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Development Bank**

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*Annex 03 – Existing Issues of
Transport in Belize City*



Transport - Table of Contents

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1. Introduction

An important feature of any city is ‘mobility’ and the provision of an efficient network that facilitates the free flow of people to the benefit of economic activity. An inefficient network will result in lost time and high transport costs to the detriment of both the economy and the environment.¹ In order to fully comprehend the dynamics of traffic movements within the City, the initial approach for this Study was not only to consult directly with relevant agencies, but also to make daily tours of the city’s streets with representatives of the City Traffic Department. These tours covered the morning and evening peak hours. They provided the opportunity to gain familiarity with the network and to discuss issues with the individuals who come across the problems on a daily basis, as well as raising awareness of the project.²

The transport network in Belize remains at an unsophisticated level in terms of planning, implementation, management, and data/information storage. Very little research and planning have taken place over the past two decades and the few studies undertaken have been neglected and archived. It is essential that this situation is reversed and the city follows a development path with a series of strategically planned investments. A ‘mobility plan’, as part of an overall urban master plan, can seek to encompass all modes from walking to road and even waterway. In the case of Belize, the affinity with water from sea, river, and canals, can provide alternative and innovative means of travel. The relatively low income level of the general population also strengthens the consideration of low cost modes, such as cycling and walking. By careful urban and land use planning, the need for transport can also be minimized.

However, a transport plan for Belize City must go beyond the typical needs of accessibility and mobility. It must also consider the precarious situation of the city in terms of climate and disaster vulnerability. It must also consider the need for tourism related travel to support or invigorate an important part of the economy, and it must align with plans to expand the city in or around an environment and topography that is either difficult or requires preservation.

Overall, the key angles that need to be addressed within the transport sector for Belize City may be categorized as:

- Transport infrastructure for disaster management
- Accessibility for urban expansion
- Transport linkages for tourism travel
- Management of city traffic congestion

This Issue Paper investigates the existing status of transport in Belize including issues and challenges from the key aspects of the road network, public transport, traffic management, freight movement, movement of tourists. The Paper includes graphics and photographs of the City to help illustrate the issues and support the text explanations. Once the main issues have been identified, solutions and appropriate interventions can be formulated. Such solutions will be designed not only to address ad hoc problems, but also to support the overall development of the city and link with other city strategies including land use development and tourism master plans.

¹ Mobility is a general term applied to the ease of movement of people and goods, which does not assume motorized traffic to achieve goals.

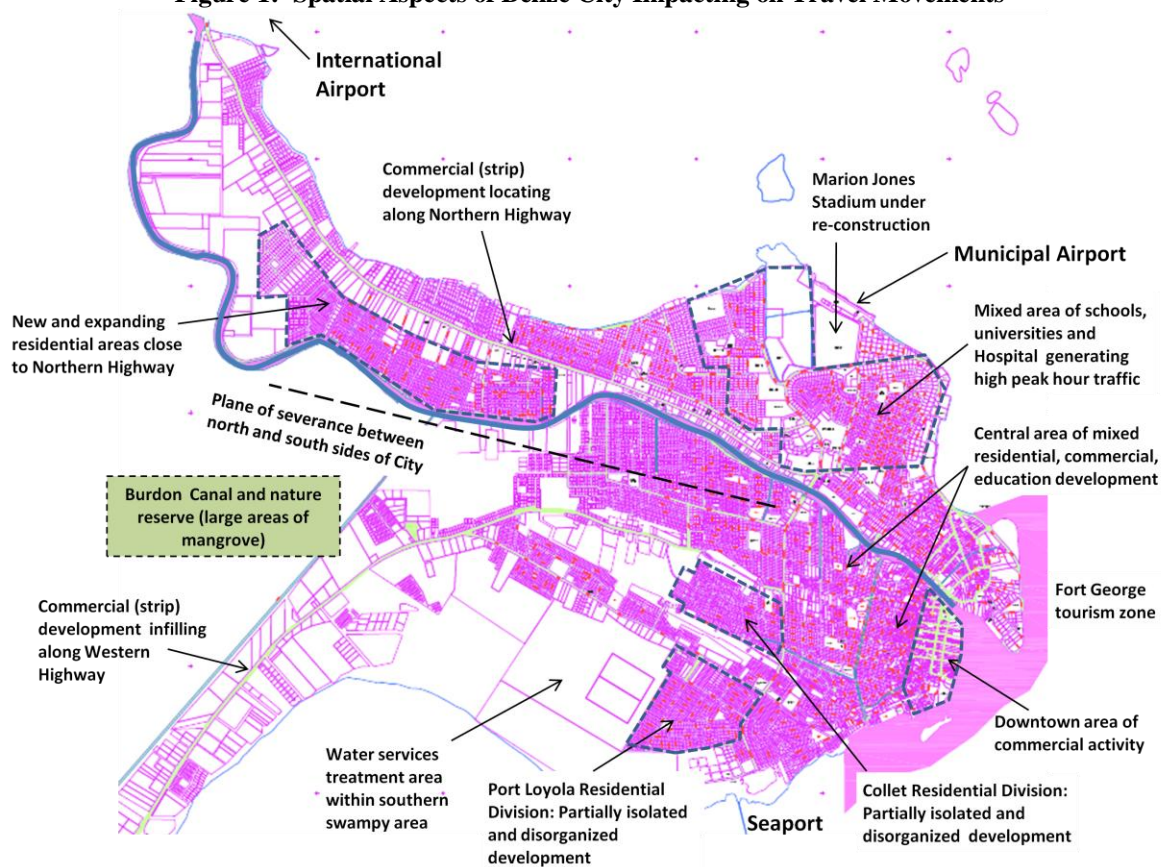
² For newspaper interview, see <http://www.guardian.bz/all-politics/2679-addressing-the-belize-citys-traffic-problems>

2. City Structure and Spatial Aspects

2.1 Belize City

This Section looks at how the spatial aspects of the City impact on accessibility and travel movements. The figure below highlights some of the key spatial factors of the City. The city is surrounded on three sides by water and has been developing from the eastern end and then along the two main highways around the mangrove centre of the Greater area. The gravitational centre of the city is therefore on the east side. The importance and influence of the Northern Highway is notable in funneling traffic toward the eastern side of the City, where most activity is taking place. The southern swampy area west of the seaport remains largely undeveloped.

Figure 1: Spatial Aspects of Belize City Impacting on Travel Movements



Source: PADECO, 2010

The economic foundation of Belize City is built on port activity, merchandizing, service industries, and hotels/leisure industries, which tend to be concentrated in the eastern area of the City. Some of the main generators of traffic are: schools located in the eastern segments, the international airport located to the north-west from the Northern Highway, the seaport located at the southern extremity, the down town area at the south-eastern extremity and strip development along the two main highways. In essence, each quadrant of the city is a generator of traffic and residential areas are woven into the urban fabric in either a planned or unplanned manner, which complicates travel patterns.

In terms of spatial dynamics and accessibility, transport problems are caused by:

- concentration of activities including schools toward the eastern side of the city (partially caused by unsuitable land on the west side) resulting in cross city traffic;
- north-south plane of severance caused by a lack of river crossing points in the western area resulting in funneling of mixed traffic toward the centre;
- unplanned developments with weak development control

In general, the lack of macro development control and zoning policies in Belize City may be causing irregular density patterns. However, there is still scope to introduce policies to encourage transit-oriented development and optimize the structural axes of the city: the Northern and Western Highway corridors. The strip development along the two corridors of the Northern and Western Highways appears to be a natural manifestation rather than macro planned. This reflects an adaptive city structure in which the city is expanding along existing transport axes away from the historically strong core at the eastern end. By careful planning within the Greater Belize area and beyond, locations along these two highways could become small hubs for development with transit facilities. However, haphazard corridor development will undermine such initiatives.

The location of commercial development along the two main highway corridors should be relieving the city centre of traffic congestion to some extent. However many of these commercial buildings are distribution centres requiring access to the seaport located on the south-east side and on transport routes via the city centre. Some service industries could also be relocated to the satellite towns thereby reducing traffic to the city core and the impact of climate-related disaster. However, any relocation would need to be considered carefully to avoid ‘hollowing out’ of the city centre and urban degeneration.

Zoning policies could be recommended to facilitate city expansion by allowing mixed development and high floor to area ratios (FAR) at the highway frontages and relocating freight distribution centres.³

The southern swampy areas are important in providing storage basins to retain flood water after periods of high rainfall and/or high tides. Their loss would increase the risk of flooding properties in Fabers Road and surrounding areas, so infrastructure development, including transportation, in this area would need careful consideration.

2.2 Satellite (Dormitory) Towns

Several satellite towns exist in the greater area of Belize and outside. These ‘sleeping communities’ have not yet reached a state of independence and therefore generate travel movements to and from central districts of Belize City.

- Ladyville: This has an economic base with a number of industries located along the Northern Highway, close to the international airport.
- Burrell Boom: This has a long established logging industry and new data processing complex.
- Hattieville: This has very little local industry and mainly exists as a dormitory town.
- 8-miles: This has very little local industry and mainly exists as a dormitory town.

³ Such a policy with high rise towers fronting the transit way surrounded by low density residential neighbourhoods has been implemented successfully in Curitiba, Brazil.

It is not known the level to which these communities currently contribute to traffic levels in Belize. However, these communities will potentially provide high demand for public transport to Belize City and become transit hubs.

