Community Policy Issues in Orange Walk Town, Belize: Volume 2: Policy Analyses
Community Policy Issues in Orange Walk Town:
A Compendium of Policy Analyses

Malaspina Geography Field Project Team 2007
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Prepared for
Town Council
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PREFACE

In May and June of 2007, the Geography Department of Malaspina University College coordinated a five-week field project in Orange Walk Town in Belize, population 18,000. The purpose of the field project was to gather community-planning information for the town, and develop policy suggestions for consideration of the Town Council. The project involved 19 university students from Geography and other social science departments. The project leader was Dr. Larry Wolfe from Malaspina Geography, with the assistance of Pam Shaw (Geography) and Dr. Victoria Macfarlane (Psychology).

The field school was an opportunity for students to earn university credits while gaining valuable real-world experience outside of Canada. The idea for the project arose from Dr. Wolfe’s previous work in Belize, where he and Dr. Macfarlane (his spouse) taught at the University of Belize and subsequently worked as consultants. A needs assessment for community planning in Belize was conducted by Malaspina Global Studies student Samantha Letourneau in 2006, under Wolfe’s supervision, and she identified Orange Walk Town as a community that might be willing to host the field project. The Orange Walk Town Council extended a gracious welcome. While in Orange Walk, the project team gathered field data on community planning issues and interviewed numerous residents and government officials. This provided extensive information for planning and seeded the ideas for policies for improving the future life of Walkeños. After return to Canada, the students conducted a review of the published literature on the policy issues they were studying. These literature reviews are the subject of this volume. In addition, they prepared policy analyses with recommendations for consideration of the town and its council. These recommendations are the responsibility of the student team, and have not been endorsed by the Town Council or Malaspina. However, they provide ideas for Orange Walk’s future planning.

In addition to time in Orange Walk, the team also spent a week in Indian Church Village near the Lamanai Archaeological Reserve. In Indian Church, they took on various volunteer projects such as repairing the community library, conducting a census, and repainting the entrance sign. They also volunteered at the Lamanai site, and learned about the archaeology, ecosystems, and cultures of the region. On their visit, the team also spent a few days at the Community Baboon Sanctuary in Bermudian Landing, Belmopan, and Caye Caulker.

The team wishes to acknowledge and thank the Town Council of Orange Walk for their wonderful generosity and support for this project. It also wishes to thank the Hotel de la Fuente for their hospitality for the many days and nights of our stay. We also wish to thank all Orange Walkeños for their welcoming spirit and the patience they showed to the team as we learned about this wonderful town. As visitors to Orange Walk, the team was delighted by its stay in the town. We believe it is one of Belize’s many beautiful treasures.
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INTRODUCTION

Orange Walk Town

Orange Walk Town is located 65 miles north of Belize City and 30 miles south of Corozal in northern Belize. With a population approaching 20,000, the town is the second largest community in Belize. The town is the major city of Orange Walk District, which has a population of 40,000.

The Town is located in the heart of the sugar-producing region of Belize. Belize Sugar Industries operates a large sugar processing plant at Tower Hill just outside town, which processes all of Belize’s sugar. Sugar is barged down the New River for export. Orange Walk also has distilleries for producing rum. The sugar heritage gave Orange Walk the nickname of “Sugar City.” Agriculture in the Orange Walk District is diversifying to include other crops, such as onions, potatoes, and soybeans, and marijuana in the past. The marijuana crops gave Orange Walk a “Rambo Town” or “Wild West” image, which has since been tempered by government programs to stamp out the business. The town is seeking a more peaceful image, and in fact, now boasts one of the lower crime rates in Belize.

Orange Walk has considerable tourism potential. It has a lively and diversified culture, with a distinctive Hispanic flavour. It rests on the bank of the New River – a largely undeveloped river with an abundance of wildlife and natural scenery, with pockets of interesting human development along the river. Boats from Orange Walk bring tourists up a tranquil, scenic neo-tropical jungle river to the Lamanai Mayan archaeological site. The town also is a gateway to many villages and communities in the region.

Orange Walk Town has been occupied for centuries. The Cuello site just outside town possibly dates back to 1,000 or 1,500 BC – one of the oldest pre-classic sites of the Mayan world. The Mayan town known as Holpatin was occupied in the Mayan Classic period (approximately 300 to 900 AD). Little evidence remains of Holpatin, which has disappeared under modern Orange Walk Town. Maya continued to occupy the upstream Lamanai site until European contact.

In the 1600’s, woodcutters arrived in the region to harvest logwood for export. They floated logs down the New River for export. They settled in the Orange Walk town area. In the 1700s, the Spanish tried to drive the woodcutters out of the region to establish their claim to the area. The attempt failed, and over time, wood production moved to mahogany logging and chicle gathering. Life in the town changed dramatically in the late 1840s with the massive influx of Mestizo refugees from the Caste War in the Yucatan peninsula in Mexico. These refugees became the foundation of modern Orange Walk. The British established forts in Orange Walk to defend its claim to the area and cope with Maya invasions. In the 1872, Marcus Canul led a Maya raid on Orange Walk and was eventually defeated in the last and only official battle fought on Belizean soil.

The history of Orange Walk District and Town is the basis of a diverse and interesting cultural mosaic. The dominant social group are the Mestizo, with significant populations of Creole, Mennonites, Maya, and Asians. The Mennonites have established large farming colonies upstream on the New River.

Orange Walk Town has a Town Council led by Mayor Ravell Gonzalez. There are six councillors: Raul Alcocer, Jamil Matar, Enid Urbina Morales, Rosario Leiva Melendez, Philip De La Fuente and Carlos Perera. All are members of the United Democratic Party (UDP). The Town Council and staff were gracious hosts to the Malaspina field team, generous with their time and information. The residents of the town were also incredibly welcoming and willing to share their information, ideas, and concerns with team members.

The Project

The Malaspina Geography Belize Field Team was in Orange Walk Town, Belize, for 21 days between May 5 and June 4. The planning team included 19 student planners, Dr. Larry Wolfe (planner and geography professor), Pamela Shaw (planner and geography professor), and Dr. Victoria Macfarlane (Malaspina Psychology). This project differed from the traditional field school because it involved active engagement of the team in working for a ‘client’ in the host community. In this project, the team worked as volunteer consultants for Town.
The project team used the rapid assessment approach as well as conventional planning analysis tools to identify and analyse planning issues in Orange Walk Town. In this approach, the team relied heavily on input from the community. The process involved:

- Identifying issues important to the Town
- Identifying and interviewing knowledgeable people in the community about these issues
- Gathering field data on the issues, including fieldwork to identify existing land uses, gathering planning information, studying community issues and features, and examining any documents or existing information
- Developing inventory reports cataloguing and analyzing planning information
- Discussing emerging results with community representatives
- Developing summary reports on inventory information
- Analyzing 19 policy issues chosen in consultation with the Town Council and preparing policy analyses and recommendations for Council. This included completion of a literature review on each topic after return to Canada to identify best practices and experience in other jurisdictions. Student work has been collected into literature review and policy analysis compendia.

- The compendia have been reviewed by the professors, edited, and sent to the Town Council for their review and consideration. Once finalized, the compendia will be available to the Town Council, the University of Belize Library, and online at Malaspina.

- The project reports are solely the opinion of the team members as individuals, and do not reflect the opinions or positions of Malaspina University College or the Orange Walk Town Council. These reports are available for consideration by the Town Council for whatever actions Council deems useful.

Academically, the project team members received credit for three fourth-year university courses. These courses were designed to enable students to gain valuable work experience applying what they have learned in other courses. These courses were:

- Geog 466: Geography of Belize – learning about Belize and its physical and human environment
- Geog 467: Field Methods in Geography I: Community Planning Field Project – gathering data about Orange Walk Town through interviews, meetings, observation, fieldwork and review of existing data sources
- Geog 468: Field Methods in Geography II: Community Planning Policy Analysis – searching the published scholarly literature and experience in other jurisdictions for solutions to a community planning issue and proposing policy solutions for Council consideration

The Team

Malaspina University-College is a public, degree-granting institution that offers both university and college programs. It was established in 1969, and now hosts over 10,000 full-time Canadian students and 1,000 international students from more than 50 countries. It offers graduate and undergraduate degrees, diplomas and certificates. The Geography Department offers Bachelor of Arts and Bachelor of Science majors and minors. Geography features two areas of specialization – Natural Resource Management or Urban Growth Management – and a General stream designed to broaden an understanding of physical and human geography. It also offers an Advanced Diploma in Geographic Information Systems. Geography graduates about 20 majors and 10 minors per year.

The project leader was Dr. Larry Wolfe from Malaspina Geography. Pam Shaw (Geography) and Dr. Victoria Macfarlane (Psychology) assisted Dr. Wolfe. Drs. Wolfe and Shaw are professional community planners with extensive experience working in government and consulting, as well as members of the Geography Department. Dr. Macfarlane has an extensive background in program evaluation and has extensive experience as a consultant to governments, communities, and indigenous groups.
The project team comprised 19 students with diverse backgrounds. These students were the foundation of this project. The 21 days they worked in Orange Walk add up to almost 80 working weeks of field work for community planning in Orange Walk. In addition, they spent many hours preparing for the project before departure, and more weeks doing research and writing after their return. Their labours demonstrate hope for the future of the world if we can engage the energies of youth to tackle the issues we face.

The 2007 Orange Walk Community Planning Project Team

Matt Baillie completed his Bachelor of Arts in Geography - Natural Resource Management at the end of the field school. He is a freelance writer and has been published in several newspapers and periodicals; he also works as a DJ for a local radio station. He is currently working towards a post baccalaureate degree in Education. He hopes someday to become a teacher and farmer in his hometown of Nanaimo.

Stuart Barker is near graduation at Malaspina, specializing in the Urban Growth Management stream in Geography. He plans to seek a master’s degree in urban design or landscape architecture. He loves to travel and play soccer. Stuart was born and raised in Victoria, BC, and moved to Nanaimo to attend Malaspina.

Rachel Birtwistle is a fourth year Malaspina student majoring in Criminology. Her interests are crime prevention, drug and alcohol abuse, and offender services. Here career plan is to find a job in any one of her interest areas. She currently lives in Victoria, BC on the weekends and in Nanaimo during the week.

Annie Brown is a fourth year student working in her double major in Geography and Anthropology at Malaspina. She intends to work on her graduate studies in archaeology and physical anthropology and pursue a career as an archaeologist with an interest in ancient culture and mythology. Her special interests include fossils, art and history. She comes from Holburg, BC, and currently lives in Courtenay, BC.

Shawna Carrières is a fourth Year Malaspina Student graduating with a major in the Urban Growth Management stream in Geography and another major in Comparative History. After graduation, she plans to pursue graduate studies to further her career options. Her hometown is Victoria BC and she currently resides in Nanaimo BC.

Jade Depue is a fourth year Malaspina student majoring in Criminology. She intends to pursue a career within the field as a possible parole or probation officer or maybe a correctional officer for youth. She comes from Victoria, BC and currently lives in Nanaimo, BC.

Cynthia Field has completed a Bachelor of Arts in Global Studies. After the field project, she stayed in Belize to volunteer with the Association of Tertiary Level Institutions in Belize to assist in the development of a National Policy for Higher Education. She is now working on a three-month internship in Belize under the Global Studies program at Malaspina. She is planning to enter law school in 2008 and pursue her career internationally. Cynthia is from Sointula, BC, and currently lives in San Ignacio, Belize.

Leah Irvine recently graduated in from Malaspina with a Bachelor of Arts in Geography - Urban Growth Management and a minor in History. She hopes to pursue a career as a city planner, with a special interest in preserving agricultural land. She has lived in Nanaimo for her whole life.

Parker Krog is a fourth year university student majoring in Geography under the general stream, and minoring in Global Studies. He intends to go to law school with a special interest in eventually pursuing international trade law. He was born and raised in Nanaimo, BC, where he currently resides.

Luke Letham is a fourth year Malaspina student majoring in Geography - Urban Growth Management. He graduates at the end of this year and intends to look for a career as a planner with special interests in community planning, transportation planning and urban design. Luke is from Terrace BC and currently lives in Nanaimo, BC.

Hayley Linton majors in Geography at the University of Victoria. Her interests include urban planning, natural resource management, and climatology. She currently lives in Victoria, BC.

Darren Lucas is majoring in Geography- Urban Growth Management at Malaspina. He plans to work eventually in the urban design and planning field in a larger urban area. He was born in Vancouver, BC, and is currently living in Nanaimo, BC.

John Mackenzie is a Geography major at Malaspina. He has worked as a Student Park Planner for the Comox Strathcona Regional District in BC. He is pursuing a career as a professional planner. He comes from Black Creek, BC.

Kevin Muise is a Geography student at Malaspina. He has extensive travel experience, including teaching in Japan. He currently lives in Nanaimo, BC.

Continued...
Eli Pilyk is a fourth year student majoring in Geography - Natural Resource Management and minoring in Global Studies at Malaspina. She has worked with Nanaimo and Area Land Trust and sits on the board of TD Canada Trust bank's Friends of the Environment Foundation. She plans to start environmentally sustainable businesses with her partner in Turkey in the near future. Eli resides on Vancouver Island, BC where she was born and raised.

Myriam Raiche is completing her Bachelor of Arts in 2007 in Geography - Natural Resource Management at Malaspina. She is interested in environmental planning, international development, and resource management - especially related to the protection of water resources. She currently works for a small private water/wastewater company and although future post-graduate educational programs are under consideration, her current employment is an excellent opportunity for work-place learning. Born in Moose Jaw, Saskatchewan, Myriam moved often growing up and now lives in Comox, BC.

Gina Sandner is a fourth year Malaspina student majoring in Psychology. She wants to work on decreasing obesity in youth and is currently training towards her Personal Training Certificate and Dive Instructor Certification. She is an avid SCUBA diver and wants to travel the world, experiencing many cultures. She comes from the interior of British Columbia and currently lives in Nanaimo, BC.

Kirsten Thicke completed her Bachelor of Arts in Geography - Natural Resource Management/ Anthropology minor at the end of the field school. Her career plans include working for a provincial agency as a conservation planner or at a non-profit organization. She enjoys traveling immensely and is hoping that her work takes her overseas. She is from Comox, BC, and currently lives in Fort Simpson, Northwest Territories.

Ryan Watson is completing his fourth year in Geography at Malaspina. After graduation, he plans to pursue a diploma in Geographic Information Systems (GIS).

Organization of Report

The papers in this report begin with a review of local government revenue (Field) and community development (Depue). These papers discuss the “inputs” of financing and people that are very essential to the development of the town. The next four papers discuss key municipal services of solid waste management (Pilyk), liquid waste management (Raiche), urban stormwater management (Thicke) and floodplain management (Muise). These services are important and urgent items for the community. The community economy is the topic of the next four papers, which address riverside development (Baillie), ecotourism promotion (Irvine), cultural and heritage tourism (Brown), and economic development (MacKenzie). As Orange Walk faces the twenty-first century, its citizens will need new livelihoods to ensure residents have a comfortable life. The next several papers discuss urban streetscapes, including pedestrian systems (Barker), traffic management (Watson), parking (Letham), and crime prevention (Birtwistle). Streets are very important to public safety and enjoyment of residents and visitors, and essential for economic growth. Next, urban design papers address public spaces (Carrieres), community image (Linton), public art (Sandner), urban design (Lucas), and land use and zoning (Krog). These papers look at ways to enhance the aesthetics and character of downtown areas.

This volume is a set of policy analyses completed as inputs to community planning in Orange Walk Town. The Town Council has not reviewed, considered or endorsed these policies. A companion volume of literature reviews provides a source of ideas and concepts.
LOCAL GOVERNMENT REVENUE
Cynthia C. L. Field

In this paper, Cynthia Field assesses the options available to Orange Walk Town for increasing its revenues. The Town’s capacity for addressing civic issues depends in part on its ability to fund necessary infrastructure and services. Thus local services such as economic development promotion, public works, crime prevention, and urban character depend on developing adequate funding resources and capacities.

Cynthia Field has completed a Bachelor of Arts in Global Studies. She is currently volunteering with the Association of Tertiary Level Institutions in Belize to develop a National Policy for Higher Education. She is planning to enter law school in 2008 and pursue her career internationally. Cynthia is from Sointula, BC, and currently lives in San Ignacio, Belize.

EXECUTIVE SUMMARY

The local government taxation system in Belize suffers from over-reliance on low-revenue producing property taxes and subvention payments. There are several options available to the Town Council of Orange Walk to increase their revenue raising capacity. These options fall into four categories:

- structural (legal and tax system)
- cost-saving
- fundraising
- project-specific funding

These options range from immediate to long-term fiscal impact.

Of the four categories of options, structural options would have the most immediate and beneficial impact on the revenue raising capacity of local government. There are simple structural changes that would give local governments access to flexible revenue resources which would require bylaws and small concessions from the central government. More significant structural changes would resolve the Town’s funding issues over the long term giving greater autonomy for the Town. However, these options will require effort and cooperation on behalf of all governments, particularly local governments, throughout Belize, and may not be feasible in the short term.

Other categories, such as project-specific, cost-saving and fundraising options all contain opportunities that would be feasible in the immediate future. The cost-saving and fundraising options address the Town Council’s pressing need for increasing available revenue and do not require long legal or political processes, while the Town could organize, implement, and administer most of these options successfully.

First, co-operate with other local governments to form a cohesive force in order to address systemic and structural issues in the Belizean system of local governance. Next, fundraise for immediate revenue generation; find grant writers; promote a non-partisan business association; implement office fees; promote volunteerism; and look at options such as per capita subvention payment structures and the benefits of attaining city status.

INTRODUCTION

This policy paper contributes to community planning for Orange Walk Town, Belize. It focuses on the need to build the capacity of local governments to raise revenue and on methods for the Town Council to have fiscal stability. Fiscal stability involves evaluating transfer payments in terms of revenue needs in Orange Walk Town, in relation to other governments in developing nations. The paper addresses the international debate on the purpose and benefits of local governance, and the benefits and drawbacks of the autonomy of local governments in raising taxes. Finally, this paper seeks to develop long term planning for economic growth strategies that will benefit the country of Belize, the people of Orange Walk Town and the Town Council.

This policy paper will:

1. Identify sources of revenue and funding accessible to the Town Council of Orange Walk
2. Identify and assess cost-saving methods available for the Town Council of Orange Walk

This policy paper provides options to aid the Orange Walk Town Council to:

1. Access alternative sources of revenue and project funding
2. Implement cost-saving methods
3. Identify future goals
METHODOLOGY AND LITERATURE REVIEW

Research for this paper consisted of an analysis of peer-reviewed articles, information from government and governmental organizations from around the world, and documents from international sessions on government issues. The writer conducted interviews in person and over the telephone. These interviews were formal, having specific questions drawn up beforehand. Many of the interviews had long informal sessions that revealed relevant information that were not always in the formal session.

This report reflects on the information gathered during interviews with Town Council officials. Many individuals contributed their knowledge of the revenue system for the Town, the central government and of revenue systems in other countries. Key interviewees from Orange Walk Town include Mayor Ravell Gonzalez; Mr. Benjamin Carrillo, staff member in charge of revenue; Mr. Eduardo Leiva, Administrator; and Mr. Roberto Urbina, Town Council Supervisor. Mayor Moya of Belize City was also interviewed.

This study refers to several articles on municipal finance. There are few studies on the finance system of local governments in Belize. However, relevant articles examine local government revenue systems in other countries throughout the world. The Belize system of governance resembles both those systems of both developed and developing nations, which is why several articles focus on the Australian, Canadian, Ghanaian and small African country tax systems.

Belizean local governments, like North American municipalities, are heavily reliant on inflexible property tax revenue. Konzak (2007) takes an in-depth look into the implementation and effects of alternative municipal taxes in Canada and the United States. The websites of the Commonwealth Local Government Forum (accessed 2007) and the Australian Local Government Association (2007) respectively discuss Alternative revenue systems, such as those in Ghana and Australia.

Slack (2006) explains fiscal imbalances in detail, and explores fiscal sustainability of municipalities. Slack has contributed to several papers that are relevant for this article, particularly Slack and Kitchen (2003). There are many options presented below that are cited from this source.

BACKGROUND

This study explores options and methods to raise their revenue generating capability of the Orange Walk Town Council. Financial autonomy is a topic of international concern as municipalities around the world are facing with increased levels of responsibility for governance. Central governments are shifting the responsibility for public and social services to municipalities often without the corresponding capacity and autonomy to generate appropriate revenue. This means that local governments are increasingly reliant on fixed income sources such as property taxes and transfer payments from central government. This reliance can decrease local autonomy in decision-making capacity and revenue raising autonomy.

There are a significant number of academic papers that reach the conclusion that municipal investment in infrastructure projects, public services and social services, can create long term economic benefits for the town and the entire country (Lobo and Rantisi, 1999; Kitchen and Slack 2003). Autonomy in planning can directly benefit the economy as local economic development requires unique public infrastructure for the support of private transportation, business and industry (Foldvary and Santa 2001; Jurdana and Susilovic 2006). Kitchen and Slack (2003) note that when “analysts evaluate the role of additional revenue sources, they often rely on the benefit model of local government finance... [the] subsidiary principle states that the efficient provision of services requires decision making to be carried out by the level of government closest to the individual citizen. Thus, municipalities are in the best position to determine local priorities and to make decisions about what services to provide, how much to provide, and how to pay for them” (pp. 2218, 2003).

Infrastructure projects implemented by a central government authority are not necessarily as effective as those projects implemented by local government. The difference lies in the local knowledge of the specific requirements for individual towns and cities.

Revenue for local governments is a particularly complex area for a policy report. There are literally hundreds of options. However, this report discusses only the most pertinent options. It presents these in the categories of cost-saving, alternative revenue, structural and fundraising options. This paper will address a number of options immediately available to Council, as well as many that governments can implement through political and legal processes.
There is no single correct structure for local government to operate. However, an international movement toward decentralization may affect Belize in the near future. Council has limited autonomy in revenue-raising and decision-making capacity, which inhibits their ability to raise revenue. The revenue raising capacity of the Council is currently limited to property taxes, garbage collection fees, business license fees and liquor license fees (Carrillo interview, 2007, Leiva interview 2007). Kitchen and Slack (2003) state that

“a case can be made for a greater mix of taxes at the municipal level. Such a mix would give municipalities flexibility to meet local needs at the local level [which] would reduce the pressure on the property tax base” (p2223).

For the 2007-8 fiscal year, the estimated revenue of central government that is transferred to local governments is 0.0059% of the total expenditures. This is low in comparison to many local governments around the world, including Ghana, Kenya and India. The Government of Ghana must transfer a minimum level of central government revenue to local governments, 7.5%. Even with this low percentage, there are concerns that revenue raised to benefit the local level of government has not reached town councils. In addition, the central government has withheld these transfer payments, also known as subvention payments, from local government for multiple months for inter-governmental disagreements.

**ISSUE IDENTIFICATION**

There is insufficient funding available for Orange Walk Town Council to focus on projects for the social, environmental or urban development of the community. At this time, the Town Council has access to an estimated $1.5 million (BZD) per year out of the $1.7 million BZD revenue capacity of the Town. The Town will require more funding to take advantage of its unique position in the developing tourism and industrial economies of Belize.

**Orange Walk Town Council Budget 2007-2008**

Council has significant responsibility for public programs and services. To pay for these services, Council has five rather inflexible sources of revenue. Along with transfer payments from the central government, Council has four main sources of revenue: property taxes, liquor license fees, business license fees and garbage collection fees. Property taxes are termed “fixed revenue” because they are limited and stay at a steady rate for long periods.

Council relies heavily on property tax collection. While tax collections have remained low over the past few years, the fiscal constraints on Council during the first months of 2007 caused the Council to increase the effort put towards collecting taxes and seek alternative sources of revenue. Liquor license fees are a good source of revenue, though also fixed in terms of the number of businesses seeking licenses each year. Both of these areas have limited growth potential. Business license fees and garbage collection fees can be flexible, though limited in terms of what individuals would be willing to pay.

Council would like to see Orange Walk have access to $40,000 BZD per month in subvention payments rather than the $33,000 they are currently receiving. This increase in transfer payment would bring the total revenue from transfer payments from $396,000 BZD to $480,000. For a town the size of Orange Walk this amount of money does not meet all municipal needs at times. Council has come up with many inventive ways of accessing revenue sources and external funding but it has to forgo opportunities to serve the community better because of limited funding.

However, as an immediate issue, the central government has limited transfer payments because of disagreements between levels of government and between political parties. The withheld transfer payments include the $3,000 BZD per month designated for paying public employees. Several issues impact the revenue income of Town Council either presently or in the future.

**Immediate Concerns**

- **Budget:** The Town Council’s estimated annual budget is $1.7 million BZD. However, with tax evasion accounted for the budget comes in at roughly $1.5 million. This means that with the present methods of tax collection, the Town is unable to bring in the full sum of money.

- **Property Tax:** The largest source of revenue for the Town is property tax. In the 2002-3 fiscal year, 95.19% of the property tax estimate was collected, while 2003-4, the number dropped slightly to 93.63%, while in 2004-5 only 88% was collected. Council has tried various methods of collecting on outstanding property taxes. However, collection takes extensive time and effort and the costs of collection do not effectively recover the total lost revenue. For example, court processes are costly and time consuming, making this an inappropriate method
except for extreme cases of tax evasion. The Town has also privatized collections, though this method did not bring down the level of tax evasion by any significant margin.

- **Liquor License Fee:** For the last two years, revenues have exceeded the estimated figures for liquor licenses, and there is an expectation that this trend will continue. However, estimates have gone down by $64,000 from 06/07 to 07/08, indicating that the Town will likely receive less funding from this revenue source for this upcoming fiscal year.

- **Garbage Collection:** There is a garbage collection tax on businesses, not individual citizens, which funds part of the overall collection and disposal expenditures. On average, the budget for garbage is 20% more than the amount of money allotted by the central government for this purpose. The Town makes up for the shortfall of this subvention payment with the fee for garbage collection from businesses.

- **Subvention Payment:** During the 2007 year, the central government withheld subvention payments for a number of months. While Council is relying on property taxes to pay for the bulk of expenses, including the $3000 per month in payments to employees, Council cannot continue to function effectively if the government withholds subvention payments for a significant period.

**Orange Walk Initiatives**

Orange Walk Town has many excellent examples of community based development projects, cost-saving programs, and revenue raising initiatives. Many local organizations within Orange Walk focus on the development of the infrastructure, social or urban aspects of the town.

**Fines**

- Traffic fines for illegal parking are $25. This program should help to cut down illegal parking within the city, improve traffic flow and sidewalk safety, and therefore would be an effective way to promote urban development while increasing local government revenue.

- In July or August of 2007, the Town will implement fines for littering, though staff does not expect these fines to bring in significant revenue. This program could save some costs of town maintenance, but no one is sure what impact the fines will have on discouraging littering.

**Parking**

- In the past there have been pay-parking stalls, however, due to a lack of enforcement capacity Council abandoned this idea.

**Business**

- Council and business community share the burden of establishing urban infrastructure. The Town Council covers the labour costs of sidewalks within Orange Walk while businesses supply the materials. Labour is worth roughly 60% of the total cost of the sidewalk and an average cost is $800 BZD to complete a storefront sidewalk.

- Businesses in Orange Walk must renew their business licenses at the beginning of each year, though some businesses pay in instalments throughout the year.

- While there is a Business Association, there appears to be room for the association to take on broad-based public works projects in the downtown core. Creating an effective business association has affected the tourism potential and growth of towns throughout the world, and can significantly reduce costs to local government for maintenance and development of infrastructure.

**Public Participation**

- Programs such as Adopt-a-Park and Adopt-a-Bench have been effective in Orange Walk Town for some time. These programs are excellent ways to create public participation and community awareness, while cutting down on costs to local government for infrastructure maintenance.

- Members of Council have previously taken part in fixing potholes in the town. This program involves gathering donations of cement and other materials while Council members volunteer time and labour to fix the streets. Although Council have paused this program currently due to the rainy season and other pressing responsibilities for Council members; some Council members intend to start the program again in the summer of 2008. The Liberty Street project is also an example of community based urban infrastructure development and of volunteerism. Local businesses buy the materials and she supplies the Council members take on the labour of building the area.
Obstacles and Barriers to Revenue and Funding

Local governments have to face conflicting goals of urban and economic development alongside the need to raise taxes for public services. They are concerned that higher taxes may stifle economic growth and alienate the voting public – two areas of particular concern for any local government. While opportunities do exist in terms of accessing current and alternative revenue sources or cutting the costs for public services, the local government is unwilling to pursue certain forms of taxation. The political cost of introducing taxes or moving to restructure the tax system can be highly controversial. Implementing new fines or forms of taxation is an important area to consider. However, there are high political costs in terms of time, money and effort. Many external barriers make raising revenue difficult at the local level. Each of these involves lack of autonomy. The local government may not raise revenue without approval from the central government. For example, the central government must approve loan requests and apply loans from financial institutions on behalf of local governments. This lack of autonomy makes local government revenue a particularly difficult policy area.

Internal barriers include the scale, effectiveness and conflicting goals of programs to raise revenue. There are many external barriers as well, including a lack of intergovernmental cooperation, political differences between governments in power, and the long legal process for significant changes in the structure of revenue capacity in government. Local governments lack funding to implement large-scale projects; thus they must focus on particular areas or particular aspects of a larger plan, which can jeopardize the project as a whole.

Stakeholders

The issue of local government revenue can affect most people in the community though few realize the true impact on their day-to-day lives. The ability of the local government to access funding for community projects affects not only the towns people immediately but also in the long term development of the community and economy.

- The Business Community has a great stake in this matter because the government supplies infrastructure, opportunities for business development, maintaining traffic circulation, and encouraging industries such as tourism.

- Individual Citizens have a stake in the revenue, even if few recognize it. The democratic process and local economic growth are two of the important stakes the individual has in local government. The local government provides opportunities for employment directly and indirectly through building and maintaining infrastructure for markets, and creating employment opportunities from the market place.

- Local Government is dependent on revenue to continue operating services for the Town.

- The Central Government also has a large stake in local government revenue-raising capability. While central government controls the majority of the local government revenue by means of subvention payments, the ability of central government to control local governments is directly related to the amount of money available to those localities. Local governments provide services to encourage markets, and therefore have a large stake in revenue for local governments in terms of overall economic growth of the country.

OPTIONS

This section summarizes the findings and recommendations of authorities for raising local government revenue and increasing local government revenue-raising autonomy. There are four option groups for revenue sources for local government: structural options, cost-saving options, fundraising options and specific project funding options. The options below range from immediate to long-term fiscal impact.

Simple Structural Change Options

1. Registration Fee for Motor Vehicles: According to Runde (2007), the registration fee for motor vehicles helped reduce the reliance on the rigid property tax system available in the jurisdiction, and promoted local government aiding local “lodging” businesses.

2. Hotel Tax: Runde (2007) showed how a tax on establishments providing short-term lodging for the public could significantly benefit the local government. This tax would be on individuals attending hotels, motels and hostels. Hospitals, nursing homes and religious accommodations were exempt.

3. Luxury Tax: The growth of a town may depend on some people paying more for certain luxuries while sparing others an increase in taxes. This
can benefit the low-income members of the community through urban and social development. Local governments, with suitable enabling powers, could apply this to expensive imported items such as jewellery or large vehicles for non-commercial related uses.

4. **Highways:** Taylor (2006) showed how governments can pay for highway projects for with user fees from toll booths and indirect user fees such as fuel taxes alongside the usual sources such as general source revenue, property tax and sales taxes.

5. **Revenue Board:** Runde (2007) also explored the idea of a separate board in charge of local government revenue income and repayment of debts. This saves costs for administration within local government and promotes public participation, especially as private business owners may play a large role in this board due to their personal stake in local government financial sustainability.

**Significant Structural Options**

1. **Local Sales Tax:** Konzak (2007) recommended granting municipalities access to local sales tax as the most practical step towards financial autonomy. Runde (2007) noted that a county sales tax authorized for general use has been proven a successful method of raising revenue.

2. **Local Personal Income Tax:** Personal Income tax is a flexible tax that can be applied without undue burden on lower-income individuals. Konzak (2007) notes that a one percent income tax for local municipalities can be a significant revenue source, accumulating to as much as one-third of the total revenue for some local governments in Canada and the United States.
   i) Wage Taxes are flat percentages of the gross wage or salary of individuals
   ii) Payroll tax is a wage tax collected from the employer rather than the employee. This is levied on the place of work rather than the residence of the worker. These are typically flat rates, and the legal burden is on the employer
   iii) General “piggyback” income taxes are collected with federal income tax and are remitted to local governments by location of the place of employment.
   iv) Locally-designed progressive income taxes involves taking into account

3. **Impact Fees:** Dayle and Falconer (2007) and Skidmore and Peddle (1998) discussed how impact fees are used to finance the capital costs of building infrastructure for public services including roads and water facilities. Impact fees are a monetary charge imposed on private companies developing buildings in the town including public and private infrastructure. Impact fees are also known as impost charges or development cost charges.

4. **Special Assessment Fees:** Dayle and Falconer (2007) also argued that local governments could collect special assessment fees, which are similar to impact fees, from specific groups who benefit significantly from particular infrastructure projects. These can be voluntary, mandatory or based on consumption levels.

5. **Cost Sharing:** Leroux and Carr (2007), Coopoo (2000) and the Big City Mayor’s Caucus (2003) all agree that there are significant benefits for local governments if they are able to share costs between municipalities. Trans-jurisdictional services can maintain low service costs, minimize spillover effects and encourage cooperation between local governments.

6. **Multinational Corporations:** Eweje (2006) notes that governments in third world nations have pressured multinational corporations to create public infrastructure and improve local education systems.

7. **Public-Private Partnerships:** Jurdana and Susilovic (2006) advocate public-private partnerships specifically for developing tourism within urban centers. Tourism can have many economic benefits for the community, which in turn can raise property values and individual incomes, giving local and central governments higher revenue bases.

8. **Private Development:** Bahigwa, Ellis, Fjeldstad, and Iversen (2004) agreed that private business is more efficient than local government, and therefore can be a benefit to governments with limited revenue resources. Ewoh (2007) explains how private development of public infrastructure can relieve local government from immediate revenue burden and, given a revenue-generating project is built, the government can also benefit from revenue of the completed project making repayment much less burdensome.
9. **Business Levies:** Other developing nations have created tax levies on the turnover, payroll and profit of businesses. According to Eweje (2006), Durbin, South Africa, charges 0.1368% on the turnover of each business in the community.

10. **Liquor Tax:** Not only is this an effective revenue generating option, it also has several benefits including lowering alcohol consumption in the community and, according to some studies, also reduces crime, which would also mean a savings on town maintenance if there were a reduction in petty theft.

11. **Increase Subvention Payments:** Orange Walk is receiving the same subvention amount as the smaller Town of Corozal.

12. **City Status:** If Orange Walk gains city status within the laws of Belize, the local government would have control over other areas of revenue, including traffic. The subvention payments owed to the city from the central government would rise significantly, and the overall revenue boost would be an estimated factor of four according to Benjamin Carrillo, Town Council member in charge of revenue.

13. **Full Subvention Payments:** Rather than making the local government collect their own property tax, the central government could collect these taxes in full and pass on the revenues to local governments. The central government has more capacity to demand tax payments. The Australian Local Government Association advocates this option for countries with widespread populations (2007). This option would require trust that the payments would not be withheld.

**Available Taxation Opportunities**

1. **Changing Tax Collection:** Because taxes are the primary revenue source for Town Council, tax collection deserves quite a bit of thought. The main option for this issue is changing the structure of the collections system to increase likelihood of payment such as tax-breaks for those who pay on time. For instance, there could be disincentives to those who fail to pay on time such as effective fines and summons.

2. **Assessing Property Tax:** In general, the amount of tax payable on a property is based on the assessed value of the land and any improvements, usually buildings on that property. While a time consuming process, a proper assessment of each property in terms of value and tax value could raise revenue for the Town.

3. **Drainage Tax:** Houses in Orange Walk that have a drainage ditch alongside the property line a frontage tax could be levied in tax per foot, for keeping the ditches clear. While the Town Council would not raise much money from this tax, it could raise more money specifically for clearing blocked ditches during the rainy season – in effect an “emergency avoidance” tax.

**Fees and Permits**

1. **Landfill Fees:** Landfill sites can be costly to maintain for the effective protection of the environment and human health, and balance the local budget.

2. **Local Permits:** The local government can collect fees for issuing local permits. Other countries, for example, add local hunting license fees to national hunting license fees.

3. **Office Fees:** Local offices often charge fees for the provision of services. Adding an additional charge to supplement the administration of these services or develop a local government reserve fund for use during emergencies, or for infrastructure development and maintenance.

**Cost-Saving Methods**

1. **Floodplain Management:** Dayle and Falconer (2003) noted that floodplain management can directly impact the revenue of the local government. There can be significant long-term savings if governments implement floodplain development correctly. This is another large policy area.

2. **Urban Sprawl Management:** Foldvary and Santa (2001) noted that local governments incur higher costs from urban sprawl, which they can avoid by planning and enforcement of bylaws.

3. **Expanding Programs:** The Adopt-a-Park program has been successful in Orange Walk Town. These programs can be encouraged.

4. **Fines for Vandalism and Littering:** Maintaining town cleanliness is a large part of attracting tourism and expanding the local economy so keeping the town clean is a priority for Council. Rather than spending money cleaning up the affected areas, fining people caught vandalizing or defacing public property can be an excellent way to deter petty crimes and save public tax dollars in maintenance fees.
5. **Community Participation**: Community volunteer organizations dedicated to maintaining certain parts of the town can save tax dollars over the years while raising community involvement and awareness. A key step toward the sustainable development of Orange Walk is to getting people to take care of their town.

6. **Tax Relief for Good Samaritans**: Local governments can encourage businesses, organizations and individuals through tax relief for acts benefiting the public good.

7. **Non-Profit for Public Services**: Citizen participation is recommended by many academic sources: Adams (2007); Brannon, John and Stoker (2006); and Becker-Olsen and Hill (2006). Though this section focuses on fundraising by non-profit organizations, local government could either work with non-profits, or enable those organizations to oversee public services. Both of these options would reduce costs for local government in providing administration for services while promoting citizen participation. Becker-Olsen and Hill (2006) discuss how non-profit companies can gain funding by branding themselves to gain access to funding and grants.

**Fundraising Options**

1. **Expanding the Flea Market**: Council has already put some alternative revenue sources in place, including the Flea Market. Expanding the scope of the Flea Market to include local artisans who may be initially unable to pay for their spots in the market could widen the appeal of the market to tourists and local citizens.

2. **Bake Sales and Barbecues**: Often organizations sell homemade items in markets or on the street in order to raise funds for the organization or a specific project. The Saturday barbecues in Belize are an example.

3. **Formal Evening Fundraiser**: Eikenberry (2006) notes that non-profit organizations can use potlucks to raise short-term immediate revenue. Local governments could arrange a potluck or a formal evening fundraiser to promote a particular organization within the community. These organizations often directly benefit the community or help the government reduce expenditure costs. They can charge a fee for each meal served, which pays for the cost of the dinner while the profit goes to the local government.

**Public-Private Partnerships**

There are many options for local government to partner with private enterprises. While certain public-private partnership arrangements are controversial, there are arrangements that deserve some focus. These arrangements require transparent decision-making processes and strong policy frameworks from the beginning.

1. **Investment**: Local governments in other developing nations have arranged loans with the private sector by issuing bonds that are repaid over the “life” of the project. For instance, they can pay off bonds for infrastructure built to last for 20 years at a rate of one-twentieth of the cost for the entire project, with minimal interest, due to the security of the bond.

2. **Service Contracts**: A contractor is responsible for one or more aspects of a municipal service.

3. **Management Contract**: The contractor is responsible for all aspects of the publicly owned municipal service.

4. **Lease**: The local government leases its operating assets of a municipal service to a contractor who is responsible for all or part of the municipal service.

5. **Build-Operate-Transfer**: At the expense of the contractor, the private business takes on the responsibility to build, manage, operate, maintain and repair a facility needed for the delivery of a municipal service. The business transfers the facility to the municipality upon completion.

6. **Concession**: This long-term arrangement has the contractor taking the full responsibility for the facility, equipment and municipal service. The contractor takes the profit of the service and pays a fee to the municipality.

**Specific Project Funding**

1. **Grants**: Pietilä (2005) notes that grants can be an effective method of raising revenue for specific projects. Local governments can access grants from foundations, donors, and other funding sources. A strong grant-writing capacity can be beneficial.

2. **Business Leadership**: Business leaders can make a large impact on the community in terms of economic and urban infrastructure development. A strong business association should have the ability to pool money towards
specific projects within the town and work in association with local and central governments to accomplish their goals.

3. **Accessing Loans:** There is great potential for enabling projects and programs within Orange Walk through loan based options. However, control over the process of accessing loans falls within the jurisdiction of the central government. While local government may be unable to apply for loans at this time without going through the central government, the issue can still be raised as to how to create effective policies that would encourage all stakeholders to take advantage of available opportunities.

4. **Operating Reserve:** A small operating reserve requires putting a small percentage of the budget each year in a reserve and waiting until the reserve is large enough to be useful in immediate development or maintenance projects. Having a pool of reserve money on hand can also be useful as collateral in gaining lower interest rates when applying for loans from banks.

5. **Community Volunteer:** Volunteer organizations could be encouraged to take on specific tasks within the town in the areas of infrastructure, social or environmental maintenance.

**ANALYZING OPTIONS**

**Criteria for Analysing Options**

The first three criteria will be costs for the Town Council:

- **Initial Cost:** refers to how much time or money the option would cost for the Town Council to implement the objective.

- **Long Term Cost:** refers to the amount of money paid over a long period of time, or in one payment in the future.

- **Political Cost:** can refer to the effort on the part of council members in terms of labour, time and effort, or can refer to time, expense and political capital used to implement objectives requiring Ministry approval

The second set of criteria is benefits of the policy option:

- **Impact:** Refers to the overall cost-savings or revenue benefits for the Town Council.

  - **Feasibility:** Refers to whether or not the objective is likely to be implemented, able to be implemented in the near future

  - **Immediacy:** Refers to how soon the option would impact the revenue or expenses of the Town Council. Note that for public-private partnership options, immediacy is not a relevant indicator of effectiveness.

The best policy options will receive a rating of “Low” for all costs and “High” for all benefits.
### Option Analysis Tables

#### Table 1.1 - Complex and Simple Structural Change Options

<table>
<thead>
<tr>
<th>Structural Option</th>
<th>Political Cost</th>
<th>Impact</th>
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</tr>
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</tr>
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<td>Impact Fees</td>
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#### Table 1.2 - Accessing Available Taxation Options

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<th>Options</th>
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## Table 1.3 - Cost-Saving Options

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<th>Political Cost</th>
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<th>Feasibility</th>
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## Table 1.4 - Public-Private Partnerships

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<th>PRIVATE-PUBLIC OPTIONS</th>
<th>Initial Cost</th>
<th>Long Term Cost</th>
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## Table 1.5 - Alternative Fundraising Methods

<table>
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<tr>
<th>Options</th>
<th>Initial Cost</th>
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<th>Feasibility</th>
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Table 1.6 - Specific Project Funding

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<tr>
<th>Options</th>
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<td>Medium</td>
<td>Medium to High</td>
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</tbody>
</table>

**Analysis and Recommendations**

- The significant structural options would be difficult to implement because they would involve long legal and political processes. However, the benefits of these options are long term and significant for the community in terms of economic development and local autonomy. While Belizean local governments look at these options, they are long-term options that will require structural and legal changes for the government system of Belize.

- Each of the significant structural options will require further policy studies before the possibility of implementation.

In a short analysis, the local sales tax option is preferred to income tax or payroll tax options because a sales tax will target consumers, not individuals. Governments generally do not want to discourage citizens from seeking to attain a higher income. Another reason for the preference of sales tax is the administration costs involved in a local income tax (Konzak, 2007). The sort of income taxes this would discourage earnings are wage taxes, which are generally flat percentages of the gross wage or salary of individuals, and locally designed progressive income taxes. Other income taxes, such as payroll taxes and “piggyback” income taxes should not necessitate great administrative effort at the local level. These income tax options may be reasonable and accessible for the Town Council some time in the future.

Liquor taxes have several benefits, including the possibility of reducing the consumption of alcohol within the community. The Town Council may assess this in terms of community support, for which this project may have from many professionals involved with policing, outreach programs and maintenance of vandalism sites. However, passing a tax on a popular item is not the first choice of the Town Council, so this may not be an immediate option to consider.

- As for non-tax structural change options, the revenue board, special assessment fees, cost sharing plans, and impact fees are other policy options.

The revenue board option would place administrative management of public services in the hands of public volunteers, and would require central government approval and the support of qualified individual citizens. This option has the benefits of public involvement and shared administration, however, this would require central government approval and that government trust people to run a municipal service.

Other non-tax structural change options include impact fees, special assessment fees, cost sharing, public-private partnerships and business levies. Impact fees are excellent sources of revenue; however, according to Skidmore and Peddle (1998), these fees may discourage residential development. This may reduce economic development for the town, but Skidmore and Peddle do conclude that this fee may be an effective way of raising revenue in developing nations.

Special assessment fees target consumers and
benefactors of particular infrastructure projects. These may also discourage development to a certain extent, though the fee is not necessarily mandatory. A discretionary special assessment fee could boost local government revenue significantly.

Cost sharing programs have benefited many communities across North America and Africa, among other areas. Orange Walk may be able to share public services with nearby towns or villages, but this probably will not result in a significant reduction in expenditures or responsibility to public services. Corozal is simply too far away to share many public services, though sharing the burden for purchasing items, such as heavy machinery, could benefit the town.

Public-private partnerships have worked in Orange Walk before; however, Town Council should assess the structure of these projects further in order to gain the most benefits for the community. There is more on this in the final section public-private partnerships. The public-private partnership section will also discuss the private development option. Eweje (2006) makes the argument for business levies in developing nations. In Durbin, South Africa, any time there is a business turnover, there is a charge of 0.1368% of the price. This small percentage contributes a substantial amount to the local government without high administrative costs.

