

Ecotourism Development in the Southern Red Sea Region

Ecotourism Resources
Ecotourism Development Plan

United States Agency for International
Development (USAID)

Prime Contract # GS-1F-0076M

Order #263-M-00-04-00004-00

Subcontract to IRG: No.2007-000-PA

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ECOTOURISM: A NEW APPROACH TO SUSTAINABLE TOURISM IN EGYPT

One of Egypt's National Strategic Objectives is "the diversification of the nation's tourism products". The Egyptian Tourism Development Authority (TDA) believes that sustainable ecotourism can play a vital role in the realization of this objective. Egyptian ecotourism should enable the visitor to personally experience a variety of nature-based and cultural activities that accurately and authentically represent the natural beauty and cultural heritage of the country. Given its unique resource base, the TDA believes that Egypt is well positioned to offer visitors a range of ecotourism experiences that are distinctly different from the rest of the world. According to the International Ecotourism Society (TIES), ecotourism is a nature-based form of specialty travel defined as:

“responsible travel to natural areas, which conserves the environment and sustains the well-being of local people.”

The use of ecotourism to further diversify Egypt's tourism market represents a significant departure from the conventional tourism development techniques now being offered by the resort hotels located along the Red Sea. Both types of tourism are economically important to Egypt, but they are distinctly different.

The significant distinction between ecotourism and traditional tourism is that the primary attractions for the ecotourist are ***authentically provided, personal experiences that are unique to a particular region***. The ecotourists' personal experiences include some combination of environmental and cultural activities that are further reinforced by accommodations that accurately reflect the heritage, foods, amenities, and various personal services that distinctly characterize the host community. The ecotourist consumer generally seeks a destination that promotes environmental conservation and economic benefits to those host communities.

Recognizing the distinguishing characteristics of ecotourism, the TDA has determined that sustainable ecotourism projects must meet the following criteria:

- promote the conservation and restoration of wildlife habitats and ecosystems;
- respect local cultures, traditions, and historic sites;
- be well planned, managed, and marketed in order to meet the stringent environmental and recreation demands of the sophisticated and increasingly competitive ecotourism market; and
- be economically feasible in order to attract financing and sustain business operations.

Most importantly, the TDA further recognizes that ecotourism must be sustainable. This means that ecotourism must be performed in a responsible manner in order to safeguard Egypt's natural and cultural resources for both present and future generations. It is essential for Egypt to both conserve its scarce environmental resources and preserve its cultural integrity. Ecotourism represents an opportunity for Egypt to demonstrate responsible stewardship of its valuable natural and cultural resources.

DIVERSIFICATION OF TOURISM ATTRACTIONS AND EXPERIENCES

Egypt's world-renowned cultural heritage evolved from the remarkable diversity of natural and human resources that are unique to this place. The Nile River, the Red Sea, the Western Desert with its vast deserts and beautiful oases, and the Eastern Desert with its dramatic mountains and wadis (valleys that extend from the mountains to the sea) have sustained and inspired the Egyptian people for more than five thousand years. This enduring legacy of diverse natural and cultural resources has proven to be a powerful attraction to visitors throughout the world.

The original foundation of Egyptian tourism was the presence of antiquities such as the Pyramids, the Valley of the Kings, the Temples at Luxor, and the monuments near Aswan. These ancient sites and monuments continue to enjoy large numbers of visitors and a variety of tourism products have been created to accommodate them.

Antiquities remained the primary tourism attractions in Egypt until the mid 1970's. At that time, new destinations such as the Sinai Peninsula and the Red Sea Region began providing shore- and marine-based resort facilities and amenities. During the past 30 years those tourism attractions have witnessed strong growth. The destination resort facilities in these regions not only diversified Egypt's tourism product, but also distributed tourists to more remote regions of the country.

Ecotourism can play a vital role in Egypt's economic development by connecting its traditional antiquities-based tourism in upper Egypt with the Red Sea's recreational attractions. These connections have the potential to both increase the number of quality attractions for the tourists and improve Egypt's economic well-being. In this way, the National Strategic Objective of tourism diversification can be achieved.

INTERNATIONAL MARKET TRENDS IN ECOTOURISM

Considerable efforts have been put into researching the ecotourism market in an attempt to define the "typical ecotourist" or identify a market segment that is most likely to participate in an ecotourism activity. While the research has shown there is not one group that can be categorically identified as the "typical ecotourist", there is clear evidence that ecotourism activities hold great appeal for a range of visitors, and some common characteristics can be found on those participating in ecotourism activities.

The ecotourism market is comprised of several distinct categories of persons pursuing various recreational activities characterized by levels of expenditures and visitor behavior. In summary the ecotourism market may be summarized as follows:

- The high-end ecotourism market is characterized by persons who are approximately 50 to 65 years of age with high educational attainment, considerable discretionary income, and an inclination for recreational activities conducted by well-trained guides and naturalists.
- The mid-range ecotourism market is typified by persons who have a substantial desire to pursue their specialized, nature-based recreational activity. For example, this individual typically saves their scarce financial and time resources to participate in nature-based activities in unique and remote locations.

- The low-end ecotourism market is those persons whose primary motivation is to inexpensively experience nature. This market segment is generally characterized by young people with few financial resources, but a willingness to "rough it" via camping or working temporary jobs in order to pursue nature based recreation activities such as snorkeling, hiking, backpacking, and mountain climbing. Successfully attracting this market segment can potentially lead to potentially long term visitation. As these individuals age, they move up the ecotourism value chain.

An integral part of Egypt's overall development strategy is to accommodate these ecotourism market segments with an emphasis on the high and middle segments of this market.

Operational Characteristics of the Market

The distinction between the ecotourism and traditional resort tourism markets results in significant differences in the ways tourism operations are conducted, and in the purpose of the lodging facilities associated with the different markets.

The tourist operations for the ecotourism market are based upon the creation and safe delivery of recreational experiences that allow the tourist to explore and learn about new environments, cultures, and people. These tourism experiences usually occur well beyond the boundaries of a particular lodging facility. Additionally, the TDA realizes that the safety of the ecotourists often involves various types of satellite facilities that can only be used on a seasonal basis. Both the safety and enjoyment of the ecotourist must be thoroughly addressed in order to implement a sustainable ecotourism program plan. Based on careful research of existing ecotourism operations, it is further understood that the ecotourist seeks guest service amenities that accurately reflect the culture and traditions of the host country.

Lodging Facilities

The ecotourist lodging facility is a place from which the ecotourist explores the surrounding region. Thus the lodging facilities for ecotourism serve as only one element in a delivery system that provides the visitor's tourism experiences.

Again, the contrast between sustainable ecotourism and traditional tourism is significant. Tourist operations for the traditional resort seek to provide an attractive mix of guest services and activities that are almost exclusively located within the perimeter of the resort property. The conventional resort with its hotel facility and associated amenities essentially define the majority of the guest experiences and thus must be designed and built to meet those consumer demands.

Distribution of Benefits from the Ecotourism Market

Ecotourism is a viable way to create several types of economic benefits for the local people. One attraction of the ecotourism market is its very conscious effort to maximize local benefits. These benefits include jobs, income, improved standards of living, cultural preservation, and environmental conservation and restoration. Sustainable ecotourism development projects endeavor to promote the social and economic well being of the local people, economy, and environment.

TABLE OF CONTENTS

- 1. Introduction**
 - 1.1 The Southern Red Sea Region: Definition and Characteristics
 - 1.2 Previous Studies
 - 1.3 Ecotourism Development Vision
 - 1.4 Ecotourism Development Goal
 - 1.5 Ecotourism Development Objectives

- 2. Resources of the Southern Red Sea Region**
 - 2.1 Environment and Natural Resources
 - 2.2 Heritage And Cultural Resources

- 3. Ecotourism Opportunities and Constraints**
 - 3.1 Visitor Experiences In The Southern Red Sea Region
 - 3.2 Seasons Of Use
 - 3.3 Ecotourism Constraints: Hazards And Risks
 - 3.4 Potential Land Use Conflicts

- 4. Ecotourism Program Plan**
 - 4.1 Objectives
 - 4.2 Ecotourism Programs and Activities
 - 4.3 Summary of Ecotourism Program Planning Principles

- 5. Ecotourism Development Plan**
 - 5.1 Recreation opportunity classes
 - 5.2. Visitor Access
 - 5.3 Gateway Facilities
 - 5.4 Lodging Facilities
 - 5.5 Backcountry and Emergency Facilities
 - 5.6 Infrastructure Requirements
 - 5.7 Tour Operator Requirements
 - 5.8 Visitor Management Guidelines (Land and Marine)

- 6. Ecotourism Promotion and Investment Plan**
 - 6.1 The Ecotourism Market Globally – A General Overview
 - 6.2 Investing In Ecotourism On The South Red Sea Coast

Appendix

- A. Classified Inventory of Ecotourism Resources**

1. INTRODUCTION

1.1 THE SOUTHERN RED SEA REGION

The TDA recognizes that a successful ecotourism project is entirely dependent upon the natural and heritage resources that are unique to a particular region. For this reason, the TDA specifically selected an especially important region in the southeastern part of Egypt that lies between the summits of the Eastern Desert and the Red Sea. This region, called the Southern Red Sea Region (SRSR) extends from the summits of the Eastern Desert mountains towards the Red Sea. This region consists of an enormous water catchment area that supplies water to the Red Sea. The approximate dimensions of the region include 100 kilometers on the coastal area that extends from the southern limits of the Town of Marsa Alam to Wadi Lahami. Map 1 shows the Red Sea Region

The Wadi El Gimal Hamata Protectorate Area is an environmentally and historically important area located in the SRSR. The Protectorate is deemed important by the Egyptian government because of biological resources and marine ecosystems that are unique to the Eastern Desert and Red Sea, and because of the numerous heritage sites located within this area. Based on the diverse natural and heritage resources located within the Wadi al Gimal - Hamata region, the Government of Egypt formerly declared it as a Protectorate Area in January 2003

1.1.1 A Land of Extreme Contrasts

The SRSR is one of the world's most arid regions, but it is located directly adjacent to a major body of water, the Red Sea. Extreme contrasts such as this have resulted in the occurrence of many environmental and cultural characteristics that have the potential for providing genuinely unique ecotourism experiences. The SRSR provides world-class sites for conducting both land- and marine-based recreational opportunities within a setting that has witnessed thousands of years of historical and cultural development.

Stunning contrasts that defy comparison with any other part of the world exist in this region. The topographic relief of the land is dramatic. The high mountain peaks that dominate this region offer stark contrasts to the flat, expansive coastal plains at the edge of the Red Sea. The abundance of water and marine life in the Red Sea sharply contrasts with the condition of hyper-aridity found in the Eastern Desert. The few wildlife species that do inhabit the Eastern Desert are exceedingly rare and therefore offer considerable attraction to ecotourists. The Eastern Desert and Wadi al Gimal – Hamata Protectorate Area in particular, provide numerous bird species with critical habitat to meet their resident or migratory needs. The biology of the region is further augmented by a remarkable diversity of botanical species that amaze the visitor with their adaptability to the intensely arid conditions.

1.1.2 Topography

The topography of the Protectorate Area is a maze of mountains, canyon lands, escarpments, and wadis. For the ecotourist seeking either the active challenge of mountaineering or the passive serenity of a quiet place, the mountains and wadis of the Eastern Desert offer abundant opportunities. The nature tourist who wishes to experience solitude and peace will

1. Introduction...

be amazed by the true wilderness character of this region. The ecotourist can experience either a glimpse or a total immersion into a profound wilderness area. The intangible qualities of solitude and peace frequently sought by ecotourists can be experienced in the Gimal - Hamata Protectorate Area of the Red Sea.

1.1.3 Ancient Civilizations

The mountains may offer solitude to the present day ecotourist, but in ancient times they were the source of substantial mineral wealth and a vital part of the economic foundation of ancient empires. Numerous mines in the Eastern Desert produced precious metals, gemstones, and Imperial Porphyry. The Wadi al Gimal Hamata Protectorate Area, by example, produced great quantities of emeralds, gold, and Amyant. The mineral wealth of the region played a critical role in the development of ancient Upper and Middle Egyptian, Ptolemaic Roman, Nubian, Coptic, and Abyssinian civilizations is well evidenced by the numerous antiquities and shrines that still remain.

The documented history of the region is thousands of years old. In addition to mining activities, the Eastern Desert was the location of vitally essential trade routes between the Red Sea and the Nile River Valley. Several historically significant caravan routes crossed this region from Red Sea harbors such as Berenice and Naqari to cities in the Nile such as Thebes, Gheneh, Coptis, and Bedesich. The routes were first traveled by donkeys, then camels, and during one era elephants were used.

The numerous human settlements associated with the production and protection of the mines produced a catastrophic impact on the environment of this region. The most significant environmental impact of the ancient mining operations and associated settlements was the nearly complete deforestation of the region. The trees were used to produce charcoal for use in the smelting and forging processes and for energy for the settlements. The mineral wealth of the region was extracted at the expense of native vegetation. When the vegetation was removed the soils were lost to erosion and the land could no longer store water. The ultimate consequence was the complete transformation of the region into a vast desert.

1.1.4 Access to the SRSR

Tourists will be able to access the SRSR from two major transport centers. The City of Hurghada in the north currently offers international commercial air service and extensive marina facilities that enable easy and convenient access for large numbers of tourists to this part of the Red Sea. Regularly scheduled commercial flights transport tourists from all over the world. This convenient travel is further enhanced by extremely affordable airfares between various European countries and Egypt.

The port facilities at Hurghada provide convenient marine access to the northern Red Sea Region. Tourists may travel by means of modern, high speed ferries, charter vessels, or live aboard vessels.

Access to the SRSR has been significantly improved by the recent completion of a major international airport and enormous private marina facility. These facilities are located approximately 70 kilometers north of the town of Marsa Alam. The Marsa Alam International Airport is currently providing regularly scheduled commercial service to Italy and Germany.

1. Introduction...

The new marina facility, Port Ghalib, is operational and has a mooring capacity for 1,800 vessels. If this capacity were to be fully realized Port Ghalib would become one of the world's largest marinas.

A visitor center was constructed near the new port facility and this will serve to promote visitation to sites throughout the southern zone of the Red Sea. All of these facilities have the potential of adding substantial numbers of tourists to the southern sector of the Red Sea Region.

1.1.5 Challenges to Ecotourism Development

The beauty and recreational opportunities created by the remote, wilderness character of the southern Red Sea Region also constitute substantial challenges for the ecotourism developer. The primary challenge is the need to safely provide recreational experiences. The hyper-aridity and harsh conditions of this region require: (1) specialized recreation service delivery techniques; (2) appropriately designed facilities; and (3) highly trained personnel in order to provide both a safe and enjoyable ecotourism experiences.

The scarcity of water, a local work force, infrastructure, emergency services, suppliers and service providers, telecommunication, and emergency transportation services represent significant management challenges. Environmental hazards such as severe heat, occasional flash flooding, seismic activity, climatic extremes, and sand storms comprise still other operational challenges. With careful planning and consideration, all of these challenges can be successfully accommodated. The information presented in this document was produced to provide both ecotourism developers and environmental managers with the essential information needed to provide a safe and enjoyable ecotourism experience in the SRSR.

1.2 PREVIOUS STUDIES AND RELATED EFFORTS

This report builds on the results and efforts of a number of previous studies related to the Red Sea region and ecotourism development in Egypt.

1.2.1 Land Use Management

In 2003, TDA prepared a land use management plan focused on a 5-kilometer deep stretch of coastal land extending from the southern boundary of Marsa Alam down to Wadi Lahmi based on an environmental sensitivity analysis and policy determination. The work involved extensive field study, data collection and analysis, mapping, and integration of inputs from experts in a variety of disciplines.

The results of the land use planning efforts were compiled into a Land Use Management Plan (LUMP) report and accompanying maps. The LUMP identified six zones each with distinct management criteria and regulations: 1) core zones - absolute reserve areas; 2) buffer zones - restricted wilderness areas; 3) transition zones - ecotourism development areas; 4) low intensive zones - coastal eco-resort areas; 5) moderate intensive development zones; and 6) special development zones.

1. Introduction...

1.2.2 Ecotourism Studies

TDA's decision to pursue ecotourism development in the Southern Red Sea Region is also based on a number of previous studies. These include:

Egyptian Red Sea and Marine Coastal Resource Project (1998) was initiated by the TDA and funded by the Global Environmental Facility/World Bank World Bank's Global Environmental Facility. The several reports produced by this project provide a baseline for both the creation of ecotourism program plans and the conservation of the region's environmental resources.

Guidelines for Lodge Development in Egypt (1998) was prepared under the Environmentally Sustainable Tourism Project (EST) funded by the United States Agency for International Development (USAID). This presents a general introduction to the ecotourism development goals and issues that are of concern to the TDA.

Guidelines for Ecotourism Development in the Deep Range of the Red Sea Region, Egypt (2003) prepared under the Red Sea Sustainable Tourism Initiative (RSSTI) funded by the USAID is based on nearly six years of extensive field in the Southern Red Sea Region, the biological, botanical, antiquity, cultural, and oceanographic resources of the region were mapped, researched, and photographically archived. Seasonal characteristics and historical documentation for this region were documented extensively.

Socio-Economic Assessment South Marsa Alam, Red Sea Coast, Egypt (2003) was also prepared under RSSTI in order to better understand the existing social and economic characteristics of the Red Sea area south of Marsa Alam including both the nomadic and permanent residents of the SRSR.

1.3 REPORT DESCRIPTION

This report is intended to guide the establishment of sustainable ecotourism activities in the region. The report contains development standards, resource maps and development maps and plans for ecotourism development in the SRSR. It is intended to be used for tourism development and land allocation decisions. It also provides the basis for an illustrative model for ecotourism in Qu'laan to serve as a model for other integrated ecotourism projects.

Based on the considerable amount of research, inter-agencies coordination, and investment accomplished to date, along with TDA's strong desire to take the lead as a pioneer Agency to conduct and support responsible ecotourism development plan within WGHPA. This plan will be a model for ecotourism development in Egypt, encouraging wider use of sustainable technologies and the promotion of environmental planning, design, management, and marketing.

1.4 ECOTOURISM DEVELOPMENT VISION

The vision of the Ecotourism Development Plan is to create a national precedent in the South Region of the Red Sea that will serve as a successful demonstration of sustainable tourism for Egypt. Specifically, to establish an ecotourism development plan that will achieve the

1. Introduction...

conservation of environmental integrity, cultural preservation, and economic feasibility. In order to accomplish this vision it is essential to provide accurate information to decision makers in both the public and private sectors that is relevant to their decision-making needs. Implementation of this sustainable ecotourism vision will benefit both Egyptians and tourists by:

- Offering visitors unique experiences that foster an appreciation and understanding of natural and cultural heritage;
- Providing visitors with opportunities to experience attractions of local, national and international interest, that occur in a diverse range of terrestrial and marine environments;
- Making positive contributions to local and indigenous communities and the conservation of the natural and cultural environment through the establishment of positive working relationship between government, tourism industry and the community;
- Being a model for ecotourism development in Egypt, encouraging wider use of sustainable technologies and the promotion of environmental planning, design, management, and marketing

1.5 ECOTOURISM DEVELOPMENT GOAL

The primary goals for the Ecotourism Development Plan in the SRSR is to “enable people to enjoy and learn about the unique natural, historical and cultural resources of this region while simultaneously preserving their integrity and stimulating regional economic development.” The achievement of that goal requires a competent understanding of the features and dynamics that define the unique character of the Southern Red Sea Region, as well as an understanding of how to package and deliver high-quality educational experiences to the international ecotourism market. This will help achieve the following:

1. To conserve Egypt's natural and cultural resources. . “enable people to enjoy and learn about the unique natural, historical and cultural resources in this region while simultaneously preserving their integrity and stimulating regional economic development”. The natural resources requiring conservation include both land and marine resources that offer critical habitat to a diversity of unique wildlife species and vegetation. The cultural resources requiring protection include the numerous antiquities found within this region and the cultural resources such as tombs, the Ababda Bedouin people who inhabit this land, and their wells.
2. To create economic development opportunities for Egyptian people by means of ecotourism. Given the scarcity of public infrastructure in this region and the need for increasing quality employment, housing and income for the Egyptian people, the potential exists for both public and private sector investments that would substantially benefit the Egyptian people.