3. Challenges and Opportunities

Vulnerability to Natural Hazards and Climate Change: There is increasing data to support the case of climate change in the Caribbean region and the likely negative consequences. For example, the years between 1995 and 2006 rank among the warmest years in the instrumental record of global surface temperature (since 1850). The global average sea level rose at an average rate of 1.8 [1.3 to 2.3] mm per year over 1961 to 2003, with a faster rate over 1993 to 2003 at about 3.1 [2.4 to 3.8] mm per year. Further, the frequency of heavy precipitation events has increased and widespread changes in extreme temperatures have been observed over the last 50 years. Since 1995, all but two Atlantic hurricane seasons were above normal.

Belize City lies entirely at or below sea level. It is exposed to hazards such as river, coastal flooding and rain inundation, tropical storm surge, winds, hurricanes, and sea level rise. This adds risk to any investments and interventions to the city. Historically, hurricanes have caused widespread destruction to Belize. Despite efforts to relocate housing inland (e.g., Belmopan, Hattieville, Ladyville) due to hurricane vulnerability, people and businesses still concentrate in Belize City. As population increases (due to rural-urban migration, but also from other countries), there is pressure for urban development in these flood-prone locations. Such vulnerability to disasters and climate change impacts further complicate the development and maintenance of infrastructure. Flood risk in the city is also intensified by development in low lying flood prone areas along the major highways. Roads in Belize City (including sections of the two major highways) are subject to damage or closure during rainy season. The highway between the airport and Belize City is often flooded as result of heavy rains. New developments, including the sea-port, block natural drainage channels and overflows. A lack of drainage maintenance also limits the reduction of flood risks. Several roads may need to be elevated to withstand flooding risk and more investment in drainage channels, ponds, and outlets is required.

Low Density, Low Income Communities: The Greater Belize area includes a belt of commuter towns and bedroom communities with low-density neighborhoods that require lengthy roads, drainage canals, pipes, and cables to serve individual lots. This increases the cost of providing residential infrastructure and therefore the cost of serviced land, making the provision of infrastructure a challenge. At the same time, the downtown area includes many low income neighbourhoods who do not own private cars. However, by providing convenient and affordable non-motorized or public transport modes, there is an opportunity for the city to plan in such a way to avoid the typical growth trajectory of most cities that see dramatic and destructive increases in car use in parallel with increasing income levels.

Areas of Severance: Haulover Creek runs the length of the city from east to west and effectively severs the city between the northern and southern sides, requiring bridges to link the two sides. Aside from Haulover Bridge at the western extremity of the Greater City area, there are three bridges which are concentrated toward the eastern end. Traffic that needs to access the north or south side of the city is therefore funneled toward the city centre. There are other noticeable areas of severance (isolation) in the city. For example, part of Lake Independence Division to the west of Western Avenue remains isolated.

Unplanned Developments and Lack of Zoning: Port Loyola and Collet residential developments are typical of the largely (or partially) unplanned residential areas that expand in relative isolation within the city causing problems in accessibility and burden on certain points on the road network. In some cases, second accesses to the neighborhoods have only recently been added. Without clear land use function, it is more difficult to invest in infrastructure that will be utilized with reasonable expectation.

Location of Schools: Many schools in Belize City are located within the city centre on the eastern side. This exacerbates traffic congestion due to the movements of traffic across town in accessing those schools. It is clear that a macro urban plan of locating educational establishments has not been made or followed, and the continuing location or expansion of these schools in the eastern central area will exacerbate traffic congestion. A strategy of gradually relocating such establishments to the western side would help alleviate traffic problems within the peak hours.

Data Gaps: There is a fundamental lack of data for Belize City. For example, there is no systematic collection of traffic numbers within the city from which to make judgments on strategy and investment. A software program for recoding traffic accidents is no longer functioning, and the City receives no passenger data from the private bus operators. Similarly, there is no data on the road network including road condition and repairs are undertaken on an ad hoc basis. With such deficiency in data, it is difficult to calculate feasibility and make recommendations unless a program of independent study is undertaken. There is no data on the surface condition of roads, which are repaired by observation and reaction. Therefore the rate of deterioration is not known and future maintenance cost profiles are not undertaken. Road condition data needs to be updated to enable sensible decisions to be made and to provide a basis for fund allocation. Records should be obtained on a computer database for monitoring.

Governance and Finance: The structure, responsibilities, and relationships between institutions in Belize are fragmented and complicated. This presents a severe challenge to the implementation and more importantly the maintenance of capital investments. Without adequate institutional capacity to operate and maintain assets, there will be little incentive to provide funding. Poorly maintained roads are symbolic of the institutional and financial problems that the City bears.

Land Constraints: Whilst the city could benefit from transport interventions, many of these require acquisition of land. For example, at the entrance to Freetown Junction from the Northern Highway, both sides of the road have vacant (unused) land in a prime city entrance location which could be used for a bus interchange facility or car parking lot; however it is under private ownership.⁴ The acquisition of land for development in Belize is complicated as there are many private owners. However, it is essential that the Government takes early steps to reserve or acquire land for city infrastructure and expansion purposes. This may require innovative approaches to negotiate with landowners on property rights.

⁴ The ownership and use of this land is to be confirmed.

Figure 2: Areas of (Vacant) Land on Northern Highway at approach to Freetown Roundabout



Source: image adapted by PADECO from ‘Google Earth’

Mixed Development and Lack of Development Control: Belize City is following a development path that encourages private transport. Although there are sleeper communities outside the central area, their density is currently insufficient to enable high volume public transport routes. However, as they grow, there is potential for the national highways to become trunk routes for bus operators. Meanwhile new developments arise in a fragmented manner with little consideration of transport issues.

Cultural Aspects: There are certain aspects of Belizean people that provide challenges to improving the transport environment, whilst others that brings opportunities. The habit of boarding buses haphazardly at their own preferred roadside locations rather than at designated bus stops provides a challenge to regularizing public transport. On the other hand, there is little or no stigma to riding public transport, evident in other countries. It is common to observe cyclists who take advantage of the flat topography and mostly clement weather. Whilst a lack of driver education leads to reckless driving, there is little evidence of aggressive driving.

Demographics: Almost half the national population of Belize is under the age of 19 (Statistical Institute of Belize, 2009). This demographic is evident in the high number of schools and colleges in Belize City, which in turn creates a high level of school traffic, adding to congestion at the peak hours. This concentrated level of traffic is difficult for cities to manage effectively. Although the impact is relatively short duration, it causes driver frustration.

Further challenges are presented in the paragraphs below that describe the current situation of transport in Belize City, through observation and interview with relevant authorities.

4. Past Projects & On-Going Programs

There are currently very few on-going transport initiatives or projects in Belize City, and no evidence of a formal road building or maintenance program. This is due to the lack of fiscal and institutional capacity. There are however, several on-going and past studies that impinge on the transport sub sector, and these are listed below.

Significant Past & On-going Projects and Initiatives

Name of Project/Program	Date	Linkage with Belize City Transport
Road and Drainage		
Flood Mitigation Infrastructure Project for Belize City	On-going	Contributing to retrieving urban spaces along canals and roads including green areas, walkways and bikeways, thus reducing maintenance needs, runoff and littering and the improvement of the urban road network consistently with BZCMP.
South Side Poverty Alleviation Project: Phase 2 Infrastructure Works (under Ministry of Works) *see description below	On-going	Substantial rehabilitation of the major streets and drainage systems in the south side area of the canal.
Study into Effects on Poverty Alleviation: Construction of Road and Bridge Linking Chetumal Street and Western Highway near Fabers Road, Belize City	October 2009	A link road and bridge in the proposed location would alleviate congestion in the city centre and help to remove large freight trucks.
Ministry of Works, Executing Unit: Emergency Road Rehabilitation Program in response to the Flooding Events caused by Tropical Depression No 16	June 2009	Loan agreement with IADB to rehabilitate road infrastructure damaged by a tropical storm
Development		
WB Housing Policy in Belize, Diagnosis and Guidelines for Action	January 2010	Characteristics of housing and residential projections impact on access requirements
Civil Aviation		
Belize Municipal Airport Expansion Program (at Phase 2)	2009	Dependent on traffic demand, the plan includes terminal expansion and refurbishment. It follows Phase 1 (B\$40m) including terminal and access improvements.
Tourism		
IDB Belize National Sustainable Tourism Plan	On-going 2010/2011	Includes tourism in Belize City, which impacts on traffic movements. Traffic is higher on cruise call days (2-3 days per week)
Fort George Tourism Zone	2010	Safe tourism zone for cruise tourism visitors – may reduce tourism-related transport outside the zone
Cruise Tourism in Belize, Perceptions of Economic, Social, and Environmental Impact	November 2006	The cruise tourism sector impacts on tourism-related traffic in the City, and could grow if the City is used as an overnight stay or hub.

