

## **TABLE OF CONTENTS**

<b>INTERPRETATION</b>	<b>2</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. OBJECTIVES</b>	<b>3</b>
<b>3. SECTORAL POLICIES</b>	
<b>3.1 Fishing</b>	<b>3</b>
<b>3.2 Tourism</b>	<b>4</b>
<b>3.3 Land-Use</b>	<b>4</b>
<b>3.4 Dredging</b>	<b>5</b>
<b>3.5 Mangroves and Littoral Forest</b>	<b>5</b>
<b>3.6 Utilities</b>	<b>6</b>
<b>3.7 Waste Disposal</b>	<b>6</b>
<b>3.8 Social Amenities and Recreation</b>	<b>6</b>
<b>3.9 Conservation</b>	<b>7</b>
<b>4. IMPLEMENTATION STRATEGY</b>	<b>7</b>
<b>5. ACKNOWLEDGEMENTS</b>	<b>8</b>
<b>ANNEX 1: BACKGROUND</b>	
<b>I. History of the Turneffe Atoll</b>	<b>A-1</b>
<b>II. History of the Turneffe Islands Development Guidelines</b>	<b>A-1</b>
<b>III. Current membership on the TICAC</b>	<b>A-2</b>
<b>V. Primary Implementation Agencies</b>	<b>A-2</b>
<b>ANNEX 2: LAND TENURE ON TURNEFFE</b>	
<b>I. Turneffe Islands Land Tenure Report</b>	<b>A-3</b>
<b>II. Anecdotal Land Tenure History</b>	<b>A-10</b>
<b>ANNEX 3: PROVISIONAL DEVELOPMENT SITES</b>	<b>A-13</b>
<b>ANNEX 4: MAPS</b>	
<b>I. Indicative Vegetation Cover</b>	<b>A-46</b>
<b>II. Indicative Conservation of Resources</b>	<b>A-47</b>
<b>III. Existing Land Use</b>	<b>A-48</b>
<b>IV. Indicative Development Sites</b>	<b>A-49</b>

## INTERPRETATION

The meaning of the following terms that have been used in the description of the Development Sites follow (see also section 6.2 below):

**“AGST&D”**: means Above Ground Septic Tank with Drain field (in Development Site tables)

**“BC”**: means Belize City (in Development Site tables)

**“BTB”**: means Belize Tourism Board

**“CZMAC”**: means the Coastal Zone Management Advisory Council

**“DOE”**: means the Department of the Environment, Ministry of Natural Resources and the Environment, GOB

**“Entry”**: means private surveyors registered entry, lodged at the Lands and Survey Department, Belmopan

**“First Aid”**: means a facility that is readily available for the provision of first aid to all who can prove they require it

**“Fish camp”**: means a building or buildings that are permanently or temporarily used for, by full or part time commercial fishermen, as licensed by the Fisheries Department and sport fishing together with ancillary uses such as housing, trap making and storage, boat repair and docking, non commercial plantation, general storage

**“GOB”**: means Government of Belize

**“GPD”**: means Geology and Petroleum Department, Ministry of Natural Resources and the Environment, GOB

**“Guest House”**: means housing facilities for visitors either as a part of the main residence or in a separate building, within the density requirements of the development sites (this is an abbreviated definition of the BTB and must meet their minimum requirements as such)

**“IMS”**: means Institute of Marine Studies, University of Belize

**“LSD”**: means Lands and Survey Department, Ministry of Natural Resources and the Environment

**“LWMS”**: means Liquid Waste Management System (see section 4.2.8: Waste Disposal)

**“Land”**: means all areas within the atoll that are either permanently or temporarily above the surface of the sea, whether through natural or man-made activity. The seabed, while not ‘physical’ land, is defined as National Land

**“n/a”**: means ‘not applicable’

**“NHW”**: means Non Hazardous Waste (in Development Site tables)

**“Residential”**: means a building or buildings that are used solely for permanent or temporary residential use by the owners or others on a non commercial basis, to the exclusion of all other uses and within the density requirements of the development sites.

