

# **LONG BAY, BEEF ISLAND DRAFT DETAILED BEACH MANAGEMENT PLAN**



**Ministry of Natural Resources and Labour**  
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# EXECUTIVE SUMMARY

# 1.0 - INTRODUCTION

Long Bay, Beef Island is an environmentally significant area – it represents one of the few remaining whole beach systems in The Virgin Islands with an intact salt pond and well-developed beach dune system. It also serves as an important turtle nesting beach and bird habitat. It is distinguished as the only beach on Tortola safe for swimming year-round and has always been an important and special part of the cultural and social life of the people of the surrounding villages in particular, and the Territory more broadly. It is estimated that Long Bay is the third most visited beach in the Territory after the beaches at The Baths, Virgin Gorda and Cane Garden Bay, Tortola. Long Bay is the most popular beach on Tortola for residential use and is of high significance to users.

## 1.1 Purpose of the Plan

In recent years, the environment and nature of activities at Long Bay have changed dramatically. Since the passage of Hurricane Irma in 2017 and impact to Cane Garden Bay, the beach has emerged as a prominent tourist destination for cruise ship passengers in particular. Additionally, opening up of the beach dune system through intentional clearing and destruction of vegetation has facilitated a new range and density of activities by residents on the beach. As a result of these recent changes, the beach now experiences 11 of the 17 potential threats to beaches identified in The Virgin Islands Beach Policy, 2020. In the absence of immediate management measures, the beach is at risk of experiencing a further three (3) threats.

As such, development of a Beach Management Plan was prioritized by the Ministry to urgently address these threats and restore and maintain user satisfaction. The planning process first sought to determine a vision for the beach in the current context; the purpose of the Plan is to create the enabling environment to realize that vision.

## 1.2 Policy Basis

The Virgin Islands Beach Policy, 2020 provides the policy basis for the development of the Long Bay, Beef Island Beach Management Plan. Specifically, as part of the decision support tools comprising the Territory's beach management framework, the Policy calls for the development of "beach management plans at the level of individual beach classes or individual beaches." Furthermore, for the subset of beaches where commercial activities and special events will take place, the Policy requires establishment of carrying capacities and occupancy levels.

The Beach Management Plan for Long Bay was developed in keeping with the following guiding principles enshrined in the Beach Policy:

- **Public trust:** Beaches hold a special place in the natural patrimony of the Territory and management decisions should be rational.
- **Sound scientific understanding:** Decisions shall be based on sound scientific understanding of the connectivity between the beach habitat and associated ecosystems, such as ponds and mangroves.
- **Environmental integrity:** Ensure sustainable development to maintain the integrity of the beach.
- **Climate adaptation and resilience:** Protect and rehabilitate beaches and support habitat to enhance natural resilience, including protection by declaration as national parks or environmental protection areas, where relevant.
- **Health and safety:** Facilitate high standards for the health and safety of beach goers.
- **High quality beach experience:** Ensure exceptional quality of experience for residents and visitors through the identification of acceptable limits of change within a beach community via regulation and enforcement
- **Public access:** Beaches are public spaces that should have free access from any part of the waters to the shores and reasonable access across lands to shores and beaches
- **Crown land:** All shores and beaches are vested in the Crown.

# 2.0 - EXISTING CONDITIONS

## 2.1 General Characteristics of the Beach

Long Bay is a pristine, crescent-shaped, white coralline sand beach located on the north shore of Beef Island, The Virgin Islands between Little Mountain and the Terrance B. Lettsome International Airport. The centre of the beach is oriented north-northeast and the beach is sheltered from high wave energy by Guana Island, Little Camanoe and Great Camanoe.

Long Bay, Beef Island is classified as a barrier, embayed, sandy beach. The main beach stretches 2,420 feet (738 meters) from its western end at the foot of Little Mountain to the eastern public entrance close to the Airport runway. The beach continues another 1,740 feet (530 meters) eastward, wrapping around a salt pond until it terminates at the Airport runway. The shoreline in this segment of the beach transitions to more of a beach rock<sup>1</sup> and coral rubble composition with a mixture of sand, coral and shells. This segment of the beach is not typically used for swimming given the reef and rocky substrate which extends up to the shoreline.

Figure 2-1 shows the location of the beach. Details about the natural resources and ecological habitats, biodiversity, including threatened and endangered species, and swimmer safety is presented in this section.



Figure 2-1. Location of Long Bay on Beef Island.

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<sup>1</sup> Beach rock is a cemented accumulation of sand, pebbles, and cobbles formed at or below sea level Island. Source: Resources Foundation (2015). An Environmental Profile of the Island of Tortola, British Virgin Islands. [http://www.irf.org/wp-content/uploads/2015/10/TortolaEnvironmentalProfile\\_201510.pdf](http://www.irf.org/wp-content/uploads/2015/10/TortolaEnvironmentalProfile_201510.pdf)



## 2.1.1 Natural Resources, Ecological Habitats and Biodiversity

Long Bay, Beef Island is home to critical natural resources and ecological habitats as described below and depicted in Figure 2-2. Importantly, Long Bay is one of the few remaining examples of a whole network of interconnected marine and coastal ecosystems, including coral reefs, seagrass meadows, sandy shoreline, sand dunes, mangrove forests and salt ponds. The area is also a habitat for endemic, threatened and globally endangered species and important plant species.



Figure 2-2. Natural resources and ecological habitats present at Long Bay, Beef Island. The aerial image (top) was taken in 2017 before Hurricane Irma. The drone below (bottom) was taken in 2018 post Hurricane Irma.

## **PRISTINE COASTAL WATERS**

Long Bay has coastal waters with very low turbidity and nutrient loads, resulting in crystal clear waters. The beach's pristine water quality is core to its natural beauty and benefits. The historic measure of water quality parameters at Long Bay to be maintained by implementation of the Plan is set out in the Environmental Protection and Restoration Plan layer.

Coastal water quality is threatened by land-based litter and pollution and, on a temporary basis, by mass sargassum landings.

## **SEAGRASS MEADOWS**

Long Bay has extensive, healthy seagrass meadows that extend across the majority of the bay. On the western end of the bay, the seagrass meadow approaches the shoreline and gradually retreats as one moves along the beach in an easterly direction. From about 100m before the centre of the beach until the eastern entrance, the seagrass meadows start approximately 100-175 ft offshore, beyond the depth that users typically swim and recreate in. The primary species of seagrass present are turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*).

Seagrass meadows play a number of ecologically important roles as they reduce wave energy, allowing sediments to settle out of the water column. The horizontal stem and roots trap sediments and stabilize the sea bed, whilst many types of algae and invertebrates are dependent on seagrass and live on their blades. Seagrass meadows remove nutrients from the water, which is very important for water quality in shallow areas such as Long Bay. It is a food source for many animals, including endangered sea turtles.<sup>2</sup> The seagrass meadows also provide an important habitat, shelter and nursery for conch, juvenile fish and stingrays, among other marine life. Additionally, seagrass meadows provide an important carbon sequestration function.

## **CORAL REEFS**

Long Bay has two fringing reefs, one on its western end and the other on its eastern end. The western reef in particular had quite a healthy mix of hard corals, soft corals and sea fans with a high presence of *Montastrea* sp. Historically, there was a popular snorkelling trail along the western reef, maintained by the former Conservation and Fisheries Department. Recent data on the condition of the reefs is not available, however, it is assumed that the health of the reefs have declined due to a combination of bleaching events, coral diseases that have affected the Territory and mass sargassum landings that temporarily affect nearshore water quality.

## **SANDY SEASHORE**

The white, medium to coarse grain sand of the seashore is another natural resource core to the beauty, attraction and recreational value of Long Bay. Additionally, the sand serves as a nesting ground for globally endangered turtle species, including the leatherback turtle (*Dermochelys coriacea*), locally known as the trunk turtle, and the hawksbill turtle

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<sup>2</sup> National Parks Trust (June 2012). Draft Information Sheet on Ramsar Wetlands - Long Bay, Beef Island Ramsar Site

(*Eretmochelys imbricata*). The sand has a higher marine versus terrestrial content. The width and slope of the sand varies seasonally with cycles of accretion and erosion.

The sandy seashore is threatened by sand mining, especially given recent building material shortages. Mass landings of sargassum also limit use of the seashore and, without careful removal, can result in damage to the seashore, including removal of substantial quantities of sand.

## SEAGRAPE TREELINE

Long Bay historically had a dense seagrape treeline that stretched the entire length of the eastern side of the beach (from central to eastern access) and most of the western side (from central to western access). The seagrape trees typically occurred in clusters of 2-3 trees spaced about 16 feet (5 meters) apart. The seagrape trees served many important functions within the beach system, including being the frontline defence against beach erosion both by wave and wind action. Seagrape tree roots actively bind the sand together and their complex network of broad leaves act as a sand trap. Additionally, the seagrape trees serve as an important source of shade for beach goers and are critical for regulating the temperature of turtle nests which are often in close proximity on either side of or within the seagrape treeline.

Following the passage of Hurricane Irma and the change of use patterns at the beach, the majority of seagrape trees have been destroyed. Many trees were uprooted during Hurricane Irma and some trees were subsequently cut. Additionally, wooden barriers have been built around some remaining trees (Figure 2-3).



Figure 2-3. Example of wooden barrier built around remaining seagrape tree



A detailed vegetation survey of the beach on June 27, 2022 as a part of the beach planning process revealed that only 26 occurrences of seagrape trees remain along the entire length of the beach, with 7 of those being clusters of 2-3 trees each, for a total of approximately 33 seagrape trees. Additionally, there is only a short 25-meter segment of the beach, just west of the centre, where the historic seagrape tree density still remains. Based on this representative historic density, the current population of seagrape trees is approximately 8 times less than the historic density.

Figure 2-4 shows the dramatic loss of the seagrape treeline and beach dune vegetation based on aerial photographs taken in 2002 and 2020.

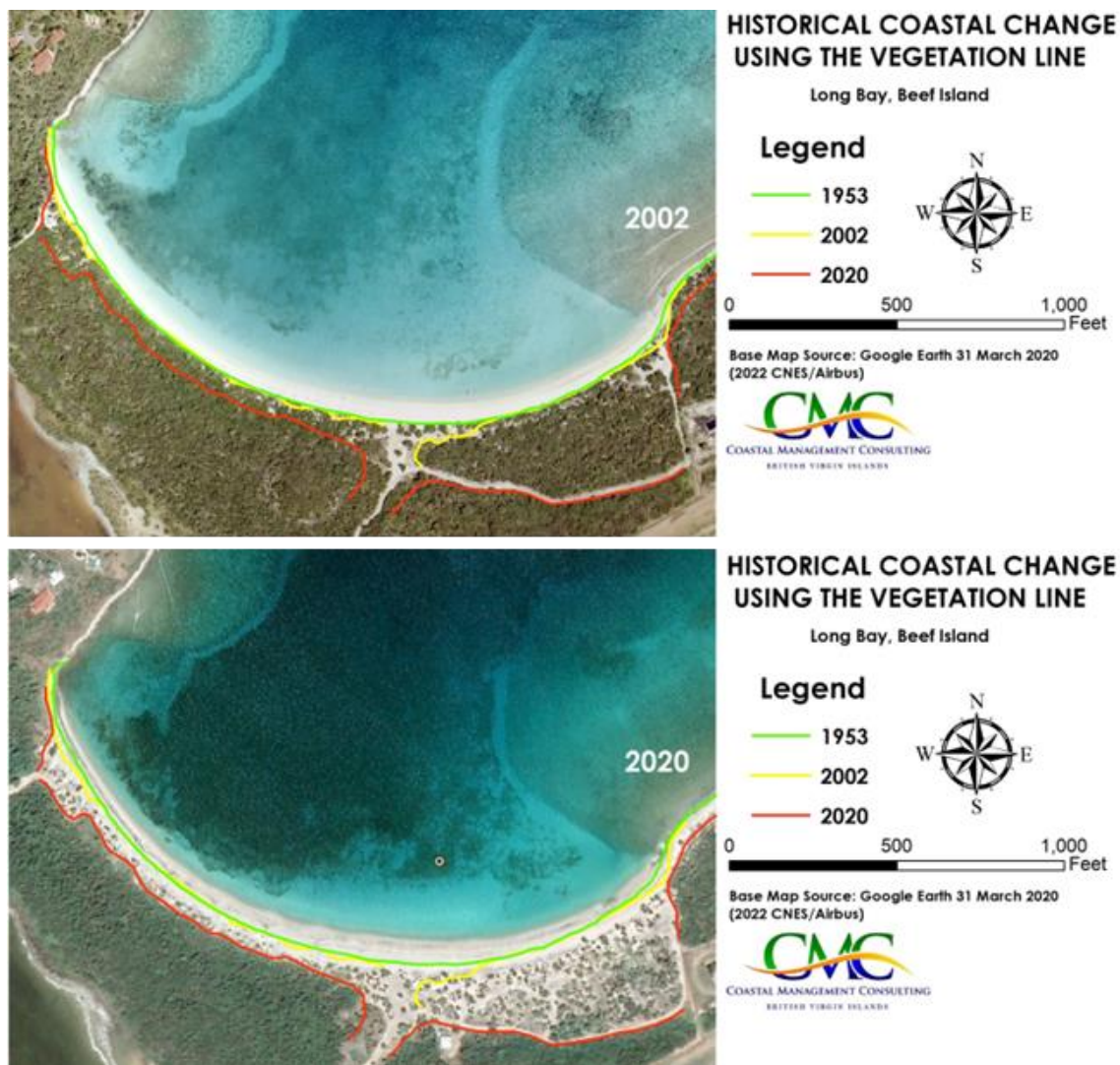


Figure 2-4. Loss of the seagrape treeline and beach dune vegetation between 2002 and 2022.

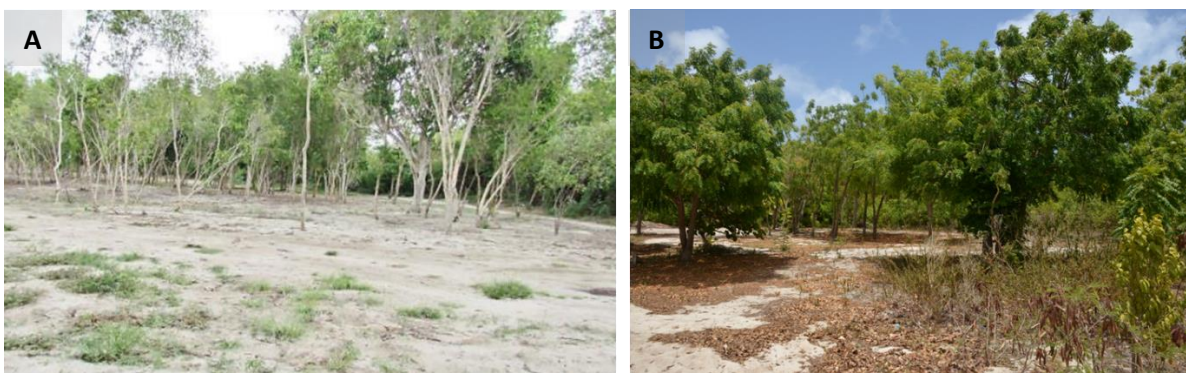
The photograph collection in Figure 2-5 taken immediately before Hurricane Irma in September 2017 gives an indication of the historic density of the seagrape treeline.



*Figure 2-5. Historic density of the seagrass treeline at Long Bay, Beef Island*

## **SAND DUNE**

Long Bay has a well-developed sand dune system. The sand dune acts as an important sand reserve for the beach and also serves as a nesting ground for hawksbill turtles. The western portion of the sand dune at Long Bay remains largely intact, covered in dense vegetation. The eastern dune, however, has experienced significant human disturbance. The dune vegetation was substantially cleared around 2015, before Hurricane Irma. A photo of the result of that clearing is included in the Environmental Profile of the Island of Tortola, British Virgin Islands published in 2015 and is duplicated in Figure 2-6a. The remaining sand dune vegetation was impacted by Hurricane Irma in September 2017. As a result of both impacts, there is now only approximately 20%-25% (a fifth to a quarter) vegetation cover remaining (see Figure 2-4). Furthermore, the remaining vegetation cover is primarily Neem trees, an invasive species (Figure 2.6b). There is also a high level of littering and soiling of the sand from barbequing.



*Figure 2-6. (A) Eastern beach dune at Long Bay cleared before Hurricane Irma. Credit: Island Resources Foundation. (B) Recovery of the beach dune primarily by invasive Neem trees.*

## SALT PONDS

There are two salt ponds in close proximity to Long Bay. The main pond is approximately 17.5 acres and is located behind the western dune system, adjacent to the main public road (Beef Island Road) and west of the central access road to the beach. The secondary, smaller pond is 9.1 acres and is located behind the eastern tail of the beach abutting the Airport runway. Both ponds are inundated between 6 – 12 months of the year and are hypersaline with a mean salinity of 61ppt to 90ppt.

The salt ponds play an important nutrient and sediment filtration role, helping to protect the pristine water of the beach. The ponds also help to stabilize the shoreline and provide an important habitat for a range resident and migratory birds, including flamingos. Visiting bird watchers and wildlife photographers are attracted to the salt ponds.

## MANGROVES

Mangroves exist around the fringes of the salt ponds and also form a linear forest along the eastern side of the main central access road to the beach. Like the salt ponds, mangroves play an important filtration role and provide important bird habitat.

## BIODIVERSITY

The natural resources and habitats described above support a range of biodiversity, including some endemic, threatened and globally endangered species. A list of plant species found within the dune system is provided in Appendix I. The full results of the detailed vegetation survey of Long Bay conducted on June 27, 2022, including species present per 50m segment along the beach are also presented in Appendix II. Given the dense vegetation cover, the survey of the western sand dune was limited to species visible from the front edge of the dune. As such, there may be species present that were not captured by the survey.

The salt ponds provide a habitat for common species of waterbirds, such as black-necked stilt (*Himantopus mexinacus*), white-cheeked pintail (*Anas bahamensis*), green heron (*Butorides virescens*), greater flamingo (*Phoenicopterus ruber*) and least sandpiper (*Calidris minutilla*). Some of the wading birds observed at these ponds are reported very infrequently in The Virgin Islands, such as northern shoveler (*Anas clypeata*), ring-necked duck (*Aythya collaris*), ruddy duck (*Oxyura jamaicensis*), and pied-billed grebe (*Podilymbus podiceps*).<sup>3</sup>

### 2.1.2 Swimmer Safety

Overall, Long Bay is a safe beach for swimming with low risks. Swimmer safety signage is posted at the beach along with rescue equipment (Figure 2-7). There have been very rare incidences of drownings at Long Bay. Given the mild and relatively safe conditions at Long Bay, there has historically not been a lifeguard stationed on the beach.

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<sup>3</sup> National Parks Trust (June 2012). Draft Information Sheet on Ramsar Wetlands - Long Bay, Beef Island Ramsar Site





Figure 2-7. Example of swimmer safety signage and rescue equipment at Long Bay, Beef Island

## WAVE ACTION AND DEPTH

Due to its orientation and sheltering, Long Bay is typically calm year-round, even during the winter months when north shore beaches of Tortola experience large swells, locally known as “ground seas.” While mainly sheltered, swell directly from just west of north (250°) does on occasion make it into the bay, creating a shorebreak along the beach and a right-hand wave on the eastern end of the bay.<sup>4</sup> Additionally, the seabed at Long Bay normally has a very gradual slope, with no sudden drop-off into deep waters. This provides for a fairly wide zone that is shallow enough for wading and allows users to control their depth to a safe position based on their swimming capabilities. This makes Long Bay distinct as the only beach safe for swimming year-round on Tortola.

## MARINE LIFE

Long Bay is home to stingrays, particularly on the western segment where seagrass beds are denser and closer to shore. These, however, are not aggressive and there have not been any reports of injury to swimmers. Long Bay also experiences occasional short-term influxes of jelly fish. These are typically the moon jellyfish (*Aurelia aurita*) which has a mild sting. Signage (flags) and beach safety advisories are used to warn swimmers of jelly fish influxes.

<sup>4</sup> Ocean Safety – Ocean Rescue BVI Lifeguard Service (2015). Beach Rescue Risk Assessment Report: The North Shore – Consolidated 2015

## **BOATING TRAFFIC**

Historically, boating traffic at Long Bay was limited to power boats and digynies that would anchor at the beach during special events once or twice a year, including Fisherman's Day.

Boating traffic remains low but has increased to include more frequent use by power boats and digynies as well as occasional temporary anchoring of yachts with fleets of up to 5 or 6 at a time observed.

## **2.2. Land Ownership and Use**

The seashore up to the highwater mark is Crown property. The beach at Long Bay is bound by four (4) parcels of land in Blocks 3640B and 3740B of the Beef Island Group with ownership by the Crown, the BVI Airports Authority and private entities as follows:

- Parcel 40, Block 3640B (51.69 acres) – Crown
- Parcel 6, Block 3740B (12.09 acres) – Crown
- Parcel 2, Block 3740B (10 acres) – BVI Airports Authority
- Parcel 48, Block 3640B (51.64 acres) – Private

The majority of the land bordering the beach, in particular that part used primarily for public recreation - from the western entrance to the eastern entrance – falls within Parcel 40 which is owned by the Crown.

Parcel 40 was acquired by the Crown from a private owner on the basis of a 2004 Cabinet decision (Cabinet Minute No. 414/2004) and a subsequent Agreement for Sale and Purchase dated May 9, 2005 for the amount of \$5,595,478.98. The purchase was concluded in 2008 when the final payment was made. The Cabinet decision expressly states that “the land be preserved as wetland to be managed by the National Parks Trust.” Following the Cabinet decision, the process to declare Long Bay a National Park/Marine Park under section 15(b) of the National Parks Act, No.4 of 2006 was initiated and got to the stage of the legally required advertisement of the proposed declaration which was published for public comment in late 2018. A copy of the advertisement is contained at Appendix III.

The land parcels bordering Long Bay, Beef Island and the surrounding parcels are shown in Figure 2-8 below.





*Figure 2-8. Land parcels bordering and surrounding Long Bay, Beef Island*

## 2.3 Public Access

Section 61 of the Physical Planning Act, 2004 requires that “there shall be at least one public landward access to every beach in the Territory.”

From the main public road (Beef Island Road), there are two accesses to Long Bay within close proximity to each other:

- a) The main access to the beach is an unpaved road that borders the eastern side of the main salt pond and leads to the central and eastern entrances of the beach. It is important to note that the start of this access road falls within Parcel 19, Block 3640B, a private parcel.
- b) A secondary access is a private estate, concrete road through Little Mountain which leads to the western entrance of the beach. At times in the past, a chain has been used to restrict public access to the beach via this road; however, in recent years the access has remained open at all times.

The two points of access from Beef Island Road and three internal entrances to the beach are highlighted in Figure 2-9 below.

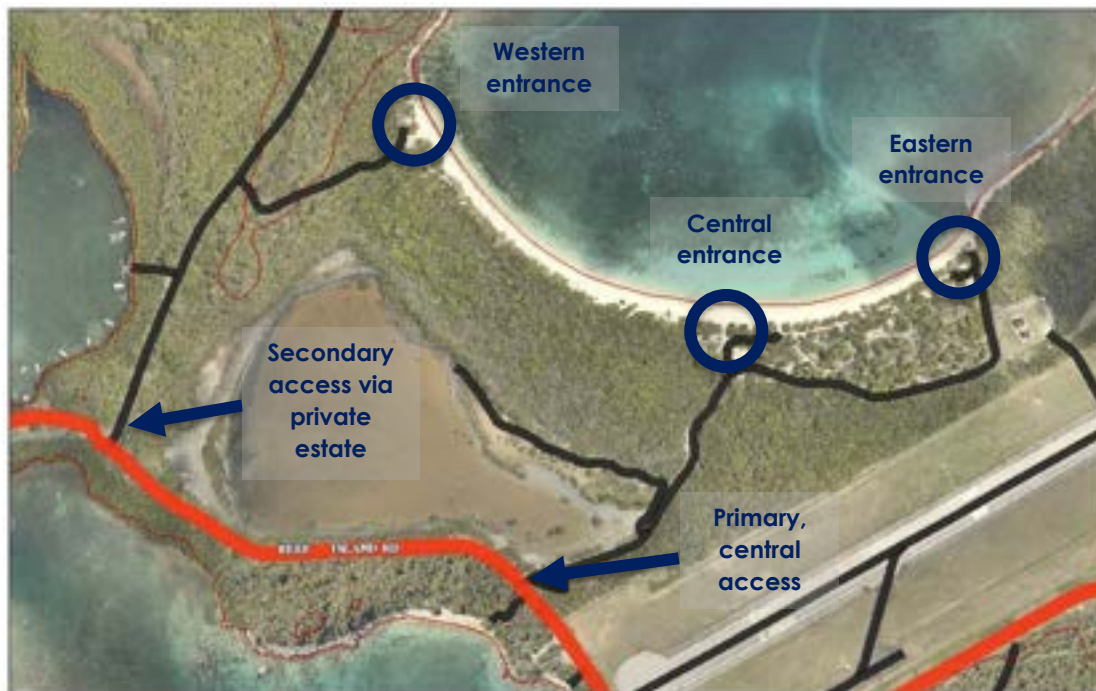


Figure 2-9. Accesses to Long Bay from the main public road (Beef Island Road) and internal entrances to the beach.

## 2.4 Traditional Uses, Benefits and Values

Long Bay has significant environmental, social, recreational, cultural and spiritual value as represented in Figure 2-10 below.

Environmental	Social & Recreational	Cultural	Spiritual
<ul style="list-style-type: none"> <li>•Pristine water quality</li> <li>•Dense seagrass beds</li> <li>•Coral reefs</li> <li>•White, sandy seashore</li> <li>•Healthy sand dunes</li> <li>•Mangroves</li> <li>•Salt ponds</li> <li>•Marine life habitat</li> <li>•Sea turtle nesting site</li> <li>•Bird habitat</li> </ul>	<ul style="list-style-type: none"> <li>•Family picnics</li> <li>•Birthday parties</li> <li>•Office fun/family days</li> <li>•Swimming</li> <li>•Water sports (windsurfing and kayaking)</li> <li>•Physical therapy</li> </ul>	<ul style="list-style-type: none"> <li>•Public holiday celebrations</li> <li>•Emancipation celebrations</li> <li>•Fisherman's Day celebrations</li> </ul>	<ul style="list-style-type: none"> <li>•Personal spiritual renewal and well-being</li> <li>•Relaxation</li> <li>•Meditation</li> <li>•Outdoor church services and gatherings</li> <li>•Baptisms</li> </ul>

Figure 2-10. Environmental, social, recreational, cultural and spiritual values of Long Bay, Beef Island

Historically, up to 2017 and the impact of Hurricane Irma, Long Bay was a recreational beach with no permanent commercial activity. The beach was primarily used and enjoyed by residents, especially persons from the East End, Long Look and surrounding communities on the eastern side of Tortola, with limited use by tourists. For the majority of its history, tourists who visited the beach were typically overnight guests who arrived independently in small numbers versus in large numbers by organized tours.