1. Introduction...

3. To establish responsible ecotourism operations that will simultaneously preserve the region's resources and provide for the enjoyment and safety of the tourists. Given the conditions of the terrain, seasonal harshness of the climate, and the remoteness of the region there is a very real need to assure that tourism operations will be conducted in a safe and responsible manner.

The Ecotourism Development Plan emphasizes an active resource-based tourism experience designed to provide tourists with an opportunity to interact with nature on a personal scale. At the same time, this ecotourism plan recognizes that the study area's value extends far beyond its capacity for outdoor activities. The protection and perpetuation of natural integrated ecosystem processes, native wildlife and plant communities, rich marine diversity, and cultural heritage of the SRSR are important aspects of this ecotourism plan.

1.6 ECOTOURISM DEVELOPMENT OBJECTIVES

The objectives listed below for the foundation of the ecotourism plan, the success of the plan can be measured by the extent to which it fulfills these objectives.

1.6.1 Nature and Culture Conservation Objectives

1. Provide opportunities for recreational uses and experiences that are compatible with the preservation of the wilderness character and nature resources and cultural resources (archaeological, ethnographic, architectural, and historic resources, trails, and cultural landscape) of the area SRRS for use and enjoyment by present and future generations.
2. Preserve, manage, and interpret the natural and scenic resources and its ecological processes.
3. Developing a better understanding of the nature of the domestic and international ecotourism market

1.6.2 Planning and Management Objectives

1. Create a sustainable ecotourism plan based on natural resources of the area for locals and international visitors, by protecting and enhancing sensitive natural values and the diverse scenery of the area.
2. Identify required tourism development and optimum arrangement and location of ecotourism uses and activities that will result in greater understanding and appreciation for area's natural and cultural sensitive recreation, and inspire in tourists a new type of environmental awareness.
3. Provide a strong framework for conservation, planning, development, managing, marketing ecotourism in the south region of the Red Sea.
4. Provide access that is appropriate and consistent with the character and nature of each sub-zones identified on the Land use management plan and the desired visitor experience.
5. Manage visitor use, development, and support services to protect area's resources and values.

1. Introduction...

6. Establish indicators and standards for desired visitor experiences and resource conditions, monitor the condition of those indicators on a regular basis, and take action to meet the standards if they are not being met.
7. Developing opportunities for partnership between the governmental agencies, private sectors and local community in the provision of the ecotourism opportunities

1.6.3 Visitor experience Objectives

1. Describe specific resource conditions and visitor experiences to be achieved in sub-zones identified on the land use management plan related to its natural sensitivity.
2. Provide a diverse range of quality visitor experiences as appropriate, based on the resources and values of the southern region, compatible with the protection of those resources and values.
3. Limit all visitors, administrative, and support facilities and services, including overnight accommodations, to maintain the integrity of the desired visitor experience and historic setting.
4. Identify "limits of acceptable use" on visitation to protect sensitive habitats and linkages.

1.6.4 Interpretation and Education Objectives

1. Provide a wide range of interpretive opportunities and information services to best assist, inform, educate, and challenge visitors.
2. Provide interpretive themes and programs consistent with the study area specific attributes.
3. Establish inventory, monitor, and maintain data on natural and cultural resources and values, and utilize this information in the interpretation plan.
4. Utilize the extensive cultural resources of the south region of the Red Sea as a strong component of the interpretive program, including interpretation of local Bedouin culture.

1.6.5 Sustainable Design Objectives

1. Make a model of excellence in sustainable design and management through such means as energy efficiency, conservation, compatibility with historic setting and architecture, recycling, accessibility, and the use of alternative energy sources.
2. Encourage appropriate use and adaptive reuse of traditional structures and local material.
3. Design high-quality facilities that exemplify visual consistency and appropriateness.

1.6.6 Economic Feasibility Objectives:

The ecotourism plan for the SRRS recognizes the important role ecotourism has in not only fostering a conservation ethic within the community but also making significant contribution to the economic well-being of SRRS by:

1. Introduction...

- Foreign exchange earnings
- Generating income for conservation and management of protected areas
- Additional skilled employment opportunities
- Using local knowledge and facilities and local infrastructure development
- Encourage greater involvement in the ecotourism industry

2. RESOURCES OF THE SOUTHERN RED SEA REGION

This section describes the resources found in the Southern Red Sea Region and upon which ecotourism development will depend.

2.1 ENVIRONMENT AND NATURAL RESOURCES

Environmental information plays two vital roles in planning for ecotourism development. First, an environmental inventory of the natural attractions is essential for determining the region's potential for becoming a viable tourism destination. Second, the environmental information concerning the sensitivity or vulnerability of a region to human activity identifies critical environmental management issues that need to be addressed in order to achieve sustainability. Numerous professionals have collected a diversity of environmental, social, and archeological information for the SRSR. Much of this information is contained in this plan, and all of this information is referenced in this plan.

Essentially, the "products" that tourism offers are the unique collections of natural and cultural resources that are found in a particular region. The environmental characteristics that are unique to the Red Sea Region need to be defined and understood in terms of complete ecosystems or key habitats. This need exists because the natural environment of the Red Sea and the SRSR is the foundation upon which tourism experiences rely. Successful tourism development will, therefore, depend upon sustaining the region's environmental integrity and preserving its cultural resources. Consequently, Management Planning for this region begins with an evaluation of the environment in terms of viable habitats and ecosystems.

Responsible ecotourism involves methods for viewing rare animals and plants in ways that shall preserve them. A diversity of life and environmental features exist within Wadi al Gimal Protectorate Area that is uniquely adapted to the harsh conditions that characterize the SRSR. The wildlife, vegetation and geology of the wadis within the proposed Protectorate Area boundaries provide valuable information regarding the ways in which plants, animals, and humans have used this region and how it can be preserved for future use.

2.1.1 Defining the Environmental Setting

The most appropriate and useful definition of an Environmental Planning Unit for the SRSR is a watershed. Specifically, a watershed is defined as a major drainage basin comprised of one or more sub-basins that serve as a complete water catchments area. This area begins at the highest elevation at which rainfall is received and extends until the flow empties into the sea. This definition accurately represents an ecologically complete environmental planning unit that provides equal management importance to both the land and marine resources of the SRSR.

The definition of the watershed as the environmental planning unit for tourism development in the SRSR acknowledges the importance of water as the single most important and scarce natural resource in the region. The dynamics of seasonal climatic change, oceanographic events, foliage, wildlife migratory events, and wildlife predator prey relationships are dominated by the availability of water.

2. Resources of the Southern Red Sea Region...

The SRSR is comprised of 32 watersheds and parts of others. The three largest watersheds include Wadi Ghadir in the north, Wadi al Gimal in the center and Wadi Lahami in the southern part of the SRSR. Adjacent to these three major watersheds are partial watersheds that may serve a variety of useful environmental management roles such as critical buffer areas and wildlife protection zones.

The map entitled Hydrology of the Southern Red Sea Region provides an illustration of the application of readily available topographic and hydrologic information to define environmental planning unit in the SRSR. The watershed environmental planning unit can be managed in accordance with sustainability principles because it has ecological integrity. It is readily apparent from this map that all human activity in the upland areas of the watershed will have potential impacts on the environmental conditions of the drainage areas - the wadis and mangroves - and on the condition of the fringe reef and the aquatic life offshore. A diversity of nature-based outdoor recreation activities can be proposed for this region, but it is equally evident that they will need to be well planned and managed in order to sustain the environmental quality of the watershed.

Based on extensive field research conducted for the Ecotourism Guidelines and Land Use Management Reports, distinct ecological zones within each watershed in the SRSR were accurately identified. At the Regional Scale of Planning a total of seven ecological zones were identified for each watershed. These seven zones are distinguished by the ways in which topography, climate and geology influence the development and prosperity of plant and animal populations within each zone. Each of the seven ecological zones requires tourism development and environmental management techniques that are best suited to protect their unique conditions.

Ecological management zones were also examined in terms of the edge condition found between adjacent zones that invariably overlap. These overlapping zones create a transition area or ecozone that contains plant and animal communities identified in adjacent ecological management zones. The direct correlation between microclimates and environmental factors such as climate and geology supports the need to thoroughly investigation of these relationships in order to establish sustainable tourism planning principles.

Given the need to perform detailed site analysis in support of TDA's goals, ecological distinctions within each of the major zones was evaluated and defined. The major ecological zones are defined in the remainder of this section.

2.1.2 Ecological Zones

ZONE ONE: Desert Mountains of the Southern Red Sea Region

Zone One begins at the upper most ridgeline of the mountains and extends to approximately three meters above the wadi floor. Although rich in mineral deposits, these mountains are austere and are virtually a zone that is devoid of life. It is a place dominated by metamorphic rock that due to the severe climate is able to support few if any life forms. The distance between the mountains and the Red Sea does not allow moisture from the coast to reach the mountain range and therefore creates a condition of hyper-aridity. Mountains slopes are unstable and vulnerable to rock slides making the area dangerous for a variety of human

2. Resources of the Southern Red Sea Region...

activities. A minimal development of paths to archeological sites and special vistas is recommended for this area.

The ridgeline of the Red Sea mountain range defines the Eastern edge of the Wadi al Gimal – Hamata Protectorate Area watershed. The igneous and metamorphic mountain range of the Red Sea is the backbone of the Eastern Desert and constitutes one-third of the total area. The topography is a remarkable wilderness of canyons and high escarpments. Predominate geologic formations such as the Jabal Sakit and Jabal Hafafit mountain ranges reaching elevations ranging from 1,103 to 1,371 meters characterize the region.

The numerous ancient human settlements required to work and protect the mines produced a catastrophic impact on the environment of the Eastern Desert. The most significant environmental impact of the ancient mining operations, and associated settlements, was the nearly complete deforestation of the region. The trees were used to produce charcoal for use in the smelting and forging processes and for energy for the settlements. The mineral wealth of the region was extracted at the expense of native vegetation. When the vegetation was removed the soils were lost to erosion and the land could no longer store water. The ultimate consequence was the radical environmental transformation of the region into a vast desert.

One of the effects of deforestation is the vulnerability of the steep slopes to erosion and flash floods. Tourists visiting this part of the southern Red Sea Region shall be restricted to trails that are clearly marked and identified for both safety and environmental reasons. In addition to appropriate directional and informational signage, tour guides must be present on all expeditions to insure visitor safety. Location and construction of the remote base camp and temporary tent sites need to respond to the environmental conditions to provide a safe and responsible eco- tourism experience.

Wildlife is rare in the mountains of the Eastern Desert. The wildlife habitat roles served by the mountains either safe havens or migratory routes. The animals that utilize the mountains as a safe have from predators include the very rare Nubian ibex, *Capra nubiana*, and the Hyrax, *Procavia capensis*, a small herbivorous mammal that lives in colonies among the rocks. The elusive Dorcas gazelle is frequently seen running through the mountains in order to elude danger and migrate between wadis. All three of these mammals are rare, threatened species. Two species of bats have also been found in the mountain areas, and it is likely that there are more.

ZONE TWO: The Wadi Floor

Zone Two is defined by the wadi. Topographically this zone extends from the wadi floor to a height of approximately three meters along the wadi sidewalls. Because the wadi systems contain scarce water resources, they also host the Eastern Desert's greatest biodiversity. In fact, Egypt's highest diversity of terrestrial plants and animals occur in the Eastern Desert. The wadi is a critically important life zone in the southern Red Sea Region and despite the extreme climatic conditions many unique species of plants and animals have adapted to this region. Ecotourism development in this zone will be limited to seasonal remote tent camps, a base camp, aid stations, communication facilities, and interpretive and way-finding signage.

The term 'wadi' in Egypt refers to a gully, canyon, valley or dry streambed that conveys water at irregular intervals down the slope from the mountains to the shore. During infrequent times

2. Resources of the Southern Red Sea Region...

of rainfall they also carry alluvial deposits ranging from rubble to silt into the coastal plain, and support important freshwater functions. The channels of the wadis usually have limited vegetation while the adjacent islands or terraces up to three meters above the wadi floor can be rich areas for high biodiversity for desert plants. Drought periods of 5-7 years and flooding due to intense desert rainstorms are factors that have contributed to the amazing adaptation displayed by the animal and plant communities exhibited in the wadis. This is a true wilderness area that for centuries has had no permanent human communities.

Vegetation plays a vital role in sustaining life in the wadi by providing important wood, cover, and nesting sites for animals, and medicines and utilitarian supplies for humans. The vegetation provides critical habitat for birds seeking both nesting and sites and cover. It provides a source of food for mammals such as camels and gazelle that inhabit the wadi.

The dominant vegetative species of the wadi is the Acacia tree. There are five species of Acacia trees found within the southern Red Sea Region and three of these species occur in the Study Area. The most common of these Acacia species is the *Acacia tortilis* ssp. *raddiana*. The Acacia trees are large, drought resistant trees that play a vital role in the ecosystems of the wadis. This tree provides leaves for the camels to eat and shade for all forms of life. Local people use the resin (sap) of the tree as a hard candy. The wood is hard very valuable as both construction material and a source of charcoal. The pods and bark are used for tanning and the flowers are used in the manufacture of cosmetics.

Other examples of woody plants include bushes that provide critical habitat for nesting birds, a date-like fruit that is used for the treatment of diabetes, a small succulent shrub that is used for soap, and the Toothbrush Bush, *Salvadora persica*. The twigs of this bush are used by the local tribes as toothbrushes. The large thorns on various trees are used as needles and leather punches. And, most importantly, the location and condition of the vegetation provides essential information regarding the location and quality of water sources. This type of information will be of interest to ecotourists who are seeking to learn about plants and the desert environment.

The animals that inhabit the wadis include many rare species of mammals and birds that are unique to the Eastern Desert. By example, the wadi provides habitat for the rare Dorcas Gazelle, Nubian Ibex, and Hydrax. As a result of their unique adaptation to the habitat provided by Wadi al Gimal, and their isolation from human contact, the populations for each of these species are currently sustainable in this region. Wild camels are abundant and rare camel species are frequently sighted. Wild donkeys, uniquely indigenous to the region, also inhabit the Wadi al Gimal – Hamata Protectorate Area.

Numerous, colorful lizards scurry about the area. Representative species include Gray's Agama, *Agama spinosa*, the Nidus Lizard, *Acanthodactylus scutellatus*, and the Egyptian Gecko, *Tarentola annularis*. These animals are not at all dangerous.

The only dangerous animals that inhabit the southern Red Sea Region are the Lesser Sand Viper, *Cerastes viparis*, The Honed Viper, *Cerastes cerastes*, and the scorpion. The Lesser Sand Viper, is normally two feet long or less and is colored yellow or pinkish to match the sand where they flatten out and burrow. Their venom is hemotoxic. They generally run from humans and will only strike when startled. The Horned Viper also hides in the sand for its prey and its venom is also hemotoxic. Local tribes of the Eastern Desert region rarely kill the snakes. The scorpion whose venom is neurotoxic is probably the most dangerous animal in

2. Resources of the Southern Red Sea Region...

the southern Red Sea Region. The Bedouin will kill scorpions because they represent a severe threat to children and the elderly.

ZONE THREE: *The Coastal Plain*

Zone Three is the coastal plain. It extends along the outlet of the wadi and stretches along flat lands that are variably between 3 to 15 kilometers from the Red Sea shoreline. The increased presence of vegetation and wildlife along the foothills demonstrates a less hostile environment that can support a variety of plant and animal communities. The development of "gateways" to the wadis is proposed for this zone. These "gateways" may include lodges, visitor centers, specialty education venues, and specialized support facilities such as communication and emergency aid stations.

The coastal plains of the Red Sea are most suited to support a wide variety of terrestrial life. Soils are deposited along the coast as the rate of stream flow diminishes and plant establishment resembles a triangular pattern creating a "delta." The GEF biodiversity - CMPA team visited twenty-nine of the major wadis along the Red Sea revealing eighty-six different species of annuals, perennials and woody perennials. The variations in the number of species recorded showed that, although annual rainfall is unpredictable in time and intensity, it is sufficient to support herbs in all of the wadis. The Wadi al Gimal had the second highest rate of diversity having thirty-eight recorded species. The most abundant tree in this zone is the Tamarisk, *Tamarix aphylla*.

The vegetation of the coastal area is also unique as a refuge for scarce botanical species. By example, the Wadi al Gimal delta area has the only Dome Palm tree left on the shore of the entire Egyptian Red Sea coast. (This fact was verified by the Egyptian Red Sea Coastal and Marine Resource Study area. CMPA, Part 1 & 2, 1998)

During the spring and autumn a remarkable diversity of birds migrate along the Red Sea. This migratory corridor represents a critically important primary route for birds traveling between the northern and southern hemispheres. Aided by thermal uplifts and a diversity of food and cover offered by the Red Sea coastal environment, large numbers of birds travel between Europe and Africa. International recognition of the importance of this flyway has been established by Birdlife International that defined 34 Important Bird Areas in Egypt. Among these 34 critical habitats, seven are located in the immediate vicinity of the Protectorate Area.

With approximately 20 percent of Egypt's critical bird habitats and given the diversity of species that may be seen, the region represents an extremely valuable ecotourism site for birding enthusiasts. The opportunities to view birds are frequent and rewarding for persons who wish to see land, shore, and sea birds in a single location.

The most commonly found herbivore mammal in the lowlands and on the coastal plain were the "gerbil." Most of the other herbivores can be observed at higher elevations at night. Gazelles are common to the wadi regions although the number of gazelles has declined in recent years from the coastal plain area.

The study of reptiles in the wadi ecosystem, although limited, reveals a total of forty species of the ninety-one identified in Egypt. The relatively high species diversity in the wadi habitats

2. Resources of the Southern Red Sea Region...

reflects the biotic character of the area, and that for the most part wadis are relatively undisturbed by man. Of the five species recorded, five are known to be threatened and need conservation measures.

ZONE FOUR: Mangroves

Zone Four is the Mangrove region. This zone supports a coastal marine mosaic that contains ecosystems dominated by species of mangroves and sea grasses that grow along the shoreline. The length and depth of these zones varies in size along the shoreline, however, the perimeters of the mangroves and sea grasses are well delineated. Mangrove thickets are the breeding sites and nurseries for a number of marine crustaceans and fish. They also provide a stable breeding environment for several bird species. This complex ecosystem is protected by the Egyptian Government from development as they not only provide natural habitat but they are also essential shoreline stabilizers in terms of flooding and rising sea levels.

Terrain associated with the coastal zone includes sandy shores, tidal flats and mangroves. Each of these areas is influenced by tidal events. The mangroves are highly influenced by seawater that inundates their areas on a generally regular basis. The sandy shores are only partially covered by seawater during the highest tides of the lunar cycle. Their ability to support plant and animal life is limited by extreme heat and tidal fluctuations. Close to the Red Sea, sandy areas support a number of burrowing mollusks, crustacean and echinoderms. Tidal flats are regularly left both wet and dry and have a rich animal community of invertebrates. Mangrove stands found in the Wadi al Gimal region along the coast and on the Al Gimal Island are predominantly comprised of the *Avicennia marina* species of mangrove plant. These mangrove communities are environmentally significant for many reasons, and they represent an important feature of Red Sea coastal-marine biodiversity.

Mangroves play several vital roles in the ecosystem of the watersheds. They stabilize the shoreline, thus helping to prevent erosion from wave action and tidal motion. Mangrove trees are unique plants that thrive in marine environments where they utilize saline seawater and tolerate tidal ebb and flow. They grow on muddy shorelines, framing azure bays with pale green mangrove thickets. Although Mangroves are scarce in Egypt, they are a significant feature in the Red Sea coastal landscape. The delta already has the only Dome tree left in the entire southern Red Sea region.

