

Recreational Carrying Capacity Assessment for Port Royal/Lime Cay

Submitted to the

Tourism Product Development
Company Ltd.

By



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1. Introduction

1.1. Project Background

With the growing number of visitors to Jamaica over the past decades, there has come an increase in the number of hotels, and the number and variety of water sports offered around the island. Additionally, the growth of the hotel and leisure watersport industry throughout the country has had a significant impact on the coastal and marine ecology of several of our resort areas. The growth of the watersports industry, along with improvements in boating technology (with faster water vessels) has also impacted negatively on visitor safety on the water. While many watersport-related incidents are apparently not recorded, there are several reported accidents a year. In fact, for the period January 2001 to December 2004, 56 watersport-related incidents were reported to the Jamaica Tourist Board (an average of 14 per year), including six fatalities. This obviously has the potential to negatively impact the tourism industry.

The Maritime Authority of Jamaica (MAJ), in conjunction with the Ministry of Industry and Tourism, along with other concerned agencies, is interested in streamlining the management of leisure watersporting activities, and wish to integrate this into an overall framework for inter-sectoral management of tourism products, coastal environmental health and marine safety. As such, they have commissioned a study, to be coordinated and managed by the Tourism Product Development Company (TPDCo), to determine the capacity and safety in marine recreational areas in Jamaica.

In November 2004 TPDCo contracted *Smith Warner International* to carry out the desired capacity and safety studies in six designated areas around the island, as follows:

1. St. Ann to St. Mary (including Ocho Rios, Tower Isle to Mammee Bay Point, Runaway Bay and Discovery Bay);
2. Negril (Bloody Bay to Norman Manley Sea Park);
3. Port Antonio (East and West Harbours);
4. Montego Bay (Bogue Lagoon to Rose Hall Beach);
5. Kingston (Lime Cay to Port Royal); and
6. St. Elizabeth (Black River up to Broad River).

1.2. Project Objectives

There are five (5) primary objectives for this overall capacity and safety study. These are:

- I. Establish optimum capacity(ies) for water sports operations in Marine and Riverine Recreational Areas islandwide;
- II. Provide guidelines for the delimitations of zones for water sports activities in the determined focus locations, especially in Marine Parks;
- III. Document the environmental impacts of the water sports on the focus areas;

- IV. Provide guidelines for the overall development of water-sports activities in Jamaica in relation to safety, security and marine/riverine pollution prevention; and
- V. Recommend better environmental management systems for the marine protected areas.

Additionally, the TPDCo is interested in determining the potential impact of zoning and leisure-craft regulations on the tourism product (visits by tourists to the island) and as such requires that a marketing study be done to ascertain such information and to guide the development of marketing and promotions pertaining to regulated water sports activities.

The intention is that the findings of this study will be used to guide the pending legislation related to watersports activities around the island.

1.3.Document Objectives

This document conveys the findings and recommendations for one of the six locations studied, *Port Royal*. The information presented in this report has been obtained through desk review, and field investigations¹, and is offered to assist decision-makers in formulating policies and regulations to ensure safety and environmental health in the Port Royal area. The recommendations outlined are intended to be used as tools in the evaluation of options for minimizing user conflicts, incidents and environmental concerns in the locations studied around Port Royal.

This report addresses the following:

- The nature and extent of watersporting activities Port Royal (to Lime Cay).
- The recreational carrying capacity of Port Royal/Lime Cay.
- The characteristics of the Port Royal watersports market.
- Recommendations and a summary of the findings.

¹ Site visit made September 4, 2005.

2. Site Description – Port Royal & Lime Cay

2.1. General Description

The historic town of Port Royal is situated on the western tip of the Palisadoes strip in Kingston, on the south coast of Jamaica (Figure 2.1). The town is strategically located at the mouth of the Kingston Harbour, with access to both the harbour (on the north) and the open sea (on the south). On the seaward side of the Palisadoes, and south of Port Royal lie a number of cays, known as the Port Royal Cays. Notable among the cays is Lime Cay, a mostly vegetated island with attractive beach areas, which is a popular landing place for day trippers, visitors and locals alike (Figure 2.2).



Figure 2.1 Study Area

For the purpose of this study, the area considered is Lime Cay and the waters immediately around the island. The island is oriented in a northwesterly to southeasterly direction, and is approximately 420m long by 90m at its widest point. On the eastern and southernmost sides of the island, the shoreline is a thin strip of sand,

which leads out to a shallow fringing reef, which is not conducive to recreational activities, except for snorkeling in some areas. The northern and western sides of the island provide wider stretches of beach which lead into shallow, clear waters. Interspersed along the western shoreline are areas of beach rock. Together, the beach, swimming areas, and beach rock make the western side of the island accessible by boat, and conducive to a number of recreational activities.

One of the island's main shipping channels, the East Channel, runs to the north of Lime Cay, and into Kingston Harbour.



Figure 2.2 Annotated Satellite Photograph of Lime Cay (2002)

2.1.1. The Palisadoes – Port Royal Protected Area

The study area falls within the Palisadoes-Port Royal Protected Area, which was declared in 1998 under the Natural Resources Conservation Authority (NRCA) Act of 1991. Since the declaration of the protected area several plans have been prepared for the zoning, land use and overall management of the entire protected area (Figure 2.3). However, there is presently no entity charged with the specific responsibility for the management of the protected area.

The Palisadoes-Port Royal area is home to a variety of terrestrial and marine species, and is of substantial ecological, social and historical value to Jamaica. Important coastal habitats such as coral reefs, seagrass meadows and mangroves, are common throughout the area, and provide breeding and nursery locations for several commercially important fish species. Specifically, the eight coral islets (the cays) together with their associated reefs, shoals and surrounding water support an important nearshore artisanal fishery.

Of note, the ownership of the Port Royal Cays is vested in the Commissioner of Lands, and as such the islands may not be legally occupied without consent.

