads with lay-bys for traffic from the opposite direction. Lay-bys must be 40 metres apart on average to allow emergency vehicles.
11. Real heritage buildings are excluded from this approach.
12. Make Norfolk St a transport corridor with appropriate development of high density residential and commercial use.
13. The possibility of Intersection Development along the St Ann's River bank between Belmont Circular Road and Jerningham Avenue can be investigated to provide for space for 400 dwelling units.

5.9 Project 8. Central Market

Project 8 – Central Market



Goals

The Central Market should be a more open well-used area in the centre of the city.
Improvement of the Market area as a multi- functional part of the city will result in not only a strong economically viable entity but also a lively residential neighbourhood with facilities and restaurants catering for a larger area too.
Space for 500du can be found in this area by reorganizing the market buildings and/or rearranging the knot of roads that surround this area.
Design a feasible way to connect the St Ann's Parkway with the Beetham Highway with access to the Market area and Sea Lots without compromising free circulation of public transport on the Priority Bus Road.

Present situation

The Central Market area is located close to both the Central Business District and Citygate, Port of Spain's most important transport hub. In spite of this prime location the market is not very attractive, surrounded as it is by much-neglected open land and derelict buildings.
Beetham Highway on the south and the Eastern Main Road on the north enclose the area and with the proposed plans, will have limited accessibility for private vehicles since the Priority Bus Road (PBR) cuts through the area.

Plan

1. The most important part of the plan is to improve the traffic system in the wider area of East Port of Spain.
2. The connection of the Beetham Highway with Independence Square via the fly-over should be improved to allow connections in all directions.
3. Limit access to the Beetham Highway between its Independence Square flyover intersection and the Wrightson Road intersection with Colville Street except at traffic light regulated locations for public transport at Citygate and at the Tobago ferry dock for passengers.
4. The Old St Joseph Road access to and from the fly-over should be relocated to north of the PBR. This will remove the existing level crossing with the PBR.

5. Piccadilly Street will be extended as the arterial road of this area to Sea Lots where the St Ann's Parkway, turns off to the east.

6. No level crossing with the PBR and the Highway should be allowed.

7. In the middle of the triangle between St Ann's Parkway, Beetham Highway and the extended Piccadilly Street construct a bus and taxi stand with facilities for pedestrians to wait and to cross the bus lanes. This is the most important access gate of this development area.