The beach has traditionally offered a quiet, safe environment and has been critical to the quality of life of residents, offering an invaluable and sacred place for relaxation, spiritual renewal and family-friendly recreation. The beach was entirely undeveloped until the construction of the public restroom facility by the Ministry of Natural Resources and Labour in 2020. The undeveloped environment allowed for a fully immersive nature experience. Studies have shown that natural spaces for outdoor recreation and relaxation are critical for mental health and well-being and are becoming rare in The Virgin Islands, especially the population centre, Tortola.

Additionally, Long Bay has always been significant in the cultural and social life of Tortola and the wider Territory, serving as the venue for celebration of public holidays, including activities during the Emancipation Festival, such as being the end point of the East End Rise and Shine Tramp. The beach was also used for the annual Fisherman's Day celebration on Territory Day, family picnics, birthday parties, office fun/family days, occasional nature-based church services, other religious gatherings and baptisms. A highlight of Fisherman's Day – the fishing tournament weigh-in – is pictured in Figure 2-11.

Swimming has traditionally has been the dominant water-based activity at the beach. Long Bay was used on occasion by a handful of windsurfers and kayakers; however, other water sports were not present. Long Bay was never utilized as an anchorage. Historically, boating traffic at Long Bay was limited to power boats and digynies that would anchor at the beach during special events once or twice a year, especially during Fisherman's Day celebrated on July 1 and organized by the former Conservation and Fisheries Department.



*Figure 2-11. Fish weigh-in at Long Bay, Beef Island during the annual Fisherman's Day celebration.*



## 2.5 Current Beach Uses and Facilities

### 2.5.1 Beach Uses

The nature of the use of the beach has changed significantly since Hurricane Irma in September 2017. In particular, the economic potential of the beach is being explored and the range of social and recreational uses has expanded. Views of the beach from the seashore taken in 2019 and 2022 reflecting these changes are shown in Figure 2-12. More photographs of current uses are included in Appendix IV.

New activities at the beach are described below. The driving factors for the changes in use have been:

- Impact to Cane Garden Bay from Hurricane Irma which caused a temporary diversion of cruise ship passenger traffic to Long Bay which was persisted; Long Bay has now evolved into its own attraction
- Clearing of the eastern sand dune system, opening it up to heavy vehicular traffic which has facilitated new uses and behaviours
- Changes in social and economic circumstances following Hurricane Irma and the COVID-19 lockdowns which created a greater demand for outdoor spaces for relaxation and recreation



Figure 2-12. (A) View of the beach from the seashore in 2019. (B) View of the beach from the seashore in 2022.

## HEAVY VISITATION BY CRUISE SHIP PASSENGERS

Long Bay, Beef Island is now visited by up to approximately 650 cruise ship passengers on cruise ship days. Approximately 500 of these are through two organized cruise ship tour operators. Traffic from independent taxi operators ranges between 80-150 guests per day.

## PERMANENT COMMERCIAL ACTIVITY

Permanent commercial activity evolved around cruise ship passenger arrivals post Hurricane Irma. Temporary permission to operate commercially on the beach for one (1) year was given to two vendors by the Ministry of Natural Resources and Labour. The conditions for permission required that no permanent structures be built. This permission has since expired and no other vendor permissions have been granted by the Ministry. Notwithstanding this, there are now a total of seven (7) long-term vendors operating on the beach as detailed in Table 2-1. Images of associated facilities are presented in Figures 2-13 to 2-16.

*Table 2-1. Product offerings of the six (6) vendors operating at Long Bay, Beef Island*

<b>Vendor</b>	<b>Bar/Restaurant</b>	<b>Beach Chair Rental</b>	<b>Water Sports</b>	<b>Souvenir/Beach Products</b>
#1	X	X		
#2	X	X		
#3	X	X	X	
#4		X		X
#5				X
#6				X
#7			X	

Two of the three bars/restaurants have wooden bar structures and outdoor eating areas with a combined total of 22 picnic tables housed under open-sided tents. The third bar/restaurant has a fully enclosed structure with a deck. All bars/restaurants rent beach chairs as a part of their operations and one also rents watercraft.

All souvenir vendors operate under open tents. One vendor rents beach chairs as a part of their operations. There is one strict water sports operator with no attached facilities.



Figure 2-13. Existing bar/restaurant operations at Long Bay, Beef Island



Figure 2-14. Existing souvenir operations at Long Bay, Beef Island

## COMMERCIAL BEACH CHAIR OPERATION

Four (4) of the six vendors include beach chair rentals as a part of their operation, including all bars/restaurants and one souvenir vendor. During a field survey on June 30, 2022 (a non-cruise ship day), a total of 403 beach chairs were observed on the beach, 241 of which were set out. Of these, the majority (254) appear to belong to a single vendor. A total of 95 beach chair umbrellas were counted as well as 60 cupholder tables for beach chairs. There have been no permits issued by the Ministry of Natural Resources and Labour for commercial rental of beach chairs at Long Bay. The beach chairs are often left out for extended periods when not in use (see Figure 2-15). This is contrary to The Virgin Islands Beach Policy 2020 which requires that all beach chairs are immediately removed unless they are in use.





*Figure 2-15. Unoccupied beach chairs left out at Long Bay, Beef Island in June 2022*

## **COMMERCIAL WATER SPORTS**

A water trampoline was introduced in 2018/2019 attached to a vendor without permission for use of the seabed. The water trampoline has since been removed. There is now one independent water sports operator renting kayaks. In addition, one bar/restaurant operator rents watercraft as part of their operation. Kitesurfing classes are also offered at Long Bay.



*Figure 2-16. Water sports activities emerging at Long Bay, Beef Island post Hurricane Irma*

## **PARTIES WITH LOUDSPEAKERS OR INDIVIDUALS PLAYING LOUDSPEAKERS CLOSE TO THE SEASHORE**

Historically, before the opening up of the eastern sand dune to vehicular traffic, large parties and use of loudspeakers was fairly infrequent and persons for the most part observed the rule of requesting permission to use the beach for such activities. In recent years, however, large, loud parties or individuals operating loudspeakers from their vehicle within the dune in close proximity to the shoreline have become routine, occurring almost every Saturday and Sunday and lasting for most of the beach day. For the most part, persons have parties and operate

loudspeakers without the requisite permissions. This activity is now spreading to the edge of the western sand dune near the western entrance.

Excessive noise levels have now stymied some of the traditional uses of the beach and opportunities for quiet enjoyment of the beach for relaxation, spiritual renewal and family-friendly recreation is limited.

### **HEAVY BARBEQUING/OUTDOOR COOKING ACTIVITY WITHIN THE EASTERN SAND DUNE**

There are at least 4-5 permanent makeshift barbeque pits/outdoor kitchens along the eastern dune system close to the seashore. An example of these is shown in Figure 2-17. This activity poses a fire risk, soils the sand and encourages littering of the sand.



*Figure 2-17. Example of makeshift barbeque pits/outdoor kitchens along the eastern dune system*

### **MORE REGULAR ANCHORING BY YACHTS**

Anchoring of yachts is now observed up to a few times per month in some instances. Groups of up to 5-6 yachts have been observed at once.

### **2.5.2. Public Facilities**

Existing public facilities include a restroom constructed in 2020 (Figure 2-18). The restroom facility contains 4 female toilets and 4 male toilets, including one handicap accessible toilet each. There are 3 female sinks and 4 male sinks for hand washing. There is an informal outdoor shower facility with 3 stalls supported by an elevated water tank in close proximity to the restroom (Figure 2-19a). Additionally, there are a handful of semi-enclosed shade huts with benches for public use scattered within the sand dune (see Figure 2-19b). More photos of existing conditions are included in Appendix IV.



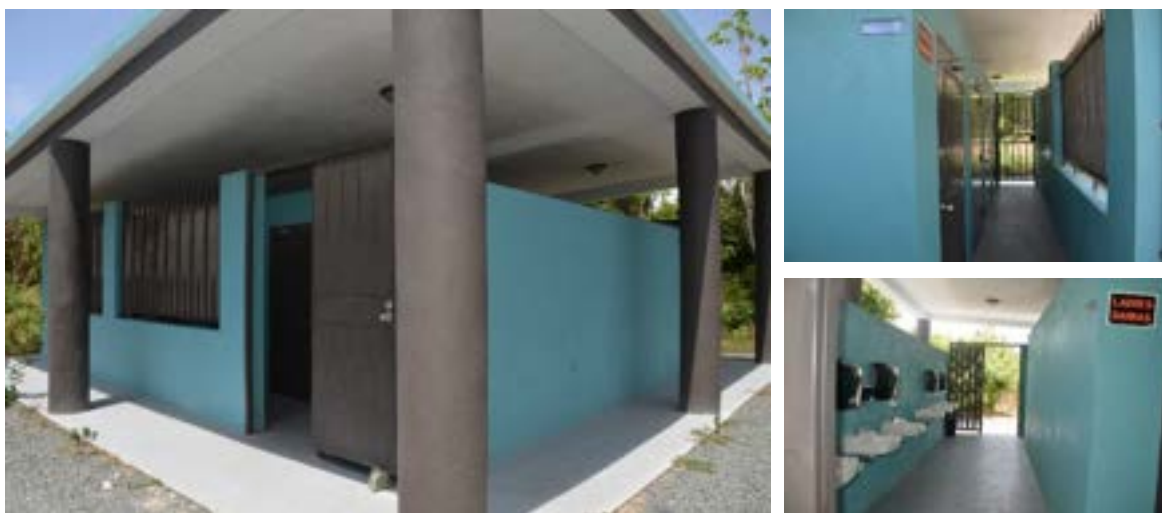


Figure 2-18. Public restroom facility near the central entrance at Long Bay, Beef Island



Figure 2-19. Outdoor shower facility and example of the semi-enclosed huts for public use at Long Bay, Beef Island.

# 3.0 - PLANNING PROCESS AND PLAN COMPONENTS

## 3.1 Description of the Planning Process

The Long Bay, Beef Island Beach Management Plan development process was led by the Ministry of Natural Resources and Labour (MRNL) as the Ministry responsible for all beaches outside of declared National Parks within the Territory. The Technical Review Committee (TRC) chaired by the MNRL and comprising membership from 12 Government agencies and statutory bodies relevant to beach management was invited to participate in all aspects of the Plan development process. Additional relevant input from Government agencies not represented on the TRC and expertise from private environmental management professionals was solicited.

The Plan was developed following standard planning practice, including definition of issues/threats and options; determination of goals, objectives and priorities; data collection and interpretation; and plan preparation with opportunity for public consultation at key Plan development stages, including the Conceptual Plan and Draft Detailed Plan as summarized in Figure 3-1 below.

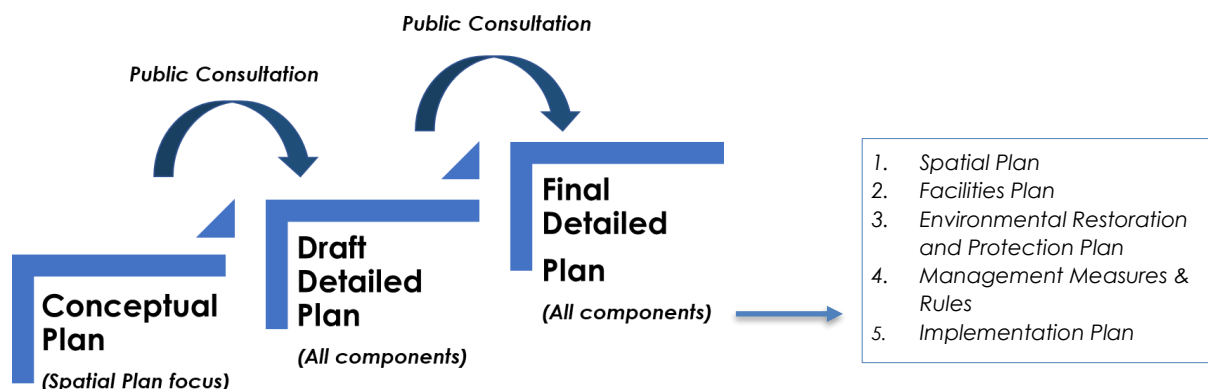


Figure 3-1. Summary of Beach Management Plan stages and opportunities for public consultation

The Conceptual Plan focused on the proposed Spatial Plan for the beach which broadly defines zones for different uses. The Draft Detailed Plan includes all Plan elements, including the Spatial Plan, Facilities Plan, Environmental Restoration and Protection Plan, Management Measures & Rules, and Implementation Plan.

At the Conceptual Plan stage, public consultation included a virtual public meeting held March 29, 2022, an in-person public meeting held on March 31, 2022 at the Willard Wheatley Primary School that was also live-streamed, and a public survey. The public survey targeted residents and focused on identifying the desired vision for the beach and current satisfaction and desires

overall and in relation to specific beach features. The survey was administered via an online survey tool (Survey Monkey) and was also made available in hard copy through various channels. A total of 300 responses were received from the general public, representing a 90% confidence level and 5% margin of error based on the target population. Full details about the survey, including the demographic profile of respondents, full results and the survey tool are presented at Appendix V.

## 3.2 Description of the Plan Components

The Long Bay, Beef Island Beach Management Plan consists of five (5) complementary components as depicted and defined in Figure 3-2 below.

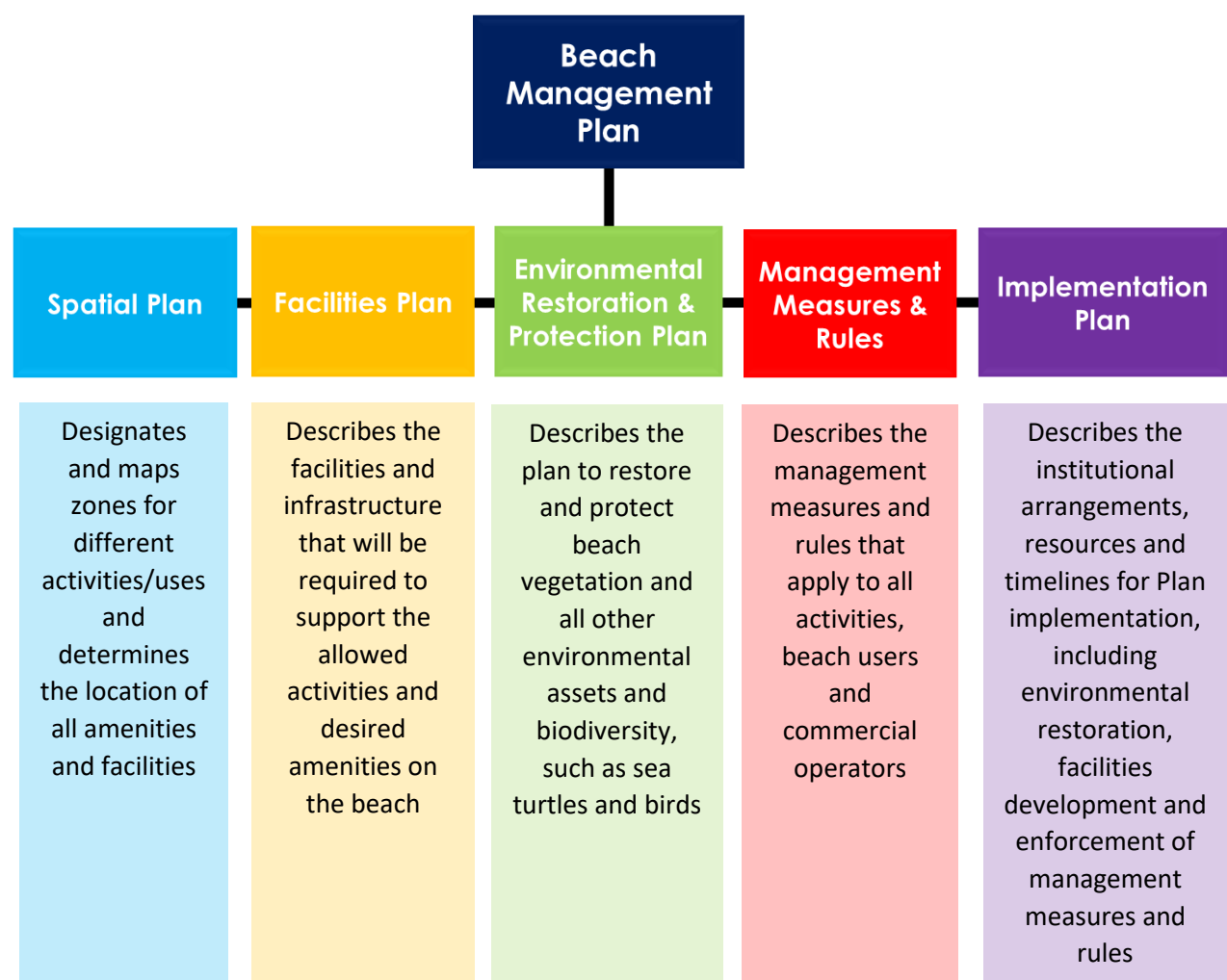


Figure 3-2. Beach Management Plan components

# 4.0 - CURRENT THREATS AND ISSUES

## 4.1. Current Threats based on Beach Policy

The Virgin Islands Beach Policy 2020 identifies 17 threats to beaches in the Territory. Current threats to Long Bay, Beef Island among those identified in the Policy have been determined based on field observations by the Ministry of Natural Resources and Labour as well as results from the public survey conducted during the beach management planning process.

Of the 17 potential threats identified in the Policy, 11 presently exist at Long Bay, Beef Island and the beach is at risk to another 3 threats in the absence of immediate management measures. The existing threats and threats to which Long Bay, Beef Island is at risk are summarized in Table 4-1. Images of some of the current threats to Long Bay, Beef Island Beach are presented in Appendix IV.

*Table 4-1. Current threats at Long Bay, Beef Island*

<b>Threat</b>		<b>Existing</b>	<b>At Risk</b>
1.	Poor water quality from storm water runoff and other discharges within adjacent watersheds and from various types of vessels, which may contain pollutants or untreated wastewater		X
2.	Deteriorating coral reef structures	X	
3.	Loss of associated habitats such as salt ponds and mangroves, which are instrumental to the ecological integrity of beaches		
4.	Degraded wildlife habitat (turtle and shorebird nesting) at heavily frequented or developed beaches; including light pollution	X	
5.	Litter, including washed ashore marine debris and litter produced during and after use by large groups attached to cruise ships or associated with special events	X	
6.	Clearing of beach vegetation	X	
7.	Persistent, mass Sargassum landings		X
8.	Sand mining, which while mainly outlawed still takes place to some extent	X	
9.	Compacting of sand dunes by vehicular traffic	X	
10.	Sea level rise combined with minimal building setbacks which reduces the ability of the beach to adapt by migrating in land	X	
11.	Lighting of bon fires and beach barbeques which "soil" the sand	X	
12.	Overcrowding and other related visitor use impacts, which may affect ecological and physical integrity		X
13.	Unregulated activities within the beach zone, such as use of heavy equipment, ill-placed temporary and permanent vending and beach bar facilities and their accessories (beach chairs, umbrellas, tables, etc.), which may impair the free seasonal movement of sand, thereby contributing to erosion	X	
14.	Multiple and conflicting uses of some beaches that reduce beach visitor experience	X	
15.	Noise pollution from loud music not authorized for special events	X	

16.	Lack of consistently applied use and safety guidelines for the continued and balanced enjoyment by various user groups		
17.	Fragmented and unclear authority of key focal agencies responsible for overall management		

## 4.2 Current Issues based on Public Survey

Key findings of the public survey used to determine current issues are presented in this section. Full details about the survey, including the demographic profile of respondents, full survey results and the survey tool are presented at Appendix V.

### Overall Beach Use and Enjoyment

The recent development and activity at Long Bay have had more of a negative than positive effect on beach use and enjoyment (Figure 4-1). This suggests that active management of the beach is required to restore the user experience and prevent further degradation of the beach.

The Survey also found that users are mainly:

- “totally unsatisfied” or “unsatisfied” with 12 of the 38 beach features surveyed (Table 4-2)
- “neutral” about 15 of the features surveyed (Table 4-3);
- “completely satisfied” or “satisfied” with 11 of 38 beach features surveyed (Table 4-4).

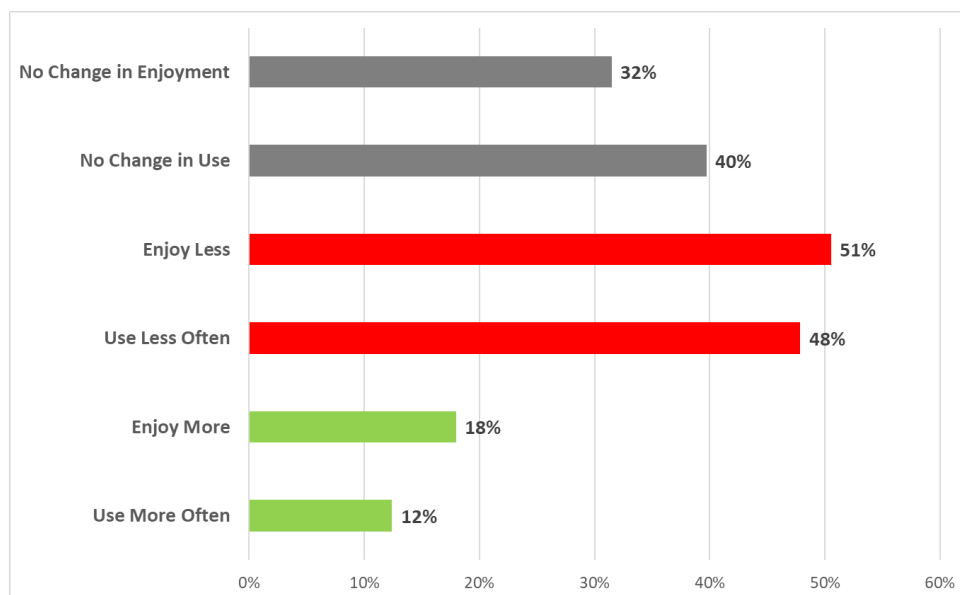


Figure 4-1. Effect of recent development and activity at Long Bay on the beach use and enjoyment of respondents participating in the general population survey.

## Features with which users are “totally unsatisfied” or “unsatisfied”

Features with which users are “totally unsatisfied” or “unsatisfied” represent current issues that management measures should focus on improving.

*Table 4-2. Features with which users are “totally unsatisfied” or “unsatisfied”*

Features “totally unsatisfied” or “unsatisfied” with	Desired Change
<b><i>Overall Environment</i></b>	
Overall beach cleanliness (53% of respondents)	“more of” (80% of respondents)
Shade trees/vegetation (49%)	“more of” (78%)
Noise level (47%)	“less of” or “none” (57%)
<b><i>Amenities and Facilities</i></b>	
Lifeguard presence/station (62%)	“more of” (75%)
Waste facilities (61%)	“more of” (78%)
Access for disabled people (48%)	“more of” (65%)
Picnic tables (48%)	“more of” (57%)
Public shade umbrellas/gazebos (46%)	“more of” (50%)
Restroom facilities (44%)	“more of” (59%)
Main access road (38%)	“more of” (48%)
<b><i>Recreational Activities</i></b>	
Loud music (52%)	“less of” or “none” (68%)
<b><i>Commercial Activities</i></b>	
Beach chairs (44%)	“less of” or “none” (41%)

## Features which users are “neutral” about

Features which users are “neutral” about should be monitored and carefully managed to ensure they do not become points of dissatisfaction.

*Table 4-3. Features which users are “neutral” about*

Features “neutral” about	Desired Change
<b><i>Overall Environment</i></b>	
Reef health/quality (43% of respondents)	“more of” (57% of respondents)
<b><i>Amenities and Facilities</i></b>	
Birdwatching facilities (48%)	“more of” (55%)
Sporting facilities (46%)	“same level” (38%)
Entertainment facilities (42%)	“less of” or “none” (47%)
Beach use signage (37%)	“more of” (55%)



***Recreational Activities***

Private water sports (53%)	"same level" (40%)
Picnics (49%)	"same level" (61%)
Barbeques/cookouts (49%)	"same level" (51%)
Parties (48%)	"less of" or "none" (47%)
Sports (47%)	"same level" (50%)
Boating (47%)	"less of" or "none" (43%)

***Commercial Activities***

Other commercial activity (54%)	"less of" or "none" (52%)
Water sports (50%)	"same level" (35%)
Souvenir vending (42%)	"less of" or "none" (52%)
Bars/restaurants (38%)	"less of" or "none" (48%)

## Features with which users are "completely satisfied" or "satisfied"

Features with which users are "completely satisfied" or "satisfied" represent features that management measures should focus on maintaining / preserving and enhancing where necessary.

*Table 4-4. Features with which users are "completely satisfied" or "satisfied"*

Features "completely satisfied" or "satisfied" with	Desired Change
<b><i>Overall Environment</i></b>	
Water area appearance (77% of respondents)	"same level" (52% of respondents)
Sand quality (74%)	"same level" (57%)
Seawater quality (68%)	"same level" (58%)
Beach width (Distance from treeline to sea) (61%)	"same level" (52%)
Family-friendly environment (53%)	"more of" (54%)
Relaxing environment (47%)	"more of" (56%)
Safe environment (45%)	"more of" (53%)
Beach appearance (Area from treeline to sea) (40%)	"more of" (59%)
<b><i>Amenities and Facilities</i></b>	
Parking facilities (42%)	"more of" (53%)
<b><i>Recreational Activities</i></b>	
Swimming and snorkelling (60%)	"same level" (49%)
Exercising (54%)	"same level" (50%)

# 5.0 - CARRYING CAPACITY

The carrying capacity of Long Bay, Beef Island refers to the level of human activity that the beach can support/sustain without undergoing environmental degradation/deterioration or without the user experience (both residential and tourist) being negatively affected.

