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Chapter

Jamaican Universities Aiding the Design of an Urban Public Space

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Abstract

Many governments are actively seeking solutions to address the economic crises bedeviling their countries. University/college towns have proven to be successful models of opportunities for attracting investments for economic development while at the same time promoting optimal health outcomes. Harvard, MIT and Newcastle universities provide examples of successful models of universities aiding in spatial design and planning of towns or neighborhoods where they are located to yield sustainable development. The Government of Jamaica has supported the proposal from the University of Technology, Jamaica, (UTech, Jamaica Ja.) to redesign the Papine area in St. Andrew into a university town, given its proximity to the two largest universities in Jamaica, UTech, Ja. and the University of the West Indies (UWI). Both institutions collaborated by using cutting-edge scholarly research and design approaches to propose workable solutions that can promote economic development and healthy lifestyle in an area designated as a university town. The research found that SOPARC was a feasible and reliable instrument for assessing park user variables and associated contextual variables. However, for the proposed design to be executed and maintained, the study recommends establishing a body such as a University District/Town Council with oversight responsibility for planning and land use management of the area.

Keywords: urban planning, open public spaces, university town, healthy lifestyles, land use management, participation, redesign

1. Introduction

The emerging Development Order for the City of Kingston, Jamaica, which governs the land use planning for the City, denotes the study area as the "Papine University District Local Planning Area." This designation is informed by *Jamaica Settlement Strategy: A Review of Experiences and Potentials* [1], which denotes a town as having basic infrastructure, such as; a post office, electricity, telephone, piped water and paved roads.

Notwithstanding the official designation, the popular name used by residents and other stakeholders from the area is the *Papine University Town*. The Papine University Town contains 11 communities extending from the Blue Mountain Range in the north to the Liguanea Plains. See location map in **Figure 1**. Two of Jamaica's
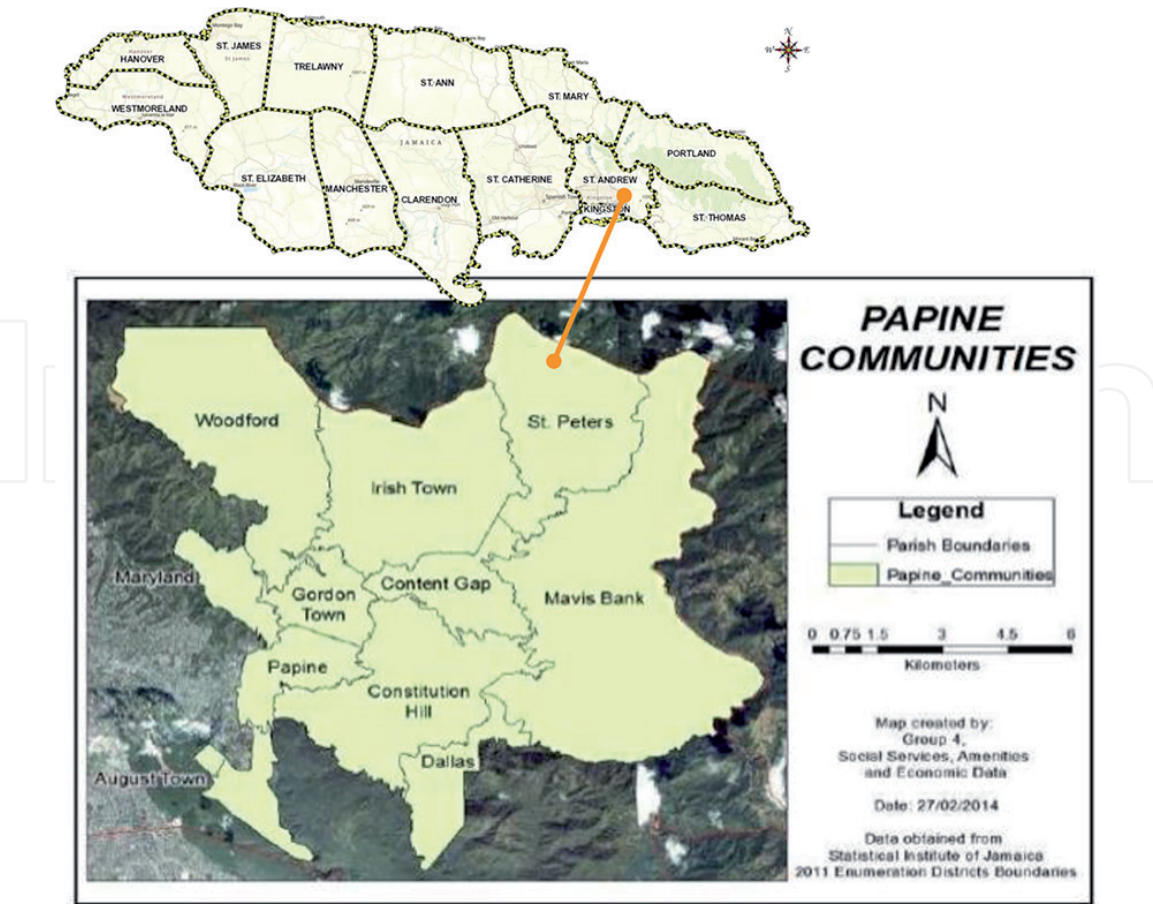
Figure 1.
Location map showing the communities comprising Papine university town.