STUDY TO DETERMINE CAPACITY & SAFETY IN MARINE RECREATIONAL AREAS
 FINAL LOCATION REPORT – PORT ROYAL

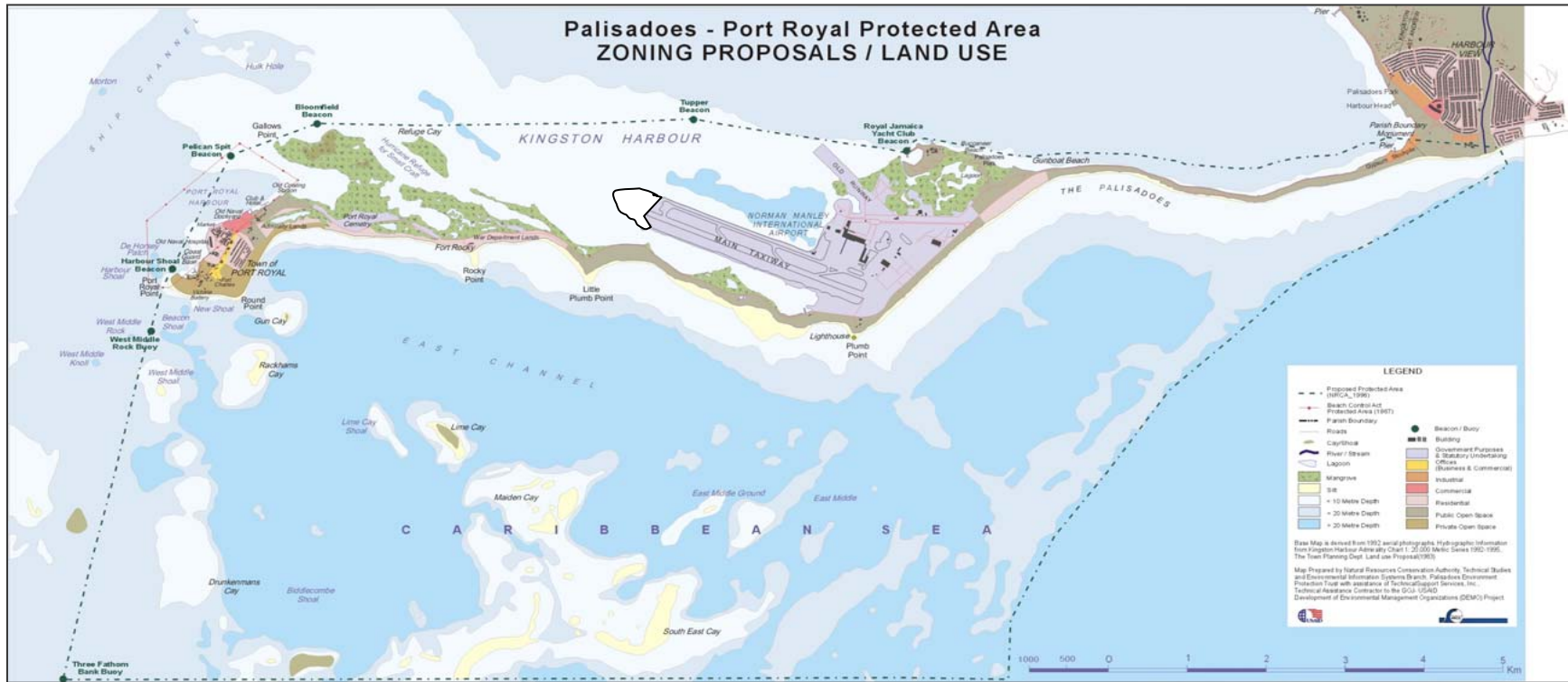


Figure 2.3 Proposed Zoning & Land Use of the Palisadoes – Port Royal Protected Area (Source: NRCA/NEPA)

2.2. Water Sports Activities

2.2.1. Nature and Extent of Watersports Activities

The western side of Lime Cay facilitates a number of water-based activities, ranging from wading and swimming to sailing and skiing. The extent to which each of these activities is done is dependant on the day of the week and the time of the year, given that there is increased recreational activity by locals during holiday periods. There are no co-ordinated watersports activities, although there are occasionally regattas in the vicinity.

The island is used primarily by locals, many of who use their private vessels to access the cay. Other locals and some visitors arrive at the island via water-taxi. Boats approach the island from the northwest (Port Royal), and moor/anchor within 100m of the island, using a combination of methods. Most of the boats moor approximately 10m from shore.

A variety of activities take place in the limited accessible space around the island, and in close proximity of each other. There is no official zoning or distinction in the use of the water or shoreline areas. However, there is an apparent understanding among the regular users of the island of how things ‘work’ with respect to boating and swimming around the cay.

Wading, sitting and swimming

Visitors to the cay sit and wade along the western shoreline in the small lagoon areas between the beach rock and the shore, and in other areas where there are larger sandy-bottom pools. Others float on inflatable rafts or rings and on small surf or boogie boards. Wading and sitting is a part of the social scene at the cay, where the locals often take their beverages with them into the water as they cool off and chat with friends in the shallow areas. Swimming and snorkeling is also common, especially among the children. This is all carried out in the areas near to shore, between boats and mooring lines, but rarely takes place beyond the seaward line of boats.

In instances where boats are moored further offshore, persons will swim in the deeper waters in the vicinity of their boats.

Boating

The boating activity that takes place around Lime Cay is primarily for access and departure, and mostly involves maneuvering for mooring and anchoring. Some recreational boating activity takes place further to the west of the island, as vessels travel to other cays or offshore. Some of these vessels often travel at high speeds parallel to Lime Cay, sometimes causing substantial wake which rocks the moored boats.

The mooring and anchoring of boats is done in a relatively systematic way along the west coast of the island, with most vessels mooring bow out, using a mooring buoy for the bow line and a shore anchor for the stern line. The result is a line of vessels approximately 10m from shore, all perpendicular to shore and within 10 to 20m of the

shore. Fewer vessels anchor further away from the island, and use smaller vessels (Rigid Hull Inflatable Boats, RHIBs or jet skis) to access the island.

The most active boats in the vicinity of the island are the water-taxis, which regularly approach the island perpendicular to the shore at the most accessible point to the beach in the centre of the island (there is little beach rock), and they load and unload the vessels by beaching the boats. To leave the island, the water taxis reverse away from the shore.

Sailing

Sailboats occasionally sail around the island, and there are annual regattas which terminate at Lime Cay. These vessels tend to anchor further offshore, or on the mooring buoys set farther away from the shore.

Jet skiing

This is a common activity around the island. Local owners of private jet skis ride or tow their skis from within Kingston Harbour (Port Royal), and then use them around the cay. Most of the recreational use of the skis takes place outside of the area of boat mooring and swimming, west of the island, and some jet ski activity is carried out north of the island, sometimes within the shipping channel.

The skis are generally operated at slow speeds when approaching the boat mooring area, although they are still frequently used in dangerous proximity to waders, swimmers and other vessels.





Examples of the mixture of activities that take place within the immediate proximity of each other, including sitting, wading, swimming, vessel landing/beaching and mooring, and jet skiing.

2.2.2. Watersports/Tour Operators

According to the records provided by the Jamaica Tourist Board, there are no licensed watersports or water-based tour operators in the Kingston area. However, there are several locations from which persons can hire boats, or take water-taxis from Port Royal out to Lime Cay. There are two entities offering formal water-taxi operations: One is from the Morgan's Harbour Hotel, and the other is from a location just east of the Morgan's Harbour Hotel, known as 'Why Knot'. Fishing canoes can also be hired from the fishing beach in Port Royal for trips over to the island.



'Lime Cay', "Sir Henry Morgan" and a fishing canoe – the three main water-taxi options from Port Royal to Lime Cay.

Both Morgan's Harbour and Why Knot offer return trips to the island every day of the week, with the regularity of the trips each day depending on demand. The weekdays are slower, while the weekends, and Sundays in particular, are busy days. On the day of the field visit (a Sunday), both operators made six (6) trips each to the island between 10:30am and 2:00pm. The boats used by these operators carry between 15 and 35 people at a time.

In addition to the water-taxis to the island, there is also an operator on the island that provides food and drink to the visitors to the cay.