In keeping with The Virgin Islands Beach Policy 2020, the carrying capacity for Long Bay, Beef Island has been assessed as a basis for developing the detailed Beach Management Plan.

## 5.1 Method to Determine Carrying Capacity

A literature review was conducted to determine the most appropriate method to determine the carrying capacity for Long Bay. Among other reports, the review included two carrying capacity assessments in The Virgin Islands conducted for The Baths, Virgin Gorda and Cane Garden Bay, Tortola.

Accepted methodology for determining carrying capacity, including consideration of a combination of physical site constraints, facility constraints and social limits was applied to determine the carrying capacity for Long Bay, Beef Island.

Dimensions of the site and requirements and limits to ensure protection of the environment were used as a basis for determining physical site constraints. Facility constraints considered the capacity of parking and restroom facilities. Social preferences were derived from international standards combined with the public survey results which provided insight into acceptable limits on commercial activities.

These factors were assessed within the wider management context, including the established historic/traditional use of the beach and the Plan vision, and the following key background factors:

- Long Bay is the only beach safe for swimming year-round on Tortola. As such, it is the most popular beach for local recreational use and has traditionally been undeveloped with no persistent commercial activity
- Persistent commercial activity is a very recent phenomenon (roughly 5 years old) and was initiated as a temporary recovery intervention in response to Hurricane Irma, 2017.
- There are no current permissions in place for commercial activity; any temporary permissions granted have expired. Permissions granted required that no permanent structures be constructed.
- All land surrounding the beach and including the beach is Crown land. The land was purchased by the Crown on the basis that it would be protected as a National Park.



## 5.2 Recommended Carrying Capacities

The methodology broadly outlined above was applied to determine the recommended carrying capacity for the following factors:

- Tourist use (maximum number of tourists at a time)
- Beach chairs (maximum number of beach chairs for rent)
- Vending units
- Picnic tables
- Parking
- Restrooms

The physical constraints, facility constraints, social limits and rationale to determine the carrying capacity for each factor are summarized in Table 5-1 below.

The implications of the carrying capacities and proposed implementation strategies are summarized in Table 5-2 below.

*Table 5-1. Determination of Recommended Carrying Capacities*

<b>Factor</b>	<b>Physical/Facility Constraints</b>		<b>Social Limits/Standards</b>		<b>Carrying Capacity</b>	<b>Rationale</b>
<b>Tourists – weekdays</b>	Effective beach sand area (central to eastern entrance)	4480 m <sup>2</sup> (48,222 ft <sup>2</sup> )	World Tourism Organization (WTO) standard	(10m <sup>2</sup> /tourist) (10.4ft x10.4 ft / tourist)	<b>450</b> tourists at a time	To maintain destination brand, the WTO standard should be respected and to remain competitive, the goal should be better than the standard
<b>Tourists – weekends</b>	Effective beach sand area (central to eastern entrance)	4480 m <sup>2</sup> (48,222 ft <sup>2</sup> )	High Standard Public Beach international standard	(20m <sup>2</sup> /tourist) (14.7ft x14.7 ft / tourist)	<b>225</b> tourists at a time	Higher standard to be maintained on weekends when beach is heavily used by residents in keeping with the Vision for the beach
<b>Beach chairs at a time</b>	Length and width of effective beach sand area	805 ft long x ~50ft wide	Desired change compared to current status based on public survey results  (There are currently 403	44 % of Survey respondents were “totally unsatisfied” or “unsatisfied” with beach chairs. 41% desired to	<b>Up to 400</b> chairs at a time  <i>(Based on specific layout – e.g. single chairs vs double</i>	The cap is established based on the existing number of chairs on the basis that chairs would not be rented on weekends

<b>Factor</b>	<b>Physical/Facility Constraints</b>		<b>Social Limits/Standards</b>		<b>Carrying Capacity</b>	<b>Rationale</b>
			chairs operating at the beach. Field surveys documented up to 240 chairs left set out at a time after use).	see “less of” or “none” in relation to beach chairs. These were the most common responses.	<i>chairs – less chairs may be required to fit within the zone)</i>	in keeping with the Vision for the beach and the “share the beach” management policy.
<b>Vending Units</b>	Maximum Vending Zone length in area which achieves sustainable setback and minimizes impact to dune vegetation	236 ft	Desired change compared to current status based on public survey results <i>(There are currently 6 vendors operating at the beach).</i>	Survey respondents were mainly “neutral” about bars/restaurants (38%), souvenir vending (42%), and other commercial activity (54%), however also mainly desired to see “less of” or “none” of these	<b>6</b> vending units  <i>(Based on physical constraint and not number of existing vendors)</i>	Six (6) units can fit within the physical constraints based on the minimum design criteria.  The visual and environmental impact of units will be significantly reduced by setting units back from the vegetation line.
<b>Picnic tables</b>	Picnic Zone length – central to eastern entrance of beach, excluding vending zone frontage	500 ft	Social distancing between picnic tables	20 ft	<b>25</b> picnic tables  (central to eastern entrance)  <b>2</b> picnic tables (western end)	Closer spacing of tables will likely result in user conflicts/ interference  Placement of picnic tables in front of Vending Zone may result in user conflicts  Picnic Zone should be limited to linear zone behind seagrape treeline
<b>Parking – public (Central and Eastern Lots)</b>	Footprint of area already cleared/that can be cleared near to central and eastern entrances to minimize	Centre - 115 ft x 43 ft within proposed parking area  East – pockets	Standard size for parking space	8 ft 6in wide x 18ft long	<b>84</b> parking spaces  (Central – 74 Eastern – 10)	Public parking lots should minimize new vegetation clearing. No parking on beach dune.

<b>Factor</b>	<b>Physical/Facility Constraints</b>		<b>Social Limits/Standards</b>		<b>Carrying Capacity</b>	<b>Rationale</b>
	impact to environment	within proposed parking area				
<b>Parking – taxi</b>	Footprint of area already cleared/that can be cleared near to central access to minimize impact to environment	Pockets within proposed parking area	Standard size for taxi parking space	10 ft wide x 25 ft long	<b>14</b> parking spaces	Number of spaces provided is sufficient to serve the recommended tourists carrying capacity (requiring up to 19 buses at a time) considering that many buses offload and return for tourists versus remaining on site
<b>Restrooms</b>	Capacity of sewage treatment system. Ecological footprint as well as construction and maintenance costs required for expansion.		Desired change compared to current status based on public survey results. (There are currently 6 restroom stalls).	59% of Survey respondents desire more restrooms	<b>10</b> restroom stalls  (8 public stalls - existing; 2 Admin Unit stalls - proposed)	Environmental footprint, construction costs and maintenance costs make further expansion of facilities impractical at this time.  Management measures (e.g. spreading out arrivals) can be used to achieve desire for increased capacity

Table 5-2. Implications and Implementation of Recommended Carrying Capacities

<b>Factor</b>	<b>Carrying Capacity</b>	<b>Implications</b>	<b>Implementation Strategy</b>
<b>Tourists - Weekdays</b>	<b>450</b> tourists at a time	Tour buses at a time (24 seat capacity): <b>18.5 buses</b>  Tour buses per day (24 seat capacity): <b>37 buses</b>  Total tourists per day: <b>900 tourists</b>	Continue system of two cycles of tourists per day (morning cycle and afternoon cycle) with a limit of 450 tourists per cycle  Consult with organized and independent tour operators to determine best implementation approach. Options may include: <ul style="list-style-type: none"> <li>- Quotas per registered operator (per week, month or season etc.)</li> <li>- Pre-booking system</li> <li>- First come system</li> </ul>
<b>Tourists - Weekends</b>	<b>225</b> tourists at a time	This option only applies in the event that the decision is made to allow tour buses to operate during the weekend based on public consultation.	Consult with organized and independent tour operators to determine best implementation approach.
<b>Beach Chairs</b>	Up to <b>400</b> chairs at a time	Maximum beach chair zone length: 592 ft  Maximum beach chair zone width – 31 ft  Maximum beach chair rows: 3  Blocks of 30 pairs of chairs: 6 full blocks, 1 partial block	Cap number of beach chair vendors  Establish quota for number of chairs permitted per vendor with approval for commercial use of the beach  Control importation of beach chairs – letter documenting approval for use at a particular beach from the Ministry of Natural Resources and Labour required for Port clearance
<b>Vending Units</b>	<b>6</b> vending units	The number of vendors allowed to operate at a time will range between 6 and 9 depending on the leasing arrangements. There is the option for small vending units to be shared by two vendors in cases where operators require limited space and operations are complementary.	Ministry of Natural Resources and Labour to construct 6 fit-for-purpose vending units for lease
<b>Picnic Tables</b>	<b>25</b> picnic tables	Total seating capacity of the picnic zone: <b>200 people</b> (based on 8 seats per table)	Ministry of Natural Resources and Labour to outfit the picnic zone with 25 picnic tables
<b>Parking – Public</b>	<b>84</b> parking spaces	Total private vehicles parked at the beach at a time: <b>84 vehicles</b>	Ministry of Natural Resources and Labour to create clearly demarcated parking lots.  The parking lot capacity should accommodate the case of typical beach usage. The public will be encouraged to car pool to the beach, especially on event days. The taxi parking lot and

<b>Factor</b>	<b>Carrying Capacity</b>	<b>Implications</b>	<b>Implementation Strategy</b>
			roadside can be used for spill over parking when necessary.
<b>Parking - Taxi</b>	<b>14</b> parking spaces	Total taxis parked at the beach at a time: <b>14 buses</b>	Ministry of Natural Resources and Labour to create clearly demarcated taxi parking lot  The parking lot capacity is sufficient to serve the recommended carrying capacity. During weekdays, the public parking lot can be used as spillover parking, if necessary.
<b>Restrooms</b>	<b>10</b> restroom stalls  (8 public stalls - existing; 2 Admin Unit stalls - proposed)	Existing public restroom facilities can service approximately 90 tourists per half hour, including 45 female tourists and 45 male tourists.  Assuming half of tourists will want to use the restroom within half an hour of arrival, this allows for up to 180 tourists arriving at the same time.	Work with tour bus operators and the dispatch at the Tortola Pier Park to stagger arrivals in the morning and afternoon cycles by at least half hour intervals with up to 7 tour buses arriving at a time within the overall limit. The carrying capacity could be achieved with arrivals within a 1.5-hour window. Tourists can be gently encouraged to use the restrooms on their ship or at the Tortola Pier Park before arriving at the beach.

# 6.0 - THE PLAN

## 6.1 VISION

The Vision for Long Bay, Beef Island is:

**“a beach we can all be proud of where protection of the natural environment is prioritized and where local recreational, spiritual, cultural, economic and tourism needs are carefully balanced.”**

The Plan Vision is based on the traditional use and values of the beach outlined in the existing conditions section of the Plan, the public survey results, the overall environmental significance of the wider beach system and the policy intention (protection of the environment) that resulted in the Crown acquisition of most land forming the beach system.

As shown in Figure 6-1, the Public Survey revealed that:

- There is very limited appetite by residents (5% of respondents) for Long Bay, Beef Island becoming “commercially developed as a major tourist destination.”
- A slight majority (52% of respondents) feel that “some commercial development should be allowed” in the context that such development is “limited and carefully planned to preserve the environment, maintain a natural aesthetic and balance tourist and residential use of the beach.”
- A large segment of the public (42% of respondents combined) feel that either “development should be limited to basic public amenities and facilities with no commercial activity allowed, except vending during public events” or “the beach should be preserved in a natural, undeveloped state.”

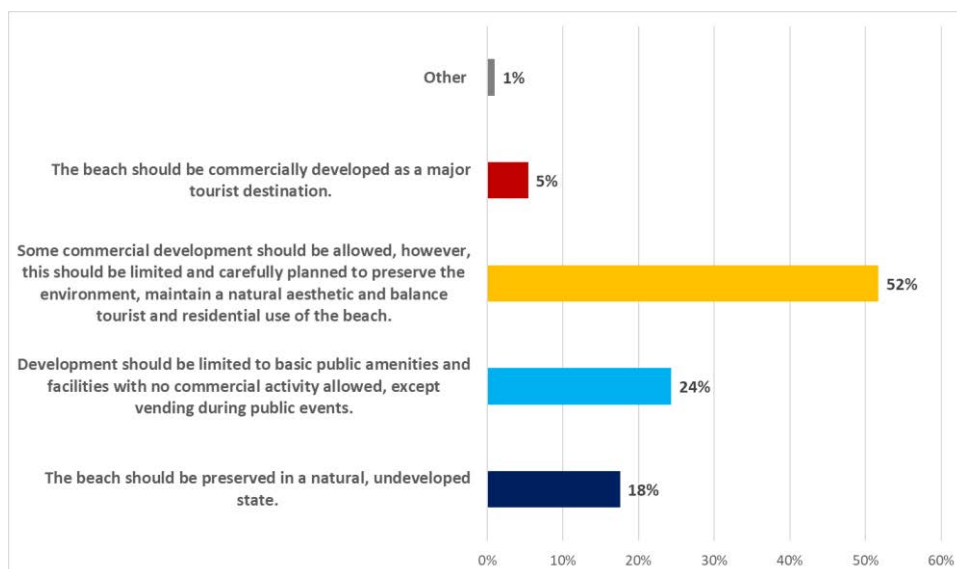


Figure 6-1. Views about development at Long Bay held by respondents participating in the general population survey.

In keeping with the Plan Vision and views about development at Long Bay, all elements on the Plan focus on ensuring the following objectives are achieved in respect of the beach's identity and character:

**Identity:** Long Bay remains a beach primarily for recreational use and enjoyment by ***all*** residents while accommodating tourism and commercial activity at a sustainable level

- Traditional uses of the beach are supported, including protecting Long Bay as a swimming beach
- The activities of one user group do not negatively impact or displace other users
- Commercial activity and tourist use of the beach do not negatively impact or displace residential use and enjoyment
- Tourist use is limited to sustainable densities and activities that do not conflict with traditional uses

**Character:** The natural aesthetic of Long Bay is maintained

- The environment is restored and preserved
- Development is aesthetically pleasing, blends into the natural environment and does not dominate the beach landscape or compromise the environment

## 6.2 SPATIAL PLAN

The Spatial Plan layer shows the physical arrangement of all amenities and facilities that will be provided as well as all activities that will be allowed and how they fit together within the natural environment. The Spatial Plan includes the detailed site plan for the Vending Zone. The Spatial Plan layer consists of an introductory narrative explaining the proposed amenities and facilities and rationale for their arrangement and a series of annotated maps and 3-dimensional renderings supported by the Spatial Plan Data Sheet.

### 6.2.1 Beach Amenities and Facilities

The Beach Management Plan will support immediate develop and continued maintenance of the amenities described in Table 6-1 towards achieving the Vision for the beach, including the desired identity and character.

*Table 6-1. Beach amenities and facilities included in the Beach Management Plan.*

<b>Sand Dune Protective Barrier</b>  <i>Barrier to prevent vehicles from accessing the sand dune</i>	<i>Features:</i> Aesthetic barrier that blends into the natural landscape, that will result in minimal environmental impact, and that cannot be easily breached but that can be removed over time as the beach dune vegetation recovers.  <i>Placement:</i> At the central and eastern entrances and along the access road that connects these entrances
<b>Picnic Area</b>  <i>Relaxing seating and picnic area for use by all beach goers</i>	<i>Features:</i> Picnic tables and benches; shade trees and umbrellas; two purpose-built barbeque pits; garbage receptables; signage with beach rules  <i>Placement:</i> Linear zone on the eastern half of the beach, excluding the Vending Zone frontage, immediately behind the seagrape treeline (to be restored)
<b>Birdwatching Hiking Trail</b>  <i>Easy trail to support exercise, natural walks, bird watching, environmental education and related recreational activities</i>	<i>Features:</i> Maintained trail; wayfinding signage; interpretive signage; rest benches  <i>Placement:</i> From the main access road, meandering along the salt pond edge to the high point of the adjacent hillside
<b>Lookout Deck</b>  <i>Elevated lookout platform to support</i>	<i>Features:</i> Panoramic view, safety rails; perimeter bench  <i>Placement:</i> At the end of the Birdwatching Hiking Trail at the highest point of the hillside overlooking the salt pond to offer a



<i>sightseeing of the beach and surrounding cays</i>	panoramic view of the pond, beach and the northern and southern cays.
<b>Vending Zone</b>  <i>Hub for all commercial activities allowed to enhance the beach user experience. Allowed commercial uses on the beach include food service, souvenir vending and watersports rental</i>	<p><i>Features:</i> Six (6) vending units with deck and ocean view; boardwalk along the frontage of vending units with handicap access to units; boardwalk along the back of units with layby to facilitate provisioning of units; shaded Outdoor Eating Area; easy connection to the public restroom facility and seashore for patrons; dedicated restrooms for staff</p> <p><i>Placement:</i> Offset from the central access to the beach and setback a sustainable distance from the seagrape treeline to reduce impact to the beach dune and protect units from storm surge</p>
<b>Administrative Unit</b>  <i>Supports the general management of the beach and visitor experience</i>	<p><i>Features:</i> The Unit will provide storage for beach maintenance equipment and supplies and serve as a base for beach management staff. It can be evolved into a welcome/information centre as necessary. The Unit will also include a male and female restroom to serve management and the staff of the Vending Zone.</p> <p><i>Placement:</i> Adjacent to the Vending Zone and opposite the public restroom facility</p>
<b>Beach Chair Zone</b>  <i>Designated area where beach chair rental is allowed</i>	<p><i>Features:</i> Up to three (3) rows of beach chairs with adequate social distancing within and between rows</p> <p><i>Placement:</i> Offset from the central access to the beach. The zone starts 50m (164ft) east of the central access and runs eastward 592 ft.</p>
<b>Passive Water Sports Zone</b>  <i>Designated area where approved passive water sports are allowed to operate. Facilities to support water sports rentals and launch.</i>	<p><i>Features:</i> The Water Sports Zone will be marked by three bouys at the eastern end, centre and western end of the beach. The existing shade huts will be converted into basic sheds to facilitate watersport rentals.</p> <p><i>Placement:</i> The Water Sports Zone will stretch the entire length of the beach outside of the typical area utilized for swimming – approximately 200 ft from the shoreline outward. The water sports rental sheds and launch area will be on the eastern end of the beach.</p>
<b>Parking Facilities</b>  <i>Clearly demarcated parking lots for use by the public and tour operators</i>	<p><i>Features:</i> Clearly marked entrance, exist and parking spots; natural surfacing; screening by trees; signage with beach rules</p> <p><i>Placement:</i> Public parking lots at the central and eastern accesses. Taxi parking lot near the central access opposite the vending zone. The western access road to the beach is privately</p>

	owned - parking is limited and can continue in the existing fashion as long as the access remains open.
<b>Restroom Facilities</b>  <i>Public restroom facility as well as a dedicated restroom for Vending Zone and beach management authority staff within the Administrative Unit</i>	<i>Features:</i> The public restroom facility has a capacity of 8 stalls (4 male and 4 female). The Administrative Unit restroom facility has a capacity of 2 stalls (one male and one female).  <i>Placement:</i> The public restroom facility is located opposite the Vending Zone and the Administrative Unit is located adjacent to the Vending Zone.
<b>Main Access Road</b>  <i>Main public access road to the beach providing access to the central and eastern entrances</i>	<i>Features:</i> The road is to be graded more regularly to create a smoother surface and ease access. Grading will be done in such a manner as to prevent impact to the salt pond and beach dune. The access road will not be paved as doing so would increase stormwater runoff and impact the environment, including the neighboring salt pond and mangrove forest.  <i>Placement:</i> Existing footprint as indicated on the Spatial Plan
<b>Water and Power Facilities</b>  <i>Water and power supply to support commercial activity</i>	<i>Features:</i> Independently metered water and electrical connections included with vending unit shell  <i>Placement:</i> Within each vending unit and within the Administrative Unit
<b>Waste Management Facilities</b>  <i>Facilities to support proper waste disposal by beach goers and vendors</i>	<i>Features:</i> 30-42-gallon public waste receptacles, including recycling bins, throughout the Picnic Zone; dedicated, covered and screened commercial bin for the Vending Zone; covered and screened service bin to facilitate consolidation and collection of all beach waste.  <i>Placement:</i> Within the Picnic Zone, at the rear of the Vending Zone, at the rear of the public restroom facility

Proposed amenities for future consideration, depending on availability of management capacity to support implementation, include a lifeguard tower to ensure swimmer safety and a gazebo to facilitate approved events/gatherings.

## 6.2.2 Overview of Spatial Plan

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The Spatial Plan is built around two key features that are paramount to the protection of the beach environment: a) full restoration of the seagrape treeline in its historic footprint, and b) barriers along the interior access road to prevent vehicular access to the eastern sand dune.

A modest hub for sustainable tourism activity is located close to but offset from the central entrance to the beach (approximately 200 feet - 60 meters - east of the centre). The tourism hub includes a Vending Zone comprised of six (6) vending units spaced 15 feet apart along an arc. Vending units are set back between approximately 75 - 100 feet (23 – 30 meters) from the seagrape treeline, maintaining an ocean view while protecting the beach from erosion and the units from storm surge. The Vending Zone also includes a boardwalk lining the front of the vending units and an Outdoor Eating Area in front of the vending units. The tourism hub also includes a Beach Chair Zone, an Administrative Unit to support management of the beach, public restrooms, signage, screened waste facilities for vending units and a taxi parking lot. A Water Sports Zone extends the length of the beach offset approximately 200 feet (60 meters) from the shoreline, beyond the typical swim area.

A linear public Picnic Area with a capacity of 25 picnic tables is located along the eastern portion of the beach from the central entrance to the eastern entrance, with the exception of the area overlapping the Outdoor Eating Area of the Vending Zone to avoid user conflicts. The Picnic Area is located immediately behind the seagrape treeline, falling within the shade of the trees. A natural footpath runs the length of the Picnic Zone for easy circulation from one end to the next.

Parking facilities are provided at the central and eastern entrances of the beach, close enough to allow easy access, but set back enough to minimize impact to the beach dune and to prevent noise pollution from vehicle sound systems. Drop-off turnaround points are also provided at each entrance to facilitate access for persons with mobility challenges and off-loading of supplies for social gatherings.

A Birdwatching Hiking Trail extends from the central entrance of the beach, along the eastern edge of the main salt pond to a lookout deck at the peak of the hillside overlooking the salt pond. A link to the western end of the beach from the lookout deck is also included in the trail system.

An overview of the Spatial Plan is presented in Figures 6-2 to 6-8.



Figure 6-2. Long Bay, Beef Island Spatial Plan - overview map



Figure 6-3. Long Bay, Beef Island Spatial Plan - overview rendering





Figure 6-4. Long Bay, Beef Island Spatial Plan - perspective view from eastern parking lot



Figure 6-5. Long Bay, Beef Island Spatial Plan – central to eastern beach entrances



Figure 6-6. Long Bay, Beef Island Spatial Plan rendering – central to eastern beach entrances

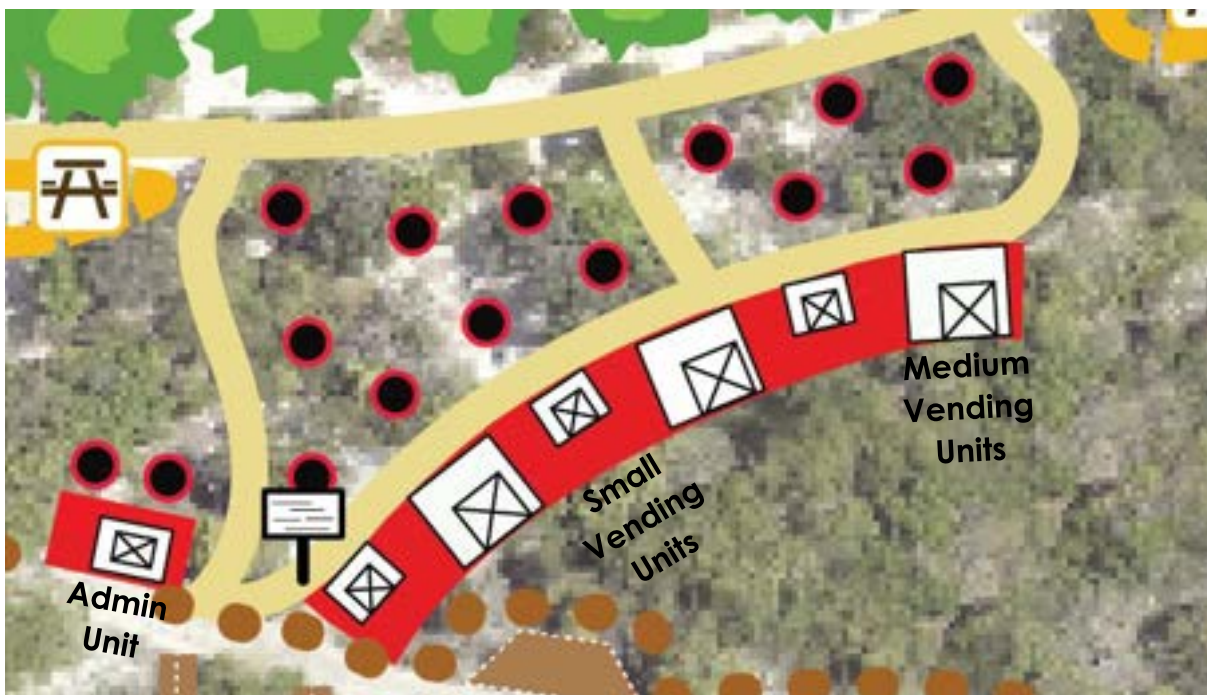


Figure 6-7. Long Bay, Beef Island Spatial Plan – Vending Zone Site Plan



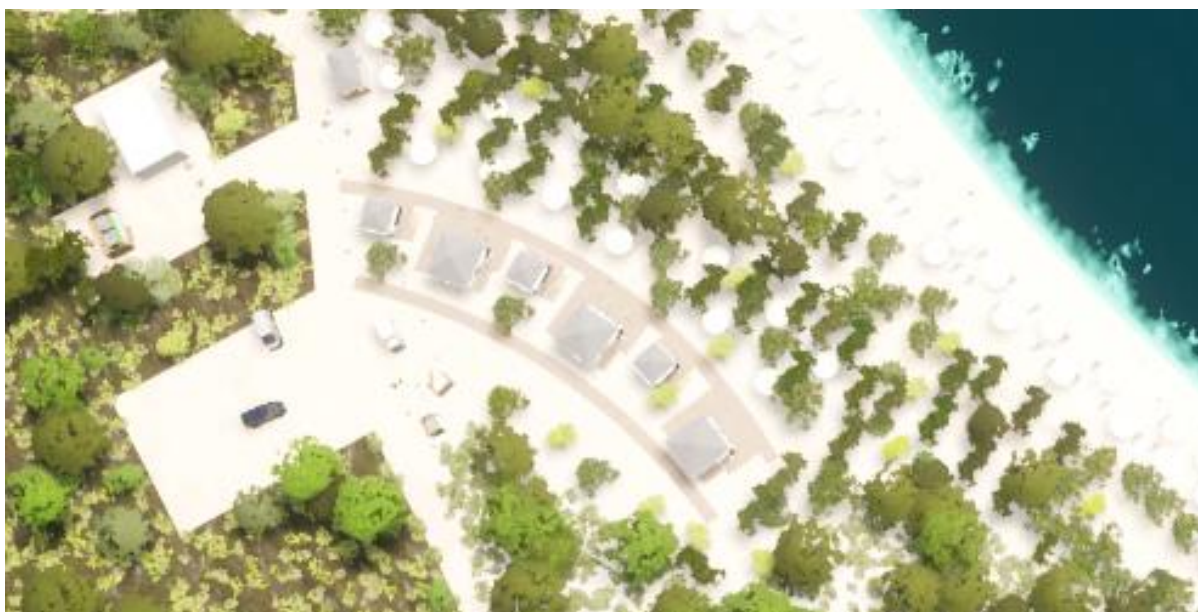


Figure 6-8. Long Bay, Beef Island Spatial Plan – Vending Zone Site Plan Rendering

## 6.2.3 Rationale for Arrangement of Amenities and Activities

The Spatial Plan directly supports the Vision for the beach and the desired identity and character as defined above. The Spatial Plan is guided by a set of core spatial planning principles derived from the Vision and desired identity and character as summarized in Table 6-2.