- The largest structural change options are those involving changing the entire tax structure of Belize to a system such as those in Ghana or Australia, having Orange Walk obtain city status, increasing the subvention payments to a minimum of the national revenue income and expenditure. There are many arguments for increasing the subvention payment amount the Orange Walk Town Council receives. Compared with communities in other developing nations, Belize transfers a small amount of the total central government expenditure to municipal governments. Municipalities in Ghana collectively receive a minimum of 7.5% of total central government expenditures. The government system is set up differently in Ghana, but it is worth mentioning that there are significant benefits for economic development for local governments to invest in local infrastructure and development projects. Several people in Orange Walk mentioned the idea of the town becoming a city. This would raise government revenues by four fold, according to several sources on the Town Council. This would give the Town Council jurisdiction over traffic, raising revenue capacity immediately. This long and involved process will require significant investment of time and labour on behalf of public employees. This may not be the most feasible immediate option, but it is a distinct possibility. The government may consider the change from town to city for the future. Changing the system for subvention payments is another long legal process. However, the Australian Local Government Association attests to the benefits of this system in countries with widespread populations. The national government would collect all taxes together, and transfer the allotted amount to local governments. This reduces the need for revenue and administration of taxes at the local level; however, this option reduces autonomy of the local government, which becomes entirely dependent on the transfer from central government.

- While all of these options offer some source of cost-savings or revenue income, many have high costs associated with them in some way. Choosing the least costly items that have the highest impact will give the greatest revenue reward in the end.

- In terms of public-private options, concession and management contracts are the best options for large services that would be run more efficiently as a private businesses due to the low cost, high impact and high feasibility ratings. However, once a contract has been signed the municipality loses a significant amount of power over the decision making process involved with the service. These options need to be carefully considered as to the pros and cons of privatizing each specific service project.

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- While public-private options are important to look at in the future, these can be set aside for
now until dealing with specific projects or municipal services. Public-private options would be particularly relevant after Orange Walk were to gain city status and have more public services to administrate.

- The other options will be more easily ratified in the near future as many do not require central government approval, however, some, such as loans, will require some reassessment of the municipalities legal framework. These options will have to be considered in the long term because of the time it will take to reevaluate the legal status of the Town Council to do certain things, such as take out loans for the Town.

- Since the need for revenue is immediate, the implementation policy of this paper will focus on the short-term ability of the Council to access funding and apply cost-savings initiatives.

### IMPLEMENTATION PLAN

The implementation plan discusses the next steps that Town Council and/or central government could implement to improve the Town’s revenue situation.

**Goal:** Focus on the immediate possibilities: The goal is to implement revenue-raising projects while planning for long term structural changes for local government financing in Belize.

1. **Analyze Structural Policy Alternatives and Co-operate with Other Local Governments**

   For structural change options to take place in the future, Town Councils need to co-operate in pushing for greater autonomy and more finance options. Mayor Moya of Belize City has spoken at the World Urban Forum about the need for greater autonomy for local governments. Her international recognition and position as the mayor of the largest community in Belize make her a strong presence in the push for local autonomy and local revenue raising capacity. Cooperating with the Belize City government and other local governments around the country to form a strong local government organization will give local governments some footing in the push for autonomy.

2. **Develop Grant Writing Capacity**

   The most difficult part of obtaining grants for specific projects is identifying people who are willing to find opportunities, research, and write proper applications. The first step is to raise the capacity of staff by training people or bringing in dedicated grant writers to the staff. Grant writers do not necessarily have to be paid by the hour. Many writers are paid 5% of the total grant money they earn for the community, particularly for churches and non-profit organizations. Educational centres may have students willing to volunteer their time, and if
local governments could arrange schools to give some form of credit for these activities, which would attract students and encourage them to work diligently.

- Examine the capacity of government to train a staff member to find and prepare grant applications. If there are no immediate candidates for the position, or the training will be excessively expensive, consider Step below.
- Ask local schools to find students willing to learn the process of grant writing. If no local students are interested, consider an internship program for grant writing students from universities outside of Belize.

3. **Promote a Non-Partisan Business Association**

Promote the development of a business association dedicated to improving the access and appearance of the central business district. Enable the association to take part in planning infrastructure projects, and develop their own initiatives for infrastructure maintenance and creation.

- Write a series of articles for newspapers outlining the importance of economic and infrastructure development in Orange Walk and why a non-partisan business association is a direct method to gain these goals.
- Ask several business people to form an open association that has prerogative to avoid petty political battles and implement projects.

4. **Implement Office Fees**

The Town Council of Orange Walk may consider trying to pass a bylaw in order to implement office fees in the future in order to fund an operating reserve. Public offices around the Town can charge certain administrative fees for this goal. These fees may be collected for purposes specific to the development of services for that office, however, in times of fiscal constraint the local government could use these fees to cover emergencies or other expenses. While the political climate may not be conducive to this now, having the capacity to implement fees in the future may be necessary for autonomy in revenue raising capacity.

- Start the process for presenting a bylaw to the central government Ministry.

5. **Bake Sales and Barbecues**

Have volunteer groups purchase and bake treats to sell at the market and at other events. Repay volunteers for their purchases out of the profits and promote their efforts at public events such as the Flea Market. Step:

- Put out word to community volunteers, and while working on this step, consider option 3 below.

6. **Encourage Community Volunteerism: Cost-Saving Opportunity**

Encourage the creation of volunteer groups for infrastructure for different areas of town. Enable them to design their own “green” and urban spaces, encouraging public art to go along with urban infrastructure maintenance projects.

- Publicly promote initiatives such as the Liberty Street infrastructure project. Also consider promoting individuals who are involved with the Adopt-a-Park program.
- Bring local talent into the local government in the form of volunteer opportunities. University students are often looking for work experience, and may be intrigued to work with the local government. The University of Belize business programs have sought opportunities for business students. Schools may be able to grant credit for the students if they work with the Town Council for a certain period of time doing things such as grant writing, research or office organization. Work with the schools to find out what skills students may be able to bring to the Town Council and to grant students credit for their volunteer hours.

7. **Plan for a Formal Evening**

Find a program that is benefiting Orange Walk Town and hold a dinner promoting their efforts. The guests will be charged for their meal, and for a “donation”, usually 50% to 100% of the cost of the meal. The meal will be formal but not expensive and the Mayor will make a speech about the organization, the benefits to the town and how the organization’s objectives are in line with the objectives of the Town Council in terms of human or economic development or environmental conservation.
• Find an organization that is doing excellent work in the community. Inform them that the Town Council would like to honour their efforts with a formal dinner.

• Advertise the formal evening as an event in the community. Perhaps guest speakers or local musicians could entertain guests. Local artists are often interested in showcasing their art at formal events, and will often contribute their art for free for the evening in return for the public viewing of their art.

• Arrange for a meal and build the cost of the meal into the ticket price. The price of the meal is usually double the catering cost of the meal, meaning the Town Council would receive the same amount of money as the catering company.

8. Discourage Tax Evasion

The Town Council needs “teeth” to deal with repeat tax evading citizens and deter future evasion. The town may need to pass a bylaw to strengthen collection. This option can work well with option 1, cooperating with other local governments to implement bylaws and change the structure of local government revenue in Belize.

• Work with other local governments to formulate and present bylaws to the central government Ministry that outline means by which local governments can encourage tax payment. This will require some research and creative thinking. Consider taking on a number of volunteers from local schools in order to utilize local research and creative thinking resources. Students can be encouraged by getting credit for their university or by getting references and job experience from the position with the Town Council.

9. Representative Subvention Payments

For Orange Walk to develop as a town in its own right it needs to be treated as a unique city obtaining subvention payment amounts that are representative of Orange Walk’s fiscal requirements. Rather than one sum of money for all towns of a certain size, Orange Walk representatives can ask for an increase in subvention payments that reflect the number of people living within the town. This political and legal process will take considerable time and effort, but would be very effective in terms of revenue capacity if the initiative is successful.

• Evaluate town needs in terms of adequate revenue for public services such as garbage collection and disposal, recycling programs, and water services.

10. City Status

Begin the process of establishing Orange Walk Town as a city. Incorporating the villages outside may be difficult, but Orange Walk should explain the benefits of being part of Orange Walk at village meetings and in newspaper columns. With the support of the majority of individuals in the surrounding villages, the Town Council can look further into the process of declaring city status.

• Seek the support of surrounding communities by explaining the benefits for individuals in outlying communities for joining Orange Walk Town.

EVALUATION

Ongoing evaluation of this policy plan will be helpful for the Town Council over the longer term. Knowing what worked well and what did not can decide future projects and paths for the Town Council.

Budget:

Evaluate each option in terms of revenue earned and future revenue raising capacity. Organize options in order, and evaluate which of the options that has the greatest potential in raising revenue in the future also has the lowest cost in terms of time and money associated with that option. Focus on the top options in this category in the future.

➢ The Budget for the Town Council should grow by a minimum 10% for these options to be considered successful.

➢ The cost of infrastructure maintenance in the town will be reduced by a minimum of 10% for the cost-saving options to be considered a success.

➢ Tax payments should increase from 88% in 2004-5 to a minimum of 92% for the tax payment encouragement option to be considered a success.

➢ If any of these options is considered unsuccessful upon evaluation, the Town Council may want to focus on other options.
REFERENCES CITED


SOCIAL CAPITAL, COMMUNITY DEVELOPMENT, AND CRIME

By Jade Depue

In this paper, Jade Depue looks at an essential asset for community development: the development of community itself. Social capital is the capacity of a community to work together for common benefit of the community without personal gain. It is about volunteerism, community contribution, and cooperation. As a criminologist, Depue discusses the application of social capital development to crime prevention.

Jade Depue is a fourth year Malaspina student majoring in Criminology. She intends to pursue a career within the field as a possible parole/probation officer or maybe a correctional officer for youth. She comes from Victoria, British Columbia and currently lives in Nanaimo, British Columbia.

ISSUE IDENTIFICATION

Background

Like many countries, Belizean society in the early 1990s experienced enduring differences in the distribution of wealth, power, and prestige. However, because of the small size of Belize's population and the intimate scale of social relations, the social distance between the rich and the poor, while significant, was not as great as in some other Caribbean and Central American societies. Indeed, Belize avoided the violent class and racial conflicts that have figured so prominently in the social life of many of its Central American neighbours.

Still, two-and-a-half decades after independence, political and economic power remained vested in the hands of relatively small local elite. A sizable middle group has emerged, however, with people of different ethnic backgrounds. This middle group is not a unified social class, but rather a number of middle and working-class groups, loosely oriented around shared dispositions toward education, cultural respectability, and possibilities for upward social mobility. These beliefs, and the social practices they have engendered, helped distinguish the middle group from the grass roots majority of the Belizeans.

Issue Statement

Social capital is the capacity of a community to work together for common benefit of the community without personal gain. High social capital means that a community has strong volunteerism, effective non-government organizations, and donations to worthy causes. Social capital is evident in Orange Walk through fund drives for health care for individuals, existing non-government organizations, and volunteers working on beautification projects and public events.

On the other hand, many non-government organizations are not functioning and community activities and projects could become more effective. Orange Walk could benefit from enhanced social capital and improved skills in community development. Enhanced social capital could address counterproductive struggles between political parties, lack of community involvement, insufficient community development skills, and cliques within the community. If the community works together, social capital will be stronger.

Improved social capital would also reduce crime. Crime prevention in Orange Walk is limited and requires more resources in order to improve on the social capital assets that they currently have such as Community on Patrol and Neighbourhood Watch Program.

Problem Significance

Social capital is a key resource for community development, and community development builds social capital. A strong civil society can address community problems and work cooperatively for mutually beneficial solutions. Community involvement within non-government organizations would also help to address the lack of motivation and it would promote community solidarity.

Preventing crime in Orange Walk would also help with community unity and keep residents informed in what is happening in the town.

Suspected Causal Factors

Collective efficacy means the community is working together successfully towards common goals. Collective efficacy is strong in Orange Walk. However, the town does have a number of divisions, not only within the political parties but also within the community as a whole.

Lack of volunteering becomes an issue when trying to develop a community. If there were more volunteers within the community, the town could create a more diverse range of cultural events and
build a more extensive cultural centre. Volunteers would also be useful in continuing the programs that have been abandoned such as several youth programs. Volunteers could also help the community with identity and education on history. Volunteers within the police department are essential because they become the eyes and ears on the street and help the police with issues they might not be aware of.

Lack of identity and education plays a part in community development. If the residents of the town do not understand how to build their community, it will be much more difficult to be successful in accomplishing certain goals.

Poverty plays a significant role for some resident. There are residents who cannot contribute little to the community. A stronger social welfare program would contribute to greater social capital and in the end a stronger community.

Funding for Orange Walk services is a major issue; the Town receives insufficient funding from central government. On the other hand, a strong charity sector can be a major source of funding for solving community problems. For example, Walkeños have raised funds for medical treatments and flea markets.

Political partisanship can be a constraint on community development and social capital. Political parties can impede community development in some areas by not cooperating on projects that benefit the overall community.

Crime prevention is the responsibility of several entities. The police and government are only a few of those with a hand on the problem.

**Stakeholders**

Residents (community members): Orange Walk residents depend on a strong community, good social capital and crime prevention for their livelihoods and in order for the community and community services to function effectively.

Youth and schools: both can benefit from a strong social capital and because in order to keep children within the community there has to be motivation to stay and raise a family. If community development is on an increase then that means the population could possibly increase as well.

Political parties: in order for the political parties to keep the faith of the community, they need to work together in order to make the town a better town, not against each other to win votes.

Tourists: tourists need to have the sense of community when they visit Orange Walk and feel as though the community is united.

Non-government organizations (NGO’s): NGO’s survive on good social capital and community development, in order to keep them up and running the community needs to be involved.

Church groups: Churches play a major role within Orange Walk because most of the community is involved with churches. Churches are also involved within the schools, which have an influence on the children and their families.

Business owners: depend on social capital and community development in order to prosper within their industry. By prospering, it supports family growth.

**Objectives**

The objectives for community development and social capital are to facilitate a stronger Orange Walk community including strong volunteerism, civil society, non-government sector, and fundraising. This paper analyzes some options for promoting these assets.

1. Strengthening social, educational, and cultural programs
2. Strengthening the business community
3. Strengthening crime, drug, and family abuse responses

**OPTIONS**

What are we trying to accomplish?

1. Build a stronger social capital
2. Increase community development
3. Increase community solidarity
4. Increase crime prevention

There are many options for the community to build a better social capital, continue on the existing community development and work on preventing crime.

**Option 1: Capacity Building Training**

Capacity building refers to assistance and actions that enhance the ability or capacity of community groups to work towards their missions. Capacity building training focuses on board management, finances, membership involvement, and areas to help organizations function better. With this training, organizations have skills and experience for assessing information requirements, setting priorities for action, designing information products,
facilitating networking and access to data; and managing data for information and policy needs.

Option 1 includes the following components:
1. Provide education towards community involvement and capacity building training for community leaders
2. Cooperate with the government or Muffles to host training seminars

**Option 2: Leadership Development**

Leadership development is also important for community development and social capital. For example within the tourism industry, tourism operators tend to see each other as competition and do not want to work together even though it would benefit all businesses. Through leadership development training, these operators could learn to work together and thus increase revenue for all.

Option 2 includes the following components:
1. Encourage hotels/tourism to work together to promote country and each other
2. Create a tourism association for all who stand to benefit from increased tourism
3. Provide training in conflict resolution and consensus building in order to work together. Perhaps there is a need for bi-partisan projects.
4. Develop posters for community events – perhaps community notice boards in selected locations to publicize community events

**Option 3: Umbrella Organization**

Orange Walk could promote the development of an umbrella organization for non-partisan community groups. This organization would support associations that cannot financially afford the basics to keep their ‘business’ running. The organization would share office equipment and supplies, office space where members can do their work, meeting rooms, and a secretary to take calls in case members of the business are unavailable. They could also cooperate in fundraising, volunteer recruitment and social marketing campaigns. The umbrella organization would benefit many small organizations because working together keeps the costs down and the productivity up.

Option 3 includes the following components:
1. Develop radio advertisements for community events
2. Broadcasts for community events on television or radio
3. Notify community about community events through advertising and press releases to increase awareness of what is happening in the community
4. Promote non-government organizations and community based organizations to start up or continue the progress they have made

**Option 4: Crime Prevention Through Environmental Design (CEPTED)**

Community development can have a major influence on reducing crime and its causes in a community. A cohesive community can work together to address threats such as criminal activity. Also, communities working together can promote urban designs and programs that deter crime such as proper lighting, security measures on homes and businesses, friendlier spaces, less graffiti and more art, clean parks, proper foliage in order to prevent hiding places, the community as a whole should see a decrease in crime. If there are no visible signs of criminal activity, there is a less significant chance that criminal activity will occur.

Option 4 includes the following components:
1. Educating the community about crime prevention
2. Promotion of Community on Patrol and Neighbourhood Watch Program

**ANALYZING OPTIONS**

There are a few recommendations in order to help Orange Walk to move in a positive direction, build on their existing strengths, and remedy their weaknesses. By implementing these recommendations, Walkeños will see improvements within the community.

**Decision Criteria**

This analysis uses following criteria to evaluate the available options for building social capital:
- **Cost:** refers to how much time or money the options will cost the Town of Orange Walk
- **Effectiveness:** refers to how effective the options will be for the Town
- **Positive Environmental Impact:** corresponds with effectiveness; the more effective an approach is the more likely individuals are to change their behaviour and the greater positive impact it will have on the environment.
- **Long-Term Effectiveness:** refers to how effective the options will be over a long period.
Outcome Matrix

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<th>Criteria →</th>
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<th>Cost</th>
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<th>Positive Environment</th>
<th>Long-term Effectiveness</th>
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<td>High</td>
<td></td>
</tr>
<tr>
<td>Education towards crime prevention</td>
<td>Med</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td></td>
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</tbody>
</table>

Low: Low cost to community
Med: there is a good chance that these recommendations will prosper but there is a chance of failure.
High: If recommendations are carried out properly then there is a really good chance that the recommendations in question will be effective and have a positive outcome.

IMPLEMENTATION PLAN

Option 1: Capacity Building Training

All community leaders should be involved in a capacity-building workshop to facilitate community groups in working towards their missions.

Education towards community involvement will help Orange Walk town with their social capital and build on community development.

Community leaders should cooperate with the government and educational institutions such as Muffles in order to start the training workshops.

Leadership development training will enable community leaders develop their management skills and to learn how to run community programs better.

Option 2: Leadership Development

Hotel and tourism associations should work together to promote each other and significantly increase the revenue of all operations.

To increase tourism there should be a tourism association so that visitors and residents alike can learn about Orange Walk.

Training in conflict resolution should be offered to hotel and tourism operators to facilitate cooperation. Tourism operators should work together to create a community notice board to publicize community events.

Option 3: Umbrella Organization

The umbrella organization could be used to help small businesses to work together and keep things running.

Using this organization would cut down the cost for several organizations because they would share a building and office equipment.

Radio, television, and newspapers could help residents of Orange Walk know what is happening around them.

The umbrella organization would enable non-government and community based organizations to continue the progress they have made. The umbrella organization would promote solidarity within organizations and bring the community together.

Option 4: Crime Prevention Through Environmental Design

Crime prevention through environmental design will create a better living environment for the residents of Orange Walk.

The community as a whole should be informed of how crime prevention through environmental design works and what it consists of. For example proper lighting, security measures on homes and businesses, friendlier spaces, less graffiti and more art, clean parks, and proper foliage in order to prevent hiding places.

The community should be educated towards crime prevention. Organizations such as Community On
Patrol and the Neighbourhood Watch program should be promoted because these organizations are already doing a great job in helping the community.

EVALUATION

The implementation of each of the options listed previously will help Orange Walk increase their social capital and possible community development. These options will greatly improve Orange Walk’s way of life.

Implementing options 2, 3, and 4 will greatly increase the likelihood of increasing social capital and community development in Orange Walk.

Having the entire community working together to promote solidarity will increase everyone’s revenue and confidence in their town.
SOLID WASTE MANAGEMENT

by Eli Pilyk

Management of garbage, recyclables, and other solid wastes is a major responsibility for local government. Eli Pilyk explores the problems in Orange Walk and examines solutions being implemented elsewhere. These solutions look toward viewing new uses for wastes – seeing wastes as resources instead of problems.

Eli Pilyk is a fourth year student at Malaspina University-College. She is majoring in Geography - Natural Resource Management and minoring in Global Studies. She has worked with Nanaimo and Area Land Trust and sits on the board of TD Canada Trust bank’s Friends of the Environment Foundation. She plans to start environmentally sustainable businesses with her partner in Turkey in the near future. Eli resides on Vancouver Island, BC where she was born and raised.

ISSUE IDENTIFICATION

Background

Garbage on the streets of Orange Walk Town is marring the town’s image, threatening environmental and human health, and causing drainage problems. Receptacles are intermittent in public areas, many receptacles are broken, and are not lidded or lined with bags to prevent spillage and ease collection. Streets are littered with candy wrappers, napkins, and plastic water bottles. Litter on the streets falls into drains and clogs the drainage system. Drainage back-ups and rotting waste produce smell and foster harmful organisms thus threatening human and environmental health. The aquifer that the town relies on as the main water supply is vulnerable to contamination from the landfill and clogged drains.

Town residents, workers, and councillors expressed their concern over the amount of litter on their streets. Many agree that it is due to the lack of waste receptacles in public spaces, but also from lack of collection services. People can take their garbage to the landfill and pay the tipping-fee if they do not receive collection service. Tipping fees at the town’s landfill are minimal: a full truck is $10Bz, a pick-up truck is $5Bz, and a partially full pick-up is $2-3Bz. Tipping fees help to pay for the quarterly bulldozing of the site (Juchim, 2007).

The town budget for Orange Walk constrains collection service abilities. Budget constraints within the town do not allow the town to expand waste collection services. The annual budget for Orange Walk town is $217,400Bz, which allows less than $20,000Bz per month to pay for fuel, wages, truck maintenance, and other costs. Currently the town is operating with two open-box dump trucks and one small compactor truck rented from the central government. The compactor truck is being used for organic wastes from cemeteries and parks and serves back up if the regular trucks break down. The compactor truck uses more fuel and has a smaller capacity that makes it more expensive and less efficient to operate (Urbina, 2007). However, economic constraints can also be as opportunities to apply new ideas to improve solid waste management (Henry et al., 2006).

There are no recycling facilities in the town, and the only materials recycled are the ones collected by scavengers. Glass bottles from soft drinks – Fanta, Coca-Cola – can be returned to the shops they were purchased from for a deposit return. Plastic water bottles and tetra-packs do not qualify as returnables as there are no deposits paid on them.
Orange Walk began as an industrial town originally for logwood and citrus, and then became a centre for sugar cane production in the 1960s. The cane industry is still a primary employer for town residents, but new industries are growing, such as tourism, papaya production, and Belize Sugar Industries’ Balcogen power plant. As more people move into town, waste generation increases and more areas require collection service. If these needs are not met, illegal dumping will occur and will damage ecosystems and create problems associated with site clean up.

The town must preserve environmental health in order to thrive. Tourism depends on the town’s attractiveness and charm, and the town has much to offer with the potential of the New River waterfront, Mayan ruin sites, diverse flora and fauna, and strong local cultures. Tourism and other industries increase waste production, accordingly waste management policies must be in place to monitor and handle the influx of commercial and industrial waste.

**Causal Factors**

The solid waste issues have several causes. The removal of waste receptacles from public spaces created littering problems in the town. Council removed some bins in the central area because the market vendors were filling them with leftover produce at the end of the market day. The bins would attract flies and vermin due to the putrescible contents. Another issue with waste receptacles is that people steal some of the receptacles when the town leaves them out for public use or collection, especially the 40-gallon drums. One theory is that they are taken for construction site refuse bins.

The current town council has resumed collection duties after they were contracted out to a private company. According to current town officials, the private company charged council $28,000 per month to perform regular collection duties. The matter is still in dispute because council is able to operate for approximately $18,000 per month. However, costs are still high for council as collection occurs Monday to Friday, from 4 am until 10 pm. Collecting this often is expensive due to wages and truck maintenance and repairs, as the trucks are being used continuously. Currently the town has two 1995 open-box dump trucks that are used for collection, one B 175 and one B 809. These trucks are expected to service the town for another year before they will need new engines. The compactor truck rented from central government is an E 1321 and costs the town $1,200 per annum. However, this truck has a smaller capacity than the open-box trucks, and costs more in fuel, so is kept for relief and not employed on a regular collection route.

The official landfill site is five miles south of town – a ten-minute drive – on dirt roads. The site is 50 acres, of which 25 are currently used. A small bulldozer such as a D5 Caterpillar would improve landfill maintenance because soil could be mixed with the waste daily for more sanitary conditions. It would also help to contain the waste, and save Council money because the rental would not be needed three times a year. At the current rate of disposal, the site will be usable for approximately 20 years, as it has been in operation for the last 20 years (Urbina, 2007). The landfill watchman is on-site from 8 am – 5 pm Monday to Saturday.

The landfill is not fenced, thus people are able to come to the site and dump for free after hours. Apparently, the site was fenced at one time, but is no longer due to dumping that was occurring outside the gates. However, there are many illegal dump sites outside the town’s boundaries that may be due to lack of a vehicle to get to the town dump, carelessness, or lack of collection service.

**Stakeholders:**

The following stakeholders are affected by this policy analysis:

- Environment – flora, fauna, and humans all require a healthy ecosystem to survive. Polluted drains emptying into the river and refuse in the water threaten aquatic species such as fish and
crocodiles, while pollutants in soils and air damage habitats for land-dwelling species, including the numerous bird species inhabiting Orange Walk.

- Residents need garbage collection service as well as a healthy environment to support livelihoods such as fishing, sugar cane, and papaya production. Even if they do not receive collection service, or burn their garbage, they are still involved in solid waste production.

- Scavengers pick through curbside garbage and the landfill for recyclable materials then sell to local buyers. Together they create an informal recycling industry for the community while generating personal income from the town’s waste.

- Businesses need waste collection services to keep their locations clean and operational. They are not able to drive their own garbage to the landfill everyday, as this would necessitate closures and congest the road to the landfill.

- Council is currently the provider of solid waste management. They need to supply employees, equipment, and the land to handle solid waste. They will also provide the officials to enforce penalties for illegal dumping and monitor the materials entering the landfills.

- Community groups who volunteer their time to clean-up streets and public spaces in the town are also affected by waste management policies. They make up the informal sector that helps to improve the town’s image and nurture community pride.

- Central government of Belize provides funds for the town to operate, and has equipment that Council needs to provide efficient solid waste management. They can help Council plan the town’s strategies and operations, and thus help with funds where needed.

**Objectives of issue resolution**

This project examined low-cost and no-cost solutions for some of the obstacles Council is facing with their limited annual budget. The goal of revising the solid waste management plan is to find innovative solutions to deal with solid waste while staying within the current budget.

- Increase environmental knowledge via public awareness and education campaigns taught by volunteers and community interest groups. These programmes can also encourage waste reduction and sorting at the point of disposal

- Reduce the quantity of garbage headed for the landfill through sorting at disposal and at council sorting stations to be sure all recyclables have been extracted

- Diminish litter on the streets

- Develop recycling prospects to create jobs and investment opportunities in the town by expanding on existing local knowledge

- Minimize environmental impacts from garbage because ecosystems have limited carrying capacities that are dependent on regulatory policies which monitor the amount and type of materials entering the landfill
• Share knowledge and use strategies that have been implemented in other areas with limited funding to solve problems. Use email and teleconferencing for consultations to save costs.

OPTIONS

Option 1: Education and Community Involvement

Enlightening the public about environmental health and amenity values is most important towards implementing change (Rabinovitch, 1992). Education can be carried out through a variety of methods: youth community involvement, Earth Day event participation, informative staff meetings, workplace policies, Adopt-a-Street incentives, and newspaper announcements. Ideas diffuse throughout the community via different social networks, and are a very effective tool for spreading information.

Council can encourage residents, business owners, and industrialists to participate in environmental quality preservation activities by empowering them to develop monitoring programs to address environmental problems in their communities. For example, the government of Peru encouraged citizens of Ilo, a community of 44,000 people, to join the Multi-sectoral Technical Commission and form management committees to recover their town by evaluating environmental impacts and contriving short-term and long-term goals for improvement. Support from NGOs complements government promotion (Díaz et al, 1996). Consulting with all stakeholders is the best method to brainstorm all possible alternatives and get the majority of people on-board with reforms.

The major obstacle hindering developing countries from effectively managing their solid waste is funding. “The remarkable innovations in addressing environmental problems in many Latin American cities, especially those that most affect low income groups, are often strongly linked to political changes which have made city authorities more accountable and democratic and increased their revenue base” (Satterthwaite, 1997). Political decisions can be made via community involvement. Concertación is a process that uses stakeholder participation to develop and implement strategies towards reaching the community’s future goals, which can include improving living conditions, enhancing ecological amenities, and reducing pollution sources (Díaz et al, 1996).

Outlying areas such as San Lorenzo and Trial Farm villages must be included in the education programmes to increase environmental awareness. Collection alternatives must also be provided for them to discourage illegal dumping. Providing an alternative also makes enforcing penalties easier. An example of what can be done with minimal cost would be to establish central collection stations, where council only has to pick up from a few main collection points. Residents and businesses in these areas would be responsible to get their garbage to the central collection areas. *See the Sunyani, Ghana Solid Waste Management Plan Draft, listed as appendix 1.

Option 2: Development of recycling facilities

Collection and sorting of recyclables can be done by integrating the informal and formal sectors into the town’s waste management plan. Using a private company to collect waste from industries, businesses, and public service establishments may be efficient because these can afford to pay a pick-up fee; households may not be able to afford an extra cost, thus municipal collection can more efficiently service residential and public areas. As shown in the flowchart below, there are various stages and stakeholders involved in solid waste management.

Sorting facilities can be developed in the town to separate inorganic recyclables from waste. They can employ waste pickers who know which materials are recyclable and already have buyers for them (Ojeda-Benitez, 2002 and Janssen and de Bakker, 1991). Such knowledge must be utilized in order to develop a well-organized facility; collection workers can be given different jobs at the sorting facilities by redirecting wages. Sorted goods must be transported to recyclers and remaining waste to the landfill. Arrangements between buyers and the sorting facility can be made to alleviate transportation costs to the Council. It is also a bonus for the buyers as their material will already be cleaned, sorted and ready for transport. Municipal collection trucks can be used to transport the unsalvageable waste from the sorting facility to the landfill twice a week.

Sorting facilities will need room for storage of the recyclables, a place for drop off, and a sorting area. It will also require bins for storing the unsalvageable waste. The town may have property that can be used for this, but if not, arrangements could be made with a private property owner. Vacant land would be too expensive as a facility would have to be built, but land that is vacant with a warehouse-type building...
would suffice for the task. Various negotiations could be made between the town and property owner such as a ‘free’ lease in lieu of unpaid property taxes, a land trade of developed land versus undeveloped land and so forth. Perhaps a buyer of recyclables could work with the city to establish and manage a recycling facility. Consultation with different stakeholders can determine what the suitable and available opportunities in Orange Walk Town are.

**Option 3: Composting for reduction**

Composting can be a huge advantage for solid waste management everywhere, especially in agricultural communities. ‘Recycling’ nutrients reduces farmers’ need for fertilizers, while the removal of organics from municipal waste can significantly reduce landfill volumes. Most solid waste composition studies find that organic waste comprises approximately half of waste generated, especially in warm climates.

There may not be a current market for compost, but one can be created through environmental education programmes (Janssen and de Bakker, 1991). Marketers who are unable to sell their fruits and vegetables give their ‘waste’ produce to the local composters rather than paying the tipping fee at the municipal dumpsite. Although composting is a natural process, there may be a need to prevent compost leachate infecting groundwater, as many microbes are present during the process. Choosing an appropriate site for composting and sealing the ground with clay or loam is a low-cost solution to protect the environment. Small-scale composting for personal use in one’s backyard and on farmers’ land is good for personal use, and reduces the amount of household waste being put out for curbside collection. Soil can then be used for personal vegetable and flower gardens.

The final compost product – nutrient-rich soil – can then be sold to local farmers and landscapers for revenues that cover the composters’ costs (Henry et al., 2006). The International Composting Corporation (ICC) in Nanaimo, Canada, uses front-end charges where residents and businesses pay for the collection of their organic waste to cover the ICC’s operating costs (Coleman, 2007). Charging for collection would be a problem for some households, but restaurants and upper class neighbourhoods could be charged for collection. Central government could help to cover collection costs as well.

**Option 4: Economic incentives to reduce, reuse, and recycle**

Orange Walk has a very limited budget for providing solid waste management provisions. Economic incentives would be charging residents who do not sort their waste, or exceed the maximum limit of
garbage put out for curbside collection. This would require fining, but penalties may be hard to collect. The incentive would be to reduce the amount of garbage put out for collection by pre-sorting organics and recyclable inorganic materials out of general household waste.

Establishing a maximum can size and maximum number of cans for residences and businesses is an easy way to limit the allowable amount of garbage. It can also help to protect workers from lifting very heavy bins. Specific bins will incur costs for residents, but establishing a volume and weight limit can alleviate this, for example a maximum bag size of 80 litres and maximum weight of 35 kilograms. An alternative is to rent standardized bins for a small monthly fee: $3/month for residents, $5/month for businesses. This adds over $12,000 monthly to the collection budget for the town, as there are 3,033 dwellings and 707 businesses according to Council’s records. Garbage can be kept off the streets by lining and maintaining waste receptacles that store waste until collection day. Residential and commercial waste can be bagged in old shopping bags or shipping bags to avoid costs.

Reducing the collection schedule would accompany this option. Collecting organics could occur bi-weekly due to its putrescibility, but collection does not need to occur for 18 hours, five days a week for regular garbage. Collection in developed countries occurs once a week for residential areas. In developed countries, commercial areas usually have communal dumpsters that are emptied weekly, so bi-weekly pick-up may be necessary. Bag-liners in public receptacles may require the city to incur some costs, but may be avoided if collection containers in public areas are solid-sided and lidded. Central pick-up areas such as those in Trial Farm and San Lorenzo villages suggested in Option 1 could be collected once or twice a week, which will depend on the bins’ capacities. This keeps the collection schedule and costs to a minimum for council as current routes can simply be modified to incorporate a few new pick-up locations.

**ANALYZING OPPORTUNITIES**

The options discussed above are analyzed in Table 1 below.

**Table1: Comparison of Solid Waste Management Improvement Options**

<table>
<thead>
<tr>
<th>Criteria:</th>
<th>Costs to Council Budget</th>
<th>Public Health</th>
<th>Environmental Health</th>
<th>Greatest Economic Benefit</th>
<th>Additional Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1: Education and Community Involvement</td>
<td>• Central collection bins</td>
<td>• Garbage contained</td>
<td>• Public interest in environment</td>
<td>• Collection simplified</td>
<td>• Community motivation and cooperation</td>
</tr>
<tr>
<td></td>
<td>• Educational materials</td>
<td>• Improved collection service especially for outlying areas</td>
<td>• Reduction of illegal dumps</td>
<td>• Reduced operating cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Staff retraining</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 2: Developing Recycling Facilities</td>
<td>• Reallocation of wages</td>
<td>• Improved working conditions for scavengers</td>
<td>• Reduced pollution</td>
<td>• Revenue generation</td>
<td>• Less waste entering landfill</td>
</tr>
<tr>
<td></td>
<td>• Regular collection service</td>
<td>• Employment creation</td>
<td>• Decreased demand for natural resources</td>
<td>• New trade opportunities with neighbours</td>
<td>• Less land required for waste disposal</td>
</tr>
<tr>
<td>Option 3: Composting For Reduction</td>
<td>• Use private enterprise for collection and production</td>
<td>• Putrescible matter taken out of garbage</td>
<td>• Reduction in fertilizer use</td>
<td>• Local entrepreneurial opportunity</td>
<td>• Job creation</td>
</tr>
<tr>
<td></td>
<td>• Monitoring composters</td>
<td>• Less chemicals on foodstuffs</td>
<td>• Nutrients returned to soil naturally</td>
<td></td>
<td>• Less waste entering landfill</td>
</tr>
<tr>
<td>Option 4: Economic Incentives</td>
<td>• Receptacle maintenance</td>
<td>• Decline in litter</td>
<td>• Amenity values preserved</td>
<td>• Shorter collection schedule</td>
<td>• Increased tourism with improved town image</td>
</tr>
<tr>
<td></td>
<td>• Bag liners</td>
<td>• Smell reduction</td>
<td>• Cleaner waste water in drains</td>
<td>• Revenue from penalty fines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Regular collection</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Firstly, because of budget constraints, Council must determine any additional costs prior to policy implementation and incorporate them into the annual budget. Secondly, improving public health is paramount and advances in sanitation practices reduce the amount of pathogens in the environment harmful to humans. Thirdly, environmental vitality is dependent on human practices, which will maintain healthy ecosystems that can sustain the agriculture industry as well as local flora and fauna. Fourth, Council wants to improve and diversify the town’s economy so economic benefits are evaluated. Lastly, additional benefits are considered because they impact the town’s image and offer advantages for residents. One of Council’s interests is to attract tourism, and this is evaluated here.

IMPLEMENTATION PLAN

Option 1 needs to be commenced before the other options can develop successfully. Town staff needs to be informed and trained so that they are aware of new developments in the solid waste management plan for the town. Teachers can be volunteers of community interest groups, or University of Belize or Muffles students. Volunteerism is free, but there is the production cost for teaching materials. These items can possibly be donated by an environmental organization such as the Protected Areas Conservation Trust (PACT), or created by University of Belize students. The central collection bins for outlying areas will have a one-time cost to purchase or produce them. The central government may absorb this cost if council will provide the collection service. Partnerships are a positive way to reduce costs and increase participation because tasks and responsibilities are shared. Local businesses can be approached for project support such as donating printing services or contributing towards the purchase of central bins. According to Diaz, there are “three steps towards implementing change:

1. Stable, reliable leadership
2. Clear vision of the future
3. Policy-making development through widespread consultation involving all actors in decision-making” (Diaz et al., 1996)

Through consultation, these goals can be achieved in Orange Walk Town, which already has a strong community spirit and volunteer base. Receptacles in public spaces must be one of the first implementations to contain waste. An inventory must be taken to determine where bins are needed, which bins are in need of repair, and current bins locations. BSI will sell or possibly even donate their old 40 gallon drums for this purpose. They have also said they will paint them for the recipients. A uniform colour for the town will draw attention and make bins easy to spot, thus reducing street litter (Torres, 2007). A method for securing the bins needs to be considered to prevent stealing. Businesses can be approached for sponsorship and have their names painted on the bins, and a definite number of painted bins requested from BSI. Sponsorship will show the town’s support for a litter-free Orange Walk.

Public health will be improved as garbage is collected from areas that previously did not receive collection service. The environment will improve as illegal dumping declines, thus natural amenities will improve and neighbourhoods will be more attractive. A motivated community can work together to solve other matters citizens are concerned about. Trial Farm and San Lorenzo may find a central collection service is unfair, seeing as Orange Walk residents and businesses receive curbside collection; but a central system can be very successful for residents and businesses when funds are not available to service these areas.

Environmental knowledge and interest leads to new ideas of how to manage waste. Recycling in the town could easily be achieved as local recyclers and buyers are brought into negotiations. Along with heightened public interest, these collectors can work with Council to achieve the common goal of waste reduction. More businesses that participate in Orange Walk’s everyday operations will generate strong bonds between the community and local government, which is why consulting with all stakeholders is so important. The Town also needs a Solid Waste Management supervisor to oversee all aspects of waste management, which includes cooperation between Council and the private and informal sectors.

Sites for new industries such as composting and recycling need to be determined. Composting can threaten groundwater resources, and the material will attract vermin and other scavengers. This must be considered for placement, along with smell, thus the area must be away from residences and businesses, ideally in an industrial area of town. Protective measures must be employed to prevent pathogens infecting groundwater. Recycling centres can be in an industrial area as well, but it is important to request all recyclables washed before disposal to keep the sorting process clean and protect workers. It will
also attract buyers because they know the materials are clean. If the landfill is to be moved, a geologic survey and environmental impact assessment (EIA) must be performed on any potential sites, and protective measures taken to prevent leachate from entering groundwater. The site must also not be prone to flooding, which increases risk of leachate contamination.

The economic incentives can be addressed later, because they require enforcement. Penalties are difficult to charge and fines to collect when officials are not affordable. Education will reduce the frequency of illegal dumping because people understand the reasons for preventing and penalizing environmentally harmful activities; they will have options for waste disposal, and are thus discouraged from such behaviours. “The four components of this legislative approach to source reduction – planning, research, institutional assistance, and statutory and regulatory adjustments – work as an integrated whole. While each describes a conceptually discrete set of programs, each of the four depends on the other three for successful implementation” (Gordon, 1986).

EVALUATION

Criteria to evaluate the success of the different waste management programs needs to be developed, and should be carried out to see where improvements can be made. In the first stages, educational programmes including their materials and teaching methods need to be considered by the volunteers using them to teach and the ‘students’ receiving the information. This can be done bi-annually.

The basic evaluation criteria are outlined in Table 2 below.

Central collection bin usage should be monitored to determine how successful they are. Residents can be interviewed to see what they like and what improvements can be made to the collection system. Sorting at the site of disposal ought to be assessed to see how many households are participating in organic and recyclables separation. Cooperation between Town Council, recyclers, composters, and community interest groups need to be nurtured so that the programs can grow and keep operating successfully.

The formation of an Environmental Association can keep all parties up to date on successes while working together to make improvements where necessary. Part of this association’s activities can include consultation with other towns’ and cities’ officials to share knowledge and strategic planning methods. Partnership with a ‘sister-city’ in a different nation to share expertise and personnel has proved very successful for many developing nations facing solid waste management problems. Establishing positive relations between town councils and the Minister of Natural Resources and Environment can set the example for all of Belize’s towns to improve their solid waste management strategies. Along with Belcogen using BSI cane waste to produce clean electricity, Orange Walk town has the potential to lead Belize into ecologically-sound waste management strategies.

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Interviews conducted in Orange Walk Town:

- Blanco, Rosala. Nurse in charge of Medical Waste, Northern Regional Hospital, May 31, 2007, 3pm
- Briceno, John. Deputy Prime Minister of Belize, June 2, 2007, 8am
- de la Fuente, Orlando. Owner of Hotel de la Fuente, May 9, 2007, 11am.
- Gonzales, Ravell. Mayor, Orange Walk Town Council, May 9, 2007, 2pm
- Guevre, Roberto, Store Keeper, Orange Walk Town, May 11, 2007, 1:30pm
- Juchim, Gratiliano. Landfill Watchman, Orange Walk Town, May 11, 2007, 2pm
- Rick Jr. Rick’s Blocks, May 10, 2007, 10:50am
- Torres, Valentino. Tour Guide, Belize Sugar Industries, June 1, 2007, 11am
- Urbina, Roberto. Town Supervisor, Orange Walk Town, May 31, 2007, 10am
- Various Residents of Orange Walk Town, May 10, 2007


APPENDIX 1: SUNYANI SOLID WASTE PLAN

Sunyani Municipal Assembly Solid Waste Management Plan DRAFT
<http://www.rdn.bc.ca/cms/wpattachments/wpID971atID1605.pdf>
LIQUID WASTE MANAGEMENT
by Myriam Raiche

Myriam Raiche explores the management of liquid wastes in Orange Walk in this paper. As the town grows, disposal of sewage and wastewater will become more problematic if planned solutions are not found. Myriam explores some common and innovative technologies for resolving liquid waste issues.

Myriam Raiche completes her Bachelor of Arts in Geography – Natural Resource Management in 2007. She is interested in environmental planning, international development, and resource management - especially related to the protection of water resources. She currently works for a small private water/wastewater company and although future post-graduate educational programs are under consideration, her current employment is an excellent opportunity for work-place learning. Born in Moose Jaw, Saskatchewan, Myriam moved often growing up and now lives in Comox, British Columbia.

ISSUE IDENTIFICATION

Issue Statement
Orange Walk Town has unregulated liquid waste disposal systems consisting of septic tanks and various types of pit latrines. As a growing urban centre with small, tightly developed land parcels, septic tanks may no longer be the most appropriate form of liquid waste disposal and treatment. Urban densities reduce the amount of land available for establishment of effective leach fields and absorption trenches.

Malfunctioning septic tanks, overflowing latrines, and unapproved dumping into drainage ditches pose serious health and environmental risks due to unsanitary disposal of fecal matter with possible contamination of water sources leading to degradation of the physical environment and ecosystems. Household wastes can also cause eutrophication* when discharged directly into waterways because of their mineral contents.

*Eutrophication: (def) the process by which a body of water becomes rich in dissolved nutrients, thereby encouraging the growth and decomposition of oxygen-depleting plant life and resulting in harm to other organisms.

Issue Significance
Liquid waste management is a significant concern for public and environmental health. It is important that on-site systems, such as septic tanks and latrines be properly sited, constructed and maintained in order that quality of life is preserved. Orange Walk Town is in a position to create a liquid waste management plan that can protect human health and ecosystems, improve the town’s attractiveness for visitors and residents, protect natural resources – especially water, and promote more sustainable domestic waste treatment practices. By assessing and updating its current infrastructure for projected urban growth, waste treatment systems will be better able to meet the increasing needs and scope of its population.
Malfunctioning systems and unpleasant odours need to be scrutinized as well as finding a solution that minimizes risk from systems located in flood prone areas. When these systems become flooded, waste can be carried onto neighbouring properties or directly into waterways, such as the New River. Saturated soils and leach fields can cause backups in the system. Waste can enter into storm drains and open ditches with the resultant pooling of wastewater becoming a breeding ground for mosquitoes; Bond (1999, 54) states that “Culex mosquitoes which spread filariasis breed in sewage water (cracked or open septic tanks, pit latrines and drains)”. Transmission of parasites, bacteria and viruses causing gastrointestinal illness, Hepatitis A, and skin rashes are another possibility from contaminated water.

Potential contamination of Orange Walk’s groundwater should be a concern and major drive to improve any failing systems, especially since well water is the town’s water source for piped water and bottled water. Figure 5 illustrates how groundwater can become contaminated from domestic waste.

**Background**

According to statistical records, out of 4,148 households in Orange Walk Town (Table 1), 75% are hooked up to septic tanks, 24% have some form of pit latrine, and 1% is on sewer. (Note: during interviews with Orange Walk locals, there was never any mention of a sewer system other than the Northern Regional Hospital which does not incorporate any residential properties.)

Construction, installation, and maintenance of these waste disposal systems are the responsibility of property owners and developers. The Ministry of Health, the Department of the Environment, the Central Building Authority, and the Water and Sewerage Act provide sanitation regulations and designs. Unfortunately, enforcement of current regulations appears wanting, especially as there are only three health inspectors available for the district. Septic service providers are few and currently not listed in the Belize yellow pages. Jones’ Septic, located in Trial Farm, provides septic pumping services for about BZ$100.