2.2.3. Water Vessels

Information provided by the MAJ indicates that there are 8 motorized vessels licensed for tourism in Port Royal/Kingston, and there are 22 vessels registered in Kingston for personal use. The data provided by the Fisheries Division indicates that there are 65 fishing vessels registered in Port Royal, so that according to these sources there are 95 registered vessels in Port Royal/Kingston.



Vessels moored at Morgan's Harbour, and along the western shore of Lime Cay



A majority of the private vessels moor at the Royal Jamaica Yacht Club (RJYC), and many are moored at Morgan's Harbour. The RJYC website indicates that more than 120 boats are berthed at the facility, and a count at Morgan's Harbour revealed more than 30 vessels moored at that site. Other boats are often found on land or on trailers in the vicinity of the two mooring facilities. A number of boat owners also keep their vessels on trailers in-land, at their private residences.

Based on the information available, and the observations made, there are substantially more vessels in the Kingston/Port Royal area than are registered in the area.

During the field observations, a maximum of 38 motorboats were moored beside the island, and a total of four (4) jet skis were seen in the area. Three (3) of the larger boats also had smaller boats which they towed behind (Rigid Hull Inflatable Boats, RHIBs).

2.3. Maritime & Shoreline Safety

2.3.1. Maritime Safety

There are no known records of the boating incidents which have taken place in the cays. There are however several known accidents, and even fatalities that have resulted from boating to and from the cays, and Lime Cay in particular. There have been direct collisions, over laden boats turning over, drowning from diving incidents, and persons being injured by propellers.

The present level of boating activity between Port Royal and Lime Cay, and around Lime Cay poses serious concern regarding safety practices.



Water taxis approaching the shore as children swim, and adults sit/wade in the path



Jet ski makes a turn beside waders, and water taxi beaches to offload passengers

Standard Boating Practice

There is mixed adherence to standard boating practice. Some vessels apparently show concern for the safe use of the water, while others seemingly have no regard for safety. Most of the vessels observed approached the shoreline in the required perpendicular manner, and at slow speeds. However, there was also evidence of a speed-boat maneuvering recklessly around the island.

On the open water there is apparent respect for the shipping channel, and the right of way of vessels, although there were observations of jet skis operating purely for recreation in the shipping channel.

Passengers on the water taxis are offered life vests, although it appeared to only be mandatory for children to wear them for the journey to and from the cay. One of the formal water taxi operators had a vessel equipped with a life raft, and signs about safety. The driver of that vessel also used a horn to alert swimmers of the approach of the vessel.

Not all riders of jet skis were observed to wear life jackets or other such personal floatation devices, and it was not possible to determine the extent to which the private boats conformed to safety requirements for floatation and distress devices.

General Use and Traffic Patterns

The general movement of vessels is from Port Royal (Morgan's Harbour, Why Knot, the RJYC or the fishing beach) through the mouth of the harbour and then south east towards Lime Cay and the opposite on return. Once at Lime Cay, private boat owners will moor and anchor their vessels at available mooring buoys and places, perpendicular to shore. Some boaters are apparently more adept at the mooring procedure than others, who may require spinning their vessel around several times before being able to moor appropriately. Water taxis approach the centre of the island, and beach their vessels to accommodate the unloading and loading of passengers.

During the weekdays there are fewer vessels plying the route. However, on holidays and weekends, the water-taxi trips increase, and there are substantially more boat owners who make the trip out to the cay.

On the Sunday when field observations were made, there were 38 motor boats moored on the western side of the island, 4 jet skis being used recreationally, 3 RHIBs, and between the two main water taxis a total of 12 trips had been made to the island by 2:00pm. Reports from regular users of the island were that the day of observation was not a heavy day for activity at the island.

With respect to swimming at Lime Cay, there are no designated areas solely for the purpose of swimming. There is therefore limited space for safe recreational activities in the water, particularly for children. Yet, the island is viewed as one of the few recreational opportunities for families on weekends.

Other safety concerns include the use of the mooring buoys installed near the island. During the field visits it was observed that several (up to 4) boats would moor to a single buoy, and while it is not known who installed the buoys or what forces they are designed to accommodate, it is quite unlikely that the buoys are designed to hold so many boats. This is a potential danger to the swimmers and other vessels around should the mooring buoy give way to the forces of the mooring lines.

2.3.2. Rescue Procedures

There are no apparent facilities for the administration of first aid, nor any identifiable rescue vessels associated with the island. An obviously intoxicated man was observed to be wearing a shirt that said 'lifeguard', but there was no designated life guard stand or facilities.

2.3.3. Safety and Aesthetics on Land

In instances where boats use a shore anchor, the mooring rope and the anchor itself pose a danger to pedestrians along the beach. In some areas, mooring hooks have been installed in the beach rock, which is used by some boaters for shore mooring, and reduces the impacts associated with beach anchors and mooring lines.

The view from the island out to sea is also greatly hindered by the line of boats along the western side of the island.

The vendors on the island also operate a sound system, which competes with the music provided by the various boats.



Example of mooring line and anchor along the beach face

2.4. Environmental Conditions

2.4.1. The Palisadoes-Port Royal Protected Area

There are several environmental issues plaguing the protected area, ranging from poor water quality, to loss of marine habitats and a decline in fish and fish catch. While the general currents in the area protect the cays from much of the pollution from Kingston Harbour, there are theories that the coral reefs and associated ecosystems in the area are being negatively affected by the outflow of untreated sewage from the up-current Harbour View Wastewater Treatment Facility.

Other concerns that affect the area are the activities associated with the shipping industry in Kingston, and in particular, the east shipping channel.

2.4.2. Solid Waste Disposal

There is a significant problem with solid waste on and around Lime Cay, which is unquestionably as a result of the entertainment and recreational activities which take place on the island. Plastic forks, spoons, knives, bags, plates and cups, glass and plastic bottles, and bones can be found in the sand and bushes on the island, as well as in the sand and rocks around the island.

Given that food is prepared and sold on the island, there is a need for adequate disposal of the waste materials. There are a few garbage receptacles placed around the cay, but these are insufficient to accommodate the waste produced by the number of people who visit the island. There are also very few signs to inform visitors about waste disposal or to encourage the proper disposal of waste.

2.4.3. Refueling & Water Pollution

There is no evidence of the refueling of vessels taking place at Lime Cay. Fuelling of boats takes place at the docks of the mooring facilities in Port Royal, and poses more of a concern for Kingston Harbour than for Lime Cay.

3. Carrying Capacity Analysis

3.1. *The Concept of Carrying Capacity*

The term carrying capacity is derived from ecological science, where it represents the number of organisms that the physical and ecological resources of a given area can support in a particular period of time. A similar meaning has been given to the term which has been adopted by various other disciplines, among them tourism management and recreational management.

3.1.1. Tourism (Visitor) Carrying Capacity

In the tourism industry, carrying capacity refers to the number of people who can use a given area in a particular period of time without an unacceptable alteration to the physical environment. For coastal and marine destinations, the determination of tourism/visitor carrying capacity has typically been associated with marine protected areas (MPAs), and has addressed the number of visitors that can be accommodated at a particular site each year without an unacceptable impact on the physical and ecological resources.