Source: PADECO, 2010

South Side Poverty Alleviation Project: Phase 2 Infrastructure Works (under Ministry of Works)

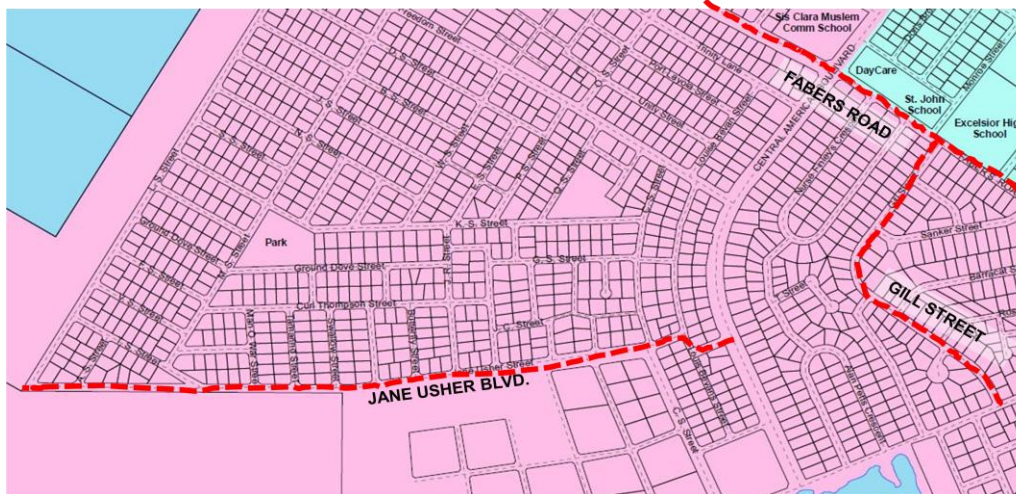
The project includes the following components:

- Roads to be paved
- Roads to be resealed
- Rehabilitation of canals

The project includes a total of 10 individual contracts as follows.⁵

1. Collet Canal, East & West Canal, North Creek Canal
2. Fabers Road Outfall Canal, Trench Town Canal Street Works, Lakeview Street Canal, Prisoner Creek Canal & Street Works
3. Neal Pen Road and drainage Improvement Works
4. Jane Usher Boulevard and Associated Works
5. Central American Boulevard Upgrading Works
6. Lake Independence Area- Street Improvement & Drainage (Vernon Street, Police Street, Mahogany Street)
7. Queens Square Area- Street Improvement & Drainage (Rivero Street Extension, Monroe Street, Benbow Street, Mex Avenue, QSUK #1)
8. Port Loyola Area- Street Improvement & Drainage (Ross Pen Road, Gill Street, Baracat Street, Reggae Street, Guerrero Street)
9. Pickstock Area- Street improvement & Drainage (Mopan Boulevard, Nargusta Street, Ebony Street, Mahogany Street)
10. Collet Area- Street Improvement & Drainage (Antelope Street extension, Pitter Street, CDUK #7 & #8, Pelican Street Extension, Racoon street Extension)

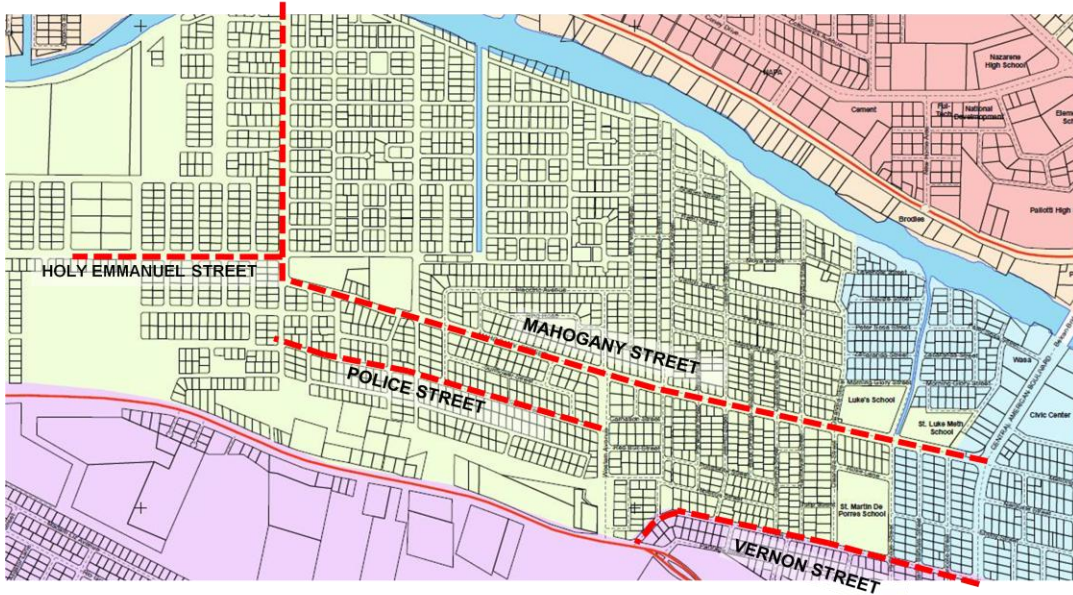
Figure 3: Streets with Treatment Works (Port Loyola Area)



Source: Ministry of Works, Project Execution Unit, Belmopan City

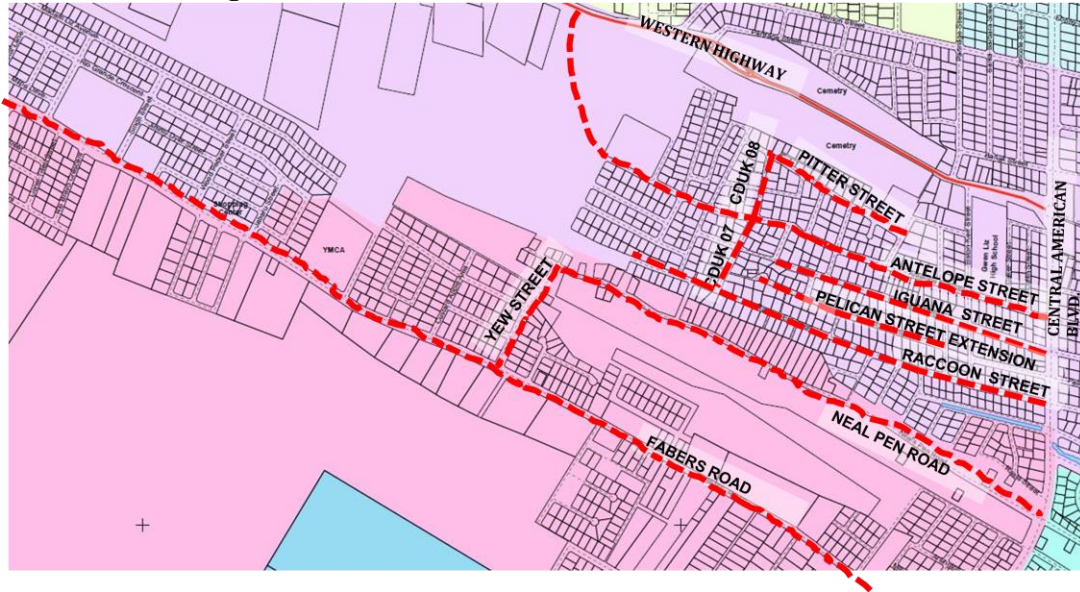
⁵ Pending further investigation and analysis, these proposals and design may not be the optimum solution and it is recommended that they be reviewed.

Figure 4: Streets with Treatment Works (Lake Independence Area)



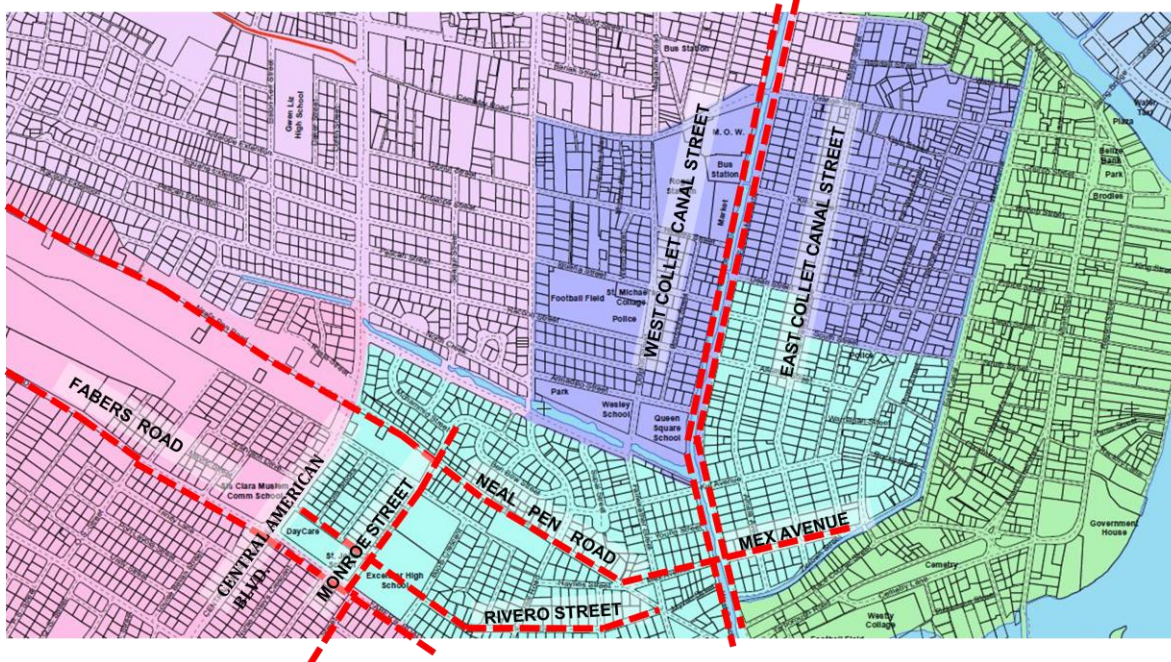
Source: Ministry of Works, Project Execution Unit, Belmopan City

Figure 5: Streets with Treatment Works (Collet Area)



Source: Ministry of Works, Project Execution Unit, Belmopan City

Figure 6: Streets with Treatment Works (Collet Area contd.)