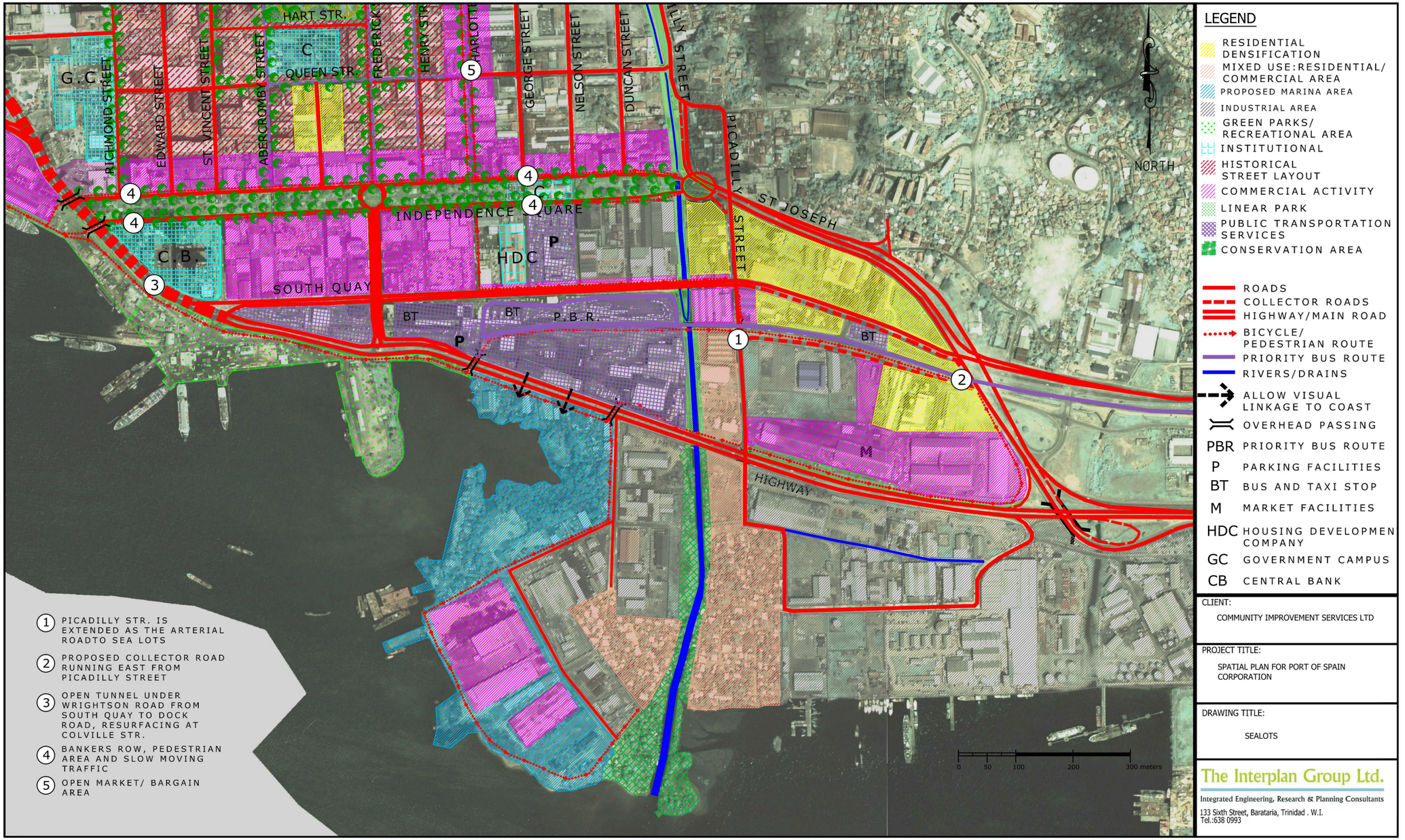
8. From the extended Piccadilly Street, two collector roads stretch to the east, one north of the PBR and one south of it. The market buildings will be concentrated one block away from Piccadilly Street.

9. A bicycle path will run from east to west all through the development without crossing the collector road, following Piccadilly Street in the north over (or under) the PBR up to the intersection with the northern collector road/ South Quay.

10. At a traffic light regulated crossing, the cycle path would follow South Quay west bound up to the intersection with Charlotte St. Along this route from the bus stand to Charlotte St, retail, services and craft functions can be established.

5.10 Project 9. Sea Lots

Project 9 – Sea Lots



Goals

Improve the living conditions of the residents.

Relocate commercial activity to the new industrial area to be located at the present Beetham Landfill site.

Develop a lively high density residential area for 4,000 families with the facilities needed and with restaurants and bars appropriate to the recreational and tourism potential of this place: the Gulf of Paria on three sides and the city centre, market and Citygate nearby.

Present situation

In 2000 there were 500 families in this area. There is an increasing number of squatters. The living conditions are poor as homes are fragile structures of scrap wood and corrugated galvanise sheets and are lacking basic facilities.