Strictly speaking, the visitor carrying capacity is a determination of the maximum number of people that can be accommodated in a given area at a given time. It asks the question *'How many visitors is too many?'*. For example, how many divers can be accommodated at a coral reef location each year without causing an unacceptable change to the reef system? Conducting such carrying capacity assessments often proves challenging given the difficulties of measuring 'unacceptable impact'. This requires knowing what amount of change to the reef is acceptable, which itself necessitates substantial data, and the findings can be quite controversial.

Giving consideration to this limitation of measuring 'unacceptable impact', a basic formula for calculating tourism (visitor) carrying capacity was developed by the WTO and UNEP in 1992. The equation is:

$$\text{Visitor Carrying Capacity} = \text{Area used by visitors} \div \text{average individual standard}$$

The average individual standard, measured in unit area per person, is the space a visitor requires for an acceptable experience at the location. This is therefore a subjective value, and is dependant on a number of factors including: the type of area, the activities undertaken and the management initiatives at the location. However, while acceptable experiences are subjective, measuring them is less difficult and controversial than measuring unacceptable impact.

This approach to determining visitor carrying capacity is more in keeping with the concept of **Limits of Acceptable Change** (LAC). The determination of LAC does not itself provide a 'carrying capacity' in its strict sense, but it provides a set of conditions, (biological, physical and social) that are deemed to be appropriate by resource managers. The determined limits are intended to reflect values, preferences, science, policy and public input, and can be maintained through a variety of policies. The LAC can therefore still answer the question, *'how many visitors is too many?'*, and often leads to a management approach that involves resource use zoning.

3.1.2. Recreational Carrying Capacity

With respect to recreational management, such as is applied in terrestrial parks and on rivers and lakes, the term carrying capacity is used to indicate the number of vessels/entities that can be operated within a defined location without compromising safe recreational use, aesthetic enjoyment, and/or environmental quality (Progressive AE, 2001). Some typical recreational carrying capacity studies assess the number of kayak entities that can occupy a waterway, or the number of water vessels that can operate on a lake at a given time without negatively affecting safety, aesthetics and/or environmental quality on the waterway or the lake. Essentially, such recreational carrying capacity assessments aim to answer the same general question '*how many is too many*'?

The general equation for determining recreational carrying capacity is as follows:

$$\text{Recreational Carrying Capacity} = \text{Area suitable for recreation} \div \text{Desired density.}$$

Desired density, measured as the number of vessels per unit area, is the space required for each vessel in order to promote safe use, aesthetic appeal and environmental quality. Similar to the average individual standard used in tourism carrying capacity determinations, the desired density is a subjective value, and is dependant on a number of factors including time, location, activities offered and management approaches. The concept of recreational carrying capacity, like visitor carrying capacity, is as much perception as it is science (Mahoney and Stynes, 1995).

3.2. Determining Recreational (Boating) Carrying Capacity

In the context of marine recreational areas and for the purpose of this study, carrying capacity can be defined as the number of vessels that can be operated in a given location without compromising safe, recreational use, aesthetic enjoyment and/or environmental quality. Calculating recreational carrying capacity can be done according to the abovementioned formula. For example, in a location with an area of 100 acres suitable for recreation, and a desired boat density of 10 acres/boat, the recreational carrying capacity is as follows:

$$\text{Recreational Carrying Capacity} = 100\text{acres} \div 10 \text{ acres/boat} = 10 \text{ boats}$$

Such a location could accommodate 10 boats at a time safely without compromising aesthetics or environmental quality.

In order to determine the area suitable for recreation and the desired densities, the following parameters need to be ascertained:

1. The **physical characteristics** of the location, including the available water surface area, the maximum depths, the mean depths, and the shoreline accessibility. This can be done from charts, maps, aerial or satellite photography.
2. The **use characteristics** of the area such as the number and types of vessels. This can be obtained from licensing records and field surveys.

3. The **usable water area**. This is a determination of the areas that can safely accommodate water-based activities. Areas that are too shallow, too rocky, have strong currents, are shipping channels etc., may be deemed not-usable, and should be subtracted from the total available water surface.
4. The **desired vessel density**. This is the most subjective component of the capacity study. In previously conducted studies, the desired densities have been determined through:
 - analysis of spatial requirements of different boat types;
 - requirements for safe vessel operation; and
 - social research (through surveys) that ascertained the user groups, their perceptions of crowding, and acceptable levels of change to the environment.
5. The **use rate**, to note the differences between typical and peak use times.
6. The potential **environmental impacts**, with an awareness of the ecology of the area, and the threats to the sensitive organisms and areas.

Essentially, no conclusive studies have been done that answer the general question: *How many vessels is too many?* There is therefore, no single standard that can be applied in all situations for the desired boating density. This can be attributed to the fact that, ultimately, recreational capacity decisions are about people’s access to recreational opportunities and the quality of their experiences (Chilman). Each location is different, and users will have different perspectives on *what is too many vessels*.

Nonetheless, the few studies that have been done with the objective of determining optimum boating densities, have come up with ranges of acceptable boating densities, based on user groups, activities, safety, and user perceptions. A few of these are summarized in the Table 3.1.

Table 3.1 Summary of Optimum Boating Densities

<i>Source</i>	<i>Recommended Density</i>	<i>Uses Prescribed</i>
Jackson et al, 1989	20 acres/boat (81,000 m ² /boat)	Waterskiing & Motor Cruising
	8 acres/boat (32,000m ² /boat)	Kayaking & Sailing
	10 acres/boat (40,500 m ² /boat)	All uses combined
Duke Power, 1999	4 acres/boat (17,000 m ² /boat)	Fishing, Sailing & Jet Skiing
	1 acre/boat (5,000 m ² /boat)	Canoe/Kayak
	9 acres/boat (36,000 m ² /boat)	Motor Boating
	12 acres/boat (49,000 m ² /boat)	Water Skiing.

3.3. Carrying Capacity Analysis for Port Royal/Lime Cay

3.3.1. Assumptions

Research has shown that with increasing density of boats, the potential for negative impacts increases. However, despite a growing interest in recreational carrying capacity and recreational boating management, only a few scientific studies have been done to determine *optimum (desired) boating densities*. These studies have primarily been conducted for lake environments, and no studies on recreational carrying capacity or optimum boating densities are known to have been conducted for marine/coastal environments.

Given the lack of a precedent marine recreational carrying capacity study, some assumptions have been made in conducting this recreational carrying capacity assessment. These are as follows:

1. The spatial constraints of an enclosed lake environment can be simulated in the marine environment, by setting a seaward boundary for the location.
2. The ranges of desired boating densities determined in lake based studies can be applied to marine locations, given that the activities are of a similar nature (e.g. fishing, water skiing, cruising, jet skiing etc.). These are presented in Table 3.1

3.3.2. Area suitable for Recreation

The area suitable for recreation around Lime Cay has been estimated using 2002 Satellite Imagery, and by setting the outer, westernmost boundary for the area 200m from the shoreline of the island, shown in Figure 3.1 by the red line.