Source: Ministry of Works, Project Execution Unit, Belmopan City

5. Institutions and Regulations⁶

5.1 Institutions

The roles and capacity of governing bodies and institutions in Belize is a critical consideration in the process of urban planning as they determine the likelihood of success of both implementing and maintaining infrastructure. Key investments can quickly fall into disrepair if there is an inadequate or non-functioning framework of responsible agencies. Therefore, capital investments should not be considered in isolation, but should include an institutional component, which may comprise capacity-building aspects.

Similar to urban planning, the responsibilities for the transport sector in Belize seem to be dispersed across several ministries and departments, and coordination among them appears low or non-existent. These ministries as well as city departments face significant limitations in resources, such staff, equipment, training, investment for strategic planning.

The Ministry of Public Works: The Ministry of Public Works is responsible for planning, construction and maintenance of the country's roads and bridges as well as some roads and drains and waterways in the city. Clearly, there are serious shortfalls in the resources to meet the demand of repairs to the highway, with nearly all streets having areas of disrepair. There also appears to be knowledge gaps in the best practice for highway material and construction techniques with the subject often debated among officers. Road infrastructure is financed by the national government as well as by grants and loans from bilateral and multilateral sources and implemented by the Ministry of Works.

⁶ More detailed information on institutions and legal aspects will be provided in the Institutional Issue Paper.

Ministry of Transport: The Ministry of Public Utilities, Transport, Communications and National Emergency Management manages the national roads, sea-ports, and is the regulator for public transport, though the City takes a prime role for transport within the city.

Department of Civil Aviation: The Department of Civil Aviation is the Government's regulatory and oversight body for the Belize civil aviation industry. It has the responsibility of licensing commercial and non-commercial aviation.

Belize Airports Authority: The Belize Airports Authority (BAA) is a Statutory Board that manages the government airports/airstrips in Belize including 15 publicly maintained airports. It is the owner of the international airport, which it leases on a management contract to a concession company (BACC).

BAA's cash flow generation is currently weak following an estimated -13% drop in passenger volumes in 2008/09. In these circumstances it is evident that the BAA cannot finance the proposed capital investment program for the country's airstrips. However, there is a proposal to implement a B\$5 Ticket Rider Tax on each departing passenger to significantly improve BAA's cash generation. To some extent, the B\$1 International Departures Tax on non residents at PGIA (implemented October 2008) will also contribute.

Belize Airport Concession Company: Belize Airport Concession Company (BACC) a private company that manages the P.S.W.G. International Airport. The company has a 30 year concession for the airport from BAA, and operates with 110 employees.

Belize Port of Authority: The Belize Port of Authority seems to regulate the privatized port facilities at Port Loyola (The Minister is Melvin Hulse). Other institutional players regarding the port function include the Institute for Maritime studies (Executive Director, Major Lloyd Jones), and, The Ports Commission in Belize.

Air transport is administered under the Civil Aviation Act (2000), and the airport and airstrip is under the responsibility of the Ministry of Tourism, Civil Aviation and Culture, through the *Airports Authority* in the case of the international airport, and the *Dept. of Civil Aviation* in the case of the Municipal Airstrip.

This dispersion of responsibilities across several ministries with involvement in the transport system and lack of coordination means that transport priorities are not systematically taken into consideration.

5.2 Stakeholder Analysis - Viewpoints

Whilst meeting various stakeholders and relevant institutions, their opinions on urban transport issues and requirements were solicited, as presented below. There was a general consensus that Belize suffers from congestion and that large vehicles are detrimental to the environment. Some comments were also made on the importance of well maintained evacuation routes.

Views and Opinions of Stakeholders

Stakeholder	Opinion
Belize Tourism Board (BTB)	Representatives of BTB offered the following possible project ideas: <ul style="list-style-type: none"> • Waterway transport system • Cruise docking to be moved to Seaport area • Construction of a road from the Seaport linking to the Western Highway • Fort George entertainment district • Kroomans Lagoon development • Rebuilding low bridges on canal to arches
Belize Airport Concession Company (BACC)	<ul style="list-style-type: none"> • Haulover Bridge improvement/rebuilding – due to age of the structure and its importance to the city.
Hotel Association	<ul style="list-style-type: none"> • Improve security for tourists • Revitalize Haulover Creek • Rebuild Haulover Bridge to allow boats to pass
Traffic Police	<ul style="list-style-type: none"> • Training for taxi drivers (who cause many accidents) • Renew/repair accident analysis software program

Source: PADECO, 2010

5.3 Legal Acts and Regulations

The following legislation is applicable to transport in Belize City.

Name of Act	Date	Relevance
Motor Vehicles and Road Traffic Act Chapter 230	Revised Edition 2000	Registration and licensing of vehicles; driving offences and legal proceedings
Public Roads Act	Revised Edition 2000	Duties and powers over public roads and adjacent lands when executing road works
Land Acquisition (Public Purposes) Act		
Belize City Council Act Chapter 85	Revised Edition 2000	Duties and powers of the Council in matters including streets and adjoining lands
Belize City Council Act (Subsidiary Laws)	Revised Edition 2003	Consolidation of laws including: Belize City Council (Public Bridges) Regulations; Belize City By-Laws
Civil Aviation Act	2000	
<u>By-Laws:</u> Belize City Council (Fort George) Special Tourism Zoning By Laws	2010	Includes clause stating - for residential parking a minimum of two cars shall be provided within each residential lot, and within one year of these Bylaws coming into effect, all existing businesses shall provide plans to the CBA showing design for future compliance with these Bylaws.
Belize City Bylaws governing Horse and Carriage Operations	2009	Horse and carriage operations for tourism

Source: PADECO, 2010

5.4 Capacity-Building Tasks within this Study

In response to the lack of road transport data and need for capacity-building, officers of the City Traffic Department were fully engaged in the early stage of this project with daily tours of the city involving the international Urban Transport Specialist during the first mission. During circuits of the city, traffic problem areas were identified by the local officers and possible solutions discussed with the international specialist. The widths of key roads were measured with discussion on their possible upgrade. A small program of traffic counts (for peak hours) was also discussed, and it is planned that this will be undertaken during January 2011. In order to raise the image of the project, a reporter was engaged by the City Traffic Department to make a brief report of the transport aims within the local media.

Interviews with the Traffic Police revealed that the department's traffic accident analysis software had crashed and was no longer being used. As part of this Study, a solution will be sought to restore the software and improve the approach to reducing traffic accidents. It was also agreed that the Traffic Police would undertake a manual analysis of accidents over the past 3 month period.

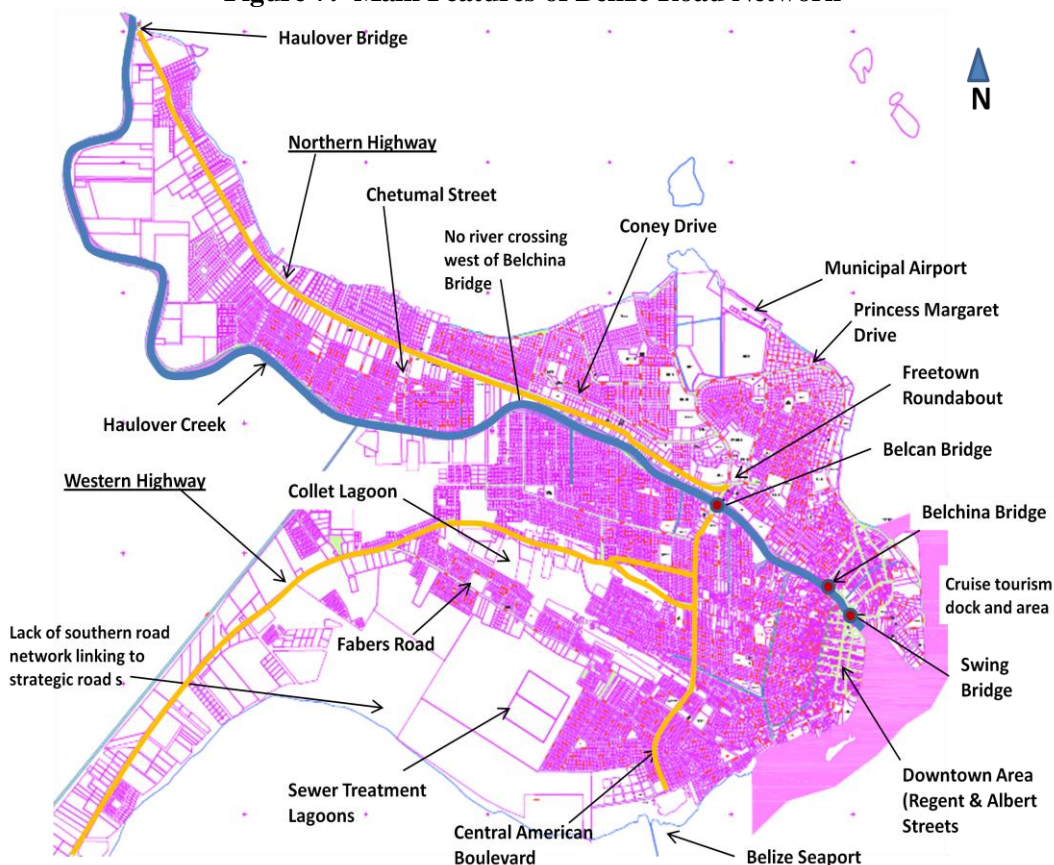
6. Road Design and Hierarchy

There is a lack of design guidelines for highways and streets in Belize with ad hoc reference to standards from the U.S., Mexico, and Europe. It is necessary to adopt a comprehensive set of design guidelines for consistency and safety in the highway network for not only urban streets, but also the national highway. Also, the city's road hierarchy is not well established, so that roads function with several different types of traffic and with inappropriate design. A hierarchy of primary, secondary, arterial, radial, collector, access, residential, pedestrian, etc. roads should be established.