**“Residential Tourism”**: means a building or buildings that are used, as one unit each, solely for permanent or temporary residential use on a commercial basis, to the exclusion of all other uses and within the density requirements of the development sites.

**“Resort”**: means a building or buildings which offers commercial and multi unit accommodation and general amenities to visitors together with ancillary uses such as staff accommodation, general storage and repair facilities, docking, within the density requirements of the development sites.

**“TICP”**: means Turneffe Islands Committee Plan (1990-91).

**“TICAC”**: means Turneffe Islands Coastal Advisory Committee

**“Tourism Facility”**: means any facility that accepts visitors for payment, or in kind, included or not included in the current definitions; that is Guest House, Resort, or Residential Tourism.

**“WCP”**: means Waste Collection Point (see Development Site No 85).

## 1. INTRODUCTION

Located 25 miles east of Belize City, the Turneffe Atoll is a discrete group of Cayes surrounded by its own living coral reef. Approximately 30 miles long and 10 miles wide, Turneffe is the largest and most biologically diverse coral atoll in this hemisphere. It supports a number of threatened and endangered species, including the American saltwater crocodile, Antillean manatee, and several species of sea turtles. It is also a substantial contributor to the commercial harvest of conch and lobster in Belize. The atoll is also known worldwide for sport fishing and scuba diving, and is a growing center for marine research in Belize. At the same time, development pressures are increasing. A brief history of the atoll is provided in ANNEX 1.

The Turneffe Islands constitute one of the nine (9) Planning Regions as described in the Coastal Zone Strategy for Belize, 2001. Each Planning Region containing unique social, economic, geographical, and administrative factors. The Turneffe Islands Coastal Advisory Committee (TICAC) is composed of Turneffe Island stakeholders, implementing governmental agencies and relevant non-governmental agencies. As there exists no town council or other governmental entity representing stakeholders at Turneffe, the TICAC fills a vital and previously unavailable role for stakeholder input and representation. A priority of the TICAC has been the review, revision, and updating of the Turneffe Islands Development Guidelines, with the overall aim of achieving true sustainable development. The history of these guidelines (first drafted in 1996) is provided in ANNEX 1.

These development guidelines thus represent broad-based recommendations, which are presented in a general sectoral basis in Section 3 to assist regulatory agencies and potential developers in decision-making and planning. The general implementation strategy for these guidelines are presented in Section 4. The current TICAC membership and primary implementation agencies are found in ANNEX 1. ANNEX 2 contains a summary of the current land tenure situation for Turneffe. The provisional development site tables with specific recommendations and maps are presented in ANNEX 3.

## 2. OBJECTIVES

In order to sustain Turneffe's terrestrial and marine environments, the specific objectives of these Guidelines include:

- a. protect the commercial and sport fishing resources
- b. protect traditional commercial fishing rights
- c. protect the terrestrial and marine environment of the atoll
- d. promote low density, environmentally sustainable tourism (for both high and low capital investment)
- e. prevent over-development
- f. promote an equitable *land distribution/ tenure system* which prevents land speculation

## 3. SECTORAL POLICIES

These policies are organized into nine sectors addressing current and potential activities at Turneffe. They include: fishing, tourism, land-use, dredging, mangroves/littoral forest, utilities, waste disposal, social amenities/recreation and conservation. It is recognized that there are a number of different regulatory and permitting agencies that have direct control over many of the following components.

### 3.1 Fishing

The atoll and its surrounding waters have provided a productive commercial and subsistence fishery for centuries. Presently, lobster, conch, snapper and grouper are the main commercial species. Bonefish, permit, tarpon and snook are important species for sport fishing. The mangroves, seagrasses and back reef flats act as critical breeding grounds that must be maintained. These guidelines seek to ensure that the valuable fishing resources of Turneffe will not be damaged by inappropriate development.