Table 6-2. Rationale for Spatial Plan

<b><i>Elements of Vision, Identity, Character</i></b>	<b><i>Related Core Spatial Planning Principles</i></b>
Protection of the natural environment is prioritized	<ol style="list-style-type: none"> <li>1. Facilities and activities must not impact the vegetation line and must minimize impact to the beach dune, including the dune vegetation, which are critical for the long-term protection of the beach environment</li> <li>2. All facilities should be set back behind the vegetation line within the secondary/hind dune so that the beach is best protected from erosion and retains its natural aesthetic from the seaside</li> <li>3. The main public entrances to the beach should remain free of development</li> </ol>
The natural aesthetic of Long Bay is maintained: <ul style="list-style-type: none"> <li>- The environment is restored and preserved</li> <li>- Development is aesthetically pleasing, blends into the natural environment and does not dominate the beach landscape or compromise the environment</li> </ul>	

<p>Local recreational, spiritual, cultural, economic and tourism needs are carefully balanced</p>	<ol style="list-style-type: none"> <li>1. Tourism facilities should be consolidated in a hub to reduce user conflicts and to avoid the overall character of the beach becoming one of a major tourist destination</li> </ol>
<p>Long Bay remains a beach primarily for recreational use and enjoyment by all residents while accommodating tourism and commercial activity at a sustainable level:</p> <ul style="list-style-type: none"> <li>- Traditional uses of the beach are supported, including protecting Long Bay as a swimming beach</li> <li>- The activities of one user group do not negatively impact or displace other users</li> <li>- Commercial activities and tourist use of the beach do not negatively impact or displace residential use and enjoyment</li> <li>- Tourist use is limited to sustainable densities and activities that do not conflict with traditional uses</li> </ul>	<ol style="list-style-type: none"> <li>2. The tourism hub should be offset from the central and eastern entrances of the beach which are the most popular use areas by residents</li> <li>3. The footprint and scale of commercial facilities should be modest</li> <li>4. Approved water sports must take place beyond the typical swim area to avoid conflicts with or restrictions to swimming</li> <li>5. Amenities to accommodate social activities should be adequately scaled, spaced and located to avoid user conflicts</li> <li>6. The spatial plan should not facilitate noise pollution and other undesirable behavior that impacts the user experience</li> </ol>



## 6.2.4 Spatial Plan Data Sheet

The Spatial Plan Data Sheet provides the approximate dimensions and capacity of all amenities and facilities included in the Beach Management Plan in Tables 6-3 to 6-16.

### BEACH DUNE PROTECTION BARRIER

*Table 6-3 – Spatial Data – Beach Dune Protection Barrier*

<b>Map reference number</b>	1
<b>Length</b>	1,205 ft
<b>Number of posts</b>	300

### PICNIC AREA

*Table 6-4 – Spatial Data – Picnic Area*

	<b>Main Area (central to eastern entrances)</b>	<b>Western Area</b>
<b>Map reference number</b>	2	3
<b>Total footprint (size)</b>	6,240 ft <sup>2</sup>	800 ft <sup>2</sup>
<b>Dimensions</b>	312 ft x 20 ft	40 ft x 20 ft
<b>Picnic table capacity</b>	25	2
<b>Purpose-built barbeque pits (Map reference 2a)</b>	2	0

### BIRDWATCHING HIKING TRAIL

*Table 6-5 – Spatial Data – Birdwatching Hiking Trail*

<b>Map reference number</b>	4
<b>Width</b>	Central entrance to Lookout Deck: 4 – 6 ft Lookout Deck to western entrance: 4 ft
<b>Length</b>	Total trail network length: 2,250 ft Central entrance to Lookout Deck trail: 1,850 ft Central entrance to western entrance trail: 1,735 ft Lookout Deck to western entrance trail: 920 ft
<b>Capacity</b>	60 persons per hour (Assuming at least 25 ft social distancing; 20 minutes at lookout deck)

### LOOKOUT DECK

*Table 6-6 – Spatial Data – Lookout Deck*

<b>Map reference number</b>	5
<b>Total footprint (size)</b>	144 ft <sup>2</sup>
<b>Dimensions</b>	12 ft x 12 ft
<b>Capacity</b>	20 persons at a time

## VENDING ZONE

Table 6-7 – Spatial Data – Vending Zone, including Outdoor Eating Area

	<b>Vending Units</b>	<b>Outdoor Eating Area</b>
Map reference number	6	7
Total footprint (size)	7,080 ft <sup>2</sup>	14,440 ft <sup>2</sup>
Dimensions	236 ft X 30 ft	~ 240 ft x 50 -100 ft (Irregularly shaped)
Capacity (No. of vending units)	6 units (3 medium units, 3 small units)	
Capacity (No. of vendors)	6 - 9 (See note on carrying capacity)	
Table capacity (Outdoor Eating Area)		20 tables (40-foot spacing) or 52 tables (20-foot spacing)

Note: Seating can be accommodated on the deck of each medium unit.

## ADMINISTRATIVE UNIT

Table 6-8 – Spatial Data – Administrative Unit

Map reference number	8
Total footprint (size)	301 ft <sup>2</sup>
Dimensions	15.5 ft x 10 ft (exclusive of deck) 21.5 ft X 14 ft (inclusive of deck)
Capacity (No. of staff)	2
Capacity (Restrooms)	2

## BEACH CHAIR ZONE

Table 6-9 – Spatial Data – Beach Chair Zone

Map reference number	9
Total footprint (size)	~18,352 ft <sup>2</sup>
Dimensions	592 ft x 31 ft
Capacity	Up to 400 chairs at a time (Depends on specific layout mix – if single chair layout is used, less chairs can be accommodated within the designated zone at a time)

## PASSIVE WATER SPORTS ZONE

Table 6-10 – Spatial Data – Passive Water Sports Zone

	<b>Water sports operation</b>	<b>Launch area</b>	<b>Support Facilities</b>
Map reference number	10a	10b	10c
Total footprint (size)	~357,600 ft <sup>2</sup>	Varies with seasonal beach width	Max: 100 ft <sup>2</sup> (2 units)
Dimensions	~ 1788 ft x 200 ft	15-foot wide access to water	Max: 10 ft x 5 ft each
Setback	200 feet from shoreline	30 feet east of eastern entrance	At least 50 feet from vegetation line

## PARKING FACILITIES

*Table 6-11 – Spatial Data – Parking Facilities*

	<b>Central Parking Lot</b>	<b>Eastern Parking Lot</b>	<b>Taxi Parking Lot</b>
<b>Map reference number</b>	11a	11b	11c
<b>Total footprint (size)</b>	20,100 ft <sup>2</sup>	1,530 ft <sup>2</sup>	3,500 ft <sup>2</sup>
<b>Dimensions</b>	380 ft (outer bays), 280 ft (inner bays) x 60 ft	85 ft x 18 ft	70 ft x 50 ft
<b>Capacity</b>	74	10	14

## RESTROOMS

*Table 6-12 – Spatial Data – Restrooms*

	<b>Public Restrooms</b>	<b>Administrative Unit Restrooms</b>
<b>Map reference number</b>	12	13
<b>Total footprint (size)</b>	TBC	55 ft <sup>2</sup>
<b>Dimensions</b>	TBC	10 ft x 5.5 ft
<b>Capacity (Standard stalls)</b>	6 stalls (3 male, 3 female)	2 stalls (1 male, 1 female)
<b>Capacity (Handicap accessible stalls)</b>	2 stalls (1 male, 1 female)	0 stalls
<b>Capacity (sinks)</b>	6 sinks (3 male, 3 female)	2 sinks (1 male, 1 female)

## MAIN ACCESS ROAD

*Table 6-13 – Spatial Data – Main Access Road*

<b>Map reference number</b>	14
<b>Service area</b>	Central entrance to beach ( <i>central public parking lot, taxi parking lot</i> )  Eastern entrance to beach ( <i>eastern public parking lot</i> )
<b>Dimensions (Public road to taxi parking lot)</b>	Existing footprint to be maintained ( <i>No further widening to avoid environmental impact</i> )  Length: ~1,285 ft Width: 21 – 29 ft
<b>Dimensions (Taxi parking lot to eastern public parking lot)</b>	Existing footprint to be maintained ( <i>No further widening to avoid environmental impact</i> )  Length: ~872 ft Width: 11 – 20 ft

## WATER AND POWER FACILITIES

*Table 6-14 – Spatial Data – Water and Power Facilities*

<b>Map reference number (main connection)</b>	15
<b>Service area</b>	Vending Zone, Administrative Unit, Public Restrooms

## WASTE MANAGEMENT FACILITIES

### ***Solid Waste Management***

*Table 6-15 – Spatial Data – Solid Waste Management Facilities*

	<b><i>Main Service Bin</i></b>	<b><i>Vending Zone Bin</i></b>	<b><i>Picnic Area</i></b>	<b><i>Outdoor Eating Area</i></b>	<b><i>Barbeque Pits Bin</i></b>
<b>Map reference number</b>	16a	16b	Distributed within Area	Distributed within Area	16c
<b>Capacity per bin</b>	2-yard	2-yard	30-42-gallon	30-42-gallon	2-yard
<b>Number of bins</b>	1	1	12	6	1

### ***Sewage/Greywater Treatment Facility***

*Table 6-16 – Spatial Data – Sewage/Greywater Treatment Facility*

<b>Map reference number</b>	17
<b>Capacity of final effluent storage tank</b>	1,000 gallons

## 6.3 FACILITIES PLAN

The Facilities Plan establishes the design and building criteria for all amenities and facilities included in the Beach Management Plan. The Facilities Plan comprises of a series of design specification tables (Tables 6-17 to 6-34) and illustrations (Figures 6-9 to 6-41).

### 6.3.1 Beach Dune Protection Barrier

*Table 6-17. Specifications for Beach Dune Protection Barrier*

<b>Material</b>	Wood (ideally used electricity poles)
<b>Spacing</b>	4 ft
<b>Height (above ground)</b>	2 ft
<b>Depth (below ground)</b>	4 ft
<b>Colour</b>	Dark brown
<b>Method of fixing</b>	Buried, packed and filled



*Figure 6-9. Example of wooden posts being used as a protective barrier for the beach dune at Maegan's Bay, St. Thomas, United States Virgin Islands*

## 6.3.2 Picnic Area

### INTERNAL LAYOUT

*Table 6-18. Specifications for Internal Layout of the Picnic Area*

<b>Minimum space between picnic tables</b>	20 ft
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*Figure 6-10. Renderings of Picnic Area. Credit: Public Works Department (PWD).*

### PICNIC TABLES

*Table 6-19. Specifications for Picnic Tables within the Picnic Area*

<b>Design</b>	Standard picnic table - rectangular table with attached benches on each side
<b>Dimensions</b>	72 in x 58.75 in (6 ft x 4 ft, 10.75 in)
<b>Seating capacity</b>	4 - 6 persons
<b>Construction materials</b>	Treated wood (suitable for beach environment) or Polywood
<b>Permitted colours</b>	Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment. (Natural wood, brown or green are recommended to blend into the sand or seagrape treeline).
<b>Method of fixing</b>	None (on surface)

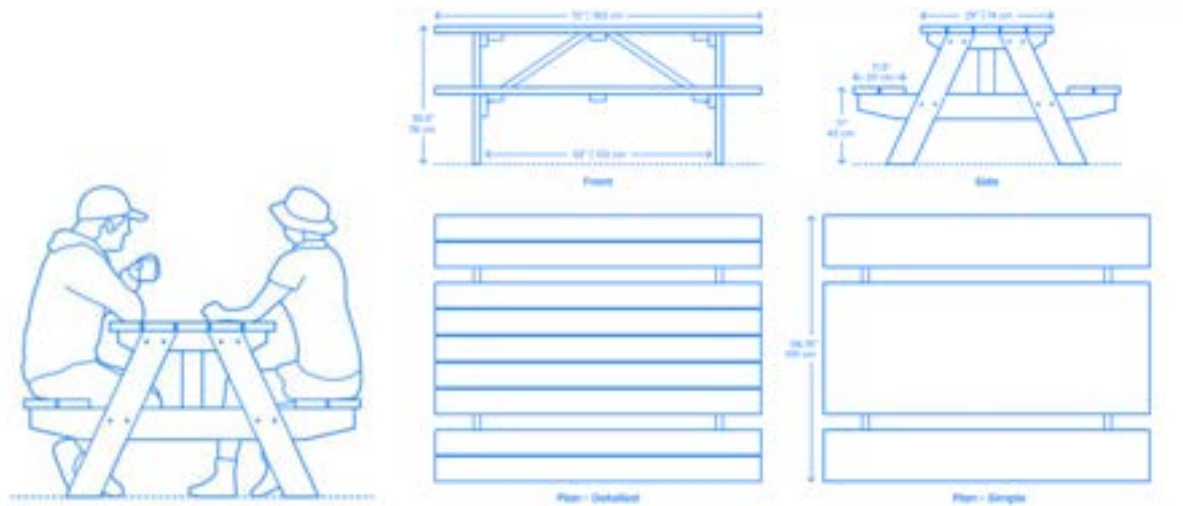


Figure 6-11. Illustration of standard picnic table and dimensions. Credit: [www.dimensions.com](http://www.dimensions.com)

## WALKWAYS

Table 6-20. Specifications for Walkways within the Picnic Area

<b>Path design</b>	Organic path, following curved lines
<b>Width</b>	4 – 6 ft
<b>Walking surface</b>	Natural - sand
<b>Definition of edges</b>	Vegetation and furnishings – Seagrape treeline and picnic benches on seaward side and primary beach dune vegetation on landward side



### 6.3.3 Birdwatching Hiking Trail

Table 6-21. Specifications for Birdwatching Hiking Trail

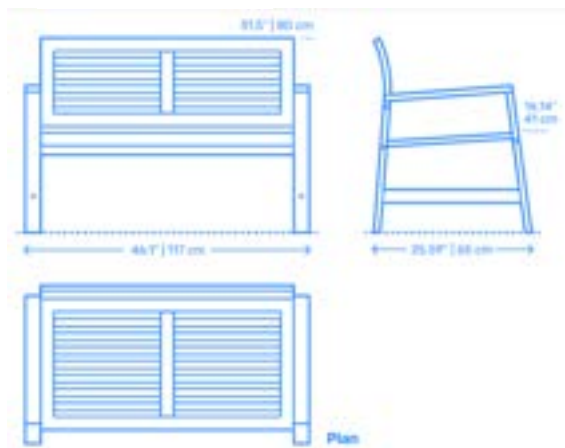
<b>Walking surface</b>	Natural surface with tree log steps where necessary (Figure 6-12)
<b>Hand railings (where necessary)</b>	<i>Material:</i> Tree logs, wood or rope <i>Colours:</i> Natural wood, brown or cream (rope)
<b>Definition of edges</b>	Vegetation
<b>Benches at rest points along salt pond edge</b>	<p><i>Design:</i> Standard park bench with or without back (Figure 6-13) <i>Size:</i> 46.1 in to 63.78 in (3 ft, 10.1 in to 5 ft, 3.78 in)</p> <p><i>Seating capacity:</i> 2 – 3 persons per bench</p> <p><i>Construction materials:</i> Treated wood (suitable for beach environment) or Polywood</p> <p><i>Permitted colours:</i> Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment. Natural wood, brown or green are recommended to blend into the salt pond edge).</p> <p><i>Method of fixing:</i> None (on surface)</p>
<b>Signage</b>	<p><i>Post material:</i> Treated wood (suitable for beach environment) or Polywood</p> <p><i>Display material:</i> Treated wood (suitable for beach environment) or Polywood</p> <p><i>Display dimensions:</i> Max 3 ft x 2 ft</p> <p><i>Colours:</i> Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment. Text colour should contrast well with background colour for easy reading. Recommended: white text on green or brown background.</p> <p><i>Fonts:</i> Clear, easy-to-read fonts must be used in a size legible to the average reader</p>





Figure 6-12. Illustration of proposed walking surface supported by tree log steps where necessary. Credit: Elachee Nature Science Center

Bench - Option 1



Bench - Option 2



Figure 6-13. Illustration of birdwatching trail rest bench options.

## 6.3.4 Lookout Deck

Table 6-22. Specifications for Lookout Deck

<b>Design</b>	Open deck with full perimeter railings and built-in wooden bench along back perimeter
<b>Construction materials</b>	Treated hardwood

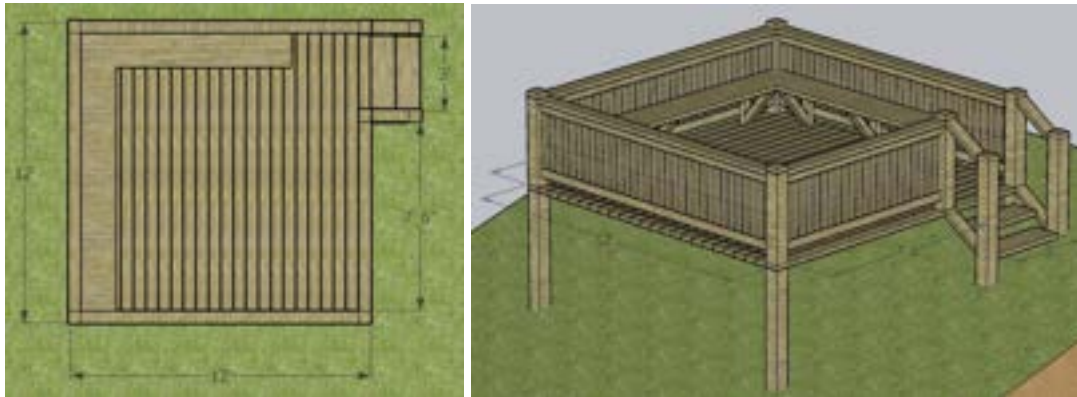


Figure 6-14. Lookout Deck plan view (left) and front perspective (right). Built-in benches are provided along the back and side of the deck opposite the entrance.



Figure 6-15. Rendering of Lookout Deck. Credit: PWD.



Figure 6-16. Partial view from Lookout Deck. Credit: PWD.

## 6.3.5 Vending Zone, including Outdoor Eating Area

### INTERNAL LAYOUT

*Table 6-23. Specifications for the Internal Layout of the Vending Zone*

<b>Distance between vending units</b>	15 ft  (See Figure 6-7 under the Spatial Plan for the Vending Unit Site Plan)
<b>Spacing between tables in Outdoor Eating Area</b>	Minimum of 20-ft clearance in all directions is recommended for optimal social distancing and comfort.
<b>Additional development guidelines</b>	<p>The Vending Zone shall be developed starting with the lots set back furthest from the vegetation line.</p> <p>A total of 36 tables in the Outdoor Eating Area are proposed initially. Tables should be spread across the entire Vending Zone. An open-seating /cafeteria style policy will obtain.</p>



*Figure 6-17. Rendering of Vending Zone entrance. Credit: PWD*





Figure 6-18. Rendering of Vending Zone – front view. Credit: PWD



Figure 6-19. Rendering of Vending Zone – front view showing wheelchair access. Credit: PWD



Figure 6-23. Rendering of Vending Zone – back view. A layby is provided to facilitate servicing of vending units. Credit: Public Works Department



*Figure 6-20. Rendering of Outdoor Eating Area – front view. Credit: PWD*



*Figure 6-21. Rendering of Vending Zone, including Outdoor Eating Area – perspective overhead view. Credit: PWD*



*Figure 6-22. Rendering of Vending Zone, including Outdoor Eating Area – front overhead view. Credit: PWD*



## VENDING UNITS

Table 6-24. Specifications for Vending Units

	<b>Small Units</b>	<b>Medium Units</b>
<b>Unit dimensions</b>	10 ft x 10 ft (exclusive of deck)	16 ft x 16 ft (exclusive of deck)
<b>Deck dimensions</b>	4 ft (front and both sides)	10 ft (front and one side)
<b>Access</b>	Handicap access provided	Handicap access provided

<b>Architectural design</b>	<i>Architectural style:</i> Traditional Caribbean <i>Small units:</i> open air concept <i>Medium units:</i> open air front, enclosed back <i>Roof type:</i> Hip roof
<b>Evaluation of base</b>	8 inches
<b>Max height</b>	1 storey (up to 10 feet)
<b>Construction materials</b>	<i>Foundation/footing:</i> Hardwood <i>Walls:</i> Treated wood siding (clapboard) <i>Windows:</i> Traditional wooden shutters <sup>5</sup> and metal louvered shutters <i>Roofing:</i> Galvalume
<b>Permitted colours</b>	Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment.  Units should be uniform in a standard set of colours. Recommended exterior wall colours: Natural wood, tan, beige or white to blend into the sand and vegetation with accent colours from earthtone family.



Figure 6-24. Small Vending Unit floor plan



Figure 6-25. Small Vending Unit rendering

<sup>5</sup> No glass windows allowed to prevent risk of shattered glass littering sand in a hurricane or other event



Figure 6-26. Medium Unit – Basic floor plan sample



Figure 6-27. Medium Unit rendering



Figure 6-28. Medium Unit – Detailed floor plan sample

Note: Units will be rented as a shell and outfitted on the interior as desired by the lessee.

## TABLES AND CHAIRS (OUTDOOR EATING AREA)

*Table 6-25. Specifications for Tables and Chairs for the Outdoor Eating Area*

<b>Design</b>	Circular picnic table with attached bench (with or without backrest). Figure 6-29.
<b>Dimensions:</b>	Height: 32.3 in Diameter: 97 in (8ft)
<b>Seating capacity</b>	8 persons
<b>Construction materials</b>	Treated wood (suitable for beach environment) or Polywood
<b>Permitted colours</b>	Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment. (Natural wood, brown or green are recommended to blend into the dune vegetation).
<b>Method of fixing</b>	None (on surface)



Figure 6-29. Illustration and dimensions of sample circular picnic tables. Credit: [www.therange.co.uk](http://www.therange.co.uk)

## 6.3.6 Administrative Unit

Table 6-26. Specifications for Administrative Unit

<b>Unit dimensions</b>	15.5 ft x 10 ft ( <i>exclusive of deck</i> )
<b>Deck</b>	4 ft
<b>Access</b>	Handicap access provided
<b>Architectural design</b>	<i>Architectural style:</i> Traditional Caribbean <i>Roof type:</i> Hip roof
<b>Evaluation of base</b>	8 inches
<b>Max height</b>	1 storey (up to 10 feet)
<b>Construction materials</b>	<i>Foundation/footing:</i> Hardwood <i>Walls:</i> Treated wood siding (clapboard) <i>Windows:</i> Traditional wooden shutters and wooden louvers <sup>6</sup> <i>Roofing:</i> Galvalume
<b>Permitted colours</b>	Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment.  Recommended wall colours: Natural wood, tan, beige or white to blend into the sand and vegetation with accent colours from earthtone family.



Figure 6-30. Rendering of Administrative Unit viewed at a distance from the west with Vending Zone in the background.