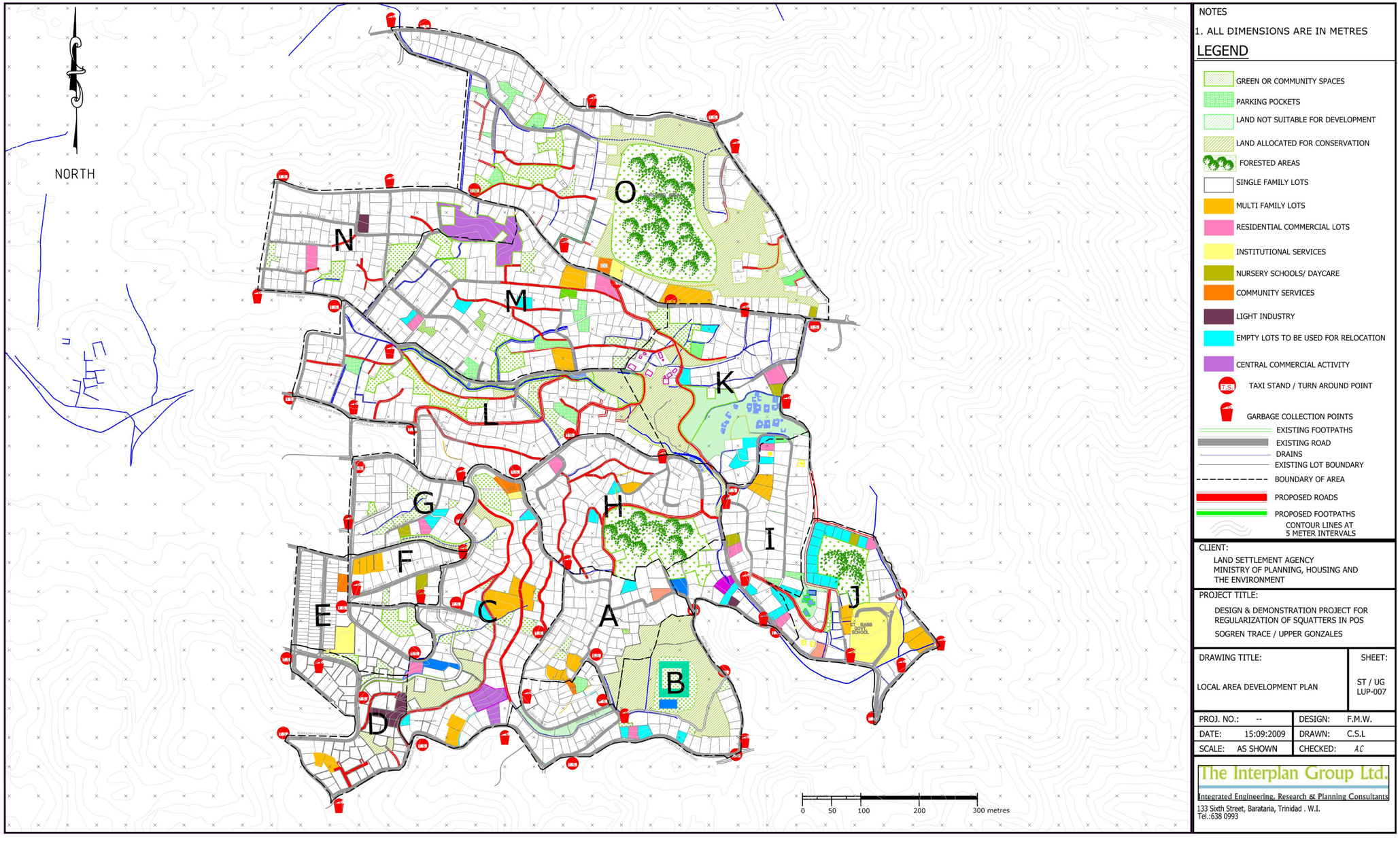
Plan

1. These lots on both sides of the St Ann's River form the most central situated locations with possibilities for high-density residential development. Immediately adjacent are Citygate, the Central Market and the retail area of downtown Port of Spain. This situation makes it possible to design an urban development with limited access for motorized traffic and with limited parking areas.
2. Both sides have a surface of 24 ha and can provide space for 2000 dwelling units each. Apartments will be built in four storeys above the ground floor where small enterprises dealing with art and craft, galleries, bars and restaurants can be located.
3. A green reserve to be sited along both banks of the St Ann's River
4. Between Citygate and western Sea Lots, a Marina is planned; include a jetty for fishing boats.
5. Locate a fish market and fish restaurants near the waterfront.
6. Construct a landmark high rise apartment building in the line of sight from Charlotte St.

7. Accessibility of the area from the east is easy and it is easy to travel to the west. Travel in a north- south direction is more difficult. To reach the area a tunnel, parallel to the bridge over the St Ann's River should connect Sea Lots with the planned St Ann's Parkway.
8. The coastal area between Sea Lots, the Ferry Dock and the Waterfront buildings should be opened and refurbished to promenade status and connect it with the Brian Lara Promenade.

5.11 Project 10. Gonzales

Project 10 – Gonzales



Goals

Provide sufficient infrastructure of utilities and accessibility

Take measures to store as much rain water as possible and to drain away the surplus in a safe and efficient way.