On-site waste disposal systems are the norm in Orange Walk Town, as in most of Belize. These are considered relatively cheap compared to conventional centralized sewer systems and for large land parcels or rural environments, on-site systems (if well maintained) can be quite effective. Unfortunately, according to the Belize Water & Sanitation Sector Analysis report (1995), co-authored by USAID, found that “[d]epending on use and the level of the water table, the pit latrines have an average life span of five years” (Part 3, Section 3.1.3). On the subject of septic tanks:

In some areas, the soil permeability characteristics and high water tables make soaking of septic tanks effluent difficult, resulting in groundwater contaminated waste into drainage canals. Given these conditions, there is a general impression that the construction of septic tanks is of a low standard, with usually one chamber and no baffles. (Part 3, Section 3.1.3)
Table 1: Number of Households by Type of Toilet Facility and Area: 2006

<table>
<thead>
<tr>
<th></th>
<th>Orange Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>Total</td>
<td>4148</td>
</tr>
<tr>
<td>W.C. linked to:</td>
<td></td>
</tr>
<tr>
<td>Sewer System</td>
<td>51</td>
</tr>
<tr>
<td>Septic Tank</td>
<td>3115</td>
</tr>
<tr>
<td>Pit Latrine:</td>
<td></td>
</tr>
<tr>
<td>Ventilated, Elevated</td>
<td>508</td>
</tr>
<tr>
<td>Ventilated, Not Elevated</td>
<td>372</td>
</tr>
<tr>
<td>Compost</td>
<td>51</td>
</tr>
<tr>
<td>Not Ventilated</td>
<td>51</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
</tr>
<tr>
<td>None</td>
<td>51</td>
</tr>
<tr>
<td>DK/NS</td>
<td></td>
</tr>
</tbody>
</table>

Source: Statistical Institute of Belize (care of Audrey Villafranco, June 18, 2007)
Note: Acquired c/o Larry Wolfe via email, June 21, 2007

According to the same report, nitrate levels in the Louisiana area of Orange Walk Town caused some concern.

In another report discussing the Belize National Biodiversity Strategy domestic liquid waste is listed as a problem.
of constantly increasing magnitude in all communities with evident population growth. Nutrient overload result in eutrophication and its associated algal blooms, alteration to the species hierarchy in the ecological structure of communities in rivers, lagoons, wetlands and coastal areas, toxicity from excess ammonium compounds, ...and contamination of groundwater [with the New River stated as an area of] particular concern (Jacobs et al., 1998, 46).

Causal Factors

Orange Walk Town, for the moment, has other infrastructure issues that hide the importance of assessing and improving the current liquid waste disposal systems. Many of the existing and potential problems that occur with these systems may not be immediately visible although negative impacts can have long-term and costly effects. Except for government-run institutions such as the Northern Regional Hospital, which had their septic systems renovated and a small treatment tank installed, finances for residential improvements have not been forthcoming.

Factors acting on the slow growth of the liquid waste industry in Orange Walk Town other than lack of financial resources include insufficient political will to push the issue into open discussion, the small number of service providers and health inspectors means there is a gap in the wastewater field with no trained personnel challenging the status quo with innovative waste solutions, and public perception has to change to involve health and environmental costs as well as economic costs to waste disposal.

Lack of planning and management led to poor siting of housing and on-site waste treatment systems, such as development in flood-prone areas. Too many ministries and authorities in charge of creating regulations but not enough personnel to enforce them is also an issue; no governing body is in place to require regular inspections and maintenance or pumpout of septage.

Stakeholders

- **Orange Walk Town residents** – have a vested interest in maintaining a healthy living environment and could contribute to discussions on how and what improvements in liquid waste management should take place to accomplish that
- **Tourists and visitors** – staying for short or extended periods of time, can bring economic incentives to improve services which could lead to return visits and help push the tourism industry into gear
- **Taxpayers** – through their financial contributions, have a direct effect on the development of their community
- **The environment/ecosystems/natural resources** – degradation of the environment or contamination of water resources can be the downfall of development, but with well-placed improvements these impacts can be mitigated
- **Water providers** – have economic incentives to keep groundwater free of contaminants and should support any actions that will continue to provide that
- **Septic contractors or service providers** – if improvements are made to pumpout schedules, they should have more business to keep them busy; therefore economic inducement to have a more regulated liquid waste management plan
- **Communities downstream** – will only benefit from treated effluent being discharged into the environment
- **Government ministries** – could have a say in how Orange Walk’s liquid waste management plan is organized; they should be interested in it being successful with the possibility of using it as a template to conduct improvements elsewhere in Belize where liquid waste problems are more prevalent

Objectives of Issue Resolution

Orange Walk Town, compared to some other areas in Belize, already has some well-developed infrastructure for potable water and sanitation. But why stop there? Improvements to the current system can only benefit the community and the environment as well as further the protection of valuable water resources. The main objective for this paper is to underline the importance of requiring and maintaining high standards of liquid waste management and to reject complacency with current standards if improvements are possible.

Also of importance:

- Improve sanitation services and standards
- Protect and maintain public health
- Prevent degradation and pollution of the environment, especially in regards to possible contamination of water resources
- Provide enforcement protocols and monitoring
- Create public awareness regarding health and environmental implications of mal-functioning waste disposal systems
• Provide other options to supplement or replace current septic systems and latrines which will be useful for urban densities
• Target needed infrastructure updates in areas where contamination has occurred or has a high probability to occur

If these recommendations are accepted, education and training would be required to supplement the increased need for certified wastewater service operators, health inspectors, and environmental monitoring officers.

OPTIONS

After speaking to professionals and conducting research from numerous perspectives and academic backgrounds, the options related in this paper reflect possible steps to improve current waste management practices. In this way, Orange Walk Town can initiate its own growth and development and perhaps gain some independence from central government by creating local regulations and committees.

Option 1: Assessment of Environmental Conditions

In order to judge the efficacy of current liquid waste disposal methods and plan for future systems, information of the natural (or altered) environment needs to be acquired.

“Since subsurface soil treatment and disposal relies upon gradual seepage of wastewater into the surrounding soils, these systems can only be considered where favorable soil characteristics and geology exist for treatment and subsequent disposal of the treated wastewater into the environment” (USEPA, 1999, 1).

Conducting hydrogeological studies can give useful information about septic system siting limitations and allow for more informed planning policies and regulations regarding liquid waste management. Knowing the environmental conditions present will allow installation of the most appropriate liquid waste disposal system. Proper siting will also help prevent negative impacts such as nitrogen, phosphorus, organic matter, bacterial and viral pathogen contamination into the surrounding area and groundwater from occurring (USEPA, 1999, 2).

Option 1 includes the following components:

1. Soil Survey
The soil’s suitability to handle septic and latrine effluent loads, especially on a long-term basis needs to be assessed. Soil properties such as type, permeability, texture, structure, colour, consistency of soil layers, and local topography are needed. The bedrock or impermeable layer depth and soil saturation are also important. The percolation rate or the long-term acceptance rate are two types of tests that can be done prior to installing a septic system to determine if the soil will be suitable in handling waste loads.

2. Hydrological Survey
Information regarding groundwater characteristics, flow cycles, water table measurements, and recharge rates are needed. If possible, floodplain mapping would be a great tool to assess areas prone to high soil saturation. Vertical separation between the septic tank/pit latrine and the water table is an essential component in effective wastewater treatment and prevention of water contamination. Water sample testing for bacterial and viral contaminants and nitrates would be wise. Well locations should also be known.

3. Public Access to Information
It is important to catalogue this data into a proper filing system and allow public access in a secure way, such as sign out procedures. Duplicating the data will ensure that information is not lost.

4. Regular Monitoring
Once the data is compiled, regular monitoring will make it easier to document environmental changes, deal with negative impacts and measure successful inputs.

Option 2: Inventory and Assessment of Current Infrastructure

From the Statistical Office of Belize, the number of households having septic tanks or latrines is known but not the state of those systems. Questions such as: are they functioning properly, are they being well maintained, are they built to necessary standards and in adequate siting locations, is there a drainage field and is it effective, what is the quality of the effluent being discharged, etc. need to be answered. Current waste disposal systems, which pose a risk to public health or the environment, need to be documented in order to come up with better solutions.

Areas for concern include septic systems installed in areas “prone to frequent heavy rains and flooding, or in topographical depressions where surface waters accumulate” (USEPA, 1999, 1); septic systems found in dense developments since these are more likely to fail; proximity to wells and water sources.

Option 2 includes the following components:
1. Household Inspection
This involves conducting a systematic survey and inspection of each household’s current waste disposal system to create an inventory of the town’s infrastructure. This inventory can then be used to assess needed upgrades, repairs, and other solutions if need be. Areas of high-risk contamination or having failed systems should be highlighted for immediate improvements.

2. Inventory Creation and Data Management
This involves documentation of information into computerized files, if possible, and creation of a Liquid Waste Infrastructure Management Map. Visualizing an issue in a 2-dimensional format will make it easier to spot patterns within the data - i.e. clusters of failed septic systems.

Option 3: Water and Effluent Testing
Through visual and olfactory inspection, waste from septic systems and/or latrines are not always being properly contained within the treatment system. Collecting water samples from drains and ditches to test for bacterial infiltration, such as fecal coliforms, would provide evidence of any public health risk. These areas should then be ranked as priority areas for repair, renovations, etc.

Option 4 includes the following components:
1. Bylaws or Regulations for Effluent Standards
(a) Establish effluent discharge criteria for the various liquid waste systems, especially for all new developments and housing
(b) Set regulations for no discharge of untreated liquid waste into waterways, or within the zone of influence of a water well
(c) Require permits for property owners discharging into waterways
(d) Require pre-feasibility testing for new developments and housing to install appropriate liquid waste treatment systems

Zone of Influence: (Def) the zone around a water well that in the opinion of a qualified professional supplies water to the well.

Option 5: Enforcement of Regulations
According to the Water and Sewerage Subsidiary Laws (2001) and Building Regulations, some standards are in place relating to liquid waste disposal systems but the inventory will tell whether these are being complied with. Also there may be systems that are out of date as these were put in before those regulations.

Option 5 includes the following components:
1. Septic System Management Committee
Creation of a regulatory body or committee, such as a septic system management district, would help residents adhere to pumpout and maintenance schedules. Regular inspections would help identify problem areas or faulty systems. The committee would need authority to approve permits and issue fines, and have a mandate to protect public health and the environment to ensure a high quality of life in Orange Walk.

2. Permits
Require that residents and developers apply for permits before installing liquid waste disposal systems. These permits must be approved by the Septic System Management Committee or some other regulatory body. If possible, create a liquid waste options zoning map by zoning areas together which are suitable for certain liquid waste disposal systems by projected density and environmental conditions. The resident or developer would be able to know before hand what type of housing or commercial development could be put into place with what type of waste disposal systems.
Malaspina Geography 2007 Field Project
Policy Analysis

3. Workplace Preparation Programs
Safe food handling programs for restaurant owners and staff to help prevent transmission of bacteria and viruses.

4. Public Promotion
Biodegradable cleaning products, which are less damaging to septic systems and the environment than conventional products, should be endorsed as well as water conservation appliances.

5. Emergency Services Management Plan
Develop an action plan with emergency contact numbers in case of waste-related concerns. Also, include a list of waste service providers, such as septic tank pumpage. This could be implemented as a newsletter or educational fact sheet and included on the internet – perhaps on Orange Walk’s council website.

Option 7: Alternative Liquid Waste Treatment
Several alternative liquid waste treatment systems are available ranging from improvements to current septic systems or looking at ecological engineering technology for community or central systems. Only after completing assessments of current infrastructure and environmental conditions can a well-informed decision be made about implementation of a liquid waste management plan (knowing what problems exist and what has been successful) and acceptance of new systems.

Option 7 includes the following components:

1. Improving Current Systems
Septic systems are a good low cost option for waste treatment, as long as they are properly constructed for the environmental conditions in which they are installed. Possibilities include mound systems, sand filters, non-sand filters/biofilters, and aerobic treatment units.

2. Implementing Community Systems
For areas not suited to conventional septic systems or latrines, community systems are a viable alternative and can be targeted only to problem areas. Options include small diameter effluent sewers, cluster systems, grinder pump systems, vacuum sewers, and recirculating sand filters.
low-cost sewer option having decreasing costs with increasing connections.

3. Implementing Sustainable Innovative Technology/ Ecological Engineering

Living machines/green machines/wetlands in a greenhouse: Solar Aquatics Systems, designed by John Todd of Ecological Engineering Associates. Facilities have been implemented in the US, Canada, France, and Mexico with an award-winning facility in Nova Scotia, Canada. Instead of a large concrete treatment facility, waste treatment takes place in the confined spaces of a greenhouse, although in Belize’s warm climate a less expensive enclosure would be suitable. This system is suitable for several small facilities where gravity pipes can follow drainage patterns instead of one main treatment plant. This is a low-cost treatment option compared to conventional sewer systems having proven high quality wastewater treatment with low mechanical inputs and no chemicals.

Vegetation is grown in tubs receiving waste where the roots promote the growth of microorganisms that break down the waste. The facility can be situated in urban areas close to the source of waste, which reduces the length of pipes to be laid. The working facilities have become tourist attractions in Canada and produce little to no disagreeable odours. Ornamental plants can be grown and sold, giving it partial financial self-sustainability and creating a loop in the resource chain. Jobs created for the community involve some skilled operational component but also less technical jobs requiring plant minding and harvesting. This will provide local employment for local residents without special wastewater operation certification.

Types of plants that can be grown in this system are numerous but are not to be ingested. Some examples: flowers (orchids), ferns, vascular plants (water lilies, calla lilies, elephant ears, banana), tomatoes, trees and shrubs, and foliage plants.

Source: Environmental Design & Management Ltd, online brochure at http://www.edm.ca/pdf/marketing_sheets/96-283%20Beaverbank%20SAS.pdf

ANALYZING OPTIONS

The options above are analyzed in a decision matrix (see next page). The following decision criteria are used to weigh the options.

Decision Criteria

Health Benefits → will the option allow public health to be ameliorated or maintained to a high standard; will it lead to promotion of public safety regarding liquid waste contamination risk

Environmental Benefits → will the option help prevent pollution to the environment, especially contamination of water resources; is it sustainable on an environmental level

Financial Cost → what will be the economic cost to the community or government to carry out the option; is it worth the health and environmental benefits

Implementation Time → the estimated time to carry out the recommended option.

Value Added → will implementing the chosen option create added value such as job creation or other economic incentives

Recommendations

A liquid waste management plan with well-functioning liquid waste disposal systems is a necessary cost to any community to maintain a healthy population and healthy environment. In the short-term, costs will be high. In the long-term view, investment into liquid waste treatment technology, which is appropriate to its environment, will mitigate pollution costs to be incurred in the future by reducing the possibility of contamination now.
## Decision Matrix Table

<table>
<thead>
<tr>
<th>Criteria Options</th>
<th>Health Benefits</th>
<th>Environmental Benefits</th>
<th>Financial Cost</th>
<th>Implementation Time</th>
<th>Added Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>Yes</td>
<td>Yes; in order to chose suitable systems, the environmental conditions need to be assessed</td>
<td>Minimal if use students to due field work Cut costs if relatively recent studies have already been conducted</td>
<td>Initially 2-3 months with regular monitoring</td>
<td>Job training for students</td>
</tr>
<tr>
<td>Environmental Assessments</td>
<td>Yes</td>
<td>Yes; you can’t fix what you don’t know is broken</td>
<td>Minimal cost if able to use govt ministries and students</td>
<td>Initially 1-3 months with regular schedules inspections</td>
<td>No economic value, but possible future savings in public health spending</td>
</tr>
<tr>
<td>Option 2</td>
<td>Yes</td>
<td>Yes</td>
<td>Lab fees can be costly but necessary</td>
<td>1-4 weeks</td>
<td>Job training for students</td>
</tr>
<tr>
<td>Inventory Of Systems</td>
<td>Definitely</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 3</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>Definitely</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 4</td>
<td>Yes; provides safety for public health</td>
<td>Yes; protects the environment, adding to sustainability</td>
<td>No</td>
<td>Depends on political will</td>
<td>No direct economic value, but protects natural resources</td>
</tr>
<tr>
<td>Regulations</td>
<td>Yes</td>
<td>Yes</td>
<td>Initial start-up fees can be supported by permit &amp; service fees</td>
<td>Continuous</td>
<td>Possibility of job creation for inspectors</td>
</tr>
<tr>
<td>Option 5</td>
<td>Yes</td>
<td>Yes</td>
<td>Ad &amp; marketing fees for educational materials</td>
<td>Continuous and changing with the technology used or problems being discovered</td>
<td>Better control of waste from source (household) with better informed residents can lead to cost savings down the road</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 6</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Awareness</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 7</td>
<td>Yes</td>
<td>Yes</td>
<td>Recommended alternative systems are all lower cost than a conventional sewer; the most expensive system is &lt;US$800,000</td>
<td>Depends on assessments of environmental conditions and development plans: build all at once or in stages?</td>
<td>Job creation: skilled and unskilled jobs; construction, inspectors Re-use of treated wastewater: horticulture, industrial use Tourist attraction &amp; educational facility</td>
</tr>
<tr>
<td>Alternative Systems</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes; as long as system is properly designed, constructed, operated, and maintained for estimated capacity</td>
<td>Yes; as long as system is appropriate for environmental conditions of site</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Healthcare costs can be reduced by keeping residents from getting sick through biological or chemical contamination. Initial costs needed for start up of monitoring committees and programs can be offset in the long-run by permit and service fees, fines, job creation, and in some cases re-use of treated waste as irrigation water and fertilizer; treated wastewater can also be sold for industrial use instead of using potable water. (Important note: Effluent quality standards need to be created and enforced if treated waste is to be re-used.) In the case of Option 7, the living systems/Solar Aquatics
systems allows for the sale of ornamental plants, and the site can be used as an educational/training facility for students. Table 2 shows the cost comparison between conventional centralized sewer system, small-scale community collection and treatment systems, and on-site household systems.

**Table 2: Comparison of Hypothetical EPA Rural Community Technology Costs for Three Types of Wastewater Management Systems**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized Systems</td>
<td>$2,321,840 – 3,750,530</td>
<td>$29,640 – 40,260</td>
<td>4216,850 – 342,500</td>
</tr>
<tr>
<td>Alternative SDGS Collection &amp; Small Cluster Systems</td>
<td>598,100</td>
<td>3,720</td>
<td>55,500</td>
</tr>
<tr>
<td>On-Site Systems</td>
<td>501,000</td>
<td>13,400</td>
<td>54,500</td>
</tr>
</tbody>
</table>

Note: The rural community consists of 450 people in 135 homes. (Adapted from EPA, 1997)
O&M: Operation and maintenance.
SDGS: Small diameter gravity sewers.
Source: Lesikar, p.6, from [http://twri.tamu.edu/wqedu_pubs/B-6098.pdf](http://twri.tamu.edu/wqedu_pubs/B-6098.pdf)

**Table 3: Breakdown of Established Solar Aquatic System**

<table>
<thead>
<tr>
<th>Location</th>
<th>Bear River, Nova Scotia*</th>
<th>Englishman River Trailer Park, British Columbia**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>880</td>
<td>46 mobile homes</td>
</tr>
<tr>
<td>Facility</td>
<td>2400 sq ft</td>
<td>60 by 35 ft</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>&lt; CDN$600,000</td>
<td>Not available</td>
</tr>
<tr>
<td>Average Annual Operating Cost</td>
<td>CDN$45,000 dropping down to CDN$25,000 in future calculations</td>
<td>Not available</td>
</tr>
<tr>
<td>Amount of Wastewater Processed</td>
<td>68,000 L/day</td>
<td>4000 gallons/day</td>
</tr>
</tbody>
</table>


for a hypothetical community of 135 homes. Table 3 gives a breakdown of implemented liquid waste treatment systems using the Solar Aquatics technology.

Option 1, 2, & 3 are needed in order to continue with any further options with a chance for long-term success and sustainability. Once these are completed and have been assessed, Options 4 & 6 can follow. Implementation of Option 7 will depend on the field work completed, environmental conditions, sampling results, social acceptability, and funding capabilities. Several alternative systems are available and need not be isolated to only one type. Option 5, Enforcement of Regulations, should begin as soon as possible to ensure current systems keep functioning and to have a well-established enforcement system that can adapt to deal with any new liquid waste treatment systems.

**IMPLEMENTATION PLAN**

**Action Plan**

1. **Assessment & Monitoring Committees**
   - The different assessments should be performed and overseen by qualified professionals but to keep costs down university students can be drafted as the labour and gain course credit towards their program of related study. The National Water Resources Commission, part of the Hydrology Department, has the responsibility of managing and protecting water resources, including groundwater. This commission should work together with health inspectors to create a timeline of required steps to complete the needed assessments for environmental impacts regarding septic and latrine waste systems. If possible a separate sub-commission responsible specifically for Orange Walk should be created to continue regular monitoring of health and environmental impacts from liquid waste disposal systems.
   - Establish a Septic System Management Committee to work with health inspectors to manage and enforce regular inspections, set maintenance and pump out schedules.

2. **Water and Effluent Testing**
   - Health inspectors are to conduct household inspections and effluent testing as this is within their purview. Since there are only three working in Orange Walk, a request for more inspectors to handle the short-term increased work load should be put forth, until the Septic System Management Committee is in place.
Also, university students studying in this field could be given course credit for taking part, perhaps as a work term or field course.

- BWS, as a government majority shareholder company, should be convinced into taking part in the water testing since they have access to a lab in Belize City. BWS should be concerned with maintaining contaminant-free groundwater. There should be information sharing between the various organizations, ministries, and committees to prevent repetition, save time and money.

- Testing for fecal coliforms should be accomplished as soon as possible to find where problem areas are located and how serious the contamination is before designing the solution strategy. This test is an indicator that coliform contamination has occurred but other tests may be required to decide the source and type (whether bacterial, viral, or parasitic).

3. Public Consultation

- Mayor and Council (along with any planning department personnel that may become established) should conduct public meetings to gain stakeholders’ perspectives on liquid waste issues and use this medium to inform on current steps being taken to improve liquid waste management in Orange Walk Town.

- The Septic System Management Committee and the Ministry of Health’s Health Education & Community Participation Bureau should begin some public awareness projects, especially organizing educational workshops on proper construction and maintenance of septic systems and problems to look out for.

- Educational programs should be implemented in local schools promoting environmental protection attitudes.

- Creation of a contact list of service providers and inspectors.

- Newsletters, educational posters, and fact sheets would be valuable educational tools; the US Environmental Protection Agency and the Michigan State University Extension have some good models to follow. The British Columbia Water & Wastewater Association website (http://www.bcwwa.org/committees/dwmc/index.php) is a good web version to look at for ideas on how to communicate this issue online. This website showcases various committees; their Decentralized Wastewater Management Committee has provided technical guidelines in PDF file format as well as online educational videos which are easy to understand and bring home the importance of a healthy septic system. An example of an educational poster on groundwater contamination possibilities can be found in the appendix.

4. Septic Inspection & Pumping

- Annual and bi-annual inspections of septic systems

- Pumpout of septic sludge is recommended every 3 years or “at a frequency sufficient to ensure that sludge accumulation does not exceed 20% of the tank depth” (Waste Management Act, 1999, 44).

- Inspections records and logbooks should be submitted to the Septic System Management Committee and to the Regional Health Inspector Manager

5. Investigate Economic Sources for Project Funding

Before implementing new systems and technology, assess the community’s economic ability to pay for services. Also do research and contact development and research agencies as possible sources of capital, professional expertise, or volunteer labour:

- CIDA – Canadian International Development Agency

- IDRC – International Development Research Centre

- PAHO/WHO – Pan American Health Organization/World Health Organization

- USAID – United States Agency for International Development

- CARICOM – Caribbean Community

- SCP – Sustainable Cities Programme

- Belize Centre for Environmental Studies

- Belize Enterprise for Sustainable Technology

- UN Agencies in Belize: UNDP, UNFPA, UNICEF, PAHO/WHO

Financing Agencies for the Health Sector Reform project:

- Inter-American Bank
- Caribbean Development Bank
- European Union
6. Assessment for Alternative Systems

- Pre-feasibility tests are to be conducted before implementing any new systems or developments: environmental impact assessment for community or centralized systems, soil percolation test for alternative on-site systems

EVALUATION

Monitoring

- Annual update reports of environmental conditions affected by liquid waste systems.
- Scheduled inspections
- On-site systems found to be causing health or environmental concern should be continually monitored on a daily or weekly basis until such time as the problem has been dealt with.
- A paper trail of permits and completed inspection checklist/reports.
- If community treatment systems are implemented, weekly effluent testing should be conducted to maintain adequate effluent levels

Judging Success

This will be based on whether or not health and environmental concerns and risks have been successfully dealt with. Effluent discharged into the environment must be kept at adequate levels of coliform counts, BOD levels, TSS, and nitrates. Proper standards will have to be set and enforced.

- Short-term: repair and improve current liquid waste systems which are deemed unsatisfactory for public and environmental health; reduce contamination into local surroundings, such as storm drains
- Long-term: improved cleanliness and quality of life in Orange Walk Town and surrounding area; recirculation of resources and water conservation through liquid waste treatment and reuse.
APPENDIX I: Belize Subsidiary Laws: On-Site System Regulations

Table A: Location of Components of Sewage-Disposal System (Separation Distances)

<table>
<thead>
<tr>
<th>Type of Item</th>
<th>Well or Suction Line</th>
<th>Water Supply Line (Pressure)</th>
<th>Surface Water</th>
<th>Dwelling</th>
<th>Property Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Sewer</td>
<td>50</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Septic Tank</td>
<td>50</td>
<td>10</td>
<td>50</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Leaching Bed</td>
<td>100*</td>
<td>25</td>
<td>50</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Leaching Pit</td>
<td>100*</td>
<td>25</td>
<td>50</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Privy</td>
<td>100*</td>
<td>25</td>
<td>50</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

*Note: Distances are to be increased by 50' for dug wells and wells with casings extending into the ground less than 10'.


Table B: Minimum Capacities for Septic Tanks Serving an Individual Dwelling

<table>
<thead>
<tr>
<th>Number of Bedrooms</th>
<th>Maximum Number of Persons Served</th>
<th>Nominal Liquid Capacity of Tank</th>
<th>Recommended Inside Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Persons</td>
<td>Gallons</td>
<td>Length</td>
</tr>
<tr>
<td>2 or less</td>
<td>4</td>
<td>500</td>
<td>6.0</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>600</td>
<td>7.0</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>750</td>
<td>7.6</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>900</td>
<td>8.6</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>1100</td>
<td>8.6</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>1300</td>
<td>10.0</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>1500</td>
<td>10.0</td>
</tr>
</tbody>
</table>

*Note: Liquid capacity is based on number of bedrooms in dwelling. Total volume in cubic feet includes air space above liquid level.

### Table C: Absorption Areas Requirements (Absorption Trenches) for Individual Premises

<table>
<thead>
<tr>
<th>Soil Structure</th>
<th>2 bedroom or 4 persons or less</th>
<th>3 bedroom or 6 persons</th>
<th>4 bedroom or 8 persons</th>
<th>5 bedroom or 10 persons</th>
<th>6 bedroom or 12 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Sand &amp; Gravel</td>
<td>150</td>
<td>175</td>
<td>200</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>Fine Sand</td>
<td>160</td>
<td>240</td>
<td>320</td>
<td>400</td>
<td>480</td>
</tr>
<tr>
<td>Sandy Loam or Sand with some clay</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>Clay with Considerable Sand</td>
<td>360</td>
<td>540</td>
<td>720</td>
<td>900</td>
<td>1,080</td>
</tr>
<tr>
<td>Clay with a small amount of Sand</td>
<td>480</td>
<td>720</td>
<td>960</td>
<td>1,200</td>
<td>1,440</td>
</tr>
<tr>
<td>Heavy Clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Requires permeable fill with system installed in the fill.

*Source: Water & Sewerage Act, 2003, 133*

### Table D: Absorption Areas Requirements (Leaching Pit) for Individual Premises

<table>
<thead>
<tr>
<th>Soil Structure</th>
<th>2 bedroom or 4 persons or less</th>
<th>3 bedroom or 6 persons</th>
<th>4 bedroom or 8 persons</th>
<th>5 bedroom or 10 persons</th>
<th>6 bedroom or 12 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Sand &amp; Gravel</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>Fine Sand</td>
<td>70</td>
<td>100</td>
<td>120</td>
<td>150</td>
<td>180</td>
</tr>
<tr>
<td>Sandy Loam or Sand with some clay</td>
<td>120</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>Clay with Considerable Sand</td>
<td>180</td>
<td>240</td>
<td>320</td>
<td>400</td>
<td>480</td>
</tr>
<tr>
<td>Clay with little Sand</td>
<td>400</td>
<td>480</td>
<td>640</td>
<td>800</td>
<td>960</td>
</tr>
</tbody>
</table>

*Note: Leaching pits are more subject to plugging than absorption trenches particularly in clay type soils.*

*Source: Water & Sewerage Act, 2003, 134*
### APPENDIX II: Alternative Household & Community Systems: Appropriate Conditions

Table E: Alternative Liquid Waste Disposal Systems According to Siting and Environmental Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Home Systems</th>
<th>Community Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mound Systems</td>
<td>Sand Filters</td>
</tr>
<tr>
<td>Impermeable soil</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Coarse sand soils over shallow aquifer</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Permanently or seasonally saturated soils &lt; 3ft from the surface</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>No expansion room for septic field, due to densification</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Failing septic systems located on small lots</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Flat area with shallow soils</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Houses built too close together but far from neighbouring developments</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Expanding neighbourhood with no room for expansion of the septic field</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sited near surface water</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Source: Information for table from Michigan State University Extension, 1997, p.3*
APPENDIX III: Educational Poster

Figure 10: The Hydrologic Cycle & Groundwater Contamination

Source: Well water protection and groundwater stewardship for rural areas from the British Columbia Ground Water Association website at http://www.bcgwa.org/waterwell/2cbadVSgood.html
Available from the Comox Strathcona Regional District, British Columbia, Canada

REFERENCES CITED


URBAN STORMWATER MANAGEMENT

by Kirsten Thicke

Kirsten Thicke explores solutions to stormwater drainage in Orange Walk. Each year in the wet season, rainwater that cannot drain efficiently inundates some areas of Orange Walk. This causes flooding of residential and business properties. Improving drainage will require a package of infrastructure and management solutions.

Kirsten Thicke completed her Bachelor of Arts in Geography - Natural Resource Management/Anthropology minor at the end of the field school. Her career plans include working for a provincial agency as a conservation planner or at a non-profit organization. She enjoys traveling immensely and is hoping that her work takes her overseas. She is from Comox, BC, and currently lives in Fort Simpson, NT.

ISSUE IDENTIFICATION

Issue Statement

Urban stormwater management is an issue of significant concern in Orange Walk Town. Many of the drains in the town are unable to discharge the increased runoff efficiently during the rainy season. As a result, areas such as Marcus Canul Phase 1 and 2, Union Town, the San Lorenzo Housing Project, and the Louisiana area flood frequently.

Issue Significance

Flooding is a serious problem for Orange Walk Town’s residents and business owners.
- Flooding causes property damage and inconvenience to homeowners. It forces residents to leave their homes and incur high costs associated with flood damage.
- People may die from drowning, especially children, seniors, or people with disabilities.
- Stagnant water sitting in the drains can result in overpowering smells.
- Health issues can also arise due to waterborne diseases.
- Businesses and residents suffer because it is difficult to navigate through the large puddles and streams that block the roads and sidewalks.

History

There are four main drainage zones in Orange Walk Town. The southeast quadrant drains into the New River. The northeast quadrant also drains into the New River. The southwest quadrant drains into the big drain and the Albert Burns Pond. Finally, the northwest quadrant also drains into the big drain. The big drain connects with the Black Water Creek, near San Lorenzo Village. This creek meets with Mameyal Creek, which then drains into the New River.

The majority of stormwater drainage related flooding occurs on the west side of town, between the high ridge in the center of town and Big Drain.

A comprehensive urban infrastructure study, carried out by Halcrow Consultants in 1996, found that the town needs key structural storm-water drainage investments. Halcrow's original work included gathering topographic and hydrographic surveys; carrying out technical, financial, environmental and economic studies; and the preparation of preliminary designs for the priority drainage. Unfortunately, the results of this study are not available to the team at this time. The typical drainage works included the improvement of culverts, ditches, dredging and canal lining, roadside drains, outfalls and some environmental improvement works. The consultants also found that Orange Walk’s drainage deficiencies were of a more specific nature and resulted from local deficiencies in the drainage system.

In Orange Walk, the Halcrow project included 995 meters of sidewalks and drains on Dunn, Peter, Progress and Mejiba streets. A new box culvert along San Lorenzo Road was also installed. Storm runoff is now drained into the New River using an underground pipe system on Cinderella Street. The Ministry of Works installed drainage project, which was funded by the Government of Belize, people of Belize and the World Bank.

Marcus Canul Phase 1 and 2 experience flooding during the wet season. This is largely due to inadequate drainage leading to the Big Drain. It also floods when the Big Drain overflows its banks.

The Union Town area also floods; however, an attempt was made to resolve this issue. A Mexican company conducted a drainage study, but the team did not have information from this study. The problem with drainage in Union Town is that the majority of drains are not concrete. They often become overgrown by vegetation or are filled in by homeowners constructing driveways.
San Lorenzo, a planned community in Orange Walk, was built on an “old flooded cane field” (2001, Press Office Government of Belize). The community was inaugurated in February 2001 and 70 of the 90 houses had been sold before its opening. The San Lorenzo Housing Project was developed without adequate drainage facilities. Many of the house lots were built at levels lower than the road. As a result, when it floods the water has no drainage route. The water sits in the lots until it infiltrates into the ground or evaporates. Since 2001, the area has been flooded several times. Many of the houses have been permanently abandoned and remain vacant.

Causal Factors
There are many causal factors associated with stormwater drainage issues in Orange Walk Town. These causal factors are discussed below.

- There is a lack of planning and maps of the drainage system. This makes it difficult to deploy maintenance crews to clean and repair drains and affects the connectivity of the drainage system.
- Lack of regular maintenance leads to trash blockages and overgrowth. This inadequate maintenance results from a shortage of funding and insufficient staff; there is only one town supervisor in charge of the whole town.
- There is no intergovernmental coordination for stormwater drainage. This makes it difficult to manage stormwater drainage effectively. The Ministry of Works implements and maintains the drains on San Antonio Road, Queen Victoria Avenue/Belize Corozal Road, the road to San Estevan and the Bypass. Council maintains drains in the rest of the town. Council and Ministry of Works are not working together to improve the stormwater drainage situation.
- Unauthorized filling of drains by property owners can also exacerbate localized flooding on neighbouring properties and streets.
- Many of the drains are not gravity fed which causes standing water in the drains during the dry season.
- The San Lorenzo Housing Project’s drainage problems result partly from being built on an old flooded sugar cane field as well as having no drainage system installed in the community.
- The Big Drain to the west of town does not have a standard width or depth. The size of the drain is considerably larger at the beginning of the drain than in other sections. When this large volume of water moves through the drain, the smaller sections are not able to handle the large amount of water. The drain overflows as a result.

Stakeholders
A policy plan would affect several types of stakeholders.

- Residents in flood prone areas. Residents are directly affected because they may need to evacuate from their homes due to flooding. They may also incur costs because of flood damage to homes and possessions. Flooding in flood prone areas particularly affects children because they have to relocate from their homes. Flood incidents are traumatic and children usually do not recover as well as adults. Most importantly, floods may put people at risk of drowning.
- Businesses in flood prone areas. These businesses are directly affected from damage to premises and inventories. They also lose business because of flooding.
- Central government. The central government is in charge of several drains in Orange Walk Town. They also are there to serve the public. If drainage is inadequate and citizens are unhappy, the central government risks being voted out of power.
- Town Council. Council is in charge of the majority of drainage in town. Council makes decisions regarding stormwater drainage. If Council is unable to provide adequate drainage to the level that the citizens expect, they could be voted out. Floods may also put civic infrastructure at risk, including roads, buildings, and park improvements.
- Taxpayers. Taxpayers pay for services in the town, which includes stormwater drainage. Floods are costly to both central government and town finances.
- Additional residents who provide emergency accommodation. During times of flooding, many people are not able to stay in their homes. Friends or family members provide emergency accommodation.
- Tourists/Visitors. Tourists visiting during times of flooding might have to alter their travel plans. They may be unimpressed with stormwater drainage in town and as a result, many will not return or recommend the town to other tourists.
- River Ecosystem. Much of the stormwater runoff drains into the New River. This runoff is untreated and is most likely full of pollutants. The river ecosystem suffers because of this untreated runoff.
Objectives

The objectives of an improved drainage system include:

1. Flood Protection

Protection of urban areas from flooding. Offering protection to all houses and occupied buildings from flooding for a return period decided on by an engineer.

2. Health

Reduction of contact with contaminated waters, thereby reducing the spread of waterborne infections.

3. Appearance

Eradication of standing waters in drains, thereby reducing foul odours and unsightly debris.

Improved appearance of the streets and town. A proper drainage system may help to increase the attractiveness of the town.

4. Environment

A reduction in the amount of polluted runoff flowing into the New River from the drainage system would improve the New River ecosystem health.

Options

A. Planning

Option 1: Develop and implement a stormwater master plan

Planning is a complex process that requires the input of many stakeholders. It is important that those stakeholders participate in the development of the plan, because they will be affected by the outcome. Stakeholders will need to develop specific objectives for the plan as well as outline the actions that will be required to meet those objectives. Stormwater master planning requires considerable data regarding the current drainage system. A list of the data required will be discussed in option 2.

To help develop a stormwater master plan, engineering faculty at various universities could be contacted and encouraged to organize a field project for their students. The Town would benefit because they would receive a low cost stormwater master plan while the students would benefit because they would gain relevant field experience. Another option would be to recruit a graduate engineering student and have that person conduct research regarding urban stormwater management in the town as their thesis topic.

Professional engineers from outside Belize could also be enlisted as volunteers. They could be offered free accommodation or homestays in town. The volunteer engineers would receive free accommodation and the experience of visiting and working in a beautiful country. Several organizations recruit and place professionals who want to volunteer their skills. One particular organization, Engineers without Borders (EWB) may be a good option for developing a stormwater master plan in Orange Walk. The international website is <http://www.ewb-international.org/> and there are chapters of this organization throughout the world. On the website, it is possible to navigate through available engineers and search for engineers with stormwater management expertise. This search option can be found at <http://www.ewb-international.org/forum2/>.

Malaspina is also exploring the feasibility of a field project for volunteer professionals to follow up on issues addressed by the 2007 field project, including drainage and other areas.

Option 2: Review of the existing drainage situation

A review of the existing drainage situation is beneficial mainly for planning purposes. This should include a thorough outline of the current drainage infrastructure; hydrological features of the catchment area; expectations, roles and responsibilities of the stakeholders; and the physical and financial resources available. The town will be able to use this information to plan solutions for current drainage
problems and take preventative action before new issues arise.

**Option 2 includes the following:**

**Determine the main physical and hydrological features of the catchment area**

Major drainage system’s natural channels and surface flow pathways should be identified and mapped (Parkinson and Mark, 2005). Studies should also determine the catchment boundaries, soil types, ground cover and topography of the area. To obtain this information, council could recruit volunteer professionals to conduct field surveys or they could try to obtain aerial photography and satellite imagery. To determine and document soil types and ground cover, council could use community volunteers to conduct comprehensive surveys.

**Review and document the existing drainage infrastructure**

Currently there is no detailed inventory of the current drainage infrastructure in the town available to council. A comprehensive urban infrastructure study was requested by the central government and was carried out by Halcrow Consultants in 1996. It was found that key structural storm-water drainage investments were needed in the town. The work that was carried out by Halcrow Consultants included gathering of topographic and hydrographic surveys, carrying out technical, financial, environmental and economic studies and the preparation of preliminary designs for the priority drainage. If the central government could provide this information to council, it would lessen the work needed to assess and document the current drainage infrastructure in the town. If this study cannot be obtained, ground surveys of the drainage infrastructure could be conducted in conjunction with those surveys for determining the ground cover and soil types.

**Determine the hydrological capacity of the drainage system**

Knowledge of the hydrological capacity of the drainage system is important for making plans for increasing the capacity of those areas that experience flooding. The actual capacity of drains may be different from the planned capacity, due to solid waste blockages and vegetation growth. Information about the planned capacity may be available from the developers of the drains. In the town, the developer of many drains is the Ministry of Works. They may have information on the hydrological capacity of some of main drains in town such as the Big Drain and the Dunn Street drain. If it is not possible to obtain this information from public works, an estimation of the drainage capacity can be made using information from the infrastructure assessment.

**Stakeholders’ expectations**

Stakeholders may have expectations regarding the quality of drainage infrastructure that the Town Council should provide. It is important to know stakeholders’ expectations in order to develop a plan that meets their needs. Surveys can be conducted to obtain this information or public hearings can be held where residents can voice their opinions.

**Evaluation of the financial resources available to invest in stormwater drainage**

An assessment of the current available financial resources will be important for planning purposes, as planning and the implementation of plans require financing. A sound knowledge of how much money is available to invest in the drainage system will allow Council to review their funding capacity and seek alternative funding sources. To obtain this assessment a review of the budget would be necessary.

**What policies or legislation will affect the development or implementation of proposed solutions?**

The policies and legislation (both local and central) that regulate urban stormwater management need to be documented, as they will impact the development of a stormwater management plan. Central government agencies intend to review hazard mitigation and emergency planning.

**What capacity does town council have to institute plans?**

Unless Town Council has the capacity to institute the changes recommended in a stormwater management plan, any such plan will be ineffective. The role of Council in implementing and overseeing an urban stormwater management plan will need to be clarified so that the plan can be legally instituted. Central government would most likely have information regarding this.

**B. Infrastructure**

**Option 3: Technologies for runoff control**

Many available technologies use a more sustainable approach to control runoff. Some of the technologies mentioned may work well in the town because they are relatively inexpensive compared to other solutions that involve major engineering works.
Furthermore, there is sufficient space in the town to implement them. Not only will these technologies control the amount of runoff, they will also aid in filtering out pollutants, thus improving runoff quality. These technologies can be used individually or can be grouped together in a variety of combinations.

**Option 3 includes the following:**

**Detention basins**

Dry extended detention ponds are basins that are designed to detain runoff for a period. They allow sediments and pollutants time to settle and filter out of the stormwater runoff. These detention ponds can also serve as a form of flood control. Parkinson and Mark state that “detention basins are storage tanks designed to ‘detain’ runoff and then drain completely after stormwater runoff ends and becomes dry between storms” (2005, 94). The water from a detention basin is detained until after the peak of the storm. When there is enough room in the receiving channel, water is released. Detention ponds are a possible option for Orange Walk as there is enough undeveloped land in town to build a dry extended detention pond. In general, the minimum amount of land required for a dry extended detention pond is ten acres. A detention basin can either be on-line, where the stream (or in Orange Walk’s case, the Big Drain) passes through the detention basin. As it passes through, water flow is restricted at the outlet and is released slowly, reducing the peak flow runoff. Excess water is stored in the detention basin. There are also off-line detention basins, whereby water can overflow from the stream or drain into the basin through a weir. For Orange Walk, the best solution would be an off-line detention basin, perhaps on the west side of the Big Drain. At present, when the Big Drain overflows its banks, much of the water drains into the east side of the drain. It floods Marcus Canul Phase 1 and 2, and the San Lorenzo Housing Project. Creation of a detention basin on the west of the Big Drain would likely alleviate much of this flooding.

**Retention basins and constructed wetlands**

Retention facilities are designed to store stormwater on a more permanent basis than a detention basin. Water is often stored in the basin indefinitely. Essentially, a retention basin is a constructed wetland; however, a constructed wetland incorporates the use of wetland plants. Much of the water in a retention basin evaporates or, depending on the geology and soils in the area, infiltrates and recharges the groundwater.

**Grassed Swales**

According to the US Environmental Protection Agency, the term swale “refers to a series of vegetated, open channel management practices designed specifically to treat and attenuate storm water runoff for a specified water quantity volume” (2007). They work by reducing the velocity of runoff and enhancing infiltration rates, however they should only treat a small watershed in order to maximize their pollutant removal capabilities.

**C. Regulations**

Regulations are effective in ensuring that new developments do not create further stormwater runoff problems downstream of the developments. Creating regulations that require developments to implement stormwater drainage infrastructure as part of the development will relieve town council and central government of this expense and will benefit the community. Option 4 outlines some possible regulations that could be implemented.

**Option 4: Required construction of on-lot stormwater mitigation devices for new developments**

On-lot stormwater mitigation devices that could be included in this regulation include small infiltration wells and a large percentage of permeable surfaces. These measures allow rainwater to be absorbed into the groundwater. Rainwater catchment captures water from the lot and stores it for discharge or landscaping use. For larger developments, there could also be regulations requiring that they implement retention or detention facilities to lessen the amount of stormwater entering the drainage system. Infiltration wells are rock-filled wells that are connected to a home’s storm drain. Runoff can also be diverted from a home onto permeable lawn surfaces rather than into the community storm drainage system, thus reducing the load on the system.

**Option 5: Required implementation of stormwater drainage services before development**

Some new developments in Orange Walk have been built without first installing proper drainage infrastructure. For the San Lorenzo housing project, this has resulted in annual flooding events. Flooding would be reduced if developers were required to implement stormwater drainage services before the development is permitted. Town Council should approve a developer’s drainage plans to ensure that it was compatible with the town’s stormwater master plan.
**D. Operation and Maintenance**

Operation and maintenance of the stormwater drainage system is a significant issue in Orange Walk. Adequate maintenance of the drains does not fit into the town’s budget. Part of the reason for this is that the maintenance takes a very long time and many person hours due to lack of proper equipment. There are also not enough scheduled cleanups of the drains and this can result in blockages. Several options are presented to improve operation and maintenance of the drains.

**Option 6: Acquire maintenance equipment to build, improve and maintain drains**

Council has applied to the central government for the approval of a backhoe purchase. The cost of this purchase will come out of the projects section of the budget. Income from drainage taxation could be used to help finance the purchase of drainage maintenance equipment. Renting the services of the backhoe to others could also provide some added income.

**Option 7: Implementation of an effective solid waste management program**

In Orange Walk, many of the problems with drainage are related to the amount of trash and weed build-up in the drains. A good solid waste management program would reduce the amount of trash entering the drainage system, thus reducing blockages in the system. It would be beneficial to coordinate drainage clearing efforts with garbage pickup in order to reduce the time that collected garbage is left on the streets. As a result, there would be less time for this collected garbage to make its way back into the drainage system.