<sup>6</sup> No glass windows allowed to prevent risk of shattered glass littering sand in a hurricane or other event

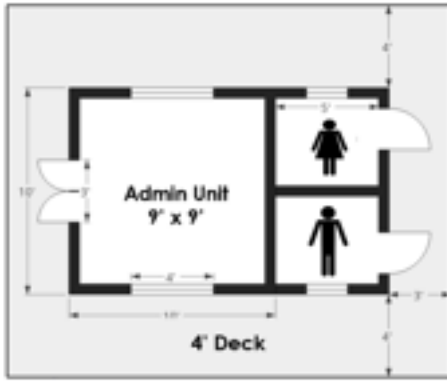


Figure 6-31. Administrative Unit floor plan



Figure 6-32. Administrative Unit rendering

### 6.3.7 Beach Chair Zone

Table 6-27. Specifications for Beach Chair Zone

<b>Total footprint (size)</b>	~18,352 ft <sup>2</sup>
<b>Zone dimensions</b>	592 ft x 31 ft (~75% of eastern beach length and 60% of the beach width)
<b>Zone capacity</b>	Up to 400 chairs maximum (400 chairs is based on a full double chair configuration. Less chairs can be accommodated within the zone if a single chair layout is used).
<b>Internal layout</b> (See Figure 6-33)	Rows allowed: 3 Chairs per row in block: 20 chairs (in 10 pairs) Chairs per block: 60 chairs (in 30 pairs) Recommended space between pair of chairs: 3 ft Recommended space between blocks of chairs: 10 ft Recommended space between rows of chairs: 6 ft
<b>Beach chair dimensions</b>	Single chair: 2.33 ft x 6.25 ft Pair of chairs (with umbrella): 4.9 ft x 6.25 ft
<b>Storage facilities</b>	5 pergola-style storage units similar to those illustrated in Figure 6-35 to be located behind the seagrape treeline, distributed as shown in the Spatial Plan (Figure 6-5)



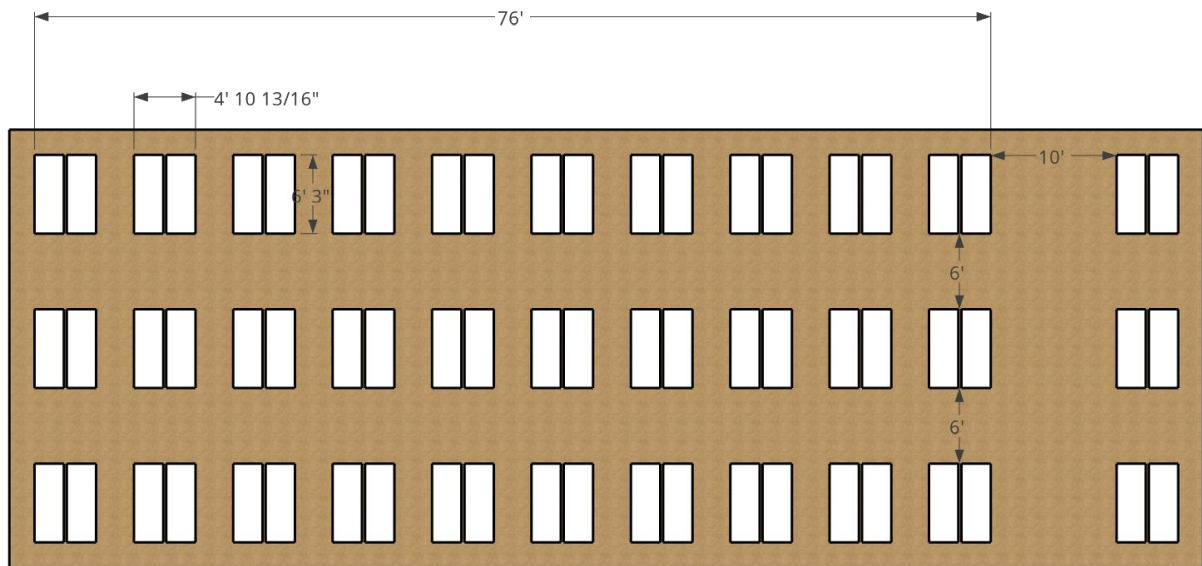


Figure 6-33a. Recommended internal layout of Beach Chair Zone to maintain social distancing/user comfort. Chairs are set out in blocks comprised of 3 rows of chairs spaced 6 feet apart. Each row contains up to 10 pairs of chairs spaced 3 feet apart. A 10-foot space is left between each block of chairs.

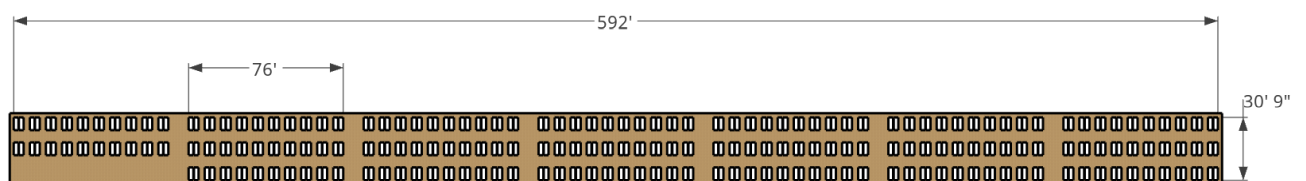


Figure 6-33b. Sample full Beach Chair Zone layout following recommended spacing, using pairs of chairs with shared umbrella. This layout can accommodate the existing 400 chairs grouped into 6 blocks of 30 pairs of chairs (60 chairs) within the defined Beach Chair Zone.



Figure 6-34. Rendering of Beach Chair Zone. Credit: PWD.



Figure 6-35. Sample design concept for beach chair storage pergolas.

## 6.3.8 Parking Facilities

Table 6-28. Specifications for Parking Facilities

	<b>Central Parking Lot</b>	<b>Eastern Parking Lot</b>	<b>Taxi Parking Lot</b>
<b>Layout/design</b>	90° perpendicular with aisle (double bay)	90° perpendicular without aisle (single bay)	90° perpendicular without aisle and with circulator road (double bay)
<b>Parking space size</b>	8 ft 6 in x 18 ft	8 ft 6 in x 18 ft	10 ft x 25 ft
<b>Aisle width</b>	24 ft	N/A	N/A
<b>Circulator Road</b>	N/A	N/A	12 ft
<b>Vegetation screening buffer</b>	6 ft	6 ft	6 ft



*Figure 6-36. Central Parking Lot rendering*



*Figure 6-37. Eastern Parking Lot rendering*





Figure 6-38. Taxi Parking Lot rendering

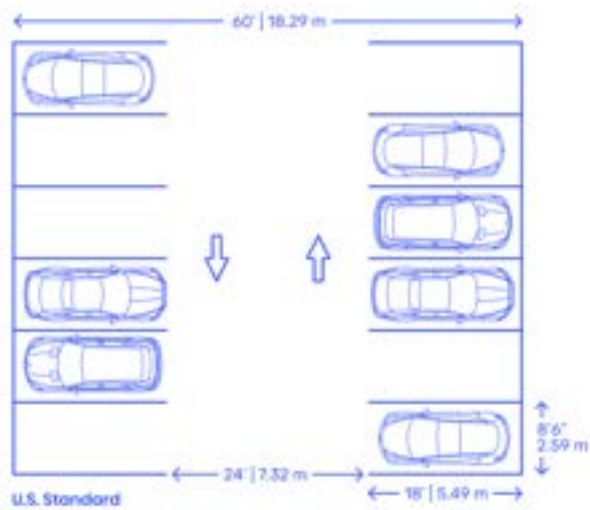


Figure 6-39a. Central Parking Lot layout  
Credit: [www.dimensions.com](http://www.dimensions.com)

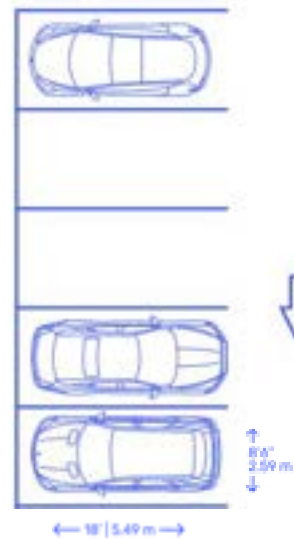


Figure 6-39b. Eastern Parking Lot layout  
Credit: [www.dimensions.com](http://www.dimensions.com)

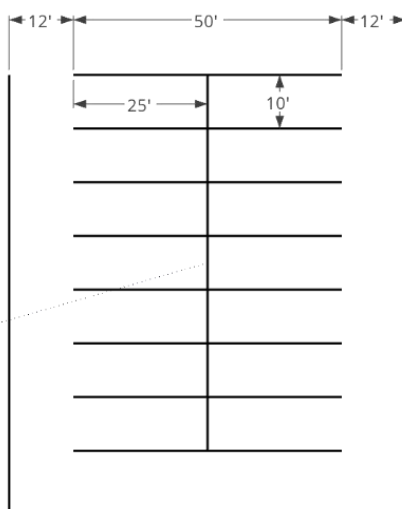


Figure 6-39c. Taxi Parking Lot layout

## 6.3.9 Water and Power Facilities

Table 6-29. Specifications for Water and Power Facilities

	<b>Water</b>	<b>Power</b>
<b>Supply</b>	Public potable water supply line from public road	Public grid (BVI Electricity Cooperation)  To prevent air and noise pollution, independent back-up generators are not allowed. Centralized solar power production at the public restroom facility is proposed in the medium term provided that budget and management capacity can support the investment, maintenance and security of the system.
<b>Water reticulation design / Electricity distribution system design</b>	Connections to each vending unit and the Administration Unit from the main connection	
<b>Metering system</b>	Independent metering for each vending unit and for the Administrative Unit	

## 6.3.10 Signage

Table 6-30. Specifications for Signage

<b>Maximum size</b>	Commercial signs: 4ft <sup>2</sup>  Beach management authority signs: 9ft <sup>2</sup>
<b>Permitted materials</b>	Wood or Polywood
<b>Content and Design</b>	<p><i>Commercial signs</i></p> <ul style="list-style-type: none"> <li>- No obscene or vulgar language or graphics</li> <li>- Content limited to information identifying the business, products, prices and promotions</li> </ul> <p><i>Beach management authority signs</i></p> <ul style="list-style-type: none"> <li>- Safety and informational signs must bear the logo and name of the beach management authority</li> <li>- Safety and informational signs must be uniform in their appearance (colour scheme and graphic design)</li> <li>- Earthtone colours that are aesthetically sensitive by blending into the natural landscape/environment should be used.</li> <li>- The text colour should contrast well with the background colour for easy reading. Recommended: white text on green or brown background. Text should also be in clear, easy-to-read fonts in a size legible to the average reader.</li> </ul>



<b>Placement</b>	<ul style="list-style-type: none"> <li>- Vending signs must be affixed to the front façade of vending units</li> <li>- Signs are not permitted in walkways or in areas that obstruct circulation on the beach or views of the beach scenery</li> <li>- Safety and information signs must be placed in central, visible locations at all three beach entrances and must be erected at eye level</li> </ul>
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## 6.3.11 Waste Management Facilities

### SOLID WASTE MANAGEMENT

*Table 6-31. Specifications for Waste Management Facilities*

	<b>Main Service Bin</b>	<b>Vending Zone Bin</b>	<b>Picnic Area</b>	<b>Outdoor Eating Area</b>	<b>Barbeque Pits Bin</b>
<b>Types of waste receptables</b>	General waste, Recycling (plastic, aluminium)	General waste, Recycling (plastic, aluminium)	General waste, Recycling (plastic, aluminium)	General waste, Recycling (plastic, aluminium)	General waste, Recycling (plastic, aluminium)
<b>Bin capacity</b>	2-yard	2-yard	30-42-gallon	30-42-gallon	2-yard
<b>No. of receptables</b>	General (1) Recycling (1)	General (1) Recycling (1)	General (12) Recycling (12)	General (6) Recycling (6)	General (1) Recycling (1)
<b>Additional required features</b>	Screening, covering	Screening, covering	Covering, wide disposal slots	Covering, wide disposal slots	Screening



*Figure 6-40. Illustrations of sample bins and screening. (A) Sample design concept for general waste/recycling bin system for Picnic Area and Outdoor Eating. (B) Sample design for covered 2-ton bins for Main Service Bin, Vending Zone Bin and Barbeque Pits Bin. (C) Rendering of screened Main Service Bin.*

## SEWAGE AND WASTEWATER MANAGEMENT

*Table 6-32. Specifications for Sewage and Wastewater Management Facilities*

<b>Type of treatment system</b>	Aerated sewage treatment plant (no leach field)
<b>Treatment capacity (volume)</b>	6,500 gallons (intake tank)
<b>Effluent storage capacity (volume)</b>	1,000 gallons (final effluent tank)
<b>Operational details</b>	<p>The sewage treatment facility does not include a leach field. No final effluent from the treatment process is released into the environment. The final effluent tank (1,000-gallon capacity) is pumped out 2-4 times per month and the effluent disposed offsite.</p> <p>Automatic grease interceptors are to be installed within each vending unit that contains a kitchen. Additionally, a main grease interceptor will be installed on the greywater line from the vending units to the sewage treatment plant in the event that interceptors within the units malfunction. The Beach Management Plan does not include facilities for the collection or treatment of hazardous materials. Hazardous materials are not allowed on the beach.</p>
<b>Spare capacity</b>	There is sufficient spare capacity to add the wastewater from the restrooms of the Administrative Unit and the kitchens/sinks of the vending units. The number of times the final effluent tank is emptied per month may have to be increased during peak usage months.

### 6.3.12 Public Restroom Facility

*Table 6-33. Specifications for Public Restroom Facility*

	<b><i>Existing</i></b>	<b><i>Proposed Upgrades</i></b>
<b>Additional Amenities</b>	None	Face mirrors; automatic faucets; baby changing station; 4 outdoor showers



Figure 6-41. Existing public restroom facility.

### 6.3.13 Main Access Road

Table 6-34. Specifications for Public Access Road

<b>Edge of road</b>	Vegetation
<b>Surface</b>	<p>Natural</p> <p><i>(The road will be graded as needed to maintain a smooth surface. Grading will be done in such a manner as to prevent impact to the salt pond and beach dune. The access road will not be paved as doing so would increase stormwater runoff and impact the environment, including the neighbouring salt pond and mangrove forest).</i></p>

## 6.4 ENVIRONMENTAL RESTORATION & PROTECTION PLAN

This layer of the Plan seeks to ensure that the beach environment is protected as a matter of priority.

This section describes the legal framework established for environmental protection of the beach and wider environment.

In addition, for each environmental asset, this section indicates the:

- Restoration/protection goal
- Standards to be achieved/maintained
- Restoration actions
- Environmental management measures

The wider, general management measures and user rules to ensure environmental standards are achieved/maintained are included under the General Management Measures & Rules layer of the Plan.

### 6.4.1 Legal Framework

The Virgin Islands National Parks Act, 2006 and its 2008 Regulations are proposed as the primary legal mechanisms to protect and manage the Long Bay, Beef Island environment, including the beach, nearshore marine area and surrounding wetland areas. This is in keeping with the 2004 Cabinet decision to purchase the lands comprising and surrounding Long Bay for preservation as wetland, managed by the National Parks Trust. The Virgin Islands National Parks Act, 2006 and its Regulations would offer a higher and more comprehensive level of protection than can be provided through the otherwise dated, limited and fragmented environmental legislation of the Territory. Declaration of the area as a National/Marine Park would also directly align with the Vision for the beach expressed in this Plan.

The process to declare Long Bay a National Park/Marine Park under section 15(b) of the National Parks Act, No.4 of 2006 was triggered at least by 2014. A National/Marine Park is defined as “a natural area of land and/or sea containing a representative sample of major natural regions, features, or scenery, or where wildlife, habitats, or surface features are of special significance and are not materially altered by current human occupation or exploitation, to be maintained in perpetuity with the following conservation and management objectives;

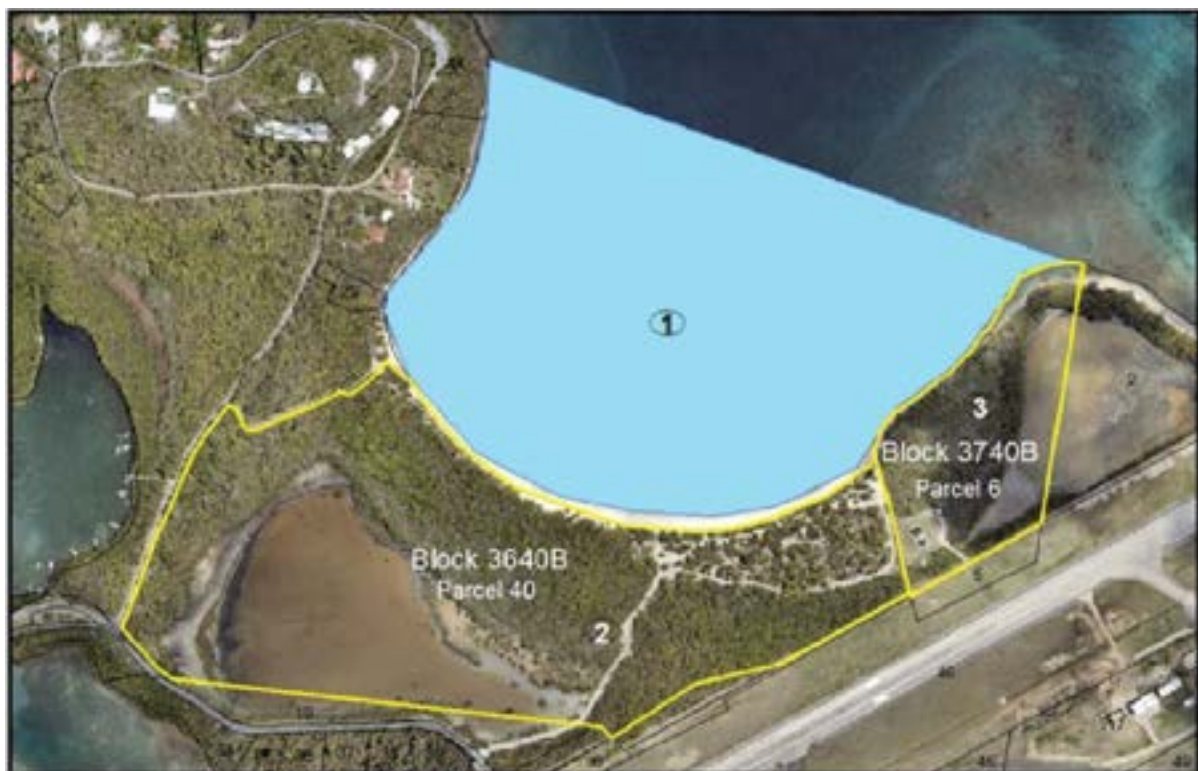
- a) To protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational, or tourism purposes;
- b) To protect, in as natural a state as possible, representative samples of major physiographic regions, biotic communities, genetic resources, and species for ecological stability and diversity;



- c) To manage visitor use for inspirational, scientific, educational, recreational, or cultural purposes at a level which will maintain the area in a natural or near natural state;
- d) To eliminate and thereafter prevent exploitation or occupation harmful to the purposes for which the areas was declared; and
- e) To take into account the needs of indigenous people, including subsistence resource use, in so far as that use does not adversely affect the conservation objectives of the area.”

The boundaries of the proposed National Park/Marine Park are highlighted in yellow outline and blue shading in Figure 6-42 below.

In order for The Virgin Islands National Parks Act, 2006 and its 2008 Regulations to apply, the formal process to declare the area a National Park/Marine Park must be completed.



*Figure 6-42. Boundaries of the proposed National Park/Marine Park at Long Bay, Beef Island*

In addition to The Virgin Islands National Parks Act, 2006 and its 2008 Regulations, relevant laws among the other applicable legislation listed under the Implementation Plan will be applied to help protect the environment.

## 6.4.2 Vegetation Line - Foredune

### RESTORATION / PROTECTION GOAL

The goal is to restore the vegetation line on the western end of the beach to 100% of its natural extent and character and on the eastern end of the beach to 90% historic cover based on the 2002 aerial imagery baseline (Figure 2-4). This goal is in keeping with best scientific practice which recognizes the significance of an intact vegetation line to the overall beach health as well as historic cultural practices that set back farming/agriculture and development from the beach vegetation line. The relaxed restoration target on the eastern end of the beach factors the footprint of the anticipated human uses, including the Picnic Zone.

### STANDARDS

*Table 6-35. Standards for Vegetation Line Restoration*

Vegetation line width	10-12 meters
Species composition	<p>The vegetation line should maintain its historic species composition, including seagrape trees (<i>Coccoloba uvifera</i>). A list of species historically found within the vegetation line is indicated in Appendix I. This primarily consists of Zone B species, however, Zone A species which typically grow directly in front the vegetation line are captured as well.</p> <p><u>Invasive species</u> Invasive species will be actively eradicated.</p> <p><u>Poisonous plants</u> Poisonous plants, such as the manchineel tree, will be clearly labelled with appropriate warning signs. Young plants will be removed.</p>
Density (seagrape trees)	5 clusters (2-3 trees each) per 25m segment – that is, 10-15 trees per 25m segment

### RESTORATION ACTIONS

- Actively replant and restore the vegetation line.

#### ***Requirements/Specifications for Restoration Actions***

The species in Table 6-36 have been identified as priority for restoration of the vegetation line. These species have been selected based on their historic presence, ecological value, growth potential and shading value. All species will require a degree of maintenance after planting, including watering, which will be the responsibility of the Beach Wardens. The Beach Wardens will be equipped with a small utility vehicle capable of manoeuvring in loose sand, a portable water tank and extended inflatable house to support this function. Additionally, protective barriers may be required around some species depending on where they are planted to protect them from trampling or other forms of damage. Long Bay does not presently have an issue with feral goats or sheep and, as such, predation is not likely to be a threat to restoration efforts.

Table 6-36 Requirements/Specifications for Vegetation Line Restoration

Species	No. of samples required	Source	Recovery Period Required	Monitoring Cycle
<i>Zone A</i>				
Beach morning glory ( <i>Ipomoea pes-caprae</i> )	50	Propagation from existing samples	1 year	Once a month
<i>Zone B</i>				
Seagrape trees - adult ( <i>Coccoloba uvifera</i> )	140 (Phase 1 – 70; Phase 2 – 70)	Procurement from private nurseries	2 – 3 years	Once a month
Seagrape trees - juvenile ( <i>Coccoloba uvifera</i> )	140	Growth at HLSCC mangrove nursery	5 – 7 years	Once a month
Barbasco ( <i>Jacquinia arborea</i> )	100	Procurement from private nurseries	10 – 15 years	Once a month
Lignum vitae ( <i>Guaiaecum officinale</i> )	50	Procurement from National Parks Trust nursery and private nurseries as necessary	10 – 15 years	Once a month
Loblolly ( <i>Pisonia subcordata</i> )	30	Procurement from private nurseries	5 – 7 years	Once a month
Marble tree ( <i>Cassine xylocarpa</i> )	45	Procurement from private nurseries	10 – 15 years	Once a month

## ENVIRONMENTAL MANAGEMENT MEASURES

- Vegetation destroyed by natural means, including natural disasters, shall be allowed to recover naturally or be actively restored as advised by the beach management authority.
- Pruning of trees, if required, will be carried out by the designated beach management authority.
- Only vegetation native to the beach system is to be used in any landscaping.
- Any invasive species identified is to be actively eradicated with efforts coordinated by the beach management authority.

- Development is only permissible in zones designated by the Beach Management Plan and is to be carried out by the beach management authority. Any development is to be conducted in keeping with required building standards to minimize impact to the sand dune.
- Furnishings are only allowed in the Picnic Area, Outdoor Eating Area and designated rest points along the Bird Watching Hiking Trail.

### 6.4.3 Beach Dune System

#### RESTORATION / PROTECTION GOAL

##### ***Eastern Dune System***

The goal is to restore the dune vegetation coverage to at least 75% of its historic extent and character using the 2002 aerial imagery baseline. The relaxed restoration target factors the footprint of the anticipated human uses, including the Vending Zone and Outdoor Eating Area. The dune is to be fully restored with the exception of these footprints.

##### ***Western Dune System***

The goal is to preserve and protect the natural extent and character of the western dune system, including its vegetation cover, which currently remains mainly intact, using 2002 aerial imagery baseline. Only a narrow hiking trail will be cut to facilitate access for bird watching along the salt pond and access to the proposed Lookout Deck.

#### STANDARDS

##### ***Eastern Dune System***

*Table 6-37. Standards for Eastern Dune System*

<b>Width</b>	Historic width (using 2002 baseline) to be restored and maintained - from beach berm to existing main access road to eastern section of beach
<b>Species composition</b>	Historic composition to be maintained (see Zone B and C species list in Appendix I)
<b>Density</b>	Historic density (using 2002 baseline) to be restored and maintained with the exception of the Vending Zone and Outdoor Eating area which would have less cover
<b>Access pathways</b>	Access pathways showed be limited to those defined in the Spatial Plan  Surface: sand  Definition of edges: vegetation

## Western Dune System

Table 6-38. Standards for Western Dune System

<b>Width</b>	Historic width (using 2002 baseline) to be maintained
<b>Species composition</b>	Historic composition to be maintained (see Zone B and C species list in Appendix I)
<b>Density (canopies)</b>	Historic density (using 2002 baseline) to be maintained
<b>Access pathways</b>	Access pathways showed be limited to those defined in the Spatial Plan  Surface: sand  Definition of edges: vegetation

## RESTORATION ACTIONS (EASTERN DUNE SYSTEM)

- Actively replant and restore the beach dune system.
- Install a protective barrier of wooden posts around the landward perimeter of the eastern sand dune system to prevent access by vehicular traffic.

### Requirements/Specifications for Restoration Actions

The specifications for the wooden Beach Dune Protection Barrier are included in the Facilities Plan above.

The species in Table 6-39 have been identified as priority for restoration of the beach dune. These species have been selected based on their historic presence, ecological value, growth potential and shading value and are a subset of those prioritized for the vegetation line. All species will require a degree of maintenance after planting, including watering, which will be the responsibility of the Beach Wardens.

Table 6-39. Requirements/Specifications for Beach Dune System Replanting

<b>Species</b>	<b>No. of samples required</b>	<b>Source</b>	<b>Recovery Period Required</b>	<b>Monitoring Cycle</b>
<i>Zone C</i>				
Lignum vitae ( <i>Guaiaecum officinale</i> )	100	Procurement from National Parks Trust nursery and private nurseries as necessary	10 – 15 years	Once a month
Loblolly ( <i>Pisonia subcordata</i> )	170	Procurement from private nurseries	5 – 7 years	Once a month
Marble tree ( <i>Cassine xylocarpa</i> )	105	Procurement from private nurseries	10 – 15 years	Once a month



## ENVIRONMENTAL MANAGEMENT MEASURES

The management measures indicated for the vegetation line apply.

### 6.4.4 Turtle Nesting Habitat

#### RESTORATION / PROTECTION GOAL

The goal is to restore nesting sea turtle populations by restoring and preserving turtle nesting habitat, including the beach dune system, vegetation line and beach berm.

#### STANDARDS

*Table 6-40. Standards for Turtle Nesting Habitat*

<b>Beach dune</b>	To remain intact and free of obstructions or threats that would interfere with turtle nesting or hatching activity
<b>Vegetation line</b>	To remain intact
<b>Beach berm</b>	To remain free of obstructions or threats that would interfere with turtle nesting or hatching activity
<b>Light</b>	No light pollution that would interfere with turtle nesting and hatching (see detailed lighting requirements below)

#### RESTORATION ACTIONS

- Actively replant and restore the vegetation line.
- Actively replant and restore the sand dune system.
- Install the dune protection barrier around the landward perimeter of the eastern sand dune system.