Present situation

Gonzales has historical roots in post-slavery times. After emancipation in 1834, many freed slaves refused to accept apprenticeship or the proposed six years of continued labour on the sugar plantations. Instead the freed and run-away slaves refused to continue in the system of dehumanisation and degradation associated with slavery and so, many settled on the outskirts of Port-of-Spain in communities such as Gonzales. A dependence on the informal job trade was developed as many people established themselves as skilled artisans and craftsmen. They became the driving social force that led the process of diversifying the economic base away from the predominant sugar-based economy. Gonzales demonstrates characteristics typical of communities that were established prior to any formal planning processes in Trinidad and Tobago. Over the years this organic nature along with other social and economic constructs has led to the existing deteriorating physical conditions in the area, such as poor housing stock, inadequate roads and a lack of open space.

The East Port of Spain Development Corporation is implementing several strategies of the EPOS Development Plan. Gonzales has been earmarked for Village Improvement and Village Upgrading.

Plan

Since not the whole of Gonzales is in the EPOS Development Plan and so has not been declared a Comprehensive Development Area, the technical recommendations from the Gonzales Community Development Plan 2006 has to be implemented.

Chapter 6 Plan Implementation

6.1 Introduction

The implementation plan described in this chapter reflects the fourth goal outlined earlier in Chapter 2 of volume 1. The premise of the implementation plan is that the ability of Municipal Corporations to have substantial impact on creating sustainable communities, promoting sustainable livelihoods, and supporting environmental management is largely dependent on meaningful local government reform.

Successful reform would include redefining administrative boundaries and putting in place coordination mechanisms to support rational planning and service delivery; empowering Municipal Corporations with a higher degree of independence in carrying out their mandates, and strengthening the capacity of municipal governments to undertake these functions. Where Municipal Corporations do not possess a formal mandate, there is a need for enhanced coordination and communication between Municipal Corporations and responsible State agencies. Finally, Municipal Corporations will require the capacity to encourage and facilitate the participation of key stakeholders and citizens in local decision-making processes. This will serve both to increase accountability and improve decision making.

6.2 Addressing Metropolitan-Scale Governance

The Development Concept presented in Chapter 4, and the underlying analysis, point clearly to the need to consider land use planning issues from a metropolitan perspective. Issues such as uncontrolled hillside development, containment of informal settlements, commercial and residential sprawl, access to facilities, flooding and traffic congestion can only be understood and addressed by taking a wider spatial perspective. While the clear and strong recommendation emerging from the plan is the need for a metropolitan scale intervention. However, there are several options to be considered in how this metropolitan area and the associated land use planning function are governed. Three models are:

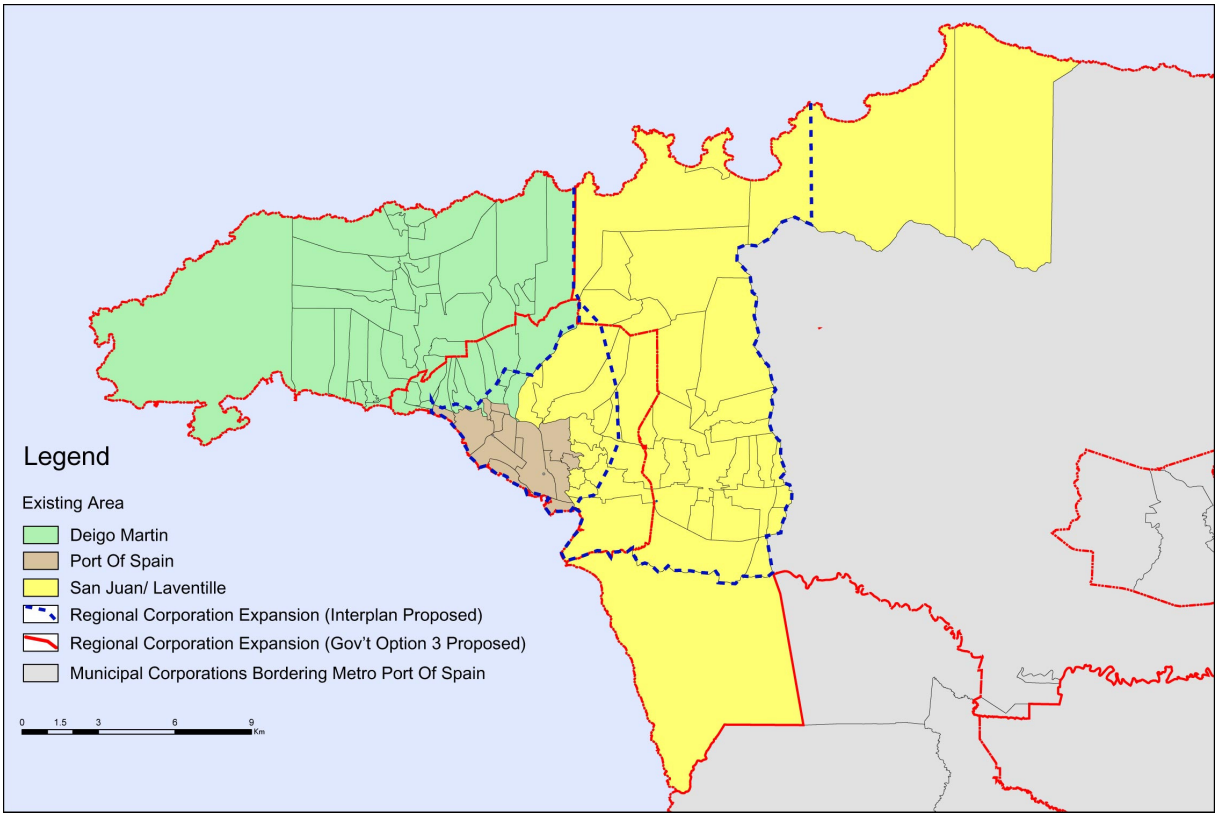
Inter-Municipal Coordination – with or without boundary changes

Expand Port of Spain boundaries to cover the entire Metropolitan Area – consider adding a borough system of local governments

Superimpose a new Metro entity on top of existing municipal corporations – with or without boundary changes

All models assume that a greater involvement of municipal corporations in planning is realised.

Map 11 Municipal Corporation Boundaries–existing and proposed



While a Metropolitan approach to planning is the only one recommended by this development plan, there are several options for the governance of this area. Two alternatives to addressing governance reform can be explored further:

1. Inter-Municipal Coordination – with or without boundary changes

This involves putting in place an inter-municipal coordinating body to support metropolitan planning that cuts across municipal corporation boundaries. While there is as yet no statutory mechanism for dealing with cross-boundary issues, an administrative mechanism can be set up to make plans and action projects that affect adjoining municipal corporations. There are many cross-boundary issues which can be addressed by an Inter-Municipal Steering Committee.

The inception meeting of a Metropolitan Port of Spain Inter-Municipal Coordinating body took place on June 5, 2009. The discussion explored how to establish a framework for coordinating policies, plans and activities of Local Government across the boundaries of San Juan/Laventille, Port of Spain and Diego Martin municipal corporations. A commitment was made to subsequent meetings to establish the coordinating framework. The inception meeting was attended by representatives of the City of Port of Spain (Mayor and CEO), the San Juan Laventille RC (Chairman and Councillor), Diego Martin RC (Councillor) the Ministry Local-Government (MoLG) and the Interplan Consulting group.

Coordinating mechanisms between municipal corporations and other agencies will require the establishment, in the body of the legislation, binding parameters for multiple interface with these Ministries / Agencies. In addition, clearer definitions need to be provided in legislation or in regulatory schedules with respect to the relationship between the Corporations and the Special Purpose State Enterprises (SPSEs) in order to avoid jurisdictional overlap. For example, as it concerns drainage, there are issues with communication and interpretation between Municipal Corporations and the Drainage Division of the Ministry of Works. This includes a problem of jurisdiction due to differing interpretations of the categorization of major and minor drains. This calls for the need for the identification of problems and the management of implementation for drainage between these two governmental agencies.

If the current boundaries were to be left intact, this would require a coordinated approach to land use planning involving three municipal corporations: Port of Spain, Diego Martin and San Juan-Laventille. The obvious difficulty inherent in this approach is the challenge of bringing together multiple, and often competing, entities to address complex issues. The role of the Ministry of Local Government in facilitating and managing this process would be crucial.