major institutions of higher learning—the University of Technology, Jamaica and the University of the West Indies, along with other vocational and training institutes are located in the study area. The area also boasts the University Hospital of the West Indies, as well as several other tertiary institutions.

The local planning area is also home to the Royal Botanical Gardens of Hope (Hope Gardens), which today, is the largest public green space in the Kingston Metropolitan Region and home to Jamaica's most popular collection of endemic and exotic botanical collections.

The Papine local planning area is located on the Liguanea Plains within the geological formation of Liguanea and White Limestone. As a result of the rapid and unplanned urbanization and the fact that the land is susceptible to soil erosion and landslides, the area is unable to sustain large scale agricultural activities.

The 2011 current census from the Statistical Institute of Jamaica (STATIN), place the population count for Papine University Town at 23,018 persons. Currently, the area is zoned at 50 habitable rooms per acre. However, with the expanded sewage system, the zoning is proposed at 100 habitable rooms per acre, particularly along the major thoroughfares. Housing developments in the study area consists primarily of single family residential detached type units. Within the past 10 years, there has been an increasing demand for housing for enrolled college students, recent graduates, and young professionals. In 2014, the total student population of the two major institutions was estimated at 25,000. The developers responded to the demand for student housing by constructing apartment and townhouse complexes in the area and on the university campuses. Since it is likely that this trend will continue, there will be the need for additional green open spaces for recreation, basic social interaction, and the promotion of healthy lifestyles.

Figure 2.
Satellite image photograph of the areas immediately adjacent to the tertiary institutions (Google map 2012).

In addition to the Royal Hope Botanical Gardens, there are several parks, recreational areas and public open spaces, in varying states of repair, serving the surrounding neighborhoods. The Kingston and St. Andrew Municipal Council is directly responsibility of these open public spaces. The Papine Park is one of the public open spaces serving the communities in the local planning area of the Papine University Town. This public space is also referred to as Papine Square. It occupies approximately 4575 m^2 with no perimeter fencing, and uncontrolled pedestrian access from all sides of the park is the norm. It is usually used for rec-reational purposes, and for group gatherings such as political rallies and cultural concerts or religious meetings. Many people traverse the Park to access the public and private transportation on the roadways that immediately border and/or are within 0.5 km (**Figure 2**).

2. University town concept and characteristics

History is replete with examples of symbiotic relationship between towns and centers of higher learning. In the past decade, for example, rapid development of university towns has been observed in Mainland China. It is estimated that about 50 university towns have been built in different cities throughout China, primarily to address the issues of economic growth.

Based on an assessment of university towns across the globe, the Hong Kong Planning Department [2] placed the development of these university/college towns into two broad categories—those that evolved organically and those promoted by

government actions and or direct policies. Towns such as Stanford, Cambridge and Oxford are representatives of the organic evolution model. In these towns, the university graduates remained after completing their studies. Graduates are attracted to areas such as these, because of the availability of jobs in companies that have relocated to the university town to benefit from the synergy of information and technology. These towns have been formed by the establishment of purpose-built campuses for the clustering of universities to achieve objectives such as, relocation and expansion of universities, and promotion of high-tech industries ([2], p. 2).