## ENVIRONMENTAL MANAGEMENT MEASURES

- The following best operational and maintenance practices will be observed:
  - If beach furniture cannot be removed from the wider beach environment entirely, it must be stacked and arranged so that the shortest side faces the water.
  - Beach cleaning should be done by non-mechanized raking and litter removal.
  - Cleaning should only take place at or below the high tide line, and only during the day.
  - Cleaning equipment should not penetrate more than 2 inches into the sand.
  - Collected debris and trash should be disposed of properly, away from the beach.
  - The use of plastic lids and straws, polystyrene containers should be eliminated.
  - Signage should be erected to indicate it is a turtle nesting beaches
  - Non-native plants, especially coconut palms (*Cocos nucifera*), should not be planted on or near nesting beaches
  - The number of beach access areas should be limited to minimize trampling of the dune

- Light requirements
  - No permanent fixed lighting sources are allowed fronting the vegetation line or lighting that shines directly onto the nesting beach or out into the ocean.
  - Use curfews to manage lighting - all lights must be off after the sundown, especially during nesting season (March – November).
  - Fixed lighting requires permission for after hours. Use of artificial light requires specific and defined purposes, and only in the required location and for the specified duration of human use.
  - Short wavelength violet/blue lights are not allowed and includes metal halides, fluorescent, halogens, mercury vapour and most LEDs. Only LEDs that are filtered to block blue light can be used. Sea turtles are less disturbed by long wavelengths of light, such as yellow, amber, and red. The wavelength of light should be 560 nm or greater.
  - Avoid high intensity light of any colour. Hatchlings can see all wavelengths of light and will be attracted to long wavelength amber and red light as well as the highly visible white and blue light, especially if there is a large difference between the light intensity and the ambient dark beach environment.

## 6.4.5 Coastal Water Quality

### RESTORATION / PROTECTION GOAL

The goal is to maintain coastal water quality at the 2012-2017 baseline.

### STANDARDS

*Table 6-41. Water Quality Standards to be Maintained for Long Bay, Beef Island*

Water quality should meet the following standards or better:	
<b>pH</b>	6.5-8.5
<b>Temperature</b>	21 - 31 degrees Celsius
<b>Salinity</b>	34 - 40 ppt
<b>Dissolved oxygen</b>	> 4mg/l
<b>Conductivity</b>	52-60 microsiemens/cm
<b>Total dissolved solids</b>	33 - 39 g/l
<b>Nitrates</b>	<2 mg/l
<b>Phosphates</b>	<= 1 mg/l
<b>Turbidity</b>	< 3.5NTU
<b>Total coliform</b>	35% of samples - less than 200cfu/100ml 53% of samples - between 200 cfu and 2,500 cfu/100 ml
<b>Fecal Coliform</b>	>20 cfu/100ml

<b>E.coli</b>	>10 cfu/100 ml
<b>Enterococci</b>	No data before 2018
<b>TBT</b>	No baseline available
<b>Organopollutants</b>	No baseline available

## ENVIRONMENTAL MANAGEMENT MEASURES

- Use of sunscreens that are determined to be harmful to the marine environment will be discouraged through signage and education campaigns.
- All black and greywater is to be treated at the approved wastewater treatment facility.
- All Fats, Oils and Grease (FOG) must be separated from the wastewater stream using grease traps and properly disposed of offsite.
- The wastewater treatment system is to be regularly maintained to prevent failure
- Any compromise or failure of the wastewater treatment facility that may result in impact to the beach will trigger temporary closure of commercial operations until the system is fixed.
- Eco-friendly cleaning products will be encouraged in commercial operations and facilities to reduce pollution and enhance function of the wastewater treatment system.
- Fertilizers and pesticides are only to be used in limited circumstances considered necessary for the greater benefit of the beach environment and should be applied only by the beach management authority or a party authorized by the same with necessary precautions to reduce any environmental impacts.

### 6.4.6 Sand Quality

#### RESTORATION / PROTECTION GOAL

The goal is to maintain sand quality as close as possible to its natural baseline.

#### STANDARDS

*Table 6-42. Sand Quality Standards to be Maintained for Long Bay, Beef Island*

Colour	Natural/historic colour to be maintained based on baseline samples retained at MNRL
Grain size	Natural/historic grain size to be maintained (0.33mm-0.67mm - medium to coarse grain size) <sup>7</sup>
Composition	Natural composition to be maintained, including shells, shell fragments, coral fragments, leaf litter and healthy quantities of sargassum (86% carbonate) <sup>8</sup>

<sup>7</sup> S. Gore (2012). Beach geomorphology and management in the British Virgin Islands. University of Ulster, Coleraine, N. Ireland

<sup>8</sup> S. Gore (2012). Beach geomorphology and management in the British Virgin Islands. University of Ulster, Coleraine, N. Ireland

Stability	Beach berm to remain stable within historical limits and annual erosion/accretion cycles
Movement	Sand to be allowed to move freely to allow longshore drift and dune building
Cleanliness	Sand to be free of all litter and pollutants, including microplastics
Safety	Sand to be free of glass and other introduced sharp objects

## RESTORATION ACTIONS

- Thorough clean-up of beach berm and beach dune in preparation for enforcement of Plan

## ENVIRONMENTAL MANAGEMENT MEASURES

- Mechanical grooming of the beach is not allowed. All beach grooming must be carried out by the beach management authority or a party approved by the authority.
- Sargassum management and harvesting will be done in accordance with best environmental practice and in keeping with the sargassum management protocols being developed for the Territory. In particular, the following must be observed:
  - Healthy, normal levels of sargassum should be left on the beach to naturally decompose. Sargassum at normal levels helps to build the beach.
  - Removal of sargassum should be done with hand tools and use of any heavy equipment avoided. The Plan proposes acquisition of a small utility vehicle fit for manoeuvring in the sand with a small dump bed to assist with removal of sargassum in the event of mass sargassum landings. The sargassum is to be buried in a shallow pit within an identified area of the hind dune to help build the sand dune.

### 6.4.7 Air Quality

#### RESTORATION / PROTECTION GOAL

The goal is to maintain air quality at its historic baseline.

#### STANDARDS

*Table 6-43. Air Quality Standards to be Maintained for Long Bay, Beef Island*

<b>Overall quality</b>	Air quality should be pristine, free from particulate matter, smoke, strong food odours and obnoxious odours
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## ENVIRONMENTAL MANAGEMENT MEASURES

- All open burning on the beach will be controlled as detailed in the General Management Measures & Rules layer of the Plan.
- Barbequing will be confined to the public barbeque pits provided.
- Barbequing by vendors must be done in the designated deck space oriented in a manner as to not affect the Outdoor Eating Area or the Picnic Area.

### 6.4.8 Biodiversity

#### RESTORATION / PROTECTION GOAL

The goal is to protect all biodiversity and their habitats.

#### STANDARDS

*Table 6-44. Biodiversity Standards to be Maintained for Long Bay, Beef Island*

<b>Population levels</b>	Historic population levels of all beach biodiversity are to be maintained through habitat protection. <sup>9</sup>
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## ENVIRONMENTAL MANAGEMENT MEASURES

- Natural beach habitats are to be protected through enforcement of all restrictions/prohibitions included in this Plan and restoration actions in relation to the environment.
- Only vegetation native to the beach system is to be used in any landscaping, including screening of parking lots.
- Any invasive species identified are to be actively eradicated with efforts coordinated by the beach management authority.

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<sup>9</sup> Historic turtle nesting data, bird count data and any other available data is to be applied.



## 6.4.9 Waste Management

### RESTORATION / PROTECTION GOAL

The goal is for all waste to be managed in a responsible and sustainable manner to maintain a clean and safe beach environment.

### STANDARDS

*Table 6-45. Waste Management Standards to be Maintained for Long Bay, Beef Island*

<b>Litter</b>	Zero litter
<b>Pollution</b>	Zero pollution
<b>Product standards</b>	Use of eco-friendly, bio-degradable products by vendors. No service of drinks in glass bottles (safety risk). No use of plastic straws or lids.
<b>Recycling</b>	Recycling of plastic and aluminium

### ENVIRONMENTAL MANAGEMENT MEASURES

The rules under the Management Measures and Rules section apply.

## 6.4.10 Mangroves

### RESTORATION / PROTECTION GOAL

The goal is to preserve and protect the natural extent and character of mangrove areas within the wider beach system using 2002 aerial imagery baseline.

### STANDARDS

*Table 6-46. Mangrove Standards to be Maintained for Long Bay, Beef Island*

<b>Width</b>	Historic width (using 2002 baseline) to be maintained
<b>Species composition</b>	<p>Historic composition to be maintained</p> <p><i>Species list:</i></p> <ul style="list-style-type: none"><li>- Buttonwood (<i>Conocarpus erectus</i>)</li><li>- White mangrove (<i>Laguncularia racemosa</i>)</li><li>- Black mangrove (<i>Avicennia germinans</i>)</li><li>- Red mangrove (<i>Rhizophora mangle</i>)</li></ul> <p><i>Source: Dr. Jarecki's 2003 thesis (Salt ponds in the BVI)</i></p>
<b>Density</b>	Historic density to be maintained

	<p><i>Pond at central beach entrance (Main Pond)</i></p> <ul style="list-style-type: none"> <li>- Buttonwood: 2,341 trees/hectare</li> <li>- White mangrove: 463 trees/hectare</li> <li>- Black mangrove: 3,561 trees/hectare</li> <li>- Red mangrove: 16 trees/hectare</li> </ul> <p><i>Pond adjacent to Airport runway (Secondary Pond)</i></p> <ul style="list-style-type: none"> <li>- Buttonwood: 831 trees/hectare</li> <li>- White mangrove: 4,462 trees/hectare</li> <li>- Black mangrove: 3,077 trees/hectare</li> <li>- Red mangrove: 1,005 trees/hectare</li> </ul> <p><i>Source: Dr. Jarecki's 2003 thesis ('Salt ponds in the BVI')</i></p>
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## RESTORATION ACTIONS

- The Ministry of Natural Resources and Labour will partner with the H. Lavity Stoutt Community College (HLSCC) and other partners to replant mangroves within the greater Long Bay area where there has been lost due to hurricane wind damage or other impacts.

## ENVIRONMENTAL MANAGEMENT MEASURES

- Mangroves destroyed by natural means, including natural disasters, shall be allowed to recover naturally or be actively restored as advised by the beach management authority.
- Pruning of mangroves, if required, will be carried out by the designated beach management authority.
- Any invasive species identified within the mangrove system is to be actively eradicated with efforts coordinated by the beach management authority.
- Furnishings (rest benches) along the salt pond should not be placed in areas where they would infringe on mangroves.

### 6.4.11 Salt Pond

#### RESTORATION / PROTECTION GOAL

The goal is to preserve and protect the natural extent and character of the salt ponds using 2002 aerial imagery baseline.

## STANDARDS

*Table 6-47. Salt Pond Standards to be Maintained for Long Bay, Beef Island*

<b>Footprint (area)</b>	Existing footprint (using 2002 baseline) to be maintained
<b>Water chemistry</b>	<p>Existing average water chemistry as per Dr. Jarecki's 2003 thesis (Salt Ponds in the BVI) is to be maintained:</p> <p><i>Pond at central beach entrance (Main Pond)</i></p> <ul style="list-style-type: none"> <li>- Salinity - 55.3ppt</li> <li>- Nitrates - 0.9 mg/l</li> <li>- Temperature - 20.2 oC</li> <li>- pH - 9</li> <li>- Phosphates - 0.02 m/l</li> <li>- Turbidity - 11.5 FAU (1 FAU = 1 NTU = 1 FNU)</li> <li>- Dissolved Oxygen - 5.75 mg/l</li> </ul> <p><i>Pond adjacent to Airport runway (Secondary Pond)</i></p> <ul style="list-style-type: none"> <li>- Salinity - 84.8 mg/l</li> </ul>
<b>Soil chemistry</b>	Existing chemistry to be maintained <sup>10</sup>
<b>Biodiversity</b>	Existing species composition and population level to be maintained <sup>11</sup>

## ENVIRONMENTAL MANAGEMENT MEASURES

1. The ecological connection between the salt pond and ocean is to be maintained to at least its current extent.
2. Temporary or permanent encroachment on the boundaries of the salt pond is not allowed.
3. Construction of the Birdwatching Hiking Trail around the salt pond defined in the Facilities Plan must follow best practices to minimize any environmental impact.

<sup>10</sup> Baseline survey to be conducted.

<sup>11</sup> Baseline survey to be conducted.

## 6.5 GENERAL MANAGEMENT MEASURES AND RULES

### 6.5.1 General Management Measures to Realize Vision

General management measures to realize the vision for Long Bay, Beef Island are summarized in Table 6-48 below.

*Table 6-48. General management measures to realize the vision for Long Bay, Beef Island*

<b><i>Vision</i></b>	<b><i>Management Measures</i></b>
<b>Preserve the environment</b>	<ul style="list-style-type: none"> <li>• Restore and preserve the seagrape treeline along the entire beach length</li> <li>• Set back commercial development within the secondary/hind dune (area identified for Vending Zone)</li> <li>• Slightly elevate vending units to allow movement of sand</li> <li>• Construct vending units in wood with a limited footprint</li> <li>• Paint vending units in earth tones that are aesthetically sensitive by blending into the natural landscape / environment. Colours are to be approved by the beach management authority</li> <li>• Ensure all beach fixtures and furnishings allowed are in earth tone colours that are aesthetically sensitive by blending into the natural landscape/environment. Colours are to be approved by the beach management authority.</li> <li>• Use wooden posts as access barriers where required.</li> <li>• Use wood to construct all footpaths requiring a finished surface.</li> <li>• Finalize the process to declare the area a National Park/Marine Park.</li> </ul>
<b>Maintain a natural aesthetic</b>	
<b>Balance tourist and residential use</b>	<ul style="list-style-type: none"> <li>• Implement a “share the beach policy” based on the days of the week and times of day that the beach is most demanded by locals versus tourists.</li> </ul> <p><i>Monday – Friday</i> 9 a.m. – 5 p.m.</p> <ul style="list-style-type: none"> <li>- Beach open to taxi tour buses (organized tour operators and independent taxi drivers)</li> </ul> <p><i>Weekends</i> Restrict taxi tour buses on weekends to guard against large tourist numbers when the beach is in highest demand for residential use:</p>

	<p>Option 1</p> <ul style="list-style-type: none"> <li>- Beach closed to taxi tour buses on Saturdays and Sundays</li> </ul> <p>Option 2</p> <ul style="list-style-type: none"> <li>- Beach open to taxi tour buses on Saturdays</li> <li>- Beach closed to taxi tour buses on Sundays</li> </ul> <p>Option 3</p> <p>Beach open to taxi tour buses on Saturdays and Sundays until 1 p.m.</p>
<b>Allow some commercial development that is limited and carefully planned to achieve elements above</b>	<ul style="list-style-type: none"> <li>• Limit vending activity to the Vending Zone and Water Sports Zone – the Vending Zone is near to but off the centre of the beach and set back from the vegetation line.</li> <li>• Limit beach chair rental to the defined zone as shown in the Spatial Plan. In keeping with the “share the beach” principal, only allow rental of beach chairs during week days and not on Saturdays and Sundays when the public mainly utilizes the beach.</li> <li>• Prevent peddlers operating at the beach. Only licensed vendors approved by the beach management authority under lease/license agreement are allowed to operate.</li> <li>• Establish the opening hours for commercial activities from 9 a.m. to 6 p.m. Monday to Saturday.</li> <li>• Preserve the central, eastern and western entrance points of the beach in a natural state.</li> <li>• Maintain the historic, natural appearance / aesthetic of the beach from the seaside.</li> <li>• No anchoring, except when permitted for special events/holidays.</li> </ul>

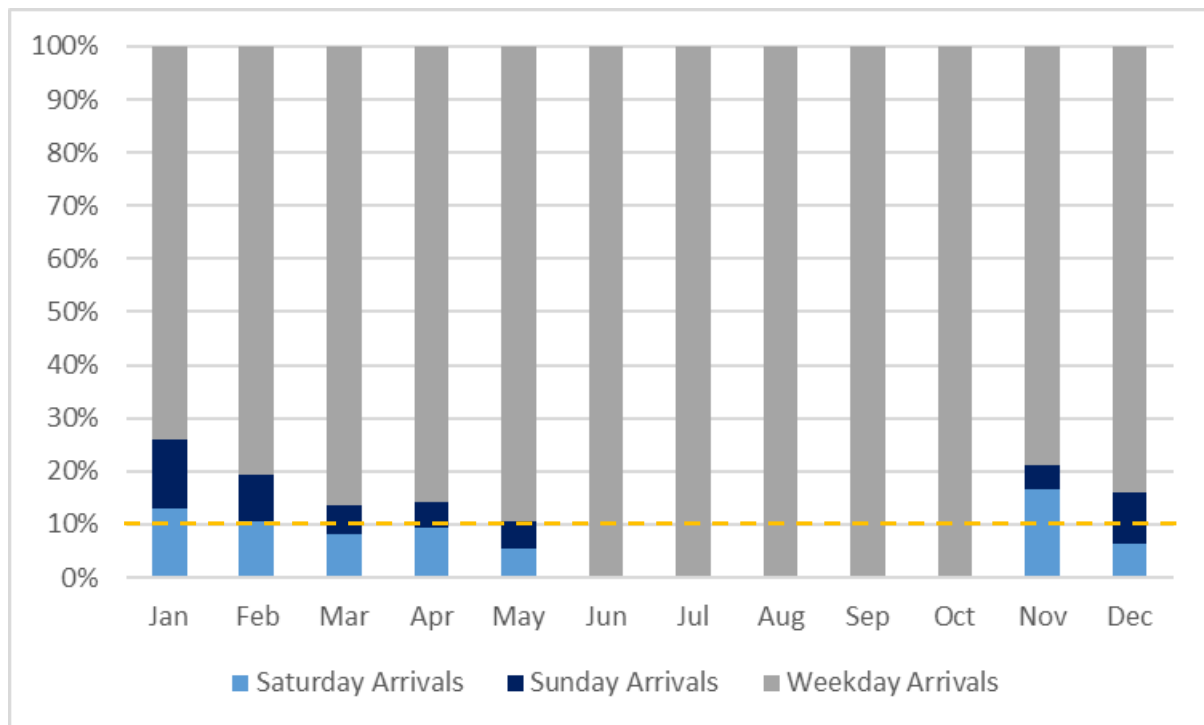
An analysis of cruise ship passenger arrivals was conducted to assess the potential economic impact of these management measures, in particular the option of closing the beach to taxi tour buses and prohibiting rental of beach chairs on weekends.

The analysis reveals that the economic impact would be marginal and would not adversely affect the profitability and sustainability of commercial operators. In particular, the analysis shows that only 8.2% of cruise ship passengers arriving in the Territory throughout the course of 2023 will arrive on a Saturday, and only 6.5% on a Sunday. There is a seasonality effect with some months have more weekend arrivals than others. There are no weekend arrivals for the months June – October; all weekend arrivals are concentrated in the peak season months of November - May. Of these, November, January and March will experience the highest weekend arrivals, accounting for 74% of the total. On average in 2023, 10% of cruise



ship passengers will arrive on weekends. Similar trends were observed for the balance of 2022 (August – December) at the time of the analysis and for 2024 based on available data.

The results of the analysis are summarized in Figure 6-43 below. The detailed data is provided at Appendix VI.



*Figure 6-43. Summary of expected cruise ship passenger arrivals to Tortola for 2023. On average, 10% of passengers arrive on weekends. Data obtained from the BVI Port Authority website.*

## 6.5.2 General Management Measures to Address Current Issues/Threats at Long Bay

General management measures to address current issues/threats at Long Bay are summarized in Table 6-49 below.

*Table 6-49. General management measures to address current issues/threats at Long Bay*

<b>Current Issue</b>	<b>Desired Direction</b>	<b>Management Measures</b>
<b>Overall Environment</b>		
<b>Parking on beach dune</b>	None	<ul style="list-style-type: none"> <li>• Create barrier of wooden posts to prevent vehicular access to the beach dune – all parking is to occur in designated parking lots.</li> </ul>
<b>Development within the vegetation line</b>	None	<ul style="list-style-type: none"> <li>• Set back the commercial zone from the vegetation line.</li> </ul>
<b>Overall beach cleanliness</b> (53% of survey respondents were “totally unsatisfied” or “unsatisfied”; 80% desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Prevent vehicular access to the beach dune to reduce the volume of food and beverage containers on the beach.</li> <li>• Prevent makeshift barbeque pits and replace with two purpose-built barbeque pits managed by the beach management authority.</li> <li>• Install no littering signs in the picnic zone and other appropriate areas.</li> <li>• Install 30-42-gallon public waste receptacles, including recycling bins, throughout the picnic zones to be cleared daily by Beach Wardens.</li> <li>• Continue Beach Warden programme to ensure daily cleaning of the beach.</li> <li>• Empower Beach Wardens to enforce the Litter Abatement Act.</li> <li>• Enforce rule that bars/restaurants operating on the beach cannot serve drinks in glass bottles or Styrofoam containers and cannot serve drinks with plastic straws or lids.</li> </ul>

		<ul style="list-style-type: none"> <li>Erect signage advising of the rule that glass bottles should not be used on the beach for safety reasons.</li> </ul>
<b>Shade trees/vegetation</b> <i>(49% of survey respondents were “totally unsatisfied” or “unsatisfied”)</i>	More of	<ul style="list-style-type: none"> <li>Implement beach dune revegetation programme, including re-establishment of the seagrape treeline along the entire beach, planting of additional shade trees in the Picnic Zone and full restoration of trees within the beach dune behind the Picnic Zone.</li> </ul>
<b>Noise level</b> <i>(47% of survey respondents were “totally unsatisfied” or “unsatisfied”; 78% desire “more of”)</i>	Less of or none	<ul style="list-style-type: none"> <li>Reserve 50% of Saturdays and Sundays in any given month as “no event days” when non-commercial or commercial entertainment uses of the beach requiring permission from the beach management authority are not allowed<sup>12</sup>.</li> <li>Preserve traditional religious holidays (e.g. Good Friday, Easter Sunday, Christmas Day) as days when commercial entertainment uses of the beach are not allowed.</li> <li>Allow a maximum of two (2) events requiring permission from the beach management authority at a time – these must be spread between the eastern end, western end and centre of the beach. Ensure noise limits are adhered to by event organizers.</li> <li>Erect signage reminding the public of the requirements of the Noise Control and Abatement Act, 1996<sup>13</sup> and provide noise limit guidelines (with tips on how to ensure compliance) for amplifying music in keeping with the “test of reasonableness” using the objective test of ordinary standards and ordinary sensitivities<sup>14</sup>.</li> </ul>

<sup>12</sup> According to The Virgin Islands Beach Policy, non-commercial use of the beach would not ordinarily require prior permission except in the following cases: Groups larger than 50 persons; Loud speakers will be operated; and Open fires will be used. All commercial uses require permission.

<sup>13</sup> The Noise Control and Abatement Act, 1996 permits use of a loudspeaker if it “is so operated as not to give reasonable cause for annoyance to persons in the area in which the loudspeaker is being operated.”

<sup>14</sup> *Guidance for ordinary standards and ordinary sensitivities*: The United States Environmental Protection Agency (EPA) identifies  $L_{eq(24)} \leq 55$  dB (long-term equivalent A-weighted sound energy averaged over a 24-hour period) as the noise limit to avoid “outdoor activity interference and annoyance.” The Del Mar, California Municipal Code limits the operation of any radio, phonograph, television set, or any other sound production or reproduction device at any public beach to 65 decibels at any point ten feet or more from the noise source between 7:00 a.m. to 7:00 p.m. and 55 decibels between 7:01 p.m. to 6:59 a.m. The City of Los Angeles Municipal Code limits noise between 9 a.m. and sunset on the boardwalk which runs parallel to the beach to 75 dBA, when measured at a minimum distance of 25 feet from the source of the noise. The UK Health and Safety Executive strongly recommends that the A-weighted equivalent continuous sound level over the duration of an event (Event  $L_{Aeq}$ ) in any part of the audience area should not exceed 107 dB. The North Myrtle Beach Municipal Code states that “the use of sound equipment to broadcast obscene, profane or vulgar language from any commercial property, private property, public right-of-way or city property in excess of 30 dB(A) from 7:01 a.m. to 10:59 p.m. and 50 dB(A) from 11:00 p.m. to 7:00 a.m. as measured

		<p>Noise Limit Guidelines:</p> <ul style="list-style-type: none"> <li>- No permission required: <b>Maximum of 65 A-weighted decibels (dBA)</b> between 7:00 a.m. to 7:00 p.m. and <b>55 A-weighted decibels (dBA)</b> between 7:01 p.m. to 6:59 a.m. at any point 10 feet or more from the noise source</li> <li>- Permission received for non-commercial use: <b>Maximum of 75 A-weighted decibels (dBA)</b> at any point 25 feet or more from the noise source</li> <li>- Permission received for a commercial entertainment or public entertainment event: the A-weighted equivalent continuous sound level over the duration of the event (Event LAeq) in any part of the audience area should not exceed <b>107 dBA</b></li> <li>- Music with obscene, vulgar, or profane lyrics (including use of commonly recognized swear words and sexually explicit references): <b>30 A-weighted</b> decibels at any point 10 feet or more from the noise source.</li> </ul> <ul style="list-style-type: none"> <li>• Prevent use of generators or alternative external power sources for operating loudspeakers without permission by the beach management authority.</li> <li>• Limit music played by vendors in the commercial zone to <b>55 A-weighted decibels</b> to avoid conflict between vendors.</li> <li>• Prevent vehicular access to the beach dune to eliminate use of vehicular sound systems to amplify music on the beach – all parking is to occur in designated parking lots.</li> <li>• Prevent playing of amplified music from vehicles while parked in the parking lot.</li> <li>• Prevent joyriding or racing of motorcycles or ATVs within the beach area - motorcycles and ATVs should be parked in the provided parking lots.</li> </ul>
Beach appearance (Area from treeline to sea)	More of	<ul style="list-style-type: none"> <li>• Restore the sea grape treeline to retain the natural beauty of the beach from the seaside.</li> </ul>

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from the boundary with the adjacent neighboring commercial property, private property, public right-of-way or city property is prohibited.”