**E. Community Participation**

**Option 8: Encourage community involvement**

Urban drainage affects many people in Orange Walk. Marsalek and Chocat put it nicely when they noted that urban drainage affects most urban dwellers and “it is therefore important to keep the public aware of the need for proper drainage and participation in the maintenance of stormwater systems” (2002, 14). Option 8 includes three elements that will not only keep the public informed of stormwater issues, but will also actively encourage the public to participate.

**Option 8 includes the following:**

**Community Education**

Educating the community as to what the drainage issues are and why they are important will help to gain support from the community for new drainage projects. Education can also be used to teach the community how to reduce their home’s runoff by the use of on-lot mitigation strategies. Community members may also be encouraged not to litter, thus reducing the amount of garbage entering the drainage system. Community education can be a way to recruit volunteers for drainage maintenance and construction and to recruit community members interested in contributing to the stormwater drainage planning process.

**Consultation with stakeholders**

As mentioned above, consultation with stakeholders is very important in stormwater planning, but also for operation and maintenance purposes. Stakeholders may be the best source of knowledge as to where drainage problems occur, as well as possible causes and solutions to these problems. These consultations can occur in the form of surveys, questionnaires or a public meeting.

**Community Volunteers**

Community members are a source volunteer labour. As seen on Liberty Avenue, town residents take pride in their city and with community volunteerism specifically aimed at building, fixing or maintaining drainage, a large amount of work can be accomplished at a minimal cost. These members could be skilled and semi-skilled labourers such as local masons and builders. There could also be non-skilled workers for digging the drain and clearing garbage and sediment from the drain (Parkinson and Mark, 2005).

**Option 9: Encourage homeowners to practice on-site runoff mitigation**

On-site runoff mitigation strategies include rainwater re-use, small infiltration wells, green roofs and a large portion of residential property that is vegetated or permeable. Homeowners could also be encouraged to plant natural vegetation with extensive root structures that increase the permeability of the soil. These measures would reduce the amount of property runoff entering the drainage system and would alleviate much of the water load during the wet season. This would reduce flooding incidences.
F. Funding Sources

Drainage infrastructure is expensive to construct and maintain. One of the town’s main problems for this infrastructure is the lack of funding. Stormwater drainage competes with a number of other services in the town budget and because the majority of the drainage issues occur only during half the year, other issues that are problems year round may take precedence. Alternative financing options are needed to help pay specifically for stormwater drainage services. The following financial options may be considered separately or in any combination.

Option 10: Implementation of a service charge

A service charge whereby the user pays for the use of stormwater drainage could be charged using a percentage of the value of the property. A tariff system could also be implemented, with the rate determined by the amount of runoff that a property contributes to the system (Parkinson and Mark, 2005). The tariff amount can also be determined using fixed rates for each type of land use (e.g. single-family house, commercial etc.) or can be determined by assessing what percentage of the property is covered by an impermeable surface. This option may require changes to existing enabling regulations.

Option 11: Implementation of a frontage tax

A frontage tax could be calculated using the width of the front lot line of a property as a means of calculating a tax value. The drain in front of a house receives runoff from that house and the homeowner or business owner can be taxed in order to build or maintain those drains.

A mechanism could also be devised where taxes could be reduced by a percentage for homeowners who choose to maintain the drains outside their homes. If the drain in front of their property remains clear of garbage and weeds throughout the year, their frontage tax bill could be reduced by a percentage. This option may require changes to existing enabling regulations.

Option 12: “Adopt-A-Drain”

Similar to the “Adopt-A-Park” program in Orange Walk, neighborhoods, businesses or individuals could “Adopt-A-Drain.” The work could be limited to maintenance of the drain, such as sweeping or raking up litter and debris as well as ensuring that the drain does not become overgrown. The “Adopt-A-Drain” program could also be extended to involve helping to build the drain and/or donate construction materials. The equipment used, such as shovels, machetes and garbage bags could be provided by town council, by those adopting the drain, or the equipment could be donated by various local businesses.

These volunteers could be thanked by putting their names in the local paper or by thanking them at public events such as Fiestarama or the flea market. These volunteers could also be acknowledged on the Council’s website.

“Adopt-A-Drain” programs could also be targeted to specific businesses in Orange Walk. Businesses could donate money to help build and/or maintain their adopted drain. In return, their business name could be advertised near the drain, similar to the program in place for business advertising on donated street signs. The business could also be acknowledged by Council during public events such as Fiestarama or the flea market or could be advertised on the town council’s website.

Option 13: Willingness-to-pay studies

These economic studies are used to assess the current public opinions of municipal services such as stormwater drainage. Parkinson and Mark note, “the perceived benefits of urban drainage in combination with a wide range of other factors, can have a significant influence of communities’ willingness to pay” (2005, 191). To gather information on how much residents are willing to pay, they have to be made aware of the problems with the drainage system as well as the proposed solutions. Thus, a survey on residents’ willingness to pay can be done in conjunction with public hearings that educate the public on the problems with drainage in the town and possible solutions to the problems.

Option 14: Participatory budgeting

Participatory budgeting is a process that allows community members to take part and make decisions regarding how they would like to allocate part of the municipal budget. Participatory budgeting could work in favour of the town’s stormwater drainage system because residents involved in the process may choose stormwater management as a main issue that needs financing. Participatory budgeting can lead to greater governmental transparency and more trust in the government by residents. If residents are aware of the municipal budget, including income and expenditures, they will see the budget limitations and may be inclined to take action in resolving some of the issues identified in this paper.
ANALYZING OPTIONS

The town could reduce the frequency of flooding and increase the quality of living for many citizens depending on the options chosen. The overarching goals of implementing these policies are to reduce the amount of flooding that currently occurs in the town and reduce the inconvenience and suffering of residents. The health of residents could also be improved through stormwater drainage upgrades. Additional benefits from implementing these suggested policies may be a decrease in environmental damage and an increase in environmental sustainability. The town may become more aesthetically pleasing by implementing these options and this would increase tourism potential. The following options can be grouped into various combinations or can be implemented separately. The options are evaluated in table 1. Decision criteria are defined in section 3.1.

Decision Criteria

The decision criteria upon which these options are evaluated can be assigned certain weights by Town Council. The outcome matrix can be altered to fit council’s priorities. Unfortunately, it is difficult to assign certain costs to the various options because many of these costs depend upon decisions made by professional engineers.

Criterion 1: Locally achievable
Will the option be locally achievable by Orange Walk Town Council and residents?

Criterion 2: Outside assistance required
Is the option is locally achievable without assistance of outside professionals?

Criterion 3: Outside funding required
Will the option be achievable within the Town’s current budget?

Criterion 4: Additional benefits
Will the option provide additional benefits other than stormwater drainage benefits?

Criterion 5: Level of planning required
What level of planning is required (low, medium or high) to implement the option?

Recommendations

Options 4, 5 and 8-14 are all locally achievable and can most likely be implemented within the town’s current budget. Many directly affect homeowners so town council should consider this when deciding upon which options to choose.

Although option 1 requires outside assistance, with the use of volunteer professionals, the town might be able to implement this option within its current budget. Option 2 is linked to option 1 and if option 1 is chosen, it will most likely be necessary to choose option 2 as well.

Option 3 looks to be the most locally unachievable option as it may require considerable outside funding. It is one option, however, that will make a big impact on the flooding situation in Orange Walk and should be considered. If a financing option is chosen, option 3 may be more achievable due to the increased financing for drainage.

Council is currently considering option 6, such as their proposed purchase of a backhoe. If Council purchases this backhoe, this would make option 3 more achievable for Council.

Finally, option 7 will be effective in meeting the desired objectives and this option may be considered in a similar paper written by Pilyk (see section) concerning solid waste management in Orange Walk.

Options 1 and 2 seem to be the best plan in terms of understanding the town’s drainage problems and coming up with solutions to fix the current problems and avoid future problems.

Option 10 will bring in needed revenue for stormwater infrastructure and maintenance and option 12 will increase the frequency of drain maintenance.
Table 1. Outcomes Matrix

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Locally Achievable</th>
<th>Outside Assistance Required</th>
<th>Outside Funding Required</th>
<th>Additional Benefits</th>
<th>Level of planning required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop and implement a plan</td>
<td>No</td>
<td>Yes</td>
<td>Perhaps</td>
<td>Engineering student or professional exchange</td>
<td>High</td>
</tr>
<tr>
<td>2. Review of the existing drainage situation</td>
<td>Perhaps</td>
<td>Perhaps, to determine the catchment’s hydrological features</td>
<td>No</td>
<td>Future planning uses. Information will be available to subsequent town councils</td>
<td>Low</td>
</tr>
<tr>
<td>3. Technologies for runoff control</td>
<td>Partly [once they know what to do]</td>
<td>Likely, engineering assistance</td>
<td>Yes, most likely</td>
<td>New River environmental benefits</td>
<td>Medium</td>
</tr>
<tr>
<td>4. Required construction of on-lot stormwater mitigation devices for new developments</td>
<td>Yes</td>
<td>Yes: regulatory authorization</td>
<td>No</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>5. Required implementation of stormwater drainage services before development</td>
<td>Yes</td>
<td>Yes: regulatory authorization</td>
<td>No</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>6. Acquire maintenance equipment to build, improve and maintain drains</td>
<td>Yes, if loan money is available</td>
<td>Probably</td>
<td>Yes</td>
<td>Maintenance equipment can be used in other service areas such as solid waste</td>
<td>Medium</td>
</tr>
<tr>
<td>7. Implementation of an effective solid waste management program</td>
<td>Yes</td>
<td>Perhaps</td>
<td>Perhaps</td>
<td>Environmental and aesthetic benefits</td>
<td>High</td>
</tr>
<tr>
<td>8. Encourage community involvement</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Improved social capital and civic cooperation</td>
<td>Medium</td>
</tr>
<tr>
<td>9. Encourage homeowners to practice on-lot runoff mitigation</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Improved social capital and civic cooperation</td>
<td>Low</td>
</tr>
<tr>
<td>10. Implementation of a service charge</td>
<td>Yes</td>
<td>Yes: regulatory authorization</td>
<td>No</td>
<td>Increased revenue</td>
<td>Medium</td>
</tr>
<tr>
<td>11. Implementation of a frontage tax</td>
<td>Yes</td>
<td>Yes: regulatory authorization</td>
<td>No</td>
<td>Increased revenue</td>
<td>Medium</td>
</tr>
<tr>
<td>12. “Adopt-A-Drain”</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>13. Willingness to pay studies</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Could benefit other sectors</td>
<td>Medium</td>
</tr>
<tr>
<td>14. Participatory budgeting</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Could benefit other sectors</td>
<td>Medium-High</td>
</tr>
</tbody>
</table>

IMPLEMENTATION PLAN
The following steps are suggested for implementing the above policies.

1. Recruitment of volunteer professional(s) within one year as well as a complete review of Orange Walk’s existing drainage situation within this time.
2. Development of a stormwater master plan within a year and a half. In this stage, objectives will be developed. The actions required to reach the objectives will also be determined.
3. Within six months, campaigns to recruit people for the “Adopt-A-Drain” program will be underway. Ideally, the program should be in place and working before the start of the 2008 rainy season.

4. Within two years, the stormwater master plan should be underway and implementation of the plan will occur at this time.

5. Within the three years, the implementation of regulations will take place, stipulating that drainage services and runoff mitigation devices need to be put in before new developments.

EVALUATION

The following steps are suggested for evaluating the effectiveness of implementing this policy.

1. Windshield surveys during and after every rainy season to assess the flooding situation that season.

2. Meeting with stakeholders after each rainy season to discuss the stormwater drainage plan. Another possibility would be to establish a bipartisan drainage stakeholders’ advisory committee to both enlist support and provide feedback on priorities and gaps.

3. Yearly reviews of the drainage plan, where an assessment can be made as to whether the objectives of the drainage plan are being met. If they are not, discussions as to why they are not being met can follow and changes can be made. This review can take place during the meeting with stakeholders or bipartisan drainage stakeholders’ advisory committee.

4. Open houses held once a year or once every two years, where residents can voice their concerns regarding stormwater drainage as well as other issues.

5. Close monitoring of solid waste levels in the drains throughout the year will ensure that if there are blockages, these can be cleared by maintenance crews or volunteers.

REFERENCES CITED


FLOODPLAIN MANAGEMENT
by Kevin Muise

In this paper, Kevin Muise discusses policies for managing the risks to property and lives from flooding of the New River and Robert Burns Pond. Flooding is a recurrent problem in Orange Walk that is expensive to families, businesses, town council, and the central government.

Kevin Muise is a Geography student at Malaspina.

ISSUE IDENTIFICATION

Issue Statement

Orange Walk Town has a tropical climate that is subject to heavy rainfall and hurricanes. During the wet season (June-November), some developed areas are subject to flooding from the New River and other large streams. (Issues related to drainage are addressed by Thicke in this volume.)

Problem Significance

In the wet season, the floodplain areas near the New River and Robert Burns Pond often flood. Town residents have built, and continue to build, homes and businesses in floodplain areas without taking the proper precautions. As a result, homes are flooded and people need to be evacuated. Most homes are not built to withstand flooding, so property damage occurs, and allows an environment where mould can grow and make the house unsafe to live in. Floodwaters can also cause septic systems and latrines to overflow. This unsanitary water can pose health problems to those that refuse to leave their homes or go back to early. Furthermore, crocodiles live in the New River, which pose a risk to residents and pets during floods. Evacuation is a costly process and places unnecessary pressure on government organizations such as the National Emergency Management Office (NEMO) to provide shelters for those that would not need them if they took the proper precautions.

History

Orange Walk is not at risk of being hit directly by oceanic storm surges from a hurricane, but the New River does flood routinely, and hurricanes that come close to or hit Belize can cause flood disasters. In September of 1974, Hurricane Fifi hit Belize and caused major flooding in the town. Since NEMO did not exist then, local residents banded together to help each other. Locals with boats helped ferry people from the San Estevan Bridge to the roundabout in town. In late October and early November of 1998, Hurricane Mitch severely flooded Orange Walk Town. The government established NEMO shortly after Mitch due to the severity of the damage. People with boats again worked with the residents to evacuate those in need and even move furniture and precious belongings. In August 2007, Hurricane Dean came ashore just north of Chetumal. Although Orange Walk escaped major damage, it was a reminder that the town is in a hurricane risk area.

Routine floods occur in the floodplain areas of the New River (Louisiana district), and the Robert Burns Pond. A single family owned the Louisiana district before 1975 and left the area undeveloped. Since there were no buildings on this land, when it flooded in the wet season, no one was affected adversely. After 1975, the central government started acquiring this land, and slowly allowed people to build on it. Since this area was not closely monitored, people started building there, often building shacks with no flood preventative measures. These areas have been known to flood and stay flooded for months at a time, leaving residents severely inconvenienced, and at risk to disease if they choose to stay.

Causal Factors

Hurricanes and increased rainfall during the wet season in Belize are natural factors that cause river flow to increase to the point where water can spill over the dry season riverbanks and into floodplain areas. Removal of natural vegetation in the floodplain areas prevents proper drainage and can prolong flood event. Development in floodplain areas often further inhibits proper drainage because housing foundations are usually built on low-permeable/impermeable material. New building codes exist, but go unobserved and usually un-enforced. As a result, an estimated 100 to 150 families along the New River, and 100 families beside Robert Burns Pond have to be evacuated in case of a flood event. Very few people building in floodplain areas build their houses on stilts, or on proper elevated foundations.
Stakeholders
The following stakeholders would be affected by a flood management policy.
- Residents of floodplain areas next to the New River and the Robert Burns Pond
- Businesses in floodplain areas that have to close due to flood events
- NEMO and other associated organizations responsible for flood evacuation
- Taxpayers who pay for government organizations such as NEMO
- Central government staff that have to allocate funds to flood relief

Objectives of Issue Resolution
The purpose of this policy analysis is to:
- Find out what areas in Orange Walk Town are susceptible to flooding, how often flood events occur, and what measures are in effect to prevent flood damage.
- Find out what locals think of the current situation and obtain ideas for what might be done to improve the issue.

This policy should work toward the following goals.
- Residents of The New River Floodplain and Robert Burns Pond Floodplain should not have to be evacuated due to flooding
- NEMO should not have to evacuate people for non-hurricane related flooding
- Building codes should be established, made public and enforced for floodplain development

OPTIONS
The following options are proposed for future floodplain management in Orange Walk. These options are not necessarily mutually exclusive, and can be applied separately or in combination.

Option 1: Status Quo
Continue with floodplain management as it is currently managed. Continue with current enforcement of building codes and flood awareness programs. People can continue to develop close to the New River and Robert Burns Pond at their own risk.

Option 2: Improve and Enforce Building Code Standards
Strengthen building code standards for construction in floodplain areas. Institute a mandatory, minimum stilt base for all buildings in vulnerable areas. This would insure that both routine and high flood events would have minimal impact on those living in floodplain areas. There is a rule in place in Orange Walk Town that all land within 66 feet of the New River is government land, and it not to be developed on without permission. Government development can, and often does take place on such land, but this development needs to be properly regulated with building codes. A brief survey of the Louisiana district revealed that there were no common standards for building on the floodplain. Some buildings had small stilts (less than 2 feet) while others were elevated approximately 8 feet, while others still were not elevated or protected in any way. Proximity to the river seems to have no impact on the length of stilt, but rather the builder’s discretion. If specific codes were put in place and enforced, flood damage and evacuations would not be needed so often, if at all.

Option 3: Dredging
Conduct an engineering feasibility and environmental impact assessment for suitability before dredging the New River to increase river drainage. Sections of the New River flood because there is too much water volume during the wet season for its shallow bed to handle. If there was a hydrological study conducted and information on river drainage was ascertained, then sections of the New River could be identified that could be dredged to increase drainage. If drainage was increased, flooding might be reduced, and therefore risk to property and residents would be minimized.

Option 4: Dykes and or Levees
Build a series of dykes or levees to prevent the rise of the New River from flooding the floodplain areas. Dykes and levees are walls of material (usually earth or cement) constructed between the body of water and the areas that flood. If these structures are built they would prevent against the increased flow of the New River from encroaching into developed floodplain lands.

Option 5: Ban Floodplain Development
Ban all development in floodplain areas. If there was no development in floodplain areas, then natural vegetation and soils could absorb excess waters during the wet season. Furthermore, if there were no structures on the floodplain there would be no property damage and no risk to human safety as no one would be living in these areas. This plan would most likely have to be used in conjunction with option 6 (stated below) as people are currently living in floodplain areas. To evacuate them from these
areas, a land trade or similar incentive would have to be used.

**Option 6: Incentives**

Negotiate a land trade system for those in floodplain areas, and move all residents currently living on vulnerable land, as well all businesses and industry located on the floodplain. Incentives for moving might include a similar housing situation in a nearby neighborhood that is not at risk to flooding, guaranteed short term or long-term employment, loans, grants, or certain combinations of these options. Since the areas in question are mostly on government land, negotiations would have to involve the central government. Once properties are evacuated, structures should be demolished to prevent reoccupation by newcomers.

**Option 7: Floating Foundations**

Allow residents to construct houses that have floating foundations. Houses would have a foundation of air-filled barrels or other floating foundation, so that as water levels rise, the structure would float above the water. A system of anchors or pilings would be needed to keep the house from moving off of its property, but since currents in these flooded areas are usually not very strong, it should pose no problem.

**ANALYZING THE OPTIONS**

The options stated above are not mutually exclusive and some may be used in conjunction with others, or separately. Some of the options presented have more than one way of being implemented. Each way of implementation comes with both positive and negative repercussions. The action taken will eventually be at the discretion of Town Council, and possibly the central government depending on the actions taken.

The options will be assessed according to the following criteria: cost, town council participation, public participation, outside organizations participation, and potential benefit. This analysis is summarized in the Outcomes Matrix following.

Cost to the government reflects the amount of work the Council will have to do to implement each option if chosen.

Public participation reflects how much work the citizens of Orange Walk Town will need to do on each option if chosen.

Outside organization participation reflects the amount of work other organizations such as NEMO would have to expend on each option if chosen.

Finally, the potential benefit reflects the most likely outcome of each option if chosen.

**Analysis**

**Option 1: Status Quo**

No changes will take place, cost to government for flood protection will be minimal, and participation of all stakeholders will stay as they are with the exception of governmental organizations such as NEMO that may or may not continue to help those in need of assistance for non-hurricane related flooding incidents.

**Option 2: Building Codes**

Cost to government will be low because only changes to laws will need to be made and enforced. Clarification between Town Council and the Central Building Authority on building codes and associated laws may require some participation. Additional administration and enforcement will be required on behalf of Council and Central Building Authority because people who want to develop on the floodplains will have to have their building plans checked and approved and construction inspected. Since this will already be required under existing new building regulations, the only additional work is making sure the approved flood design plans are prepared and adhered to. Public participation would stay the same as long as they adhered to the plans that were approved. Outside organizations would not have to be involved. The potential benefits would be improved safety and living conditions for those currently living on the floodplains. People would not have to be evacuated due to flood events, and would sustain less property damage due to floods. NEMO and similar organizations would experience less pressure to provide assistance to flood victims.

**Option 3: Dredging**

Cost for dredging operations would be extremely high and periodic maintenance dredging would be required. A proper engineering feasibility and

continued...
### Outcomes Matrix

The following table assesses the options based on a set of criteria.

<table>
<thead>
<tr>
<th>Criteria → Options ↓</th>
<th>Cost to Government</th>
<th>Cost to Floodplain Residents</th>
<th>Town Council Participation</th>
<th>Public Participation</th>
<th>Outside Organizations Participation</th>
<th>Potential Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo</td>
<td>Inexpensive, except for post flood expenses</td>
<td>Low</td>
<td>Low</td>
<td>Low-Low</td>
<td>Low-Medium</td>
<td>None</td>
</tr>
<tr>
<td>Building Codes</td>
<td>Inexpensive</td>
<td>Moderately Expensive</td>
<td>Medium</td>
<td>Low-Medium</td>
<td>Low</td>
<td>Improve living conditions</td>
</tr>
<tr>
<td>Dredging</td>
<td>Very Expensive</td>
<td>Very Expensive</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium-High</td>
<td>Limit flooding</td>
</tr>
<tr>
<td>Leves</td>
<td>Very Expensive</td>
<td>Very Expensive</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium-High</td>
<td>Limit flooding</td>
</tr>
<tr>
<td>Ban Development</td>
<td>Inexpensive</td>
<td>Moderately Expensive</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Limit flood damage</td>
</tr>
<tr>
<td>Incentives</td>
<td>Moderately Expensive</td>
<td>Inexpensive</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Improve living conditions</td>
</tr>
<tr>
<td>Floating Foundations</td>
<td>Moderately Expensive</td>
<td>Moderately Expensive</td>
<td>Low</td>
<td>High</td>
<td>Low-Medium</td>
<td>Improve living conditions</td>
</tr>
</tbody>
</table>

Environmental impact study would have to be conducted to make sure that dredging the New River would not have adverse affects on the environment or river transportation. If it approved, proper machinery would have to be acquired and operated. Additional dredging may have to be done in the later years as river sediment is carried from upstream and fills in the dredged areas. Participation from Council and outside organizations to get the machinery, and permits would be moderate to high depending on how much dredging would have to be done. The potential benefits would be that the river would rise, but would be less likely to flood the floodplain areas.

**Option 4: Levees**

Cost for building levees or dykes would be very high. Construction of dykes is a very precise science, as New Orleans demonstrated during Hurricane Katrina. Materials have to be carefully selected, and may not be available locally. Town council, public, and outside organization participation would depend on how the labour for the construction of the levees was acquired. The potential benefits would be that homes and businesses would be less likely to flood. Local citizens might also gain some employment, or lessen the cost by volunteering. One problem with dykes, again as found by New Orleans, is that dykes can hold water in as well as out. In fact, dykes may require pumps to discharge routine drainage that occurs regularly behind the dyke. Unless very carefully designed, dykes can fail, and this can lead to sudden and catastrophic flooding.

**Option 5: Ban Floodplain Development**

Cost to government for banning future floodplain development would be minimal. This option would most likely be used in conjunction with Option 6 therefore raising the cost. Town Council and central government would have to pass floodplain legislation banning floodplain development. Possible benefits would include a cap on the amount of property damage and risk to human health and safety. Outside aid organizations such as NEMO would have to evacuate fewer people.

**Option 6: Land Trade**

Cost of land trades or similar incentives would be moderately high at first, but may be a worthwhile long term investment. Used in conjunction with option 5, land trades would allow the floodplain to revert to a more natural state or be used for other purposes, such as conservation, recreation, or agriculture. Property damage, human health and safety risks, and evacuations would be reduced. Town Council and the central government would have work together to provide incentives for people
to move out of the floodplain areas. Residents of floodplain areas would have to work with the government to find reasonable compromises for permanently vacating the floodplains. Outside organizations might participate by contributing funds for implementing this option, but would be less involved in emergency responses.

**Option 7: Floating Foundations**

Cost for construction of floating foundations would be moderately expensive, but cost to government depends on who takes initiative. Companies such as Shell and BSI have already donated barrels to the town for use as trashcans. If similar materials that could be used for floatation were donated by large companies then cost will go down. If people living on the floodplains decided to pursue such an action independently, then there would be no cost to government, or participation except to approve the building plan. If an outside organization chose to make one of these houses as a prototype, they could use it to advertise their technology for sale, and there would be no cost to Town Council.

Trying new techniques to deal with issues is an interesting solution. If the idea proves not to be feasible, then everyone can learn from the mistake and not try the same thing again. If it proves to be successful, it can be marketed as a tourist attraction. For example, Lake Titicaca has floating homes that draw hundreds of tourists each year. Families that used to survive as fishing families now make a decent living by selling souvenirs, and mini-floating houses are rented by tourists. Spiral Island, an artificial island constructed on a foundation of empty plastic bottles in Mexico, was a huge tourist draw as well since it was unique and environmentally friendly. If this idea is examined further and tried the potential benefits would include minimization of property damage and risk to human health and safety. Outside organizations such as NEMO would no longer need to worry about evacuating people in floodplains areas due to routine flooding. In addition, if the solution proved to be successful, it could be used as a means of attracting tourists and increasing revenue.

**Recommendations**

Given Orange Walk’s relatively small population and limited access to funds, the most logical solution would be option 2 (building codes). Establishing and enforcing strict building codes for future floodplain development would ensure that those building on the floodplain are aware of the risks, and are prepared for flood events. If NEMO provided information to those building in these areas in conjunction with the strictly enforced building codes, people living in these area would know what to do in case of emergency, since they would most likely be the first affected. Additionally, this option would not require very much more participation that what is already happening. The costs would be minor and this option would affect those living on floodplains positively. Although any of the other options would improve the situation, option 2 would have to most effect for the least effort and cost.

The key part to this option is to define the boundaries of the floodplains in a legally defensible way. A specific line has to be drawn to avoid confusion. Depending on the New River’s flood pattern, this line may change over time. For this option to be effective, an engineering study should be conducted to define the floodplain, and those boundaries need to be adhered to.

Additionally, a special property tax could be imposed on residents of flood prone areas. That revenue would be used to pay for evacuation and emergency accommodation.

Alternatively, residents in defined floodplain areas could be required to participate in a mandatory flood insurance program. If this were adopted countrywide, it would lift a financial burden from taxpayers, as collected insurance funds would be used for evacuation and shelter costs of those flooded out.

**IMPLEMENTATION PLAN**

1. **Floodplain Study**

Organize a study on the New River floodplain. This study should identify both developed and undeveloped land that is vulnerable to flooding, and ascertain specific water level marks and floodplain highpoints. These levels should be correlated to river discharge and rainfall. This can be used to define and designate floodplain areas based on probability of flooding.

2. **Participatory Process**

Once floodplains are defined, Council and central government agencies can host a participatory process to discuss flood protection measures that need to be implemented. Designate floodplain areas can be set apart from other areas of town, and be given their own set of building code provisions.

3. **Establish Building Codes**

Floodplain provisions should be incorporated into building codes for floodplain areas. These codes need to be approved and enforced. All buildings in
the designated floodplain should be subject to these codes, and so no further development could take place unless it was up to code.

The elevation of the floodplain is not uniform. Usually flood regulations are based on a designated flood return period. For example, the code may require that habitable floors of a dwelling be at an elevation of the 100-year flood plus two feet for a margin of safety. The height of building stilts would thus depend on the location of the building and the forecast height of flood on the site. In Canada, the design flood is often the 200-year flood plus two feet. In Belize, that might be lower. This means some houses might require very tall stilts in some places. Houses could also be built on mounds. Flood discharge data is available for Tower Hill south of town.

4. Appointing a Building Inspector or Engineer

Orange Walk Town should appoint an official expert to administer floodplain regulations on designated floodplains and ensure that all buildings are in compliance with zoning bylaws and building codes. The Town needs to work with the central government, or the Central Building Authority to attain this goal.

5. Improving Living Conditions (Optional)

Once floodplain regulations are in place, the town and government should evaluate buildings constructed before the codes and bylaws were put in place. Incentives could be offered to those in the highest risk areas to improve flood proofing. If well built structures can be elevated or flood-proofed, then the owners should be encouraged to do so. If all buildings in vulnerable areas were protected, living conditions in floodplain areas would be increased, needs to evacuate due to flooding would be reduced, and those living there would be happier and safer.

EVALUATION

The effectiveness of this policy should be evaluated annually after the wet season. The principal criteria for evaluation are the numbers of people affected by flooding and the cost of flood damage in dollars, time, and health. During the rainy season, Town staff should also inspect and document areas that are flooded. Staff should note which houses and other buildings were flooded. In order to document the floodplain, staff should also post stakes at high water contours. The location of these stakes should be plotted on maps for future reference. It is possible that the New River will change course over time, and floodplain areas could change. If this is found to be happening, a new study should be conducted to update the boundaries.

CONCLUSIONS

Floodplain management is an important aspect to a town that is situated near a body of water that floods. Obviously it is important to know what areas flood, and how much and how often, so that people living and working in the area can do so safely. Development in floodplains is not a mistake, as long as it is done carefully, and with proper regard given to how the body of water operates in a natural state. If this state can be preserved, while allowing humans to live in balance, then safety and happiness should follow. Keeping citizens safe and happy should be the paramount responsibility of any town, and with proper policies in place, this is easier to ensure.
RIVERSIDE DEVELOPMENT

by Matt Baillie

In this paper, Matt Baillie discusses development along the New River within Orange Walk Town. The river is a tremendous potential asset to the urban design of the town and to tourism. The keys to capitalizing on this asset are to build pathways and nodes for access and link the river to the central area.

Matt Baillie completed his Bachelor of Arts in Geography - Natural Resource Management at the end of the field school. He is a freelance writer and has been published in several newspapers and periodicals; he also DJ’s for a local radio station. He is currently working towards a post baccalaureate degree in Education. He hopes someday to become a teacher/farmer in his hometown of Nanaimo.

ISSUE IDENTIFICATION

Orange Walk town lies at the mid-point of the New River. Within the city, utilization of the riverside is underdeveloped. The New River is a great potential asset to the town. With sensitive development, the riverside area would beautify the city, provide recreation benefits, and attract tourism. This could also mitigate riverside erosion.

Problem Significance

Ecologically sustainable utilization of the New River corridor could strengthen the local economy of Orange Walk greatly. The development of a riverside walk would attract both local and international tourists. Such a walk would help create the image of the town as a beautiful and peaceful riverside center. In addition, by using certain building techniques the walk would help prevent riverside erosion. There are also a great many other things that can be done in the floodplain area that will help prevent damages in the event of a water level rise that will also provide services to the community.

History

In the past, Orange Walk had a small river walk. Unfortunately, a hurricane-driven flood destroyed this walk some years ago and it was never rebuilt. A tourist information facility survived, although the centre was shut down. The foundations of a pair of palapas also survived. The walk was not rebuilt because it was not attracting tourists. A slaughterhouse was located on the river, and this was one deterrent for tourists. It caused an unpleasant smell and attracted many crocodiles, making people concerned when utilizing the river. Subsequently the slaughterhouse moved to another location. Tourism is currently picking up in Orange Walk and the river walk could now play a central role in attracting tourists.

In the 1999 Orange Walk Master Plan, there was a plan to build a walk from along a proposed biological corridor (figure 1). The Town has already started a path in the south end of Orange Walk. The Cultural Center at one end of town could be a node for such a walk. If such a walk were to follow along the biological corridor, it would run along the New River from the borders of Trial Farm to Crooked Tree.

Figure 1. Structure of Tourism Development
Source: 1999 Orange Walk Master Plan

Recently the Town established a sixty-six foot setback from the river, which is deemed as public access. However, land that had already been private land is still considered private. This includes a saw mill, private residences, and tourism businesses. At present some people are living within the floodplain. The east bank of the New River is undeveloped and provides a very pleasant view corridor for people strolling on the west bank. The ground on the east side of the New River is somewhat swampy. The
1999 Master Plan for Orange Walk recommended that it be a protected area with a circuit trail running from the highway bridges at Independence Park and the bypass bridge south of town.

**Casual Factors**

Development is expensive. In a city with a stretched budget, it is difficult to allocate funds to a project that does not promise immediate success or address pressing concerns. The development of the town has not focused on the river, and development has moved steadily away from the river. The town has thus not capitalized on an important civic asset. In addition, the large floodplain means possible loss of property to anyone building near the river.

**Stakeholders**

Some of the stakeholders that could be affected by a riverside development strategy are:

- Orange Walk residents
- Business owners in Orange Walk
- Local artisans and entrepreneurs
- Property owners
- Recreationalists
- Tourists
- The environment
- The Belize Tourism Board (BTB) and Belize Tourism Industry Association (BTIA)
- Industry along the New River

**Objectives**

This report has several objectives:

- Maintain ecological health of the New river
- Beautify and maintain the positive aesthetic appeal of the New River
- Create public spaces and access along the river for the citizens of Orange Walk town
- Attract tourists
- Address erosion issues

**OPTIONS**

This section discusses options and proposes alternatives for riverfront development along the New River. Some options are mutually exclusive while other options may be used in conjunction with others.

**Options 1 through 4 – Pathways**

Options 1 through 4 are the pathway options for the riverside. These options should be considered together in conjunction with each other. Different options could be applied in various areas.

Options 1 through 4 can also be considered along with options 7 and 8 to create a continuous pathway rather than a broken up one. In addition, option 11 should be considered to fully utilize the commercial aspects of the pathway.

In the case of pathway options, the 1999 Orange Walk Master Plan proposed a possible routing for the pathway together with policies to preserve riverside areas for public use or conservation. The pathway could run along the west bank of the New River from Trial Farm to Crooked Tree. If the town or government could not acquire some properties for such a preserve, these areas could be linked through options 7 or 8. In addition, if considering this option the Town Council should definitely consider option 11.

One feature that is common to the pathway options below is public safety. The botanical preserve near Trial Farm would be part of a river walk pathway. Concerns have been raised about the safety of people walking through the park at night. This issue would apply to all parts of a river walk. A good way to lower the crime rate would be to install lights that illuminate the pathway at night. These lights can be fairly inexpensive and could be aesthetically designed as lamp posts rather than streetlights.

Options 1 to 4 have the following common tasks:

- The mapping out of where the path will run along the New River
- The clearing, levelling, and preparing the ground where the path will run
- The assembling materials for construction of the path
- Developing design plans and surveys for the pathway
- Recruiting volunteers with appropriate skills to assist with work
- Assigning town staff to oversee construction, as necessary
- Informing the BTB and BTIA of the new attraction in Orange Walk

**Option 1 – Pathway atop Dike**

Large metropolitan centers often feature a long raised walking path near water. Such a walk could be the real focus of Orange Walk. If the government ever
constructs a dike for floodwater control along the New River, the town should capitalize on such a project and create a walk along the top. The walkway should be at least four feet in diameter.

**Option 2 – Gravel Paths**

Gravel paths are very pleasant to walk on and are a low cost alternative for walking paths. They also have minimal impact on the environment. By laying out large stones to border exactly where the path should lead one can simply fill in with gravel. This can be augmented by cobbles (rocks with a diameter between 0.5 and 2.0 feet).

Floods can damage gravel paths. Annual maintenance would be essential to keeping the pathway in good repair. Such a pathway is extremely easy to construct and maintain. The Town could provide volunteers with tools and material to do the work, which would save costs.

**Option 3 – Riverfront Boardwalk**

Many communities have developed boardwalks as the centerpiece of their community. They are extremely attractive and create a wonderfully relaxed atmosphere for a pleasant walk through town.

Unfortunately, people have scavenged boardwalks for building supplies. If a boardwalk survived hurricane flooding and the boards did not float away, people with damaged homes might take boards from the walk.

One possibility to discourage theft would be to paint pathway materials such as boards of a boardwalk orange. This would mark the boards and create an “Orange Walk”.

**Option 4 – Woodchip Path**

A woodchip path is by far the easiest and cheapest way to create a riverside path. Woodchip paths are extremely popular in areas that are not prone to flooding or fires. Woodchips can be obtained from nearby sawmills at little to no cost. Woodchip paths are easy to construct and repair and so volunteer labour is a great asset to such a project.

Flooding would destroy a woodchip path as materials float away. The path would have to be rebuilt each time there is a flood. Wood chips may also have environmental implications that would need to be assessed.

**Option 5 – Erosion Study**

Riverbank erosion is a serious issue along the New River. In addition to normal erosion caused by river flows, floods, and hurricanes, boats traveling at high speed up and down the river are eroding the riverbanks. Cruise ship boats cause problems as they race along the New River on their way to Lamanai.

![Figure 2. Boat Wash along New River](image)

A study of erosion could show trends of riverbank erosion and helps gather data about the rate of erosion as well. This data could prove especially useful for later studies on where erosion is taking place and how to address such issues. If volunteer labour were used, say an hour a year for each set of control stakes then this issue would have a low start-up cost.

Option 5 requires the following:

- hammer control stakes on either side of the New River. Ensure these stakes are well away from the banks (5m).
- Use a long spooling tape measure to measure and record distance from stake to riverbanks.
- Do this annually and extrapolate the rate and locations of erosion.

This whole process can be done with multiple control points to find out where the banks are eroding fastest.

**Option 6 – Build Tire Riverbank**

Along the New River, some private owners have chosen to reinforce their riverbanks with a tire wall. These walls are cheap to construct and protect the bank from erosion.

Tire-banks are unattractive but can be covered and landscaped to reduce unsightliness. Private owners or by the Town could use this option to protect civic structures in specific locations.

This option requires the following:

- Determining where on the riverbank walls are to be placed
• Laying tires down with the river as low as possible
• Using appropriate pilings and cement to hold tires in place
• Landscaping the tops of the tires to hide the tire-bank

**Option 7 – Buyout Riverside Properties**

Although the town could route pathways around private riverside properties along city streets, continuous riverside paths are very desirable. Private owners can allow passage, and this is likely if the properties have public uses, such as restaurants or concessions. Some properties may present significant obstacles to a pathway system. In these cases, the Town or government may consider buying key riverfront properties on the west bank of the New River would allow the river walk to run unimpeded through the town. This option is clearly very expensive and would be used key situations.

Option 7 requires the following:
• Identifying properties on the west bank that are needed for a riverside pathway plan
• Asking private owners and businesses along this walk if they would be willing to provide an easement for the walk to run through their properties
• Where easements are not feasible, raise funds for purchase of properties

Option 7 can be used in conjunction with option 8. Option 7 should not be undertaken unless one of options 1, 2, 3 or 4 is also being implemented.

**Option 8 – Make an Orange Walk**

Currently, much of the west bank of the New River is private property. Where the town or government cannot obtain easements or title to allow a public walkway, the town can simply route the pathway around these private properties to get to the next section of a river walk. The town of Chemainus (BC, Canada) has an interesting solution to the problem on shepherding tourists where they wish them go. The town has painted footsteps around their town that tourists are encouraged to follow (figure 3).

It is important that the town establish connectivity between its various parklands. While private property would regularly interrupt a riverfront walk, one can easily bypass this with painted footsteps or other marking system. This gives the town a unique feel and allows one to lead recreationalists to the next spot of green space in the town, as well as to the central area or other retail areas.

![Figure 3. Footsteps in Chemainus, BC](image)

Orange Walk can have a similar program and make it unique to this town. Footsteps could be shaped like bare human feet or even crocodile feet. The footsteps could also be painted in orange, making a truly ‘Orange Walk’. Such a pathway is very easy to create and very inexpensive.

Option 8 involves the following:
• The mapping where the path will run around private properties to get back to the riverwalk
• Create a painting template with the desired footprint image. The template would have cutout holes that can be painted through directly onto the road or sidewalk.
• Enlist volunteers to paint the footsteps in the appropriate locations.

An optional element in this plan is to upgrade sidewalks and other infrastructure where the footsteps are to run to ensure good safety and aesthetic appeal in high traffic areas.

Option 8 should only be considered if one of options 1, 2, 3 or 4 is being implemented. Option 8 can be implemented in conjunction with option 7 by buying what properties are available for reasonable purchase and circumnavigating the others.

**Option 9 – Plant Bullet trees**

Shade is an extremely pleasant thing to have during a hot day. Large leafy trees can provide shade. Bullet trees grow naturally near the New River. In addition, bullet trees are extremely good at preventing erosion along riverbanks as their roots systems retain soil very well.
Option 9 involves the following:
- Locate an area that has transplantable bullet trees
- Plant trees in riverside areas with little shade or are at risk of eroding

**Option 10 – Post Speed Signs on River**

Currently wave action from boats traveling at high speeds on the river causes much of the erosion occurring on the banks of the New River. To address this, Town Council could put signs along the river, especially at either end of the town stating: “Please Slow Down”. These signs may be effective in getting cruise ship boat captains to slow down while traveling through the town.

The sugar refinery’s barges should be allowed to move at higher speeds however. During cleaning cycles, the factories dispose of some hazardous waste into the river. To dilute this waste quickly they run boats up and down the river after disposal. This helps with dilution and this practice should continue.

Option 10 requires the following:
- Gathering of necessary materials
- Painting signs, one for each river entrance to the town, stating: “Please Slow Down, Por favor Desaceleración”
- Installing signs

**Option 11 – Link Downtown to Riverside**

The New River should be linked to the Orange Walk downtown area, both for the benefit of local residents and to attract tourists. A good way to link the downtown to the riverside is with pathways that link to the river. These could connect with the cultural center, the projected tourism center, and other features.

A pathway from the projected tourism center could run up Church Street and then Park Street straight into the central plaza of Orange Walk town. This would provide a pleasant vista for walkers. A path from the cultural center to the downtown core could run along Queen Victoria Avenue and then down local streets to the cultural center.

To reduce costs, Orange Walk could simply paint footsteps leading people where you want them to go, as discussed previously. Option 11 includes the following task:
- The mapping out of where the path will run to link up the downtown with the riverside
- Creation of a template from a large piece of cardboard. This should be a cut-out hole that can be painted through directly onto the road or sidewalk.
- Have a volunteer go around town painting footsteps in the appropriate locations.

Option 11 should not be implemented unless one of options 1-4 is implemented.

One long-term goal the Town Council can have is to upgrade the sidewalks and roads on the route of this footpath. The pathway to the river should be part of the pedestrian system planning.

**Option 12 – Protect the East Bank of the New River**

The east bank of the New River provides a pleasant view corridor and hosts a great number of species of flora and fauna. Development could damage ecosystems along the New River if both banks are developed. Currently the east bank is mostly undeveloped private property. The 1999 Master Plan recommended the area be designated a protected area. As an interim measure, the Town Council should consider implementing a strict large no-development setback on the east bank to protect environmental integrity, public access and aesthetic appeal.

Option 12 requires the following:
- Town council calling a public meeting to hear and consider the opinions of all stakeholders
- If Town Council still wishes to protect the east bank, it should approach the central government about acquisition and/or designation, and in the interim, establish a wide setback to prohibit development.

If the town and government implement Option 15 (bio-corridor) then this option is superfluous. Option 15 is a more wide ranging protection plan that includes the east bank of the New River.

**Option 13 – Restore Tourist infrastructure**

In the past, Orange Walk had a tourist information center, a pair of palapas and a dock on the New River near where Riverview Road meets Church Street. A hurricane destroyed this infrastructure some years ago and it was never rebuilt. There were few tourists in Orange Walk at that time.

Now there are more tourists coming to Orange Walk and Belize. Town Council wishes to attract tourists and the Belize Tourism Board have stated there is not enough infrastructure in Orange Walk to attract tourists.
Rebuilding the palapas and dock would enhance the infrastructure provided for tourists. The tourist information center is now a youth center. The palapas would not be for tourist use only, but locals would also use it. If a new dock is to be constructed it should be constructed to survive a hurricane flood. Such a dock must also not interfere with the boats and sugar barges moving up and down the river.

Orange Walk needs a tourist information center. The town hall has a vacant space that could easily be used for this purpose. If coupled with option 11 one could link up this information center to the riverside.

Option 13 requires the following:

- A decision on which of the infrastructure to restore, if any
- A decision on where to put the tourist information center if it is to be restored
- Granting of licenses to people wishing to set up food carts or barbecues near the riverside
- Restoring palapas and dock
- Forming a committee to organize the tourism information center
- Creation of tourism center with all necessary information about local lodging, restaurants, entertainment, shopping and tourism attractions

Option 13 should definitely be considered if any one of options 1-4 are implemented.

**Option 14 – Create Sturdy Public Structures in Floodplain**

The annual flooding of the New River is more than an inconvenience to some people. Floods regularly force citizens to evacuate from their homes and live in temporary housing; they often have to deal with serious property damage as well. Floodplain areas would be better utilized for permanent and hardy public spaces rather than housing. The most difficult problem would be to provide good housing to replace the bad housing where people currently live on the floodplain.

The San Lorenzo development currently experiences major drainage issues. However, if these issues were resolved, then a trade could occur, giving occupancy of the houses in San Lorenzo in exchange for the land and houses on the floodplain. This would provide an incentive for people to move since they would be acquiring title to good housing that is less at risk of damage.

Many different types of public uses could be established on a floodplain that would not be at risk from flooding. Some examples are:

- A soccer pitch
- A band shell, that is, a platform for bands to perform for audiences
- Green space, a fairly large park area, with playing fields
- Fruit trees for consumption by local residents. Perhaps many orange trees coupled with an “orange festival” during the harvest would be a great way to get together as a community as well as attract tourists. Perhaps a competition to create foods and desserts that utilize oranges.
- Space for the circus to come to town. While the Town already has this it is placed on valuable high ground with good drainage. This land could be used for other purposes. By relocating the circus ground the council frees up valuable land in the downtown and utilizes the floodplain
- Creation of a playground for children with the structures anchored to the ground

Option 14 would certainly help create a community feeling along the riverfront and create a wonderful atmosphere for both tourists and local residents.