2.1 Characteristics of university towns

The characteristics of a university town, as described by the Hong Kong Planning Department (outlined below), with the exception of the last point, are all applicable to the Papine University Town:

1. nurturing of a number of high-tech companies and activities in the surrounding area;

2. clustering of education, research institutions and start-up companies;

3. occupying a large site area, ranging from a few hundred to a few thousand hectares with a wide range of supporting facilities such as housing, shops, banks, research and development companies, entertainment and exhibition facilities;

4. high degree of facility sharing, including sharing among the, educational institutions the companies and the people living in the town; and

5. attracting talents, intellectual elites, research and development companies and international investments, thus enhancing the town.

Despite having met the requirements, for the most part, the area has not attracted the level of international or local investment in comparison to similar urban areas in the United States or Europe. The economy of a university city or town is closely associated with the university's activity and is highly supported by the whole university structure, which may include university hospitals and clinics, university printing houses, libraries, laboratories, business incubators, student rooms, dining halls, students' unions, student societies, and academic festivities. In some university or college towns, the history of the city or town is often intertwined with the history of the university itself.

A university town plays an important role in defining the urban form and creating a sense of identity for residents and visitors of a country. The university's role in the design and layout of public open space is one way of defining and creating this identity. The university's involvement in the creation of new knowledge, technology and other forms of innovations, through research and development, allows for an environment conducive to learning and growth. Evidently, the University towns, cities or district are important to national development because of the important role these urban forms play in promoting major investments in public space development, public maintenance, and public safety. Universities also influence the shape and direction of the urban expansion because they tend to occupy large tracts of land and depend on services provided by external providers within close proximity.

Research on university towns highlighted the fact that, in the initial, the university and the town failed to work together to address common problems.

In fact, historical records from North America and Europe suggested that, at best, the relationship between university and residents from surrounding communities was antagonistic. The source of antagonism is the disconnect between scholars in the perceived *ivory towers* and the inaccessibility of the scholarship to the average residents. Martin et al. [3] in their essay, support the argument that partnerships between universities and community organizations have been either non-existent or unconstructive; this state of affairs being the result of opposing philosophies and practices. They postulate the demand for good governance and participatory democracy worldwide, and the support of this demand by international lending agencies and organizations such as the United Nations has spurred the renaissance for innovative university-community partnerships.

There are several approaches to how universities are engaged in the community development process. The United States Department of Housing and Urban Development (HUD) developed a taxonomy for university/community partnership under broad categories of service learning, service provision, faculty involvement, student volunteerism, community in the classroom, applied research, and major institutional change ([3], p. 4). The activities undertaken by the University of Technology, Jamaica and the University of the West Indies in the Papine area fits squarely with the HUD taxonomy. The students of both universities provide service to the surrounding communities as part of their regular course work. In the design and maintenance of Papine Park, students are able to complete assignments for credit associated with a mandatory course on community development. Furthermore, faculties are assessed annually on their level of engagement in community initiatives in and around the Papine area.

3. Method

The University of Technology, Jamaica, through its Faculty of the Built Environment (FOBE), took on the responsibility to prepare architectural designs for the restructuring of the built environment in the local planning area designated as the Papine University Town. The Papine Park, an important landmark and a community hub, is the key target area for the redesign. Baseline data was needed to assess current usage patterns to guide the planning and redesign efforts based on the needs identified by the various stakeholders. A team from the University of the West Indies Tropical Medicine Research Institute (TMRI) was engaged to assist with data collection, using a particular approach. Over the years, the TMRI provided cutting edge, high quality research solutions for developmental needs. The built environment is now the focus of important ongoing collaborative research at UWI by both the Department of Community Health & Psychiatry and Tropical Medicine Research Institute (TMRI), through the project dubbed **E**valuating **Qu**alitative and **Qu**antitative **I**ssues in **P**hysical Activity in **Ja**maica (EQUIP-JA). The overall goal of EQUIP-JA is to utilize rigorous qualitative and quantitative methodologies to better understand physical activity (PA) patterns in Jamaicans and develop interventions that increase physical activity levels in communities and also provide important data for community and public space designers and planners, as well as prove useful for monitoring and evaluating the investment of public funds in parks. The team from the Tropical Medicine Research Institute employed the SOPARC method which is described below. In addition, the research employed qualitative methods inclusive of questionnaires, focus group interviews and in depth interviews with government officials who have responsibilities for public open space and public works.