(59% of survey respondents desire an improvement)		<ul style="list-style-type: none"> <li>Implement limits on the zone occupied by beach chairs and enforce the Beach Policy which requires that chairs are only put out on demand and removed immediately after use.</li> <li>Require that beach chairs and umbrellas are in earth tone colours that are aesthetically sensitive by blending into the natural landscape/environment. Colours for new or replacement chairs are to be approved by the beach management authority.</li> <li>Increase the capacity of beach wardens to manage mass sargassum landings.</li> </ul>
Reef health/quality (57% of survey respondents desire an improvement)	More of	<ul style="list-style-type: none"> <li>Conduct a reef survey to determine the condition of the reef and develop a plan for management/rehabilitation of the reef.</li> </ul>
<b>Amenities and Facilities</b>		
Lifeguard presence/station (62% of survey respondents were “totally unsatisfied” or “unsatisfied”; 75% of survey respondents desire “more of”)	More of	<ul style="list-style-type: none"> <li>Recommend expansion of the lifeguard programme to include a lifeguard stationed at Long Bay.</li> <li>Include a provisional sum for construction of a lifeguard tower and procurement of lifeguard equipment in the beach management plan budget.</li> </ul>
Waste facilities (61% of survey respondents were “totally unsatisfied” or “unsatisfied”; 78% desire “more of”)	More of	<ul style="list-style-type: none"> <li>Remove the open-air garbage receptables at the central access to the beach and relocate to a screened area adjacent to the restroom sewage treatment facility to serve as a service bin to consolidate garbage from public bins. Ensure that bins are covered.</li> <li>Install 30-42-gallon public waste receptables, including recycling bins, throughout the Picnic Zone to be cleared daily by beach wardens – waste to be consolidated in larger service bin near the public restroom.</li> <li>Provide a dedicated, screened and covered garbage receptable for vendors at the rear of the vending zone.</li> <li>Ensure the service bin and dedicated vendor bin is emptied by the Solid Waste Department at least every other day.</li> </ul>



Access for disabled people (48% of survey respondents were “totally unsatisfied” or “unsatisfied”; 65% desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Include drop-off zones close to the seashore to reduce walk distance to the beach.</li> <li>• Consider aids/devices to assist disabled access to the sea.</li> <li>• Ensure vending units are wheelchair accessible.</li> </ul>
Restroom facilities (44% of survey respondents were “totally unsatisfied” or “unsatisfied”; 59% desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Reduce peak demand for restrooms by working with tour/taxi operators to better spread-out tourist arrivals to the beach.</li> <li>• Implement the “share the beach” management policy for balancing local and tourist use of the beach.</li> <li>• Implement carrying capacity limits on number of tourists.</li> <li>• Make enhancements to the public restroom in the near term, including addition of face mirrors, automatic faucets, baby changing station and 4 outdoor showers</li> <li>• Add restroom facility dedicated for staff.</li> </ul>
Picnic tables (48% % of survey respondents were “totally unsatisfied” or “unsatisfied”; 57% desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Install public picnic tables along the inner perimeter of the seagrape treeline from the central entrance to the beach to the eastern entrance within the Picnic Zone. Install two picnic tables at the western end of the beach.</li> </ul>
Birdwatching facilities (55% of survey respondents desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Construct a hiking trail along the perimeter of the salt pond leading up to the proposed Lookout Deck with bird observation points along the trail.</li> </ul>
Beach use signage (55% of survey respondents desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Install beach use signage at each entrance to the beach (central, eastern and western), including beach rules and safety information.</li> <li>• Install “no littering” signs and “noise limit” signs within the Picnic Zone in addition to including relevant rules on signs at entrance.</li> <li>• Label important plant species within the picnic zone.</li> <li>• Regulate the size, placement and content of signs within the vending zone, including preventing use of obscene, vulgar or profane language or imagery.</li> <li>• Erect signage along the Birdwatching Hiking Trail.</li> </ul>

Parking facilities (53% of survey respondents desire an improvement)	More of	<ul style="list-style-type: none"> <li>• Provide public parking lots at the central and eastern entrances to the beach: <ul style="list-style-type: none"> <li>- Central entrance – 74 spaces</li> <li>- Eastern entrance – 10 spaces</li> </ul> </li> <li>• Continue to permit limited parking at the western entrance of the beach (approximately 6 spaces).</li> <li>• Provide a separate parking lot for taxi tour buses (14 spaces).</li> <li>• Utilize the Taxi Parking Lot for vendor staff parking during times that tours are not allowed.</li> <li>• Utilize a portion of the Central Parking Lot for vendor staff parking during weekdays.</li> <li>• Utilize roadside parking for overflow parking when required.</li> <li>• Prevent parking on the beach dune.</li> </ul>
Public shade umbrellas/gazebos (46% of survey respondents were totally unsatisfied or “unsatisfied”; 50% of survey respondents desire “more of”)	More of	<ul style="list-style-type: none"> <li>• Incorporate shade umbrellas in public picnic tables</li> <li>• Incorporate shade umbrellas in the Outdoor Eating Area attached to the Vending Zone.</li> <li>• Replace existing shade huts with fit-for-purpose picnic tables with shading.</li> </ul>
Entertainment facilities (47% of survey respondents desire “less of” or “none”)	Less of or none	<ul style="list-style-type: none"> <li>• Designate an easy-to-access area at the central entrance of the beach to accommodate approved public entertainment events. The area will be sized to accommodate a stage, as may be required, that is to be set up and removed by event organizers.</li> </ul>
<b>Recreational Activities</b>		
Loud music (52% of survey respondents were totally unsatisfied or “unsatisfied”; 68% desire “less of” or “none”)	Less of or none	<ul style="list-style-type: none"> <li>• Reserve 50% of Saturdays and Sundays in any given month as “no event days” when non-commercial or commercial entertainment uses of the beach requiring permission from the beach management authority are not allowed.</li> <li>• Preserve traditional religious holidays (e.g. Good Friday, Easter Sunday, Christmas Day) as days when commercial entertainment uses of the beach are not allowed.</li> <li>• Allow a maximum of two (2) events requiring permission from the beach management authority at a time – these must be spread between the eastern end, western end and centre of the beach. Ensure noise limits are adhered to by event organizers.</li> </ul>

		<ul style="list-style-type: none"> <li>Erect signage reminding the public of the requirements of the Noise Control and Abatement Act, 1996 and provide noise limit guidelines (with tips on how to ensure compliance) for amplifying music in keeping with the “test of reasonableness” using the objective test of ordinary standards and ordinary sensitivities:</li> </ul> <p>Noise Limit Guidelines:</p> <ul style="list-style-type: none"> <li>No permission required: <b>Maximum of 65 A-weighted decibels (dBA)</b> between 7:00 a.m. to 7:00 p.m. and <b>55 A-weighted decibels (dBA)</b> between 7:01 p.m. to 6:59 a.m. at any point 10 feet or more from the noise source</li> <li>Permission received for non-commercial use: <b>Maximum of 75 A-weighted decibels (dBA)</b> at any point 25 feet or more from the noise source</li> <li>Permission received for a commercial entertainment or public entertainment event: the A-weighted equivalent continuous sound level over the duration of the event (Event LAeq) in any part of the audience area should not exceed <b>107 dBA</b></li> <li>Music with obscene, vulgar, or profane lyrics (including use of commonly recognized swear words and sexually explicit references): <b>30 A-weighted</b> decibels at any point 10 feet or more from the noise source.</li> </ul> <ul style="list-style-type: none"> <li>Prevent use of generators or alternative external power sources for operating loudspeakers without permission by the beach management authority.</li> <li>Limit music played by vendors in the commercial zone to <b>55 A-weighted decibels</b> to avoid conflict between vendors.</li> <li>Prevent vehicular access to the beach dune to eliminate use of vehicular sound systems to amplify music on the beach – all parking is to occur in designated parking lots.</li> <li>Prevent playing of amplified music from vehicles while parked in the parking lot.</li> <li>Prevent joyriding or racing of motorcycles or ATVs within the beach area - motorcycles and</li> </ul>
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		ATVs should be parked in the provided parking lots.
Parties (47% of survey respondents desire "less of" or "none")	Less of or none	<ul style="list-style-type: none"> <li>• Allow a maximum of two parties requiring permission at the beach at a time – these must be spread between the eastern end, western end and centre of the beach</li> <li>• Reserve 50% of Saturdays and Sundays in any given month as "no event days" when parties requiring permission from the beach management authority are not allowed.</li> <li>• Preserve traditional religious holidays (e.g. Good Friday, Easter Sunday, Christmas Day) as days when commercial entertainment uses of the beach are not allowed.</li> <li>• Ensure noise limits are adhered to by party organizers.</li> </ul>
Boating (43% of survey respondents desire "less of" or "none")		<ul style="list-style-type: none"> <li>• No anchoring of vessels and no operation of power-craft, except during special events as authorized by the beach management authority - anchoring zones are to be established and the power-craft speed limit enforced in such cases as defined at Section 4(6) of the Power-craft Act (Cap 261).<sup>15</sup></li> </ul>
<b>Commercial Activities</b>		
Beach chairs (44% of survey respondents were totally unsatisfied" or "unsatisfied"; 41% desire "less of" or "none")	Less of or none	<ul style="list-style-type: none"> <li>• Limit the zone occupied by beach chairs to that mapped in the Spatial Plan and enforce the Beach Policy which requires that chairs are only put out on demand and removed after use.</li> <li>• Require that beach chairs and umbrellas are in earthtone colours that are aesthetically sensitive by blending into the natural landscape / environment. Colours for new and replacement chairs are to be approved by the beach management authority.</li> </ul>
Souvenir vending (52% of survey respondents desire "less of" or "none")	Less of or none	<ul style="list-style-type: none"> <li>• Limit the number of souvenir vendors operating at a time to two (2) vendors.</li> </ul>
Other commercial activity (52% of survey respondents desire "less of" or "none")	Less of or none	<ul style="list-style-type: none"> <li>• Limit commercial activities to existing types of activities: food service, souvenirs and water sports.</li> </ul>

<sup>15</sup> Section 4(6) of the Power-craft Act (Cap 261) states: "Any person who operates a power-craft at more than five knots within one hundred yards of low water mark shall be guilty of an offence."

		<ul style="list-style-type: none"> <li>• Limit commercial activities to the purpose-built units within the Vending Zone and Water Sports Zone.</li> <li>• Prevent peddlers operating at the beach. Only licensed vendors approved by the beach management authority under lease/license agreement are allowed to operate.</li> </ul>
Bars/restaurants (48% of survey respondents desire "less of" or "none")	Less of or none	<ul style="list-style-type: none"> <li>• Limit the maximum number of bars/restaurants to three (3).</li> <li>• Make bars/restaurants less intrusive to the beach environment by locating them within the proposed Vending Zone.</li> </ul>
Water sports (35% of survey respondents desire "same level")	Same level	<ul style="list-style-type: none"> <li>• Only allow passive water sports. No motorized water sports are allowed. No wind-based water sports that may pose a risk to swimmers (e.g. kiteboarding) are allowed.</li> </ul>

### 6.5.3 RULES

Beach rules apply to all beach users, including commercial and non-commercial users approved to operate on/use the beach. The rules extend to the entire area covered by the Beach Management Plan, including the Salt Pond and Birdwatching Hiking Trail.

#### PROHIBITED ACTIVITIES

##### *Land / Beach Dune Alteration*

1. Development of any kind. All development on the beach will be undertaken by the beach management authority.
2. Earthmoving, including temporary or permanent shifting of mounds of sand or encroachment on the boundaries of the salt pond
3. Digging and taking away of any deposit of sand, stone, gravel or shingle from the foreshore without a permit granted by the Minister for Natural Resources and Labour (Beach Protection Ordinance, 1985)

##### *Motor Vehicles*

4. Driving vehicles, motorcycles, ATVs or any motorized form of transportation, except along public access roads / entrance ways
5. Parking vehicles, motorcycles, ATVs or any motorized form of transportation outside of designated parking lots and designated overspill parking areas during public events
6. Parking overnight
7. Abandoning vehicles (Abandoned vehicles will be removed or disposed of in keeping with the Derelict Vehicles Disposal Act, 2000.)



### *Vessels and Water sports*

8. Landing of vessels on the beach (except watercraft approved for passive water sports and licensed to operate on the beach)
9. Motorized water sports
10. High-speed wind sports that pose a safety risk to swimmers, such as kiteboarding

### *Waste/Pollution*

11. Littering
12. Serving beverages in glass bottles
13. Use of Styrofoam containers
14. Use of plastic straws and lids
15. Discharge or disposal of wastewater of any kind, including brine, into the environment
16. Discharge or disposal of any other pollutant (foreign substance) or waste of any kind, including oil, into the environment
17. Cleaning of equipment, produce or other objects in the ocean or other elements of the environment
18. Use or disposal of chemical cleaning agents in the environment
19. Generation or disposal of hazardous waste
20. Application of pesticides or fertilizers

### *Air Quality*

21. Smoking on the beach (Tobacco Products Control Act, 2006)
22. Idling of vehicles in the parking lot

### *Biodiversity*

23. Cutting, pruning, removing, otherwise destroying or harvesting any vegetation, including mangroves
24. Introduction of non-native or invasive species, including plants, into the beach environment
25. Disturbing, harming, killing, hunting or harvesting stingrays, turtles, birds and other biodiversity or their eggs. In particular, the following are illegal:
  - a. Interfering with any turtle nest or turtle that is nesting or hatching (Fisheries Regulations, 2003)
  - b. Attempting to or wilfully killing, injuring or taking any wild bird; or taking, damaging or destroying the nest of any wild bird while in use (Wild Birds Protection Ordinance 1959)
26. Feeding of wildlife or feral animals, including cats
27. Addition of lighting to the Vending Zone, Outdoor Eating Area or any other area

### *Recreational and Commercial Activities*

28. Operating a loudspeaker in contravention of the Noise Control and Abatement Act, 1996
29. Use of barbeque grills except for the purpose-built barbeque grills provided
30. Loitering in or around restrooms
31. Dogs on the beach outside the hours of 6:00 a.m to 8:00 a.m and 5:00 p.m to 7:00 p.m. (Dogs (Prevention of Injury to Persons, Livestock and Poultry) Act, 2001)
32. Dogs on the Birdwatching Hiking Trail at any time
33. Horseback riding

34. Soliciting or peddling
35. Leaving beach chairs or other equipment on the seashore (sandy area of the beach) when not in use. Beach chairs must be put out on demand and removed and stored in the designated areas immediately after use.
36. Operation of commercial activities beyond 6 p.m.
37. Leaving lights on at vending units after sundown

## ACTIVITIES REQUIRING PERMISSION

Undertaking of the following activities requires written permission from the beach management authority. Requests should be submitted in writing by hand or emailed. The Ministry of Natural Resources and Labour currently serves as the beach management authority and can be contacted at 1-284-468-2147 or [nrl@gov.vg](mailto:nrl@gov.vg).

1. Use of the beach for any commercial purpose or a non-commercial purpose involving groups larger than 50 persons or use of loudspeakers or open fires
2. Anchoring  
*(Anchoring will only be allowed during specially permitted public events in designated zones)*
3. Use of powercraft  
*(Operation of powercraft will only be allowed during specially permitted public events in designated zones. Permission requests will be considered with input from The Virgin Islands Shipping Registry and other relevant agencies on the Technical Review Committee)*
4. Erection of tents or any other temporary structure or display  
*(Permitted structures or displays must be erected in the area approved and immediately removed following the permission period)*
5. Creation of any temporary or permanent facility to facilitate sports  
*(Permitted facilities must be installed in the area approved and according to any other stipulations indicated in the approval)*
6. Operation of generators on the beach to facilitate events
7. Fixing of any device or structure to the seabed
8. Lighting of open fires, including bonfires  
*(Permitted bonfires must be burnt in a controlled container, such as a cauldron, that prevents interaction of the fire with the sand and does not pose a fire risk).*
9. Traversing the salt ponds
10. Sargassum removal or other forms of beach grooming  
*(Sargassum removal and other forms of beach grooming, such as removal of invasive grasses, will ordinarily be handled by the beach management authority. Persons*

*wishing to remove sargassum or engage in other forms of beach grooming must apply to the beach management authority for approval. Any permissions issued will dictate suitable methodologies to be used and ensure compliance with the sargassum management plan for the Territory).*

## **REQUIRED ACTIONS**

1. Application to the beach management authority is required for persons wishing to use the beach for any commercial purpose or a non-commercial purpose, where required by The Virgin Islands Beach Policy.
2. All beach chairs and umbrellas not in use must be immediately removed from the seashore (sandy area of the beach) and stored in the approved locations / facilities.
3. All waste must be disposed of in the bins provided.
4. All bars/restaurants and other food vendors utilizing oil in their operations must maintain a functioning grease trap on sinks. Oil should be collected in separate containers for proper disposal offsite.
5. Dogs must be leashed with proper identification tags. All dog waste must be immediately removed from the beach and properly disposed of offsite.

## 6.6 IMPLEMENTATION PLAN

The Implementation Plan defines the institutional arrangements (beach management authority) and management mechanisms to ensure enforcement of management measures and rules included in the Beach Management Plan. Additionally, the Implementation Plan presents the strategy for implementation of the Facilities Plan and the Environmental Restoration and Protection Plan, including timelines, estimated costs and source of funds, procurement strategy and responsible parties and partners. Finally, this section presents a basic Facilities Maintenance Plan.

### 6.6.1 Beach Management Authority

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Management of Long Bay, Beef Island will continue to be the responsibility of the Ministry of Natural Resources and Labour until the process to declare the beach and surrounding areas a National Park/Marine Park is completed. As such, the Ministry of Natural Resources and Labour will serve as the beach management authority at first instance. This function would be transferred to The Virgin Islands National Parks Trust once the declaration as a National Park/Marine Park is completed. It is recommended that the transfer be concluded no later than March 2024. This timeline would allow sufficient time for implementation of the Facilities Plan, important aspects of the Environmental Restoration and Protection Plan and efforts to enforce rules in order to significantly improve the existing situation.

Transfer to the National Parks Trust would be in keeping with the intent for which the land bordering and surrounding the beach was acquired by the Crown. In particular, Cabinet approved the purchase of the land on the basis that “the land be preserved as wetland to be managed by the National Parks Trust.” Additionally, transfer to the National Parks Trust would provide the most effective management mechanism and would provide comprehensive legal powers to give effect to all management measures and rules under the Beach Management Plan and ensure carrying capacities are not exceeded.

In the interim, the Ministry of Natural Resources and Labour will depend on provisions in the following legislation to help enforce the management measures and rules of the Beach Management Plan.

- Beach Protection Ordinance, 1985
- Noise Control and Abatement Act, 1996
- Virgin Islands Physical Planning Act,
- Fisheries Regulations, 2003
- Wild Birds Protection Ordinance 1959
- Dogs (Prevention of Injury to Persons, Livestock and Poultry) Act, 2001
- Powercraft Act, 1972
- Derelict Vehicles Disposal Act, 2000
- Litter (Abatement) (Amendment) Act, 2009
- Tobacco Products Control Act, 2006
- Government Salt Ponds Ordinance, 1904

## OPERATIONAL STAFFING REQUIREMENTS

In the immediate future while the beach remains under the management of the Ministry of Natural Resources and Labour, the Ministry will depend on its Beach Wardens for maintenance of the beach. The Beach Wardens are full-time employees of the Ministry that work Mondays to Fridays with shifts normally starting at 8:30 a.m. and ending at 1 p.m. A team of four (4) Beach Wardens is currently assigned to Long Bay, Beef Island.

The current role of the Beach Wardens is limited to cleaning the beach, including removal of any natural debris such as sargassum, control of weeds and litter collection. It is proposed that the role of the Beach Wardens be expanded to include an enforcement function in conjunction with the Royal Virgin Islands Police Force as detailed under the Management Mechanisms section.

Other operational functions such as cleaning of the restrooms, servicing of the sewage treatment facility and maintenance of the vending units and other facilities will be contracted to private parties through the Ministry of Natural Resources and Labour. Enforcement of leases and licenses will be handled through the Ministry's Lands Unit and Seabed Unit.

The BVI Tourist Board will have the opportunity to have an ambassador present at the beach on cruise ship days to provide information to tourists and to help address any complaints, including by reporting issues to the Ministry.

## OPERATIONAL EQUIPMENT REQUIREMENTS

The minimum operational equipment required for the beach management authority staff to maintain the beach is presented in Table 6-50 below. This list was developed with input from the current Beach Wardens under the Ministry of Natural Resources and Labour.

*Table 6-50. Minimum operational equipment required for the beach management authority staff to maintain Long Bay*

<b>Equipment</b>	<b>Function</b>	<b>Existing Quantity</b>	<b>Additional Proposed</b>	<b>Total Est. Cost (Proposed)</b>
<b>Trash Picker Grabber</b>	Litter collection	8	0	
<b>Landscape Rake (Metal)</b>	Litter collection, Sargassum management	4	2	
<b>Stone Rake (Metal)</b>	Sargassum management	0	2	
<b>Garden Fork</b>	Sargassum management	0	5	
<b>Shovel (square)</b>	Sargassum management	0	1	
<b>Wheelbarrow</b>	Sargassum management, weed removal	2 (1 damaged)	1	
<b>Garden Hoe</b>	Weed removal etc.	0	5	
<b>Weed Eater</b>	Weed removal, parking lot maintenance	0	2	

<b>Garden Secateurs</b>	Removal of invasive species, pruning	0	1	
<b>Lopping Shears</b>	Removal of invasive species, pruning	0	2	
<b>Hedge Shears</b>	Maintaining parking lot screening hedges	0	2	
<b>Chainsaw</b>	Removal of invasive species	1 (poor condition)	1	
<b>Small 4x4 Utility Vehicle with dump bed</b>	Watering of replanted trees, sargassum management (mass landings)	0	1	
<b>Portable Water Tank (275 gallons)</b>	Watering of replanted trees	0	1	
<b>Collapsible Garden Hose 200ft</b>	Watering of replanted trees	0	1	

## OTHER RESOURCE REQUIREMENTS

Other resources are required to support beach maintenance operations as summarized in Table 6-51 below.

*Table 6-51. Other resources required to support beach maintenance operations*

<b>Resource</b>	<b>Function</b>	<b>Quantity</b>	<b>Total Est. Cost</b>
<b>Fuel</b>	Fuelling of Small Utility Vehicle	24 gallons/year	
<b>Mechanic services</b>	Maintenance of Small 4x4 Utility Vehicle	2 times per year	

## 6.6.2 Management Mechanisms

The following management mechanisms will be continued or put in place to ensure effective management of the beach.

### APPLICATION AND APPROVAL MECHANISMS

The activities requiring permission from the beach management authority are indicated under the Management Measures & Rules layer of the Beach Management Plan. The process for applying for Commercial and Non-Commercial Use of the beach is detailed below. All other activity permission requests require submission of the Application Form at Appendix VII



accompanied by a cover letter addressed to the Permanent Secretary, Ministry of Natural Resources and Labour.

## ***Commercial Use***

Under The Virgin Islands Beach Policy 2020, Commercial Use of the beach is defined as “use of the beach for business activity.” Commercial Use of the beach may be long-term or temporary.

### **Long-term Vending and Restaurant/Beach Bar Operation**

Persons can apply for approval to engage in long-term Restaurant/Beach Bar operation as well as the following types of long-term vending activities:

- Food preparation and service
- Water sports
- Beach chair rental
- Beach-based equipment sale/rental
- Sale of local souvenirs/craft

All long-term commercial activities must take place in the Vending Zone, Water Sports Zone or Beach Chair Zone within the demarcated boundaries or facilities provided for lease.

### **Application Process and Approval**

Applicants must submit the form included at Appendix VIII to the Ministry of Natural Resources and Labour together with the required application fee. Applications will be assessed by the Ministry and the multi-agency Technical Review Committee chaired by the Ministry. A decision will be made to approve or deny the application.

The types of approvals granted are summarized in Table 6-52.

*Table 6-52. Types of Long-term Commercial Use Approvals Granted*

<b>Approval Type</b>	<b>Validity Period</b>	<b>Use</b>
Licence	Up to 1 year at a time with option for renewal	- Beach chair rental - Water sports operation
Lease agreement	Up to 3 years at a time with option for renewal	- Rental of vending units or other facilities to support restaurant/beach bars and other long-term vending activities

In order to prevent monopolization of commercial activities, an individual or company may not hold a licence or lease for more than two types of allowed long-term commercial activities.

### **Evaluation Criteria**

The criteria for evaluation of applications for long-term commercial use are provided in Appendix IV.

### Rules Applying to Approved Applicants

- Licence and lease holders must comply with all beach management measures and rules. Failure to comply is a basis for termination of licences or leases in keeping with the terms of the licence or lease.
- Licence and lease holders must comply with all other Territorial laws, policies or other requirements to operate, such as but not limited to holding a valid Trade Licence, Food Establishment Licence, Food Handler's Certificate and Liquor Licence Certificate.

### Licence and Lease terms

A sample licence and lease are provided at Appendix X.

### Temporary Commercial Uses of the Beach

Persons can apply for approval of the following types of temporary commercial uses:

- Entertainment events deemed compatible with the beach vision, identity and character, including traditional use
- Temporary vending to support approved entertainment events
- Paid nature-based tours or experiences

### Application Process and Approval

Applicants must submit the form included at Appendix XI to the Ministry of Natural Resources and Labour. Applications will be assessed by the Ministry and the multi-agency Technical Review Committee chaired by the Ministry. A decision will be made to approve or deny the application.

The types of approvals granted are summarized in Table 6-53.

*Table 6-53. Types of Temporary Commercial Use Approvals Granted*

<b>Approval Type</b>	<b>Validity Period</b>	<b>Use</b>
<b>Permits</b>	Up to 2 days at a time	<ul style="list-style-type: none"><li>- Commercial Entertainment Events</li><li>- Temporary vending to support Commercial Entertainment Events</li></ul>
<b>Licenses</b>	Up to 1 year at a time	<ul style="list-style-type: none"><li>- Paid nature-based tours or experiences</li></ul>

### Rules Applying to Approved Applicants

- Permit or licence holders must comply with all beach management measures and rules and any additional stipulations included in the permit or licence. Failure to comply forms a basis for termination of an event or operation or refusal of future applications.

### ***Non-Commercial Use***

Under The Virgin Islands Beach Policy 2020, Non-Commercial Use of the beach is defined as “use of the beach by large groups that does not involve the sale of goods and/or services. Non-commercial activities could include picnics/beach barbecues, camping, sporting activities and entertainment.”