**Option 15 – Implement Biological Corridor**

The 1999 Orange Walk Master Plan proposed biological corridor along the New River that would run along the New River from Corozal to Crooked Tree. The plan also detailed an “Orange Walk Park” on the east bank of the New River (see figure 1). Parts of this plan have already been implemented.

The main obstacle to this plan is that parts of the proposed biological corridor are currently privately owned. One solution for this is to grandfather out the land that is currently in private hands and protect the rest. There is already a 66-foot setback from the river, this can be enforced.

Option 16 requires the following:

- A review of the issues surrounding the implementation of the proposed Biological Corridor
- Consultation with the public on whether they wish this implemented
- Going ahead with necessary business and legislative tasks to create the biological preserve

Option 15 subsumes Option 12. While option 15 is bigger it also requires more time and energy to create.
ANALYSIS OF OPTIONS

The options above will be assessed based on the following criteria. The text below and table on the following page suggest some weights that could be assigned to each criterion. However, the community could debate and assign weights based on their own opinions.

1. Cost

Orange Walk town has a very limited budget. Thus, careful consideration must go into how much an option would cost. This criterion has four categories.

- No cost (involves volunteer labour and cost less than $100)
- Low cost (a projected budget of less than $1000; may or may not include volunteer labour)
- Medium cost. (budget between $1,001 and $10,000; central government funding should be applied for in such a case)
- High cost (cost over $10,000; almost certainly not undertaken without assistance from the central government).

No cost is given a score of 50, low cost 40, medium cost 20 and high cost 0.

2. Promotion of Tourism

Orange Walk wishes to attract tourism. The promotion of tourism is therefore an important goal, second only to cost. It is given a weight of 15% of the total criteria.

3. Ecologically Sensitive

Belize is a land of great beauty and its people take pride in that, ecological sensitivity is reflected in these criteria. It is given a weight of 10% of the total criteria.

4. Prevention of Erosion

If an option works towards avoiding erosion on the New River it is given a weight of 10%. This is related to ecological sensitivity but was kept separate for clarity’s sake.

4. Politically and Culturally Sensitive

The Town must consider the political and cultural implications of each option. This criterion is assigned a 10% weighting.

5. Permanence

If a policy is expensive and gets destroyed during the next flood the policy is useless. A 5% value is assigned to such a factor. A value of semi is assigned a score of 3%, this reflects that such a policy would require repair but not reconstruction during the course of its existence.

Recommended Options

The following options are recommended: 2, 5, 8, 9, 10, 11, 12, 13, and 15.

There is synergy among the recommended options. Option 2 recommends a gravel path through the town along the New River. Options 3 (boardwalk) and 4 (chips) could be implemented in some areas. Option 8 (trails along streets) would avoid private properties on this walk without breaking a budget. Option 9 (planting trees) would keep the walk shady, pleasant and more permanent. Lights are essential for safety at night and are options in all the riverwalks. Linking of the riverwalk to the downtown in option 11 would increase economic incomes. Revenue generation is also kept in mind in option 13, restoration and reuse of the existing tourist infrastructure. Option 15 maintains the aesthetic appeal of the riverbank.

It is also important to preserve the river for future generations. The town and government should immediately implement a study of erosion (option 5) to assess riverbank erosion. Option 10 (speed signs on river) should also be done immediately to reduce erosion. If there is erosion, option 6 (tire-banks) may become a priority in places.

Long term goals should certainly include the implementation of option 14, which involves the movement of a great many people out from a hazard zone. If the goal of the government is to work for people then undoubtedly the re-location of people to safe and affordable housing should be a priority. This option would require external funding from the central government and international organizations.
Matrix of Options

<table>
<thead>
<tr>
<th>Criteria/Options</th>
<th>Cost</th>
<th>Pro. Tourism</th>
<th>Eco. Sensitive</th>
<th>Prevents Erosion</th>
<th>Pol/Cul Sensitive</th>
<th>Permanence</th>
<th>Score</th>
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<tbody>
<tr>
<td>Weight</td>
<td>50%</td>
<td>15%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
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<td>Op1: Pathway atop Dike</td>
<td>High</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>45%</td>
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<td>Op2: Gravel Paths</td>
<td>Low</td>
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<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>Semi</td>
<td>73%</td>
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<td>Op3: Riverfront Boardwalk</td>
<td>Medium</td>
<td>Yes</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>Semi</td>
<td>53%</td>
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<td>Op4: Woodchip Path</td>
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<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>70%</td>
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<tr>
<td>Op 5: Erosion Study</td>
<td>No</td>
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<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>78%</td>
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<td>Medium</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>45%</td>
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<td>Op7: Buyout Riverside Properties</td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>27%</td>
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<td>Op8: Make an Orange Walk around properties</td>
<td>No</td>
<td>Yes</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>85%</td>
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<tr>
<td>Op9: Plant Trees</td>
<td>Low/Med.</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>80%</td>
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<td>Op10: Post Speed Signs on River</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>80%</td>
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<tr>
<td>Op11: Link Downtown to Riverside</td>
<td>No</td>
<td>Yes</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>85%</td>
</tr>
<tr>
<td>Op12: Protect East Bank</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
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<td>Op13: Restore Tourist Infrastructure</td>
<td>Medium</td>
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<td>N/A</td>
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<td>Yes</td>
<td>Yes</td>
<td>55%</td>
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<td>N/A</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>13%</td>
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<tr>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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IMPLEMENTATION PLAN

The development of the New River will need careful consideration and planning that this document cannot possibly cover. Therefore, a town official or committee should be appointed to develop plans and recommend what options should be implemented and oversee work. Depending on the size and complexity of the options to be implemented, the retention of a pathway planner and/or civil engineer may also be necessary.

The next step should be to consult with the public to determine the level of support for the proposed program. Council could host a series of public “open houses” to meet with the public. An open house is a public event where plans are displayed on posters, and the public invited to attend and discuss proposals in an informal, one-on-one manner with staff or council members. The notifications should stress that this is an opportunity to hear and listen to the community’s thoughts on the proposals and make suggestions for changes or improvements.

Once the public is consulted and council has decided what options to implement, council and central government agencies must pass necessary legislation, approve budgets, and give approvals for implementation.

The budget must account for many things, including construction materials, wages for workers, and costs of rental equipment. It must also include, where necessary, the cost of acquiring privately owned land. It should also look for savings, such as use of volunteer labour whenever possible. Finally, it should seek donations from local businesses, industries, central government, and international agencies.

Next, quality and performance standards should be set for the projects. This means setting budget limits, timelines, ecological restraints, and other standards.

Finally, plans can be implemented. The committee or individual in charge can implement the program over time subject to the overall plan. This would include overseeing individual projects.
EVALUATION

The options being considered should keep the following goals in mind. If they are not being fulfilled then either the implementation of more options or the reconsideration of implemented options should be considered.

The Developments along the river should

- Maintenance of ecological health. Each project should be assessed for its impact on ecological health. This would also include area of ecological space protected.
- Creation of public access and space. Progress can be assessed on the basis of the increase in amount of public space.
- Attraction of tourists. Measures should be devised to assess the extent to which the riverside plans attract tourists to the river and to Orange Walk.
- Sustainability. Criteria should be developed to assess whether the project will last a lifetime and not damage the local ecology or economy.
- Reduction of riverbank erosion. Erosion studies should be done and repeated annually to measure how effective erosion control measures are in reducing erosion.
TOURISM PROMOTION

by Leah Irvine

Leah Irvine discusses options for promoting tourism in Orange Walk. Tourism in one of the world’s fastest growing industries. It is also a clean industry and one that is accessible to many small businesses. Tourists are increasingly diverse in their interests, and Orange Walk has much to offer.

At the end of the field project, Leah Irvine received with a Bachelor of Arts in Geography - Urban Growth Management from Malaspina with a minor in history. She hopes to pursue a career as a city planner, with a special interest in preserving agricultural land. She has lived in Nanaimo for her whole life.

ISSUE IDENTIFICATION

Issue Statement

Orange Walk Town Council is interested in developing a secondary economic base because the future of the sugar cane industry is uncertain. One option is to expand and develop a tourist industry.

Issue Significance

Because of trade liberalization, Belize is losing its preferential status for sugar exports to the European Union. Many Walkeños currently rely on the sugar industry for employment. It is time to diversify the economy within the town, and the Caribbean already has a tourist industry firmly established that the town can benefit from.

History of Issue

The tourist industry has not had a major role in the economy of Orange Walk. The town has some tourist infrastructure already established such as, hotels, restaurants and tour operators. Currently, the town is mainly considered a place to stop for only overnight visitors, and is not a tourism destination.

The 1999 Orange Walk Master Plan proposed camping areas and open spaces along the New River. There has also been a plan to construct a boardwalk along the New River. However, these plans have not been implemented.

Casual Factors

The present lack of tourism in the town is due to several factors, including:

- Dependence on one economic industry
- Lack of river access for people
- Lack of awareness of tourism potential by residents
- Lack of promotion of tourist industry through advertising and residents
- Lack of funds available to increase tourism infrastructure

Stakeholders

Many stakeholders could be affected by a tourism strategy

- Residents who are the people who will benefit the increase of tourism
- Tourists (local and international) who will choose to travel to Orange Walk
- Tour guides who relies on tourists for income
- Hotel owners who relies on tourists for income
- Restaurant owners who relies on tourists for income
- Small business owners (merchants and artisans) who relies on tourists for income
- Wildlife, which requires a natural habitat that is not polluted to survive
- Riverfront industries (such as Belize Sugar Industries) that will be affected by an increase in tourism

Objectives

The development of a tourism policy has several objectives:

- To enhance river tourism
- To beautify the river corridor
- To encourage recreational activities (for locals and tourists)
- To increase tourism marketing (with entities such as the Belize Tourism Board and the Belize Tourism Industry Association)
- To use Orange Walk’s present features to increase tourism
- To use Orange Walk’s central location on the New River as an attraction

OPTIONS

Orange Walk has much potential for increasing tourism and the following are a few ways to work towards that goal. Orange Walk Town and District
have a lot to offer. The strongest assets are the friendly residents, the rich culture and heritage, the New River, the jungle ecosystems, and sugar industry. If tourism gains momentum then more and more residents will become involved in the industry. However, there needs to be a starting point for the tourism industry to flourish and some of the following options can establish that.

**Option 1. Promoting Regional Attractions**

Orange Walk lies in the central area of Northern Belize. In this location, it can be a gateway for visiting sites in the region. The town could thus capture a portion of the traffic that now is on the way to somewhere else, such as Mexico or Corozal or Lamanai.

**a) Lamanai and New River Gateway**

Many people now use Orange Walk Town as a gateway to the New River corridor and Lamanai Archaeological Reserve. The New River corridor is green and wildlife is plentiful, especially birds. Tours already provide access every day. Orange Walk can benefit from strategies that service this business, such as hotels, restaurants, and tourism operators. Tours of the river could serve domestic as well as international tourists. River tours are a popular tourism attraction. Tours can be enhanced with nodes along the way that invite tourists to stay over night in jungle cabanas or local villages.

**b) Belize Sugar Industries Factory Tour**

Industrial tourism is a fast growing attraction for tourists. Belize Sugar Industries (BSI) now offers tours of its sugar processes facilities, which could attract more tourists with advertising. For international tourists, BSI could charge a fee. This would also educate tourists to sugar industry issues. Tourists in other regions are seeking unique experiences such as travel on ocean-going freighters; BSI could consider offering excursions on its river boats.

**c) Sugar Cane Farm Tours**

The sugar cane fields surrounding Orange Walk could be an attraction for tourists. Tours could include the demonstrations of the cane being harvested and brought to the mill. The tour could offer sugar cane products for purchase for an additional profit.

**d) Bird Watching Boat Tours**

The Orange Walk area has the largest population of birds in the country. This is a major asset to increase tourism in the region. Birdwatchers, known also as “birders,” will spend lots of money and time to see new birds and add to their personal “bird lists.” Since there are already boat tours on the New River, special tours could be promoted that focus on birdlife. Orange Walk tour operators could advertise in popular bird watching newsletters.

**e) Protected Areas**

Tourists are attracted to protected areas that are untouched by development. Designation of an area as a “park” automatically increases interest. One possibility for such an attractive protected area is the jungle across the New River from the town. The 1999 Master Plan proposed this area for protection. The vegetation is untouched and filled with wildlife, the land is low lying and flood prone, and the river provides a natural boundary for development. Construction of a walkway through the jungle would enhance this area. The most important thing is to limit development here and protect a large amount of the natural habitat and a scenic riverscape.

**Option 2. Development along the New River**

The New River is an obvious attraction for recreational activities. The New River is within walking distance of the central area of town, which makes is accessible for many people to come and enjoy the natural beauty of the river. The river provides a natural gathering spot for wildlife, including hundreds of species of birds, as well as fish and crocodiles.

The main concern here is to minimize any harm to the river from further erosion or pollution.

**a) Develop a River Walk**

The 66-foot buffer along the river could be developed into a river walk. A river walk would draw people down to the river and create a place to relax and cool down at night and enjoy the diversity of riverine wildlife. Even though the river floods, there are different types of building materials, like hardwood, that would stand up against the flooding of the river. The river walk would create a location
for local artisans and merchants to set up little stalls to sell their merchandise.

b) Renovate Old Slaughterhouse
The abandoned slaughterhouse on Slaughterhouse Road is well located and the town could convert this site into a tourist and recreation attraction by painting, reconstructing the roof, and adding information signs explaining about the history of the building.

c) Develop Platforms for Nature Watching
The Orange Walk area has the largest population of birds in the country, with hundreds of species of birds, many of which live on the New River. Serious bird watchers could be attracted to the town if trails and wildlife watching platforms were built along the New River. In addition, signs could be installed to educate people about the most popular birds and give information about them. This would benefit residents as well as visitors.

d) Create a Public Dock
There are many types of water activities that could be accessed easily from a dock, and a dock would provide a place where people could keep small boats. Canoes and small boats could also be rented out. BSI barge traffic needs to be considered, especially if tourists use small boats at the same time as the barges are on the river.

Option 3. Spread the Word
Currently if someone is looking for places to stop in Belize, Orange Walk does not stand out. The local tourism industry needs to advertise to get messages across. Businesses can advertise in hotels, restaurants, and shops where visitors are most likely to stop.

a) Increase Advertising for Tourist Activities
Currently there are activities for tourists in and around Orange Walk, but to find these, one must ask local residents. Tour guides should be encouraged to advertise, including placing brochures and posters in busy locations. Many other businesses could also advertise tours, such as BSI tours of the sugar plant.

b) Orange Walk Town Tourism Website
The Internet is the easiest way to spread information, especially about areas that tourists are thinking about visiting. A large proportion of tourists today book hotels, vacations, and tourist activities online. An Orange Walk website could advertise local tourism opportunities and businesses. The website could also include a calendar displaying annual and monthly festivals or markets, like the monthly flea market, the Fiesta Rama, Mother’s Day, and other events.

c) Create a Tourist Centre
Tourism in Orange Walk would benefit from a location for visitors to get information on local attractions and tourism services. A town councillor suggested that a tourism centre could use a vacant room under Town Hall; this would be a great place for a tourist centre because of its central location. The tourist centre would have posters and maps, as well as brochures for hotels, restaurants, shops, and tours that might interest visitors. Signs should be installed around town directing tourists there.

d) Construct “Welcome to Orange Walk” signs
Currently, there are no entrance signs welcoming passing visitors to Orange Walk. The Town could place signs at northern and southern ends of the central area of town to welcome visitors and invite them to stay.

Option 4. Local Education and Awareness
Many local business owners said in interviews that they were not aware that there are a lot of places that tourists would be interested in visiting in the Orange Walk area. For example, tourists today are interested in learning about the sugar industry, local history, and local ecology. For tourism to work, local people and businesses must see the opportunities and benefits. Residents need to be informed.

a) Benefits of Tourism
Tourism is the fastest growing industry in the world today. Tourism brings in money into an economy. Importantly, the residents need to be educated as to the benefits of developing a new industry. This could be done through the local papers, on posters, on local radio stations and through town meetings.

b) Environmentally Friendly
To keep the natural integrity of the surrounding rainforests, rivers, land and air it is important to consider when developing.

c) Encouraging Small business Owners and Entrepreneurs
Without having places to shop or tour guides to explain the area, it will be harder to expand tourism. There must be encouragement to the owners who will help achieve this goal, whether it is simply getting
the idea across that more entrepreneurs are needed or if there could be some type of financial help.

ANALYZING OPTIONS

Criteria

The following criteria are used to evaluate the options. See Table 1 below for evaluations.

Criterion 1. Cost to Town Hall

The option suggested does it have a high cost to Town Hall to develop and does it require a lot of labour to accomplish?

Criterion 2. Cost to Environment

Does the less of a negative impact on the environment the better, but if a development does negatively effect the environment, how harsh will it be?

Criterion 3. Cost to Economy

Town Council wants to boost the economy through tourism, do these options help achieve this goal?

Criterion 4. Will it Increase Tourism?

Does each option directly increase tourism? This is the main goal.

Recommendations

Options 1 and 3 as a whole looks to have the most results with the least amount of money. However all four options work together and benefit each other.

IMPLEMENTATION PLAN

Within three months, Town Council should contact BSI to suggest advertising for tours. Council should also encourage a local farmer to establish cane field tours.

Council should also encourage a tour guide to offer a bird watching tour on the New River and other areas. This should be advertised to tourists.

Within the next six months, the tourism website and the tourist centre should be up and running. This step includes communication with the business owners so they will help pay for both, through advertising.

Within the next year, resident awareness and education initiatives about the benefits of increased tourism should be completed. This includes options that environmentally friendly benefits, tourism benefits and encouraging small business owners and entrepreneurs.

In addition, within the next year, the town should pursue the option of a protected area on the river.

The town should complete the first stages of the artisans shop or stall, even if that means the items are for sale in a local business.

Within the next year and half, tourism operators should increase advertising of tourist activities and complete the new welcome sign.

Within the next two years, the renovation of the old slaughterhouse should be completed as well as the development of the platforms. This step includes the future planning of the river walk as well, because the development of the platforms should benefit the future construction of the river walk, not hinder it.

Within the next two years, the BTB should recognize Orange Walk Town on its tourism website.

Within in the next two and a half years, the dock should be completed, and should have a small business owner renting out canoes during the appropriate months

Within the next five years, the river walk should be completed along with sufficient lighting, benches, and trees.

EVALUATION

Statistics should be updated on the number of tourists arriving in Orange Walk every year. This can be done through hotel occupancy rates compared to each year, on visitors use the tourist centre, and number of tours booked.

The town and government should update statistics on how many businesses rely directly on tourists, such as tour guides, hotels and restaurants.

The increase of business income after advertising should be estimated every year.

Business owners should be surveyed the every year to find out if more tourists are coming and if they are making higher profits.
Table 1. Orange Walk Boosting Tourism Options

<table>
<thead>
<tr>
<th>Criteria Options</th>
<th>Town Hall</th>
<th>Environment</th>
<th>Economy</th>
<th>Increase Tourism?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Regional Tourism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) New River and Lamanai Gateway</td>
<td>a) Minimal labour, minimal cost</td>
<td>a) Minimal effects</td>
<td>a) Can boost, if there was a fee for tour</td>
<td>a) Yes</td>
</tr>
<tr>
<td>b) Factory Tour</td>
<td>b) Medium to minimal cost for</td>
<td>b) Medium effects</td>
<td>b) Can boost economy</td>
<td>b) Yes</td>
</tr>
<tr>
<td>Advertising</td>
<td>development and labour</td>
<td>c) Minimal effects</td>
<td>c) Can boost economy</td>
<td>c) Yes</td>
</tr>
<tr>
<td>c) Cane Tour</td>
<td>c) Minimal cost</td>
<td>d) Medium effects</td>
<td>d) Minimal, could have donation boxes</td>
<td>d) Yes</td>
</tr>
<tr>
<td>d) Boat Tour</td>
<td>d) High cost</td>
<td>e) Medium effects</td>
<td>e) Can boost economy</td>
<td>e) Yes, but not directly</td>
</tr>
<tr>
<td>e) Protected Area</td>
<td>e) Minimal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Artisans Shop/Stall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Development along the New River</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) River Walk</td>
<td>a) High cost for development, high</td>
<td>a) Can have negative everlasting</td>
<td>a) Can boost business a long the river</td>
<td>a) Not directly</td>
</tr>
<tr>
<td>b) Slaughterhouse</td>
<td>labour cost</td>
<td>effects</td>
<td>b) Minimal, could have a donation box</td>
<td>b) Yes, but on a small scale</td>
</tr>
<tr>
<td>c) Platforms</td>
<td>b) Medium cost for development,</td>
<td>c) Can have negative everlasting</td>
<td>c) Minimal</td>
<td>c) Not directly</td>
</tr>
<tr>
<td>d) Dock</td>
<td>medium labour cost</td>
<td>effects</td>
<td>d) Minimal, could charge for moorage, and</td>
<td>d) Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>charge rental companies.</td>
<td></td>
</tr>
<tr>
<td>3) Spread the Word:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Advertising Methods</td>
<td>a) Cost could be minimal or high</td>
<td>a) Minimal effect</td>
<td>a) Will boost business to those that do so</td>
<td>a) Yes</td>
</tr>
<tr>
<td>b) Website</td>
<td>b) Low development, low to medium</td>
<td>b) Minimal effect</td>
<td>b) Will boost economy indirectly</td>
<td>b) Yes</td>
</tr>
<tr>
<td>c) Centre</td>
<td>labour cost</td>
<td>c) Minimal effect</td>
<td>c) Will boost economy indirectly</td>
<td>c) Yes</td>
</tr>
<tr>
<td>d) Signs</td>
<td>c) Minimal, just have to set up room</td>
<td>d) Minimal effect</td>
<td>d) Minimal</td>
<td>d) Not Directly</td>
</tr>
<tr>
<td></td>
<td>d) Medium development cost, medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>labour cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Education/Awareness:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Benefits</td>
<td>a) Minimal development, medium</td>
<td>a) None</td>
<td>a) Minimal direct effect, but in the long</td>
<td>a) In the long run</td>
</tr>
<tr>
<td>b) Environmentally Friendly</td>
<td>labour cost</td>
<td>b) A more positive effect if followed</td>
<td>run more effect</td>
<td>more effect</td>
</tr>
<tr>
<td>c) Encourage business</td>
<td>c) Minimal development, medium</td>
<td>through</td>
<td>b) Minimal</td>
<td>b) Not Directly</td>
</tr>
<tr>
<td></td>
<td>labour cost</td>
<td>c) None</td>
<td>c) Medium to high in the long run</td>
<td>c) Yes, in the long run</td>
</tr>
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CULTURAL HERITAGE TOURISM

By Annie Brown

In this paper, Annie Brown discusses how Orange Walk could promote its culture and heritage as a tourism asset. Often things we live with are things we do not see. Orange Walk has a very diverse culture and rich heritage that could attract tourists.

Annie Brown is a fourth year student working in her double major in Geography and Anthropology at Malaspina. She intends to work on her graduate studies in archaeology and physical anthropology and pursue a career as an archaeologist with an interest in ancient culture and mythology. Her special interests include fossils, art and history. She comes from Holburg, BC and currently lives in Courtenay, BC.

ISSUE IDENTIFICATION

History

Orange Walk is a town rich with history that dates back as far as 2500 BC starting with the Maya. The Cuello Maya archaeological site is located just three miles west of town. Cuello was a Mayan ceremonial centre and next to it, where Orange Walk now stands, was Holpatin, a residential and farming area. Maya history continued well into contact when around the 1600s British loggers came to the scene. They were after logwood, important as a source of red dye. The loggers camped along the shores of the New River. Many believe this is how Orange Walk Town came to be.

The Caste Wars occurred around 1847 and 1872. This war brought an influx of Mestizo people into the area as well as a few Maya from Yucatan. In 1872, the Maya lead by Marcus Canul overran Orange Walk. The battle ended when some members of the West India Regiment shot and fatally wounded Canul. The Regiment comprised of Creole and Jamaican men. In 1874 to 1876, the British built Fort Mundy and Fort Cairns in response to that battle.

It is clear Orange Walk has become a place of many cultures. Today, only a few cultural celebrations are held. Most of these are sponsored the Roman Catholic Church, the largest religious denomination in Belize. These celebrations include Fat Tuesday, Lent, Los Finadas (in October) and celebrations we see around the world like Easter, New Years and Christmas.

As for celebrations of cultures; on September 19, 2002 the Banquita’s House of Culture was opened to the public. Originally, this house of culture was built to celebrate Orange Walk’s many peoples. Dances, ceremonies, rituals and displays were made. Today due to lack of funding, the Banquita’s house of culture is now only a small donation museum with irregular hours of operation.

Issue Statement

Currently Orange Walk Town has very little tourism especially cultural tourism. Historical sites in this town that may be significant, educational and meaningful are in danger of destruction from development.

Issue Significance

Orange Walk’s former image as “Rambo Town” has caused negative reviews that do not reflect the town’s current people and cultures. Many residents do not know or recognize the history of the town or the existence of century-old buildings there. Without an inventory of these structures, new construction can destroy valuable heritage buildings and sites. Archaeological and historical information will be lost without proper site excavation and documentation. This means Orange Walk’s history will be lost forever. Celebrations of cultural interest are inadequately advertised and few of these celebrations center around local cultures. With the lack of preservation and restoration of their history and fewer cultural celebrations, it would make attracting tourists to Orange Walk quite difficult.

Causal Factors

Orange Walk’s issues most often begin with insufficient funding, whether from the central government, private businesses, and foreign investment. High interest rates also create difficulties for small business. Funding appears to be an issue for everyone.

For education, there is not enough focus in on Orange Walk Town itself and its history. Many people living in the town know nothing of their hometown’s history.

In addition, Muffles College tends to send its tourism students out of town to work as volunteers.
or to study abroad. Walkeños move to other towns to work in tourism.

Few businesses cater to tourists’ interests. Tourists cannot find unique Orange Walk or Belizean merchandise or souvenirs to take home with them. Many items are from the United States or other countries.

There is no central tourism centre or any gift shops. Because of this, tourists have no information about what is to see or do in Orange Walk, and many, if they stay a night, leave the next day.

Unkempt buildings are noticeable in parts of the town and are a distraction for tourists.

The cultural opportunities of Orange Walk are invisible to tourists and many residents because of a lack of promotion of local events, event calendars and brochures.

Development of the town and privatization of land has become a threat for all of the historical sites. Many times buildings are built on lots bought without knowledge of their past. This presents a problem since quite often surveys are not done properly and the chance of losing a site or information on a site is at a high risk.

The town also needs to address crime and drug abuse before actively promoted for tourism.

Orange Walk’s identity has also become a hindrance. The old label of “Rambo town” has positioned the town as a place of violence, drugs and drunks. While exaggerated, when this reputation must be neutralized.

Weather, health and crime warnings have also become a problem for the town and many times tourism guidebooks tell tourists to skip the town or stay for as short a time as possible.

Stakeholders
There are several types of stakeholders that would be affected by this policy.

- Residents who would like to see the town change for the better and learn something about the town itself.
- Town Council, which would like to attract more tourists to Orange Walk. This would also strengthen the town's economy as well as improve the town's revenue.
- Tourists (Belizean and foreign) who would benefit from having a new place to visit as well as opportunity to see one of the locations that has among the most diverse cultures in Belize.
- Businesses, which rely on the consumers.

Tourism would increase the sales. However, at present, few tourists spend much time in Orange Walk.

- Belize, which would experience an increase in total revenue as well as popularity for the more northern regions.
- Archaeological and historical sites, which would benefit from increased awareness and involvement in preservation, protection and restoration.
- Education, which would benefit as more children could learn about their town’s past history and how it came to be.

Objectives
The following are objectives for shaping this policy:

- Increase culture- and history-based tourism in the town
- Increase awareness of the history of the town to locals and foreigners alike
- Increase interest in the old fort sites and archaeological sites in and outside of the town
- Create an active interest in the culture in residents
- Create a calendar of celebrations
- Create a central tourism centre
- Influence businesses to take part in the market of culture
- Inform hotels, businesses, resorts, the house of culture and many more locations tourists would have interest in to produce brochures so tourists can find areas of interest
- Continue the detailed budget for the House of Culture and it's activities on a regular basis

OPTIONS

Option 1: Implementation of a Central Tourism Centre and Gift Shops- Current

At one time, there was a tourism centre in Orange Walk, located along the New River on Riverside Street. The tourism centre was small and away from high tourist areas. In 1961, Hurricane Hattie destroyed the entire riverside by flooding. Today there is no centre for tourism and often tourists simply pass by without giving Orange Walk a second thought.

1. Central Tourism Centre
The best location for a tourism centre would be somewhere central in the town, for example, such as
near the market square or on the first floor of the town hall where there is vacant space. These locations would be accessible and visible to tourists and local residents. In addition, they would have an opportunity to visit the markets.

2. Gift Shops
Currently there are no gift shops in Orange Walk. Often tourists are looking for souvenirs to bring back with them to show friends and loved ones. It would be better if there were locally made items that would make Orange Walk Town and District stand out. Carvings, art and other items would be a wonderful place to start. If local crafts prosper, younger people will be more likely to stay, locals will be able to make a stable living, and the local artists will stay in the town rather than leaving. The gift shop could also feature artwork from villages outside the town.

3. Cultural and Historical Celebrations
The town could hold celebrations every year, bi-yearly or any time. These should celebrate the local Orange Walk culture and cultures of surrounding areas, as well as the town’s rich history. These events could also be fundraisers that would be unique around all of Belize. The town could use the funds raised in these events to promote Orange Walk’s tourism.

Option 2: Historical Sites and Education
Orange Walk has a longer history than many towns in Belize. The town could use this history to become a popular destination in Northern Belize.

1. Historical Sites
Forts like Mundy and Cairns are potential historical assets to Orange Walk. Also throughout the town there are some older buildings, some as old as a century. If sites are improved, walking tours could take tourists around these locations. More importantly, the town and government must protect these buildings and forts or else they will forever be lost. Although expensive, if Orange Walk continues to prosper with tourism it may even be possible to set aside some protected land and rebuild the forts as they looked when they were first built.

Lastly, in regards to heritage buildings, forts, and monuments; signs and plaques should be installed for those who are interested locally and as tourists. The signs should give special attention to time, place, events, and people. Currently, there are locations where there were plaques but they were never replaced once they were broken or weathered. In other locations, the monuments have been deteriorating; it would be also wise to restore them so tourists could clearly see what they are.

2. Educational
Orange Walk does not teach its people much about its history. Not many even know the full history of the town. They do know, however, their own culture. This is a start. It would be best that the schools teach the students not only the history of Belize, but also about their home since it too plays a strong role in Belize's past.

Orange Walk could also use its historical buildings as a place to teach the children about the town’s history. They could go to the locations where events happened. The locals and children can then visualize the events that occurred in these places and they are thus more likely to remember them and identify with the town’s past.

Option 3: Archaeological Sites and Protected Sites
1. Archaeological Sites
The Maya occupied the Cuello site possibly as far back as 2500 BC. Today, Orange Walk itself stands on a Mayan site once called Holpatin. Both the Maya inhabited these sites at the same time. Even though there are fewer Maya in Orange Walk today it is clear that people have lived here for millennia.

By preserving Cuello, we may learn more about the Maya than any other site found around Central America. Because of its very old age and amount of habitation, it would be best to preserve this site as much as possible. Some reconstructions would be also an asset for tourism.

If Orange Walk takes advantage of this, the town could become one of the most famous locations in all of Central America. Also within the town, developers should be required to commission an archaeological assessment before any development begins to gather artefacts and irreplaceable information on the town’s past before they are lost. Archaeologists can place recovered items in the House of Culture for all to see and learn about.

2. Protected Lands
Under the Protected Areas Conservation Trust (PACT) Orange Walk could ask to obtain protected lands. PACT could give Orange Walk the funding needed to protect or buy the lands based on PACT’s criteria. These could be simply the lands around the forts and Cuello. If these lands are protected then the sites will also be in turn protected.
**Option 4: Oral History**

It would be advantageous for Orange Walk to record the oral history of its elders. This would help Orange Walk document the town’s rich history and identity more firmly. Compiling these histories would preserve the many tales, songs, dances, rituals, medicines and genealogies of the town.

Preserving an oral history is very simple. Volunteers can do this using video, tape recorder, or pencil and paper. Standard questions can lead people through the process. In addition, people of any age can do an oral history by visiting and having a conversation with the elders and other knowledgeable people in the community. The stories one day will become a unique treasure to the community as their popularity increases. At the same time, this will save accounts of events for later reference.

**Option 5: Advertising and the House of Culture.**

1. **Advertising**

In Orange Walk, The House of Culture is the only place currently that is holding regular events. The House of Culture and hoteliers mentioned the need for brochures. Orange Walk has no brochures to indicate when and where events are happening, unless from the TV and radio channels. However, this is not where tourists get their information.

Orange Walk needs advertising for events. A small independent newsletter would be one option. For local residents with an Internet connection, a Yahoo group would provide a free local notification system. Advertised events would range from cultural events like certain holidays to school performances. For Orange Walk this would not only give something for tourists to see and hear about, this would be something for everyone.

2. **The House of Culture**

For the House of Culture it would be advantageous for them to establish a gift shop. Some of the artefacts on display were made locally or in villages of Orange Walk District. Gift shop items could be reproductions of museum pieces or other cultural artefacts. With Cuello nearby it would be a great idea to excavate and display the items in the House of Culture. In addition, it would be interesting to show case the cultures found in Orange Walk. Tourists would enjoy seeing some items, costumes and images of celebrations.

**ANALYZING OPTIONS**

This section analyzes the options above based on the following decision criteria.

**Decision Criteria**

This analysis uses the following criteria to assess the options:

- **Criterion 1**: Low Cost – These would be options that add little to no cost to the town.
- **Criterion 2**: Medium Cost – These are options that have an initial cost but begin to pay for themselves quickly.
- **Criterion 3**: High Cost - These are options that are high cost but may also have a large advantage for the town.

**Recommendations**

The table on the following page outlines the evaluation of the above options. For historical-cultural tourism in Orange Walk, it is best to start small but also to make waves. Orange Walk should make itself seen for its originality compared to all the other locations vying for tourism. Orange Walk should emphasize its cultural variety but not so much as to dilute or destroy its cultures. They should make the events as big as possible and advertise them everywhere. Independent newsletters should be created to show these events are only culturally affiliated not politically. No politics should enter into these events. A central tourism centre should be established and gift shops. From there Orange Walk should be able to work on its own and work out the next steps. However, Orange Walk must keep its heritage and history always in mind. This will be the key to gaining recognition, attracting tourists, and changing the image Orange Walk.

**IMPLEMENTATION PLAN**

**Year One**

- In the first year, Orange Walk and the Belize Tourism Board should launch an initiative to increase advertisement for local businesses, activities, and special occasions. This will bring Orange Walk the attention and hopefully some of the funding it will need.
- Orange Walk should implement a special local council to work on Orange Walk’s cultural tourism; this would work best with a willing representative from each cultural group.

continued...
**Evaluation Matrix**

The proposed options are presented in order of cost requirements.

<table>
<thead>
<tr>
<th>Cost</th>
<th>Option</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Cost</td>
<td>Option 1</td>
<td>Cultural/ Historical Celebrations</td>
<td>These celebrations would help bring tourists to Orange Walk as well as bring locals closer as a whole. The funds raised could also help Orange Walk with any improvements to increase tourism.</td>
</tr>
<tr>
<td>Low Cost</td>
<td>Option 2</td>
<td>Education</td>
<td>The programs are already set; all that is needed is lessons on the history of Orange Walk and perhaps some activities to engage students to take a more active role in their heritage.</td>
</tr>
<tr>
<td>Low Cost</td>
<td>Option 4</td>
<td>Oral History</td>
<td>As mentioned above, this can even be documented on paper, computer, video or tape recorder.</td>
</tr>
<tr>
<td>Low Cost</td>
<td>Option 5</td>
<td>Advertising</td>
<td>The cost would be for printing, paper and circulation. In some cases this could be posters, newsletters, the newspapers, etc.</td>
</tr>
<tr>
<td>Medium Cost</td>
<td>Option 1</td>
<td>Central Tourism Centre</td>
<td>This would indeed begin to pay for itself as the centre could be in charge of booking tours and special events. They may also run their own gift shop showcasing local items.</td>
</tr>
<tr>
<td>Medium Cost</td>
<td>Option 1</td>
<td>Gift Shops</td>
<td>Initially it would be a challenge to find the items needed and the cost could be large, however once established, gift shops will make more than enough to make up for the initial cost.</td>
</tr>
<tr>
<td>Medium Cost</td>
<td>Option 5</td>
<td>House of Culture</td>
<td>The House of Culture may one day house its own gift shop, artifacts from the local archaeological sites and the forts.</td>
</tr>
<tr>
<td>High Cost</td>
<td>Option 2</td>
<td>Historical Sites</td>
<td>The preservation, documentation and upkeep of these sites will be a large cost but more and more jobs for locals would be open.</td>
</tr>
<tr>
<td>High Cost</td>
<td>Option 3</td>
<td>Archaeological Sites and Protected Sites</td>
<td>The sites like Cuello would need to be excavated so some help may be needed from outside or from within depending on the offers. It is also possible for Orange Walk to request field schools to come help. Still in order to dig certain criteria have to be covered stated by Belizean Law.</td>
</tr>
</tbody>
</table>

- Plans for protecting heritage buildings and sites should be developed and implemented.
- Plans for a central tourism centre should be made. There are locations already suitable for this.
- Recordings of histories could begin (however can be started at any point)
- Orange Walk should start a few celebrations of its own. These can celebrate cultures of the town and surrounding areas celebrating all cultures and the history of the area. This would be unique in Belize. Money raised at these events can be used to fund future cultural or tourism projects.
- Muffles College could also introduce a course designed for teaching students about local history in depth.

**Years One to Five**

- Central tourism centre should continue in operation. This does not have to be large, even local advertisements at first will do; until further funding is raised. However, the funding would be best coming from the funds raised from festivals and celebrations.
- Plans for protecting heritage buildings and sites continue to be implemented.
- Grant proposals to PACT should be drawn up, paying close attention to the requirements.
- Create local gift shops owned by local people to display the work of local artists. The goal is to attract both tourists and local residents.
- Sites nearby like Cuello should be acquired and excavated. Orange Walk and the central government could find willing field schools from local or international schools willing to help out.

**Years Five to Ten**

- Protected areas are established around sites like Cuello and the Fort Mundy site. Orange Walk could now allow for tourists to tour these sites.
- Expansion of the House of Culture, to showcase the items found in the Cuello site as well as
locally made costumes from celebrations. The house should always continue serving Orange Walk as a centre for cultural events.

EVALUATION

The town should evaluate progress toward implementing historical/cultural tourism periodically.

- Much of the evaluation will be based on a few factors:
  - More tourists will be in Orange Walk for a longer time
  - More events will be advertised
  - Events will have a higher turnout of local residents and tourists
  - Gift shops will appear at road sides
  - More people will want to take tours of historical sites
  - Tourism will generate more money for the community
  - Locals will find more job openings in tourism

- To evaluate tourism:
  - Surveys should be sent to local hotels for tourists to state what they like about the town and if they are staying in Orange Walk for only one night or a longer period of time.
  - Similar surveys should be sent to the hotel owners and local businesses asking similar criteria.

REFERENCE CITED

ECONOMIC DEVELOPMENT

by John MacKenzie

In this paper, John MacKenzie discusses approaches for developing a sustainable economic development strategy. John Mackenzie majors in Geography at Malaspina. He has worked as a Student Park Planner for the Comox Strathcona Regional District in BC. He is pursuing a career as a professional planner. He comes from Black Creek, BC.

ISSUE IDENTIFICATION

Background

The Orange Walk Town economy is dependent on agriculture of which sugar production is the main driver. A lack of diversity in primary economic activity leaves the town vulnerable to economic downturns. In addition, barriers to small and medium business development include high labour costs, high utility and lending rates, and the lack of a strong, organized business community. A sustainable economic development plan is essential for business to thrive and succeed in this area over the long term. Several considerations are important including business and government organization, marketing, tourism, agriculture, education, poverty reduction and sustainable development practices.

Issue Significances

A strong economy is vital for any healthy community. An opportunity exists for diversified business development in Orange Walk and the creation of an investment friendly atmosphere. Government and business leaders in the area also appear to recognize the need for increased investment and differing types of businesses to flourish to increase economic growth, and create more jobs and a better standard of living for local residents. A 1995 Central Statistics Office survey considered 21% of households to be poor, 24.9% of the population to be poor, and that 0% of people heading poorest households held secondary education. Consequently, the town must utilize a multi-pronged approach to stimulate the economy, reduce poverty and follow sustainable development practices.

History

Orange Walk has a history of resource extraction, including logging and associated shipping as well as agriculture. Secondary industries such as sugar processing and rum distillation have also occurred. The town has developed into a major agricultural service centre. Although only a small fraction of the land is cultivated, agriculture provides about 75% of Belize's exports, the chief of which are sugar, citrus fruits, and fish. Clothing and woods are also important products and export items, and export of some petroleum began in 2006. Tourism and construction are increasingly significant to the economy. The Chamber of Commerce is not active in the area; however, a business association exists but with a low number of local businesses involved.

Suspected Causal Factors

Many factors contribute to a lack of small and medium business development. One may be a failure to recognize assets such as the tourism potential of the natural environment as well as social capital. The town appears to be lacking a strong central business voice. Other challenges include the high costs due to high rates for labour, utilities and loans.

Stakeholders

The main stakeholders involved include local residents, local and foreign tourists, local and foreign investors and government officials.

Options:

Development of an economic improvement strategy

The town needs to have a clear, focused strategy in order to guide economic development within the area. In the absence of a strategy or plan, differing ideas and perspectives may carry economic growth in vastly different directions; or worse yet, very little will happen because of the lack of planning to increase economic activity and investment. In creating an economic strategy, the town should involve the main stakeholders in the process and creating a working document that can guide future economic development decisions.

Business and Government Organization

Create a strong non-partisan business association that works in the best interest of the community. Build on the long-standing democratic tradition held in Belize. Continue to seek ways to create a more open and transparent political structure. Find ways
to involve community members in the development plan and provide them a voice in the political process.

**Marketing branding**

Public perception of crime rates in Orange Walk is an important issue. Anecdotal evidence suggests that some potential business people may view parts of the town as having difficulties with burglaries, rowdiness and irregular upkeep and maintenance. Within a marketing strategy, it would be important to create a positive image of this area as a safe, welcoming place to travel and do business. Although many residents may already be aware of the benefits of living in this area, the town should communicate these strengths to tourists and possible investors.

**Developing the tourism sector**

Belize has many options for tourists. It has a rich history, an amazing natural habitat and a welcoming small population. The majority of tourists visit from North America. In 2005, 145,977 Americans visited the country, 33,466 Europeans, 13,907 Guatemalans followed by 13,580 Canadians. Belize is attracting more tourists each year and the town needs to market local attractions such as the New River in the area and the Lamanai Mayan site. The town can also capitalize on cultural tourism by providing opportunities to visit old forts, take part in music, dance and historical cultural activities.

**Diversifying the agricultural sector**

As stated earlier, agriculture is an important part of the Belizean economy with sugar production at the top of the list. Volatile world agricultural markets have pressured agricultural producers to diversify into other areas including fruit (bananas, citrus), cacao, fish, cultured shrimp, garments and wood. Sugar will probably continue to be an important part of the Belizean economy however, diversifying would enable the economy to withstand boom and bust economic cycles.

**Creating opportunities for secondary and post secondary education**

In most industrialized countries, the correlation between higher education and more economic stability/a better standard of living is evident. Creating more opportunities for local residents to upgrade their skills and training in order to invest and create business opportunities in the local area is vital to a vibrant, sustainable economy.

**Tackling child poverty and enhancing opportunities for women**

As of 2002, 40.7% of children in the town were considered poor while 39.0% of the national population of children fell within this category. As indicated by CSO, one of the contributing factors to poverty in Belize is “Early Motherhood: high teenage pregnancy, lack of day-care and pre-school prevents women from taking part in the workforce”. Therefore, tackling child poverty must include a focus on creating policies to facilitate education, and better living and working conditions for women, which in turn, will also assist children as well.

**Creating opportunities for local self-reliance**

As indicated in Roseland (1998) “the goal of a self-reliant community is to enhance the local wealth by developing the communities existing resource base. Every community has some resources – physical, human, social – which can be harnessed for creating local wealth. Self-reliance means diversification of local economies to support local needs, encourage cohesiveness, reduce waste and enable more sustainable trade practices with other communities. It strives to strengthen connections between producers and consumers. One way to do this is to identify imports and where possible, substitute them for local products, in order to invest in the local economy”. Micro lending may be a valuable tool to assist with this goal. With environmental sustainability quickly becoming one of the world’s most popular subjects, it is important that these types of sustainable development practices are given adequate consideration.

**Recommendations:**

- Develop a clear vision and economic plan/strategy
- Enhance current business association, encourage new members and create a non-partisan structure
- Continue to work at creating an open, transparent political structure (wherever possible and appropriate, try to involve stakeholders in the decision making process)
- Create an image/logo and marketing message to tourists and possible investors
- Continue to develop tourism sector with special attention focused on the new river and historical and cultural tourism
• Reduce over reliance on sugar cane and support opportunities for people to develop diverse, effective agricultural practices
• Invest tax revenues in enhancing secondary and post secondary education
• Focus on reducing child poverty and enhancing educational and work opportunities for women
• Use sustainable development and self reliant community practices as a guide to economic development
SIDEWALKS AND PEDESTRIAN SYSTEMS

by Stuart Barker

People experience the city most intimately as they walk about the town whether shopping, working, or just walking. The pedestrian experience can be one of the more enjoyable parts of living in a community. It can also be risky. In this paper, Stuart Barker examines the pedestrian environment of Orange Walk, and looks at ways of enhancing the safety and convenience of sidewalk systems.

Stuart Barker is completing his Bachelor of Arts at Malaspina in Geography - Urban Growth Management. He plans to seek a master’s degree in urban design or landscape architecture. He loves to travel and play soccer. Stuart was born and raised in Victoria, BC, and moved to Nanaimo to attend Malaspina.

ISSUE IDENTIFICATION

History

Orange Walk Town is the third largest urban population in Belize, 15,300 persons (Ministry of National Development). Orange Walk, like many other urban centers around the world, has evolved to accommodate the automobile. Because of this, communities have seemingly ignored other issues, such as the sense of place, beautification of streetscapes, and pedestrian systems. Over-reliance on the automobiles has caused many cities to become congested, unsafe, and unappealing to those traveling on foot.