3.1 System for observing play and recreation in communities (SOPARC)

A proven reliable and valid direct observation tool employed to assess park usage and conditions is the System for Observing Play and Recreation in Communities (SOPARC) developed by McKenzie et al. [4] in the USA. Though somewhat labor intensive, it is an observational tool that is less intrusive than other data collection strategies and may also be used as a monitoring tool for evaluating changes in park usage patterns and park conditions. Whiting et al. [5] examined the tool as an efficient and effective tool for monitoring park visitation by comparing it with intercept surveys and exit surveys.

UTECH and UWI collaborated on a pilot study to obtain baseline data on current usage patterns and conditions of the Papine Park and assess the reliability and utility of SOPARC as an assessment tool in small-island developing country context.

The SOPARC method, approved by the UTech Ja Research Ethics Committee was employed in the study. It used momentary time sampling techniques that were both systematic and periodic to gain objective observational data on contextual and individual physical activity. The original SOPARC coding forms used by McKenzie et al. [4] were slightly modified by removing the racial categories and adjusting the age group categories.

3.2 Surveys and interview

In addition to SOPAC method, face to face interviews were conducted among park users to determine their views and perceptions of the park and to solicit their input on features to be incorporated in the redesign of the park. Although surveys were also administered, it is important to note that the survey was done at a time when both universities and other educational institutions in the area were on summer break, which resulted in limited student participation. Two hundred surveys were administered to persons in the Papine Park over a 3 week period during the months of July and August 2015. The survey included questions on safety in the park, esthetics, accessibility and mobility in and around the park. The researchers collected additional data by way of focus groups interviews with members of citizens associations, business owners along the park, police personnel and other key stakeholders associated with the park. The researchers interviewed key personnel from state agencies who are likely to play a role in the redesign and re-construction of the park. Representatives from the public transportation agency, the agency with responsibility for solid waste management and infrastructure development. These interviews elicit information from the representatives relative to their agencies work plan for the park and their willingness to execute the ideas emanating from the participatory process. The results of these findings were used to inform the redesign of the park.

3.3 Limitations

The limitations noted were few. Firstly, data were collected during only 1 week of summer when schools and universities in close proximity to the park were closed. Secondly, the predetermined observation periods may not have captured periods of increased use outside of those timeframes. Thirdly, inter-observer agreement (IOA) scores were not formally calculated during training and may have affected reliability assessment of gender-specific age and activity levels. Despite the limitations, this study has revealed that SOPARC is a reliable assessment tool and effective for providing baseline estimates on the user characteristics of the Papine Park. Reliability for sex-specific age groups and activity levels may be improved by

ensuring inter- observer agreement (IOA) scores of at least 80% prior to commencing data collection.

Future observation studies over a longer period and at different times of the year may improve on the representativeness of the data. SOPARC may, therefore, be useful for evaluating changes in user characteristics over time, particularly, if the Papine Park remains a part of the new university town. The Park can be described as a transportation hub. Thirty-one or 27% of the respondents stated that they use the park for rest and relaxation. During the field survey, several vendors were observed plying their wares in the park. They were selling snacks, beverages, phone cards, fruits, and cigarettes. Regardless of the fact that the Kingston and St. Andrew Corporation, the local authority with responsibility for managing the park, has stipulated that vending is prohibited, this is not strictly enforced.

4. Analysis

4.1 SOPARC analysis and results

The SOPARC analysis shows that the target areas used most frequently were those nearest to public transportation, where sitting was possible and areas that offered shade. There were limited green spaces in terms of number and size. A number of vendors were observed mainly in the target areas along the western half of the park where there was easy access to parked public transport. However, given that the scan was momentary, it was pre-determined that vending would be coded according to PAL observed rather than type of vending activity. Almost all of the target areas within the park were accessible and usable. Nonetheless, a few areas were empty for each observation period, with the exception of the evening period where all target areas were used by persons (**Figure 3**).