Traditional fishermen, mostly from Belize City, Sarteneja and Caye Caulker, utilize fishing camps, which are either permanently or semi-permanently occupied. The number of camps decreased from 44 in 1996 to 34 in 2000, and is thought to have declined further. Fishermen have expressed concern over the security of their leases to these camps.

Fish catches, although not well quantified, have declined steadily over the past decade.

**Recommendations:**

1. Establishment of maximum sustainable yields for all fishing activities, including limits on catch and/or effort
2. Prohibit activities and/or developments that damage commercial and sport fishing habitats
3. Traditional fishermen should be provided with security of tenure (leases) for existing fishing camps
4. Occupants of private lands and parts of national lands that have been leased for tourism should not be permitted to engage in commercial fishing.

**3.2 Tourism**

Recognizing the attraction Turneffe atoll provides for nature-based recreation, these guidelines propose measures to limit the amount of development in order to sustain this pristine atoll's marine habitat.

There are currently three operational resorts, which cater to sport fishing, diving and snorkeling activities. In addition, there are two educational/research facilities. Day-tours originating from Belize City, Ambergris Caye and other locations are made to Turneffe for sports fishing and diving at a limited number of sites.

Some traditional fishermen have expressed a desire to develop their fishing camps into small, guest houses offering the eco-cultural experience of the fishermen. These guidelines support this type of development, which is reflected in the Provisional Development Site Tables (ANNEX 3).

**Recommendations:**

1. Fishing camps are given the option to develop 'guest houses'; promoting opportunities for the traditional users of the atoll to gain increased benefits from the tourism industry.
2. All tourism facilities should be properly identified for safety purposes and required to have disaster preparedness and evacuation plans.
3. All tourism facilities should be required to meet the BTB's minimum standards.
4. BTB, DOE and BELTRAIDE should not approve or recommend tourism facilities that do not conform to these development guidelines.
5. The "*Tourism and Recreation Best Practices Guidelines for Coastal Areas in Belize*" produced by CZMAI are additionally recommended.

**3.3 Land-Use**

The atoll consists of approximately 28,350 acres and is made up of a mix of high and low lands that essentially fringe an expansive lagoon system that can reach to a width of 5 miles and a length of 13 miles. The islands, some of them larger than 5000 acres, are characterized by a variety of approximately 77 vegetation types, reflecting the topography of the land. The high lands are generally covered by littoral forest, palmetto, broken palmetto thicket and coconut; the low lands with high, medium and low mangrove. Much of the low land is permanently inundated.

The 'land', whether consisting of solid high land, substantial mangrove stands or over wash mangrove swamp, is predominantly National land. There are, however, an increasing number of privately owned properties, mainly on the east coast and the south.

In the early 1990's, there was a moratorium on the sale of small National cayes. This policy is hereby supported along with the suggestion to further apply this policy to parcels of land on larger cayes in Turneffe. It is acknowledged that transferable leases have resulted in more land being transferred into private, ultimately foreign hands, with little economic benefits going to the people and Government of Belize.

The revised inventory of cayes for Turneffe indicating current land tenure was completed in late 2002. (Summarized in ANNEX 2). There are 33 private properties, ranging in size from 500 square yards to 351, acres; 139 approved leases, ranging in size from 780 square yards to 85 acres; 33 lease applications

that have not yet been approved, and 12 cancelled leases. The 1992 Inventory of Cayes had identified 103 leases.

**Recommendations:**

1. Continue the moratorium on the sale of small national cayes.
2. Institute a temporary moratorium on the sale of all national land on Turneffe until the Biosphere Reserve Management Plan is completed (or until December 2005).
3. Secure tenure (leases) for fishing camps that have had long-term occupation.
4. No new leases should be issued for non-traditional fishermen on Turneffe.
5. All lease conditions, transfers, and sub-divisions should conform with these guidelines.
6. Over the water cabanas should not be allowed on Turneffe.