7. Road Network

As shown in the Figure below, the road network of Belize City is structured by two national highways that run East-West parallel to the River. Toward the city centre a North-South highway (Central American Boulevard) connects the north and south areas of the city via Belcan Bridge. The thin strip of land between the Northern Highway and sea restricts development of secondary roads in this northern most area.

Figure 7: Main Features of Belize Road Network



Source: PADECO, 2010

The following paragraphs describe the key features of the most prominent roads in the city.

7.1 Key Roads in Belize City

Northern Highway: The ‘Northern Highway’ is the most significant feature of the city’s highway network and is the main spine for traffic entering and exiting the city. It attracts corridor development including industry and residential plots, and provides passage for long distance traffic accessing the north of the country and the border with Mexico. It also operates as a hurricane evacuation route while additionally serving local traffic by distributing traffic in the northern segment of the city. The several functions of the highway make it a prime component to facilitate expansion of the city and it attracts strip development along its length. Despite the importance of the highway, access to it from the south side of the river is highly limited with no connecting bridges other than Belcan Bridge at the eastern end toward the city centre. For this reason, strategic traffic, including traffic to/from the port on the south side of the city, is forced to navigate the city centre to access a national route, therefore mixing several types of transport from residential to port freight and tourist. A consideration is therefore how to gain access to this national highway and relieve the city centre of longer distance through traffic.

As shown in Figure 8, the Northern Highway varies in width between Haulover Bridge and Freetown Roundabout. Until the Junction with Buttonwood Bay Blvd, the northern Highway is approximately 9m in width, therefore operating within the dimensions of a wide single carriageway road. However, there is significant shoulder and verge land that could be used as highway. As the

road continues eastward toward the city centre, the side verge reduces, replaced by foot and cycle ways, and a central reservation of almost 3m. The carriageway either side of the verge is around 7.5m, which is sufficient to operate as dual carriageway, though there are no line markings.

The northern Highway becomes congested during the morning peak hour (7-8am) as commuters enter the city. Such commuters are largely made up of city workers and school traffic. Most employment centres and schools open at 8am. Notably, the demographic of the City is relatively young; therefore the school population is high.

The distance between Freetown Junction and H. Bridge on the edge of Greater Belize is approximately 6km. During the morning peak at 7.30am, traffic entering the city causes a long tailback of some 5km from the central junction, about 1km from H. Bridge. To traverse the highway from Haulover Bridge to Central Junction in the morning peak takes some 20 minutes, equating to an average speed of 18km/hour, while during relatively free flow conditions after 8am the journey can be made in less than 10 minutes (equating to 36km/hour).



Long Tail-back on Northern Highway several km from the central Freetown Junction 7.30am

By observation, the reasons for congestion are the high number of accesses fronting the highway, the bottleneck at Central Junction, and the capacity of the single lane road to accommodate commuters and school traffic. Whilst the congestion is significant at the peak time, it clears quite quickly after 8am.

Haulover Bridge: Haulover Bridge is located at the western end of the Northern Highway toward the edge of the Greater Belize area. This bridge is reportedly over 100 years old. It is a critical point in the network as it connects Belize City to the international airport and to the national road network to access the north of the country, as well as being on the main evacuation route for the city. Given the age and importance of the bridge, its structural capacity is a concern, and its height may provide an obstacle to river transport potential. Taking the Western Highway to access the north of the country via Burrell Boom requires a significant detour.

Western Highway: The second national highway, the Western Highway, runs east-west on the south side of the river. It connects to the border with Guatemala. A number of quarries may be observed along the Western Highway which generates day-time truck movements.

Coney Drive: Coney Drive is a relatively wide road of good running standard that runs parallel to the Northern Highway and acts as both a collector road for neighbourhoods in the northern area of the city, and a relief road to part of the Northern Highway, which becomes congested at peak hours. It provides a route to access the many schools in the north of the city, avoiding Freetown Junction.

Fabers Road: Fabers Road connects the Western Highway with the Port area. It therefore has strategic uses. However, it also serves as a secondary access road for low income neighborhood and a route for young children to access primary schools.

Cemetery Road:

This road connects Central American Boulevard with the Western Highway and cuts through an area that has some heritage value in that it is home to hundreds of gravestones located up to the very edge of the highway. The road is 8.3m in width with a 1m footway on the northern side. If an intervention is introduced to divert traffic from the Northern Highway to the south side of the City via the Western Highway, the traffic demand on this road could increase substantially. The environmental impact and mitigating measures would need careful consideration.

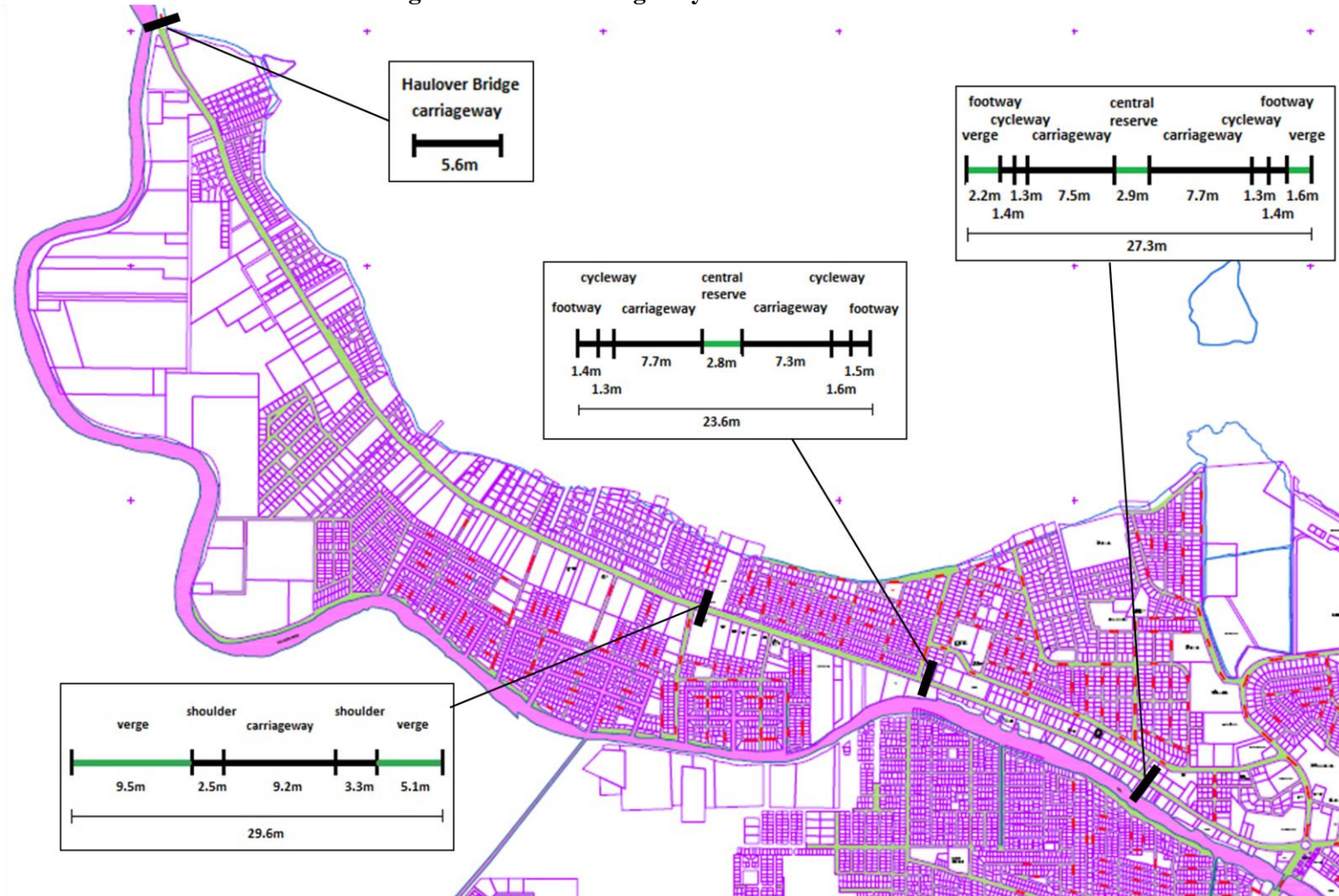


Cemetery Road, Belize City

Source: PADECO, 2010

Annex 03 – Existing Issues of Transport in Belize City 2011

Figure 8: Northern Highway – Road Section Widths



Source: PADECO (measurements taken by Consultants)

Central American Boulevard: This boulevard road runs north-south connecting Freetown Roundabout to the seaport. It accesses central residential areas as well as providing a strategic route between the Northern Highway and the port.

7.2 Key Intersections in Belize City

Freetown Roundabout: The City’s largest and most well-known junction is the Freetown roundabout. This large roundabout distributes traffic from each axis of the city including the Northern Highway where traffic gains access to the central areas.



Belize: Freetown Roundabout Junction



Belize: Large Vehicle Negotiating Roundabout alongside Cyclist - 8am

Source: PADECO, 2010

Heavy flows at the junction and the location of at-grade non-signalized pedestrian crossings causes traffic to quickly tail-back along the Northern Highway during the morning peak hour, particularly 7am-8am.