Significantly, more men than women were observed using the park and the vast majority of users were adults (18–64 years old, 83%). Of all users, approximately 54% were observed engaged in sedentary activity viz. sitting, standing or lying down, 39.7% were walking and only 6.2% were engaged in vigorous-intensity PAL.

Differences were noted in park use according to time of day. There was an increasing trend in use throughout the day, from a low of 15% of persons observed in the morning period to a high of 38% in the evenings. Regarding PAL among men, almost 60% were observed to be sedentary compared with the other PALs. For all females, the proportion observed to be sedentary versus walking was almost equally split (47% vs. 46%). When the PAL of each sex was examined by period of the day,

Figure 3.
Photograph showing the northeastern view of the entrance to Papine Park, August 2015 (Source: Author).

vigorous-intensity activity levels were significantly highest for both sexes in the evening period (**Figure 4**).

When usage patterns by day of the week were examined, Friday had the highest proportion of use by all users (21%) with Sunday having the least proportion (12%). This difference in proportion over days of the week, was not statistically significant (p = 0.674). When usage patterns among females of different age groups were examined, only a minority of seniors (persons ≥ 65 years old) used the park on any day of the week when compared to females in the lower age group categories (p < .001). Among men, the 18–64 year old group visited the park at significantly higher levels than the other age groups irrespective of the observation day (p < .001). User counts within age groups for males revealed a statistically significant difference according to the day of the week for adults (p < 0.001) and seniors (p = 0.002) but this difference was not statistical significant for males <18 years. For most days, both sexes were engaged in significantly more sedentary activities compared to walking and vigorous-intensity PAL (p < .001). The exceptions were Saturday and Sunday. However, it was only on Saturday that the difference was significantly higher among females; the highest proportion of women observed walking was 59% compared to 37% sedentary and 5% doing vigorous physical activity (p < .001) (**Figure 5**).

The most common activities for each sex in areas scanned where at least one person was observed were walking (F: 57.3%, M: 47.6%), sitting (F: 31.6%, M: 37.8%) and standing (F: 9.0%, M: 10.8%) (**Figure 6**).

Following on studies conducted by McKenzie and Cohen, the reliability of user count data was assessed by calculating single and average measures intra-class correlations for the variables sex, age and PAL. Data from a total of 261 simultaneous measures were used in the reliability analysis. Inter-observer agreement (IOA) scores for contextual variables were perfect for area accessibility, degree of lighting and presence of organized activity and above 99% for presence of supervision, provision of equipment and usability. All coefficients met acceptable criteria for reliability assessment ranging from r = 0.87 to 1.0.

In general, almost all areas of the park were accessible and usable during the observation periods. The target areas used most frequently were those nearest to public transportation, where sitting was possible on concrete seats and ledges and

Figure 4.
Photo of typical evening activities in Papine Square (source: Author).

Figure 5.
Photos of Papine Park and surrounding area on a Saturday (source: Author).

Figure 6.
Photo of Papine Park (source: Author).

near to shaded areas. The observations also revealed significant differences in the use of the park: there was greater use by men versus women and by more adults than seniors or children/teenagers. There was also significantly higher use in the evenings and on Fridays by both sexes. Our results were similar to other studies done using SOPARC.

For most days of the week both sexes were observed to be engaged in sedentary activity in the park, even though activity tended to be more vigorous in the evenings. The possible reason for this is that the Papine Park is more of a square, i.e. a small park/plaza. Hino et al. [6] found that regardless of gender, persons tend to be more sedentary in squares (mean area $\leq 6217 \text{ m}^2$) than the larger parks, with the possible explanation being that there are fewer walking and running trails. The presence of trails has been associated with higher PALs.

4.2 Interviews and surveys analysis

Of the 115 participants interviewed, 41% (47) were males and 57% (66) females. While more males were observed in the SOPARC method, using the park, it was

assumed that more women were represented in the survey because of the likelihood of women to respond to surveys. Majority of those interviewed were between the ages of 20–34. A total of 65 persons fit within this age group. Few senior or persons between the ages of 65–80 were interviewed. Five persons interviewed reported that they were between 65 and 80 years old. Similarly, 17 respondents reported that they were 19 years old or less. This group is identified as the school age population in Jamaica. It is likely that they were represented in small numbers because the survey was conducted in August while most schools were on summer recess.