### **3.4 Dredging**

Turneffe atoll has sufficient high land for resort and/or residential use (detailed in the provisional development site tables in ANNEX 3) that the conversion of swamp or sea into “beaches” or “land” is not needed to allow development. Any mechanical dredging on this sensitive atoll would be detrimental to the marine environment, particularly adjacent seagrass beds and reefs that support the fishing and tourism industries. Furthermore, such artificial beaches and land filling creates land unsuitable for effective liquid waste disposal, distorts land/wetland values, and sets a harmful precedent for future development.

**Recommendations:**

1. In consideration of the planning objective to minimize the impact of development on the atoll and confine developments to lands that are naturally supportive of such development, no dredging, sand mining or land filling /reclamation should be allowed on Turneffe.
2. Any reclamation of lost property, (after hurricanes) however, should only be done in consultation with the relevant authorities.
3. There should be minimal manual dredging for boat access. Land that has no feasible access should not be developed. The provisional development site tables (ANNEX 3) give provisions for piers.

### **3.5 Mangrove and Littoral Forest**

Mangroves are important for a variety of ecological and economic reasons including their role as fisheries nurseries and habitat. In addition, they provide habitat for birds, crocodiles, marine invertebrates and numerous insects; serve as protection against hurricanes, storms and erosion, provide flood control, water purification and natural filtration services. Turneffe contains the largest area of mangroves found on Belize’s cayes. The variety and extent of mangrove habitats found there is extraordinary.

Littoral forest refers to forested areas along the coast or cayes that generally occurs on high land. They have distinctive plant assemblages such as red and white gumba limbo, sea grape, poisonwood, matapalo fig, sapodilla, numerous shrubs and other flowering plants, which support a diverse assemblage of birds and insects. Caye littoral forest is probably the most threatened coastal habitat in Belize and the eastern side of Turneffe is an important area for littoral forest.

**Recommendations:**

1. Due to their importance as providers of ecological services for the atoll and to its main industries (fishing and tourism), the Mangrove Protection Act of 1989 should be strictly enforced.
2. Clearing of vegetation should be kept to a minimum and valuable littoral forest should be identified and reserved.
3. Certain high mangrove stands are used for the selective cutting of poles and palmettos for fishing trap construction. This use is sustainable in its present volume and should be allowed, recognizing that some management may be required in the future.

### 3.6 Utilities

Given the remote nature of the atoll, provision of adequate water and electricity is a major obstacle for development and a potential source of environmental degradation. These guidelines seek to ensure that proper consideration is given to the environmental consequences of providing these utilities, with site-specific recommendations included in the Provisional Development Site Plans (ANNEX 3). The matter of the level of requirement and the means of supply falls, in many ways, into two categories: the fishing camps, which generally do not require much infrastructural development or provision, and the tourism / residential developments which require more advanced infrastructural development.

#### **Recommendations:**

1. The use of solar and wind power is recommended, yet it is recognized that generators will continue to be the main component.
2. Generating systems should be shared by neighboring developments as far as is feasible.
3. All precautions should be taken to ensure the avoidance of pollution, particularly making provision for removal of waste oil from generators, adequate safety for fuel storage, and reduction of noise pollution.
4. All development proposals on the atoll should include detailed consideration of how to supply adequate fresh water sources that do not degrade the natural fresh water resources used by wildlife.

### 3.7 Waste Disposal

The matter of waste disposal is addressed in much the same format as is utility supply: what is recommended as suitable for the resort and residential developments differs from that for the fishing camps. This is based on the possible occupation and investment levels: a resort or a residential development (whether permanently or occasionally occupied) will probably generate far more waste, and should have access to higher investment for disposal systems, than a fishing camp.