Expand Port of Spain boundaries to cover the entire Metropolitan Area – consider adding a borough system of local governments

This second option – also assuming a multiplicity of municipal corporations within the metropolitan area – would be to create a new metropolitan planning entity vested with responsibilities for land use planning. The clear disadvantage of this option is the cost – both financial and political – of creating a new administrative layer.

In the case of both alternatives, minor boundary changes to any of the relevant corporations would be possible, but would still require either coordination or a new metropolitan entity.

6.3 Strengthen Municipal Corporation Mandates & Institutional Capacity

Development Planning

Expanding the planning function of municipal corporations will require enshrining these changes in the body of the local government reform legislation. This includes appropriate bye laws, rules and regulations in an accompanying schedule. Steps must be taken to ensure that this legislation is in keeping with the expectations of the Town and Country Planning Act and all other pieces of legislation which will impact on the planning process within the city, e.g. The Environmental Management Authority, Public Health Ordinance, Highways, etc. Similarly, there is a need to effectively incorporate urban planning implications of the Special Purpose Enterprise projects into the planning mandate of the Corporations.

Authority for decisions regarding the approval of the Regional Development Plan give should be given to the Municipal Council, in order to allow them to implement the proposed measures and plans. The Ministry of Local Government should be responsible for implementing the legislative measures, and coordinate as necessary with other Central Government ministries.

Accompanying these regulatory changes will be the need to create in-house organisational capacity to manage the required planning functions. A first step would be to design a roadmap for capability enhancement in the context of the planning requirements in the expanded role for local government. This would include make provision for the creation of opportunities for the enhancement of knowledge, skills and strategic thinking among the councillors and the municipal administration.

Development Control & Urban Design

Before an application for a development can be approved, it will have to fulfill many conditions. These include research into the impact on the natural environment, air quality, the consequences for traffic, noise of all kinds, soil quality and capacity, water management (sewerage, infiltration, drainage), the influence of factories in the neighbourhood on the environment, and external safety. The measures that have to be taken to overcome the upcoming problems or to limit, mitigate and compensate the negative effects of the development have to be described. The developer has to prove that he is capable and willing to implement these measures. This impact assessment has to be judged by different parts and levels of government, including Ministry of Local Government, Ministry of Town & Country Planning, other State Agencies, and the Municipal Corporation. The responsibility of each has to be clear.

Assessing the aesthetic quality of individual developments should be the responsibility of the Municipal Corporation. A committee that reviews the development plan on aesthetic qualities and advises the Corporation would be useful. Other methods are to establish a professional team that participates in the development design activities, or prepares a design plan, made by or for the Corporation, that outlines the design standards/criteria to be achieved. This plan, after approval, establishes the rules by which applicants can be judged.

Procedures have to be established to fix the time for judgment and approval or refuse. The consequences of a decision, of deciding late, the possibilities of appeal have to be clear.

Environmental Management

Municipal corporations can play a role in implementing a range of small-scale, high-impact environmental management actions. This includes stormwater & environmental management.

Measures to save rainwater on private property could include requiring every newly built house to have a rainwater harvesting container of a minimum size, to be used for watering the garden, flushing the toilet and washing clothes. Every renovated house could have a rainwater container for the same purposes. A system of subsidized rainwater containers for existing houses and apartments could be considered. Similarly, municipal corporations could support a program of downspout disconnect from the drains in the case of gardens with unpaved surfaces representing of a minimum proportion of the roof.

Municipalities could also be mandated with actions such as the following:

- Create ponds as reservoirs on high-elevation places and maintain and improve drains by providing check-dams.
- Require all municipally-licensed businesses to prepare environmental management statements about their impact on the environment and the improvements they will make. Measures could include recycling, a transport plan for goods and employees, saving energy or using sustainable energy. This would be part of an annual report.

Traffic Management

There is a need to clarify municipal responsibilities with respect to various parts of the road network.