The water surface area within the determined study location is approximately 115,000 m². The non-usable area of water has been estimated to be 30,000m², and includes the reef areas, a 50m coastal buffer to represent the swim zone, and the shipping channel at the north of the island. This leaves an estimated 85,000m² as water area usable for active recreational purposes, as indicated in Table 3.2.

Table 3.2 Area Suitable for Recreation

	Total Water Area (m ²)	Non-usable area (m ²)	Usable Area (m ²)
Area west of Lime Cay	115,000	30,000	85,000



Figure 3.1 Boundaries and non-use areas of the study area

3.3.3. Desired Density & Recreational Boating Capacity

Based on some of the previous studies done (Table 3.1) to determine optimum densities for lake conditions, a desired density of 10 acres (40,500m²) of water surface per boat has been selected as a conservative, combined density for all types of boating activity.

Applying the equation for recreational carrying capacity (Section 3.2), the boating (vessel) capacity for the western side of Lime Cay has been calculated, and is presented in Table 3.3 following.

Table 3.3 Combined Use Vessel Carrying Capacity for Lime Cay – Study Area

	<i>Usable Water Area</i>	<i>Optimum Boating Density (combined use)</i>	<i>Carrying Capacity (CC) for combined use</i>
Western side of Lime Cay	80,500 m ²	40,500 m ² /vessel	2 vessels

Based on this calculation, the study area can accommodate the active recreational use of a total of 2 motorized and non-motorised vessels combined, without compromising safe, recreational use, aesthetic enjoyment and/or environmental quality. This does not

include boats that use the area for mooring purposes or for entry or egress, and which in fact use the 50m buffer area designated for swimming.

Observations during the field assessments (presented in Section 2.2.3) indicated that there are more than 40 motorised vessels that use the study area, mostly for access and mooring. In fact, there was no apparent **active use** of the area, except for the use of jet skis recreationally, and there were never more than 4 jet skis observed using the area recreationally at the same time. However, some of these jet skis used the area that has been considered as a buffer/swimming zone in this assessment.

It should be noted, that there is far greater space available offshore of Lime Cay than accounted for in this study, and should there be a greater demand for boating activity that involved more than just access to and departure from Lime Cay, this area offshore would need to be considered in further carrying capacity assessments.

3.3.4. Constraints

As mentioned previously, recreational carrying capacity is as much perception as it is science. The determination of the carrying capacity for water vessels in Port Royal was done based on the assumptions presented in Section 3.3.1, and with several constraints. These include:

- **The short duration of the study period.** The single field observation (one day) facilitated through this study does not allow for a true assessment of vessel use patterns or density over time. No comparison can be made between the average use periods and the peak use periods.
- **The lack of site-specific user information.** Without the conduct of a 'perception' survey, there is no way to truly develop a site-specific optimum boating density for Port Royal. The social survey designed into this study is a marketing survey and addresses more the watersports market profile, and not so much the perceptions. Furthermore, this social survey is too small a sample size to develop a true picture of the user perceptions of safety and aesthetics on the water in Port Royal.

Given these limitations to the carrying capacity assessment, the findings (vessel numbers) presented in Section 3.3.3 should be used as guides, and not definitive or finite figures.

A more comprehensive carrying capacity assessment could provide a location-specific study that would provide the necessary information on perception and actual use areas and patterns, and would therefore provide a more exact assessment of recreational vessel capacity at Lime Cay. The number of each type of vessel that could be accommodated based on demand and optimum density could then be determined, and used to further guide the licensing of watersporting activities. Such a study would require the following:

- Developing a **profile of recreation users** through on-site and mail surveys. This will enable the measurement of visitor expectations, perceptions of existing conditions, and satisfaction and opinions of shoreline management. This is particularly important at **Lime Cay** as informal discussions with regular users

revealed that the boaters are quite comfortable with the current mooring practices and other activities at the island.

- Measuring recreation use patterns, with the aid of **aerial** and ground counts, over an extended period of time to account for peak and low use periods.

4. Marketing Analysis

4.1. Background & Methodology

A marketing analysis was conducted in the study area in order to determine the following:

- The current level of participation in water sports in Port Royal.
- Whether or not what was being offered in the water sports industry was what was in demand by visitors to the island.
- Whether or not the water sports operators were providing enough services to fill the needs of current and potential participants.
- Whether or not the quality of the water sports services offered made Jamaica a true competitor in the water sports industry.
- Whether or not there was space for improvement of water sports services and protection of marine and riverine areas through regulation.
- What marketing strategies would be useful in encouraging interest in Jamaica as a water sport destination?

In conducting the market survey, a questionnaire was drawn up, with emphasis placed on obtaining the views of participants in water sport activities in Port Royal. Independent, non-focused interviews were conducted with water sport operators and stakeholders in the focus areas to get a feel for the context within which the data was being gathered.

A questionnaire consisting of 11 questions was developed, some of which were split into 2 or more sections, using the objectives of the study as a guideline. With consideration of the expected unwillingness of tourists to spend vacation times completing a lengthy survey more closed-ended than open-ended questions were included. The questionnaires contained 4 biographical questions, and 7 others geared towards gleaning information on the above bullet points.

The questionnaire was pilot tested among foreign nationals residing in Jamaica and who frequently participate in water sports, to test its level of 'user-friendliness'/ appropriateness, inclusive of:

- logical sequencing of questions;
- ease of comprehension of questions and instructions; and
- possible resistance to unforeseen implications of questions.

These completed surveys and the individuals' personal assessments were discussed to see whether the intended meaning of the questions was clear, and if their responses were typical of what could be considered useful for this exercise. A copy of the survey instrument is presented in Appendix II.

A two (2) person team implemented the surveys in Port Royal. Respondents were approached randomly in the vicinity of water sports facilities, and were screened only to

see if they had already participated in water sports while in Jamaica. The researchers were not required to survey tourists only.

The areas targeted in Port Royal were Morgan's Harbour Hotel, Why Knot and the fisherman's jetty at Port Royal. This area proved the most difficult to achieve our aim. Researchers visited these areas on a Wednesday, Thursday and Sunday in July during mid morning to late afternoon. There was not much activity during the weekdays, at Why Knot on Thursday for example only a group of Japanese visitors were seen. They did not speak English. On Sunday there was mixed reaction some persons refused as they just wanted to relax and others who would have were rushing to get on the boat or to leave the location. A last effort was made on the first Tuesday in August to no avail. The end result, 13 surveys were received.

4.1.1. Constraints

- Tourists generally are not willing to spend the time to complete surveys when it interferes with their activities. With this questionnaire, it was important to visit the guest just before or after a water sport activity was undertaken or as was the case in Montego Bay while they were on or around the beach area.
- As a result of the above many of the questionnaires were hurriedly completed and the data shows that many of the questions were not answered, resulting in a high percentage of data with "no response".
- Some answers could not be processed as respondents clearly did not read the questions e.g. question 8 which ask for a list of "activities pursued in Jamaica" persons listed activities pursued in Mexico, the Dominican Republic and Mexico.