#### **Recommendations:**

1. For resort and residential developments, solid waste should be removed to Belize City. In the future, if a collective system is instituted, the identified potential Waste Collection Point (see 'comments' in the description of Provisional Development Site 85; ANNEX 3) could be used to store waste before removal to Belize City. The use of compactors is encouraged.
2. For fishing camps, the volume of solid waste generated is so small that incineration on site, given adequate precautions, should be acceptable. If a camp were to take up the option of developing 'guest house' facilities, which the plan supports, they should then meet the BTB minimum standards.
3. For liquid wastes of resorts and residential developments, closed systems are preferred; either using composting toilets or closed septic systems with contained drain fields feeding wetlands and/or vegetation. If sewage treatment systems are used they should meet all of the requirements of the Effluent Regulations of 1995 under the Environmental Protection Act and the recommendations of the public health bureau.
4. Closed septic tanks are recommended for all small development sites. Latrines should only be used in fish camps if the occupancy is minimal, i.e. 2-3 people. If the fishing camp takes up the option of developing 'guest house' facilities, which the plan supports, then BTB minimum standards would apply.

### 3.8 Social Amenities and Recreation

Given the remoteness of the atoll, the disbursed community of fishermen, resort staff and tourists need to work cooperatively to secure basic social amenities.

#### **Recommendations:**

1. Because there are no basic health care facilities on the atoll, recreational and commercial users should be prepared to provide their own medical care, although resorts are encouraged to provide assistance to the wider community.
2. The IMS on Calabash Caye, or other suitable facilities, should be used for meetings of the general community or specific groups/committees on the islands.

3. Specific sites for general public recreation should be established.
4. Public recreational beaches, with infrastructure such as pier and bathroom facilities, should be established in order to manage and facilitate day-trip tourism at suitable sites on Turneffe.

### **3.9 Conservation**

Turneffe is unique in that it is one of the few atolls in the Caribbean containing excellent reef development around its margins as well as intact mangrove and seagrass habitat in its interior. It is also the largest of the four atolls in Mesoamerica. The reefs and hard-bottom communities support a diverse assemblage of corals, sponges, and fish. Critical fish spawning sites are also known to exist off both the northern and southern tips of the atoll, including sites for the endangered Nassau grouper.

Turneffe contains some of the best remaining American salt-water crocodile habitat in the Caribbean, with perhaps the largest population in Belize of this endangered species. Sea turtles also nest on the sandy beaches of the eastern cayes. In respect to marine mammals, dolphins and the endangered Antillean Manatee are also regularly found in the interior network of mangrove cayes. Several species believed to be endemic to Belize, including Belize's atoll gecko and the rare and cryptic white-spotted toadfish, are found here.

Turneffe also has the distinction of being the only atoll in the Belize Barrier Reef System with no protected areas, although recommendations and justifications for such areas have been made since at least the mid 1990's.

#### **Recommendations:**

1. The Turneffe Islands Committee Plan (in the early 1990's) and the Coastal Zone Management Authority and Institute in 1999, identified a number of areas to be reserved due to their high conservation value. These recommendations are endorsed by the TICAC.
  - Soldier Caye (nesting site for the roseate tern and white crowned pigeon);
  - Grassy Caye Range (nesting site for turtles and the roseate tern); flats for bonefish and juvenile conch;
  - Blackbird, Deadman's and Calabash cayes (important nesting sites for the endangered American crocodile); Calabash also a turtle nesting and ancient Maya site;
  - Vincent's (or Northern) Lagoon, Freshwater Creek area, Pelican Caye, the Crayfish Range / New Bight area in Central Lagoon, Sheg Caye Bluff / Cross Caye, Cockroach Bay Caye, Douglas Caye, mangrove cayes east of Calabash, and Calabash Lagoon;
  - Mauger Caye (site of a historic lighthouse)
2. National land lying outside of the identified provisional development sites should not be developed pending further studies.
3. It is recommended that Turneffe atoll be established as Belize's first Biosphere Reserve, emphasizing a multiple use (conservation, fishing/ tourism and education/research) zoning scheme. As an initial step in establishing the Biosphere Reserve, Vincent's Lagoon and the associated Cayes are recommended as a core protected area (National Park/Marine Reserve).

## **4. IMPLEMENTATION STRATEGY**

Following the government's policy of decentralization and inclusion of stakeholders in the decision-making processes, it is envisioned that the regulatory and permitting agencies will recognize the stakeholder consensus expressed through these guidelines. The TICAC will work closely with the Coastal Zone Advisory Council regarding monitoring and implementation of the guidelines.