As it relates to employment status, 71 respondents reported that they were employed, 27 indicated that they were students, 7 were unemployed and 4 retired. One person stated that they are unemployed because of their disability. Two persons did not respond. Based on how the question was posed, it was not clear how many of those employed were "self-employed." While a significant number of the people interviewed reported that they were employed, it is likely that they were in the vicinity of the park as they transitioned between work and home.

The respondents were asked how often they used the park. Thirty-two respondents (28%) indicated that they used the park every day. Forty-three respondents (37%) stated that they use the park anywhere from two to five times per day. Thirty-eight respondents indicated that they seldom used the park or use it once in a while. The question on frequency of use did not specify or define the type of use; hence, it is likely that those who walk through to access public transportation or retail stores on either side of the park might not describe this as "using." The study did not highlight any significant difference in the frequency of use based on gender.

5. Proposed redesign and structure for management and maintenance of Papine Park and Papine

Proposed design were presented to the stakeholders at community meetings organized by the Papine Area Development Committee, the umbrella organizations representing various civic associations in designated Papine University Town local planning area. There were approximately four meetings to arrive at a final redesign of the Park. Below are artist renditions which incorporated the changes.

To address the issues of safety and security the design incorporated covered bus stops, planting trees and other vegetation for shading from the sun and reducing the heat island effect in the area, solar lighting, and a multi-story pavilion to house a police outpost and information center. The design also included underground parking to accommodate approximately 20 cars. This would remove cars from the roadway and limit traffic congestion in and around the park. This would be supported by the recommendation to re-route traffic via the road way behind the University of Technology. The design also considered designated seated areas for public gatherings and general seating. Based on the analysis of the SOPARC data more than 54% of the park users were observed to be seated or lying down. Only 6.7% of the users were involved in vigorous physical activities such as running (**Figures** 7 and **8**).

The leadership of the University of Technology, Jamaica and the University of the West Indies is mindful of the great expectations that are likely to emerge from residents of the surrounding areas. The leadership has also become concerned that elected officials and other decision-makers might become reliant on the universities since their involvement in the planning and development of activities in the Papine Local Planning Area. In several focus group meetings regarding the park design, residents and public officials indicated the need for an appropriate governance/management structure of the university town. The members of the focus groups interviewed for this project are of the view that an entity should be created with
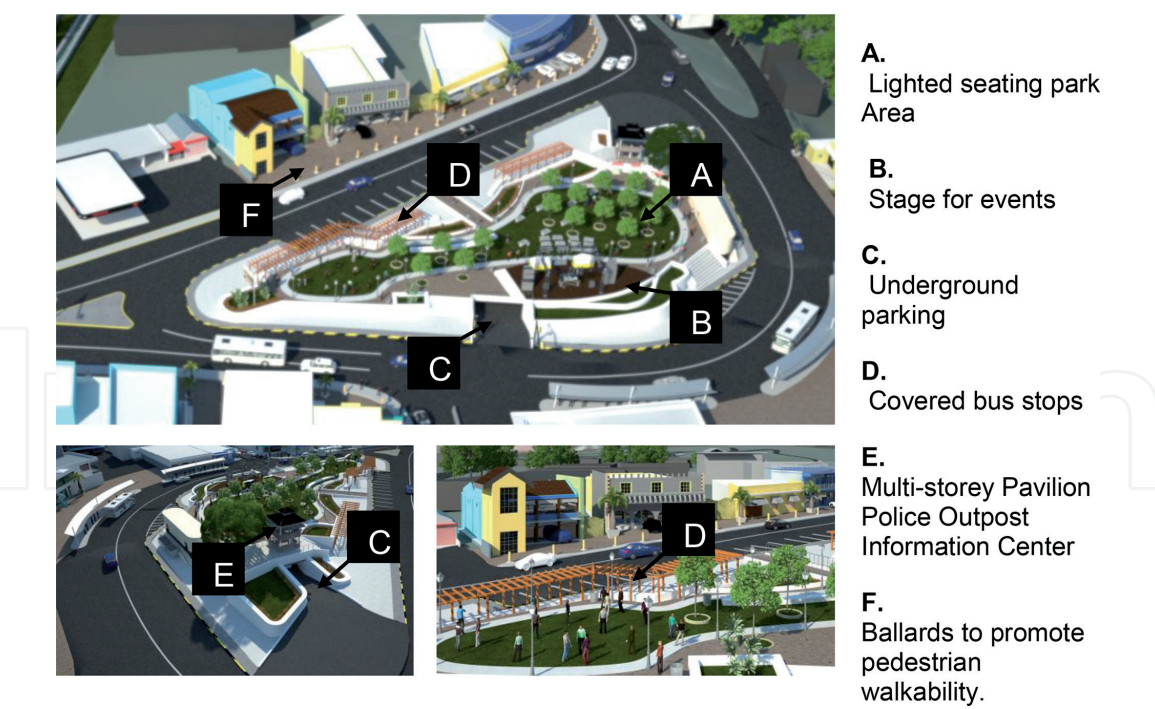
A.
Lighted seating park Area