The shore area and mangrove stands provide thousands of migrating birds with suitable resting, roosting, and feeding places throughout the long arid coastline of Egypt. By example, they provide a suitable breeding environment for several bird species such as the lender Western Reef Heron, *Egret glares*, and the stealthy Green-backed Heron, *Areola striate*. The latter is a solitary bird that usually searches for its prey by moving through the understructure of the mangrove trees. The vast network of roots within the mangrove thickets provides breeding sites and nurseries for a number of marine crustaceans and fish.

ZONE FIVE: The Fringe Reef

Zone Five encompasses the coastal fringing reef that protects the shore. This zone mediates the fluctuation in sea levels and provides refuge for an important collection of corral species (invertebrates) and commercial fish. The reef structure is intricately linked to the formation of

2. Resources of the Southern Red Sea Region...

sandy bays and sheltered harbors associated with the wadis. Due to the higher concentration of salt and geographical separation of the Red Sea from the Mediterranean Sea and from the Indian Ocean, the marine life associated with the fringe reef is largely endemic to the Red Sea. Conservation construction techniques should be applied in order to provide access to diving to insure preservation of one of Egypt's most valuable natural resources.

The fringe reef ecosystem is the most extensive reef type along the Egypt's Red Sea. A large fringe reef extends along the coast of the southern Red Sea Region. From Marsa Alam to the Sudan the reef shelf is very wide extending in some places up to 500 meters with varying slopes. The reef generally protects the coastal area and experiences very little water movement, except when occasional swells from the west or north occur. The coral patches on this reef are 100 percent alive and with high species diversity. The number of coral species ranges from 23 to 35 species per site.

Although it is the "hard coral" framework which builds the reef foundation, there are many plants and animals which live in, on or among this framework. Coral reefs are considered most significant when considered as highly integrated ecosystem including the hard and soft corals, the seaweeds, the snails, slugs, crabs, shrimps, fishes etc. all which live together in a coral reef. It is the collective community of reef-based plants and animals, which comprise an unparalleled world of color, texture, shape and animation that make coral reefs such a special place to experience. The sea floor in between the Al Gimal Island and the shore consists of coarse sand interrupted in many areas with sea grass beds and coral patches. Twenty-eight of the open water species have been fished from the area. Large snappers and pelagic species such as jacks and mackerel can also be expected on the outer rim of the reefs.

Coral reefs of the Red Sea support approximately 400 fish species that utilize corals for shelter, food or as a breeding ground. Many of the reef fishes are of economic as well as recreational importance. Groupers are the most abundant species of fishes in the area.

ZONE SIX: Offshore Marine

Zone Six is defined as the off shore marine environment. Specifically, it is a zone that begins at the most offshore perimeter of the fringing reef systems and extends seaward to the limit of Egypt's jurisdiction. This zone constitutes another mosaic of endemic marine life within the coral patches and submerged reefs occurring between the shore and the island. These submerged reefs present a hazard to any boat traffic circumnavigating the islands. Oceanographic research should be conducted to insure both the protection of these submerged reefs as well as navigational charts for the preservation of marine vessels.

Egypt's corral reefs are highly complex ecosystems that provide a home to thousands of species of different flora and fauna in any given area. It is the hard or calcium-based skeletal part of the coral (which are animals) that provides the framework to the overall reef ecosystem and literally builds the foundation of what is termed reefs. Coral their algae partners are very susceptible to subtle changes within the marine environment thus it is important to insure the appropriate temperatures and clear water remain favorable for the coral-algal partnership.

2. Resources of the Southern Red Sea Region...

Based on dives conducted in this reef system it is evident that a great diversity of marine life is being sustained by the reef ecosystem. The diversity of species found includes both hard and soft corals and numerous fish species. The quality of the reef system and the abundance of diverse fish species provide evidence of the health and vitality of the marine conditions in the southern Red Sea Region.

Coral reefs are of both an important economic and biologic value as reefs directly and indirectly contribute to the economy of Egypt and they contain one of the highest known manifestations of plant and animal diversity on the planet. It is important that they are not degraded so they can function to their full ecological capacity, which in turn helps people through provision of services such as fisheries and shoreline protections. In order to insure that the reef systems are protected, certain rules should be created. For example, the number of visitors to the reef system should be limited, areas should be evaluated in terms of use and preservation, signage and visitor education programs should be initiated in order to provide guests with a list of accepted and prohibited activities, environmental management training provided for employees and the application of appropriate sustainable management techniques such as those advocated by the PADI and NAUI dive certification programs.

Despite the frequent use of the Red Sea by vessels of all sizes, very little oceanographic information concerning the near shore areas exists. Commercial shipping lanes located near the mid point of the Red Sea are known to local pilots and maritime officers, and the characteristics of local shoals are known by the people who fish in this region. However, there are no published charts of the depths or currents of the near shore area. Hydrograph, in the form of marine charts, is simply not available. Tide tables are available, but information pertaining to the strength and direction of currents has not been published.

The absence of critical oceanographic information should be a critical concern for those planning marine based recreational activities and tourist facilities in the Wadi al Gimal region. Safe boat and dive operations depend upon a competent knowledge of the marine conditions. The safe disposal of wastes requires knowledge of the location of key reef systems and the direction and magnitude of ocean currents.

Coral reefs of the Red Sea support approximately 400 fish species that utilize corals for shelter, food or as a breeding ground. Many of the reef fishes are of economic as well as recreational importance. Groupers are the most abundant species of fishes in the area.

Based on marine surveys conducted by government agencies and scientific research organizations, the following fish species are known to inhabit the offshore marine waters in the vicinity of the Protectorate Area.

Groupers <i>Serranidae</i>	Snappers <i>Lutjanidae</i>
Emperors <i>Lethrinidae</i>	Goatfish <i>Mullidae</i>
Wrasses <i>Labridae</i>	Parrotfish <i>Scaridae</i>
Sturgeonfish <i>Acanthuridae</i>	Rabbitfish <i>Siganidae</i>
Damsels <i>Poracentridae</i>	Angelfish <i>Pomocanthidae</i>
Sgtmajor	Anthias <i>Anthiidae</i>
Butterfly <i>Chaetodontidae</i>	Fusilier <i>Caesionidae</i>

ZONE SEVEN: The Offshore Islands

2. Resources of the Southern Red Sea Region...

Zone Seven is comprised of the offshore islands. This zone encompasses 22 islands off the coast of the Egypt such as the Wadi al Gimal Island. The mangrove stands on the islands, although small, are considered one of the best ecosystems throughout the coast. The presence of mangroves on this island makes it a perfect habitat for hundreds of island coastal birds, shorebirds and seabirds. Diving activities should be carefully monitored to insure the minimum impact the corral reef environment of the islands.

he Wadi al Gimal Island is formed mainly of uplifted coral, about 5 - 10 meters above the sea level, and the western side has a long sandy beach. Mangrove trees grow in the southeastern corner of the island in a pocket of old reef. A large number of coral patches are located at the eastern side, while the western side faces a navigation channel and is rockier with fringed coral. A large area of submerged reef is located slightly to the north of the island. The island supports globally significant bird species and is has been classified as "Important Bird Areas." Being acceptably protected from predators and surrounded by shoals of marine animals and fish, the island is a haven for breeding seabirds, and is a resting and feeding post for winter visitors and passage migrants.

The mangrove trees are the primary vegetation located on the southeastern corner of the island and support a large population of water birds. Over one thousand species visit this island per year many of which nests on its remote shores. In addition to the bird populations, two species of turtles, Green turtles and Hawksbill turtles use the island for nesting grounds and dolphins are commonly seen swimming around the island. Almost all of the common species of reef fish are found along the entire reef areas around the island.

Unfortunately, the pristine condition of the island is being abused by boaters who land on the island, disturb bird life, and leave behind a significant amount of rubbish. Based on physical inspection of the island, it is apparent that all human contact should be eliminated in order to preserve these unique habitats. By example, no ecotourism facilities can be constructed on this island.

The environmental quality and integrity of the Southern Red Sea Region is perhaps best understood in terms of the ability of its plants and animals' ability to thrive. Based on the extensive field research conducted during all seasons of the year it was possible to identify both the land and marine habitats that are essential for perpetuating viable wildlife and plant communities. This information is contained in the map entitled Critical Habitats of the Southern Red Sea Region. The critical vegetative zones, mangroves, fringe reef systems, and critical bird nesting offshore islands are all enumerated on this map.

2.2 HERITAGE AND CULTURAL RESOURCES

The ancient history of Egypt reveals an advanced culture that made significant contributions to the creation of civilization. For thousands of years the SRSR played at least two vital roles in the creation of that important world history.

- First, it was the primary trade route between the Indian Ocean Basin, Asia, Africa, and the empires of the Mediterranean Sea.

2. Resources of the Southern Red Sea Region...

- Second, its extraordinary minerals and gemstones provided an abundance of wealth to ancient empires.

An integral part of this remarkable history has been the culture of the indigenous tribes that have inhabited this region for more than four thousand years.

The antiquity and cultural resources of the SRSR represent potentially valuable tourism attractions. Consequently, a comprehensive inspection of the region's heritage resource sites was performed. In addition, an analysis of the cultural elements that could potentially enrich the educational and recreational value of the tourist experience was conducted. These research and cultural assessments will help identify unique visitor sites and provide important input for the subsequent design and implementation of ecotourism experiences. The significance of these antiquity and cultural resources is summarized in this document by means of a brief narrative description of the resources and maps that illustrate the amazing profusion of sites throughout the SRSR.

2.2.1 Ancient Caravan Trading Routes

From approximately 3,500 BC to 1500 AD the southern part of the Eastern Desert was the location of one of the world's most important trading routes. This region served as the vital trade route that connected the Indian Ocean, Africa, and the Mediterranean Sea. The wealth of ancient empires traveled between the Red Sea and the Nile Valley and thus enriched the power and prestige of Egypt.

Several factors made sailing in the Red Sea dangerous. Due to strong prevailing north winds in the northern part of the Red Sea, ancient merchants were unable to sail their ships northward. As a consequence of this, sea trade was landed at the southern Red Sea ports of Berenike, and later Nakari and Quseir for shipment across the Eastern Desert caravan routes to cities in the Nile Valley. Once cargo reached the Nile River it could be floated downstream to the Mediterranean Sea.

In addition to the winds, shoals and reefs in the Red Sea made sailing dangerous further enhancing Berenike's appeal by obviating the need to use more northerly Red Sea bays. The scarcity of provisions, especially water made the trip northwards along the Red Sea a perilous venture. Piracy was also a problem in both the Red Sea and Indian Ocean throughout Ptolemaic and Roman times. The cumulative effect of these circumstances was the establishment of an overland caravan route between Berenike and the cities of the Nile Valley.

Several historically significant caravan routes crossed this region from Red Sea harbors such as Berenike, Nakari, and Quseir to cities in the Nile such as Thebes, Ghenneh, Coptis, and Bedesich. The means of transport along these routes was originally by donkeys. When camels were introduced to Egypt from Saudi Arabia, they became the primary mode of transport. It is important to note that during the era of the Ptolemies elephants were transported along this route.

Perhaps the most distinctive caravan route was the legendary Elephant Route of the Ptolemies. This route crosses the SRSR and then proceeds to the largest fortress trading

2. Resources of the Southern Red Sea Region...

center located along the route. This fortress city was named Appollonos by Alexander the Great and then later re-named Appollonia by the Romans. Support facilities such as sentry posts, fortresses, and laboriously constructed roads with large stone cairns to mark the route provide stone remnants of the several trade routes that crossed this region. All of these antiquity sites have been mapped by the RSSTI study team and are shown on the map entitled Tourism Attractions on the Roam Road in the Red Sea Region.

The town of Berenike, located south of Ras Banas was founded in 275 BC by Ptolemy II in order to import African elephants which were caught in what is now eastern Sudan, Eritrea and Ethiopia and which were brought to Alexandria and used in the wars against the Seleucids in the Near East. After the discovery of the periodic change of the Indian monsoon, in about 50 AD, steady sea-going trade between India and Egypt could take place and at the overland route to Europe from India. This route was controlled by adversaries of the Roman Empire who made overland trade difficult for Roman merchants, the town at the southernmost tip of the Roman Empire flourished as a "transfer port" for deferent goods from Africa, India eastern Java, Vietnam, Sri-Lanka, and Thailand These goods were shipped via Berenike to Alexandria and Rome.

All of the ancient caravan routes provide evidence of the economic significance of the region during ancient times. Today, Ababda Beduoin people in the region continue to breed camels and trade them throughout Egypt and the Sudan. But the transport of modern modes of transport have replaced the need for freight transfer across the SRSR.

Ancient monuments such as water stations called Hydreumas and way markers in the form of stone cairns provide testament to the vital importance of the ancient caravan routes. Support facilities such as sentry posts, fortresses, and laboriously constructed roads provide stone remnants of the several trade routes that crossed this region. An incredible abundance of ancient pottery, stone sculptures and tools also provide ample evidence of the large size of the human settlements that once thrived in this region. The vast majority of these sites have been accurately located and many have been authoritatively researched by archeologists. They cover a vast territory that represented the major highway for the wealth of ancient empires.

Significant sites that are located along the ancient caravan route include the following:

- Berenike
- Nakari
- Appollonos
- Cabalsi
- Phylacon
- The Roman fortresses at Vetus Hydreuma
- Novum Reservoir
- The Roman fortress that guarded the pass to Wadi Lahami

The map entitled: Antiquities in the Southern Red Sea Region illustrates the major caravan routes, as well as the key antiquities found in the region.

2.2.2 Mining Settlements

2. Resources of the Southern Red Sea Region...

In ancient times the natural resources of the SRSR were the source of a huge amount of mineral wealth that played a vital role in the economic strength of ancient empires. The precious metals and gemstones mined from this area supported the development of ancient Upper and Middle Egyptian, Ptolemaic, Roman, Nubian, Coptic, and Abyssinian civilizations. The SRSR experienced its most extensive economic development during the ancient time period of approximately 2,500 BC to 200 AD. During that era the entire region was intensely mined for precious metals and gemstones, and Imperial Porphyry. Numerous mines in the Eastern Desert produced precious metals, gemstones, and Imperial Porphyry.

In the SRSR enormous quantities of emeralds, gold, and Amyant were mined at the ancient settlements of Sakit, Nuqrus, Sukkari, and Zabara. These mining operations resulted in the establishment of large towns where several hundred people in each town and surrounding settlements worked to construct and operate mines, smelt, process vast quantities of ore, and smelt metals. The mineral wealth of this region is so immense that mining operations continue in this region today, although at a far smaller scale. Most notably, gold deposits are still sought in remote wadis such as Sukkari.

The precious metals and stones mined in the region provided the wealth for the ancient Egyptian, Nubian, Ptolemaic, Roman, and Abyssinian kingdoms and empires. These empires and the nomadic tribes frequently fought for the control of the mineral wealth and trade routes located in this region. Because of this situation, many fortifications were established to defend these valuable resources. The structural remains of numerous sentry posts and fortresses in the region provide vivid evidence that the mining wealth of this region was secured by a significant military population garrisoned in the wadis.

The most significant Ancient Mines and Mining Settlements in the SRSR include:

Wadi Sakit Townsite	Wadi Nuqrus Townsite
Zabara Townsite	Gelia Townsite
Ankari Townsite	Hangelia Townsite
As Sukkari Mine (Gold)	Umm Kudumay Mine (Gold)
Umm Ud Mine (Gold)	Hanjaliyyah Mine (Gold)
Hafafit Mine (Amyant)	Sakit Mine (Emerald)

The numerous human settlements associated with the production and protection of the mines produced a catastrophic impact on the environment of the South Marsa Alam Area. The most significant environmental impact of the ancient mining operations and associated settlements was the nearly complete deforestation of the region. The trees were used to produce charcoal for use in the smelting and forging processes and for energy for the settlements. The mineral wealth of the region was extracted at the expense of native vegetation. When the vegetation was removed the soils were lost to erosion and the land could no longer store water. The ultimate consequence was the complete transformation of the region into a vast desert. The map entitled Mines and Quarries in the Southern Red Sea Region depicts the location of ancient and modern day mining operations.

2.2.3 Islamic and Blemmeys Cultural Resources

Apart from the environmental features discussed in the preceding sections, local antiquities and present-day cultures are an integral part of the visitor experience. As previously noted,

2. Resources of the Southern Red Sea Region...

the SRSR is rich in history. It will be important to perform an analysis of the local cultural elements that will enrich and add to the educational and recreational value of the visitor experience. This cultural analysis will help to identify unique visitor sites and provide important input for the subsequent design and implementation of this experience.

There are a vast number of Islamic cultural sites located throughout the SRSR. The majority of these sites are tombs and shrines that have both cultural and religious significance. In addition, the tomb sites for ancient cultures such as the Blemmeys people and the Romans are located through this region. During the past three years a great number of these sites have been accurately located and mapped. The map entitled "Cultural Resources of the SRSR" illustrates the numerous sites that have been identified in the region.

The following is a representative list of cultural attractions that would be of interest for the tourist visiting this region

Islamic Shrine Sites

Ash Shaykah Haliimah Tomb	Ash Shayk al-Haj Tomb
Sidi Bahajil Tomb	Roman Shidani Tomb
Ash Shayk Ta-ah Tomb	As Sitt Umm Ghanam Tomb
Ash Shaykah al-Fuqayrah Tomb	Ash Shayk Jibrin al Anqarabnawi Tomb
Ash Shayk Amfa in Mosque	Al Anba ut Roman Ruins Area
Al Haj Tomb	Al Arba in Tombs
Ash Shaykah Halmah Tomb	Ash Shayk Ajabayn
Ash Shidani	Ash Shayk Hamad Shrine
Ash Shayk Halimah Shrine	Ash Shayk Salim Shrine
Ash Shayk Ali Hamad Shrine	Ash Shayk Sharif Shrine
Ash Shayk Sa'id Shrine	Ash Shayk Mahmud Shrine
Ash Shayk as-sahabi Shrine	Ash Shayk 'Abd Allah Hamad Shrine
Sidi Abu Madafi Shrine	

2.2.4 Ababda Bedouin Wells

Wells – these are the most important human use and settlement sites.

Bi'r Hilan ar Rayyan
Bi'r Hafafit
Bi'r Abu Biraykah
Bi'r Umm Khirayjah
Bi'r Asli (Salt)
Bi'r Abu Rahayah
Bi'r Ghadir (Salty)
Bi'r al Anba ut (Salty)

The map entitled Wells of the Southern Red Sea Region illustrates the location of both ancient and active wells within the region. Given the aridity of the Eastern Desert, these are critical resources for the Ababda Bedouin.

2. Resources of the Southern Red Sea Region...

3. ECOTOURISM OPPORTUNITIES AND CONSTRAINTS

3.1 VISITOR EXPERIENCES IN THE SOUTHERN RED SEA REGION

Ecotourism meets the growing demand for experiences that go beyond 'sightseeing'. Tourists are becoming increasingly demanding, looking for the 'experiential' aspects of tourism and for high quality, authentic experiences. Genuine interaction with the environment and local communities are increasingly the consumer benchmarks of quality visitor experience.

The visitor experience is the ability of the ecotourism industry to provide a variety of ecotourism activities within and across the range of settings in a natural and/or cultural area without compromising the integrity of the individual settings. The method of travel, group size, style of information delivery and extent of physical skill required by participants all play a role in shaping the style and scale of the visitor experience.

As previously stated, the SRSR is best characterized as a land of extreme contrasts. Most notably, this is one of the world's most arid regions, but it is located directly adjacent to a major body of water, the Red Sea. Extreme contrasts such as this have resulted in the occurrence of many environmental and cultural characteristics that have the potential for providing genuinely unique ecotourism experiences. The SRSR provides world-class sites for conducting both land- and marine-based recreational opportunities within a setting that has witnessed thousands of years of historical and cultural development.

The extreme contrasts of this region are also dramatically evident in the land forms found here. The topography of the SRSR is a maze of mountains, canyon lands, escarpments, wadis, and oases. And all of these diverse and monumental land forms create the backdrop for the Red Sea with its well-deserved reputation for biodiversity. For the ecotourist seeking either the active challenge of mountaineering or the passive serenity of a quiet place, the mountains and wadis of the Eastern Desert offer abundant recreational opportunities. The nature tourist who wishes to experience solitude and peace will be amazed by the true wilderness character of the SRSR. The tourist can experience either a glimpse or a total immersion into a profound wilderness area. The intangible qualities of solitude and peace frequently sought by ecotourists can be experienced in the SRSR.