In addition to the overarching policies described in Section 3, the guidelines include provisional development sites, as presented in ANNEX 3. The identification of, and recommendations for these provisional development sites was based upon information received from Government agencies, from the atoll's occupants and users, extensive field work, aerial photographs and satellite images. The identification of a development site does not mean that the land is recommended for development or must be developed; it simply means that if that land is developed then the recommendations of the plan should apply.

ANNEX 3 specifies the type of land use, lot size, building density, means of utility supply and other performance standards recommended for each site. It is intended that development should take place only on these potentially suitable sites; the remainder of the land, whether it is high or low, should remain undeveloped, at least until further review.

Planning is a continual process of recommendation, participation, implementation and review. These guidelines and provisional site development recommendations should be monitored on a continual basis in order to establish its strengths and weaknesses. It is acknowledged that, at any given time, some of the detailed information presented in the provisional site development recommendations will be in error. Thus all users of the plan are urged to provide updates and / or corrections to the CZMAC and TICAC.

Additional studies are needed, in liaison with the relevant authorities and the islands' occupants, on the areas outside the 'provisional development sites': the "reserved" national land. Such studies should reveal information which may better determine to what degree these lands should be reserved and what, if any, 'compatible development' they could accommodate. Further research targeting the conservation of threatened and endangered species and critical marine habitats/species affected by the development on the cayes, must also be conducted and used to revise the provisional site development recommendations and overall development guidelines, as needed. This process will be included in the general plan review procedure.

Through a management planning mechanism, TICAC will regularly update the provisional development sites with the realization that a) development of all listed sites could, in and of itself, cause an over-development situation, and b) through the implementation of the Biosphere Reserve, as well as other considerations, sites may need to be added or removed. Working together to promote environmentally sound, rational and equitable development, these guidelines will hopefully set a good example of representative, cooperative and adaptive management.

## 5. ACKNOWLEDGEMENTS

The TICAC would like to acknowledge the hard work and dedication of all its members (listed in ANNEX 1) in the completion of these development guidelines for Turneffe. A special thanks is offered to World Wildlife Fund's Mesoamerican Caribbean Reef Conservation Program for funding the land tenure consultancy through Grant PVG-14 to the CZMAI and for supporting Dr. M. McField's time in editing this document. The CZMAI, particularly John McGill and Desirée Graniel are commended for their longstanding efforts to develop and support these guidelines and TICAC. Janet Gibson is also acknowledged for her longstanding efforts and vision for creating the CZMAI and the mechanisms for management planning in Belize, which are exemplified by these development guidelines.

The original development guidelines were compiled by John McGill, with assistance from the following:  
Richards, Gilbert 1994 Frame Survey Report (Fisheries Department)  
Zisman, S; Minty, C; Murray, M 1995 Turneffe Terrestrial Resource Reconnaissance: Report to CCC Ltd, Department of Geography, University of Edinburgh  
Turneffe Island Committee (courtesy Earl Young, CZMU, Fisheries Dept., and Clinton Gardiner, DCLS, Lands & Surveys Dept.)  
Ray Lightburn, Blackbird Caye Resort, Turneffe Islands  
Jonathan Ridley, Marjo Vierros, and Kevin Coye; Coral Caye Conservation  
Gayle Bradley Miller, Marine Research Centre, University College of Belize  
Susan Wells, CZMP  
Carmen Cawich, CZMP  
Rory Solis, CZMP  
Turneffe Island Lodge, Turneffe Islands  
Westby, Hopeton, fisherman  
Young, Morrel, Fisherman  
Amigos del Mar, San Pedro  
Alison Saunders, Oceanic Society Expeditions, Turneffe Islands  
Lands and Survey Department, Ministry of Natural Resources, GOB  
The Planning Section, Housing and Planning Department, Ministry of Housing, Urban Development & Co-operatives, GOB  
The Inventory of the Cayes, CZMU, 1992  
Department of Archaeology  
Lighthawk