4.2.S.W.O.T. Analysis

Port Royal, once the center of all commercial activities in the Kingston area, has basically one main economic activity currently, fishing. Though the historic and cultural sites exist there has been no development in this area. There is one hotel located here which is currently being renovated. The area serves as a dock for yachts, other boats and jet skis/wave runners.

Lime Cay is a day trip venue and has recently been privatized. It is a popular week-end destination for locals as well as visitors who have local connections. Information is not readily available about the attraction hence, many visitors to Kingston are not aware of this activity.

There is a limited amount of "wreck", cave and scuba diving mostly by persons who have their own equipment. There are minimal opportunities for income to be earned as a result. Income is derived from transportation to and from the only. Some participants have there own jet skis/wave runners, scuba equipment and boats in some cases.

Strengths
<ul style="list-style-type: none"> ▪ Great beach with a good mix of sun and shade. ▪ Great family venue. ▪ Food and Bar items readily available ▪ Accessible by boat from varying locations in Port Royal. ▪ No harassment whilst in this area.
Weaknesses
<ul style="list-style-type: none"> ▪ There is no organized water sport activity available. ▪ There is no demarcation for swimming or for boating. ▪ Bathroom facilities do not have proper signage. ▪ Information is not readily available about the location, to visitors in and around the Kingston area regarding the offerings of the area.
Opportunities
<ul style="list-style-type: none"> ▪ A researcher interviewed a resident of Port Royal who stated that unless there is a steady flow of tourists who visit the area for water sport and travel without equipment, there will be no sustainable opportunities in this area. He stated that money was invested in this type of venture previously and it was unsuccessful.
Threats
<ul style="list-style-type: none"> ▪ The pollution of the waters flowing into this area is seen as a major deterrent

4.3. Findings of User Survey

The main findings of the marketing survey implemented under this study for the Port Royal area have been presented below. As previously mentioned, some of the surveys returned did not have responses to all of the questions, and so, in some instances there are percentages representing 'did not indicate'. All the percentages have been rounded to the nearest whole number.

4.3.1. Market Profile

Nationality
<ul style="list-style-type: none"> ▪ British – 23% ▪ Canadian – 8%

<ul style="list-style-type: none"> ▪ Russian – 8% ▪ Jamaica – 23% ▪ Trinidadian -8% ▪ Guyanese -8% ▪ American -15% ▪ Korean – 7%
Gender
<ul style="list-style-type: none"> ▪ Male – 46% ▪ Female – 64%
Age Group
<p>The age distribution of the respondents were as follows:</p> <ul style="list-style-type: none"> ▪ Ages 16 – 25 years - 23% ▪ Ages 26 – 35 years - 23% ▪ Ages 36 – 45 years - 23% ▪ Over 46 years - 30%
Motivation/Attitude
<p>In this area, only 12% of the participants in the survey indicated that they chose Jamaica because of the availability of water sports. The other percentages are as follows:</p> <ul style="list-style-type: none"> ▪ No response - 29% ▪ scenery/environment - 23% ▪ culture - 12% ▪ advertising and recommendations – 6% ▪ school - 6% ▪ business - 6% ▪ family - 5% ▪ 69% of the respondents stated that they were repeat visitors ▪ 8% of them were first time visitors to the Island ▪ 23% did not give a response
Type of Room Plan
<p>The majority of the persons surveyed (31%) were staying with friends and or family. Followed by 15% staying in European Plan properties, 8% were on business and 46% did not answer the question.</p>

4.3.2. Analysis of Findings

Length of Current Visit

- 8% - less than 4 nights
- 8% - 5-7 nights
- 39% - over 7 nights
- 46% - did not indicate a response

A visitor's length of stay is determined by a number of factors, including time available to them for vacation, and their level of disposable income. This question was included in order to determine if there could be any relationship between the length of stay and how much time a visitor would allocate to taking part in water sports, for instance how far away from their accommodation are they likely to travel to participate in an activity. If zoning of certain water sports activities should become a reality, a visitor's willingness to travel to participate will impact on the viability of that activity.

Watersports Preferences

The majority of respondents indicated jet skiing as their preferred watersporting activity, followed by snorkelling, then by sailing, SCUBA diving and spear fishing.

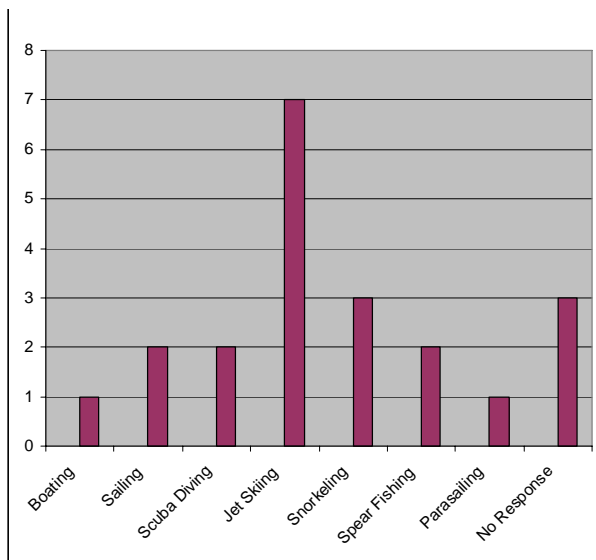


Figure 4.1 Preferred Watersport (Male & Female Combined)

Travel Time to Participate in a Watersport

The range of time that respondents were willing to travel to participate in an activity was varied. The breakdown of the percentages is as follows:

- 15% would travel for a maximum of 15 minutes
- 38% would travel for a maximum of 30 minutes

- 32% would travel for more than an hour
- 15% did not indicate time willing to travel

Environmental Awareness

A high percentage of the persons (77%) completing the questionnaires stated that they consider themselves to be environmentally conscious. Fifteen (15%) stated that they do not describe themselves as being environmentally conscious.

However, when crossed checked with the question regarding support for regulations to protect the environment 23% would be extremely supportive, while 31% would be very supportive of regulations which may restrict their sporting activity but protect the Jamaican environment.

4.4. Market Size & Potential for Growth

The total number of stopover visitors for 2004 was 190,363 or 13.5% of total market share. The corresponding figure for 2003 is 14 % of market share or 180,875 stopovers, an increase of .8%.

The market is mainly a 2 day- Saturday and Sunday one, with limited use of the capacity of the area. Few tourists traveling on their own are purchasers of this product. The market is made up of locals, Jamaicans visiting from abroad, tourists visiting family and friends and frequent visitors to the island.

As indicated by a guest staying at the Hilton, information is not readily available and the cost is prohibitive. However, when you visit the island over a period of time you “learn the ropes” of the activities of the locals.