Figure 9: Freetown Roundabout

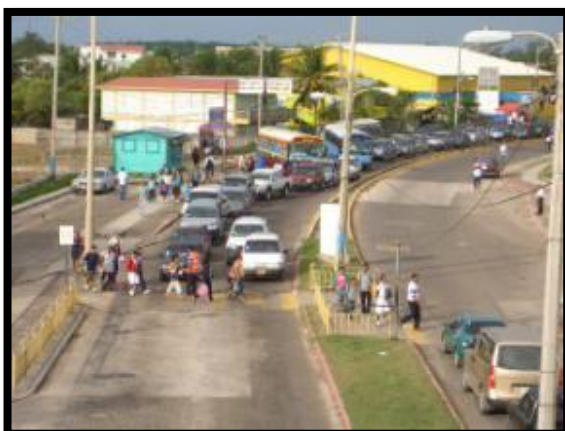
The opposite image shows an aerial view of Freetown Roundabout. The pedestrian footbridge is visible on the left side, crossing the Northern Highway approach. The diameter of the centre island of the roundabout is approximately 50m and its inscribed circle diameter (ICD) is around 65m (measurements taken from Google Earth). A capacity assessment could be undertaken using appropriate software such as ARCADY, however the roundabout appears to accommodate existing levels of traffic.



Source: modified from Google Earth

It is feasible that some relatively minor modifications of the roundabout could increase capacity and reduce queuing, such as a right-only turn lane at the Northern Highway approach (if the turning movement is determined high), pedestrian barriers on the central reserve to maximize use of the pedestrian bridge, relocating at-grade pedestrian crossings to prevent backing up of vehicles onto the roundabout circulatory carriageway, and possible signalization.

As shown below, it is interesting to compare the congested traffic on the Northern Highway with bus priority measures implemented in other cities. Whilst Belize City is clearly not at the stage of a mega-city, such as Bangkok, the principles and lessons of bus priority may be considered.



Belize City: Pedestrian Crossing at Approach to Roundabout Causing Congestion – 8am
Source: PADECO, 2010



Bangkok BRT Corridor- illustrating the comparative advantage of bus priority measures for road space

Coney Drive Junction

This junction has high turning traffic during the peak hours as it is an important node for school traffic. As shown in the photo opposite, there is a high mix of crossing and turning traffic in the morning peak with pedestrians, cyclists, and motorized vehicles. The junction is not signalized and a traffic officer directs traffic during the peak times. Due to congestion at this junction, some traffic tends to ‘rat-run’ residential streets and uses the alternative junction at University Drive / Princess Margaret Drive.



Intersection at Coney Drive/Princess Margaret Drive during morning peak (7.45am) with school children crossing
Source: PADECO, 2010

8. Road Condition and Maintenance

Most roads in low-income neighborhoods are still un-paved, road upgrading does appear to be a priority at the present time. Several gravel residential roads seem to have recently been upgraded in several poor areas on the South Side of Belize City and in the Belama IV informal settlement in the northern side of the city; but all what these roads need to quickly deteriorate is few inches of rain.

There does not seem to be an inventory of the state of urban roads, nor a multi-year plan for road improvements and upgrading in residential communities. There is no data on the surface condition of roads, which are repaired by observation and reaction. Therefore the rate of deterioration is not known and future maintenance cost profiles are not undertaken. Road condition data needs to be updated to enable sensible decisions to be made and to provide a basis for fund allocation. Records should be obtained on a computer database for monitoring. Maintenance evaluation models, such as the World Bank's Highway Development and Management Model (HDM4) require the existing road condition to be input and empirically derived deterioration curves applied to assess the maintenance work and cost.



Belize City: Typical Narrow Residential Street in Central Area (with potholed surface)



Belize City: Typical Suburban Street with Poor Gravel Surface and Drainage

Source: PADECO, 2010

Heavy Goods vehicles are not prohibited from the central area of Belize City and cause damage to the pavement.

Some streets, such as the ones in Belama, are repaired almost on a monthly basis only to be laden with pot-holes again the very next day. This is due to inadequate reparations done that instead of fixing the problem, just make matters worse. Other streets that suffer constantly such as Castle Street are faced with the problem of becoming flooded up to about 6 inches whenever it rains.

In some cases, such as Princess Margaret Drive, good materials and constructive systems seem to have been used. As a result that road seems to have served the community for about 20 years without suffering deterioration, until recently when alterations were made to solve service issues resulted in excavations which were then refilled with inferior materials. Now deep and pronounced holes are visible along this road and the messy patchwork that resulted from hasty quick-fixes has only made matters worse; had this road received proper and regular maintenance all this damage would never have occurred.

From many years of investigation worldwide, it has been shown that water is the most common cause of pavement failure: (i) penetrating the pavement through surface cracking; and (ii) in pavement layers due to inadequate drainage, wash out and erosion of slopes and many others. The common theme is water and this is a primary cause of local pavement problems. In winter, it is essential that the pavement and drainage design takes account of the climate condition and the maintenance regime should also pay particular attention to the sealing of cracks, repairing potholes and drainage problems before these defects develop into much more expensive repair items.

The photo opposite shows workmen filling in potholes. However, this was being undertaken due to a forthcoming procession event, rather than as part of a maintenance program. The magnitude of the area that requires surface treatment is too large for the City to allocate adequate funds. The opposite photo also indicates lack of compaction taking place. This results in a very temporary repair work that quickly deteriorates as water filters through the material and vehicles disturb the gravel.



Repair works in central area of Belize City
– filling in potholes

Source: PADECO, 2010

The cost of repairing a road in Belize is about US\$30 per ft². This includes scarifying the surface and constructing a sub-base, base, and capping layer.

8.1 Drainage

Most of the roads in the central area of Belize are narrow with shallow, unlined drains. Although drainage remains a key concern for the city, works carried out during the 1990s, including the lining and covering of drains, have improved the situation. The drainage situation is exacerbated by the poor garbage collection in the city, which causes unattended garbage to block drains. This situation of drains being constructed before an effective system of refuse collection is established can cause blockages and expensive rehabilitation. Standing water can be observed in several parts of the city due to blockages and inadequate gravity.



Belize City: Standing water in side drain
(due to blockage and/or inadequate gravity)

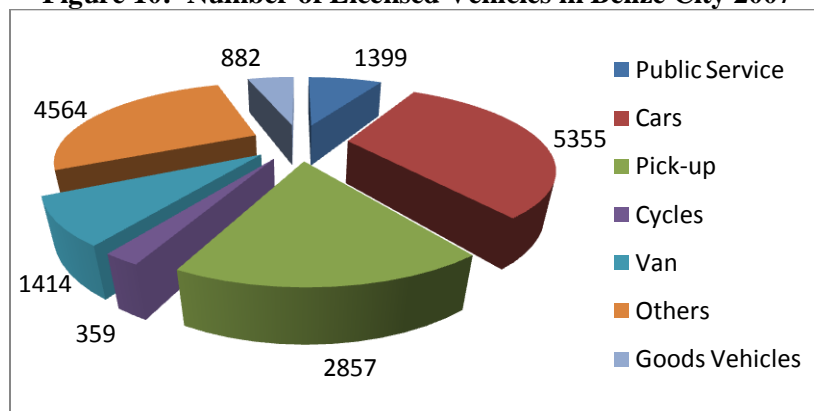
Source: PADECO, 2010

9. Traffic Characteristics

9.1 Traffic Fleet

The most recent complete statistics for Belize City are up to the year 2007. In this year, there were 16,830 vehicles licensed in Belize City. The composition of the vehicle fleet is as follows.

Figure 10: Number of Licensed Vehicles in Belize City 2007



Source: Adapted from ‘Abstract of Statistics, 2009’

9.2 Transport Costs

The fuel pump prices in Belize City (as of December 2010) are B\$9.51 for regular petrol, B\$9.89 for premium, and B\$9.10 for diesel. Typically, car insurance costs around B\$150-200 and licensing costs B\$100-150. The fare price for buses are B\$1-1.50 from sleeper communities and B\$1 within the city (flat rate) with a concessionary fare of B\$0.5 for primary school students. To and from Belmopan, the fare is B\$4 for a one-way trip.

10. Public Transport

10.1 Bus Operations⁷

Public transport is regulated by the Transport Department of the Ministry of Transport. There are several private operators and the system can be described as regulated through permit issuance, though the level of regulation appears rudimentary. Many of the buses are imported former school buses and are over-sized for the narrow streets of downtown Belize.



Belize City: Large Bus on the streets of Belize City



Belize City: Oversized Bus in Downtown Area

Source: PADECO, 2010

⁷ This section is pending responses from the Ministry of Transport to a set of detailed questions.

In order to gain a better understanding of the environment for public transport, a questionnaire was submitted to the Ministry of Transport (see Annex A. Results pending). This supplemented an initial meeting with the Ministry's Transport Department.

There is a lack of depot facilities for buses with Belize due to land constraints. Therefore, scattered small informal areas are used for buses to stay when not in operation, which have little or no facilities such as fueling, cleaning, repairs and inspection. It may be preferable to find adequate land outside the central area for depot facilities, possible integrating with a bus interchange facility that provides various services for transport into the downtown area, ranging from city centre (small) buses with different routes, to taxi, and waterway transport.



Informal Bus Depot in Central City Area with no Surface Treatment or Facilities

Source: PADECO, 2010

10.2 Taxis

Belize City is also characterized by a high number of unregulated, unmetered taxis. Taxis are regulated by the Belize City Council through its Traffic Department. Although most taxis are part of an association, membership in an association is not a requirement for license (although the Department of Transport asks for a letter of recommendation from a union or association prior to granting a license). A fifty question test needs to be passed to acquire an endorsement on the existing driver's license to the C1 or Taxi class. There are no specific safety or service standards for the industry outside of those attempts to self regulate via unions and associations.