Several factors influence the situation in the town. Orange Walk’s population grew from 14,085 in 2001 to 15,000 in 2004 (Ministry of National Development, 2005). The rural hinterlands surrounding the town have also seen considerable growth.

Another factor is an increase in automobile usage. The number of vehicles licensed in Orange Walk increased from 3,517 in 2000 to 5,558 in 2004 (Ministry of National Development, 2005). Orange Walk serves as an important link in the transportation network that spreads in out from the town in four directions. This puts pressure on the town to serve regional and national needs.

Population growth and an increase in automobile usage have put pressure on the current pedestrian system. On the other hand, access to the town and its shops and community life depend vitally on the quality of its sidewalk systems.

Issue Statement

An increase in population and the limited sidewalk infrastructure, coupled with the effects of increasing automobile usage, has created a negative situation for pedestrians. The lack of adequate sidewalks has created an unsafe, non-pedestrian friendly environment. This is a critical element for town’s core commercial area. Pedestrian systems are the circulation system pedestrians use to move throughout the urban environment. The lack of pedestrian systems in the central area has had a negative effect on people’s ability move safely and efficiently throughout the town. Some of the more obvious problems that exist within the current pedestrian system include the inability for pedestrians to travel on a consistent pathway to and from key destinations throughout the town, for example a pedestrian link from central park market to the riverfront, or the bus station to the tourist center. Often sidewalks do not connect together, one business will have built a sidewalk and the one next-door does not, there is a gap in the infrastructure, having a significant impact on a person’s ease of movement, thus creating a non-pleasurable experience for the user.

The lack of a formal set of guidelines for the construction of sidewalks has created a situation where people have constructed sidewalks of varying shapes and sizes. Orange Walk businesses and pedestrians could benefit from standards requiring sidewalks to be constructed using a specified set of dimensions, including height and width. This would ensure people have a safe and consistent path to walk on, thus creating a more enjoyable experience.

It is important that people have the ability to move throughout the central area to reach these destinations. It is equally important that pedestrians have a sense of safety, a sense of stimulation. This paper focuses specifically on sidewalks. Other papers in this compendium address issues such as parking, traffic circulation, public space, urban design, and community image that also influence the pedestrian experience.

Issue Significance

The lack of sidewalks throughout much of central area has created a walking environment that is
inconvenient and unsafe for pedestrians. People are often required to walk in traffic because of the lack of safe sidewalks to reach their destination. This is not only dangerous; it also creates a feeling of disorganization, two elements essential in the creation of an efficient, organized, thriving community.

Causal Factors

Several causal factors have led to the current sidewalk situation. The lack of enforceable zoning bylaws has allowed landowners to build their buildings right to the edge of their property boundaries, leaving little room for the construction of sidewalks.

The overall construction cost for sidewalks is high because of the cost of construction supplies and labour. For the upcoming year, the amount allotted to sidewalk construction is just $4,000 BZD.

The lack of drainage infrastructure throughout much of the town heightens the problem of the construction of sidewalks because sidewalks cannot be constructed without drainage infrastructure.

The lack of building standards for sidewalks has created a situation where sidewalks vary in shape and form creating uneven pedestrian walkways. Sidewalks, where they exist, are often very narrow.

The absence of an organized parking system has created a situation where cars litter the roadside. The town must remedy the parking situation before completing its sidewalk systems. Parking and sidewalk policies are closely related.

Stakeholders

* **Orange Walk Town residents**- Residents of Orange Walk would benefit immensely from the creation of a standardized sidewalk system. Movement throughout the central area would be enjoyable and inherently safer.

* **Tourists/visitors**- Presently, visitors to Orange Walk are discouraged from exploring all the great things the town has to offer due to the lack of safe sidewalk infrastructure. The ones that do go out and explore the town are too busy weaving in and out traffic to appreciate their experience.

* **Construction Companies**- Any company involved in the construction of sidewalks has an important role to play in ensuring central area provides a pleasurable experience for all to enjoy. If the town established construction guidelines, construction companies would benefit from knowing the exact dimensions and the subsequent amount of supplies needed to complete the job.

* **Central area business owners**- Business owners in the central area would benefit from efficient pedestrian pathways in front of their shops. A business improvement district would allow businesses to share in the costs of improving their commercial district, thus benefiting everyone.

* **Town Council**- The town as a whole would benefit from the development of a safe and efficient pedestrian system with associated drainage infrastructure. This would also make efficient use of limited town finances.

Objectives

There are several objectives to this policy analysis.

* Create a fully connected, consistently built pedestrian system throughout the defined central area

* Link the central area to attractive local destinations throughout Orange Walk; these areas include the riverfront, places with historical significance, schools, churches, bus stations, libraries, cultural facilities and all other public services likely to attract pedestrians.

* Provide all pedestrians with an enhanced sense of safety, comfort, and visual appeal throughout the central area.

* Create an area where pedestrians are given precedence over automobiles and other motorized transportation in the form of pedestrian only, traffic-free zones.

OPTIONS

What are the best ways to accomplish the objectives set forth in the section above? The sections below outline a series of options and tasks to improve the present pedestrian system.

Option 1: Construction Standards for Sidewalks

The first course of action would be to create a set of design guidelines and standards for construction of sidewalks. The guidelines should specify different types of design standards for various types of road. Shopping streets, for instance, should have wide pedestrian pathways, with vegetated streetscapes to encourage a positive shopping experience from its users. On the other hand, a residential street would require narrower sidewalks to accommodate lower levels of pedestrian traffic. Generally accepted standards for sidewalks have been established
elsewhere and these guidelines could be adapted for use in Orange Walk.

Within the central area of town, there are some obvious examples of shopping streets: the area around Queen Elizabeth Park, parts along Queen Victoria Avenue, Baker Street, and Main Street. All of these roads have the capacity to provide a pedestrian friendly environment. These roads should provide enough space to accommodate larger amounts of pedestrian traffic. Unfortunately for a few of these roads – Baker, Main and Queen Victoria streets handle large numbers of automobiles – in these situations, it is essential to have a separation between the automobile and the pedestrian. There are many options available to create this separation, including trees, curbs and in some instances, or parallel parked cars.

Residential streets in neighbourhoods outside the central area have different requirements. The town should give these streets a lower priority than streets within the central area. However, they also need guidelines and standards to ensure a consistently shaped, flat surface for pedestrians to walk on. So what is the recommended set of dimensions for the different street types?

According to Lynch and Hack (1984), a sidewalk shall be no less than three-feet (1 meter) in width and six to eight inches in height, this is the absolute minimum. These dimensions would be a minimum for a residential neighbourhood, except near schools and other high traffic areas.

There is no consensus on appropriate sidewalk size for shopping streets; however these types of streets are often heavily used, thus requiring additional space to ensure ease of movement. A common minimum width of eight feet (Untermann 1984) seems to be a suitable size to accommodate more pedestrians.

**Option 2: Financing and Economic Incentives**

Given inadequate funds for Town Council, improvements to sidewalk systems can be a challenge. However, there are creative ways to generate funds. The options below offer a means by which to generate funds for sidewalk projects.

**Option 2.1 – Deferred or Instalment Payments**

Most small merchants cannot pay large amounts at one time, so offering the ability to defer payments or make instalment payments for sidewalks over 5 to 10 years may encourage land-owners to construct sidewalks. To generate additional funds, the town could apply a small interest rate to the cost of construction over the repayment period.

**Option 2.2 – Tax Abatements**

Another approach would be to offer developers a tax abatement for a given amount of time, say 10 to 15 years, to offset the costs of constructing sidewalks on publicly owned property. For example, a developer constructing a building on San Antonio Road would pay for the construction of a sidewalk on publicly owned land. As a result, the developer would pay lower taxes on the property for a given amount of time. This option would involve some loss of property tax revenues to the town.

**Option 2.3 – Business Improvement District**

An effective way to generate funds for civic improvements in downtown areas is to create a business improvement district. The town would levy a small increase in property taxes on lands within a defined district. The town would then use the resulting tax revenues exclusively for designated improvements within the district such as sidewalk improvements. It would be advantageous for the central area to implement such a program because the majority of sidewalk improvements should take place within this area. Untermann (1984) suggests that the tax increase need not be huge; a two to three percent increase over a five-year period can provide a substantial amount of funds for improvements within the designated district. It is important that residents and landowners within the central area see improvements happening because they are paying for them.

**Option 4 – Weekly Night Market**

A weekly night market could generate money that can then be used for sidewalk improvements. Charging vendors a slight fee, say five to ten dollars every week, would generate funds over time that could be used for improvements. Merchants could sell a wide array of items, from food to artwork, crafts to clothing; the night market could provide an entertaining environment for residents and tourists alike.

**Option 3: Pedestrian Only Areas**

Pedestrian-only areas prohibit motor vehicles for part or all of the time to allow for the free movement of pedestrians throughout a given area. Queen Elizabeth Park and surrounding stores in the heart of the town provide the ideal environment for a pedestrian only area. This environment and location make this a viable option.
Pedestrian-only areas can be cost efficient. Closing roads to vehicle traffic can be as simple as installing removable posts in the middle of the road. The posts can be removed at night so delivery trucks can service shops within the area.

Orange Walk’s pedestrian only area would serve as the starting point for further expansion of its pedestrian system. Sidewalks would branch out from this area over time, connecting the pedestrian-only area with important features such as the river, historical landmarks, banks and the bus station.

Pedestrian-only areas would help create a safe environment for pedestrians, promote increased revenues for business owners, and enhance the lives of residents and visitors.

**Option 4: Public Awareness**

One important step to promote a pedestrian-friendly environment is to stimulate public interest. A good way of doing this is to hold public meetings. In the case of pedestrian-only areas, public participation should be encouraged to allow people to voice their concerns and provide input to guide system design. This would generate public interest in what is happening in their town. Often the input is valuable and can be used to improve plans. When both the local government and public work together, the result is increased civic pride and a more holistic community.

**ANALYZING OPTIONS**

The options above are assessed based on a set of decision criteria. The assessment is shown in table 1 below (see page following). These decision criteria can be given different weightings by council or citizens.

**Decision Criteria**

The options above will be assessed based on the following criteria:

- Criterion 1: Cost to Town Council
- Criterion 2: Cost to Landowners
- Criterion 3: Pedestrian Benefits
- Criterion 4: Benefits/Built Environment

**IMPLEMENTATION PLAN**

Local governments often have state their vision of goals, plans, and tasks to be accomplished over a certain amount of time, often ten or twenty-year plans. These are strategies for civic development, including sidewalks and other issues. For sidewalks Orange Walk, the following major steps are recommended:

* As soon as possible, consult with the public in attempt to gain public input
* Within one year, establish a set of sidewalk construction standards
* Within one year, determine which roads have the highest need for sidewalk improvement
* Immediately take measures to reduce and enforce the speed of automobile traffic in high pedestrian areas
* Within five years, construct one or more pedestrian access routes from the central area to one or more designated spots along the river
* Within five years, implement a pedestrian only area
* As an ongoing process, increase the amount of street trees, benches and shade in the central area
* Within three years, establish a funding system such as a business improvement district, instalment system, or tax abatement program to fund infrastructure improvements
* For five years, focus sidewalk improvements on the central area

**5. Evaluation of Performance**

The town should monitor performance and achieving these results based on the following process:

1. Ensure that standards are established and enforced for all new construction of sidewalks
2. Hold periodic public meetings to keep the public informed and invite them to express their views and suggestions
3. Annually, evaluate where things are and are-not working and make adjustments accordingly

**CONCLUSIONS**

This policy analysis has shed light on the issues surrounding sidewalk systems in the central area and offers possible options for improving sidewalk systems. These options provide possible measures to create a walkable community. Pedestrian activity is the life-blood of a thriving, economically successful core area. It is important that this not be ignored in favour of the automobile and the convenience these machines provide.
Table 1: Comparison of Options

<table>
<thead>
<tr>
<th></th>
<th>Cost to Town Council</th>
<th>Land Owners</th>
<th>Pedestrian</th>
<th>Built Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction standards</strong></td>
<td>Positive: More efficient cost analysis for construction. The cost of construction could be less or more given the situation</td>
<td>Positive: Improved walking environment would encourage more people to spend money. Negative: Potential increase of cost to landowners</td>
<td>Positive: Increased safety for pedestrians. Accessible to all residents including the disabled. More appealing and efficient for residents</td>
<td>Positive: A more efficient, safe and appealing pedestrian environment.</td>
</tr>
<tr>
<td><strong>Generating funds</strong></td>
<td>Positive: Long-term gains in funds are generated from interest. Save money in the end Negative: Short-term losses. Inability to offer incentives on a massive scale because of limited funds. Positive: Landowners would be enticed</td>
<td>Positive: Financial ability to construct sidewalk because payment is spread out over a longer period of time Negative: Slight increase in property taxes</td>
<td>Positive: Fund generation would allow for the construction of sidewalks. Tax dollars at work</td>
<td>Positive: Pedestrian environment would benefit directly from an increase of funds</td>
</tr>
<tr>
<td><strong>Pedestrian only areas</strong></td>
<td>Positive: Very cost effective</td>
<td>Negative: Used to having vehicle traffic, see it as a good thing Positive: Pedestrians buy things, not people in cars. Businesses within this area would see an increase in sales</td>
<td>Positive: No automobiles means increased safety for pedestrian Positive: Perfect shopping environment</td>
<td>Positive: People would be drawn to this type of environment Positive: Increased space for trees, benches, vendors, patios and entertainment</td>
</tr>
<tr>
<td><strong>Public Awareness</strong></td>
<td>Positive: Council and public could work together to create best line of action Negative: Conflicting points of view</td>
<td>Positive: Ability to voice opinion on issues Positive: play a role in the planning process</td>
<td>Positive: Involved in creating a better walking environment</td>
<td>Positive: The best urban environments in the world are the ones created when there is a lot of public involvement</td>
</tr>
</tbody>
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**REFERENCE CITED**


TRAFFIC MANAGEMENT
by Ryan Watson

This paper considers traffic management in the central area of Orange Walk. As a community grows, traffic grows, and this causes problems of congestion, pedestrian-vehicular conflicts, noise, and pollution. However, properly managed, traffic problems can be mitigated. This paper addresses possible options.

Ryan Watson is completing his fourth year in Geography at Malaspina. After graduation, he plans to pursue a diploma in Geographic Information Systems (GIS).

As with any urban settlement, the management of traffic circulation is an important issue for Orange Walk. An efficient traffic management plan can benefit all aspects of city life, ranging from a stress-free and healthy driving experience for motorists to a flourishing, easily accessible downtown environment for drivers and pedestrians. Presently, there are some issues with traffic in the town. Through the careful consideration of a number of no- and/or low-cost options, there are a number of recommendations that could greatly alleviate many of the issues that presently exist.

The town’s grid-style street system is based around the country’s highly traveled Northern Highway route, known in town as Queen Victoria Avenue. Queen Victoria intersects at key locations with Bakers Street and San Antonio Road on the southern boundary of the study area, Arthur Street in the park/market area of town, and Cinderella Avenue to the north. Streets that parallel Queen Victoria are the one-way Main Street lying on east side, and the quieter Progress Street to the west. A series of one-way streets cut through the South Park area, a popular gathering place and commercial district located between Queen Victoria and Main Street.

ISSUE IDENTIFICATION

Issue Statement
Traffic circulation in the central area is presently experiencing worsening congestion and motorist and/or pedestrian safety issues. These problems are amplified during peak times of day (such as at the end of the work/school day) and week (weekends, paydays). As the town of approximately 15,000 residents continues to grow, it is highly important to address these problems promptly and carefully.

Issue Significance
Traffic congestion impedes vehicle flow and makes navigation of city streets slow and frustrating. Lack of intersection control coupled with high traffic volumes leads to serious automobile accidents, putting motorists and pedestrians at risk.

History
Existing streets were easily able to accommodate the town’s vehicular demands in the past. However, as the town expanded and subdivisions developed, and more residents became vehicle owners, traffic volumes increased. Lack of zoning and building codes allowed building owners to construct buildings too close to streets. Thus, buildings obstruct vision at several intersections throughout town.

The town has installed “traffic-calming” structures in a few places in the past, such as pedestrian ramps on Queen Victoria Avenue at Arthur Street, and on Main Street. It has proposed additional ramps at the intersection of Queen Victoria Avenue and Bakers Street, as well as a traffic light at the same location.

Causal Factors
One cause of traffic problems is the intercity bus circulation within the town. Buses currently use the lot next to the downtown market, and travel through the surrounding narrow streets, thus making passage of other vehicles difficult. Buses also often stop, sometimes for long periods, near the pedestrian ramp on Queen Victoria Avenue; this reduces right-of-way and visibility for motorists, pedestrians, and boarding or disembarking bus passengers.

Limited funding for town projects has led to a lack of intersection control, which the town desperately needs in some key points in town, most notably the intersection of Queen Victoria Avenue and Bakers Street. Numerous serious accidents have resulted from poor control at intersections.

On-street parking and the state of disrepair of sidewalks often create a chaotic street environment for pedestrians, who often step into the street to avoid hazards.

Structures located too close to streets at many intersections dangerously limits motorist visibility. Lack of enforcement of traffic regulations, in
addition to a lack of knowledge and/or education of safe driving habits, may be other factors contributing to the present traffic situation.

The town’s development history is another factor. Typical of most communities, the community paid little attention to future traffic circulation in its early years. As greater numbers of residents purchase vehicles, increasing traffic congestion will compound traffic circulation issues.

Stakeholders
Traffic policies of the town will affect several types of stakeholder:
- Motorists, as residents, visitors to the town, and passers-through, who must face the stress and risk of congested travel.
- Pedestrians (residents and visitors), also at risk with regard to safety.
- Local business owners, concerned with accessibility to their business.
- City officials (councillors, police and traffic enforcement, etc), charged with the maintenance of the traffic system.

Objectives
The purpose of this policy analysis is to:
- To facilitate traffic circulation in central area streets
- To create a safer street environment for motorists and pedestrians
- To improve or maintain accessibility for vehicles and pedestrians throughout the town’s central area
- To create a traffic management plan that can accommodate present and future demand

OPTIONS
The sections below identify a number of relatively simple and inexpensive methods of addressing the present situation with the goal of reducing congestion and improving safety within the central area.

Option 1: Reconfiguration of Traffic Flow Directions
Many of the congestion problems stem from an overabundance of cars on overly narrow roads, coupled with a high volumes of traffic and an inefficient system of circulation. Several possibilities relating to this option exist:

1.1 Ring Road Option
The present traffic circulation pattern around the central area, with Main, Bakers, and Avilez Streets being one way only, causing a general traffic circulation pattern in an anti-clockwise direction.

This necessitates more dangerous left-hand turns across traffic flows, causing vehicles to wait for an opportunity to turn while delaying cars behind them.

One way of improving this system would be to reverse the direction of flow east of Queen Victoria on Main, Bakers, and Avilez Streets, creating a clockwise/right-turn based pattern of circulation. This would create a “ring road” around the east side of the central areas. These changes would obviously require much preparation and advance warning to the public.

1.2 Central Park/Market Area Option
Another problem area was the streets around central park and market area, particularly Arthur Street.

The possibility of designating this street one way only, with traffic permitted to travel from the east (Queen Victoria Avenue) to the west (Progress Street and beyond). This will not only discourage buses from parking along this road during peak traffic times, but also keep general traffic moving through this area more efficiently. With this, the minor gravel street, running behind the market and lot currently used as a bus terminal, can also be changed to one direction, from King George to Arthur Street, cutting down on conflict between buses and other vehicles at the intersection of Arthur and Progress Streets.

Option 2: Designation of a Pedestrian-Only Area
The area around the South Park is prone to high congestion at certain times of the day. A proposal is being considered to convert the streets surrounding the park (South Park, North Park, Lovers Lane, and Park Streets) into a strictly pedestrian zone. Several options exist:

2.1. Designating South Park Street, North Park Street, Lovers Lane Street, and Park Street Entirely Pedestrian-Only
This is the commercial heart of Orange Walk. Designating this area as completely pedestrian might have positive effects on the business community, but drawbacks imposed on the traffic system might outweigh the benefits. Completely cutting off through access for vehicles in this area would displace traffic into the already problematic surrounding streets and intersections, and make access between Queen Victoria Avenue and Main Street difficult for motorists.
2.2 Designating the South Park area pedestrian-only during specific times of day

Congestion in the South Park area is an issue, but only at certain times of the day. The South Park area could feature easily movable barriers that could establish the area as pedestrian-only during times of intensive pedestrian use, leaving it open to cars for the remainder of the day. A similar practice already occurs on streets near schools which are blocked off during operating hours.

2.3 Designating South Park Street and part of Lovers Lane as pedestrian only

Closing off a section of the area, while leaving North Park Street, Park Street, and the northern section of Lovers Lane (from Park Street-North) would still allow for one-way through access for vehicles between Queen Victoria and Main Streets, while increasing safety and reducing congestion (fewer directions as options for travel). The pedestrian-only section in this scenario would contain sufficient space to build on the existing shopping district through the addition of market stalls, creating a safe and vibrant environment for pedestrians.

Option 3: Intersection Control at the corner of Queen Victoria Avenue and Bakers Street/San Antonio Road

The intersection at Queen Victoria Avenue and Bakers Street/San Antonio Road is very dangerous and congested. The lack of traffic control infrastructure makes it very difficult for cars to move through this intersection in a safe and timely manner.

3.1: Installation of a traffic light

A traffic light would make this intersection much safer and more efficient. However, a signal system is very expensive, with one quote being approximately $20,000 BZ. The Town could seek surplus equipment from outside Belize.

3.2: Installation of pedestrian ramps

Pedestrian ramps, installed in each direction on Queen Victoria Avenue (priced at $12,000-15,000 BZ) would reduce traffic speeds, which presently have no reason to slow down when traveling through the intersection. This would allow easier passage of traffic from San Antonio Road – an arterial serving the western area of Orange Walk District.

3.3: Establishment of an all-way stop

Placing two stop signs in either direction on Queen Victoria, in conjunction with the existing one on San Antonio Road (Bakers Street is one way away from the intersection) would greatly increase safety, forcing all vehicles to stop completely before entering the intersection. However, with Queen Victoria Avenue being such a highly traveled route, causing all vehicles to stop might worsen congestion, causing stop-and-go traffic to back up for great distances.

3.4: Designation of left-turning lanes

An inexpensive means of bringing some control to the intersection would be to paint lines on the road to designate left-hand turn lanes off of Queen Victoria Avenue. This allows motorists a safe zone into which they can pull into while waiting for a sufficient gap in traffic through which they can turn. This will prevent turning vehicles from impeding the flow of vehicles that wish to continue straight through.

Option 4: Mitigation of bus stop impacts

With buses impeding traffic flow and visibility in the central area, the town should consider establishing a new site at which buses can safely and easily load and unload passengers. This should be located just outside of the central area, within walking distance of downtown, but far enough out of the area so as not to cause any further strain on the town’s traffic system. This would greatly reduce the congestion and safety hazard posed by bus use downtown. A number of potential sites for the carrying out of this option exist, notably at the present location of the Ministry of Public Works yard (which could be relocated somewhere further out of town), or utilizing a portion of the property currently occupied by the town’s stadium facility. Though this option may appear difficult to implement, with its need for the necessary funding to acquire a suitable piece of property, in addition to cooperation by the different levels of government, the positive effects such a move will have on the town’s traffic system will be enormous in alleviating many of the problems it is currently faces.

ANALYSIS OF OPTIONS

Criteria for deciding the wisest course of action for addressing each of the previously discussed issues are:

- Cost/financial constraints
- Ease of implementation and/or maintenance
- Improvements to traffic circulation
- Effects of safety on motorists, pedestrians, and other stakeholders
Table 1 uses these criteria to assess the options above. Because the options discussed in the sections above are interrelated, these options are considered below in conjunction with one another.

Option 1.1 would likely have great effects in improving traffic circulation in Orange Walk Town. However, reversing the present street flow directions would likely be difficult to implement, with effort and cost of informing all residents of the impending change, along with “getting used to” of the change. Option 1.2, however, would be relatively simple to implement, merely changing one or two streets (Arthur) that were previously two-way to one-way (still providing adequate signage and advanced warning to the public), while still being likely to lessen much of the congestion that presently exists in this area.

On the opposite side of Queen Victoria Avenue at Arthur Street lies the Queen Elizabeth Park area. This area could be converted, either wholly or partially, into a pedestrian-only zone. Coupling this principle with the one-way street designation nearby would have an even greater effect in calming traffic in the central area of the town. However, cutting off vehicle access to these streets completely (option 2.1), even if only at certain times of day (2.2) could displace vehicular traffic with negative impacts on surrounding streets and intersections. If the pedestrian-only option is considered, more detailed analysis of traffic flows and intensity should be undertaken.

Instead of pedestrian-only areas, leaving one-way access open through North Park and South Park Streets would allow for a safe and low speed route between Main Street and Queen Victoria Avenue, and would likely be the optimal solution to the problem of congestion in this area (Option 2.3).

Cost is an important constraint that must be considered for the intersection control options at Queen Victoria Avenue/Bakers Street/San Antonio Road intersection. Town officials have said that they are planning to install pedestrian ramps in the near future at a cost of up to $15,000. Local business sponsors would pay part of the costs of the ramps. It might be advisable to put these plans temporarily on hold until the Town can explore the feasibility of acquiring a traffic light. This may require looking for surplus equipment from local governments in Canada or Mexico. The team will explore this option on return to Canada. The Town could use available funds for the traffic light instead of pedestrian ramps. In the mean time, options 3.3 or 3.4 or both may be carried out as temporary and inexpensive means of increasing the safety and function of this intersection.

The option of the establishment of a new bus terminal facility is a costly and complicated one, but the Town should still give this serious consideration for the future. This option would lessen many of the current problems to do with buses in town.

**IMPLEMENTATION PLAN**

1. Immediately re-evaluate funding as it relates to intersection control (options 3.1 and 3.2). Seek additional business sponsors and/or private donations to the cause of a traffic light. Look into the cheap acquisition of a potential piece of land for a bus facility.

2. Within three months, release public announcements and post signage warning motorists of impending changes to traffic patterns (for both Arthurs Street and South Park options), no more than one month in advance of actual implementation.

3. Approximately one month later, take steps to alter current the traffic pattern; designate and enforce Arthurs and the street behind the market as one way. Erect movable barriers (to allow for emergency and shipping vehicle access) at South Park Street, and Lovers Lane at Park and Bakers Streets. Designate North Park, Park Streets, and the remainder of Lovers Lane as one way. Display sufficient signage in all instances.

4. Within 6 months, designate turning lanes at the intersection of Queen Victoria Avenue and Bakers Street by painting lines on the road. Erect stop signs on Queen Victoria no more than three months before the installation of either pedestrian ramps or, optimally, a traffic light, to be installed soon (funding dependent).

5. Research and evaluate effectiveness of newly implemented circulation patterns and devices. Evaluate levels of congestion and safety in downtown area, and decide whether it be necessary to pursue the bus station option. If issues still exist, seek to establish a bus station outside the central area as soon as possible.
Table 1: Comparison of Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Motorists</th>
<th>Pedestrians</th>
<th>Businesses</th>
<th>Officials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1: Ring Road</td>
<td>Positive - Fewer left-turns, better traffic flow</td>
<td>Negative – Increased traffic flow reduces opportunities for pedestrians to cross</td>
<td>Positive - Greater accessibility by motorists</td>
<td>Negative - difficulty in implementation</td>
</tr>
<tr>
<td>1.2: Reconfiguration of flow</td>
<td>Positive - Reduced congestion in core area</td>
<td>Positive - Safer pedestrian environment</td>
<td>Better flow and accessibility around market</td>
<td>Positive - Relative ease in implementation, no cost</td>
</tr>
<tr>
<td>2.1: Pedestrian Only Area</td>
<td>Negative – reducing access, diversion of traffic to surrounding streets</td>
<td>Positive - Safer, car-free environment</td>
<td>Positive - Could create vibrant shopping district Negative - Potential loss of auto-oriented business unless parking improved</td>
<td>Negative - Issues related to traffic displacement Positive - Low cost (one time cost of barrier installation)</td>
</tr>
<tr>
<td>2.2: Pedestrian-only areas at certain times of day</td>
<td>Negative - reducing auto access at peak times, traffic displacement Positive – Still allows access at other times of day</td>
<td>Positive - Safer pedestrian environment</td>
<td>Negative - Potential loss of business during peak hours</td>
<td>Negative - Trouble of ensuring barriers are put up at correct times, traffic displacement</td>
</tr>
<tr>
<td>2.3: Pedestrian / One way through traffic</td>
<td>Positive - Calming of traffic while providing one way through access</td>
<td>Positive - Relatively safe pedestrian environment</td>
<td>Positive - Businesses accessible to vehicle and pedestrian traffic alike</td>
<td>Positive - Barrier installation (one time low cost)</td>
</tr>
<tr>
<td>3.1: Traffic Light</td>
<td>Positive - Drastic improvement of traffic flow and intersection safety</td>
<td>Positive - Increase in safety at intersection, ease when crossing</td>
<td>Positive - Better control of traffic flows</td>
<td>Negative - High cost</td>
</tr>
<tr>
<td>3.2: Pedestrian Ramps</td>
<td>Positive - Forced slowing down of cars entering intersection</td>
<td>Positive - Safety, greater ease in crossing street.</td>
<td>Positive - Better control of traffic flows</td>
<td>Negative - Cost of installation, maintenance</td>
</tr>
<tr>
<td>3.3: All-way Stop</td>
<td>Negative - Could back traffic up for great distances Positive - Will increase safety at intersection</td>
<td>Positive - Increase in safety</td>
<td>Positive - Better control of traffic flows</td>
<td>Positive - Low cost, little maintenance required</td>
</tr>
<tr>
<td>3.4: Line Designation</td>
<td>Positive - Increase in safety.</td>
<td>Positive - Increase in safety</td>
<td>Positive - Better control of traffic flows</td>
<td>Positive - Low cost of line painting</td>
</tr>
<tr>
<td>4: Bus Station</td>
<td>Positive - Removal of bus traffic downtown will reduce congestion, increase safety</td>
<td>Positive - Safer for pedestrians and bus passengers Negative – Possibly longer walks for passengers depending on station location</td>
<td>Negative - May see a loss in pedestrian business due to out of town location.</td>
<td>Negative - High cost, difficulty in implementation</td>
</tr>
</tbody>
</table>
EVALUATION
Evaluate the effectiveness of changes made to the traffic system by observing levels of traffic congestion (conduct vehicle counts and peak times of day both before and after implementation), analyzing auto accident statistics, and conducting informal interviews with drivers and pedestrians based on perceptions of congestion and safety. Insure that accident figures are decreasing, and traffic is able to flow more smoothly.

CONCLUSION
The options proposed in this paper were intended to be simple, low cost, and have an ease in implementation over a relatively short period. While keeping in mind the need for adequate forewarning to the public with regard to matters pertaining to the alteration of traffic patterns, many of the options presented, (Options 1, 2, 3.3, and 3.4) can be carried out at any time, even if only for an evaluative/trial period. Others, such as the traffic light and bus terminal options, should be considered goals to work toward for the future, which will hopefully be safe and congestion-free.

#
PARKING
by Luke Letham

Orange Walk Town would benefit from orderly and proper parking in the central area. With a comprehensive parking plan, the Town could address many problems like congestion, unsafe pedestrian environment, inadequate of parking and lack of parking revenue. In this paper, Luke Letham explores solutions.

Luke Letham is a fourth year Malaspina student majoring in Geography - Urban Growth Management. He graduates at the end of this year. He intends to pursue a career as a planner with special interests in community planning, transportation planning and urban design. Luke is from Terrace BC and currently lives in Nanaimo, BC.

ISSUE IDENTIFICATION

History
Orange Walk does not have a parking plan and there were two zoning plans that were put in place but never made effective. In past years, people of Orange Walk District and Town have become increasingly dependant on the automobile. The town and its surrounding villages have begun to expand and sprawl as the district now has the second largest population. Ten years ago you would find far fewer automobiles around town with many more pedestrians and bicycles. With few vehicles there was no need for parking as the space was used for more important land uses. With the increase of vehicles in town, changes are needed made to make the system work and run fluently.

Issue Statement
There is no coordinated plan for parking in the Orange Walk central area. Such a plan would improve safety, beauty, and efficiency of the core area.

Issue Significance
There are few marked parking areas for cars in the central areas. Cars are parked on sidewalks, roadways, driveways, and other areas. This creates an unsafe environment for both drivers and pedestrians. Many areas that are marked with signs read “No Parking” and it is quite likely that you will see a car parked right underneath or nearby of the sign. This impedes the flow of traffic, and causes pedestrians to enter driving lanes to travel the streets. The scattered pattern of parking also affects the attractiveness of streetscapes. Figure 1 shows an example of a poor parking procedure.

Casual Factors
There are many reasons for the present parking situation. The first factor is the increasing dependence on the automobile in Orange Walk. With this increase there is a definite lack of safe and reliable parking in the central area. Another reason is the improper use of some of the current parking stalls. On the east side of Queen Elizabeth Park there is a number of stalls that are occupied all day long by people trying to sell vehicles. A second issue is the overabundance of taxi parking stalls that could otherwise be used for public downtown parking. Also, there are a few vacant lots in the central area that have the possibility of being used for parking lots. Without these parking lots, vehicles are parking along the streets. This causes many problems that need to be resolved to ensure a safe environment for residents. Right now the situation is unsafe as people are carelessly parking their vehicles, which cause problems like the blocking of driveways, congestion, and unsafe situations for pedestrians and bicyclists. These factors are closely related to other areas such as encroachments of many buildings and poor sidewalks. With vehicles protruding farther out into the streets, it makes it quite difficult for people walking and biking to be seen and recognized by drivers.

Another factor that affects parking is the lack of enforcement. The central area needs to be patrolled regularly. If enforcement is lacking then people will continue to believe that they can get away with parking anywhere they like.
The last factor is improper or lack of signage. Most of the parking signs in the town are quite run down and might need to be replaced. Some signs have fainted paint making them unreadable and others are so bent you could read them upside down. There is also a lack of signs in the central area. With more signs and the enforcement to back it up, there will be a lot less parking violators.

**Stakeholders**

Several types of stakeholder would be affected by parking policies:

- Orange Walk District residents – the central area is becoming more unsafe and problematic with the lack of a parking plan.
- Business Owners in the central area – with no easy or accessible parking by their stores they will lose business.
- Automobile owners – with no convenient parking in the central area.
- Orange Walk Town – the town will suffer economically if people quit trying to park in the central area because of a lack of a coordinated parking plan.
- Taxi companies – they may lose parking stalls to allow for more public parking or bus parking in the central area.
- Bus companies – they are endangering pedestrians with where they park currently and cause a lot of congestion.

**Objectives**

The objectives of this report are as follows:

- Create a safe environment for pedestrians, bicyclists, and motorists
- Identify additional parking areas that could be utilized
- Suggest ways to gain revenue through parking
- Analyze the alternatives

**OPTIONS**

**Option 1: Relocate Bus Depot**

Relocate the current bus “depot” to the Ministry of Work land on San Antonio Road. The Ministry of Works building could easily find another close by location. Relocating the Ministry of Works yard farther away from the central area will not hinder their services.

1: **Relieve congestion in the central area near the market**

The Ministry of Works would need to find another suitable piece of land for its building. Once this is done, a new bus terminal can be built on the site where tickets can be bought and a schedule can be seen. The new bus terminal location is just on the outskirts of the central area, which will alleviate congestion and open up prime parking right beside the market, which is now occupied by buses. The current location for buses is dangerous for pedestrians and other vehicles. The buses are forced to make wide turns on the route they are using now. The present location of the bus depot is because there is an elementary school on the adjacent lot. There is too much bus traffic for a school zone area and an area flooded with people.

**Figure 2: Proposed new location for a bus “depot”**

Source: Letham, 2007

**Option 2: Redevelop Parking Areas**

Many parking stalls and lots can be redeveloped for better uses and more public parking. The central area is lacking proper and convenient stall parking.

Option 2 includes the following components:

1: **Minimize taxi parking**

Minimize taxi parking by either eliminating stalls on Queen Victoria Street or charge the companies more per stall used. There is an excess of taxi stalls when looking at how busy the taxi companies actually are. These areas could otherwise be used for downtown public parking. Another idea for the stalls is to turn into a downtown bus stop for the nearby-proposed site for the depot on San Antonio Road.

2: **Use vacant lots as parking lots**

Give incentives to vacant lot owners to turn their lots into parking areas. Either tax them more for leaving
the lot vacant or give them a tax break if they turn the land into a parking lot. The vacant lots are useless to the area and with the definite need for parking in central area they are a good fit.

**Option 3: Increase Enforcement**

Enforcement in parking areas in the central area is very important for the parking situation to be organized and work well. The lack of parking enforcement in the central area is probably the main contributor to the lack of organized and proper parking.

Option 3 includes the following components:

1: **Hire parking “wardens”**

Town Council would hire parking “wardens” that would vigorously regulate parking areas. This revenue would go to the council rather than the central government. The “wardens” would work on a commission or quota basis.

**Figure 3: An example of vehicles illegally parked**

*Source: Letham, 2007*

2: **Increased and better signage**

There are a few parking signs in Orange Walk but most of the time they are disobeyed. With signs that are very clear and better positioned, drivers will not be as confused. With more signs drivers will be more aware and better informed of the parking situation. Another option would be to put the fine amounts on the sign just so that people are reminded of the consequences of illegal parking.

**Option 4: Create Loading Zones and Short Term Parking**

Orange Walk’s streets can be quite busy and congested at different times in the day. By creating short-term parking and loading zones, more spaces will become available for parking in the central area.

Option 4 includes the following components:

1: **Create short-term timed parking**

On the east side of South Park, the stalls should be timed parking only (either 30 minutes or one hour) for quick and easy access to the busy banks and surrounding businesses. With the “wardens” patrolling this area regularly, parking would be more available.

2: **Create commercial loading zones**

Create loading zones for commercial vehicles so they do not block off streets while loading and unloading (Zeta Ice Factory on Main Street).

**ANALYZING OPTIONS**

Orange Walk could have safe and organized parking in the central area depending on the options chosen. The decision criteria given below may be assessed certain weights, by the deciding members, then of whom may alter the following outcome matrix to revolve around what they see more important. It is also very important to get all the stakeholders involved in choosing the best options.

**Decision Criteria**

1. **Criterion 1: Benefits for citizens of Orange Walk Town**

Will the citizens of the town benefit and prosper from a more organized parking plan?

2. **Criterion 2: Cost to automobile owners**

Will the benefits of a parking plan override the costs to auto owners of the town?

3. **Criterion 3: Cost to Town Council**

How will the costs to the Town Council compare to the benefits?

4. **Criterion 4: Effectiveness**

How effective will the proposed plan and options likely be?

5. **Criterion 5: Benefits to business owners**

Will more people have convenient access to the stores in the central area? Will this bring in more business?
Table 1: Comparison of Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Benefits for citizens of Orange Walk Town</th>
<th>Cost to Auto Owners</th>
<th>Cost to Town Council</th>
<th>Effectiveness</th>
<th>Benefits to business owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1: Relocate Bus Depot</td>
<td>Less congestion in central area, safer, new bus depot with schedules and ticket booth</td>
<td>Low</td>
<td>Medium cost</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Option 2: Redevelop Parking Areas</td>
<td>More stalls closer to central area, lots off street which are safe and easier</td>
<td>Less stalls for taxi’s, low cost to shoppers</td>
<td>Cost of additional signage – low cost</td>
<td>Medium</td>
<td>Closer parking to downtown shops for customers</td>
</tr>
<tr>
<td>Option 3: Increase Enforcement</td>
<td>Vehicles parked properly can enjoy more convenient parking, spots more readily available</td>
<td>Increased tickets and enforcement means more fines</td>
<td>Increased payroll – reduced increase in fines</td>
<td>High</td>
<td>Parking available for everyone including store owners</td>
</tr>
<tr>
<td>Option 4: Create Loading Zones and Short Term Parking</td>
<td>Less congestion on streets, more readily available central parking</td>
<td>Low</td>
<td>Cost of paint and additional signage. Increased enforcement</td>
<td>High/Medium</td>
<td>A different mix of customers and more of them at a higher rate</td>
</tr>
</tbody>
</table>

**Recommendations**

All of the options given would help to create a safe and organized parking plan for the town with some options being more viable than the others. Option 1 (Relocating the Bus Depot) would help to relieve a lot of the congestion that exists in the central area. A new bus “depot” would be a little more expensive than the other options though. The central government may not go along with the plan making it quite difficult for town council.

Option 3 (Increasing Enforcement) is probably the most important component. With more enforcement, the parking situation would run more smoothly and efficiently. Without the necessary enforcement, vehicles park wherever they please for however long they please.

Option 4 (Loading Zones and Short Term Parking) would also help out the central area tremendously. There would no longer be large commercial trucks blocking streets as they load and unload. Quick errands and stop offs become a lot easier. Option 4 should be seriously considered because of its relatively low cost and time.

Option 2 (Redeveloping Parking Areas) is a good possibility but may upset a few parties. Taxi drivers may object to decreasing their stalls but in reality the taxi space is not being fully used. Vacant lot owners may not like the idea of turning their lots into parking lots but if given the right incentives it might work out for them as well as the town.

**IMPLEMENTATION PLAN**

A small volunteer committee should be assembled to oversee a parking plan for Orange Walk Town. Under supervision of town council, the committee will:

- Redesign parking signs for the central area. This includes sign content, design, and placement.
- Be in charge of the “wardens” including allocation and managing new revenues through parking and violations.
- Locate a good spot for a downtown bust stop before it reaches the depot on San Antonio Road.
- Place signs and road lining markings for loading zones
• Create bright and visible signs for the timed parking area beside South Park
• Encourage residents to walk or bike to their destination instead of taking their automobile

EVALUATION

The Town can use the following indicators to evaluate progress in implementing parking policies:

• The number of tickets and violations should be monitored monthly and annually to identify problem areas.
• Buses should monitor number of passengers going and coming
• Stakeholders are invited to monthly meetings with the parking committee to voice concerns and new ideas.
• Monitor business revenues to help see if the easy accessible parking made a difference the amount of people frequenting the business.
CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

by Rachel Birtwistle

In this paper, Rachel Birtwistle addresses the concept of Crime Prevention Through Environmental Design (CPTED) and its potential value as a policy for Orange Walk. CPTED is a set of urban design practices that have been proven successful in reducing crime in urban and other areas. These practices can be built into the urban fabric, making the town not only safer, but also perceived to be safer by residents and visitors.

Rachel Birtwistle is a fourth year Malaspina student majoring in Criminology. Her interests are crime prevention, drug and alcohol abuse, and offender services. Her career plan is to find a job in any one of her interest areas. She currently lives in Victoria, BC on the weekends and in Nanaimo during the week.

ISSUE IDENTIFICATION

Issue Statement

The issue is the elevated perceived level of crime in Orange Walk Town. Even though the crime rate in Orange Walk is lower than in some other areas of Belize, there is still a need to address crime issues.

Issue Significance

Although crime rates are much reduced in Orange Walk, crime is still prevalent in some areas. Furthermore, crime is still a concern of some residents and tourists. Crime should therefore be addressed in a strategic manner.

History

Residents and officials have taken various measures to deter crime in Orange Walk. For example, officials have promoted educational awareness, drug and alcohol awareness, informational crime prevention pamphlets, formal police surveillance and Sensitization Empowerment Workshops. In addition, residents have utilized burglar bars, barbed wire or glass top concrete walls, and guard dogs. The community has also launched Community on Patrol Program and Neighborhood Watch programs.

Overall, many programs and techniques have been used to help prevent crime in the town. Some have proven to be effective; however the crime rate in Orange Walk could still be reduced. Thus, something further must be done to help close the gaps and ensure the safety of residents and visitors.

Causal Factors

Currently there are a number of criminogenic (crime promoting) factors that are contributing to the elevated crime rate in Orange Walk Town. Examples include:

- Insufficient lighting
- Low traffic/surveillance areas
- Vacant and abandoned buildings
- Graffiti
- Insufficient locks, doors, windows and gates
- Easily accessible drugs and alcohol
- A lack of alarm systems
- A lack of law enforcement officers and vehicles
- A lack of crime prevention education
- Low traffic roads
- A lack of drug and alcohol education
- Overgrown grass and bush
- The Rambo Town label and idealized gangs

Stakeholders

A reduction in crime would affect several types of stakeholder:

- Tourists would be more willing to come to Orange Walk and would feel safer during their stay.
- Community members would feel safer and would be able to live more freely.
- Children and youth would be able to congregate safely in schools and parks.
- Police would have more time and thus, would be able to focus their time more effectively.
- The government would end up spending less money on crime prevention in the end.
- Business owners would have safer businesses. They would also save money due to a drop in theft rates.

Overall, if crime is addressed and reduced, the only people who would not benefit are the people who are committing the crime to begin with.

Recommendation

Crime Prevention Through Environmental Design (CPTED) could address and reduce many of the criminogenic factors present in Orange Walk.
Furthermore, it could address many of the criminogenic factors in a cheap and effective manner. In essence, CPTED provides a common sense way to improve the safety of one’s environment through deterring and preventing criminal and/or deviant behavior.

Therefore, it is highly recommended that the Town implement CPTED in Orange Walk.

**Objectives**
- Decrease in crime
- Decrease in fear of crime

**OPTIONS**

**Option 1: Increase Lighting**

Lighting is effective in reducing both crime and fear of crime. Lighting increases outdoor activity (vehicular and pedestrian movement), surveillance, the ability to detect a crime in progress and the ability to identify an offender. Furthermore, “[a]dvocates often point to the deterrent potential of lights, which may make potential offenders choose less well-lighted areas for their crimes. Lighting should allow potential victims to see their surroundings and may lead them to avoid less well-lit locations” (Lab, 2004, p.41).

Option 1 includes the following components:
1. Installing lighting in high crime areas (see appendix one).
2. Installing lighting in high traffic (vehicular and pedestrian movement) areas.
3. Installing lighting in areas where fear of crime is elevated.

**Option 2: Increase Surveillability**

Surveillability is effective in reducing both crime and fear of crime. Surveillability is the ability of police, residents, and other individuals to survey an area throughout the course of their day. Surveillability reduces the ability of offenders to sneak up on or hide from victims. It enhances the ability of police officers and security professionals to patrol or survey an area.

Option 2 includes the following components:
1. Trim bushes, trees and other growth back from roads, parks, and high crime areas.
2. Increase lighting in high crime areas, parks, and low traffic areas.

3. Increase eyes on the street. The community can accomplish this through increasing the number of volunteers involved in the Community on Patrol Program and the Neighborhood Watch Program.