The road network is the lifeline of a region or community. In order to adequately serve this function, it is necessary that both the users and those responsible for the maintenance and administration of the network understand the relative importance and functions of various roads. The allocation of resources in annual maintenance as well as land development control

decisions and decisions about the level and kinds of access and roadside activities should all be based on the class to which a road belongs. The country's development drive makes it even more important that the roads are classified in a manner that is intuitive and easily understood by those unfamiliar with particular regions. The current road hierarchy is defined in the Highways Act chapter 48:01. Six categories of roads are defined. The definitions are inadequate and cumbersome. There is nothing within the definitions which would indicate the level of jurisdiction or the level of design and construction of the roads. One result of this is that the Highways Division is responsible for some roads which mainly serve an access function, while conversely local government bodies are responsible for some roads which serve mainly a through-transit function.

Public Transportation

There is currently no comprehensive authority responsible for public transport. Regulation of public transport is limited to registration, with fragmented organization of public transport, with private and public operators. Public transport is currently administratively inflexible, unresponsive to changing travel needs and patterns of activity, does not serve a wide range of origins and destinations, characterized by improper location of terminals / stops, and too far to walk to destination. The result is little public confidence in the public transport system.

There is a role to be played by a Metropolitan Port of Spain Transit Authority. Consultation with local stakeholders identified the following actions related to strengthening municipal mandates and building municipal capacity:

- Funding mechanisms
- Planning process must not be affected by the political cycle: sustain momentum of implementation
- Create an in-house organisational capacity to manage the required planning functions. Effectively incorporate urban planning implications of the SPSE's projects in the Corporation's planning thrust.
- Design a roadmap for capability enhancement in the context of the planning requirements in the expanded role for local government.
- Make provisions in the schedule for the creation of opportunities for the enhancement of knowledge, skills and strategic thinking among the councillors and the administration

6.4 Develop a Municipal Stakeholder Consultation & Public Engagement Strategy

A proposed approach to stakeholder consultation and public outreach was presented in the inception report and Situation Report 1. This approach was refined during these earlier phases based on feedback from the Ministry of Local Government, extensive dialogue among team members, and initial consultation with municipal corporations. In essence, the role of consultants is to meet with internal key stakeholders on behalf of the Ministry and Municipal Corporations. As a starting point, the role of the consultants is to work with these internal stakeholders in order to establish the framework to enable individual Municipal Corporations to interact directly with their external key stakeholders and the general public. The MOLG & consultant will help each Municipal Corporation in initiating a participatory model that will continue beyond the formal planning process.

Implementation of the five-phase consultation plan continued in earnest during Phase 3. A full report of the stakeholder consultation & public outreach process will be presented in the form of Report on Consultation.

With respect to longer-term reform, elements of a working relationship with public and private stakeholders should be described in legislation. This would ensure that Local Area Planning meets the expectations of all interest groups and individuals. In addition, a process should be outlined, perhaps in an attached schedule, which ensures that stakeholders are co- owners of any planning initiatives through to the implementation stage.
Consultation with local stakeholders identified the following actions related to improving consultation systems and processes:

- Define in the legislation the elements of a working relationship with public and private stakeholders. This would ensure that Local Area Planning meets the expectations of all interest groups and individuals.

- Outline a process, perhaps in an attached schedule, which ensures that stakeholders are co- owners of any planning initiatives through to the implementation stage.
- Support information dissemination, awareness-raising, public education, school curriculum development and community involvement in environmental & beautification-focused issues and activities
- Rely on various media, new technologies, and various art forms (dance, theatre)
- Work closely with school and youth organizations
- Include opportunities for giving people a voice in the process; work with schools
- Include young people and seniors in Citizen's Advisory Committees to Council
- Host regular town meetings
- Maintain continuous dialogue with stakeholders

6.5 Develop a Plan Implementation Monitoring Tool

The indicators and benchmarks outlined in Chapter 4 of this volume represent the foundation for a plan implementation monitoring tool.

These include the following:

Land use mix : % of allowable land uses Dwelling Density : Dwelling units/hectare Employment Density : Jobs/ha

Facilities ratio : facilities/1000 pop

Water management : Reduced incidence of flooding ; Concentration level by key pollutant

Transportation: Improvement to road capacity and/or critical intersection; Change in modal split

Urban Design: Local Area Plans and projects conform to accepted urban design guidelines; Creation of a public engagement strategy that utilises "Placecheck" methods