Citizens who are not car owners use taxis, usually keeping the same taxi and driver on a regular basis, who in effect become their dedicated drivers. It is also common for taxi-sharing to take place.

11. Traffic Management

There are several aspects of traffic management as listed below:

- Congestion (Obstacles and Pinch-points)
- Safety (Traffic Accidents)
- Parking (On-street and Off-street)
- Provision for Pedestrians and Cyclists
- Signage (Regulation and Information)

Initially, an understanding of the traffic fleet and conditions is required. The population of vehicles in Belize City has a number of characteristics. Buses are large and can be considered over-sized for many of the narrow streets of Belize. Large vehicles are also detrimental to the fragile road structure, as well as the general environment.

11.1 Congestion

Traffic congestion is visible in Belize mainly at peak periods in the morning and afternoon. It is mainly caused by overloading of key intersections, which in turn is caused by the mixing of local and longer distance traffic. Congestion in Belize is also caused by school traffic as there are a large number of schools located in the central area. Students of such schools should be encouraged to use public transport for longer distances, and walking/cycling modes for shorter distances. Except for a peak half hour period, the congestion is at a manageable level with hold-ups clearing relatively quickly.

A first stage in improving the situation is to remove long distance traffic (such as that to/from the port) from the city’s central area.⁸

11.2 Traffic Safety

The Traffic Police Department employs 18 staff, of which 5-8 staff are on duty at any one time. Their equipment includes 4 motorcycles and 1 pick-up vehicle. Among duties of the Traffic Police they record and investigate traffic accidents. Previously the department was using specialist software for recording and analyzing traffic accidents, however, the system crashed and has not been used over the past year.

The table below shows traffic accidents in Belize City. There appears to be no evidence of improvements in road safety since 2005, and 2008 showed a rise in accidents. Anecdotally, road accidents are caused by loss of control on national highways during wet weather, reckless driving due to lack of enforcement, and intersection conflicts.

Table 1: Belize City: Number of Accidents and Casualties 2004-2008

	2004	2005	2006	2007	2008
Total		308	291	206	328
Fatal		12	6	12	17
Injury		296	285	194	311
Pedestrian		62	48	44	37
Fatal		5	1	3	6
Injury		57	47	41	31
Passengers		102	87	61	141
Fatal		0	4	3	5
Injury		102	83	58	136
Cyclists		90	68	41	53
Fatal		5	0	1	1
Injury		85	68	40	52
Drivers		54	88	60	97
Fatal		2	1	5	5
Injury		52	87	55	92

Source: National Police Headquarters

The table below shows the causes for traffic accidents in the year 2009. Driver error and careless conduct feature highly. The figures also show the vulnerability of cyclists as well as problems with

⁸ It would be useful to carry out a registration survey of traffic at selected locations to better understand the movement of traffic and determine whether it is local or longer distance traffic. Such a survey could be carried out by students.

turning traffic. Speed does not appear to be a significant factor, which may reflect the abundance of ‘sleeping policemen’ (road humps) in the city.

Table 2: Causes of Traffic Accidents (2009)

CAUSE	TOTAL
Driver Error/Negligent Passenger	420
Reversing or Turning Error	335
Careless Conduct	305
Inattention or Misjudgment	60
Negligent Cyclist	43
Others	27
Alcohol Influenced	14
Negligent Pedestrian	14
Vehicle Defect	14
Excessive Speed	9
TOTAL	1241

Source: National Police Headquarters

The table below shows the types of vehicle involved in accidents for the year 2009. The number of taxis involved in accidents appears to be a significant statistic, and again bicycles are a noticeable feature.

Table 3: Types of Vehicle Involved in Accident (2009)

CLASSIFICATION	TOTAL
Private Motor Cars	1414
Taxis	327
Others including Vans, Pick-ups, etc	189
Commercial Vehicles	147
Motor Cycles	82
Bicycles	72
Omnibus	67
Police	43
Government	39
Foreign Registered	14
B.D.F.	3
Freight and Passengers	1
B.F.B.	1
Tractor and Trailer	0
TOTAL	2399

Source: National Police Headquarters

There are many road humps (sleeping policemen) within the streets of Belize City. These help to control the speed of city vehicles, providing a traffic calming function. Internationally, horizontal deflections in the carriageway tend to be preferred over vertical deflections for traffic calming purposes, though humps provide a relatively low cost solution. Their design and implementation in Belize is inconsistent as standard design specifications are not followed. Greater provision for cyclists could be adopted in the design, such as leaving a level gateway at the side of the hump for cyclists’ comfort.

11.3 Parking

Parking in Belize is largely uncontrolled and unregulated. There is no road demarcation and little signage to show restricted areas. This exacerbates congestion within the central areas of the city with parked vehicles creating obstacles to traffic movement and taking road space that could be allocated to other uses, such as pedestrian activity.

There is no survey information to show the duration of parked vehicles, so it is not known whether stationary vehicles remain parked for short or long term periods. Vehicles parked for long periods in commercial downtown areas will restrict economic activity, such as shopping, business, and deliveries, so long-term on-street parking should be discouraged. Also, freely available parking space encourages motorized vehicles to enter central areas, thereby contributing to congestion and reducing the attraction of public transport. A parking scheme with appropriate restriction can be used as a traffic management tool to curtail traffic within central economic and crowded areas, then improving the environment for pedestrians and cyclists.

However, the implementation of parking restrictions requires adequate enforcement to ensure that they are not ignored by motorists. At present, there are only six (6) traffic officers operating in Belize City.

In the central area of Belize City, it is common for streets to have the curb-side reserved as parking for commercial businesses and shop customers. The business owner pays a monthly fee to the City Council. The disadvantage of this system is that it discourages high turnover of vehicles to the benefit of the entire area. It can also encourage long stay parking, which is detrimental to the local economy.



On-street parking reserved for local businesses and customers



Double-sided parking and Delivery Vehicles Causing Obstruction in Queen St (north side)



Parking Area at Canal in Central Area (typically long-stay parked vehicles)

Source: PADECO, 2010

11.4 Facilities for Pedestrians and Cyclists

Pedestrians

The pedestrian environment in Belize is poor. Sidewalks are typically either lacking or narrow or in severe states of disrepair. This situation tends to represent the walking mode as lower importance in the transport hierarchy, though best practice dictates that pedestrians should be the highest priority in the city network.



Hazardous Sidewalk in Central Area
(could cause serious injury to pedestrians)

Source: PADECO, 2010



Broken Pavement at Downtown Area
(most likely caused by heavy vehicle turning)



Poor Sidewalk Condition in Orange St (Central Area)

Source: PADECO, 2010

The photo below shows recent improvements to the pedestrian environment within Regent Street. Sidewalks have been widened and integrated with parking bays.



Improved Sidewalk in Regent Street (Central Area)

The pedestrian overbridge at Freetown Junction is under-used by pedestrians due to its poor design and at-grade crossing option. The overbridge is accessed by long ramps, which although cycle and wheelchair friendly, require pedestrians to walk some 100m in total just to access and egress the crossing. The at-grade crossing across the Northern Highway, close to the overbridge, is much preferred by pedestrians and offices of the City Traffic Department assist pedestrians to cross by

holding traffic. There is a 7am-9am crossing prohibition, but this is largely ignored. The overbridge could be improved by providing a stepped access to avoid the long ramps, and central reserve barriers to prevent pedestrians crossing at-grade.



Pedestrian Bridge at Freetown Junction



Long Access Ramps on Pedestrian Bridge at Freetown (not attractive to pedestrians)

Source: PADECO, 2010

Cyclists

Cyclists are a common sight in Belize City. On some streets in Belize, cycle ways have been provided by allocating part of the sidewalk for cycle use and modifying the surface and level. This approach has largely been unsuccessful as cyclists tend to use the street haphazardly and usually cycle within the road carriageway. A cycle plan requires identification of prime and origins and destinations and then route which can include quiet streets, possibly designated for cyclists/pedestrians only.

As shown in the photo below, cyclists tend to use sidewalk areas alongside busy roads, but facilities are not always used as intended.



Belize City: Cyclist on Northern Highway (using pedestrian area alongside the cycle area)



San Pedro: Cyclist making use of the Smooth Drainage Channel alongside the Street

Source: PADECO, 2010

Interestingly, cyclists in the tourist destination of San Pedro make use of the drainage channel at the side of the cobbled streets. This sag-shaped channel effectively provides a smooth passage for cyclists with a sense of segregation from the running carriageway. This ‘doubling’ of functions could be adopted elsewhere.

The opposite photo shows cycle parking which has been provided by a particular shopping outlet and is basically reserved for customers of the shop only. There are very few of these parking facilities and tend to be positioned in places that are obstructive to pedestrians. A city wide allocation of secure cycle parking facilities would be beneficial to encouraging cyclists and reducing theft.



Cycle parking stand in central area – for shop customers only
Source: PADECO, 2010

11.5 Traffic Signage and Markings

Signage in the city is generally inadequate and often damaged. Traffic management signs to depict one-way streets are lacking, so local knowledge is required to navigate the streets. There are no information signs, such as for tourists. Painted lines including those for pedestrian crossings and road humps fade quickly (within a few months) and require continuous repainting. It costs the City Traffic Department around US\$100 to purchase per sign, and around US\$30 to make signs. The locally made signs lack reflector surfaces so cannot be used in certain situations.



Pedestrian crossing showing fading of white areas

Source: PADECO, 2010

11.6 Freight

There is no restriction in the movement of container trucks that have storage facilities in Belize City, but those without storage can only unload after 6pm. Large trucks including articulated vehicles can often be observed on the streets of Belize throughout the day, causing conflicts with small private vehicles and non-motorized users.