4. Educate on the importance of surveillability.

5. Increase pro-active policing.

**Option 3: Institute and Utilize Property Identification Programs**

Property identification programs are effective in making it more difficult for offenders to dispose of or “fence” stolen goods. Furthermore, they make it easier to find the rightful owner of the marked items. This reduces the value of stolen goods as well as increases the potential for convictions.

Option 3 includes the following components:
1. Identify and mark valuable items, such as electronics, bicycles and cars.
2. Create a database at the police station where people can register their marked items. The police can then use the property identification number to identify and return stolen goods to their rightful owners. This will also help in prosecutions.
3. Utilize property identification programs to identify and return stolen items.

**Option 4: Institute and Utilize Locks, Doors and Other Related Access Factors**

Access control factors are effective in reducing both crime and the fear of crime. Access factors are devices that make entry into a home, building, or property more difficult. Examples of access factors are locks, gates, fences, doors, windows, and other security devices. All of these make the offenders target harder to achieve, and make home/business/property owners feel safer.

Option 4 includes the following components:
1. Educate residents and children on the importance of access factors. Teach people the importance of locking their doors and keeping their homes safe.
2. Install locks, gates, fences, doors, windows, and other security devices where necessary.

**Option 5: Install Alarm Systems in High Priority Buildings**

Alarms are very effective in deterring criminal activity. Offenders are several times less likely to
commit an offence on a building that has an alarm system.

Option 5 includes the following components:
1. Install alarms in high priority buildings and on buildings with valuable information inside.
2. Place alarm notification plaques and signs around properties.

**Option 6: Increase Beautification Projects**

Beautification projects are effective in reducing both crime and the fear of crime. Beautification projects encourage collective efficacy and instil a sense of territoriality in residents. Both collective efficacy and territoriality help to reduce crime.

Option 6 includes the following components:
1. Clean up graffiti
2. Clean up garbage
3. Plant flowers
4. Paint murals
5. Clean up parks, schools and public buildings

**ANALYZING OPTIONS**

Depending on the alternatives and options implemented, Orange Walk Town’s crime rate could be significantly reduced. The overall goal is to implement a successful crime prevention program that would allow for a reduction in both crime and fear of crime, and an improvement in the quality of life of many Belizeans. In addition, communities, neighborhoods, homes, buildings, streets, schools and parks could all be made safer through the application of Crime Prevention Through Environmental Design (CPTED) principles. The proper implementation of CPTED principles should make it more difficult to carry out criminal and/or deviant acts in Orange Walk Town.

Table 1 below evaluates these options based on the following criteria.

**Criteria for Funds Required**
- Inexpensive: Volunteers, community fundraisers, and crime prevention money could be utilized.
- More expensive: Fundraising, town council money, and individual resident’s funds may be needed.
- Expensive: Individual residents, town council, and government funds may be needed.
- Inexpensive to expensive: the funds needed will vary depending on what is implemented.

Depending on the implementation process all estimates are subject to change. If volunteers are utilized the costs of each implementation plan can be cut drastically.

Overall, this report recommends the implementation of options 1 through 6 in order to see the most drastic reduction in crime and the fear of crime. However, options 3 and 5 are not as highly recommended at the others. Options 1, 2, 4 and 6 are essential if any reduction in crime is to be seen.

**IMPLEMENTATION PLAN**

**Increase Lighting**

The high crime areas that are in need of lighting are listed in appendix one. However, a visual survey will need to be done to determine which other areas are in need of lighting. Town Council will need to find funding. BEL should be involved as well and could be approached for support. This should be implemented as soon as possible.

**Increase Surveillability**

First, awareness education classes will need to be given in schools, colleges, and at public functions on the importance of surveillability.

Second, the Community on Patrol and Neighborhood Watch Programs should be expanded.

Third, bushes, trees and other growth will need to be trimmed back from roads, parks, and high crime areas.

Fourth, educational posters should be made that stress the importance of surveillability.

Lastly, an increase in pro-active policing would really help with a reduction in crime and fear of crime.

All of these tasks will need to be completed by police, neighbourhood residents, students and teachers. This should be implemented as soon as possible. This is the most important step in reducing crime and fear of crime.

...continued...
Analysis of Options

Table 1: Comparison of Options

<table>
<thead>
<tr>
<th>Criteria/Options</th>
<th>Cost</th>
<th>Intended Benefits</th>
<th>Additional Benefits</th>
<th>Organization Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase Outdoor Lighting</td>
<td>More expensive</td>
<td>Reduces crime and fear of crime</td>
<td>Increased outdoor activity / surveillability</td>
<td>Little: visual survey</td>
</tr>
<tr>
<td>Increase Surveillability</td>
<td>Inexpensive to expensive, depending on what is implemented</td>
<td>Reduces crime and fear of crime</td>
<td>Increased sense of community.</td>
<td>Little: awareness education</td>
</tr>
<tr>
<td>Institute and Utilize Property Identification Programs</td>
<td>More expensive</td>
<td>Reduces crime</td>
<td>None</td>
<td>A lot: public awareness, mark items and create database</td>
</tr>
<tr>
<td>Institute and Utilize Locks, Doors and Other Related Access Factors</td>
<td>Inexpensive to expensive, depending on what is implemented</td>
<td>Reduces crime and fear of crime</td>
<td>Increased feelings of territoriality.</td>
<td>Little: awareness education</td>
</tr>
<tr>
<td>Install Alarm Systems in High Priority Buildings</td>
<td>More expensive</td>
<td>Reduces crime</td>
<td>None</td>
<td>Medium: install alarms in selected buildings</td>
</tr>
<tr>
<td>Increase Beautification Projects</td>
<td>Inexpensive to expensive</td>
<td>Reduces crime and fear of crime</td>
<td>Increased feelings of territoriality. Increased sense of community Creates a beautiful space for residents</td>
<td>Little: awareness education</td>
</tr>
</tbody>
</table>

Institute and Utilize Property Identification Programs

First, a database will need to be created to contain all of the marked items. This needs to be done, so that the original owners of the marked items can be contacted, and also to ensure that the item was actually stolen.

Second, valuable items will need to be identified and marked. This will involve data technicians and police.

Third, retailers will need to be contacted and informed of the program. Furthermore, retailers will have to explain the program to each customer that buys a marked item.

Institute and Utilize Locks, Doors and other Related Access Factors

First, residents (including children) and officials will need to be educated on the importance of access factors.

Second, locks, gates, fences, doors, windows, and other security devices will need to be installed where necessary.

This will involve teachers and property owners.

Install Alarm Systems in High Priority Buildings

First, high priority buildings will need to be identified.

Second, these high priority buildings will need to be equipped with alarm systems.

This will involve some property owners and alarm technicians.

Increase Beautification Projects

First, a clean up project will need to take place. Graffiti and garbage needs to be removed from all areas, especially parks, schools and public buildings.

Second, murals need to be painted around town.

Lastly, flowers should be planted in high traffic and high crime areas.

All elements of the beautification project could be carried out by volunteers and even children.
EVALUATION

The implementation of Crime Prevention Through Environmental Design principles should result in a measurable or noticeable reduction in crime, fear of crime and an overall improvement in quality of life in Orange Walk Town.

In order for the overall project to be considered successful, options 1, 2, 4 and 6 must be fully implemented.

Furthermore, police, teachers, residents and officials should all adopt the Crime Prevention Through Environmental principles and do their best to implement them.

REFERENCES CITED


APPENDIX: CRIMINOGENIC AREAS

The following is a list of areas identified by the community as experiencing high levels of crime.

- Pasadita Street
- Nature Park
- Temash Street
- Savannah Street
- Riverside Street
- San Antonio Road
- Louisiana Farm Road
- Stadium Area
- Cemetery Street
- Union Town Area
PUBLIC SPACES

By Shawna Carrieres

Orange Walk Town is blessed with extensive areas of parks and public spaces. These areas provide an excellent opportunity to enhance the quality of life of Orange Walk residents and attract visitors. In this paper, Shawna Carrieres explores options for enhancing the town’s public spaces.

Shawna Carrieres is a fourth Year Malaspina Student graduating with a major in the Urban Growth Management stream in Geography and another major in Comparative History. After graduation, she plans to pursue graduate studies to further her career options. Her hometown is Victoria BC and she currently resides in Nanaimo BC.

ISSUE IDENTIFICATION

Issue Statement

Orange Walk Town is a living town with a strong thriving community. The town is blessed with extensive areas of public spaces. However, there is potential for improving various uses of these spaces and enhance beauty of the central area. More planning of public spaces will create new activities and cultural experiences and understanding within the community.

Problem Significance

Attractive and usable public spaces create cohesive community awareness and involvement. Access to the public spaces improves the quality of life of the community. Patterns, markers or paths, and attaching various spaces with adjacent land uses can greatly influence the town’s appeal. By creating emphasis on a variety of public spaces with effort placed on historical, cultural and social importance throughout the town and for the members of the community fosters a heightened sense of pride in the town’s past. Some land uses are more appropriate in other areas (i.e. the public works yard at town hall).

Beautiful destinations in our urban environments transform the social interaction of whole communities. The achieve this; towns must carefully consider how they use varying elements within the space and how these spaces achieve appositive impact on communities. In towns like Orange Walk, however, another important factor is the costs of improving and maintaining these public spaces and potential revenues from these spaces. It is difficult for towns with low budgets to justify investing thousands or millions of dollars in parks and public spaces. However, research has shown that when properly planned, parks and public spaces create beneficial public use; boost civic pride; create more energy efficient, promote less polluting development; and encourage the understanding of the community’s heritage. Contact with nature; opportunities for exercise; and involvement in social, cultural and community activities are all large social impacts of good public spaces.

History

Barracks Sports field - During the Caste Wars in 1872, this was the site of a military barracks. The structure was not originally created for this use. During the conflict, the walls of the structure received over 300 holes from rifle bullets and in some spots, the thatch roof was shot away. However, during the battle most men from Orange Walk Town made their way to the Barracks to fight off the Indians. After the battle, the grounds of the Barracks were maintained and eventually became a playing field that everyone in the town is able to use the site. A local school also uses the grounds for play space.
Independence Plaza, Police Department, and Courthouse - Two years after the battle at the Barracks the people of Orange Walk Town made the decision to fortify the town. This fort was established to overlook the river for any possible attackers coming by river. The structure was created out of wood and protected the gaol (jail), police office and courthouse. The original fort was lost to fire in 1978 and one can still find remnants of the walls around the park, police department and courthouse. The statue featured in Independence Plaza is that of Major Robert Mundy but is not particularly noted and can be difficult to recognize by visitors. The preservation of old fort walls and the statue would be important for recognition of the town’s rich history.

Archaeological Site/Fort Cairns (across from market) - The fort was completed in 1876 in the centre of town. The builders used wood fences and a single gate on the eastern side. The masonry bastions on the southeast and northwest corners of the fort overlooked the deep moat are all still notable today. Unfortunately, the land is quite overgrown today and is not used for public activity and use.

Lovers Lane - This is a quaint little street connecting major arterials and runs parallel to South Park. The lane contains little shops and could also boast lovely street cafés, delicatessens or the like which would give park goers and pedestrians more interesting places to sit and meet. The the Novelo family originally donated the land to create this street. The family still runs a business there. The street was named for its history of young lovers smooching along the lane.

South Park - The statue in the park is dedicated to the appreciation of the mothers of the town and shows the great respect for all that mothers do. This statue is an old colonial statue now celebrated on Mother’s Day and receives a wreath each year during the massive town celebrations on that day.
Central Park – This is the area between the Barracks and Old Fort Cairns. Now standing in this area is a large public area with a covered market area where local merchants sell fruit and vegetable and another structure has been created for taco and other food stands. This park has little seating but with minimal work could be one of the town’s most vibrant areas.

Causal Factors

Orange Walk Town has set aside plentiful space for public and open space. There are extensive areas of open space in the central area. The issue now is how to utilize the historical importance of the archaeological sites to emphasize the history of the area and enhance the appeal and sense of place within the town. Unfortunately, the Town budget is not large enough to accommodate all needs of park maintenance. According to the 2006/2007 budget, the town spends $8,330 on both a market keeper and a park keeper. Maintenance and other costs of public spaces can take a huge bite out of Town’s already minimal budget. It is thus difficult to maintain these areas and to add to their vitality when so many other important issues need to be addressed.

Fortunately, the community is seeking use of an “adopt a park” movement to improve the appeal of the public spaces. Awareness for newer uses for public space and cultural emphasis will greatly improve experiences within the town. As mentioned earlier, Orange Walk has plentiful public space and has many citizens who want to work together to see it improve. It is likely that the town’s public spaces will in time help to improve upon this already vibrant community.

Stakeholders

The most important people who will be affected by the emphasis of public spaces will be the local residents and they will achieve a higher quality of life. Local residents will enjoy the beautiful spaces and view corridors created from the public spaces and will be able to use public spaces for recreation and enjoyment.

Some businesses will benefit from proximity to public spaces that improve the customer experience.

Both town council and central government will be concerned with the outcome and political factors related to decisions as to what is to be done with the parks.

Tourists will be experience the strong culture of Orange Walk Town and will also learn about local history. The use of open space will give tourists the opportunity to experience cultural activities within the town and this can act as a pull factor ultimately improving local business and revenue.

Objectives

Enhancing the public spaces of Orange Walk Town will give members of the community important opportunities to become involved in their community and to show pride in the town. Emphasis on the historical appeal of many of the public spaces like the barracks and archaeological site will improve understanding of the cultural and social diversity of Orange Walk. The Town should consider various planning issues in designing public spaces, including eyes on the street, public events, social/cultural activities and entertainment, and place great emphasis on the historical and cultural importance of public spaces. Creating new activities like public night markets and focus on various festivals like events will greatly enhance the community’s use of public space.

OPTIONS

Description of Options

A. Continue at Current Standard

Orange Walk Town could continue with the current trend with public spaces by maintaining clean orderly areas and not add any extra to the spaces.

B. Recreation of Uses and Styles

Orange Walk could re-create some of the ways it uses its public spaces. Council has previously considered closing the streets surrounding South Park to vehicular traffic. Also, council has considered the idea of using cobble stone paths and making the roads and walkways more attractive and aesthetically appealing. This would improve on tourism interest; however the considerations of the costs of more attractive walkways and streets over more practical streets may be overshadowed by the needs of the town and the financial resources to a these improvements. Luke Letham, Stuart Barker and Ryan Watson (see sections) will address this issue in more detail.
C. Social Programs for Revitalization

Orange Walk could make revitalization a social improvement issue and gain opportunities of improving lives of many members in the community by creating park and public space revitalization programs. By incorporating volunteer programs and after school care programs with the local schools the children and volunteers could work together to revitalize their parks in ways they can be proud. The local police department could also implement a program where common offenders actually are involved in community work time in the parks where they can paint, build benches and playground equipment to help their confidence in knowing they are improving in the community, hopefully aiding them to end their criminal and delinquent activities.

Specific to Spaces

This section discusses options for specific spaces in the town.

South Park and Lovers’ Lane Area: Council has considered creating a pedestrian only area here in the past. Pedestrian-only streets have been beneficial to some cities in the world. Curitiba, Brazil for example has its famous Rua XV de Novembro, which was one of the first pedestrian-only streets in Brazil; it has become a huge draw for both residents and tourists (Irazabal, 2002). The reason for the large amount of use of the street is the appeal created from the well-tended pots of flowers and tourist restaurants installed in hundred-year-old buildings. The street is home to many artistic performances, such as mimes and clowns who interact with those who pass by, musicians, magicians and other miscellaneous such as the Statue Man (Irazabal, 2002). Orange Walk could certainly learn from Curitiba’s use of a pedestrian-only street and South Park area along with Lovers’ Lane would likely be an ideal place for this. When we questioned the shop owners of this area if they thought a pedestrian only area here would be beneficial the results were pretty well evenly divided. People are slow to accept change, especially when their incomes may be affected. However, in Curitiba, at first local merchants were opposed to the idea, they quickly found the pedestrian zone to be a tremendous economic boost; much more space was available in the area for customers rather than vehicles, the shopping environment was more pleasant, and people had more time to shop when they did not have to drive and park (Fernandes, 1995).

Independence Plaza: This is a major portal area to Orange Walk Town on the Northern Highway and the bridge and has attractive frontage on the river connected to Banquitas house of culture, hotels, and other sites like the prominent police station, courthouse and other structures which were once part of Fort Mundy. As already stated these are very important to the local history of the town. Thus, incorporating historical appeal to the plaza would be beneficial for civic pride and understanding and tourism to the town. Consider how impressive it would be to enter the town from the bridge and one of the first sites is an attractive portal with Independence Plaza displaying historical information on the important Caste Wars that the locals of Orange Walk once experienced. If the Town takes measures to identify the entrance to the town more clearly, this will create a sense of entry for residents and tourists. Planting trees along the portal, possibly orange trees, would frame the entrance and create a more impressive entrance while also providing shade for the pedestrians and those using the plaza. Independence Plaza had a large, flat concrete surface that is the remnants of a volleyball court. The Town could fix this up inexpensively and it would be ready for play again. This would improve the park’s use and would bring various members of the community together to play.

Central Park and Market: This area is very important to the people of Orange Walk Town. The market brings in revenue and many of the citizens and tourists can get fresh produce or a tasty meal from one of the vendors who frequent the area. The market shelter is attractive and there appears to be a stage-like structure under construction that would encourage local festivals to take place in the space. An option for this area would be to develop it in a festival ground style and possibly use this as the central area for attracting tourists and residents to celebrate and possibly create revenues from outdoor festivities. Maier Festival Grounds or as the Summerfest Grounds, is a festival park in Milwaukee, Wisconsin, started as a large, centrally located area much like Central Park in Orange Walk with simply concrete blocks with wooden slabs placed on top to serve as stages, in the middle of a grassy, muddy field. Regardless of these conditions, the grounds were able to support festivities because of the location and over the years, the features of the grounds were improved upon (History of Summerfest). Perhaps the space could have an amphitheatre that would be beneficial for musical, theatrical and other forms
The town could also improve seating around the park and possibly provide more areas for eating, resting and chatting. With the success of the once-a-month council-run market, perhaps council could expand this approach to include a weekly or nightly market where local artisans from the town and other local towns in the Orange Walk District so they could display their goods and sell them there. This would likely draw attention from tourists and residents of other areas of Belize. Night markets or night bazaars are street markets operating at night mainly in urban or suburban areas that are generally dedicated to more leisurely strolling, shopping, and eating than more businesslike day markets (Jordan, Morris and Moskowitz, 2004). Possibly extending the night market of central park to the South Park, Lovers’ Lane area would make this a very beneficial and enticing activity to attend.

**The Barracks:** The Barracks is used as a sports field and fair grounds in Orange Walk Town and is accessible to members of the public. This area already has been noted for its historical importance but the importance of the soccer/football pitch needs now to be addressed. Soccer is the most popular sport in Belize and Orange Walk Town has an incredibly gifted football squad. To continue this trend and to keep support and interest in the area alive it would be great to create a really interactive soccer club at the barracks. Perhaps a clubhouse with a pub and a little information on a plaque about what once happened on the grounds during the wars would keep the area interesting. Certainly the children would feel rather important having change rooms while getting “booted up” to play a match. Stands for the spectators and a vendor concession would really add to interest while creating revenue for upkeep of the grounds. The structure does not need to be very fancy, just added interest may boost up use of the area. Perhaps the building could be rented out as a hall for private events to create more revenue to the town.

**Fort Cairns:** This area of land is very important historically and should remain so. As this area is in such a central area of town it could be beneficial to create beatification of this area and make it into a cultural and education centre. The town needs to focus this area more on the history of the events that took place there. Perhaps a tourism information centre would be beneficial. With close proximity to the school, this would also be great for the children to be involved in various activities of the land. This could be an expensive project but perhaps in years to come the ability to make this a reality with careful planning could come. Hopefully, this could become a cultural hub for the entire town and possibly create a whole culture of a town built around its rich history.

**EVALUATION OF OPTIONS**

**Decision Criteria**

This report uses the following criteria to evaluate the options:

A. This would be the easiest as there would be no change in the policies and council would not have to shift around structure to accommodate plans for the public spaces. However, this could lead to the breakdown of the parks as no new improvements would be made like playgrounds or new benches for people to enjoy and the parks could begin to be boring or could fall into disrepair. However, adopt a park would still be implemented which seems to have been very successful to the parks of Orange Walk Town.

B. This would be extremely expensive for any town and overly aggressive. Orange Walk has very attractive features within the parks and public spaces and it would be a shame to lose any of these. New creations are advised and perhaps tearing down features that are no longer safe is advisable but losing the entire heritage in the area would not be beneficial at all.

C. Implementing various social programs to improve the park would be an inexpensive way to make improvements on the parks and would also create inexpensive ways to maintain the public spaces. This could also improve community pride as it would involve many different members of the community into improving the parks and spaces. By creating new social programs economic alternatives to after school care would be available to families allowing parents to work and not worry about their children. The idea of possibly creating community service sentences for minor offences or regular offenders could also help the individuals involved with crimes that doing good for the community is great and could give these individuals more
confidence to move away from activities which are causing them issues.

Table 1 below applies these criteria to the evaluation of the options.

### Table 1: Comparison of Options for Public Spaces of Orange Walk Town

<table>
<thead>
<tr>
<th>Options:</th>
<th>Criteria: Economic Considerations</th>
<th>Community Involvement</th>
<th>Community Benefits</th>
<th>Additional Benefits</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue at current standard</td>
<td>Inexpensive, already within town budget</td>
<td>Substantial – still could be involved in adopt-a-park activity but still needs funds</td>
<td>Yes but would not create new opportunities for this</td>
<td>Does not change structure of budget</td>
<td>Little, except that there would be a lack of progress</td>
</tr>
<tr>
<td>Complete Demolition and Recreation</td>
<td>Needs extensive funding, very expensive</td>
<td>Little or none – this would be unsafe for unskilled laborers</td>
<td>Some- new playground and other equipment but high costs could cut into other programs</td>
<td>Could cause diffusion of benefits</td>
<td>This destroy historical landmarks and lose community spirit as many important areas change needlessly</td>
</tr>
<tr>
<td>Social Programs for Revitalization</td>
<td>Inexpensive</td>
<td>Maximum- all members of community have opportunity to be involved</td>
<td>Maximum- this is focused and creating opportunity for community members to be involved and have there skills utilized.</td>
<td>Support local economy</td>
<td>Little but could be controversial and would certainly need police and other authorities to be behind project.</td>
</tr>
</tbody>
</table>

**Recommendation of Best Alternative**

The analysis suggests that a combination of options A and C would be the best approach. By continuing to utilize the already well-established and proven uses of town planning, Council will be able to maintain the attractive and appealing public spaces that already exist. However, the use of various other sources of labour can both enhance community pride and create more appealing and attractive spaces to visitors and community members alike.

The idea of incorporating both traditional and more abstract ways of maintaining the public space will create new paths for future development in this area. It is realistic to presume that the spaces can become ideal within a few years. Slow processes for change and taking small steps at a time will create the better solution for the creation of wonderful public places. If the Town tries to get involved in large scale projects too quickly, it is possible this will be too much and the project will cease to finalize causing a larger problem. There is a wonderful palate in Orange Walk and the small steps will create amazing results.

**IMPLEMENTATION PLAN**

The following are suggested steps for implementing the above recommendations.

**Draft a bylaw to institute new programs for the park maintenance**

The town would need to work with community groups and schools to implement new programs to involve individuals and groups in improving the public spaces. For the school system, this can be in the form of after school care or extras credits for older children. In the penal system
Malaspina Geography 2007 Field Project  
Policy Analysis

this can be in the form of community service hours. This would be a chance for law evaders to give back to their community and feel apart of it again.  

**Launch a Community Spaces Awareness Program**  
The town should highlight enhancements to the spaces various members of the community have contributed to. Facts about the importance of the spaces should also be readily available for parents, students, and community members altogether. The ability for various culture groups to be involved in various activities and showcases in the public spaces should be made attainable by all groups so the spaces can host verities of events.  

**Enhance Historical Awareness**  
To not only boost community knowledge but also to enhance tourism creating various local historical enhancements throughout the public spaces would be ideal. By creating plaques that have stories of what each space once was and how it came to be would truly bring the spaces together and create cohesive communities. This would boost tourism along with local pride.  

**Develop Park Improvement Plans**  
The Town needs to create environments that are more inviting. Trees to create micro-environments of shade and cooler temperatures are very important in this town. This will help people want to be in the public spaces more frequently and cause them to use the areas. By using the social programs, trees can be planted with cheap labour and costs would only be the trees themselves. By having the older, more skilled labourers working on building benches, playgrounds and other uses the spaces will be incredibly inviting.  

**CONCLUSIONS**  
Public spaces are incredibly important to a town’s well-being and structure. Clearly all members of the community need to be able to use public spaces. This will be a great way to bring all members of the public together and boost community spirit of Orange Walk Town. Fortunately, Orange Walk already has abundant and attractive public spaces and rejuvenation of these spaces is not going to be an overly trying task. Given the great community enthusiasm and energy observed during our short stay in Orange Walk, the future of public spaces in the town appears assured. With creativity, Orange Walk will become a very desirable place to live and visit.  

**REFERENCES CITED**  
History of Summerfest from webpage, http://www.summerfest.com/  

Malaspina University College, Canada  
Orange Walk Community Planning
COMMUNITY IMAGE

by Hayley Linton

Community image evolves in a community from many small and large decisions. A tree or a better store sign are minor changes, but over time, these changes enhance streetscapes enormously. Large decisions, such as creating “portals” at the entrances to a central area can add dramatic impact. In this paper, Hayley Linton describes some options for Orange Walk.

Hayley Linton majors in Geography at the University of Victoria. Her interests include urban planning, natural resource management, and climatology. She currently lives in Victoria, BC.

Orange Walk Town is a lovely town with potential to become even more functional, more liveable and more beautiful. Orange Walk would benefit from more uniform sidewalks, well maintained public spaces, more public art, more trees and greenery integrated into the commercial areas, and more distinctive signage in terms of streets and businesses. The town would also benefit from a discrete entry/exit gateway or “portal” to the downtown area to let visitors and residents know that they are entering the central area of Orange Walk. These measures could increase tourism and make the downtown space more beautiful, useable and inviting for residents. Orange Walk should endeavour to create a clear, distinct “Orange Walk” community image.

ISSUE IDENTIFICATION

Issue Definition

Currently the central area of Orange Walk can be very hot. This could be remedied in part by planting trees and plants to create shade and greenery. The town could widen and standardize sidewalks to provide a safe and pleasant walking experience. View corridors along streets also have potential for enhancement. Parking areas could be established to remove cars from walking areas. Vacant and derelict lots could be redeveloped for attractive uses. The town would also benefit from the creation of more public gathering spaces, such as theatres and galleries, which foster a sense of community and camaraderie between residents in the area.

Issue Significance

Enhancement of the community image would have many benefits for Orange Walk. It would make Orange Walk an even more beautiful place. The town would create a clear, distinct Orange Walk image that will be one of a clean, beautiful town. A rejuvenated central area can increase quality of life for residents and attract tourists to improve the town’s economic status.

History

In the late 1800s and early 1900s, the cities in America were growing and expanding. Between 1860 and 1910, the number of American cities with over 100,000 residents grew from 8 to 50 (Hines, 2004). These cities developed so rapidly that they gave little to no thought into spatial distribution of services and the overall layout of the city. So the City Beautiful Movement was headed by Daniel Hudson Burnham. Burnham propose the City Beautiful Movement as a way to improve and beautify the American urban centers and to put them on par with the famous European ones. The aims of the City Beautiful Movement were promoting the planned creation of civic beauty through architectural harmony, unified design and visual variety (Baeyer, 2007). Projects completed under the City Beautiful Movement included magnificent civic centers, tree lined parkways, landscaping in front of public buildings, and revitalized parks.

Revitalization and beautification has already started to occur in Orange Walk. The Liberty Street project, led by Councillor Rosario Melendez, has shown that residents are willing to volunteer to help beautify the town. This example shows promise for future projects. Painting murals on blank walls, revitalizing and cleaning up parks, or putting up monuments to historical events that occurred in Orange Walk Town are all possibilities for projects in the future.

Causal Factors

There are a number of factors that affect the image of downtown Orange Walk:

- With no overall beautification plan in the central area, individual property owners do not coordinate decisions on their properties. This leads to discontinuity in the streetscape...
and missed opportunities for enhancing the overall beauty of the town.

- There is a slightly claustrophobic and chaotic feel to some parts of the central area due to the unsafe pedestrian conditions, narrow roads, and buildings set very close to the street.
- The downtown area is very hot due to the small number of trees that provide shade in the central area.
- Blank walls and doors, the lack of a defined entrance or ‘portal’, and lack of public art make the town less inviting to people passing through.

**Stakeholders**

A community image strategy would benefit several types of stakeholder:

- The business owners would benefit from a more attractive environment in the commercial area, which would lead to more customers and increased profits for their businesses.
- Residents and tourists would have a more aesthetically pleasing place to shop and visit parks. Residents would be more willing to come into the downtown area and tourists would stay longer to explore the town.
- The Town would be better able to fund more projects within the area, since the economic status of the town would improve.

**Objectives**

This policy analysis seeks to:

- Develop an overall strategy for enhancing the beauty of Orange Walk’s central area
- Capitalize on the setting and existing built form of Orange Walk
- Identify economical and functional beautification options

**OPTIONS**

**A. Street Trees and Flower Boxes**

Orange Walk has a nice central area that would greatly benefit from some shade and greenery to cool it off and provide scenery. Trees and flower boxes integrated into some of the higher pedestrian traffic areas are said to lead to “enhanced worker productivity, traffic stress reduction, emotional stress mitigation, and restoration of cognitive capacities necessary for basic functioning and productivity” (Wolf, 2003). A study was conducted in 2003 in an inner city area using three scenarios: no trees, traditional trees only, and mixed vegetation including trees, shrubs and flower boxes. The traditional trees and mixed vegetation always got responses like “welcoming,” “friendly,” “well-kept,” “relaxing,” and “inviting” while the no trees scenario received responses such as “bleak,” “stark,” and “barren” (Wolf, 2003). Vegetation added to the central area would create a more inviting and pleasurable environment, which would attract consumers and thus increase employment and business revenues. A greener shopping environment would cause more people to shop there more often and attract some tourists.

**Figure 1 – Queen Victoria Avenue ‘Green Median’**

Option 1: Volunteer Groups

Street trees and flower boxes could be integrated into the downtown area by volunteer groups. If volunteer groups were created to help overhaul the downtown area, then trees and plants could be added to the central area as the group progressed through the town. The town can use the Liberty Street Project as a model for the project.

Option 2: Town-funded Labour

Another option for street vegetation is to place flower boxes on the sidewalk and plant flowers and trees in them. The Town can also integrate more Flowers and trees into medians on streets, like on Queen Victoria Avenue (see Figure 1 above). The town can hang flower baskets on lamp posts or poles to add greenery where the sidewalk does not allow room for planter boxes on the ground (see Figure 2 below).
Option 3: Creation of a Business Improvement District (BID)

Street beautification would enhance local business revenues, so the Town Council could promote the establishment of a Business Improvement District (BID) for the central area. Communities have created BID’s all over North America and Europe as a means to “benefit the trading environment within the boundary of a clearly defined commercial area” (UKBIDs). Each business in the district would contribute a certain amount of money each month or year to a central account for the whole area, the BID then uses the money for basic maintenance or enhancement projects within the defined area of the district. Local businesses would participate in the planning. Appendix A identifies more resources on Business Improvement Districts. The BID could use its funds for a project that would incorporate street trees and flower boxes into the central area.

B. Business Signage

Business signage in Orange Walk is dominated by the ubiquitous Coca Cola sign. Individualized signage would be more aesthetically pleasing. Coca Cola signs are unoriginal and the shop names are sometimes hard to read, especially if the name is long.

Option 1: Painted or Hanging Signs

If the business name was simply painted on the building in an already well-lighted and visible area, this would not only get rid of the Coca Cola signs, but would also decrease their power consumption since they don’t have to pay to light the sign. It would also add to the color and character of the downtown area. The Town Council could implement signage guidelines to promote individualized signage. Business signage can be incorporated into some form of art on the building. Figures 3, 4, and 5 illustrate street signage options.
Option 1: Rented Ad-Space
Business owners can rent advertisement space on the street signs, like in Figure 5, and that would cover the cost of the sign itself.

Option 2: Town-Funded Signs
If advertisement is not acceptable, the Town itself could buy and install street signs. Signs could be manufactured by a local community group or the Kolbe Foundation.

Option 3: BID-Funded Signs
If a Business Improvement District is established, it could provide some – or all – of the funding for street name signage in the central area.

D. Entry/Exit Gateway or Portal
Orange Walk’s central area currently has no visibly defined entrance or exit to inviting travellers to visit the town and stay for shopping. Many cities and commercial centers develop attractive ‘gateways’ or ‘portals’ to let drivers know when they have entered and when they are leaving the central area. These gateways can “take many forms, including a decorative wall, arch, unique landscaping, stone structure” (City of Canby, Oregon, 2005).

Two ideal places exist for gateways:
- North: the intersection of Main Street and Queen Victoria Avenue (Figure 7 below)
- South: the intersection of Liberty Street and Queen Victoria Avenue.

The north portal is a splendid venue that could integrate the sloping topography, the Fort Mundy heritage sites and buildings, Independence Park, the New River, and the cultural center. It also includes the access bridge to the bypass, other public buildings, hotels and other amenities. A portal here would inspire a strong sense of arrival and welcome.

Option 1: Town-Funded Materials with Volunteer Labour
One option would be a large welcoming sign or artistic picture, combined with landscaping. The Town Council could supply the materials and get local artists to volunteer to paint it. Many local artists would be pleased to have their work showcased in a place thousands of people will see.

Option 2: BID-Funded Project
It may be possible to use the money from the Business Improvement District to provide the materials, since local businesses would be primary beneficiaries.

In addition to a billboard, the gateway could include a business directory and map, paid for by local businesses whose names would be
included. Once the sign is constructed and decorated with art or advertisements, it could be placed and then surrounded by a landscaped flower garden and other shrubs and trees.

There are other important aspects of community image as well that are not addressed in this report such as: sidewalks, public spaces, land use, architecture and design, parking, public art, and traffic flow; but those are all discussed in other policy analyses.

**ANALYZING OPTIONS**

*Decision Criteria*

This report evaluates the options based on the following criteria:

- **Criterion 1**: Low cost of implementation to Town – the start-up and maintenance costs must be plausible for the Town to afford.
- **Criterion 2**: Beneficial to overall Orange Walk Town image – the overall ambiance of Orange Walk Town is in the balance and should be considered accordingly.
- **Criterion 3**: Organizationally feasible – it must be possible to attract volunteers or some kind of external help to assist with the projects.
- **Criterion 4**: Efficient and competent labour – work done must be completed efficiently and in a professional, skilled manor.

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**Analysis of Options**

**A. Street Trees Attribute Analysis**

<table>
<thead>
<tr>
<th>Options/Criteria</th>
<th>Low cost?</th>
<th>Improvement to Image?</th>
<th>Organizationally Feasible?</th>
<th>Efficient and Competent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Volunteer Labour</td>
<td>free</td>
<td>Image improved</td>
<td>Least feasible</td>
<td>Least</td>
</tr>
<tr>
<td>2. Town-funded Labour</td>
<td>most expensive</td>
<td>Image improved</td>
<td>More feasible</td>
<td>Most</td>
</tr>
<tr>
<td>3. Creation of BID</td>
<td>inexpensive</td>
<td>Image improved</td>
<td>Most feasible</td>
<td>moderately</td>
</tr>
</tbody>
</table>

Having volunteers planting street trees to the downtown area, while the cheapest possibility, is not necessarily the most efficient option. Citizens of Orange Walk are busy people who may not always have time to work on the project. It would make more sense to implement Option 3, a Business Improvement District, in the central area and have each landowner within the specified geographic area contribute a specified amount of money each month or each year to pay for various improvement projects around this area. Creating the BID is also a less expensive and more equitable way to complete revitalization projects within the downtown area, instead of the town providing all the funds.

**B. Business Signage Attribute Analysis**

<table>
<thead>
<tr>
<th>Options/Criteria</th>
<th>Low cost?</th>
<th>Improvement to Image?</th>
<th>Organizationally Feasible?</th>
<th>Efficient and Competent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Painted or Hanging Signs</td>
<td>Low cost to landowners</td>
<td>Improved image</td>
<td>feasible</td>
<td>Efficient and competent</td>
</tr>
</tbody>
</table>

Sign guidelines to regulate size and manner of advertisement would be a good idea. Implementing these guidelines would break up the monotony of the Coca Cola signs. Business signage should be original and add to the colour and vitality of the area. If signage regulations were implemented it would greatly improve the streetscapes within the downtown area, making them more inviting to pedestrians.
C. Street Signage Attribute Analysis

<table>
<thead>
<tr>
<th>Option/Criteria</th>
<th>Low cost?</th>
<th>Improvement to image?</th>
<th>Organizationally Feasible?</th>
<th>Efficient and Competent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rented Ad-Space</td>
<td>Free</td>
<td>Improved image</td>
<td>More feasible</td>
<td>Efficient and competent</td>
</tr>
<tr>
<td>2. Town-Funded</td>
<td>Most expensive</td>
<td>Improved image</td>
<td>Least feasible</td>
<td>Efficient and competent</td>
</tr>
<tr>
<td>3. BID-funded</td>
<td>Low cost or free</td>
<td>Improved image</td>
<td>Most feasible</td>
<td>Efficient and competent</td>
</tr>
</tbody>
</table>

If the Council can get business owners to rent advertisement on new street signs that are being erected (Option 1), this would cover the cost of the sign, Council then only has to pay for the labour of installing it. This would be less expensive than having the Town or the BID cover the costs of materials. For ease of use and navigation by drivers and pedestrians, at least one street sign should be present at each intersection and be clearly visible and readable.

D. Entry/Exit Gateway Attribute Analysis

<table>
<thead>
<tr>
<th>Options/Criteria</th>
<th>Low cost?</th>
<th>Improvement to image?</th>
<th>Organizationally feasible?</th>
<th>Efficient and Competent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Town labour, volunteer art</td>
<td>Low cost</td>
<td>Improved image</td>
<td>feasible</td>
<td>Least</td>
</tr>
<tr>
<td>2. BID-funded project</td>
<td>Low cost or free</td>
<td>Improved image</td>
<td>Feasible</td>
<td>Most</td>
</tr>
</tbody>
</table>

The central area needs a defined border or entrance. The town should develop a site plan for the portal areas, and begin improving landscaping and maintenance. The entrance should include a billboard sized sign. Local artists could volunteer to showcase their work on it. Signs should be painted with “Welcome” and “See you soon” messages facing in alternate directions. Option 1 makes the most sense in this case, as the Town would be providing labour for installation of the sign and completing landscaping anyway.

IMPLEMENTATION PLAN

This report suggests the following steps for implementing this policy.

**Street Trees**

- A Business Improvement District should be created for the central area. Business owners should be informed of the importance and benefits. Council may wish to begin with a small steering committee of interested business owners or the business association.
- Flower boxes and planters should be purchased or built, and placed on sidewalks where room allows.
- Hanging flower baskets could be placed where sidewalks are narrow.
- The town and volunteers can be responsible for providing labour for these projects, while the BID provides materials.
- The trees and planters can be incorporated into the streetscape in correlation with repair of existing sidewalks or construction of sidewalks where there currently are none.
- There should be as many trees as budget and room allow, providing shade and ambiance for pedestrians.
- The Town should be responsible for ensuring maintenance and watering of planted vegetation.

**Business Signage**

- Create a set of sign design guidelines for business owners.
  - The size and style of signs is at the discretion of the council. Model sign guidelines are available from communities in other countries.
  - Limiting Coca Cola signs, and having business signs be original and creative, would add to the overall character of the town and improve the streetscapes significantly.
• Send proposed regulations through the regular channels of government that are required when implementing new bylaws.

• Let business owners know of the new legislation, and give them a year to comply with the new regulations.

**Street Signage**

• Notify business owners in central area about the opportunity to purchase advertising on street name signs.

• The money should then be collected to buy the materials.

• Get town employees to place the signs at their respective intersections.

**Entry/Exit Gateway**

• Confirm locations for the gateways: Main Street at Queen Victoria Avenue and Liberty Street at Queen Victoria Avenue seem to be the most likely spots.

• Purchase the materials. Find local artists willing to volunteer their time and talent.

• Place gateway at its specific site.

• Landscape the area around the gateway. The whole area should be attractive to add a finishing touch to the area. This could be in the form of flowers, palm trees, shrubs or any combination of those that will make the area look more appealing and inviting to passers-through. Local features and buildings should be maintained.

**EVALUATION**

The town can use the following approach to assess the effectiveness in implementing this policy.

**Business Improvement District (BID)**

Within three years, the Business Improvement District should be established. The success of the BID is contingent upon landowners making payments and the town using the funds for useful revitalization projects within the central area. Each year a survey should be taken of the landowners within the BID’s defined area to see how satisfied members are with the outcomes of projects funded by the BID.

**Street Trees**

The street vegetation should be planted within several years and maintained regularly by the town.

Once a season all the plants should be checked thoroughly for parasites and overall health, as well as fertilized, and replaced if they are not in good health.

**Business Signage**

Business signage should be altered to meet the new regulations within a year of the bylaw passing. Every five years the Town should check the signs in the central area to ensure new businesses are adhering to the regulations and to make sure signage adds to the overall ambiance of the town.

**Street Signage**

Street name signs should be installed at every intersection within two years. They should be checked once every two years by the Town to ensure they are still present and legible to drivers and pedestrians.

**Entry/Exit Gateways**

The gateways to the central area should be constructed within two years. The landscaping surrounding the signs should be regularly maintained and watered and the sign should be checked once every four years to ensure it is still in good shape. If it is not in good shape then it should be repaired.

**CONCLUSION**

Orange Walk Town has the potential to be an even more beautiful city. It is a nice little town with wonderful people and a nice atmosphere. Addition of street trees and planters for shade, ambiance and beautification could greatly improve pedestrian traffic, and draw people to the downtown area. Business signage that is directed by a set of guidelines could be more original and more easily read, this will add character to the downtown area and help to create an Orange Walk “image”. Constructing entry and exit gateways at both ends of the central area creates a defined downtown space. Once people pass the gateway, they know they’re in Orange Walk and would be more tempted to stop if the town was more inviting and friendly looking from a driver’s perspective. Overall, the town would benefit from a more beautiful atmosphere in the central area; residents would go there more often, drivers passing through would stop more frequently, and it may even attract some more tourists. Orange Walk Town should strive to create a clear image of Orange Walk that is one of a clean and beautiful town.
REFERENCES CITED


PUBLIC ART

by Gina Sandner

Public art promotes city beautification and establishes a sense of place for all who visit and live in an area. Public art can connect people to their past, as well as a city to its history. Through art, people take ownership of their communities, and ownership can reduce crime, vandalism and antisocial acts. Art gives people a chance to contribute artistically to their communities and can make tourist destinations from industrial towns. In this paper, Gina Sandner discusses options for adding public art to Orange Walk’s life.

Gina Sandner is a fourth year Malaspina student majoring in Psychology. She wants to work on decreasing obesity in youth and is currently training towards her Personal Training certificate and Dive Instructor Certification. She is an avid SCUBA diver and wants to travel the world, experiencing many cultures. She comes from the interior of British Columbia and currently lives in Nanaimo, BC.

While there are a few examples of public art in Orange Walk Town, the community has incredible potential to increase the beauty, historical value and tourism appeal through the addition of public art. The following policy analysis will focus on this topic.

ISSUE IDENTIFICATION

History

From the time that cavemen first drew on cave walls there has been public art. Around Orange Walk Town, the nearby Lamanai Mayan site displays many examples of carvings, structures and pottery that are early forms of public art. In town, the sculpture of the Mother in Queen Elizabeth Park and the bust of Queen Victoria date back to Victorian times, and still grace the streets. Murals have been painted on walls in various locations around Belize, but the newer ones are appearing in the places whose economies focus more on tourism. Beautiful murals have been painted on the walls of public spaces, hotel walls and stores, often as a form of advertisement. Potential spaces for murals, installations and sculptures are abundant in Orange Walk, and with careful planning, public art could make the town even more beautiful.

Issue Statement

Public art beautifies a city, encourages civic pride and can bring history to life (Breitbart, M. M., 1995; Florida Mural Routes, 2001; Gabali, Hans, 2006; Hayden, D., 1994). Orange Walk has some beautiful, but isolated examples of public art. An opportunity to beautify the town, increase tourism, decrease graffiti and improve civic pride exists in the production and preservation of public art (Mele, 1996; Semenza, 2003; Szczygiel, 2003).

As a blossoming tourist destination, as well as one of the largest communities in Belize, Orange Walk has charm and personality that could be accentuated by increasing public art. Collected opinions of community members suggest that an strengthen the historical feel of the town, increase tourism, and make the city a more beautiful place to live. One of the options to accomplish these goals is to promote public art, in its many forms.

Issue Significance

Local authorities and community members have expressed an interest in beautifying the city, creating a more historical image of the town, increasing tourism and improving community cohesiveness (Hodder, 1999; Katikati, 2006).

Industry can be built from art. By creating a more beautiful community, people are more likely to move there, live there and bring their business to the community. In communities all over the world, the display of public art has proven to increase financial stability of the communities (Katikati, 2007; Municipality of North Cowichan, 2001; Mural Routes Inc., 2004; Nanaimo Webmasters, 2007; Karpan, 2005, Welcome to Cowichan, 2001).

Graffiti is most prevalent in places where buildings look neglected or are in disrepair (Frank, 2006).

Sharing art can create jobs, and provide livelihoods for those without formal education. Art also has the ability to preserve and share culture within and between groups.

Public art can give people and opportunity to create something beautiful together, which can
increase a sense of community and instil civic pride.

Studies link public art to people’s sense of place, or emotional connection with a place they call home. As part of crime prevention through environmental design program, public art has also been proven to decrease vandalism, antisocial behavior and social decay. Children who participate in social art projects have been shown to feel more connected with their communities, have fewer problems interacting with grownups and feel like they are contributing members of society. Communities with public art feel safer and more welcoming than communities without (Semenza, 2003).

One final and critical issue is that of the subject matter of public art. Many communities have suffered from choosing controversial images, or inappropriate subject matter in their public art. The general consensus seems to be that when beginning a beautification project it is important to speak to the community to find which images and symbols the community would feel the most comfortable with (Hamilton, Forsyth, & De Iongh, 2001; Holman, 1997; Holman, 1997; Levine, 2002; Lessoff, 2000). Plants, animals, natural scenes of the areas near the communities, and images from the community’s past seem to be safer subject matter.