3.1.1 Defining the Ecotourism Experiences

The natural and cultural resources of the southern Red Sea Region provide many opportunities to create ecotourism experiences. For the purpose of effective tourism planning and management, it is essential to understand that the ecotourism experience consists of the following:

1. expectations of the ecotourist prior to departure;
2. the actual ecotourism activities; and
3. memories resulting from participating in the ecotourism experience.

3. *Ecotourism Opportunities and Constraints...*

3.1.2 Expectations Prior to Departure

Before traveling to the southern Red Sea, the tourist obtains information from travel planning, reading, and viewing a variety of visual mediums. The ecotourist expects to view a Protectorate Area that is an environmentally pristine area that contains unique natural and cultural features of national and international significance. Because the Southern Red Sea Region is remote and rarely visited, the ecotourist also anticipates that significant wilderness qualities will be associated with the region. The protectorate status given to the Wadi El Gimal Hamata Protectorate Area communicates the expectation that the region enjoys the protection of the government and that environmental management practices are being implemented.

In order to realize these expectations, the Ecotourism Development Plan advocates the use of the following types of information:

1. Excellent published materials that describe the region in terms of both their attractions and their potential dangers. These materials would include accurate maps, weather conditions, lists of species to be seen, descriptions of heritage sites, and descriptions of marine conditions.
2. Trip preparation would be enhanced by a listing of appropriate clothing per season and equipment that would contribute to the enjoyment of the trip. The region can experience extremely hot temperatures during the day and remarkably cool temperatures at night. These can be easily prepared for with proper, pre-travel information.
3. Descriptions of the modes of transport, duration of travel, and any special travel scheduling requirements constitute essential information for the prospective ecotourist. By example, schedules of commercial air transportation to Marsa Alam and Hurgada should be well known to potential guests and their travel agents. The quality of the vehicles used to conduct land tours, and the quality of the vessels used to conduct marine tours will be important to potential guests.
4. Special requirements, such as security passes, or permits for entry into archeological sites, are essential information to be provided in order to ensure that the ecotourist has allowable entry to the sites they expect to visit. For guest satisfaction, it is essential to be certain that the proper entry documents are secured in order to deliver the advertised ecotourism experience.
5. Medical precautions and identification of medical facilities in the immediate vicinity of the ecotourism experience are especially valuable to both the traveler and the liability concerns of the tour operator. By example, the vulnerability of medicines to the heat is an important message for persons that rely upon medical prescriptions.
6. Finally, contact numbers for answering questions and providing supplementary information will help to ensure that the traveler is well prepared for their journey and that the operator is prepared in advance to respond to any special needs or concerns.

3. *Ecotourism Opportunities and Constraints...*

3.1.3 The Actual Ecotourism Experience

The actual ecotourism trip experience includes travel to and from the site, the ways in which the experience is actually delivered, compatibility with other guests met during the trip, the accommodations and food, and the culture of the host community.

For the purposes of accomplishing an Ecotourism Development Plan, this report concentrates upon the ecotourism delivery systems, the accommodations, and the development issues affecting the host community. The ecotourism experiences are briefly characterized in the remainder of this section and described in detail in the ecotourism program planning sections of this report.

3.1.4 Environmental Experiences

The southern Red Sea Region is a place where extreme contrasts exist. In the mountainous parts of this region the ecotourist can explore a place that offers dramatic beauty, but also represents one of the most hostile and desolate environments on earth. For persons seeking recreational opportunities in an extremely remote wilderness area, the southern Red Sea Region provides one of the best opportunities anywhere in the world.

For naturalists seeking unique adaptations of land and wildlife to severe conditions, the wadis offer stunning examples of rare and unusual life forms. The inventory of wildlife that either resides or migrates through the area identifies the array of viewing opportunities for wildlife enthusiasts. For the person seeking an abundance of life, the offshore fringing reef systems and the mangrove ecological communities offer a diversity and abundance of marine species that are world class.

For artists or persons seeking aesthetic qualities in nature, the dramatic landscapes, pure light, the night sky with its unimpeded view of the stellar galaxies, and the colorful sunsets and sunrises, offer diverse viewing and photographic opportunities. These aesthetic experiences can be further enhanced by the rich literature, poetry, and history of Egypt.

Given the remoteness of the Southern Red Sea Region, and the potentially hazardous conditions that may be found there, it will be important for tourists to travel in vehicles and vessels that are especially designed for rough travel. If the recreational venue is hiking, then it will be necessary to have well qualified guides accompany the tours. The guides will be licensed and certified based on their achievement in language skills, natural history, cultural, heritage, hospitality, and emergency medical and communication services.

For all locations of the region where tours are conducted it is imperative to have emergency medical, communication, and evacuation services. In most instances the visitor will be accompanied by vehicles and personnel that will have self-contained emergency response equipment and skills. In other instances, these resources will be provided at strategically located sites throughout the region in which tours are conducted.

3. *Ecotourism Opportunities and Constraints...*

3.1.5 Cultural Experiences

An ecotourist visiting the southern Red Sea Region will have the opportunity to travel numerous pathways that have been used for thousands of years. Along these ancient routes the ecotourist is able to witness ancient town sites, fortresses, roadways, sentry posts, tombs, shrines, and mines. They can see an amazing abundance of pottery, artwork, and stone sculpture that provide stark evidence of the communities that existed in this region between 2,000 and 4,000 years ago. There are numerous stories to be told to the tourist who is interested in the ancient history of this land, of the empires that competed for its wealth, and of the vast amount of knowledge that has yet to be discovered by means archaeological study of this area.

Like the natural history of the southern Red Sea Region, the human history also presents vivid contrasts. Perhaps the most dramatic of these is that despite thousands of years of human use, the region now has scarcely any human settlements. The few inhabitants of this region are nomadic people who sustain themselves by means of camel and goats, limited trading, and charcoal making.

The Ababda Bedouin people of the Eastern Desert people can enrich the tourist experience with their sincere hospitality, their generosity, and their customs. By example, the practices of roasting coffee over coals, or baking bread in an oven buried in the ground provide people with an indication of the ways in which people have adapted to this land. Art work in the form of textiles, ornate silver jewelry, and leatherwork are to be admired and may be purchased from local artisans. Local fishermen take pride in displaying skills with their nets and boats that enable them to harvest a bounty of diverse marine life.

The diversity of sea food that is abundant in the Red Sea provides attractive menu items for guests. A variety of other meats and an assortment of fruits and vegetables provide ample opportunities to showcase superb food preparation techniques and local recipes.

In summary, the opportunity for tourists to view an abundance of rarely seen ancient heritage sites and to witness the traditions of tribes which have inhabited the southern Red Sea Region for thousands of years, will compare favorably to other antiquity sites throughout the world that are frequently overwhelmed with large numbers of tourists.

3.1.6 Memories Resulting from the Ecotourism Experience

Visitor satisfaction from a tourism trip is often manifested in the memories that the traveler retains of those experiences. The creation of positive visitor satisfaction most frequently results from the creation of positive memories. The success of ecotourism projects depends upon establishing an excellent tourism reputation.

After the travel occurs, the ecotourist uses photographs, videos, books, publications, souvenirs, and friendships acquired during the course of the visit to evaluate their experiences. These can be supplemented by correspondence and consumer surveys that are forwarded to the guest after their departure. For the ecotourist market, the guests are generally appreciative of newsletters that provide updates regarding environmental conditions or heritage site preservation.

3. *Ecotourism Opportunities and Constraints...*

The availability of well written books that are richly illustrated provides guests with both a keepsake and something they can share with others. The sharing of these types of publications provides a potentially significant marketing advantage to ecotourism operators in remote locations.

3.2 SEASONS OF USE

It is critically important to accurately define the seasons of operation in the SRSR. These seasons are normally defined as a high, low, and shoulder season. The high season consists of the months that are most attractive to visitors. The low season is the least attractive time for visitation. And the shoulder seasons are defined as brief time periods in which a specific tourist market may be attracted to the region. The duration of the seasons has a direct effect upon the investor's ability to realize a positive return on their investment. Obviously, maximizing seasonal use of ecotourism facilities should contribute to increasing the return on investment. The map entitled Seasons of Use depicts the areas of potential ecotourism activities and their respective periods of year when visitation is most appropriate.

3.2.1 High Season

The high season in the Southern Red Sea Region would extend from approximately November to the first week of April for all management zones. The most popular month for tourism in the region has historically been November because of the favorable weather conditions and the greatest abundance of wildlife.

The high season for offshore, marine based recreational activities in the region could conceivably extend all year. These activities are currently being conducted in coastal management zones. Currently, the high season for marine activities throughout the Red Sea region is approximately January through November. However, as the marine transport facilities at Marsa Alam become operational and as other scuba diving locations throughout the world become more congested, the Red Sea marine recreation season will most probably lengthen in duration.

3.2.2 Low Season

As a result of the extreme heat and hyper-aridity during the late spring and throughout the summer months, mid-May through mid-September, it would be extremely dangerous to conduct tours through the mountains and upland of region generally. The high mountain zone, is a particularly dangerous location to conduct tours during the summer months and the TDA strongly advises investors to not operate in that zone during that time period.

The ambient temperature in the mountains and upland regions of Wadi al Gimal average 50 to 60 C (130 to 150 F) during the late May through August time period. The sand and rocks can frequently absorb heat that will increase their temperature by another 30 F. It is unreasonable to believe that visitors to this region during that time would be able to successfully acclimate to these harsh conditions. From a logistical point of view, the supply of water and medicines is another significant concern. The vast quantity of water and ice required to maintain visitor safety for even a few days excursion is prohibitive, and virtually all

3. *Ecotourism Opportunities and Constraints...*

medicines will perish and become useless when temperatures exceed 95 F. for sustained time.

3.2.3 Shoulder Season

The very brief shoulder seasons would be springtime, defined as approximately mid- April through mid-May, and early autumn, defined as late-September through October. During both of these time periods there are very significant bird migrations that would be attractive to select ecotourism markets. In addition, there are a few days of tolerable heat that would allow tourists to enter the wadi for a short distance to view a few heritage sites and wildlife habitats. Finally, these time periods may be particularly attractive to landscape and nature photographers who wish to take advantage of the extraordinarily pure light, tolerable temperatures, and the absence of other people in the area.

3.2.4 The Evenings

It is very important to note that evening tours can be conducted throughout the entire year. Well-planned evening tours represent excellent opportunities for guests to enjoy the wilderness area and for tour operators to expand their market potential.

3.2.5 Summary Checklist of Season Defining Information

In summary, one of the most useful planning tools that either a resource manager or an ecotourism investor can produce is a calendar to define of high, low and shoulder seasons is a calendar. The calendar will includes the following types of information in order to indicate the seasonal attractiveness of an ecotourism region.

Climate assessment by monthly averages for the following:

- Temperature
- Precipitation
- Hours of daylight
- Climatic hazards - e.g. flash floods, sand storms, etc.

Environmental attractions by type and abundance of the following:

- Wildlife migration events by species - land, bird, marine
- Botanical changes, e.g. Foliage, blossoms, crops, etc.

National and religious holidays

Traditional festivals, art, and cultural events

Heritage sites

3.3 ECOTOURISM CONSTRAINTS: HAZARDS AND RISKS

The ecotourism market is appealing to many guests because of its emphasis on the experience of authentic wilderness. However, the ecotourism developer needs to recognize that a truly wild place has a variety of natural hazards that require planning and management. The inventory of environmental information for an ecotourism development project must

3. Ecotourism Opportunities and Constraints...

identify these hazards. The biodiversity and physical character of the Gimal-Hamata Protectorate Area, by example, not only represents potential attractions for ecotourists, but also environmental hazards that need to be included as essential information for project design and environmental management. A method for categorizing this information is to classify potential threats to humans and potential threats to the ecosystem.

Most of the threats to humans result in medical emergencies and the remoteness of the region presents many challenges in this regards. The evacuation of injured persons is complicated by the ruggedness of the terrain, the inability of vehicles to travel safely at high speeds across that terrain, and the considerable distances from telecommunication and emergency medical aid. These obstacles can be reduced by effective communication systems with medical personnel and the strategic stationing and mobilization of emergency response vehicles.

Potential threats to humans:

- Extreme heat
- Scarcity of water
- Roughness of terrain
- Poisonous Insects
- Poisonous Snakes
- Rockslides
- Sand storms
- Sea currents
- Flash flood
- Seismic activity

Potential threats to the ecosystem

- Water pollution
- Nesting bird colonies cannot be intruded upon
- Vulnerability of Mangroves to pollution and human activity
- Scarcity of vegetation in the wadis must be protected
- Conservation of critical habitat areas in the wadis and mountains

Human Factors

- Climate is perhaps the largest issue in terms of visitor safety and comfort level. Given the extremity of heat and the scarcity of water, visitor safety is a major concern. During the September to March time period it is possible to safely conduct ecotourism activities by means of adequate preparation and supplies. During the summer months, it would be extremely dangerous to expose tourists to the climatic conditions of the southern Red Sea Region.
- Poisonous insects and snakes are a real concern in the deep regions of the Gimal – Hamata Protectorate Area. Anti-venoms must be refrigerated to maintain their effectiveness due to the extreme temperatures.
- Slopes also present a challenge in terms of experiencing the region. Unstable slopes prevent activities such as mountaineering and hiking and intense heat conditions particularly during the summer months are also a major safety concern in terms of dehydration, heat exhaustion.
- Floods, although infrequent, transform the canyons of the region into a funnel creating extreme safety concerns in terms of visitation in the event of a flash flood. Signage

3. *Ecotourism Opportunities and Constraints...*

may be used along roadsides and paths to provide precaution measures for the guest by directing visitors to safety during this infrequent but deadly flood event.

Environment Factors

- Water pollution can cause irreparable damage to the marine coral ecosystem. Sustainable wastewater treatment facilities and disposal of solid waste should utilize innovative technologies in order to maintain a stable coral environment.
- Mangrove stands are to be protected from development and require a buffer zone of no more than 10 meters from the tidal zone to insure preservation of habitat for plant and animal populations.
- Disturbance of existing vegetation and their associated habitats within the Wadi al Gimal should be protected by educational tools such as signage and interpretive information.
- Critical Habitat should be identified and construction and environmental education techniques should be implemented to prevent further destruction of the Wadi al Gimal desert environment.

3.4 POTENTIAL LAND USE CONFLICTS

3.4.1 Cultural Sites

There are literally hundreds of Islamic and Blemmeys tom sites located throughout the Southern Red Sea Region. All of these sites must be treated with respect. It is imperative that these sites remain undamaged. It is also essential to respect the privacy of the families and friend who may be conducting ceremonies in remembrance of the deceased.

3.4.2 Ababda Traditional Use Areas

Water is an extremely scarce resource in the Southern Red Sea Region. Therefore the wells of the Ababda must be preserved in order for these people to survive. Both the people and the livestock of the Ababda depend upon the wells for their subsistence. Consequently, this means that there should be no competitive use of the well sites associated with tourism activities.

Vegetation essential for grazing of the Ababda livestock must be respected. Again, there should be no competitive use of these sites that would in any way endanger the survival of the Ababda people.

3.4.3 New Community Development

Egyptian involvement in tourism planning and implementation, while clearly promoting economic development and environmental and cultural preservation, will also present a unique set of challenges. While the only viable option for ecotourism staffing is to draw from Egyptian population centers with a surplus of labor force and people who have the desire to relocate to the southern Red Sea Region, this process will not only introduce a significant

3. *Ecotourism Opportunities and Constraints...*

number of people to an extremely foreign environment, but will also quickly demand that this new population serve as "experts" describing the environment for tourists to the area. To mitigate this challenge, a careful guide and workforce training will have to be achieved. It is suggested that the Ababda Bedouin people, with their intimate knowledge of the Wadi al Gimal Protectorate Area, are the persons best suited to either become guides or participate in the training of guides.

3.4.4 Mines and Quarries

Mining and quarry operations remain very active in the southern Red Sea Region. Numerous mines and quarries are located from Safaga in the north to approximately Wadi Lahami in the south. Gold is still being mined at the Sukari site. Minerals and phosphates in exceedingly large quantities are being strip mined. And a variety of ornamental stones, particularly granites, are being quarried throughout the region.

It is acknowledged that the existing mines and quarries represent a continuation of approximately 5,000 years of economic history in this region. However, from the perspective of ecotourism development, there are several concerns about compatibility that must be recognized and require planning.

- First, there is the issue of air pollution. Many of the mining operations create large plumes of dust. These plumes not only pollute the air but they can also be seen for miles.
- Second, is the issue of truck traffic. All routes in the region are narrow and if tourism traffic attempts to compete with mine and quarry trucks serious congestion will result.
- Third are aesthetics. Tourists will not want to see these types of economic activities. In addition to the obvious daytime view, it must be realized that several of the sites are lit at night.
- Finally, is the issue of noise pollution. The machinery and workers create noise that directly conflict with the quiet that is otherwise universally found in the Eastern Desert.

4. ECOTOURISM PROGRAM PLAN

The purpose of the Ecotourism Program Plan is to define both the types of experiences that will be provided in a specific ecotourism service area and the specific delivery systems needed to offer those experiences. As stated in previous sections, ecotourism seeks to provide high quality recreational, cultural and educational experiences. The guide services, visitor centers, lodges, emergency services, appropriate infrastructure, and other visitor facilities serve as vital elements in the delivery of those experiences. The ability to provide those unique experiences and appropriate services and facilities is based on the creation of a comprehensive Ecotourism Program Plan.

4.1 OBJECTIVES

The Ecotourism Development Plan objectives for creating beneficial ecotourism experiences are:

1. Identification of the essential operational and facility needs required to deliver quality recreation services and accommodations.
2. Identification of the specific types of tourist, specialized, and educational markets that would be attracted to the region.
3. Identification of the dynamic environmental conditions, such as severe weather and the migratory behavior of wildlife, in order to plan for these events.
4. Identification of the investment and human resource needs required to complete a successful ecotourism development project.

4.2 ECOTOURISM PROGRAMS AND ACTIVITIES

The Ecotourism Program Plan identified ecotourism activity and development areas based upon the unique environmental and cultural characteristics of the seven ecological management zones described in the previous section of this Plan. The unique conditions found in each ecological management zone were evaluated to determine the appropriate ecotourism use for each zone. The characteristics of the zones that were evaluated included:

1. Distinctly different environmental and heritage based attractions are present in each ecological management zone. These attractions will appeal to very distinct ecotourism markets with varying consumer preferences.
2. Different environmental conditions in each zone require specially designed accommodations and tourism services in order to safely and effectively deliver quality recreation experiences.
3. Guide training and other human resource requirements will have to be designed to be relevant to the conditions and attractions that occur in each of the zones.

4. Ecotourism Program Plan...

4. The availability and quality of infrastructure and emergency response capabilities are distinctly different among the zones and therefore planning and investment for these tourism development needs will vary considerably.
5. Transportation access to each of the ecological zones varies substantially and therefore represents different challenges to both the ecotourism investor and the tourist.
6. Environmental management and cultural preservation issues will be very different among the zones. By example, wildlife habitat conservation in the wadi involves different management considerations than either the preservation of heritage sites, or the conservation of the fringe reef coral systems.

In summary, the seven ecological management zones that comprise the Southern Red Sea Region ecotourism area serve as a method for defining the type of recreation activities that are offered and the major investment considerations required to develop facilities and services that will meet the needs of these ecotourism markets and the sustainability of the region. The creation of an Ecotourism Program Plan therefore builds upon specific site characteristics while simultaneously managing important environmental and cultural features that will contribute to the sustainability of the tourist experience.

The environmental and cultural conditions that are unique to the seven ecological management zones of the southern Red Sea Region provided the essential information required to define appropriate ecotourism activities and facilities. This approach insures that the Ecotourism Development Plan is based upon information that is essential for sustainably managing the environmental and cultural features of the southern Red Sea Region. The map entitled: Ecotourism Resources of the Southern Red Sea Region shows a composite of the natural, heritage and cultural resources upon which ecotourism programs should be based. In order to illustrate the ways in which the environmental and cultural features of the region will be used to create ecotourism, two types of tours will be described.