4.4.1. Available Accommodation

Table 4.1 Available Accommodation in Kingston

	Units				Rooms			
	2000	2001	2002	2003	2000	2001	2002	2003
<50 rooms	13	13	13	14	325	325	360	356
51 - 100	4	4	4	4	282	282	282	282
101 - 200	3	2	2	2	439	306	306	306
>200 rooms	2	2	2	2	653	653	653	653
Total Hotel	22	21	21	22	1,699	1,566	1,571	1,597
Guest Houses								
Guest Houses	29	74	75	87	209	308	322	361
Resort Villas								
Resort Villas	7	2	2	2	33	12	12	12
Apartments								
Apartments	11	14	15	16	154	164	169	171
TOTAL	69	111	113	127	2,095	2,050	2,074	2,141

- Source: JTB Tourism Statistics 2003 Table 25
- The Jamaica Tourist Board in consultation with the Tourism Product Development Co. has removed some accommodation from the current listing because they either have remained closed over an extended period of time or are no longer being used as a tourist accommodation.
- The Guesthouse accommodation category since 2001 includes properties that offer Bed & Breakfast facilities.

4.4.2. Potential for Growth

The area has a lot to offer in the sphere of water sports, however, without the accompanying market, investment will not be entered into.

The water sport product needs to be diversified so as to allow licensed person to operate water sports in this area under the proper guidelines as it relates to safety.

Adequate promotion will therefore be necessary so as to give tourists the option of visiting this area and participating in the activities which are available.

4.5. Watersports - Competition for Jamaica

Jamaica is subject to competition from within and from other destinations. Within the Jamaican market, competition is primarily between the marketing regions. There has been a marked difference in the water sporting needs of visitors to the island within the last twenty (20) years. Client expectations have shifted from the glass bottom boat rides, snorkeling and diving and now include Aqua-cycles, Hobie cats, Jet-skis/Wave runners

and Para-sailing. Independent water sports operators are a “dying breed” since the larger (all-inclusive) resorts commenced operating water sporting facilities rather than outsourcing the department to sub-contractors. Initially, these independent water sports operators would use the resort as a base and were able to attract guests from villas, guest houses and smaller hotels. They are now however, marketing and selling the same products which are now already included in the all-inclusive packages. Independent operators concentrated on niche marketing at dive shows instead of one of the numerous offerings of an all-inclusive package.

Since January 2005, the Sandals chain has moved away from including SCUBA diving in the package. The once included Resort training (Introduction to SCUBA) is now available at a surcharge (US\$70 per person) with an additional US\$180 for persons wishing to be certified internationally (PADI). Of note, is the fact that one of their resorts has experienced a thirty percent (30%) increase in persons taking the certification course. Currently this resort offers between three (3) to five (5) dives per day in addition to training dives and the increasingly popular night dives. A maximum number of certified divers who this resort takes out daily are 15 – 20 persons. The increased growth in demand is most likely due to increased promotion/marketing of this revenue earner on resort by resort personnel.

Turks and Caicos, the ABC islands (Aruba, Bonaire, Curacao), the Cayman Islands, Cancun and St Lucia are five (5) of the primary regional destinations. Turks and Caicos’ development is primarily due to water sporting (SCUBA diving in particular). The ABC islands and Cancun also heavily market water sports as their primary attraction. A local Dive Operator with over 20 years diving is of the view that the offerings of the above referenced destinations pale in comparison to the wonders to be seen in Jamaica’s waters. Most lack variety and safety requirements are lacking.

4.5.1. Key Success Factors

The following factors would be essential to any efforts to effectively market Jamaica as a water sport destination:

- Effectively segment the tourism market and target water sporting enthusiasts
- Position Jamaica as a choice water sport destination offering a variety of water sporting activities blended with culture and eco-tourism
- Educate and change the mind-set of local stakeholders to the benefits of sustainable tourism development

4.5.2. Critical Issues

Tourism is the world’s largest industry with eco-tourism its fastest growing sector. The possibility of water sport developing as another niche market for Jamaica’s tourism is encouraging. Environmental degradation and pollution, harassment, limited growth potential due to space limitations in marine traffic areas, inadequate and insufficient support systems, and lack of enforcement of regulations have been cited as critical factors which could negatively impact this development.

Jamaica as a destination is still considered one the most exciting within the Caribbean. The combination of climate, geography, culture and activities provides strong

competitive advantage over the destinations (in the Caribbean). The perception of crime is the significant drawback.

To ensure a viable product, a clear and concise marketing strategy must be developed which addresses these critical issues.

With the proper marketing, there is potential for water sports to grow as another niche market in Jamaica.

4.5.3. Macro-Environment

Sociological -World wide, values are constantly changing among different population sectors. Across sectors, people are seeking a better quality of life and self-reliance. Populations are aging as a result of improved health and declining birth rates and trends indicate significant changes in family structure. These changes have brought about adjustments in the process of acquiring customers and how customers close purchase decisions.

Economical – Jamaica is a key member of the Caribbean Common market (CARICOM), which is strategically located 1,000 miles from the United States of America (USA), the world’s richest market place. The economic policies of Jamaica encourage foreign investment in areas that earn or save foreign exchange, generate employment and use local raw materials. The government provides a wide range of incentives to investors, including remittance facilities to assist in repatriating funds to the country of origin; tax holidays which defer taxes for a period of years; and duty-free access for machinery and raw materials imported for approved enterprises. (www.investjamaica.com).

The recent granting of approved tourist destination to Jamaica by China (February 2005) will facilitate a development of China’s outbound tourist market while ultimately reducing the island’s dependence on the more traditional markets (namely USA which presently accounts for 72% of visitors to the island).

The current development of the West Harbour in Port Antonio has now created modern facilities for the boating and sailing fraternity. This coupled with the proposed development of a ferry system to facilitate large cruise ship stops in Port Antonio will ensure that Port Antonio will be on the itineraries of the ever-expanding market of recreational boating. (www.portland-coc.org). This can be the catalyst to Portland regaining its position of a top Caribbean exclusive destination.

Political – Jamaica has one of the most stable democracies in the world. This is important especially to a sector such as tourism. A stable political environment will encourage investment by both local and foreign investors. It means also that there is little risk of visitors being caught in the middle of any political unrest.

Regulatory – The island boasts a most liberal and modern regulatory environment in the western hemisphere. There are not constraints to capital flows in and out of the country as exchange controls have been removed and the net international reserve is in a strong

position. Tough legislation has also been implemented to protect the integrity of the country's financial system. These measures have the full endorsement of multilateral and rating agencies as well as the private capital markets. (www.investjamaica.com).

4.6. Recommended National Watersports Marketing Strategy

4.6.1. Marketing Objectives

- Establish Jamaica as a choice destination for water sporting
- Provide world class facilities (direct and support)
- Achieve sustainability through effective regulations and enforcing of same

The priority is to establish Jamaica as a leading water sport destination while capturing the uniqueness of each resort area.

4.6.2. Segmentation & Target Market

Age: 25 - 54 years old

Gender: Male and Female

Ethnic Origin: Multinational - Jamaican, North American, Europeans, and Asian

The intention is to pursue a niche marketing strategy. Our research has shown that persons will travel for water sport in combination with other appealing factors. The diversity of Jamaica's culture and geography will play a key role in the decision made for the final venue on island.