These and similar images are more likely to unite a community than cause discontent.

**Causal Factors**

Public art is limited in Orange Walk at present. This results from a number of factors.

- The lack of awareness of the town’s own unique civic personality is probably one of the most significant
- Understanding how fascinating that civic personality is to other people, visitors and tourists, and that art is a way of publicly sharing that personality with others
- Understanding how public art can teach, share, and beautify is essential to inspiring production and preservation of art
- Organization and motivation of groups dedicated to beautifying the town would also improve its aesthetic appeal. There appears to be a lack of utilized channels through which leads to poor attendance and limited support
- A history of destruction and neglect of monuments seems to keep people from making things beautiful, because they fear their efforts being destroyed
- The absence of an art gallery, art market, artisan center, or theatre also discourages the presentation of art, because artisans have no place to show their talents. The absence of such a designated space also decreases the desire to produce art, as there is nothing to fill with it. It also limits sharing of artistic talents and perfection of crafts, with no collaboration or friendly competition to drive improvement
- Orange Walk has the potential to be a lively and successful spot for both locals and visitors from both within Belize and abroad, but it seems to be lacking a cohesive vision, as well as a defined image in line with the community’s hopes for the future
- Tourism as an industry is desired by many in the town, but there seems to be a lack of full appreciation and exploitation of culture, heritage and location of the town
- The monthly flea market is a wonderful start, but may not be large enough to make a sufficient difference. Expanding the dates, regularity and breadth of the products and events offered at the fair may improve the market for local artists
- Lack of funding is another challenge when looking to improve and increase the image and beauty of the town
- A lack of appreciating the business opportunity and potential job creation of supporting public art may also be an obstacle in creating a more beautiful town
- Finally, a political and social attitude of exclusivity may be contributing to a lack of community development. Financial investments in public art projects might not be available
- Funding raised by local House of Culture gets collected by National House of Culture
- Limited support for artistic projects in the form of volunteers, patrons and organizational groups
- Overlooking how important art can be
- Underutilizing existing groups and organizations that can make a huge beautiful
difference in art production (namely schools, churches and NGOs)

Stakeholders

Many people could be affected by and benefit from public art in the town. The following are likely the most affected.

- The citizens of Orange Walk would feel more civic pride, feel safer, more connected to their community and live in a more beautiful town
- Council would be part of making the community more tourist-friendly, more affluent and more beautiful
- Volunteer and NGO groups would play a larger and more available role in community beautification
- Church organizations would contribute to a more beautiful community
- Cultural groups would share their culture with others more effectively
- The youth of the community would feel better connected to the community and have more civic pride. They would also be less likely to get involved in antisocial acts
- Law enforcement would have fewer problems with vandalism and may have fewer high crime areas to monitor
- Artisans, both local and from across Belize would be able to sell their art and could improve their livelihoods
- Tourists would have a more beautiful, appealing place to visit, and would be more likely to enjoy the charm of Orange Walk
- Business owners would benefit from increased tourism, and more people stopping to shop in their shops. They may also suffer fewer crimes, in a more beautiful community.

Objectives

- To propose feasible ways and means of increasing public art in the town
- To create a more visually appealing, historically representative, interesting streetscape
- To create an attraction of the history, culture and beauty of Belize, and more specifically Orange Walk, through public art around the community
- To increase local income by making it a destination rather than just a place to stop for gas
- To increase civic pride and community involvement of the entire community
- To decrease graffiti by obliterating the ‘Broken Window Syndrome’
- To make producing public art a priority in the community
- Provide and encourage an art market featuring local artisans of all mediums and qualities
- Establish a newsletter for the House of Culture to encourage consistent advertisement and promotion of local art and cultural events

OPTIONS

What are we trying to accomplish?

- A more beautiful, historic central district
- More murals, sculptures and other examples of public art
- Establishment of community associations responsible for increasing public art
- Increase school and NGO involvement in beautification
- Increase tourism
- Decrease vandalism and other antisocial behavior of tourists and residents

What are the best ways to accomplish any or all of these goals? To follow is a list of suggestions that could be considered individually or as parts of a holistic plan.

Option 1: Economic Incentives

By focusing on the financial benefits of creating a more beautiful town, the local businesses are more likely to get involved in participating and funding a beautification project. Option 1:

1. Host a friendly competition between store owners

By advertising a contest for store owners, and people with outdoor wall space in public areas to compete for the prize of ‘Best Mural’ the community could benefit in multiple ways. By involving those who stand to most directly benefit from the increasing of public art, the shop owners.

Subsidies and tax incentives could be provided to those who participate in the production and
maintenance of public art works. Tax deductions could be credited for the amount any on business is willing to donate to the mural project.

Marketing benefits could also be offered to those willing to participate in the project. Creating a “Mural Walk” could send locals and tourists on a set path through the community, increasing exposure for those businesses that have murals painted on their walls. A map could be printed for tourists and locals that plots the route to follow to see all the murals. Advertising spaces could be sold on the map to pay for production costs and for a public art production fundraiser.

2. Determine Economic Value of Art
Encourage a group meeting of all businesses, hotels, and restaurants that stand to benefit from an increase in tourism, and explain how public art has increased tourism in other communities (Chemainus, BC, Canada for example). Encourage the business owners to consider the potential increase in profits if more people stopped in Orange Walk Town for an afternoon or overnight, instead of just stopping for gas.

Focus on the minimal costs of a public art project, when compared to rebuilding infrastructure or rebuilding the facades of many of the buildings, which could be other ways of attracting tourism.

Option 2: Make Public Art a Focus of NGO’s and Volunteer Groups
Orange Walk has several community-based organizations, youth oriented groups, school and church groups. Some of these groups seem to be less effective than they could be. With a solid, community-wide goal of beautifying the town, these inefficiencies might be addressed.

1. School and Church Projects
As schools and church groups already cooperate for fundraisers and to host events, perhaps issuing a challenge for these groups to complete a work of art would focus their energy on a project that could benefit the entire community.

2. Nongovernmental Organization and Corporate Sponsorship
Inspiring charity organizations to take on the challenge of creating art in public spaces could beautify the town in very little time. The House of Culture could organize fundraisers and community events for painting bare surfaces around its site.

Option 3: Art Market
One element that has proven very effective in many small communities is that of an art market. An art market can be a low budget way of attracting visitors, increasing local revenue and branding a community.

1. Benefits for Artists and thus the Community
Art markets give local artisans a chance to sell their works, which also encourages them to hone their skills and produce more items for sale. Through fees for tables or a share of their profits, the community can directly benefit from the artisans’ success. An art market can create incomes for those who have no venues to display their crafts, and can encourage artisans from other parts of Belize to bring their skills to Orange Walk. By making Orange Walk known as the community with the incredible art market, more people will come to visit and stay, so indirectly, too. The community benefits from the art market.

2. Elements that Help Make a Successful Market
Some communities have found it most effective to keep time, dates and venues consistent. When hosting a market, a consistent day of the week or day of the month helps people know when it’s happening and then they are less likely to miss it. By hosting it in the same place, again, people are more likely to find it. If the venue is along the main road, or well marketed along the main road, giving visitors ample time to find parking and join the festivities, attendance will increase.

Including many types of stalls, services and booths in the market may also diversify the audience. A flea market, combined with a barbecue and an art market with musicians, dancing, food, kids’ games, and performers would bring in families, art fans, people who love music and people looking for lunch, rather than just any one group.

Option 4: Making the most out of the House of Culture
Belize guidebooks that mention Orange Walk recommend a visit to the House of Culture. There are a few suggestions that might help make the most effective use of this space.

Option 4 would include the following components:
1. Establishing a Newsletter for the House of Culture

The House of Culture could publish a monthly or bimonthly newsletter to advertise the local cultural events in the Orange Walk area. Advertising could be sold in the newsletter to fund additional editions, or ads could be given away as prizes for those companies and businesses that do things to support the local cultural events.

A free advertising space could encourage smaller cultural events to advertise, making their events more successful.

A designated space for local artists to advertise their work could improve their sales and help them build a livelihood out of their crafts.

2. Reorganizing the Space

After gathering local opinions, the conclusion was reached that residents do not like to visit the House of Culture because they find it to be the same every on visit. After learning of the twice monthly art shows, this is not a fact but only a perception held by many of the local people. Perhaps this perception could be changed by reorganizing the space in the House of Culture. If the new and frequently changing displays were kept in the front of the building, local people might be more tempted to come in and check out the House of Culture. It might also encourage more artists and organizations to offer up their works for display, by raising awareness of all that the House of Culture has to offer.

ANALYZING OPTIONS

To decide which options to put into action, the options must meet criterion set as important by the members of Council and community members.

Decision Criteria

The following criteria are used to evaluate the alternatives.

 Criterion 1: Financial Costs
Initial and ongoing financial obligations for the council and community members to implement and sustain public art projects.

Criterion 2: Cost to Business owners
Increased income and increased costs accrued though the production of public art works.

Criterion 3: Civic Involvement
Group interest and willingness to participate in project. Ensuring that people have the time, manpower and supplies to complete any proposed project will be very important.

Criterion 4: Accessibility
Areas that are easily accessed, available to the public and can be seen by people driving through the city. Areas covered in graffiti should also be the first to be revitalized, as they will have the biggest impact on the civic pride, and beautification of near by areas.

Criterion 5: Effectiveness and Financial Benefits
Bright colours, as well as large, accessible murals and projects will be the most effective. Tourism will be most affected by projects like these.

Images that the majority of the population will enjoy should be used as often as possible; For example, nature scenes, historical events, views of the surrounding landscape might be good choices to avoid controversy.

The criteria above are used to assess the options as shown in Table 1 below.

Recommendations

Option 1 requires the most organization and financial cost, but also has the potential to do contribute the most to Orange Walk’s town beautification. Option 2 stands to increase civic pride and community involvement. Financial costs are much lower than option one, but more organization and a vast volunteer force are required. The potential social and financial benefits could be incredible. Option 3 would require more time, and some organization, but could benefit the town by increasing tourism and day trippers from neighbouring communities. Option 4 would require the least time, organization or financial investment, but could benefit a specific part of the town, but would have fewer social benefits.
The Orange Walk Town Beautification through Public Art Options

<table>
<thead>
<tr>
<th>Criteria/Options</th>
<th>Cost to Local Government</th>
<th>Cost to Business owners</th>
<th>Civic Involvement</th>
<th>Accessibility</th>
<th>Effectiveness and Financial Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economic Incentives of Beautification</td>
<td>Moderate: Time, organization, deciding on art topics and artists.</td>
<td>Moderate: Donations of money, space, and supplies.</td>
<td>Limited to Business owners, property owners and artists.</td>
<td>Available to everyone</td>
<td>Mass Potential: Increase tourism, and help make OWT a destination</td>
</tr>
<tr>
<td>2. Making Public Art a focus of NGOs</td>
<td>Moderate: Time to organize groups and educate them on importance of public art works, fundraising and training for group leaders.</td>
<td>Limited: Voluntary donations of money, supplies and labour.</td>
<td>Mass Potential: Community must be involved for project to be effective.</td>
<td>Available to everyone (depending on location)</td>
<td>Mass Potential: Increase Civic pride and community involvement</td>
</tr>
<tr>
<td>4. Making the most of the House of Culture</td>
<td>Minimal: Hire help to reorganize space</td>
<td>Minimal: Donations or buying marketing in Newsletter</td>
<td>Limited</td>
<td>Limited: Only available to those who visit the HOC or receive newsletter</td>
<td>Increased local visits, increased tourism increased donations</td>
</tr>
</tbody>
</table>

IMPLEMENTATION PLAN

The implementation of a public art policy for Orange Walk would include the following steps:

1. Establish a group of individuals willing to head up the beautification through public art project within one year. Ideally, each cultural group, and political affiliation should be represented to ensure maximum effect and cooperation.

2. Work on establishing relationships with the community, church groups and volunteer groups. Hold meetings with them to gather their input as to how they would be willing to participate.

3. Meet with school teachers and discuss possible curriculum additions that would have the children contribute to some public art projects, like murals, designing potential murals, or painting medallions of cement or local materials to wire to the chain link fences in a river of colour.

4. Work with business owners issuing friendly challenges for them to donate spaces on their buildings, or financial contributions to help increase public art in Orange Walk Town. Educate them to how their businesses will benefit from a more beautiful, tourism friendly community. Find ways to give the businesses immediate benefits to the business, for example free advertising and inclusion in a tourist map that will increase business for all included.

5. Organize the expansion of the already established flea market to include an art market and food fair. Encourage local businesses to set up booths and bring out their souvenirs and any local crafts.

6. Gather contact information on local artists, and artists from all over Belize. Write them to tell the about the art market and encourage them to sell there wares there.

7. Contact the local hotels that sell art and crafts to tourists. Encourage them to bring out the art and crafts to the market.
8. Contact the Belizean tourism association and have them advertise the art market in their magazines and on their website.

9. Have a meeting with the coordinator of the House of Culture. See where her progress stands on developing a newsletter. Encourage her progress and discuss the possible reorganization of the House of Culture layout.

EVALUATION

Town Council can take the following steps to evaluate progress toward implementing this policy.

1. Council and a committee for beautification through public art should reassess progress yearly, tracking completed and in progress art projects, helping the groups keep focused and work together.

2. The community should keep track of attendance at the art market, possibly through a tally of meals sold by vendors. Continue to increase marketing to ensure increasing visitors. Continue to contact artists and artisans to increase booths and attractions.

3. Yearly tallies of visitors to the House of Culture and attendance to local cultural events will help keep actions in line with goals. Adjust performance by increasing marketing and involving people from all different backgrounds.

4. Keep looking around, for places that could use brightening up, beautifying. Continue involving the community and enlisting the help of children and community groups.

REFERENCES CITED


URBAN DESIGN
by Darren Lucas

In this paper, Darren Lucas explores approaches for urban design in Orange Walk. Orange Walk has several design elements such as archways and balconies that define a unique urban form. Urban design processes can use these features to enhance the beauty and ‘signature’ of the town.

Darren Lucas majors in Geography in the Urban Growth Management stream at Malaspina. He plans to work eventually in the urban design and planning field in a larger urban area. He was born in Vancouver, BC, and is currently living in Nanaimo, BC.

ISSUE IDENTIFICATION

Issue Statement
The community of Orange Walk Town does not have a cohesive set of design guidelines for its buildings.

Issue Significance
Experience demonstrates that design guidelines are an important contributor to civic pride, safety, and aesthetic consistency in a community. This will have a strong impact on other factors such as tourism, business, industry, and the overall economic development of Orange Walk Town.

History
There has been no regulation for proper planning or design for municipal structures in Orange Walk.

Causes
The current urban design of the town is a mix of historic and present cultures, government change, and colonization as well as a lack of municipal bylaws.

Stakeholders
The residents, business, industry, tourists, and the government are all affected by the town’s architectural environment.

Diagnosis and Objectives
The development of consistent design guidelines which can be applied throughout the town will benefit the overall community.

OPTIONS
In order to develop a set of design guidelines for the town, research on pre-existing structures and theories is integrated with knowledge of the community.

Sjoberg (1965) describes three prerequisites for the emergence of city life. The first is a “favorable ecological base”. There must be an abundance of natural resources available for an emerging city. The second prerequisite the people or civilization starting the independent city must have adequate technology in both agricultural and non-agricultural spheres. The third is a sufficiently complex social organization and power structure to keep the city sustainable and running. These three factors create an environment for the planning and development of structures for shelter, farming, domesticated animals, public space, hierarchy, and religious ceremony. These structures determine a basic layout in which a city would function and grow.

Belize is located in the region of the ancient Mayan civilization with remnants of their preindustrial cities. Since maize comprised the major portion of the Mayan diet, the growth of communities around present day Orange Walk likely evolved around agriculture. However, even though natural resources were important, the most impressive and largest structures in the known Mayan world were the ones serving a religious purpose.

Although the Maya occupied this region for centuries, Orange Walk’s primary architectural style today is more Mediterranean than Mayan.

SYNTHESIS AND ANALYSIS
Design guidelines allow a city to grow in a controlled manner and address housing and development patterns, efficient civil engineering, and urban beautification. Town Council has not yet established design guidelines for the town.

The first rule of urban design is that design guidelines should address the elements of the present city relative to its mass, form, and density. Consequently, aesthetics often have to respond to their environment and history.
The literature review on urban design conducted for this project provides background for urban design. This review pointed to several considerations. First, the ground plane, or topography, is the supporter of all architectural production. In other words, topography and the environment influence all building and thus urban design. In Orange Walk, the central area has developed on uplands above but on the New River. This area is well drained with an interesting topography.

When the topographic plane connects to vertical plane in design, this creates a third dimension of design and sense of “space”. Thus if buildings compliment the topography, they create and define the urban space. The Imaculata Church is located on the uplands overlooking that New River creating a scenic combination of natural and human elements. Independence Park and House of Culture are a district with impressive potential for an urban design ‘statement.’

Organization is the next step for how more than one structure can work together in creating a single form, or how single forms can coincide to create a pattern or a city form. In a city, buildings are the product of more than one mind as each owner and designer works to develop an aesthetically pleasing and efficient design. Thus the urban structure reflects more than one person’s ideas.

One element of urban design is the pattern of subdivision. The ancient Greeks believed that every person needs their own space, so the logical way to design their cities was a grid pattern making sure that space was given and divide fairly. A later form of organization is radial organization of single structures. Most people already know that older cities generally develop in a radial pattern; this is easily visible from an aerial view of older European cities. Yet more recently, modern subdivisions were designed with curvilinear streets.

With the advent of zoning, urban organization began to separate different uses from each other. Sometimes land uses become too segregated and divided at the city scale. Many recent urban designers have associated this isolation of uses with urban problems associated with housing, transportation, poverty, social unrest, environmental quality, and the fiscal deficits. As a response, they assert that urban design requires greater integration of thinking on the separate functions and aspects of an urban environment. In many communities, such as Vancouver, BC, urban design is returning to the mixtures of commercial space, offices, and residences. This is treating the issues at present with what I could call, “the design theory of relativity” where more than one purpose is used to integrate and help design a structure that would ultimately reflect the environment and its recent or ancient history.

Orange Walk has a population of approximately 15,000 persons. Its design should thus reflect its small city status. It is not practical to promote high rises and mass transit systems, although these may be future options. However, it should have design guidelines with rules for smaller multi zoned buildings. The town currently has many examples of ground floor commercial with upper floor residential. This design is both traditional and yet reflecting the latest thinking in urban design. So it is a good option to develop and build upon the town’s pre-existing pattern of houses over shops. This form of design is old enough to be found in even Roman design.

One question arises though, how do you tie all this multipurpose structures together? This is where Queen Elizabeth Park and the central area come into play. Town squares are an excellent public realm.

Proportion and rhythm is important in application to frequency of aesthetic patterns. Architecture is frozen music, this means that ideally, any “good design” has not only a nuance with the current community environment in its structure but should be repeating and diverting – as there is theme and variation in music. The public realm - all the areas available to the public - must fit in flawlessly with the community’s variety and visual setbacks.

Orange Walk has design themes that mainly involve its Spanish and British history, however, this does not mean that one should not include modern design as an option. Be careful of what is deemed modern; contemporary design is sympathetic to existing fabric and culture. Modern design can compliment even the most historic of communities, but only if it is a good environmentally reflective design.

As previously, form, mass and density are relevant to design guidelines for the present city. All in all, design guidelines must include all of the above without disrespect of ancient culture as well as Belize’s more recent colonial ones.

**METHODOLOGIES**

This paper explores some of the design elements that can be considered in design guidelines for Orange Walk. One method for collecting...
information and identifying these elements was to do site sketches and photographs. These images were then analyzed using the following criteria: identifying color boundaries and deciphering their contrast; looking for physical city rhythm such as the patterns present in structures; recording notes of general visual observations of what exactly is in the field of view, rather than a select structure or object; exploring and recording subjective experiences at each site.

Image analysis was supplemented by notes on conversations with my fellow students, professors, and local residents for opinions on the town’s aesthetic design or appeal. Architectural magazines, journals, and textbooks were also used to identify some of the structural tools already present in the town, as well as, enhance the overall urban designs.

**FINDINGS**

There appear to be several architectural elements that reflect original Orange Walk structures this includes:

- Archways
- Porch details
- Burglar bars and ironwork on windows and other areas

A rather large number of archways can be found throughout the town. These archways mark entrances to homes and public buildings and sometimes frame them to provide shade to porches, decks, or doorways. A common thread in their design appears to be Hispanic. Most structures with decks or porches often have elaborate spindles lining their perimeter. These spindles range in design from a complex hourglass form to intricate polymorphic shapes and contribute to the appearance of the building’s exterior.

Windows in the town are mostly generic, with the exception of an intricate one here or there. However, the window bars used crime prevention are often exquisitely shaped and curved in artistic patterns with floral looking features that mask their true reason of existence.

Another facet of design commonly found in Orange Walk is the columns holding up the porches or archways or sometimes surrounding structures. These columns have a Roman or Greek influence and contribute positively to the overall image of the town. All these features flow up to the town’s roof lines which may be either flat and terraced with a garden or sloped with a red terracotta Mediterranean appearance. The arches, columns, terracotta roofs, and white wash stucco exterior walls all have are characteristics commonly found in the Mediterranean as well as Orange Walk.

Orange Walk has little in terms of steel structures. The only structures that employed steel framework were the bridge crossing the river, the Human Resources building in Orange Walk, and the water tower. Other than that, metal was used mainly as a reinforcing agent in the masonry buildings that make up the majority of structures in the town.

Besides steel and Mediterranean styles, Orange Walk has a small collection of English colonial buildings. These older wood buildings have the look and feel from a time when Belize was a British colony. Although small in number, the colonial housing is also great addition to the character and charm of the Orange Walk design.

Urban design for Orange Walk should use the design elements that have evolved in the town – the archways, porch details, and ironwork – together with the Mediterranean and colonial designs. The goal would be to enhance urban design through intentional use of these elements in new and refurbished construction in the town. The options below explore some approaches.

**ANALYZING OPTIONS**

**INTERPRETATIONS**

Based on the existing structures, plans, and goals of the community of Orange Walk it is suggested that the following design guidelines be considered. However, before they can be implemented it must be decided whether the building is going to be residential, commercial, public or mixed use, or industrial in terms of its zoning.

This research has identified approximately 40 different design features that would define a structure characteristic of Orange Walk. Arches (figure 1) in this town are mostly simple tall arches but can be seen with a more square like features or columns and sometimes as portals in the side of a building (there is no glass so it is not a window).

Another facet of design commonly found in Orange Walk is the columns holding up the porches or archways or sometimes surrounding structures. These columns have a Roman or Greek influence and contribute positively to the overall image of the town. All these features flow up to the town’s roof lines which may be either flat and terraced with a garden or sloped
subtle details maybe added to give them their own identity.

Orange Walk receives a fair amount of sun from almost directly above during some times of the year. So naturally a little overhang goes along way. The average overhang in Orange Walk ranges from about three to four feet, however, there are some ranging over six feet. The idea of having an overhang is not only to provide an area of shade but when the roof is also sloped, it can protect the structure from rainwater. Approximately six different designs were identified for overhangs (figure 4).

There are sloped roofs (figure 6) and flat roofs (figure 7) in Orange Walk, flat roofs being more common. While sloped roofs have an advantage for rain certain times of the year, flat roofs can be used for recreation or relaxation, i.e. terraces.

Windows are necessary for ventilation, particularly where air-conditioning is absent. Windows (figure 9) are usually barred and vary in different forms and shapes but wide windows seemed common to most structures without air-conditioning. Many doors were protected by a second screen door, to allow the air to move but minus the bugs and burglars. Depending on income, doors ranged from double extravagant to normal wood panels (figure 10).

Some of the buildings in town were elevated by stilts to prevent damage from flooding (figure 11). In figure 5, 8, and 12-A 12-B you can see that within a couple of categories were a few features that seem unique. These are specific examples of what should be used in a constructing a home for Orange Walk.

The following composite sketches (figure 13 to figure 14) incorporate the key design guidelines based on the variety of architectural tools employed in Orange Walk. In the first sketch (figure 13) a structure supported by column and arches have been used to portray the towns design. The second sketch (figure 14) could be used as mixed zoning of commercial and residential space. It uses columns, spindles, an arch, as well a broad entrance to the lower floor this is also a prime example of Orange Walk living. This sketch (figure 15) is a perfect example of Mediterranean mixed with Mayan style architecture; it is a pedestrian overpass dictating how the fusion of the different styles accent some of the previous sketches and architectural elements. Overall, these sketches are representative of the design themes that are recommended for this community. Moreover, these composite drawing could be used as templates for the town planning guidelines when approving building permits or drawing up plans for new developments within the community.

**IDENTIFY BEST PRACTICES FOR DESIGNING**

Responsible design enhances the conditions of residences in the immediate area. Variety, adds richness of character to the community (variety in context with familiar history, material and form.). The public realm - all the areas available to the public – must fit in flawlessly with the community’s variety and visual setbacks. This is responsible design. Orange Walk has a design theme that mainly involves its Spanish and British history. This does not mean that one should not include modern design as an option. One should be careful of what is deemed modern; contemporary design is sympathetic to existing fabric and culture. Modern design, can compliment even the most historic of communities, but only if it is a good environmentally reflective design. As mentioned previously form, mass and density are relative to design guidelines addressing the present city. All in all design guidelines respect of history.

**IMPLEMENTATION PLAN**

Good design can never be legislated. Yet there has to be a set of suggested rules in order so a community does not lose its sense of place. First of all, in order to set up boundaries, one must determine what spaces are public realms and what spaces are private realms. After property lines have been addressed, the next phase is a decision of inner property boundaries or more formally known as the building envelope. The size and shape of the building envelope will ideally be reflected in the constructed mass, this chooses how the street or boulevard feels. In addition, a small building envelope in relation to a large property will give the existing road a sense of open space where as the opposite idea where the envelope is approximately the size of the structure gives a sense of protection and for some minds a form of comfort.

**EVALUATING PERFORMANCE**

Urban design is subjective and somewhat hard to evaluate in a quantitative or objective sense. However, local observers are usually able to say whether the design of a town is improving or deteriorating. Words like eyesore or monstrosity describe failures. On the other hand, words like
charming, beautiful, attractive, or splendid
describe success. Design can thus be evaluated
by surveys of local citizens. It can also be
evaluated by independent design professionals.
The process would be strengthened by doing
before and after photography buildings have
been renovated or built.
LAND USE AND ZONING
by Parker Krog

Land use planning is a process of protecting and improving both the community’s living conditions and urban environment through the proper use and development of land. Designating or zoning land uses creates a more pleasant atmosphere for locals and tourists alike. With a lack of focused land uses, individual landowners can undermine the economic growth of surrounding businesses. Land use planning involves the regulation of the use and development of real estate. The most common form of land use planning is zoning.

Parker Krog is a fourth year university student majoring in Geography under the general stream, and minoring in Global Studies. He intends to go to law school with a special interest in eventually pursuing international trade law. He was born and raised in Nanaimo, British Columbia, where he currently resides.

ISSUE DEFINITION

Issue Statement

Orange Walk Town has a mixed spatial arrangement of current land uses throughout the Central Area. The problem lies in Orange Walk Town’s’ lack of defined land usage throughout this area. This causes barriers to successful planning and development of the land in the Town’s’ downtown core. Orange Walk Town has no policy guiding land use zoning in the Central Area. This may result in land use conflicts, poor designs, and inefficiencies. Existing zoning is very general in nature, and not effective for sufficient land use control.

Problem Significance

Land use planning is a process of protecting and improving the community’s living and working conditions and environments through the proper use and development of land. Orange Walk can improve its economic growth and development, as well as its quality of urban environment by creating a land use plan. Designated land uses create a more pleasing and efficient atmosphere for locals and tourists alike. With a lack of designated land use areas, individual landowners can undermine the economic growth of surrounding businesses. For example, mixing industrial with non-industrial land uses often creates a conflicting environment for people within the town. With effective land use planning, similar and adjacent land uses can reinforce one another and provide benefits to economic growth and development. Areas with more focused land uses create signals to investors from within and outside the town to the best areas for investment in various types of businesses. Designated land uses and zoning by-laws create a more amenable atmosphere for the municipality to collect tax revenues, as well as distinguish between those adhering to appropriate land uses and those who are in violation of such by-laws.

History

Orange Walk Towns’ recent history has developed as a base for transporting raw materials through Belize including forest and agricultural products. The community developed from the river upwards. Orange Walk has an urban center that has developed naturally, including the surrounding areas outside of the central area. There is not an extensive history of land use zoning in Orange Walk Town until the Master Plan created in 1999, and although improvements can be made to the plan, it provides an initial basis from which to develop further land use policies.

Causal Factors

Orange Walk Town has no official land use policy in place. There are a number of possible reasons for this.

First, there is no comprehensive national legislation on zoning. The Housing and Town Planning Act only briefly mentions zoning. Community planning is coordinated by the central government. Plans are periodically prepared for the community. In some cases, central agencies have developed new subdivisions or other facilities with little or no consultation with the Town.

Second, the town itself has very limited powers to do planning or implement plans. Orange Walk could prepare plans, if it had the resources, but plans would have to be submitted to central government for approval. Although this
approach uses scarce professional resources efficiently, it may limit the flexibility and local responsiveness of plans.

Third, information needed for planning is inadequate or unavailable. This includes, for example, up-to-date mapping of the physical geography, infrastructure, and other features of the town.

Fourth, there also may be an overall lack of awareness among citizens of Belize and Orange Walk regarding the value of land use planning and zoning policies.

Fifth, there are only a handful of trained planners in Belize. This deficiency limits the ability of both central and local governments in developing plans.

**Stakeholders**

There are a number of stakeholders who will benefit from land use zoning policies.

- Orange Walk Town residents. Citizens will be able to navigate with more ease and efficiency through a more pleasant urban environment.
- Orange Walk Town businesses. Businesses will benefit from a more coordinated and mutually reinforcing business environment.
- Consumers and tourists. Shoppers and visitors to Orange Walk Town will have an easier time acquiring goods and services with more focused areas of land use.
- Investors. Private investors will benefit by having a better idea of where to focus investment in order to maximize revenues.
- Orange Walk Town in general will benefit from economic growth and development due to firms and businesses being located near functionally related activities.

**Objectives**

The Malaspina consulting team reviewed the problem of land use planning and examined solutions. The Terms of Reference for the Malaspina team required the team to carry out the following tasks:

- Identify areas of focused land use in the central area of Orange Walk Town
- Propose incentives for businesses and firms to locate within their particular spheres of focus. For example, encourage hotels and restaurants to locate within potential hotel districts, and banks and offices to locate within office district.

The Malaspina consulting team states the following objectives for recommendations:

- Outline the areas of focused land use
- Encourage business to locate in areas in which they are surrounded by functionally related activities, and areas in which their land use is associated with the appropriate zoning designation
- Provide incentive programs to either encourage or discourage businesses currently operating outside of the preferred use

**OPTIONS**

The following alternatives are proposed for future land use zoning in Orange Walk Town. These options are not necessarily mutually exclusive, and many can be applied separately or in combination.

**Option 1: Zoning Land for Its Existing Use**

The team found a mix of residential, industrial, retail commercial, and service commercial within the central area. The existing properties in particular portions of the central area of Orange Walk Town are currently occupied by appropriate land uses. For example, there is a well-suited mix of retail commercial land uses surrounding the Town Plaza on North Park Street, South Park Street, Lovers Lane, and Park Street. In this case, it may be appropriate to zone the current land uses into their existing form, that is, retail commercial land uses. This allows for current land uses within areas of Orange Walk Town to remain as their current use.

Option 1 includes the following component: Zone all lots in a chosen area according to their existing use. For example, if a street is occupied by appropriate land uses and the council wishes to maintain those lots to maintain their current land uses, then Option 1 allows for those uses to remain the same. For example, South Park Street has considerably appropriate land uses surrounding the Town Plaza. If a new landowner purchases land currently operating as a retail commercial business on South Park Street, the implementation of Option 1 will require that new landowner to operate the land as a retail commercial business. Therefore, Option 1 recommends that the municipality of Orange
Walk Town adopt a zoning by-law according to the 1967/1999 zones.

**Option 2: Zoning Land for Its Predominant Use**

The team found various residential and industrial lots within parts of the central area that would be more appropriately used for either a service commercial or a retail commercial land use. For example, there may be a block that has three or four properties being operated as retail or service commercial businesses, with one property operating as residential land use. Additionally, there may be a block with land predominantly operating as retail or service commercial businesses, with one lot being used as an industrial lot. Such types of land use create a conflicting and uncoordinated environment, and land uses function more efficiently and create a more pleasant urban environment when they are surrounded by functionally related activities.

Option 2 includes the following component: In the above two examples, an appropriate land use policy would be to zone the mentioned area according to the predominant land use. In this case, the block with three or four retail or commercial business lots with one lot of residential land use would be designated as a retail or commercial land use zone. The residential use could be continued as a nonconforming or grandfathered use until future development. This would create a more coordinated and functionally related area within the central area and surrounding areas of Orange Walk Town. The single residential lot would then be zoned as a retail or commercial business lot, and the lot would eventually redevelop into a land use appropriate to its new zoning.

**Option 3: Zoning Land for Its Most Logical Use**

The team found various areas within Orange Walk Town in which particular land uses were consistent with one another on a small scale, but inconsistent with their overall surrounding land use functions. In such a case, the consulting team recommends that these lots be zoned into more appropriate land uses according to their surrounding lots and in accordance with the particular areas in which they are located. For example, there may be more residential lots than retail or service commercial lots on a particular block; however, relative to the area in which that block is located, retail or service commercial land uses may be more appropriately coordinated with the overall urban environment. In such a case, these lots could be zoned according to the best uses within the overall urban context. In other words, these lots could be zoned retail or service commercial, regardless if that particular block is predominantly operating as residential land use.

Option 3 includes the following component: Zone all lots in an area in accordance with a more appropriate use that is consistent with the overall urban environment. In this case, a particular area will be zoned into the most logical form of land use, regardless whether the area is predominantly operated under land uses in contrast with the desired outcome. By using option 3, the three or four residential lots mentioned in the above example would be zoned as retail or service commercial lots, or whichever zoning policy would be most appropriate with the overall urban environment. The residential lots would eventually transfer into a land use appropriate to its new zoning.

**Option 4 - Break Down Current Zones into More Specific Zones**

The municipality of Orange Walk Town is zoned into Urban, Ecological, Industrial, Services, Commercial, Administrative, Tourist, and Residential zones. The commercial zoning of Orange Walk Town lacks specificity and could be further divided into retail commercial zones and service commercial zones.

Retail commercial land uses refer to smaller item retail stores that customers tend to use more frequently, such as clothing stores, sports goods stores, and music stores. These commercial land uses usually operate in pedestrian oriented areas, and would be best located in the central area with little to no motor vehicle traffic. South Park Street, for example, is currently used largely as a retail commercial area.

Service commercial land uses refer to larger item stores that customers tend to frequent less often, such as furniture stores, appliance stores, building supply stores, and other light industry businesses. Service commercial stores tend to be more motor vehicle oriented and are best located on arterial roads or anywhere outside of the core of the central area. Progress Street, for example, has naturally developed as a service commercial zone and such land uses are appropriate for that particular street.

Option 4 includes the following components:

1. Demarcate areas that are predominantly operated as service commercial land uses
and retail commercial land uses into their appropriate spheres, and implement zoning by-laws that divide the current commercial zone into the two sub-groups of retail commercial land uses and service commercial land uses.

2. Encourage firms operating as retail commercial businesses to locate themselves within the demarcated zone of retail commercial land use through various incentive programs or zoning restrictions.

3. Encourage firms operating as service commercial businesses to locate themselves within the demarcated zone of service commercial land use through various incentive programs or zoning restrictions.

Option 5 - Concept Designation for Particular Areas

Economic and business growth and development is stronger when firms businesses are established in areas with functionally related activities. For example, a mix of small stores, restaurants, and personal services (retail commercial) reinforce each other. This creates conditions of cumulative causation in which cost advantages accrue to those firms because of their location. Orange Walk does not currently have concept designation for particular areas, although the Town has naturally developed into areas that can serve as a base for concept designation that will encourage future businesses to establish themselves in such areas. For example, Belize Bank is located in an area mixed with other retail commercial activities. Their current location would serve as an excellent area for a retail commercial concept designation.

Additionally, Hotel de la Fuente, Hotel St. Christopher, and Orchid Palm are all located in relative proximity to one another. Their current location is in close vicinity to the recommended Town portal – the visual entrance to the Town centre. Visitors to Orange Walk would have an easy time finding their hotel if this area was conceptually designated as a hotel district. Concept designations may or may not be the first step toward legal designation, however a development permit approach may be more appropriate. Concept designation encourages firms to locate within their relative spheres, while a development permit can be used to encourage a specific type of land use. For example, if council wishes the development of more hotels in an area zoned for commercial use, special bonuses can be available for hotel development. This policy paper includes a concept designation map that suggests the most suitable areas for particular business activities. A development permit approach could be used as a supplement to a zone, rather than a replacement.

Option 5 includes the following components:

1. Demarcate the areas suggested in the concept designation map and encourage future businesses to establish themselves within their particular zone in order to create a more cohesive and coordinated urban environment.

2. Using a development permit approach, a developer would require permission from town council prior to the commencement or completion of any development.

Option 6 – Implement Land Use Incentives as a Supplement to Zoning

Incentive or ‘Bonus’ Zoning is a flexible zoning technique that allows for a trade off between the as-of-right requirements of land use bylaw and the desired changes in those requirements by a developer. It allows for a relaxation of existing zoning and other bylaw requirements in exchange for an amenity that would benefit the residents of the development and their neighbors. For example, in exchange for a higher number of units in an apartment building unit, the developer would have to provide an increased level of landscaping or other amenity space that would not otherwise be required in by standard zone provisions. Bonuses could also encourage businesses to locate in certain areas by providing incentives that offset higher development costs. These trade offs can be applied to a variety of land use and development requirements or any other provision that a land use bylaw would normally control. The principle of such an incentive program is that the developer and the community gain from the application of this technique.

This alternative zoning should generally be encouraged after the implementation of zoning and land use restrictions in the area upon which the particular lot is located.

Option 6 includes the following components:

1. Designate lots and areas that are under consideration for a land use incentive, and determine what is the desired outcome of the land use

2. Determine what would be an appropriate trade off between the municipality and the
land owner that would serve as beneficial to both parties.

3. Implement a change into the zoning bylaw or land use restriction that allows for the alteration of the current land use to change in accordance with the desired outcome of both the landowner and the municipality.

ANALYZING THE OPTIONS

The options and alternatives listed below are not necessarily mutually exclusive. Various options can be used for different areas, as some may be more appropriate for certain areas of Orange Walk Town. It is encouraged, therefore, that different alternatives are implemented for the central area than those implemented for the surrounding areas of Orange Walk Town.

Because there are varying costs associated with different options, it is recommended that the more expensive and administratively taxing options be used for the central area and surrounding regions, while the outer regions of Orange Walk Town are encouraged to receive less attention, with the potential of no land use zoning being implemented for the time being.

Criteria

- **Required Financial Input From Town:** Refers to the relative degree of financial input required on behalf of council in order to cover budget and other overhead expenses. Levels of measurement are low, medium, and high.

- **Public Concern:** Refers to the amount of relative concern on behalf of the citizens and businesses of Orange Walk Town. This also addressed the amount of potential public debate regarding the option, assuming citizens of Orange Walk are supportive of planning. Levels of measurement are low, medium, and high.

- **Required Administrative Input:** Refers to the relative amount of administrative resources required in regards to staff and council hours in order to overlook and implement land use zoning policies. Levels of measurement are low, low-moderate, and moderate.

- **Professional Assistance Required:** Refers to the relative amount of outside help and administrative organization needed to implement an option. This criterion refers to additional assistance required by professionals outside of the town council, and will likely require additional financial input as well. Levels of measurement are low, low-medium, medium, medium-high, and high.

- **Benefits of Implementation:** This refers to the benefits associated with adhering to a particular criterion. These aspects can come in the form of financial benefits, coordination, and administrative ease. This aspect has no designated levels of measurement.

These criteria are used to evaluate the options in Table 1 below.

**Recommended Options**

Orange Walk Town is a beautiful and culturally diverse municipality with varying urban features, and has a unique downtown core with great potential. Because citizens and council members know Orange Walk Town best, the ultimate decision as to which options should be considered for implementation lie with them. There are, however, a number of options that would be best suited for particular areas of Orange Walk.

For the central area, options 5 (Concept Designation) and 6 (Land Use Incentives) would be most beneficial because this area should receive the most focus regarding further development. Concept designation is a valuable approach to future land use control, and allows for an urban core with land uses located in proximity to those of functionally related activities. Using a form of development permit to allow innovative design may be helpful. This approach requires professional assistance to draw up plans, which could potentially come on contract with funds coming from an application fee. Recommended concept zones are outlined below in the ‘concept designation’ map, and should be considered in congruence with using both land use incentives and nuisance rules to guide future functional use and development. As noted in the criteria matrix, these last 3 options generally require more administrative, and organizational, and financial commitment on behalf of council, however it is strongly recommended due to the future benefits they will achieve.

Continued after table…
Table 1. Evaluation of Options

<table>
<thead>
<tr>
<th>Options:</th>
<th>Criteria:</th>
<th>Required Financial Input from Town</th>
<th>Public Concern</th>
<th>Required Administrative Input</th>
<th>Professional Assistance Required</th>
<th>Benefits of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone Land for Existing Use</td>
<td>Low</td>
<td>Low</td>
<td>Low: Initial effort to develop zoning</td>
<td>Low</td>
<td>Control and ease of administration</td>
<td></td>
</tr>
<tr>
<td>Zone Land for its Predominant Use</td>
<td>Low</td>
<td>Medium</td>
<td>Low-Moderate: Initial effort to develop zoning and identify predominant use</td>
<td>Medium</td>
<td>Coordination of functionally related activities</td>
<td></td>
</tr>
<tr>
<td>Zoning Land for its most Logical Use</td>
<td>Low</td>
<td>Medium</td>
<td>Moderate: Requires community plan to identify logical uses</td>
<td>Medium</td>
<td>More organized urban environment</td>
<td></td>
</tr>
<tr>
<td>Break Down Current Zones into More Specific Zones</td>
<td>Medium</td>
<td>Medium</td>
<td>Moderate: Requires community plan and zoning to identify logical uses</td>
<td>Medium</td>
<td>Higher Specificity of control and administrative ease</td>
<td></td>
</tr>
<tr>
<td>Concept Designation for Particular Uses</td>
<td>Medium</td>
<td>Medium</td>
<td>Low-Moderate</td>
<td>Medium-High</td>
<td>Future coordination of urban landscape</td>
<td></td>
</tr>
<tr>
<td>Land Use Incentives as a Supplement to Zoning</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
<td>Medium-High</td>
<td>Any benefits stipulated in the designated incentive</td>
<td></td>
</tr>
</tbody>
</table>

In regards to option 4 (More Specific Zones), this alternative would best be used in conjunction with either option 2 (Zoning for Predominant Use) or 3 (Zoning for Logical Use) in commercial areas of the central area. Some areas have developed naturally into certain zoning areas, for example retail commercial and service commercial zones. It may also be useful in areas outside the central area for different types of residential area – small lot vs. large lot.

As for option 1 (Zoning for Existing Use), its implementation in the central area and outer portions of the town is useful but not absolutely necessary. It is, however, necessary when zoning lots within the central area that are currently adhering to the recommended land uses on the concept designation map or land uses desired by council.

IMPLEMENTATION PLAN

1. Establish Planning Advisory Committee

Council can act as a planning commission, and create a Planning Advisory Committee. This committee would be a networking hub for key stakeholders in the zoning process and a sounding board. This helps to improve support because stakeholders own the product, and their support means it is likely to be more effective.

2. Conduct Participatory Planning Process

This should be a relatively intense program that uses a variety of different methods. The process will be undertaken by the Planning Advisory Committee, and the outcome will define what the plan should accomplish.

3. Draft Bylaw

Because this is a rather technical aspect of land use zoning, any zoning bylaw should be done by a trained planner. It does not need to be too costly because zoning bylaws can be cobbled from existing bylaws elsewhere.

4. Submit for Public Review

This will allow for members of the community and the general public to review the proposed bylaw. Submitting the proposition for public review gives stakeholders a formal opportunity to support or oppose specific provisions, and this process is a legal requirement of natural justice.

5. Adopt

If the previous four steps have been completed and the draft bylaw has been accepted by
stakeholders and council, then the document should be finalized for submission to the government to seek final approval.

6. Forward to Government for Approval

Because ultimate power lies with the central government, council does not have the final say regarding the implementation of a bylaw. Unless the council gets planning powers, the bylaw requires approval from the central authority and should therefore be forwarded to the government.

7. Seek Necessary Powers to Implement

Plans usually have ideas that pose problems, so the planning advisory committee must ensure that they have the authority to implement and the necessary money to do so.

EVALUATION

An evaluation of the effectiveness of implementing land use and zoning policies should take place on an annual and five year basis to measure a variety of factors. The responsibility of developing a suitable means of measuring such factors as well as the actual measurement thereof should fall upon the Planning Advisory Committee. Because land use zoning controls vary with particular areas, the committee will need to cooperate to develop an appropriate means of measurement. The following, however, should be included in their final evaluation:

- Determine whether the new land use controls have been complied with, and evaluate the overall adherence to new zoning laws.

- Through an appointed committee, perhaps the planning advisory committee, evaluate the aesthetic improvements of the designated area that have resulted from the new zoning laws. One option is to have a Design Review Committee as part of the Planning Advisory Committee. This review committee would not necessarily have architects, but knowledgeable professionals to serve as volunteers.

- Survey the general public and other community members in Orange Walk Town who reside or own land in the district or land area being evaluated. This survey should allow for an evaluation on behalf of the public, who will decide whether or not they feel the new land uses have led to positive or negative changes, or if there has been no change.

CONCLUSIONS

Overall, land use zoning policies are key features to any moderate sized urban environment, and serve as an essential stepping stone to any future development or urban growth. Land use planning helps to protect and improve both the community’s living conditions and urban environment through the proper use and development of land. Though more often than not, zoning leads to increased revenues or reduced costs for a municipality, the main focus should not be to increase a tax base directly through zoning policies. Zoning policies lead to a more efficient and coordinated urban environment that has a greater aesthetic appeal and allows for a more coordinated control of how growth is managed. This control will guide growth in the most appropriate manner, and lead to an increase in tax revenue and overall economic growth. Designating and zoning land uses will create a more pleasant atmosphere for locals and tourists alike, and allow for increased administrative capacity on behalf of the Orange Walk Town council.