The first is a tour that features a combination of nature and heritage sites that would start at the mouth of Wadi al Gimal and then proceed westward to destinations characterized by significant heritage sites and dramatic transformation of the environmental conditions. This tour would be exclusively land based and would provide the ecotourist with a comprehensive introduction to the significant natural and cultural features of Wadi al Gimal.

The second illustrative tour would be marine based and would extend from the shores of the Wadi al Gimal region through the coral reef systems and would view Gimal Island prior to returning to the mainland. This tour would emphasize the diverse and unique marine life that exists among the Wadi al Gimal mangrove, the fringe reef, the offshore area, and Wadi al Gimal Island.

4.3 LAND AND MARINE BASED TOURS BY TYPE, SEASON, AND ALLOWABLE USES

4. Ecotourism Program Plan...

The Southern Red Sea Region is an enormous area that could potentially host a large number of recreational activities. The implementation of these activities in the region would provide economic development opportunities for investors, unique visitor experiences for guests, and employment and community development opportunities for Egyptian citizens. The purpose of this section is to describe the types of land based activities that can be offered in the southern Red Sea Region and then to provide explicit examples of ecotourism operations that could be conducted from the proposed Study Area.

Based on extensive field research, both the opportunities for ecotourism development and the critical environmental and heritage site conditions that need to be managed were identified. The extensive field research discovered, mapped, and researched more than 1,700 unique features. These features included more than 500 In ancient heritage sites, more than 300 cultural sites, 20 geological features, nearly 100 wells and springs, and hundreds of critical wildlife habitats. The field research verified numerous wildlife species, including three endangered species.

The field research confirms that, at a minimum, the following types of recreational activities can successfully be implemented in the southern Red Sea Region:

1. Naturalist guided tours to view and learn about wildlife and the environment including:

Birding

Wildlife viewing and photography

Medicinal, cosmetic and utilitarian use of plants

Botanical studies

Geology

Hydrology – hyper-aridity and flood events

These tours may be conducted by means of:

Off road vehicles suited to the region

Trail systems in temperate seasons

Camel trekking

Horseback in cool seasons

2. Guided tours to heritage sites to view ancient Egyptian, Ptolemaic, and Roman archeological sites including:

Museum sponsored tours

Archeological research tours

4. Ecotourism Program Plan...

University and educational tours

These tours may be conducted by means of:

Off road vehicles suited to the region

Trail systems in temperate seasons

3. Given the region's visual clarity, Nature Photography Tours including:

Landscape photography - locations that have dramatic vistas, rock formations, sunsets, and sunrises.

Photographic schools

4. Cultural tours that may combine the following type of activities:

Medicinal and subsistence use of plants and animals

Camel herding and training

Poetry recitation

Traditional storytelling

Falconry exhibitions

Traditional fishing

5. Night camps that teach stellar navigation

6. Hiking and trekking with qualified guides during temperate seasons.

7. Mountaineering with qualified guides during temperate seasons.

Summiting

Rock walls

Marine Based Tours by Type, Season, and Allowable Uses

The Red Sea's world famous fringe reef system, large mangrove ecosystems, diverse fishes, palm groves, and hundreds of offshore island that provide critical habitat for migrating and resident bird species are the attractions sought by ecotourists. These natural resources provide the basis of the suggested marine based tour.

1. Maritime, non-motorized recreational activities including:

Sailing

Sea kayaking

Snorkeling

2. Maritime, motorized recreational activities

Scuba diving with certified Master Divers

Charter boat tours

4.4 REPRESENTATIVE LAND AND MARINE BASED TOURS

The following sections describe specific tours that could be organized in the Southern Red Sea Region.

4.4.1 The Wadi al Gimal Land Based Tour

Ecotourism in the Gimal Hamata Protectorate Area would originate from a “**Gateway**”. This “Gateway” would consist of facilities that provide: (1) essential visitor interpretive and safety information; (2) a diversity of visitor services such as food and beverages, comfort stations, and rest areas; (3) emergency services, supplies, and telecommunications; and (4) supplies and equipment that are appropriate for the delivery of these several services. The specific types of services and facilities contained in the “Gateway” should be consistent with the unique needs of supporting ecotourism in the Eastern Desert wilderness areas.

The starting point for the Wadi al Gimal land based tours would be located within the Study Area. In order to maximize the market opportunities for the ecotourism investor, facilities can be developed that meet the needs of destination ecotourists, day use tourists, and destination tourists. Given this economic development goal, the specific facilities that can potentially serve as the actual point of departure for the tour are either:

- The Sharm Al Lolly Ecolodge
- The Visitor Center
- The Wadi al Gimal Ranger Station

For the purpose of creating both an enjoyable and safe tour, the primary objectives of these facilities are:

1. to communicate essential safety information,
2. provide trained guide personnel,
3. insure that proper equipment, such as vehicles, and supplies such as water are provided,
4. determine the backcountry experience and skill levels of the guests,
5. determine the primary interests of the guests, and
6. make available field guide books, trail maps, or any other useful and pertinent information that would enhance the ecotourism experience.

The tour would begin with an introduction from the well trained guide who may be either (a) an employee of the lodge, (b) a Protectorate Area naturalist or ranger, (c) a small businessman based at the visitor center, or (d) an educator affiliated with both a college or university. The introduction will explain the route of the tour, its anticipated sites, its duration,

4. Ecotourism Program Plan...

amenities and special services that will be provided. These services may include meals, specialized forms of transport, or backcountry camping. Emphasis will be placed on safety and special medical needs of the guest.

The tourist will travel in a safari type vehicle that has both the rugged features necessary to travel across the land and sufficient elevation and air circulation to provide both excellent viewing and reasonable comfort. The first stop of the tour will be at the mangrove and Dome Palm grove ecosystems at the mouth of Wadi al Gimal. The environmental significance of these systems will be described and the opportunity for wildlife viewing and photography will be pursued. The abundance of life and diversity of wildlife species that are found in these regions will contrast sharply with the environmental conditions in the upper reaches of the wadi. The species lists and information contained in the environmental inventory will contribute substantially to the information conveyed to the tourist.

Entry into Wadi al Gimal will be along the main route of the valley floor across vehicle paths that are currently well established. Discussion of the geology, vegetation, land and bird wildlife, and the rapid changes in climatic conditions will be presented.

The environmental conditions throughout the tour will be discussed in terms of both their scientific significance and subsistence values. Thus, by example, the Acacia tree can be described in terms of its important drought resistance and food source for animals such as camels and gazelle. And it can also be described in terms of the resin (sap) that provides a natural candy, a fruit that is an effective medicine for the treatment of diabetes, or its thorns that serve as sewing needles. Certain bushes provide indications of the salinity of the water at a site while simultaneously serving as an amazingly effective natural soap. Other shrubbery, remarkably located far inland, provide critical nesting sites for shore birds such as heron while simultaneously their branches provide toothbrushes to the nomadic tribe people who travel through the wadi.

The geology of the region would be described in terms of both its astonishing age and its mineral wealth. There are interesting stories to be told to the person interested in the fact that the Pre-Cambrian rocks in this area are some of the oldest rocks on earth or to the person who may be interested in the fact that these rocks contained the wealth of ancient empires. Again, the environmental inventory and researched histories produced during the evaluation of critical elements will contribute information to this aspect of the tour.

As the tour proceeds up the wadi the guide will acquaint the guest with the types of wildlife they may see. Methods for spotting, identifying and photographing the wildlife will be communicated. A sense of expectation should be created because the genuinely natural character of the region will produce rare wildlife viewing opportunities.

The distance from the Red Sea coast to the first significant archeological site is only 9 kilometers. This site is a sentry post used by the Romans and ancient Egyptians to guard entry into the wadi and thus protect the valuable emerald and gold mines located in the upper reaches of the wadis. The view from the site is dramatic and the abundance of ancient artifacts is astounding. Among the artifacts is the prevalence of seashells that were used as a source of lime to purify water. The shells were crushed and then applied to the interior lining of pottery and wells. The grinding stones, fire pits, and ceramics ornamented with polychrome designs, incising, and sculptured moldings provide some idea about the daily lives of the sentry stationed at this outpost. For the modern tourist experiencing this site

4. Ecotourism Program Plan...

during extremely hot weather, it is scarcely imaginable that a person in a full suit of leather armor could withstand the heat for long periods of time.

Like the spotting of rare and unusual wildlife, the presence of the first archeological site begins a process of anticipation. The guide can provide clues for spotting additional sites. The building materials for all of the ancient heritage sites throughout Wadi al Gimal, Wadi Sakit, and Wadi Nuqrus is native stone, therefore the ruins blend unobtrusively from the valley floors and walls. They are, in essence, naturally camouflaged and recognition of their appearance will continuously surprise the tourist.

Frequent stops to examine the unique features of the wadi and to be certain that guests have sufficient water are essential. Examination of the condition of the vehicles and maintaining radio communication protocols are also valuable procedures for insuring the delivery of a safe tour.

The rest stops should also be a time for pleasurable enjoying native foods and story telling. Ababda guides can demonstrate traditional methods for roasting coffee over a bed of coals, or serve warm bread from an oven scooped out of the sand. Teas, water, juices and native fruits can be used to insure the tourist's safety (sufficient hydration and electrolytes) and comfort. Temporary tents or canopies can be quickly erected to provide shade and shelter from the wind. These and other culturally authentic amenities can be provided to support a positive guest experience.

The mountainous walls of the wadi provide graphic examples of the harsh environmental conditions that exist in the Eastern Desert. The rocks that comprise the maze of mountains surrounding the wadi not only exhibit the geology of the area, but also demonstrate its dangers to humans. The slopes of the mountains are comprised of highly fragmented rock that creates extremely talus slope conditions. The tourist can easily see how difficult it would be to climb these mountains, and by feeling the heat of the rock can vividly appreciate the temperatures that occur during the summer months.

Between the slopes of the mountains and the floor of the wadi there is much evidence of the frequent flash floods that have occurred in this region. Significant depositions of soil and rock provide the tourist with very graphic delineations of the historic size and extent of the floods. The magnitude of the flood events provides a stunning impression of the way in which life consistently returns to the wadi and, given these catastrophic events, to the miraculous preservation of the ancient heritage sites.

The wildlife that inhabit Wadi al Gimal offers the ecotourist an opportunity to view a variety of species throughout the entire land tour. When the tour begins at the mangrove and palm grove sites, the tourist can view the diversity of shore and sea birds that either reside or migrate through this area. There is a variety of coastal marine life that can be easily viewed in this region also. When the tourist is provided with information about the natural history of this coastal zone they will probably be intrigued that such a diverse complexity of life inhabits the desert environment.

The wildlife that inhabits the inland region of Wadi al Gimal is both unique and rare. Specifically, the tourist will see a diversity of wild camel species and the ways in which these animals survive in this rugged land. Rare and endangered species such as the Dorcas Gazelle and the Hydrax can also be seen in the wadi.

4. Ecotourism Program Plan...

For the birding enthusiast, the wadis of the Eastern Desert provide an opportunity to view a remarkable diversity of resident and migratory land, shore, and sea birds that can be added to their species life lists. The diverse bird species extend from raptors such as osprey, kestrels, and falcons, to sea birds such as white eyed gulls and flamingos, to shore birds such as sandpipers and water pipits, and an enormous collection of upland birds. In the furthest upland region of Wadi al Gimal is the original species of pigeon.

As the tourist travel through the Wadi al Gimal region there are several opportunities to witness and participate in personally enriching human events. Although there are very few people who live in this region, it is possible to encounter one or two of these people either along the trails, at the site of wells, or at the site of shrines. These people are friendly, generous, courageous, and have a wonderful sense of humor.

The tourists who meet these people will be invited to participate in the honored custom of sharing. One example of this tradition is particularly exceptional. Shrine sites mark the grave of a person who is honored for being a good and generous person. That tradition of generosity is perpetuated at the shrine by persons who place what they can at the site, and by those less fortunate persons who take only what they need. This tradition of generosity is also manifested in the sacrifice of a sheep or goat at the site. When the animal has been sacrificed one third is given away to strangers, one third is shared, and one third is kept. Places and customs such as these provide the tourist with a living example of a remarkable capacity for sharing in a desert region that appears to have so little to sustain life.

When the tour has reached either the Sakit, Nuqrus, or Appollonos sites they will most certainly be overwhelmed by the immensity of these ancient ruins and the astonishing abundance of artifacts strewn about the area. The towns are comprised of private residences, public buildings, temples, mines, fortresses, and sentry posts that were entirely constructed from shale rock. In order to insulate the buildings from the heat and cold the structures have two walls separated by an open space that provides the interiors with remarkably temperate conditions.

The population of these towns, estimated in the hundreds of persons, had well constructed wells that were lined with brick and then further lined with lime to purify the water. There were bakery ovens of fired brick and road systems across mountainous terrain. Sandstone from as far away as 50 kilometers was transported to the sites and ornately carved for personal identification of residences and for building ornaments. The multitude of highly ornamented ceramics that were decorated by means of inscription, sculpture, or polychrome glazes are testimony to the artistry and wealth that once resided in these towns.

Located at the Sakit site is the Temple of Isis. The female goddess Isis was originally worshipped by the Greeks who believed she represented mother earth. The age of the temple may therefore be as ancient as the Ptolemaic period of Egyptian history. The Romans continued the worship of this goddess during their time of empire. The temple at Sakit has been carved from the mountain and is highly ornamented with beautifully carved columns supporting its roof. Equally attractive are the carved alters and the original whitewash that remain to be seen on the walls and main alter.

Ancient mines consisted of either narrow tunnels dug at a diagonal into the tops of mountains or entire hillsides that were reduced to rubble. Emeralds and gold were the primary minerals sought in these places and evidence of mining operations are evident everywhere. Stone

4. Ecotourism Program Plan...

tools for splitting and crushing the rock are easily found. Smelting pits and ovens are present throughout the sites. And, quite amazingly, the actual emeralds themselves are to be found lying on the ground. Climbing to the mine sites located at the tops of the mountains is arduous and would not be recommended for all persons. The guides have to be extremely cautious about stable footing, deep holes that are hidden from sight, a serious condition of hyper-aridity, and the presence of scorpions.

If the tourist wishes to participate in a full days tour, then at the end of the day they will have the opportunity to view brilliantly colored sunsets. The sunsets transform the colors of the mountains from brown to multiple shades of blue and red.

For those tourists who wish to remain overnight in the wadi, there will be designated remote tent sites that will be operated by licensed ecotourism businesses. Several vivid experiences can be derived from spending a night in the wilderness of Wadi al Gimal. The most stunning experience is perhaps the exceptionally clear view of the stars. Constellations and galaxies can be readily identified and ancient methods of stellar navigation can be learned from this experience. Combining the mythical names of the constellations and Egypt's rich cultural history of literature and poetry might provide an opportunity to share a legacy of storytelling.

The solitude and silence is probably the second most impressive experience derived from a night in the wadi. For those persons who enjoy true wilderness, the experience would be magnificent. The experience may not be as enjoyable to those who have never "listened to the silence".

4.4.2 Representative Marine Based Tours

Again, the starting point for the Wadi al Gimal marine based tours would be located within the Wadi al Gimal "Gateway Center". Currently, the Wadi al Gimal Dive Center provides the boat and dive services required to accomplish this tour. However, the facilities suggested below can potentially serve this ecotourism market.

It is very important to note that lodges that provide both land and marine based ecotourism will most probably realize the most economic benefits. By combining land and marine touring operations the ecotourism business derives benefits from longer operational seasons and an ability to attract more diverse ecotourist markets. The lodge that offers both types of tours will also be especially attractive to families that have multiple environmental and cultural interests.

1. The Visitor Center
2. The Wadi al Gimal Marina
3. The Wadi al Gimal Dive Center (at Shams Alam)

In order to create both an enjoyable and safe tour, the primary purposes of these facilities are:

- to communicate essential boat and dive safety information,

4. Ecotourism Program Plan...

- to determine that scuba divers are properly certified by a professionally responsible program such as PADI, and that divers have their logbooks and medical information in order.
- provide the appropriate well trained personnel. These may include: properly experienced or licensed maritime officers and personnel, Certified Diver Masters or Dive Instructors, and other personnel with relevant water safety skills.
- be certain that the proper equipment, such as diving and snorkeling equipment, personal flotation devices, and other nautical supplies are provided,
- determine the water safety skill levels of the guests,
- determine the primary interests of the guests, and
- make available nautical guides, nautical charts, tide tables, or any other useful and pertinent information that would enhance the tour experience.

The marine tour can focus on providing at least two types of visitor experiences. The experiences can be either a charter boat tour of the near and offshore marine environments, or an in water experience such as scuba diving or snorkeling.

The marine tours would begin with an introduction from either a certified Dive Master or a licensed maritime officer. In the case of scuba diving, an explanation of the dive locations, level of difficulty, and anticipated sea life viewing opportunities would be described. For the marine tour the vessel transits, locations to be viewed, and probable marine life to be viewed will be presented. Marine tour schedules and specified dive duration and rest periods will be explained. Information regarding vessel safety procedures, amenities, and food and beverage service will be provided to the guest.

Based on dive operations currently being conducted by the Wadi al Gimal Dive Center there are 35 dive locations that offer a variety of dive experiences. The dive center is directed by PADI certified Dive Instructors that emphasize safe diving procedures and well maintained equipment.

The greatest abundance and diversity of life in the Wadi al Gimal region is located in the near offshore coral reef systems, ecological management zones Five, Six and Seven. In terms of providing ecotourism experiences in the Wadi al Gimal region, it is most appropriate to consider sharing the vibrant and complex life that exists in these near and offshore ecological management zones. The dive experiences provide the visitor with an opportunity to view an amazing profusion of life in each of these zones. The excellent clarity of the water in the vicinity of Wadi al Gimal permits the diver to see fish species that literally have dazzling colors and both hard and soft color communities that are thriving. Curtain, pillar and labyrinth coral structures provide the diver with a remarkable display of marine ecosystems.

For the many people who are not certified divers, but who wish to experience the natural attractions of the near and offshore marine zones, charter boats provide essential access to these zones. A well trained naturalist and professionally competent crew can begin a tour in the vicinity of the mangrove ecosystems and provide tourist with a rare seaside view of this important ecosystem and the wildlife that inhabit it. The distinct reef systems can be viewed

4. Ecotourism Program Plan...

from the surface and by means of various types of optical equipment that enable people to look underwater. Local fishermen can be employed to describe the fish species, traditional fishing techniques, and their traditional uses of the fish as sources of food, trade goods, and for meeting their other subsistence needs.

Gimal Island with its reef, mangrove, and bird colonies offer an excellent opportunity to understand the ways in which the islands of the Red Sea provide a sanctuary for migrating birds and nurseries for fish. Gimal Island enjoys Protectorate Area status because of the vulnerability of its wildlife to intrusion. This protectorate status should be respected by not allowing people to land on the island or use it as a place for eating or camping. Unfortunately, some boat operators are allowing their guests to disembark on the island and their visits are evidenced by the trash and abandoned campfires they have left behind. Based on the vulnerability of the island's ecosystems to human use, it is apparent that no tourism facility development can be permitted.

One of the ways in which the ecotourist can gain an appreciation of the mountains of the Eastern Desert is to view them from the Red Sea. During the daytime the startling contrast between the brown mountains and the intensely blue and green colors of the Red Sea vividly shows the extremes of aridity and an abundance of water. The high topographic relief and magnitude of the mountains, when viewed from offshore, provide the tourist with a glimpse of the enormity and scale of the Eastern Desert. The extraordinary beauty of the Eastern Desert is perhaps best displayed when viewed offshore during sunset as the colors of the mountains are transformed into vibrant shades of purple, blue, and red.

In summary, it is important for the ecotourist to understand that Wadi al Gimal and the Red Sea are integral parts in a complex watershed environment. That the southern Red Sea Region is an enormous region that represents one of the world's great wilderness areas. And that Wadi al Gimal has the capacity to show the tourist great austerity and great beauty. The best place to obtain these positive tourism experiences is from the deck of a boat.