11.7 Traffic Enforcement

Traffic enforcement is carried out by both the City Traffic Department and the Traffic Police. The City Traffic Department has 21 officers, with around half patrolling streets including directing

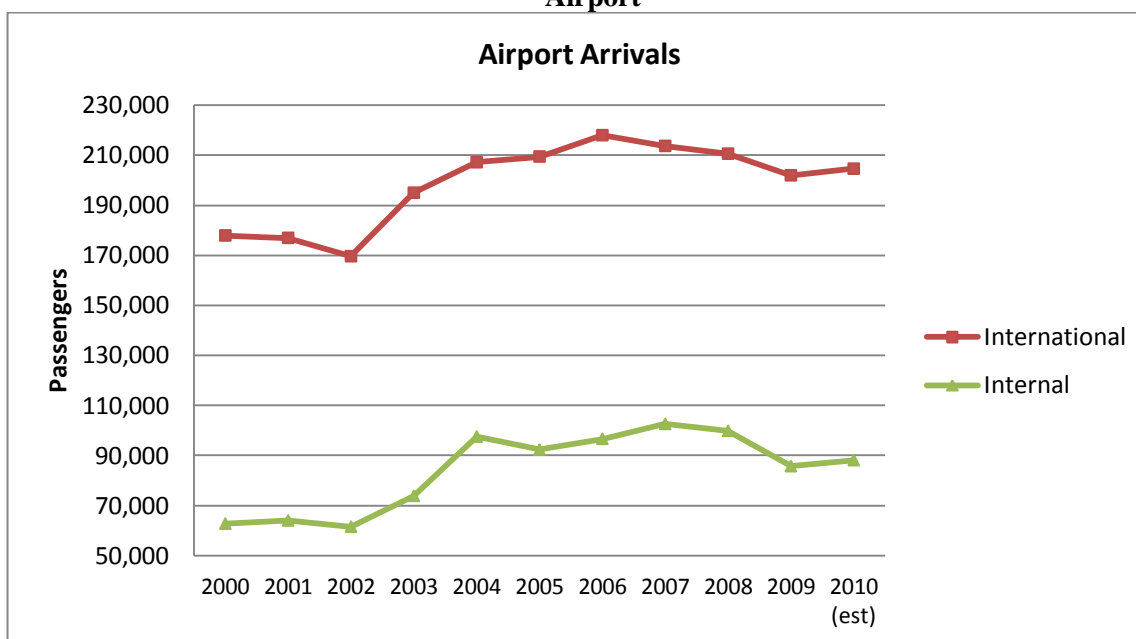
traffic at busy intersections in the morning and evening peak hours. The department has only one vehicle and 5 motorcycles. Traffic penalties are B\$25 and should be paid within 18 days, or court procedures will commence. In general, traffic enforcement is inadequate and this will be a concern if more traffic prohibitions, such as speed and parking restrictions, are implemented.

12. Civil Aviation

12.1 International Airport

P.S.W. Goldson international airport (PGIA) is privately managed and is located in Belize-city belt of commuter towns. The figure below shows annual passenger arrivals (international and domestic) at PSW Goldson International Airport. Around 200,000 inbound international passengers arrived in 2010 and 90,000 national. Following a general increase from 2002 to 2006 there has been a slight decline, particularly in 2009, which may be attributed to the global economy.

Figure 11: International and Domestic Passenger Arrivals at P.S.W. Goldson International Airport



Note: Figures include in-transit passengers. Due to lack of data for the months November and December, 2010, estimates were made using 2009 data.

Source: Adapted from data supplied by Airport Authority

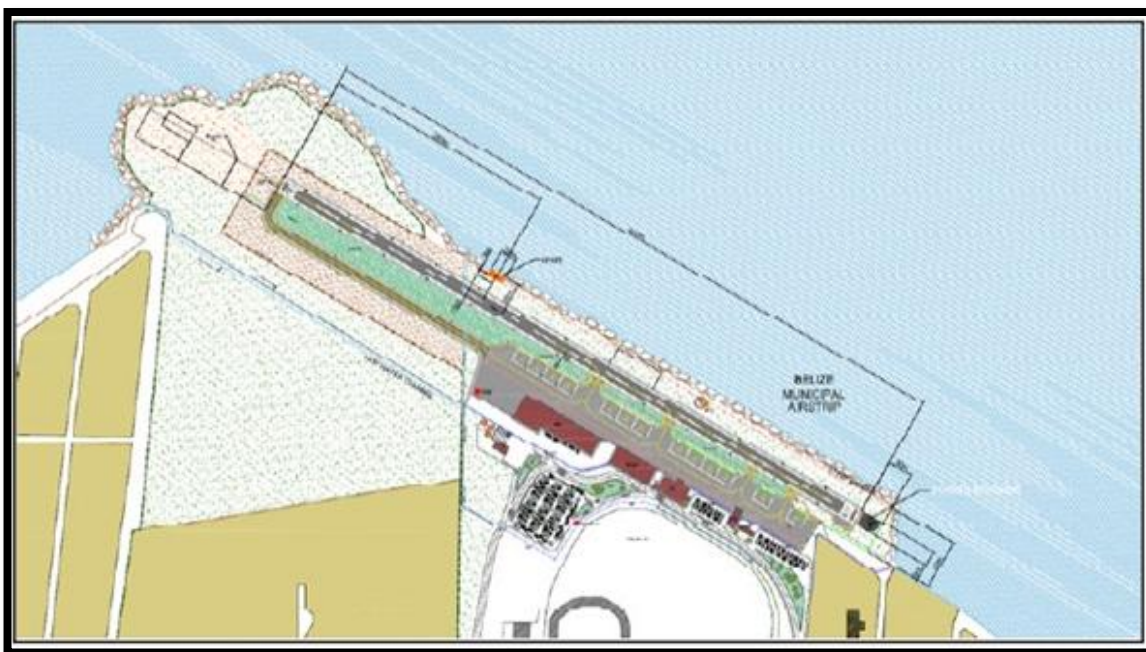
The land around the airport is underdeveloped. For instance, there is not commercial development of the non-aeronautical land surrounding the PGIA. It is important to consider this potential as part of the investment project relating to the expansion plan to accommodate future population growth in Greater Belize-city.

12.2 Municipal Airport

There is a municipal airstrip (owned by the government) for commercial and domestic air transport as well as tourist traffic located in Belize-city central built up area. This airport has been appointed first priority in the BAA infrastructure enhancement program for all municipal airports in Belize

and will take the most significant improvements. The plan includes extending the runway to 800m and widening to 30m from the runway centre line. Land acquisition of some 81.5 Ha from St. John's College is required.

Figure 12: Belize Municipal Airport Improvements (showing runway extension and new access arrangements)



Source: Municipal Airstrip Expansion Program, 2009

The airstrip shall be provided with basic aeronautical lighting and visual aid facilities, such as:

- PAPI/APAPI System (Precision Approach Path indicator)
- SALS (Single Approach Lighting System)
- RWY edge and RWY threshold lighting
- New windsleeve (located closer to the RWY) and an elevated aerodrome beacon
- TWY and Apron edge reflective markings

In addition to civil works on the airstrip, major improvements will be made to public access. A new double way road access to airstrip will be constructed with new parking areas. A new BAA office building will be implemented and the Tropic Air terminal building recently completed, ensuring all buildings are located at the same safety distance from the RWY centerline. Fuel farm facilities will be removed and displaced towards the south with suitable access arrangements. All terminal area buildings will be also urbanized and equipped with pedestrian areas and ramps.

The total cost for these improvements is priced at B\$10.1m (US\$5m). It is proposed that the short term mandatory investment program of B\$17.7m for improvements to all airports can be financed through a loan, which can then be repaid from improved cash generation (due to a proposed B\$5 Ticket Rider Tax on each departing passenger).

13. Waterway Transport

13.1 Inland Waterways

Belize City has developed along Haulover Creek. In addition, the city has a system of canals. However, the canals generally have low clearances that reduce the opportunity for waterway transport.

Figure 13: Collett Canal in Central Area of Belize City



Source: Adapted from Google Earth

13.2 Seaport⁹

The country of Belize has a small private enterprise economy mainly based on agriculture, agro-based industry, and merchandising.¹⁰ Sugar, the chief crop, accounts for nearly half of exports, while the banana industry is the country's largest employer.

The port of Belize in Belize-city and the port of Big Creek in Staan Creek, handle the vast majority of trade shipments (90%) destined for the Belizean market. In addition, sugar, bananas, citrus, papayas, etc., all leave the country and the city and its port by the sea. Belize's port business seem to be declining (18% up to 2009¹¹), while business in neighboring Puerto Barrios in Guatemala,

⁹ This section is pending responses from the Ministry of Transport to a set of detailed questions.

¹⁰ More recently, the tourism and construction industries have become more significant. Crude oil was discovered in 2006 in the town of Spanish Lookout.

¹¹ See *Belize port's business declined 18%*. Amandala Belize, Nov 24, 2010. P. 2

increased 27% for 2009. Belize is losing business to regional ports. Some business people in Belize may prefer to have their goods shipped to Guatemala and trucked to Belize

The sea port of Belize-city in Loyola is privately owned and the largest in the country. The cargo handled in the port is mainly containerized manufactured imports. Belize-city is also served by cruise ship services. Expansion of the seaport should consider city drainage and avoid blockage of natural drainage paths.

Figure 14: Seaport with On-going Land Filling and Reclamation along Southern Shoreline



Source: Google Earth