B.
Stage for events

C.
Underground parking

D.
Covered bus stops

E.
Multi-storey Pavilion Police Outpost Information Center

F.
Ballards to promote pedestrian walkability.

Figure 7.
Artist impression of park proposal.

Figure 8.
Showing Papine bypass to ease congestion in Papine Square.

representatives from the relevant stakeholder group to assist with the construction and/or implementation and maintenance of the Papine Park once it is redesigned.

The focus groups believe that for any development to be effective and sustained in the Papine University Town, the establishment of a management structure is critical. The proposed structure is in keeping with the Town Centre Manager concept introduced in 2013 by the Ministry of Local Government and Community

Development. The concept of Town Centre Manager, while new to Jamaica, has been in existence in Europe and North America for several decades. Andrés et al. [7] postulate that the town center management is more relevant now than before, as growing mega cities compete for prosperity on a global scale. They further noted that in the early days of its development in the United Kingdom, Town Center Management (TCM) was seen primarily as a response to external factors and "a comprehensive response to competitive pressures, which involves development, management and promotion of both public and private areas within town centers, for the benefit of all concerned" (p. 75). More importantly, they are also of the view that the Town Centre Management implies a co-operative rather than confrontational relationship with the private sector and all other stakeholders while striving to retain a local identity. The Government of Jamaica, through the Ministry of Local Government and Community Development, representatives from the University of Technology, and representatives of the civil society are currently in dialog with the local planning authority to establish a town center manager to oversee planning regulatory functions and assist with the management of the Park once it is redesigned.