4.3 A SUMMARY OF ECOTOURISM RECREATION PROGRAM PLANNING PRINCIPLES

The factors that should be considered when producing an Ecotourism Recreation Program Plan include:

1. Inventory of the potential environmental, cultural, and historical recreation activities and attractions in the ecotourism service area. This includes consideration of the tolerance of the local environmental and cultural conditions to determine the capacity of the service area to host the tourist experience.
2. Seasons of use for activities and attractions defined in terms of high, shoulder, and low.
3. Duration of activity participation, on average.
4. Numbers of visitors per season and their anticipated behavioral characteristics.

4. Ecotourism Program Plan...

5. Experience and skill levels of the tourists. The tolerance, physical condition, and participation skills of the potential guest should be evaluated to determine the appropriateness of a particular activity and its compatibility with other recreational events.
6. Design the type of visitor experience that will be provided. These can be defined in terms of a range extending from passive to very active. By example, the actual type of activities can be categorized as naturalist guided, self guided, vehicular, boat, hiking, photographic, mountaineering, sea kayaking, sailing, etc.
7. The potential compatibility among ecotourism experiences should be evaluated.
8. Visitor management ratios - define a reasonable relationship between the number of guides and support staff and the number of guests.
9. Types and numbers of transportation and recreational equipment involved - by example, everything from boats and vehicles to binoculars and snorkeling gear.
10. Specialized supplies and logistical support required - by example, everything from meal preparation supplies to sunscreen.
11. Published field guides, relevant brochures, trail maps, way finding signs, and interpretive signs should be available to the guests.
12. Required human resource skills and associated training for guides should include multiple language fluency, hospitality, subject matter expertise, emergency response, communication equipment, and land and marine equipment operator skills.
13. For educational venues, be sure to design appropriate curriculum, have text books, and qualified teachers.
14. Permits and licenses, when required, must be obtained.
15. Insurance, liability, vehicular and property, must be obtained.
16. Emergency services capacities must be provided either by cooperative agreements or on site.
17. Maintenance and repair of equipment and facilities are essential for efficient delivery of tourism services.
18. Costs and revenues for the program plan should be calculated.

5. ECOTOURISM DEVELOPMENT PLAN

In preparing the proposed ecotourism development plan, the RSSTI study team followed the methodology laid out in *Guidelines for Ecotourism Development in the Deep Range of the Red Sea Region*. As described in Chapter 4, the ecotourism activities are both marine and land based, and offer seasonal variations primarily due to changes in climate and weather conditions. The map entitled Proposed Ecotourism Facilities and Trails provides an overview of the various aspects of the Ecotourism Development Plan.

5.1 RECREATIONAL OPPORTUNITY CLASSES

In accord with legislative intent and specific objectives to manage for a diverse range of visitor experiences compatible with the protection of resources and values, “zoning” of the SRSR provides a framework for management based on different Park settings. Both the Land Use management Plan LUMP and The WGPA Conservation management plan CMP defined the Management Zones where strategies for management and use will best fulfill management objectives and achieve the purpose of the park.

The visitor use management is directly related to the sub-zones identified in the land use management plan conducted on June 2003. The sub-zones is defined by a combination of physical, social and managerial attributes. The attributes include biogeography features, Cultural characteristics, accessibility, current uses.

The wilderness areas of the SRSR are within the Natural Zone, managed to conserve natural resources and ecological processes and to provide for their use and enjoyment by the public in ways that do not adversely affect these resources and processes. To further represent the diversity of wilderness settings and opportunities, the following are four recreational Opportunity Classes has defined.

The term ‘Opportunity Class’ replaces ‘Management Zone’ described in the Land Use Management Plan LUMP. The concept has not changed, simply the terminology. As in the LUMP, “zone” implies a physical management area, whereas the term “opportunity class” describes a range of conditions or settings for which the SRSR manages.

The SRSR wilderness areas are comprised of four Opportunity Classes: Threshold, Primitive, remote and Wild. Each Opportunity Class is described in terms of the desired resource, social, and managerial conditions for that particular use area .

The Opportunity Classes are based upon the following criteria:

- type and amount of use
- opportunity for solitude
- current resource conditions
- management uses.

The following narrative descriptions outline the general characteristics associated with each Opportunity Class.

5.1.1 Threshold (coastal low intensity)

The areas of Ras Hankorab and south Marsa Umm El Abbas, are examples of suitable low intensity development/coastal eco-resort zones. Development in this zone will follow similar guidelines to those of the ecotourism/transition zone. Only restricted development will be allowed in the low intensive zoning category due to the environmental sensitivity of adjacent areas.

This zone is a developed area with ecoresorts and ecotourism facilities. The Wadi Um Al Abbas, and Wadi Abu Ghosoun Trails provide access from these developed areas, and act as thresholds to the wilderness areas. The Corridor is referenced to the extent that it represents the spectrum of opportunities and provides a comparison for management strategies in the coastal areas.

5.1.2 Semi-Primitive (transition zone)

This zone represents peripheral areas, with moderate-to-low levels of environmental sensitivity. The Semi-Primitive (transition) zone encompasses both flat and mountainous terrain. Visitors to this zoning level are encouraged to carry out diverse activities compatible with the natural and cultural environment via environmental education and ecological awareness programs.

Areas in this zone may have limited low-impact tourist services (mainly of an interpretive nature). The main ecotourism facilities will be concentrated in the transition zones, i.e., visitor centers, ecolodges, campgrounds, and heavily used trail corridors. This zone primarily accommodates four-wheel drive experiences. Vehicles allowed in this area must be low-impact and low speed, with primary mobility achieved on foot, camel, bicycle, or horseback.

Semi-Primitive Use Areas are managed for moderate to high levels of use relative to wilderness. Camping can be in designated sites or at-large, depending on the use area. Composting toilets exist at most areas, or may be installed if required to deal with unacceptable concentrations of human waste.

The Semi-Primitive zone areas include the following:

- The medium and small wadis of the planning area including Wadi Ringa, Wadi Abu Ghusun, Wadi Qulaan, Wadi Hamata, and Wadi Anbaaout, and the area between Wadi El Gemal and Sharm El Luli.
- The coastal uplifted reef area of Qulaan.
- The enclosed sand basins (sahl) of El Luli, Naga Haboni, Al Andidibat, and El Foqiry.
- The rugged lands and rocky mountains around the medium and small wadis that form a watershed area.

5. Ecotourism Development Plan...

- The coastal plain near Sharm El Foqiry, Sharm El Luli, Marsa Umm El Abbas, and Hamata.

5.1.3 Primitive (buffer zone)

This zone represents areas of high sensitivity. The Primitive (buffer) zone areas would offer visitors a fairly structured experience with on-site interpretation and education. The opportunity for isolated and remote experience, independence, closeness to nature, tranquility, solitude, and application of outdoor skills would be common. The probability of encountering other visitors would be medium. This zone gives a sense of being in wild lands with trails, with minimal maintenance facilities. The number of visitors is limited and monitored, and impact is minimized through regulations and pre-entrance orientations. No paved roads are permitted, and off-trail use of the park is prohibited.

Primitive areas are managed for low to moderate use. Camping is at-large except in very rare cases where campsites may be temporarily designated for resource protection. Toilets are not common and are installed only as a last resort to correct human waste problems. Other structures are generally not permitted except temporary structures that are not visible and do not leave permanent impacts.

The Primitive zone areas include the following:

- The area around the shoreline of the shallow areas and mud flats, Wadi El Gemal Island, as well as the protected and sheltered embayments like Sharm El Luli.
- The area around turtle nesting areas along the shoreline of Umm El Abbas.
- The area around wildlife habitats of Wadi El Gemal, including 500 meters of the rocky mountains on both sides of the wadi and its branches.
- The flood plain of Wadi Umm El Abbas, Wadi Ereear, and Wadi Ghadir including 500 meters of the rocky mountains on the both sides of the wadis and their branches.
- The salt marsh area of Marsa Umm El Abbas.
- The area around the salt marshes of the mangroves between Qulaan and Hamata.

5.1.4 Wild (core zone)

This zone represents areas of very high sensitivity that could be easily disturbed or areas where the presence of people would significantly impact important visual resources. Access to these areas would be restricted with permitted access only for the purpose of research, traditional cultural activities, or other well-justified uses with a limited number of visitors accompanied by a guide or park ranger.

The Wild (Core) zone areas would provide maximum preservation of fragile and/or unique resources, endangered species, archeological sites, etc. Although access would be restricted, visitors could benefit from off-site interpretive programs and from the experience of learning about sites protected for future generations.

5. Ecotourism Development Plan...

Wild areas are mostly remote and provide the greatest opportunities for solitude. No structures of any kind, including toilets, are permitted.

The wild zones include:

- Bird sanctuaries
- The shallow mudflats and salt marshes of Ras Baghdadi.
- The bird nesting area of Wadi El Gemal, Mahabis, and Shwarit Islands.
- Mangrove areas
- The Mangrove swamps of Hamata/Qulaan, Wadi El Gemal Island, north Baghdadi, Sharm El Luli and Wadi Lahmi.
- Salt Marshes and shallow mudflats and salt marshes of Ras Baghdadi, Sharm El Luli, Lahmi, and Qulaan.
- Wadi habitats
- The habitats of land mammals and reptiles (shelter, feeding, breeding, and corridor areas) in Wadi El Gemal.
- Marine reserves
- Breeding, feeding, and nesting areas of green turtles at Wadi El Gemal Island, Ras Baghdadi, and Umm El Abbas.
- Feeding area of dugongs at Wadi El Gemal Island.
- The sheltered bay of Sharm El Luli.
- The fringing reef of Shaab Baghdadi.
- Archeological sites
- The archeological site of Marsa Naqari.

5.2 VISITOR ACCESS

The RSSTI study team has explored and evaluated a series of routes and candidate sites for gateway and backcountry facilities within the SRSR. Based on this research a transportation plan and facility siting plan has been created. This development plan is illustrated by the map entitled Ecotourism Development Plan

5. Ecotourism Development Plan...

The points of entry to the demonstration area need to be Wadi Gimal to the north, Wadi Lahmi to the south and Qu'lan as a key intersection point in the center. The primary backcountry routing connection is the ancient Roman Road that is located along a northwest and southeast transit. The ancient route extends from Berenice in the south to Vetus Hydreuma, to Cabalsi, to Appolloni, to Phulacon, and then connects to the Nile River.

In addition, we have identified the secondary access routes that will support this regional demonstration project. This geographic framework will form a complete circuit that has both interpretive and operational integrity. This is an ecotourism circuit that can be used by means of individual segments or as a comprehensive program plan. Equally important, it connects to the most interesting and attractive coastal and offshore features.

5.3 GATEWAY FACILITIES

The information contained in this section presents a comprehensive description of the several types of facilities required to effectively provide an economically and environmentally successful ecotourism experience. Given the remoteness of certain ecotourism operations and the seasonal character of the businesses, it is important to distinguish between permanent facilities and installations that need to be provided and temporary facilities that are utilized infrequently. The full array of permanent and temporary ecotourism facilities is described in this section. The flexible ways in which these facilities can be used should provide the ecotourism investor with a variety of creative methods for delivering diverse ecotourism experiences.

The several ecotourism facilities that will be described include:

- Visitor Center
- Lodging Facilities
- Supporting Infrastructure

5.3.1 Ras Hankourab Visitor Center

A Visitor Center has the potential to serve many important roles in the delivery of safe and enjoyable tourism experiences. There are numerous environmental and safety management functions that can be performed from this type of facility and there are numerous economic development opportunities that can be realized. Based on this combination, potential ecotourism investors, especially those most interested in tour operations, may wish to consult with the TDA regarding development opportunities.

The Visitor Center can actively promote sustainable development and provide visitors with an enjoyable and informative introduction to wilderness areas that:

- Emphasize the unique environmental and cultural attractions of the region
- Describe the appropriate and safe methods for touring the region
- Promote an extended visitation by describing numerous attractions

5. Ecotourism Development Plan...

- Promote a return visit to view the attractions that were previously unknown.
- Provide visitors with information about obtaining guide services to provide them safe and knowledgeable entry to the region.
- Provide visitors with the information and/or equipment they may need to tour the region.
- Distribute for sale field guides, brochures, maps, books, video, and other information.
- Purchase or lease field equipment and supplies.
- Exhibit and sell artwork and other locally created products may be sold at the center.
- Provide ecolodge and eco-resort referral services

TDA , EEAA and RSG will be represented at the Visitor Center and would have the opportunity to describe conservation endeavors and solicit support. The Visitor Center may serve as a base for coordinating radio communications throughout a region.

If well coordinated communication functions are established at the Visitor Center, then it will also facilitate and Search and Rescue operations that are needed, and any emergency medical response services that are required.

Visitor Center facility requirements for providing visitor and recreation services are presented below. This information enumerates the basic functional requirements for a Visitor Center near the gateways to a Protectorate Area. The actual dimensions of the functional spaces are determined by the anticipated market demand for this type of facility.

- Exhibit Space for approximately 30 minute experience
- Exhibit Storage/Preparation Area
- Audio/Visual Program Area - theater setting with stage
- Reception & Information Desk - kiosk type desk/counter
- Archives with counter and display cabinets
- Retail Sales with display shelves
- Restrooms (staff and public)
- Administrative / Support Spaces
 - Manager
 - Asst. Manager
 - Sles Manager and Storage
- Seasonal / Volunteer Work Area
- Employee Dining - Break Area
- Kitchen
- Employee restrooms
- Library and Research Area
- Classrooms
- Archives with counter and display cabinets
- General Storage

5. Ecotourism Development Plan...

- Janitorial
- Mechanical systems
- Recreation Equipment Storage, Maintenance, and Repair
- Electrical / Fire Alarm / Communications
- Maintenance Facility
- Vehicle Parking and Storage
- Security Fencing
- Parts storage
- Maintenance and Repair Area
- Exterior Site Furnishings
- Shade / Picnic Structures
- Benches
- Boardwalks
- Decks
- Trail heads
- Signage
- Informational Signage - presented in multiple languages to welcome and introduce the tourist to the facility and the region.
- Kiosk
- Trash receptacles
- Lighting - pedestrian and parking
- Parking
- Outdoor Group Seating Area
- Regulatory - enumeration of the rules and required tourist behavior
- Entry and Way finding - directions for traveling and eliminating confusion, or getting lost.

5.3.2 Interpretive and Observation stations

TDA and EEAA will support the multi-agency information station at the visitor center of Ras Hankourab and proximal to fee collection stations, where applicable, so that visitors could receive additional information after paying entrance fees. These information stations will provide additional locations for visitors to obtain orientation and interpretation information for the region prior to their arrival.

The objective of supporting these offsite facilities will be to better prepare visitors for their visit to the region. Interpretive services will be provided wherever park staff could effectively connect with the visitors to increase their understanding and appreciation of SRRS resources. Book sales will be provided in all the information stations and at major interpretive facilities. Sales items at the interpretive facilities will be directly related to the themes presented at that site.

The on-site interpretive and Observation stations will provide additional locations for visitors to obtain orientation and interpretation information on specific sites within the SRRS in both coastal and wilderness areas. Twelve sites with prime resources identified to allocate the interpretive and observation stations within the SRRS. The location, and the theme of each station are listed on the following table

5. Ecotourism Development Plan...

Table () The proposed interpretive and observation stations on the SRSR

LOCATION	THE INTERPRETIVE THEME	FACILITIES
Marsa Naqari	Naqari Archaeological site, access to deep water, Sharm's ecosystems	interpretive panels
Ras Baghdady	Integration between wadi, coastal and Island ecosystems, vegetations of salt marshes, the mangrove, the turtle nesting, Dugong feeding ground	Interpretive trail within the salt marsh, interpretive panels
Sharm Al loly	Sharm's ecosystems, the role of the sharm as access to deep water for boating, local Fishermen, the integration between sea sans, seagrass and coral reef ecosystems	Interpretive trail around the bay, shaded area, sales books, brochures, fishermen guest house, Sharm Al loly ecolodge, interpretive panels
Marsa Um Al Abbas	Turtle nesting, sea grass beds as a feeding ground for turtles	
Qulaan	Fishermen local community, mangrove ecosystem, water birds, Osprey nesting	Interpretive trail around the bay, shaded area, sales books, brochures, Qulaan community guest house, Qulaan ecolodge, interpretive panels
Wadi Ghadeer	the ophiolitic sequence, Ultra-mafic rocks meta-gabbros, sheeted dykes and pillow meta-basaltic rocks. Pillow lava, wadi ecosystems, Rare plants, endangered wildlife	Interpretive panels
Wadi Al gimal	The wadi ecosystem, the rare plants, plants ecosystems, wildlife endangered species, wildlife adaptation with desert environment	Interpretive panels
Sequit	The old mining operation, the geology of the site, ancient mining settlements, water storage systems, living conditions in the harsh desert	Outpost station for rangers, interpretive trails and panels
Nugrus	The old mining operation, the geology of the site, ancient mining settlements, water storage systems, living conditions in the harsh desert	Interpretive trails and panels
Appolonia	The ancient Roman caravan and trading road, the ancient settlements, The role of the defense forts, living conditions in the harsh desert	Interpretive panels

5. Ecotourism Development Plan...

LOCATION	THE INTERPRETIVE THEME	FACILITIES
Cabalsi	The ancient Roman caravan and trading road, the ancient settlements, The role of the defense forts, living conditions in the harsh desert	Interpretive panels
Vetus Hydreuma	The ancient Roman caravan and trading road, the ancient settlements, The role of the defense forts, living conditions in the harsh desert	Interpretive panels

5.4 LODGING FACILITIES

The purpose of the lodging facilities, like all other associated ecotourism support facilities, is to play a vital role in the delivery of unique tourism experiences in the SRSR of the Red Sea region. By definition, a lodge is a place from which tourists are offered an array of recreational and educational experiences by means of a facility that is designed, developed and managed in an environmentally sensitive manner. The design of a lodge and the activities provided within the facility should therefore encourage close interaction with the natural and cultural environment and have an atmosphere that is appropriate to the site's specific setting.

Development Guidelines

Two designated ecolodge sites are proposed within the wilderness areas of SRSR on the other side of the coastal road (one to two km from the road);

- The first at Sharm Al Loly with 30-50 rooms
- The second at Qulaan with 30 rooms

The following criteria has been considered in the site selection process for the proposed sites for ecolodges:

- Accessibility and transportation resources.
- Views, slopes, hydrology, soils, climate, and vegetation.
- Existing infrastructure - water, wastewater treatment, electricity, telephone, etc.
- Proximity to potential markets
- Effects of seasonal change.
- Proximity to outstanding natural, historical, and cultural attractions,
- Availability of inputs (energy, materials, labor, products)
- Availability of acceptable locations for disposal of waste outputs
- Limits of acceptable change, i.e., the tolerance of the site and region to withstand change
- Proximity of goods, services and housing
- Compatible adjacent land uses
- Property rights

5. Ecotourism Development Plan...

Principles for sustainable development and building design should allow ecotourism experiences to occur with minimal impacts on the natural environment and the host culture. The functional characteristics and size of the lodge are determined based upon the following criteria:

1. The facility's role in achieving the ecotourism program plan. This role has been discussed in the previous sections of this report and exemplified by representative ecotourism operations in the SRSR.
2. Site conditions
3. Environmental conditions
4. Design standards that are compatible with the environmental conditions and local culture.
5. Availability of building materials and construction skills
6. Proximity and relationship to local communities.
7. Available infrastructure
8. Additional infrastructure requirements and estimated costs
9. Design and development costs
10. Cost of construction
11. Pre-opening costs
12. Operations and maintenance costs

The ecotourism investors, together with members of their technical team, should spend at least two to three days on site to research its characteristics. It is advisable that this team either meets with or be joined by a member of the local community who is familiar with the site's natural and cultural conditions. One of the benefits of meeting with the local population is to protect traditional subsistence sites (fish camps, settlements, and animal grazing areas) for their continued use. While the number of traditional people in the SRSR is small, the uses they make of the environment are vital to their survival.