In keeping with the Beach Policy, non-commercial use of the beach would not ordinarily require prior permission from the Ministry of Natural Resources and Labour except in the following cases:

- Groups larger than 50 persons
- Loud speakers will be operated
- Open fires will be used

### ***Application Process and Approval***

Applicants must submit the form included at Appendix XII to the Ministry of Natural Resources and Labour together with the required application fee. Applications will be assessed by the Ministry, and where necessary, by the multi-agency Technical Review Committee chaired by the Ministry. A decision will be made to approve or deny the application.

Approval is in the form of a Beach Use Approval Letter.

### ***Rules Applying to Approved Applicants***

Approved users must comply with all beach management measures and rules and any additional stipulations included in the Beach Use Approval Letter. Failure to comply forms a basis for termination of an event or activity or refusal of future applications.

## **6.6.3 Enforcement Mechanisms**

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A combination of public education; signage; interventions by Beach Wardens and the Royal Virgin Islands Police Force, including enforcement of applicable laws; and enforcement of lease and license provisions will be used to ensure that the management measures and rules of the beach are adhered to as best as possible until declaration as a National Park is completed.

### **PUBLIC EDUCATION**

The Ministry of Natural Resources and Labour will increase and enhance its ongoing public awareness initiatives to ensure that the public is aware of The Virgin Islands Beach Policy, management measures and rules applying to all beaches and specific rules applying to Long Bay, Beef Island. A specific public awareness campaign utilizing all forms of media will be implemented to support the various phases of implementation of the Plan.

Public education is intended to reduce the instances of breakage of the rules and to encourage a self-policing culture among beach users.

## **SIGNAGE**

Signage with the rules of the beach will be erected at the three main entrances to the beach to:

- ensure that all beach users are aware of the rules
- facilitate public policing and enforcement of rules by providing an authoritative source of information
- provide contact information for the Police and the Ministry of Natural Resources and Labour for intervention to enforce rules where necessary

## **COMPLAINT MECHANISMS**

Complaints may be about beach facilities, use conflicts, the actions of commercial operators or complaints about the overall beach experience. Based on the nature and urgency of the matter, complaints may be directed to Beach Wardens, the Police or the Ministry of Natural Resources and Labour using the mechanisms below:

- Beach Wardens will be present to receive and address complaints during their standard working hours and will be identifiable by uniform;
- The contact numbers for the Royal Virgin Islands Police Force and the Ministry of Natural Resources and Labour will be posted on all beach signs indicating the rules of the beach;
- A secure complaints box with forms and pens will be fixed to the Administrative Unit. Additionally, an email address and link to an online form will be provided to submit complaints electronically.

## **INTERVENTIONS BY BEACH WARDENS AND THE POLICE**

It is proposed that the role of the Beach Wardens be expanded and elevated to include an enforcement function in conjunction with the Royal Virgin Islands Police Force.

During their established working hours, Beach Wardens would serve as the initial point of contact for enforcement of beach rules. As such, Beach Wardens would patrol the beach and alert users of any activity observed that breaks the rules of the beach or laws of the Territory.

The objective of the Beach Warden intervention would be to educate beach users of the rules, have users immediately desist from any prohibited activities, and have users correct any infractions (e.g. remove litter or temporary structures placed without permission). If Beach Wardens are met with resistance, they can escalate the matter to the Royal Virgin Islands Police Force. Beach Wardens would also be encouraged to photo document any infractions that are unresolved or repeat offences to facilitate escalation to the Police or the Ministry of Natural Resources and Labour.

To support their roles, Beach Wardens and the Police would be trained in the rules applying to the beach, including applicable laws, by the Ministry's Environment and Climate Change Unit. Training in basic enforcement and conflict resolution techniques will also be arranged for Beach Wardens. Additionally, Beach Wardens would be appointed as Litter Wardens under the Litter (Abatement) (Amendment) Act, 2009. For identification as officials of the Ministry, Beach Wardens will wear a T-shirt with the Ministry's logo and their position as wardens.

## ENFORCEMENT OF LEASE AND LICENSE PROVISIONS

Adherence to all beach rules and compliance with management measures will be built into all lease and licence agreements. As such, all leases and licences will include provisions for penalties and/or termination in the event that beach rules are broken or management measures are not respected. The Ministry's Land Unit and Seabed Unit will be responsible for enforcing these provisions based on complaints received from the public, information on infractions provided by Beach Wardens or the Police or facts obtained via internal monitoring measures.

### 6.6.4 Monitoring Mechanisms

The monitoring mechanisms summarized below will be implemented.

## ENVIRONMENTAL MONITORING

### *Coastal Water Quality*

Coastal water quality monitoring will be conducted once per month by the Ministry's Environment and Climate Change Unit. The standard parameters included in Table 6-54 will be tested from at least 3 sampling points along the beach distributed as follows: eastern end, western end and the centre.

*Table 6-54. Standard Water Quality Parameters to be Monitored at Long Bay, Beef Island*

pH	Total dissolved solids	Fecal Coliform
Temperature	Nitrates	E.coli
Salinity	Phosphates	Enterococci
Dissolved oxygen	Turbidity	
Conductivity	Total coliform	

In the event of elevated bacteria results, the Water Quality Response Plan in The Virgin Islands Beach Policy will be followed. In the event of other elevated parameters, the Environment and Climate Change Unit will assess the cause of the problem and propose appropriate management interventions.

### ***Salt Pond Water Quality***

Salt pond water quality monitoring will be conducted once per quarter by the Ministry's Environment and Climate Change Unit. At minimum, the standard parameters listed in Table 6-55 will be tested.

*Table 6-55. Minimum Salt Pond Water Quality Parameters to be Monitored*

pH	Dissolved oxygen	Phosphates
Temperature	Nitrates	Turbidity
Salinity		

### ***Dune Vegetation***

The seagrape trees and other beach dune vegetation replanted as a part of the Environmental Restoration and Protection Plan will be monitored by the Environment and Climate Change Unit once a month to determine rate of growth and survival. As a part of this, presence of invasive species will also be monitored.

### ***Biodiversity***

Continuation of the Annual Christmas Bird Count led by The Virgin Islands National Parks Trust will be encouraged. Additionally, the turtle monitoring programme implemented by the former Conservation and Fisheries Department will be continued within the Ministry's capacities.

## **FACILITIES MONITORING**

### ***Vending Units, Ancillary Facilities and Furnishings***

A random spot check of the exterior of vending units, ancillary facilities (e.g. beach chair storage pergolas, water sport sheds, gas tank shed and garbage bin screens) and furnishings (e.g. picnic tables, benches, garbage bins) will be done once a month as a part of the Environment and Climate Change Unit's environmental monitoring activities. Spot checks will complement the responsibility of lease and license holders to immediately report any damage to facilities.

### ***Restrooms***

The contracted cleaning service will be required to immediately report any damage or disrepair to the Ministry of Natural Resources and Labour. Additionally, a random spot check of the restroom facility will be done once a month as a part of the Environment and Climate Change Unit's environmental monitoring activities.

### ***Birdwatching Hiking Trail***

The Birdwatching Hiking Trail will be hiked by the Environment and Climate Change Unit at least once per quarter to determine any maintenance needs, including pruning of vegetation and reinforcement of the hiking trail.



## MONITORING ADHERENCE TO RULES

Adherence to rules will be monitored on a routine basis by the Beach Wardens. Additionally, random spot checks, including of commercial operators, will be conducted by the Environment and Climate Change Unit.

### 6.6.5 Financing

Financing for implementation of the Beach Management Plan and maintenance of the beach is proposed from the Environmental Protection and Tourism Improvement Fund established under Section 4 of the Environmental Protection and Tourism Improvement Fund Act, 2017.

This is justified as the Beach Management Plan implementation directly aligns with two of the three intended applications of the Fund, including:

- a) activities related to:
  - (i) environmental protection and improvement;
  - (ii) climate change, and other matters affecting the environment;
- b) the maintenance and development of tourist sites and other tourism related activities throughout the Territory.

### 6.6.6 Implementation Partners

Partnership with the entities summarized in Table 6-56 will be sought to support implementation of the Plan.

*Table 6-56. Proposed partners for implementation of the Beach Management Plan*

<b>Partner</b>	<b>Roles</b>
<b>Virgin Islands National Parks Trust</b>	<ul style="list-style-type: none"><li>- Technical assistance/guidance with beach dune vegetation restoration</li><li>- Technical assistance/guidance with Birdwatching Hiking Trail establishment</li><li>- Source for procurement of certain tree species to be replanted in the beach dune</li></ul>
<b>H. Lavity Stoutt Community College</b>	<ul style="list-style-type: none"><li>- Co-establishment of seagrape tree nursery</li></ul>
<b>Department of Waste Management</b>	<ul style="list-style-type: none"><li>- Collection of general waste</li></ul>
<b>Green VI</b>	<ul style="list-style-type: none"><li>- Collection of recyclables</li></ul>

<b>BVI Airports Authority</b>	- Temporary storage of Beach Warden equipment, in particular the small utility vehicle, until a secure facility can be constructed onsite
<b>Royal Virgin Islands Police Force</b>	- Enforcement of beach rules
<b>Town and Country Planning Department</b>	- Enforcement of rules related to development that fall within the scope of the Physical Planning Act

## 6.6.7 Summary of Implementation Timeline and Budget

The implementation timeline for the Beach Management Plan is 1 year from January 1, 2023 to December 31, 2023 as summarized in Table 6-57. The implementation budget is being finalized.

*Table 6-57. Summary of Implementation Timeline and Budget for Beach Management Plan*

<b><i>Plan Component</i></b>	<b><i>Timeline</i></b>	<b><i>Budget</i></b>
<b>Environmental Restoration and Protection (Phase I)</b>	Start: Jan 15, 2023 End: May 31, 2023	
<b>Environmental Restoration and Protection (Phase II)</b>	Start: Aug 15, 2023 End: Dec 31, 2023	
<b>Facilities Development</b>	Start: Jan 15, 2023 End: Oct 31, 2023	
<b>Facilities Maintenance</b>	Start: Nov 1, 2023	
<b>Enforcement</b>	Start: Jan 1, 2023	

## 6.6.8 Implementation of Environmental Restoration and Protection Plan

The strategy, responsible parties, timelines and cost for implementing the Environmental Restoration and Protection Plan is summarized in Table 6-58.

*Table 6-58. Strategy, Responsible Parties, Timelines and Cost for Implementing the Environmental Restoration and Protection Plan*

<b>Activity</b>	<b>Implementation Strategy</b>	<b>Responsible parties</b>	<b>Timeline</b>	<b>Cost</b>
<b>Beach Dune Protection Barrier installation</b>	<p>Donation /procurement of used electricity poles from BVIEC</p> <p>Planting of poles by contractor and PWD with supervision by the Environment and Climate Change Unit, MNRL</p>	<p><i>Lead:</i> MNRL</p> <p><i>Partners:</i> BVIEC, PWD, contractor</p>	<p><i>Procurement:</i> Jan 15 – Feb 15, 2023</p> <p><i>Implementation:</i> Feb 15 - 28, 2023</p>	
<b>Seagrape replanting</b>	<p><u>Phase I</u></p> <p>Procurement and planting of mature seagrape trees from centre to eastern end</p> <p>Establishment of seagrape tree nursery at HLSCC</p> <p><u>Phase II</u></p> <p>Procurement and planting of mature seagrape trees from centre to western end</p> <p><u>Phase III</u></p> <p>Community planting of juvenile seagrape trees from nursery from western to eastern end</p> <p><i>Watering and maintenance by Beach Wardens</i></p>	<p><i>Lead:</i> MNRL</p> <p><i>Partners:</i> Private nurseries, HLSCC, NGOs</p>	<p><i>Procurement (Phase I):</i> Jan 15 – Mar 15, 2023</p> <p><i>Implementation (Phase I):</i> Mar 15 – Apr 30, 2023</p> <p><i>Procurement (Phase II):</i> Aug 15 – Oct 15, 2023</p> <p><i>Implementation (Phase II-III):</i> Oct 15 – Nov 30, 2023</p>	

<b>Vegetation line and beach dune system replanting</b>	<p><u>Phase I</u> Procurement and planting of trees for the Outdoor Eating Area and Picnic Zone</p> <p><u>Phase II</u> Procurement and planting of initial trees in the balance of the beach dune. Eradication of invasive species in the dune</p> <p><i>Watering and maintenance by Beach Wardens</i></p>	<p><i>Lead:</i> MNRL</p> <p><i>Partners:</i> Private nurseries, NPT, NGOs</p>	<p><i>Procurement (Phase I):</i> Jan 15 – Mar 15, 2023</p> <p><i>Implementation (Phase I):</i> Mar 15 – May 31, 2023</p> <p><i>Procurement (Phase II):</i> Aug 15 – Oct 15, 2023</p> <p><i>Implementation (Phase II):</i> Oct 15 – Dec 31, 2023</p>	
<b>Landside clean up</b>	Major community clean-up following installation of Beach Dune Protection System	<p><i>Lead:</i> MNRL</p> <p><i>Partners:</i> DWM, NGOs, churches</p>	Dec 3, 2022	
<b>Underwater clean up</b>	Major community clean-up following installation of Beach Dune Protection System	<p><i>Lead:</i> MNRL</p> <p><i>Partners:</i> DWM, NGOs, churches, dive operators</p>	Dec 3, 2022	

## 6.6.9 Facilities Development Plan

### ***Implementation Modality***

All facilities and ancillary structures will be developed and owned by the Government of The Virgin Islands. Ownership would be transferred to The Virgin Islands National Parks Trust upon completion of the process to declare the area a National Park/Marine Park.

Vending units and other facilities to support commercial operations will be leased to approved commercial operators under a formal lease agreement. The lease would extend to the structure only and not the land. Vending Units are to be leased as shells with electrical and plumbing connections; the interior of Units are to be outfitted by tenants.

Furnishings for the Outdoor Eating Area, Picnic Zone and Birdwatching Hiking Trail will be procured by the Government of The Virgin Islands. Donations of furnishing by private companies and non-government organizations are also welcome. All furnishings would become the property of the Government and be maintained by the Government until transfer to The Virgin Islands National Parks Trust.

The strategy, responsible parties, timelines and cost for implementing the Facilities Plan is summarized in Table 6-59.

*Table 6-59. Strategy, Responsible Parties, Timelines and Cost for Implementing the Facilities Plan*

<b>Facility/ Amenity</b>	<b>Implementation Strategy</b>	<b>Responsible Parties</b>	<b>Timeline</b>	<b>Cost</b>
<b>Picnic Area and Outdoor Eating Area</b>				
<b>Picnic Tables (Picnic Area)</b>	Local construction by contracted supplier	<b>Lead:</b> Contracted supplier	<b>Procurement (Phase I):</b> Jan 15 – Mar 15, 2023	
<b>Picnic Tables (Outdoor Eating Area)</b>	Delivery and placement by PWD with guidance by the Environment and Climate Change Unit, MRNL	<b>Partners:</b> MNRL, PWD	<b>Implementation (Phase I):</b> Mar 15 – Mar 31, 2023	
<b>Garbage Bins</b>	<u>Phase I</u> Picnic Area		<b>Procurement (Phase II):</b> Aug 15 – Oct 15, 2023	
	<u>Phase II</u> Outdoor Eating Area		<b>Implementation (Phase II):</b> Oct 15 – Oct 31, 2023	
<b>Birdwatching Hiking Trail and Lookout Deck</b>				
<b>Hiking Trail</b>	Clearing of trail by Beach Wardens with assistance from hiking groups and NGOs with guidance from the Environment and Climate Change Unit	<b>Lead:</b> MNRL  <b>Partners:</b> Hiking groups; NGOs; Department of Agriculture	<b>Implementation:</b> Apr 1 – May 31, 2022	

<b>Facility/ Amenity</b>	<b>Implementation Strategy</b>	<b>Responsible Parties</b>	<b>Timeline</b>	<b>Cost</b>
		(mulching of cut trees)		
<b>Lookout Deck</b>	Construction by local contractor via competitive bid with supervision by PWD	<i>Lead:</i> Contractor  <i>Partners:</i> PWD (supervision)	<i>Procurement:</i> Jan 15 – Mar 15, 2023  <i>Implementation:</i> Apr 1 – May 31, 2022 (access from top via private road)	
<b>Rest Benches</b>	Local construction by contracted supplier  Installation by PWD with guidance from the Environment and Climate Change Unit, MNRL	<i>Lead:</i> Contracted supplier  <i>Partners:</i> MNRL	<i>Procurement:</i> Jan 15 – Mar 15, 2023  <i>Implementation:</i> Apr 2023	
<b>Signage</b>	Content development and design by MNRL, NPT and GIS  Production by contracted supplier  Installation by PWD with guidance from MNRL	<i>Lead:</i> Contracted supplier  <i>Partners:</i> MNRL; NPT, GIS; PWD	<i>Procurement:</i> Jan 15 – Mar 15, 2023  <i>Implementation:</i> Mar 15 – Apr 15, 2023	
<b>Vending Zone, including Administrative Unit</b>				
<b>Vending Units</b>	Construction by local contractor via competitive bid with supervision by PWD and MNRL	<i>Lead:</i> Contractor  <i>Partners:</i> PWD; MNRL	<i>Procurement:</i> Jan 15 – May 15, 2023  <i>Implementation:</i> Jun 1 – Oct 31, 2023	
<b>Boardwalk for Vending Units</b>	Construction by local contractor via competitive bid with	<i>Lead:</i> Contractor  <i>Partners:</i>	<i>Procurement:</i> Jan 15 – May 15, 2023	



<b><i>Facility/ Amenity</i></b>	<b><i>Implementation Strategy</i></b>	<b><i>Responsible Parties</i></b>	<b><i>Timeline</i></b>	<b><i>Cost</i></b>
	supervision by PWD and MNRL	PWD; MNRL	Implementation: Oct 1 – Oct 31, 2023	
<b>Admin Unit</b>	Construction by local contractor via competitive bid with supervision by PWD and MNRL	<i>Lead:</i> Contractor  <i>Partners:</i> PWD; MNRL	Procurement: Jan 15 – May 15, 2023  Implementation: Jun 1 – Oct 31, 2023	
<b>Beach Chair Zone</b>				
<b>Storage pergolas</b>	Construction by local contractor via competitive bid with supervision by PWD and MNRL	<i>Lead:</i> Contractor  <i>Partners:</i> PWD; MNRL	<i>Procurement</i> Jan 15 – May 15, 2023  <i>Implementation:</i> Jun 1 – Jul 31, 2023	
<b>Signage</b>	Installation of signage by PWD with guidance from MNRL defining the Beach Chair Zone (e.g. “No Beach Chairs beyond this point”).  Sign content and design by MNRL and GIS	<i>Lead:</i> Contracted supplier  <i>Partners:</i> MNRL; GIS; PWD	<i>Procurement</i> Jan 15 – Mar 15, 2023  <i>Implementation:</i> Mar 15 – 31, 2023	
<b>Parking Facilities</b>				
<b>Clearing and Surfacing</b>	Clearing by MNRL Beach Wardens. Surfacing and installation of parking lot markings by PWD with supervision by MNRL.	<i>Lead:</i> MNRL  <i>Partners:</i> PWD	<i>Implementation:</i> Jan 15 – Feb 15, 2023	
<b>Screening</b>	Procurement of trees from local nursery via competitive bid;  Community tree planting in partnership	<i>Lead:</i> MNRL  <i>Partners:</i> Private nurseries,	<i>Procurement:</i> Jan 15 – Feb 15, 2023  <i>Implementation:</i> Feb 25, 2023	

<b><i>Facility/ Amenity</i></b>	<b><i>Implementation Strategy</i></b>	<b><i>Responsible Parties</i></b>	<b><i>Timeline</i></b>	<b><i>Cost</i></b>
	with NPT, NGOs, schools and churches;  Watering and maintenance by Beach Wardens	NPT, NGOs, schools, churches		
<b>Water and Power Facilities</b>				
<b>Water</b>	Water reticulation plan and extension of water connections to vending units by Water & Sewerage Department	<i>Partners:</i> WSD	Aug 1 – Sep 30, 2023	
<b>Power</b>	Extension of power to Vending Units by BVI Electricity Corporation	<i>Partners:</i> BVIEC	Aug 1 – Sep 30, 2023	
<b>Signage</b>				
<b>Safety and Information</b>	Content development and design by MNRL, Virgin Islands Fire and Rescue Service, and GIS  Production by contracted supplier  Installation by PWD with guidance from MNRL	<i>Lead:</i> Contracted supplier  <i>Partners:</i> MNRL; VIFRS; GIS; PWD	<i>Procurement</i> Jan 15 – Mar 15, 2023  <i>Implementation</i> Mar 15 - 31, 2023	
<b>Commercial</b>	To be installed by approved commercial operators in keeping with beach rules	<i>Lead:</i> Approved commercial operators	Start of lease (Nov 1, 2023)	
<b>Waste Management Facilities</b>				
<b>Solid Waste Management</b>	Procurement of bins and construction of screening by competitive bid  Installation by PWD with guidance from MNRL and servicing by	<i>Lead:</i> Contracted supplier  <i>Partners:</i> MNRL; PWD; SWD	<i>Procurement:</i> Jan 15 – Mar 15, 2023  <i>Implementation:</i> Mar 15 – Apr 15, 2023	

<b><i>Facility/ Amenity</i></b>	<b><i>Implementation Strategy</i></b>	<b><i>Responsible Parties</i></b>	<b><i>Timeline</i></b>	<b><i>Cost</i></b>
	Beach Wardens and Solid Waste Department			
<b>Wastewater Management</b>	Continuation of existing contract to pump out the public restroom facility sewage treatment system storage tank  Installation of a small pump station, if necessary, to manage wastewater from the Administrative Unit and Vending Zone	<i>Lead:</i> Contracted supplier	Ongoing	
<b>Upgraded Public Restroom Facility</b>				
<b>Outdoor Showers</b>	Construction by local contractor via competitive bid with supervision by PWD and MNRL	<i>Lead:</i> Contractor  <i>Partners:</i> PWD; MNRL	Procurement: Jan 15 – May 15, 2023  Implementation: Jun 1 – Jul 31, 2023	
<b>Access Road</b>				
<b>Enhanced Access Road</b>	Grading by PWD twice per year or as needed, as determined by MNRL	<i>Lead:</i> MNRL  <i>Partners:</i> PWD	Ongoing	

## 6.6.10 Facilities Maintenance Plan

The beach management authority is responsible for the structural maintenance of all facilities for commercial use as well as the full maintenance of all facilities for public use. The Facilities Maintenance Plan is presented in Table 6-60.

It is recommended that all facilities be insured to protect against hurricanes, storm surge, flood, fire and other natural disasters.

*Table 6-60. Facilities Maintenance Plan*

<b>Facility/ Amenity</b>	<b>Action</b>	<b>Cycle</b>	<b>Responsible Parties</b>	<b>Est. Monthly Cost</b>	<b>Est. Annual Cost<sup>16</sup></b>
<b>Picnic Area</b>					
<b>Picnic Tables</b>	Painting	Annually	MNRL (Community service project)		
<b>Walkways</b>	Cleaning/ clearing	Daily	Beach Wardens		
<b>Birdwatching Hiking Trail and Lookout Area</b>					
<b>Hiking Trail</b>	Cleaning/ clearing; step repairs	Quarterly	Beach Wardens		
<b>Rest benches</b>	Painting	Annually	MNRL (Community service project)		
<b>Signage</b>	Repairs	As needed	MNRL		
<b>Vending Zone, including Administrative Unit</b>					
<b>Vending Units</b>	Structural repairs	As needed	MNRL (via contract)		
<b>Admin Unit</b>	Structural repairs	As needed	MNRL (via contract)		
<b>Insurance</b>	Annual premium	Annually	MNRL		
<b>Beach Chair Zone</b>					
<b>Pergola storage</b>	Structural repairs				
<b>Parking Facilities</b>					
<b>Surface</b>	Grading	As needed	PWD		
<b>Screening (hedge)</b>	Watering, pruning	Weekly	Beach Wardens		
<b>Water and Power Facilities</b>					
<b>Water</b>	Repairs to broken lines	As needed	WSD		
<b>Water</b>	Utility bill	Monthly	MNRL		
<b>Power</b>	Repairs to lines	As needed	BVIEC		
<b>Power</b>	Utility bill	Monthly	MNRL		
<b>Signage</b>					
<b>Safety and Information</b>	Repairs to signage	As needed	MNRL		
<b>Commercial</b>	N/A				
<b>Waste Management Facilities</b>					
<b>Solid Waste Management</b>	Removal of waste;	Daily	Beach Wardens; SWD		

<sup>16</sup> Cost to beach management authority

<i><b>Facility/ Amenity</b></i>	<i><b>Action</b></i>	<i><b>Cycle</b></i>	<i><b>Responsible Parties</b></i>	<i><b>Est. Monthly Cost</b></i>	<i><b>Est. Annual Cost<sup>16</sup></b></i>
	Painting of bins	As needed	MNRL		
<b>Wastewater Management</b>	Maintenance of sewage treatment plant, including pump out of storage tank	Monthly	Contracted supplier		
<b>Restroom Facilities</b>					
<b>Daily operations</b>	Cleaning	Daily	Contracted supplier		
<b>Structural maintenance</b>	Plumbing, electrical, structural repairs	As needed	MNRL (via contract)		
<b>Access Road</b>					
<b>Surface</b>	Grading	Twice per year or as needed	PWD		
<b>TOTAL</b>					

## **7.0 – Appendices**



**Appendix I - Plant Species Found Within the Vegetation Line and Dune System**

**Appendix II - Full Results of Detailed Vegetation Survey Conducted June 27, 2022**

**Appendix III – Advertisement of the Proposed Declaration of Long Bay, Beef Island as a National Park**

**Appendix IV - Photos of Existing Conditions**

**Appendix V – Long Bay Public Survey – Survey Tool and Results**

**Appendix VI – Cruise Ship Passenger Arrival Data – Tortola, 2023**

**Appendix VII – Application for Permission to Carryout Special Activities at Beaches**

**Appendix VIII – Application for Long-term Commercial Use of Beaches**

**Appendix IV – Criteria for Evaluation of Applications for Long-term Commercial Use**

**Appendix X - Sample Licence and Lease for Long-term Commercial Use of Beaches**

**Appendix XI – Application for Temporary Commercial Use of Beaches**

**Appendix XII – Application for Non-Commercial Use of Beaches**