While Andrés et al. [7] is a major proponent of a structured approach to town center management, Reeve [8], on the other hand, has concerns about the town center structure. He sees this structure being heavily influenced by the private sector or serving mainly its interest. He also argued that in general the management structure for most town centers across Europe are not elected by the people and thus making their accountability to the people questionable. Mindful of Reeve criticism of the town center management structure, based on the responses from the focus groups and surveys, the proposed structure below (see **Figure 6**) includes a management board with representatives from the political directorate in the form of the Member of Parliament(s) representing the national government and councilors from the local government. In addition, the other proposed members include representatives from the universities, civil society, business interests and other stakeholders. These members would appoint the town center manager and provide oversight for the implementation of development activities in the local planning area designated as The Papine University Town (**Figure 9**).
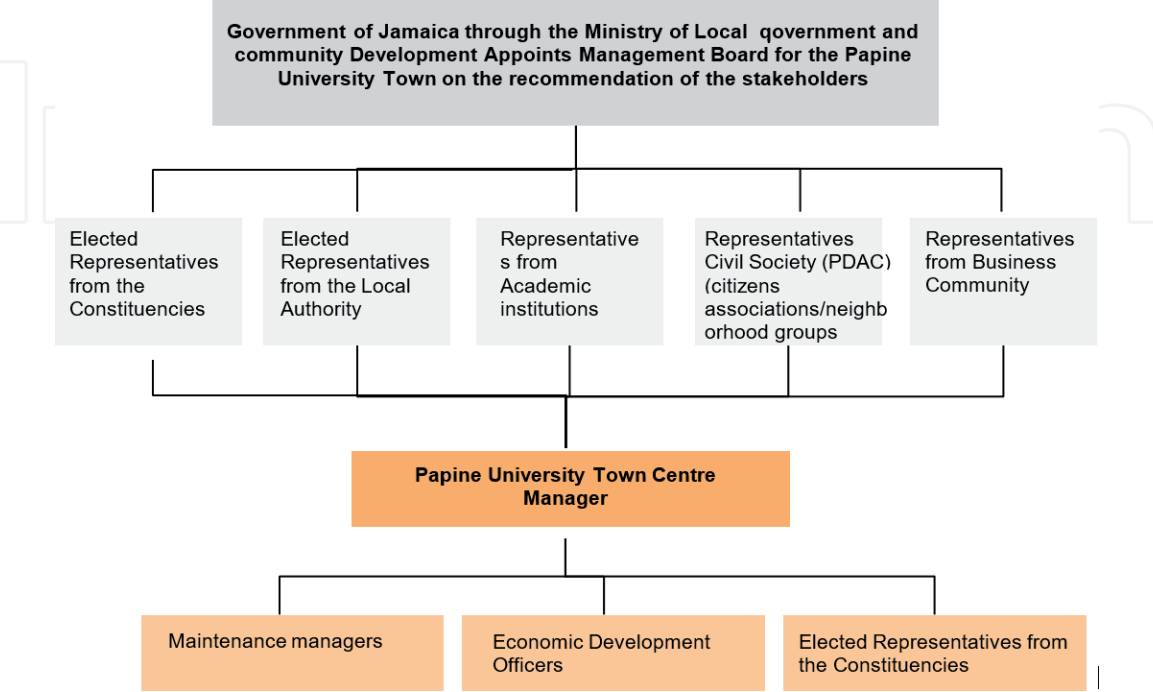

Figure 9.
Proposed structure for the Papine university town local planning area.

6. Conclusion

Activities undertaken by higher education institutions across the globe demonstrates that these institutions are important assets to assist regional, national and local governments with achieving sustainable development, particularly those targeted and measured for the United Nations Sustainable Development Goals 2030. Small Island Developing States such as Jamaica, with limited resources have to rely heavily on higher education institutions to use cutting-edge research and technological advances to provide workable solutions for sustainable development. One of the primary areas that the universities assisted the government was collecting, analyzing, and mapping of data for the area around the Papine Park. The municipal government with responsibility for the management and maintenance of the park now has baseline data on the use of the park. This was the first of its kind for the municipality and for Jamaica in general.

As highlighted above the two universities played a significant role in assisting the government of Jamaica to plan, design, develop an urban public space. In addition, the researchers proposed a new framework to govern and manage the public space and the surrounding neighborhood. The proposed governance framework will help to increase participation of the residents in the decision making process; reduce inequalities; promote sustained, inclusive and sustainable economic growth; improve human health and wellbeing; foster resilience; and protect the environment. This is one of the major commitments of the New Urban Agenda associated with Sustainable Development Goal 11—"Safe, Inclusive, and Resilient Neighborhoods, Towns and Cities." which Jamaica agreed to. In essence, the re-design and construction of Papine Park as proposed by the university allow Jamaica to demonstrate its commitment to SDG 11.

The proposed design was achieved using the participatory approach which promoted the engagement of a wide cross section of users and potential users of the public park. As a result of the participatory approach used, residents and park users expressed a sense of ownership and belonging and knowledge of how the park should be designed. Safety and crime reduction, inclusiveness, accessibility and environmental sustainability were some of the major consideration voiced by the park users and these concerns were included in the proposed design.

The proposed design also gave due consideration to the multifunctional use of the areas for social interaction and inclusion, human health and well-being, economic exchange and cultural expression. In order for the multi-purpose park to serve future generations, the researchers proposed a governance and management framework that involves the major stakeholders in the decision making process. The involvement of the stakeholders will ensure that the design is implemented to meet the need of the primary users based on their feedback of the design process.

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