Environmental Conditions

The very substantial amount of information obtained from the previous evaluations of ecological management zones in the SRSR should well serve the development needs of the ecotourism investor. The determination of geophysical characteristics will assist in the structural design of buildings and site improvements such as roads. Relationships to climatic conditions, wildlife habitat, and the most attractive views will all assist the developer in the siting and orientation of the lodge and associated facilities. In addition to those applications of SRSR environmental conditions to development goals, the TDA advocates the following site selection criteria that are especially relevant to the environmental conditions of the Red Sea coast:

1. Preserve the best sea and mountain views for shared functions that people really enjoy. Remember that provision of a sea view is not the only criteria for a good guestroom.
2. Know the prevailing wind directions in order to carefully site water supply and wastewater treatment facilities in order to eliminate or reduce risks of unpleasant odors and noise.

5. Ecotourism Development Plan...

3. Avoid harmful discharges, and provide for adequate mixing by locating discharge points at a suitable distance from fringing reefs and other resources (Tourism Development Authority, 1998).
4. In the case of bluffs and headlands, carefully situate buildings to avoid dangerous cliffs and strong winds.

Lodge developments must be evaluated on the basis of environmental impact and adoption of acceptable mitigation measures. As previously stated, the accumulation of essential environmental information is in the best interests of the ecotourism investor because it provides vital input to both the creation of the ecotourism recreation program and a competent understanding of the environmental factors affecting site conditions. Appendix A contains an illustration of the Context of Qu'laan and the Qu'laan Ecolodge Conceptual Design. In summary, the environmental assessment of the site conditions should include consideration of the following:

Climate: Monthly temperature variations: mean, maximum and minimum; temperature variations (day/night); monthly and yearly mean precipitation; absolute and relative humidity; monthly mean and maximum wind velocities; wind orientation patterns; potential for generating wind energy. Angle of solar incidence all through the year; solar intensity; local potential for generating solar energy.

Geology: Geophysical characteristics; seismic characteristics of the site; resistance and compaction of soil; fitness for different types of foundations.

Hydrology: Presence of mangroves, wadis, lagoons etc.; depth of water table; risk and frequency of floods. Marine resources in terms of water quality, reef communities, fisheries, currents, depth, conditions of the littoral.

Topography: Topographic features, degree of slope, major land forms.

Vegetation: Dominant, characteristic and threatened botanic species; identification of flora species from the ecotourism attraction viewpoint and precise location of specific individual plants of particular interest or beauty.

Wildlife: Types and estimated number of species of native fauna (mammals, birds, reptiles, amphibians, fish and invertebrates). Their seasonal use of the habitat in terms of resident, transient, and wintering species. Identification of both land and marine species in regards to their degree of ecotourism.

5.5 BACK COUNTRY AND EMERGENCY FACILITIES

5.5.1 Campsites

Officially designated seasonal camp facilities will be required if there is a substantial number of visitors to the Southern Red Sea Region. Given the scarcity of quality rest stops in this region, by example, the "substantial number of tourists" would be no more than 100 persons.

5. Ecotourism Development Plan...

The most important factor associated with these facilities is waste treatment and disposal. Waste disposal for this number of persons using the same area simultaneously would be a considerable challenge. Again, if there are large numbers of tourists in the SRSR, it will be necessary to have reliable water storage, wastewater treatment, and solid waste disposal infrastructure. Appropriate technologies to meet these needs are readily available. However, a management program will have to be established to maintain these service facilities and that will require the dedication of qualified personnel. Providing these services may represent an economic opportunity for Egyptian investors.

There are use areas in the primitive and semi-primitive opportunity class with campsites that have been designated because of archeological, resource protection, aesthetic, and sociological considerations. Where designated campsites exist, visitors may not select other campsites. The most important factor associated with these facilities is waste treatment and disposal. It will be necessary to have reliable water storage, wastewater treatment, and solid waste disposal infrastructure. Appropriate technologies to meet these needs are readily available.

Limited number of campsites is proposed to offer a variety of camping experiences. These camps will be subject to seasonal closures due to extreme heat on summer time. Most campground use will occur primarily from October to April because of cooler temperatures. The following table lists proposed wilderness campsites.

Table () The Proposed Camp sites in the wilderness area

Location	Coordinates	Opportunity class zone	Description
Wadi Hafafit	24 33 37 N 34 45 22 E	Primitive/ Semi primitive	Maximum 20 tents
Wadi Mokhatata	22 33 26 N 34 50 45 E	Primitive/ Semi primitive	Maximum 20 tents
Khour Abu Hassa	24 30 27 N 34 49 36 E	Semi primitive	Maximum 30
Wadi um al Abbas	24 27 31 N 34 58 07 E	Primitive	Maximum 20 tents
Wadi Qulaan	24 14 36 N 34 09 15 E	Semi primitive	Maximum 30 tents
Wadi Um Suwaih	24 29 05 N	Semi primitive	Maximum 30 tents
(Future Growth)	34 53 59 E		

5.5.2 Ababda Bedouin Ecostations

Given the scarcity of quality rest stops in the SRSR, and the absence of human evidence in the region, number of Ababda Bedouin ecostations are proposed. Each ecostation will be based on single or expanded Bedouin family to serve the visitors of the backcountry area. The ecostations are intended to integrate the Ababda Bedouin living in the Eastern Desert into the delivery of tourism services; educate the visitor to local customs, beliefs and traditions; and provide a potential source of income from the sale of artwork and handicrafts, as well as food and beverages.

The proposed Ababda Bedouin ecostations will include Bedouin family tent, guest tent, toilet, photovoltaic powered refrigerator for food and medicine storage, LPG fueled cooking range, emergency communication and first aid equipment, water storage tanks, drinking water as well as other traditional belongings such as livestock. Each Bedouin ecostation would also include a display area for traditional handicraft.

A limited number are proposed to offer a variety of visitor and park facilities. These ecostations will be subject to seasonal closures due to extreme heat in summer months. The Ababda ecostations are located strategically along prescribed access routes, on the transition points between wild and primitive opportunity class zones, as well as when the need to change the mode of transportation from motorized vehicles to camel or horseback riding. The following table provides a list of the proposed Ababda Bedouin ecostations in the wilderness.

TABLE () The proposed Ababda Bedouin Ecostations in the Wilderness Areas of SRSR

Location	coordinates	Function of the station	facilities
1. Wadi Abu dawameer	24 41 09 N 35 04 34 E	trailhead	Guest Bedouin tent, camel rent station
2. Abu Ghosoun trailhead	24 26 43 N 35 11 24 E	trailhead	Guest Bedouin tent, camel rent station
3. Qulaan trailhead	24 20 16 N 35 17 21 E	trailhead	Guest Bedouin tent, camel rent station
4. Hamata trailhead	24 17 16 N 35 21 26 E	trailhead	Guest Bedouin tent, camel rent station
5. Lahamy trailhead	24 12 42 N 35 24 50 E	trailhead	Guest Bedouin tent, camel rent station
6. Roman Road from	24 00 00 N	trailhead	Guest Bedouin tent, camel rent

5. Ecotourism Development Plan...

Location	coordinates	Function of the station	facilities
coastal road	35 23 56 E		station
7. Kabb Khawara	24 29 05 N 34 53 59 E	transition point	Guest Bedouin tent, camel rent station, First aid, toilet, rest station, orientation panel
8. Talaat Um Swaih	24 33 37 N 34 45 22 E	transition point	Guest Bedouin tent, camel rent station, First aid, toilet, rest station, orientation panel
9. Wadi Mokhatata	22 33 26 N 34 50 45 E	transition point	Guest Bedouin tent First aid, toilet, rest station, orientation panel
10. Wadi Um Al Abbas	24 30 00 N 35 00 53 E	Intersection & orientation	Guest Bedouin tent, camel rent station, First aid, toilet, rest station, orientation panel
11. Cabalsi/Abou Ghosoun/ Roman Road	24 27 31 N 34 58 07 E	Intersection & orientation	Guest Bedouin tent, camel rent station, First aid, toilet, rest station, orientation panel

The number of visitors at any Ababda Bedouin ecostation would be limited to the number of persons in a licensed tour, and would include both tour staff as well as tourists.

5.6 INFRASTRUCTURE REQUIREMENTS

The TDA has published numerous documents that describe the appropriate methods for providing infrastructure to tourism facilities developed in the Red Sea region. By example, the TDA's recent publication entitled Environmental Management Guidelines for Coastal Hotels and Resorts presents a two volume description of the preferred and/or regulatory prescribed methods for efficiently and cost effectively providing not only infrastructure systems, but also mechanical and electrical systems. The ecotourism investor is invited to review these documents in order to acquaint themselves with the TDA requirements and to quickly and accurately determine the types of equipment and operational procedures are that are most cost effective.

The proposed Ecotourism Development Plan calls for the siting, design, construction and operation of a variety of ecotourism-related facilities. These will be located in both centralized focal points near the coast and remote areas in the desert. The following section describes the anticipated infrastructure needed to support the proposed facilities.

5.6.1 Coastal Integrated Development Centers

TDA-planned Integrated Development Centers are located at the Northern and Southern ends of the Southern Red Sea Region - Fokari IDC and Karaa IDC. The planned infrastructure in the IDCs is part of the Master Plan for the IDCs, and is subject to the review and approval of TDA and EEAA as part of the EIA process. TDA has prepared a series of Best Practice Manuals that cover energy (both electricity generation and other forms of energy), water supply, wastewater, and solid waste.¹

Both IDCs will support licensed ecotourism service providers operating in the ecotourism planning area. These include retail shops and reservation/booking centers, but also include medical clinics, construction workshops, vehicle repair, and marina facilities. In addition, the lodging and other retail establishments in the IDC will support tourists that might visit the Protected Area visitor centers and interpretive centers, or might take part in day or overnight visits into the deep range.

The IDC structure allows a group of hotels and other establishments to pool their resources to build shared utilities and thus take advantage of economies of scale. When properly designed and operated, shared utilities can be significantly more efficient, less expensive to operate, and less damaging to the environment than the sum of the individual on-site hotel facilities they replace.

Infrastructure requirements:

- Centralized water treatment using Large-Scale Reverse-Osmosis (RO) Plant or Large-Scale Mechanical Vapor-Compression (MVC) Distillation Plant
- Local sewerage collection network and treatment in a centralized wastewater treatment plant with treated effluent used for irrigation
- Centralized electricity generating plant and distribution system (operating on diesel). Wind power and solar applications as well as cogeneration should also be considered.
- Diesel and gasoline storage and fueling facilities for both vehicles and marine vessels.
- Centralized solid waste collection and transfer points, source separation, storage, and treatment (landfill and/or incineration).
- Paved road network
- Centralized communication system to support both cellular and land lines

5.6.2 Ecolodges and Eco-Resorts

Within the ecotourism planning area, smaller, more environmentally-sensitive lodging facilities will be developed in Qu'laan and Ras Hankorab. Given the size and lack of concentration for

¹ *Best Practices for Solid Waste Management in Red Sea Tourism Development, Best Practices for Water and Sanitation in Red Sea Tourism Development, and Best Practices for Energy Management in Red Sea Tourism Development*

5. Ecotourism Development Plan...

the ecolodges and eco-resorts, the infrastructure will support individual establishments, and related activities originating from those establishments (e.g., vehicle storage and maintenance for desert safaris, water supply for dive centers, etc.).

Infrastructure requirements:

- Small-scale Reverse-Osmosis (RO) Plant or purchase water supplied from tanker trucks.
- Greywater collection and subsurface irrigation, grease traps, and wastewater discharge to septic tanks and leach fields, intermittent sand filters or oxidation ponds. Composting or dry toilets should be considered for guestroom, staff and public restrooms.
- Diesel generator with controls and switchgear. Small wind energy conversion systems and solar photovoltaic panels should also be considered as stand-alone applications or as hybrid with diesel generators to improve reliability.
- Diesel and gasoline storage and fueling facilities for both vehicles and marine vessels.
- Centralized solid waste collection and transfer points, source separation and temporary storage for both wet and dry waste. Trucked to IDC or municipal landfill site.
- Paved or unpaved main access road, unimproved , unpaved designated routes for vehicle traffic with the site.
- Centralized communication system to support both cellular and land lines

5.6.3 Hamata and Abu Ghosoun Service Centers

Two service centers are planned for Hamat and Abu Ghosoun. These will consist of minor vehicle repair and refueling, restaurants, retail establishments for food and other supplies, and possibly a small-scale marina to accommodate diving and other compatible water sports recreation (e.g., sea kayaking).

Infrastructure requirements:

- Small scale Reverse-Osmosis (RO) plant or purchase water supplied from tanker trucks.
- Greywater collection and subsurface irrigation, grease traps, and wastewater discharge to septic tanks and leach fields, intermittent sand filters or oxidation ponds. Composting or dry toilets should be considered for staff and public restrooms.
- Diesel generator with controls and switchgear. Small wind energy conversion systems and solar photovoltaic panels should also be considered as stand-alone applications or as hybrid with diesel generators to improve reliability.

5. Ecotourism Development Plan...

- Diesel and gasoline storage and fueling facilities for both vehicles and marine vessels.
- Solid waste collection and transfer points, source separation and temporary storage for both wet and dry waste. Trucked to IDC or municipal landfill site.
- Paved or unpaved main access road, unimproved, unpaved designated routes for vehicle traffic with the site.

5.6.4 Medical Facilities

The Egyptian Government has recently completed the construction of a hospital facility at the town of Marsa Alam. This facility is fully equipped and furnished. When it becomes fully operational it will have the capacity of providing emergency medical services, limited surgical services, and convalescent care.

The following are the locations for hospitals, medical clinics and First Aid stations:

- Marsa Alam hospital
- Fokairi IDC medical clinic
- Lahmy IDC medical clinic
- Ras Hankourab medical clinic
- First aid stations at the Bedouin Ecostations
- First aid and trained emergency medical technicians on all tours
- Diving decompression chamber: The existing decompression chamber at Marsa Shagraa (some 20 km north Marsa Alam) can serve the emergency needs for diving operation in region.

5.6.5 Marinas and Jetties

Marine-based ecotourism activities are supported through full service marinas and jetties. The following are located in the Southern Red Sea Region:

- Lahmi IDC marina
- Zabargad marina
- Fokari marina
- Abu Gahsoun jetty
- Hamata jetty

5. Ecotourism Development Plan...

In addition, EEAA has plans for an entire mooring buoy system. Once installed, their location should be plotted using GPS with location information available at dive centers.

5.6.5 Emergency Aid Stations

A series of strategically located remote emergency and rest stations should be established throughout the touring regions of the SRSR. The location of these very special SRSR facilities is determined the routes of travel, the frequency of anticipated use, adequate response time necessary to cope with an emergency, and transmission directions and signal strength of communication systems.

These facilities would consist of an elevated platform (approximately 2 feet above ground) that has emergency water, medical, food, shelter, and communications supplies. The licensing requirements for tour operators during their seasons of operations would require regularly scheduled inspections of these facilities to insure their reliability. It would be desirable to use photovoltaic electrical systems to provide self-sufficient electrical power to these facilities.

5.6.6 Emergency Communications Systems

The SRSR Region presents a variety of obstacles for accomplishing communication. Most prominently is the terrain itself. The height and steepness of the mountains represent a physical barrier to communication transmissions. The absence of human settlements means that the region has historically not had telecommunication services.

The creation and implementation of a reliable communication system in the SRSR will be critically important for the efficient and safe conduct of ecotourism. Operational functions accomplished with communication systems include distribution of tour groups, communicating the location of wildlife, reporting trail and site conditions. All of these communication supports will all contribute to the satisfaction of the guest and the economically efficient use of tour resources.

Reliable communications are critical for performing emergency medical response, back-country assistance for events such as vehicle repair, relief and re-supply. For these and other reasons, dependable communications are critically important for safely conducting touring operations. In most instances, the existence of an excellent communication will prevent a small problem from becoming a much larger and more dangerous situation.

In the near term, it is proposed that all licensed tour operators as well Ababda Bedouin ecostations be equipped with satellite phones. In the longer term, a reliable radio communications system for ecotourism operations in the SRSR will, at a minimum, need the following elements:

Equipment:

- A base station radio with at least a 16 watt transmitter, designated emergency frequencies, and high gain antenna
- VHF handheld radios for field personnel
- Weather radios for continuous monitoring of conditions

5. Ecotourism Development Plan...

- Radio repeater towers strategically located at the top of ridges in the SRSR in order to transmit communications between wadis and canyons
- Short distance, line of sight, handheld radios for backup

5.6.7 Trail System

The proposed trail system following the existing routes without proposing any new trail. The trail system consists of 5 major trails as a main access and linkages between the coastal and backcountry ecotourism activities and resources, 2 wild trails for non-motorized for hiking and camel riding only; as well as 5 minor trails as a secondary connectors between major trails.

The trail system will have the following characteristics: the area is predominantly natural in appearance; interaction between users is low; evidence of other users is present; camping is permitted only in designated sites; wilderness group-size limits apply; and mechanized (motorized and bicycle) access is permitted only on designated trails

Major Trails - These trails are marked routes improved and maintained for foot and horseback traffic. These pre-existing trails provide important access to the backcountry and the Ancient Roman Road. Maintained for 4 wheel drive at the medium level standards for user convenience. Most of the major trails link tourist centers or villages along the regional road and the antiquities site along the Ancient Roman road. The major trails including wadi Um Al Abbas, Wadi Abu Ghosoun, Wadi Hamata, Wadi Lahamy.

Minor Trails - These trails are marked, improved, and maintained to accommodate foot or horseback traffic, but contain an overall lower construction standard than major trails. These trails are maintained for semi-primitive use. The minor trails including all minor connector trails between major trails of wadi Abu Ghosoun and Wadi Um Al Abbas; as well as the wild trail of Wadi Al Gimal. The minor connector Trails linking Um Al Abbas and Wadi Al Gimal are suggested as alternatives to the Wadi Al Gimal Wild trails for visitors with experience hiking or camel riding in Wadi al Gimal. Only wadi Al Ringa is the minor trail linking between the coastal regional road and the Roman road.

Emergency Trails - There are four trails on the south region of the Red Sea available for emergency mechanized access including Wadi Ghadeer, Wadi Um Al Abbas, Wadi Abu Ghosoun and Wadi Qulaan.

Threshold Trails - These trails are constructed within or leading to use areas within the Threshold Opportunity Class. Trail maintenance will be performed to protect the integrity of historical features including and drainage systems. Trail width should be a maximum of 6 meters, except where historically constructed to wider dimensions, or where environmental conditions require wider tread (e.g., switchback junctions). Average trail width of 4 to 5 meters on relatively level sections should be preserved. A 10% out-slope of trail tread (one-meter drop for every ten meters of tread width) will be attempted where possible to facilitate drainage. Loose rock removal may be conducted. Obstructive tree limbs or brush may be cut or removed to prevent detours and multiple trailing.

Primitive Trails - These trails are constructed within or leading to use areas within the semi primitive Opportunity Class. Trail maintenance will consist of resource rehabilitation efforts at impacted sections, including stabilization of historic features. Trail width should be an average 3 meters, unless environmental considerations require a wider tread. Low maintenance

5. Ecotourism Development Plan...

techniques such as out-sloping and drainage dips may be used where necessary. Multiple trail eradication and route delineation and/or minor relocation may be necessary to mitigate resource damage. Primitive trails include only wadi Um Al Abbas trails.

Wild Trails - These trails are constructed within or leading to use areas within the semi wild Opportunity Class. Wild trails are defined as a non-delineated access with minimal user-defined path development. Rehabilitation on such routes will be to mitigate unacceptable resource damage only. Once an impacted section is identified, and appropriate clearances are conducted, rehabilitation efforts not to exceed Primitive Trail (Type C, Level V) standards may be undertaken for the specified site. Wadi Al Gimal and Wadi Qulaan Wild trails are included in this category. The 60 km trail of Wadi A Gimal to the roman road will be closed to mechanized access, and converted to designated as wild hiking trails.

The following table details the complete list of trails, classification, and trail lengths.