4.6.3. Perceptual Positioning & Distribution

Promotional and advertising material ought to reflect the variety and range of water sporting activities available based on resort destination. The appeal will be directly to the water sports enthusiast love for this particular sporting activity in different sections of the same island.

The distribution channels will be the traditional channels of the tour operator/wholesaler, the travel agencies, direct through consumer shows and the Internet. Familiarization tours by travel agents and tour operators of the various water sport facilities are encouraged. Press releases on newsworthy items will be circulated (such as National Geographic recently published a photograph taken here in Jamaica of a Black shark on top of a Spotted Eagle Ray). Word-of-mouth advertising and client retention programs will provide secondary support.

4.6.4. General Recommendations

- Closer monitoring of the use of marine traffic areas in all resort areas.
- Decompression chamber required in (at least) one other resort area.
- Introduction of other water sport activities to cater to the wide cross section of consumers (such as underwater trekking, submarine underwater tour, wake boarding, surfing, Regattas (in selected areas)

- Strict regulation (with severe penalties) to reduce and/or control the effects of pollution and environmental degradation.
- Encourage investment in support systems in areas where the need has been identified.

5. Summary of Findings & Recommendations

5.1. Watersports Capacity, Zoning & Safety

While there are entities offering water taxis or shuttle services between Port Royal and Lime Cay, the watersports activity that takes place in the area is somewhat limited and is not commercial in nature, but rather associated with individuals operating their personal vessels (primarily boats and jet skis). Around Lime Cay itself, there is little active use of the water for watersports *per se*, with the exception perhaps of jet skiing. Most of the water-based activity around the island is actually boat access to, departure from and mooring at the island.

The carrying capacity study for the area (50m from the island out 200m to the west), indicates that the area can only accommodate 2 vessels at a time for **active use**, without compromising safe, recreational use, aesthetic enjoyment and/or environmental quality. However, the current practice of mooring vessels on the western side of the island in proximity to the shore severely limits the shore access to the area available for active recreation, especially on high traffic days at the island. Several vessels moor in the area that can be used for shore-based watersporting activity, and their presence inhibits such activities.

Wading, swimming, snorkeling and other activities take place in extremely close proximity to boats and their mooring lines, which poses serious safety implications with the current mixed uses of the area. There is presently no designated swimming area, nor are there any dedicated zones for particular activities.

5.2. Recommendations

Given the sparse regard for shore and marine safety in the vicinity of Lime Cay and within the context of the island as a part of a protected area, the following are recommended to address safety and environmental considerations:

1. A zoning plan should be developed for the use of the shore and water areas around the island, which should include the following:
 - A designated landing area for water taxis/shuttles. Such a landing point should either be clearly marked as an entry and egress lane (not for swimming or other activities), or a jetty should be constructed to facilitate loading and unloading of passengers and their belongings. A jetty would in fact promote the best use of open areas for recreation by 'freeing up' nearshore water area, would promote safer access to the beach, and would reduce the cumulative beach impact from the repeated beaching of the water taxis;
 - Designated mooring areas;
 - Areas designated for swimming and wading only; and
 - Areas specifically for the use of jet skis.

2. A standardized buoy system should be used to demark designated use areas. This would provide a visual indication to water craft and bathers as to the distinction between appropriate uses. Aesthetics should be considered in the determination of the buoy systems.
3. Water-Taxi operators should be required to do training in safety procedures, and have the appropriate coxswain-driver certification from the Maritime Authority of Jamaica.
4. Operators of privately owned vessels should also be required to undergo training in marine safety procedures, and to obtain the necessary driving certification from the Maritime Authority.
5. The island needs to have a designated management entity that will see to the appropriate handling of solid waste, and will maintain the zoning and other infrastructure on the island.

It is imperative to note that the above recommendations require systems for monitoring and enforcement. The legal implications of these recommendations will be further discussed in the final report for the overall *Carrying Capacity & Safety in Marine Recreational Areas Study*.

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STUDY TO DETERMINE CAPACITY & SAFETY IN MARINE RECREATIONAL AREAS
FINAL LOCATION REPORT – PORT ROYAL

Water Sports Questionnaire

WE ARE GATHERING INFORMATION ON WATER SPORT ACTIVITIES IN JAMAICA, AND WOULD GREATLY APPRECIATE YOUR HELP IN COMPLETING THE FOLLOWING SHORT QUESTIONNAIRE. THIS WILL HELP TO IMPROVE THE QUALITY OF ACTIVITIES OFFERED HERE.

Please tick [✓] the dialogue boxes which agree with your answer. Otherwise, write your answer in the space provided.

1. Are you: male female

2. Please indicate the age group to which you belong:

under 15 16 – 25 26 – 35 36 – 45 46 – 55 over 56

3a. Nationality: -----

3b. Country of Residence: -----

3c. If you are not Jamaican, is this the first time you have been to Jamaica? yes no

3d. Why did you choose Jamaica as your travel destination? (*Select as many answers as are correct for you*)

advertising/recommendation culture (art, music, cuisine) scenery/environment water sports
 other (please state _____)

(If you live in Jamaica, please omit questions 3e and 3f, and go directly to question 4)

3e. As a visitor, what type of package are you using?

European Plan (room only) All-inclusive (room, meals, drinks) Other (Please state: _____)

3f. What is the length of your current visit?

4 nights or less 5 – 7 nights more than 7 nights

4. Please state the type of water sports you enjoy. (*Do not state any activity you have not taken part in within the last 3 years.*)

THANK YOU FOR YOUR TIME AND HELP

5. Do you choose destinations that cater to your preferred water sport activities? yes no

6. While on your visit, how long would you travel to take a part in a water sport?
 15 minutes 30 minutes 1 hour more than 1 hour

7a. Do you consider yourself to be environmentally conscious? yes no

7b. How supportive are you of regulations which may restrict your water sport activities, but protect the Jamaican environment?
 extremely very neither for nor against a little not at all

8. Please list the water sports you have pursued while in Jamaica.

Please refer only to water sport activities in which you have participated within the last 3 years. Rate each sport as indicated in the table below, using the values: 5 = high, 4 = very good, 3 = acceptable, 2 = low, 1 = non-existent. In the last column, circle the appropriate answer.

TYPE OF WATER SPORT	LOCATION	OVERALL SAFETY	OVERALL MAINTAINANCE OF THE FACILITIES	YOUR COMFORT WITH EQUIPMENT	COMPETENCE OF OPERATORS	CUSTOMER SERVICE	ACCESSIBILITY	VALUE FOR MONEY	INTEREST IN REPEATING ACTIVITY
									Yes/No
									Yes/No
									Yes/No
									Yes/No
									Yes/No
									Yes/No

THANK YOU FOR YOUR TIME AND HELP

9a. Is there anything you were particularly dissatisfied with? yes no

9b. If yes, please state:-----

10a. Is there anything you were particularly satisfied with? yes no

10b. If yes, please state:-----

11. Do you have any recommendations regarding water sport activities in Jamaica? (*suggestions for improvement, types of activities, etcetera*) -----