Proposed Trail System in Southern Red Sea Region

<i>Name</i>	<i>Length km</i>	<i>Opportunity class</i>	<i>Mode of transport.</i>	<i>type</i>	<i>Mainten-ance level</i>	<i>Origin From</i>	<i>Destination To</i>
Regional Road	86.954.65	Threshold	Motorized	Major	High	North Entrance Of WGHPA	South Entrance
Wadi AL Gimal	49.676.05	Wild	Riding + Hiking	Wild	Minimum	Ras Boghdady	Appolonia / Noqros / Sekit
Linkage trail (1)	16.491.07	Semi-Primitive	4x4	Minor connect or	Medium	km 1.002.58 on Umm Al Abbas trail	Km 16.759.30 on Wadi Al Gimal trail
Linkage trail (2)	14.170.34	Semi-Primitive	4x4	Minor Connect or	Medium	km 11.695.68 on Umm Al Abbas trail	km 27.862.56 on Wadi Al Gimal trail
Linkage trail (3)	23.160.24	Semi-Primitive	4x4	Minor Connect or	Medium	km 9.488.73 on Umm Al Abbas trail	km 33.769.65 on Wadi Al Gimal trail
UMM Al Abbas	31.512.45	Primitive	4x4 + riding	Major	Less	UMM Al Abbas	Roman Road
Linkage trail (4)	11.619.22	Semi-Primitive	4x4	Minor Connect or	Medium	km 7.175.07 on UMM Al Abbas trail	km 3.282.92 on Abu Ghosoun trail
Linkage trail (5)	12.331.90	Semi-Primitive	4x4	Minor Connect or	Medium	km 20.380.60 on Umm Al Abbas trail	km 15.652.66 on Abu Ghosoun trail
Abu Ghosoun	17.700.71	Threshold	4x4	Major	Medium	Abu Ghosoun	Cabalsi
Al Ringa	19.768.39	Semi-Primitive	4x4	Minor	Medium	Al Ringa	Roman Road
Qulaan	20.239.02	6.2. WILD	4x4	Minor	Minimum	Qulaan	Roman Road
Hamata	21.129.83	Semi-Primitive	4x4	Major	Medium	Hamata	Roman Road
Wadi Lahmy	19.923.46	Semi-Primitive	4x4	Major	Medium	Wadi Lahmy	Roman Road
Roman Road	36.940.12	Semi-Primitive	4x4 + riding	Major	Medium	Appolonia	Cabalsi
Roman Road	46.657.73	Semi-Primitive	4x4 + riding	Major	Medium	Cabalsi	Vetus Hydreuma
Roman Road	22.369.22	Semi-Primitive	4x4 + riding	Major	Medium	Vetus Hydreuma	Bernis

5. Ecotourism Development Plan...

In the initial phase of the Ecotourism Development Plan, it is expected that only persons accompanied by a licensed tour operator will be allowed. A guidebook will need to be prepared to inform the visitor of the natural, heritage and cultural resources of the Southern Red Sea Region, the potential hazards, how best to prepare for day and overnight trips, and the climate and possible weather conditions at different times of the year.

This guidebook would have information on the trail length, difficulty, expected duration of (depending upon transportation means), location of Ababda Bedouin ecostations, designated camping areas and emergency facilities.

EAAA will evaluate the need for trailhead information waysides that could serve visitors using trails. Design standards for these signs will be established in a park sign plan. Wayside exhibits will be developed for key features along heavily traveled corridors and elsewhere in the park if the need to interpret and protect resource arises. Interpretive waysides will be kept to a minimal level (or number) on backcountry trails.

5.7 TOUR OPERATOR REQUIREMENTS

5.7.1 Minimum Requirements for Marine Tours

The most important requirements for conducting marine tours are vessel safety and safety of the guests. The operational procedures and equipment that are specifically relevant to Red Sea tour operations are enumerated below. For those investors seeking information pertaining to the registration and licensing of vessels, that information may be found in the Egyptian offices responsible for maritime operations or from the Harbor Masters at Red Sea ports.

Several of the requirements listed below are directly applicable to the marine operations that will be conducted at the new Port Galib facility near Marsa Alam. The large scale maritime activities that will be based from this facility are anticipated to have a potentially large impact on the entire southern coast of the Red Sea. The Wadi al Gimal region of the coast, in particular, is anticipated to be impacted because of its many attractions and the presence of the Wadi al Gimal Dive Center.

Marine Related Requirements Include:

- Navigational and radio equipment
- Fire fighting equipment
- Adequate training of captain and crew
- Adequate life jackets life rafts
- Accurate Charts and coastal information
- Vessel and equipment inspections
- Safety drills
- Tide and current information

5. Ecotourism Development Plan...

Techniques for Safeguarding the Marine Environment Include:

- Permits to operate in protected areas
- Demonstrated knowledge of the areas
- Contingency plan for spills
- Contingency for rescue at sea or towing operations
- Adequate channel markers, aids to navigation, and docking facilities.
- Fueling and fuel management safety procedures
- Sewage and waste containment and disposal
- Procedures to identify potential operation errors (test equipment before entering reef areas)

Port Ghalib, Marsa Alam Safe Operation Considerations Include:

- Pilotage
- Port information
- Approach information
- Sewage and waste containment and disposal
- Fueling and fuel management safety procedures
- Spill control and response
- Controlling water depth
- Radio channels monitoring on VHF Radio
- Harbor master
- Facilities to repair vessels - travel lifts or cranes
- Response vessels
- Size limitation, tonnage limitation
- Berthing costs

5.7.2 Minimum Requirements for Off-Road Land Based Tours

Only licensed tour operators will be authorized to make excursions into the deep range. Each licensed tour operator is required to have 4-wheel drive vehicles with adequate clearance, suspension, gear ratio and tire size for driving in the off road terrain found in the Eastern Desert. In addition, each vehicle should be fully equipped to handle both expected and unexpected situations. A second off-road support vehicle is required with the same equipment. The two vehicles should travel together and remain in close visual contact.

The following are needed to support off-road land based tours:

- Vehicle maintenance handbook
- Extra set of car keys
- Two fire extinguishers
- Jack or hijack, spanner and a pad to put under in soft terrain.
- Two spare tires & extra wheel nuts.
- Air pressure gauge.
- Air compressor or battery driven tire pump
- Power winch
- Hydraulic jack
- Jjack handle extension
- Tire levers

5. Ecotourism Development Plan...

- Fix a flat.
- Two inner tubes.
- Towing rope or cable.
- Jump cables.
- Crow bar
- Spare fuel can
- Two 10 liters jerry cans filled with water.
- WD 40 spray can.
- One 20 liters fuel jerry can.
- First aid kit (see below)
- Sand mats [at least a couple] and at least one shovel.
- Duct tape.
- Flash light.
- Maps, GPS and Compass.
- Full automotive toolbox.
- Specialty tools such as clamps, hammers, axes, files, wires
- Grab straps and elastic cords.
- Extra batteries (for flash lights, GPS, etc.)

Spare parts list:

- Fan belt [belts] depending on the car.
- Extra radiator cap.
- Extra radiator hoses.
- Liquid metal kit.
- Fix a radiator kit.
- Bolts and nuts [different sizes].
- Ignition coil.
- Electronic ignition unit.
- Sensors [especially fly wheel sensor for Cherokees].
- Electrical wires and fuses.
- Fuel pump [especially with fuel injection engines].
- Air filter.
- Oil filter.
- Engine oil.
- Gearbox oil.
- Rear differential additive.
- Transfer case oil.
- Automatic transmission fluid.
- Brake fluid.
- Fuel funnel

First aid kit and supplies:

- Betadine (antiseptic)
- Alcohol
- Gauze sponges (shash)
- Band-aids

5. Ecotourism Development Plan...

- Scissors
- Aspirin
- Antihistamines
- Sedatives
- Antidiarrheals
- (medications for any personal medical conditions such as insulin for diabetes, thyroid medication, etc)
- Zebdet Cacao (for drying lips and handback skins)
- Sunblock
- Tourniquet
- Carbon pills
- Panadol extra
- Burns ointments
- Case/Bag good to keep all the above in good condition

5.7.3 Land-Based Guide Training

Guiding provides the critical link between the guest and the local community. Well trained guides encourage visitors to interact and learn about the environment that they are experiencing., Good guiding practices will contribute to making a visitor's stay more enjoyable. It will not only inform visitors about the prime attractions, but will also encourage them to return and spread a positive message about the operator. The knowledge that a guide possesses and the way in the way he/she delivers it to the visitor can is a major factor in visitor satisfaction.

The need to preserve the resources of the Wadi al Gimal Protectorate Area and provide for the safety of ecotourists requires the creation of a Guide Training Program. In order to accomplish those purposes, guide training must consist of the learning the following types of knowledge:

- Competent first hand knowledge of the region.
- Understanding the resource management and ecotourism program management guidelines.
- Well defined stewardship role.
- Recognition of security issues.
- First responder emergency service training
- Hospitality and guest service training
- Language training.
- Knowledge of communication technologies and protocols.
- Introduction to cultural practices.

It must be acknowledged that the successful accomplishment of this type of Guide Training Program is exceedingly challenging for the following reasons.

1. With the notable exception of the Ababda people, there are virtually no Egyptians with a first hand knowledge of the survival skills required to travel in the SRSR Region.

5. *Ecotourism Development Plan...*

2. The educational resources in the SRSR Region are scarce and currently do not emphasize the natural and heritage resources of the region.
3. There is very little published research from which touring and environmental management guidelines can be devised or obtained.
4. The guide operations will occur only seasonally, therefore people who wish to be guides will not have year-round employment as a guide.
5. While the initial guide training is occurring, the emergence of the Wadi al Gimal area as a Protectorate will entail the simultaneous creation of environmental management parameters that the guides will have to learn.

Minimum Requirements for Guiding:

1. Hire local people as tour guides, boat captains and crews. This will provide both employment opportunities for local residents, as well as provide a vehicle for better acquainting visitors with local customs and practices.
2. The guides must have the following skills: multiple language fluency skills, relevant subject matter expertise, emergency response, communication equipment, vehicle and equipment operator competency, and hospitality skills.
3. Guide licenses, permits, and any other governmental certification requirements for conducting tours or operating land and marine transport for touring purposes.
4. Guides must be properly insured.
5. Assign professional local guides with modern equipment that would allow them to direct and protect your guests during their excursions in the surrounding environment.

5.8 VISITOR MANAGEMENT GUIDELINES (LAND AND MARINE)

5.8.1 Visitor Management Ratios for Ecotourism Operations

Visitor Management ratios are defined as the number of qualified guide personnel required per number of visitors. The ratio identifies ways that a particular tour can be accomplished in both a safe and informative manner. The factors that normally determine this ratio are the mode of transport, the severity of the terrain, the anticipated weather, the anticipated behavioral characteristics of the tourists, and the amount of money the tourists are spending for the experience.

Ecotourism conducted in the SRSR, by example, will predominantly use either off-road vehicles or hiking as the mode of transport, will travel across extremely severe terrain in potentially extreme weather conditions, will have tourists with high educational attainment and curiosity about the area, and will have spent a significant amount of money to get to the SRSR. Given all of these factors, the most desirable guide to visitor ratio is one qualified

5. Ecotourism Development Plan...

guide to six visitors. Based on vehicle passenger capacity and safe hiking practices, the 1 to 6 ratio is quite appropriate for SRSR tour operations.

For tour groups larger than 6 persons the ratio can be easily maintained in order to provide safe and enjoyable tours. This is most frequently accomplished by adding the appropriate number of assistants to maintain the ratio.

In virtually all instances where tour groups are visiting the SRSR, they will be accompanied by additional support personnel such as drivers, cooks, outfitters, and perhaps herdsmen. Although the additional personnel may increase the host to visitor ratio, it is important to note that all of the people will rely upon the guide for direction, education, and assistance.

5.8.2 Numbers of Tour Groups in the SRSR

Preservation of the wilderness experience in the SRSR, which may be stated as the lack of tourist congestion, will require the visual separation of tour groups. There will be at least two distinctly different operational approaches to this issue. First, given the vast expanse of the SRSR and its maze of mountains, it would seem that solitude could be rather easily accomplished. However, the second consideration is that primary attractions such as spectacular heritage sites or crucially important wells will inevitably attract larger crowds of tourists.

Finally, there is the issue of emergency response capabilities. At this point in time resources are insufficient to provide large scale emergency response services in the SRSR. If large numbers of persons required emergency assistance it would not be possible for either the private investor or the government to provide sufficient services to render this magnitude of aid. In addition, emergency medical air evacuation is currently not allowed by the Egyptian Government for this region. For all of the preceding reasons, it is in the best interest of both the TDA and ecotourism investor to establish and sustain a licensing systems that will determine the number of allowable entries to key ecotourism sites in the SRSR.

6. **ECOTOURISM PROMOTION AND INVESTMENT PLAN**

6.1 **THE ECOTOURISM MARKET GLOBALLY – A GENERAL OVERVIEW**

According to the International Ecotourism Society (TIES), ecotourism is a nature-based form of specialty travel defined as “*responsible travel to natural areas, which conserves the environment and sustains the well-being of local people.*” However, this definition describes a set of principles to be applied in planning and managing tourist destinations and does not serve as a functional definition for gathering market statistics. This lack of a clear, functional definition of what constitutes an “ecotourist” has challenged existing efforts to determine the size, profile and potential of the ecotourism market. In that regard, the ecotourist market is usually assessed as a specialty segment within the larger nature tourism market, in keeping with a methodology suggested by both TIES and the World Tourism Organization (WTO).

For various reasons, the following information should be viewed as valid for the broader nature-based tourism market as well as the more specific ecotourism market. However, some differentiation between the two of them will be offered at different points during the report.

6.1.1 **Characteristics of the International Ecotourism Market**

- a) **Size of the Market.** While it is very difficult to establish the exact percentage of all international tourism that is nature-based, it is currently reckoned to account for 25% of total international travel or approximately 150 million visitors. This data has been obtained by triangulating conservative estimates presented by WTO (that put the number in 20%) with optimistic estimates presented by TIES and other organizations (that put the number around 50%). The “experienced ecotourism” market is estimated to account for approximately 7-8% of international travel, a percentage that both TIES and WTO agree with. In addition to this actual or realized demand, both organizations estimate the potential market for all forms of nature-based tourism to be around 35% of all international travel, based on estimates of the significance of nature-related motives in international visitors’ choices.
- b) **Growth Rates.** Nature-based tourism and ecotourism have been growing steadily over the last decade. According to a report published by TIES, nature travel (of which ecotourism is a sub-segment) presented average growth rates for visitor arrivals between 10% and 30%, depending on the destination during the late 80’s and early 90’s. Supporting data for this claim can be found in report on a survey of tour operators in the Asia Pacific region, who experienced annual growth rates of 10% to 25% during the decade of the 90’s. While not all destinations in that region are considered nature or ecotourism destinations, it certainly contains some of the biggest players in that field, including Australia and New Zealand. Other destinations that are considered “pure” ecotourism destinations (such as Costa Rica, Nepal and Ecuador, where the Galápagos Islands are located) also experienced higher than average growth rates of visitor arrivals during the same period of time.
- c) **Demographic profile.** It has been repeated that ecotourists and nature tourists are older, better educated and, on average, wealthier than traditional tourists. However, recent

6. Ecotourism Promotion and Investment Plan...

research on the topic carried out by WTO and TIES indicates that their demographic profile changes with the country of origin, selected destination, activity undertaken, costs, etc. For example, visitors in a long-distance (international) trip are more likely to be wealthier than those visiting domestic destinations. A slight majority of European nature tourists tend to be women. However, in the case of American travelers, “experienced ecotourists” are mostly men and “general consumers” are mostly women, due primarily to the different types of activities characterizing each segment. Also, European nature tourists are, on average, slightly older than their American counterparts. The main findings in the demographic profile of the international nature-based and ecotourists are:

AGE: According to WTO and TIES, virtually all group ages were represented, with younger types (less than 35 years old) interested more in nature/adventure activities such as rock climbing, canoeing, scuba diving, etc.; while older types (aged 45 and older) are more interested in nature contemplation/experimentation activities such as bird watching, walking, wildlife viewing, etc. Interestingly, trekking and hiking rank high for all group ages.

GENDER: By and large, both genders seem to be equally interested in the overall range of nature-based and ecotourism experiences. Nevertheless, there are slight gender differences based on the degree of interest in specific activities and on country of origin.

EDUCATION: Recent research reinforces previous statements describing nature-based tourists and ecotourists as better educated than general tourists. In general, this type of tourists has at least a college degree (80% for North America and 65% in Europe).

- d) **Trip Duration.** Information regarding the average duration of nature tourists’ trips indicates that it is destination-specific rather than market-specific and it doesn’t differ too much from the average of all holidays. Most importantly perhaps, trip length varies tremendously by activity. For example, while the average length of stay in Nepal is 9.3 nights per visit, trekkers and hikers stay an average of 25.8 nights. On average, international nature tourists and ecotourists prefer trips lasting 8 to 14 days, which include the time devoted to other non-ecotourism activities. Average length of stay depends on the destination.
- e) **Average Expenditure.** Research has showed that prices of ecotourism tours are mostly on the middle and high price range, rather than in the luxury or the lower price brackets. However, as in the case of other characteristics of this market, average expenditure depends on a series of factors including destination, length of the trip, means of transport, season of the trip, activity, etc. Indications are that expenditures differ a great deal both from a willingness to pay and a product pricing perspective. One clear conclusion of most research conducted on the subject is that, although not necessarily a wealthier segment, “experienced ecotourists” are more likely than “general” consumers to make (or to have already made) a personal financial contribution to environmentally sound and socially responsible destinations, by choice of tours and activities.
- f) **Season of Travel.** The majority of both “experienced ecotourists” and “general consumers” show a preference to travel in the summer months of July and August,

6. Ecotourism Promotion and Investment Plan...

particularly in the European market. However, “experienced ecotourists” were more prepared than “general consumers” to travel in winter and particularly in the shoulder seasons. This finding presents useful opportunities for nature destinations to justify the development of four-season products.

- g) Party Composition.** There are no clear indicators that ecotourists and nature tourists travel alone or in couples much more than average tourists. Again, party composition seems to be a consequence of activity and destination-based rather than market-based. However, it is very clear that when traveling in groups as part of an organized tour, these tend to be smaller than “traditional” tour groups. For example, a survey of European ecotourism operators showed that most of the tours were for groups of 6 to 11 people, with the second largest percentage going for groups of 11 to 15, and the third largest percentage to groups of only 1 to 5. Tours for groups of more than 20 people were extremely rare.
- h) Motivations.** Research on the motivations of international nature tourists and ecotourists is abundant and confirms that the opportunity to enjoy scenery, landscapes and the natural setting is the number one reason to consider when choosing their travel destination. Experiencing other cultures constitutes the second most important reason in their travel choice, confirming that while ecotourists are nature lovers, their expectations for their trips are not limited to just experiencing nature but include a desire to get to know the culture and lifestyles of the locals. In that regard, most ecotourists actively engage in cultural and sports activities during their trips. Culture-related activities tend to be more important for “general consumers”, while the “experienced ecotourists” tend to be more interested in outdoor-related activities.

6.1.2 Global Ecotourism Destinations

For both the specialized and general ecotourist in the region several countries offer attractive destinations, like Jordan’s Wadi Rum and Dana, Turkey’s Cappadocia, Yemen’s earthen villages, Cyprus, Tunisia’s ksar cliff dwellings, and the *Hoggar* of Algeria. Other destinations associated with ecotourism include the parks of New Zealand, points in South Africa, Costa Rica, the barrier reef of Belize, Ecuador’s Galapagos Islands, to name a few more.

In Egypt, there are resorts and tour operators offering trips into the Western Desert along the Dahkla-Farafra-Fayoum loop that could be considered nature-based tour products. Sinai also is offering such experiences. However nature-based tourism in Egypt is not highly developed, although it is certainly growing.

6.1.3 International Market Trends in Nature-based Tourism and Ecotourism

The latest research effort geared towards forecasting international tourism market trends at the global level², revealed that “*demand for authentic experiences, including local culture, and*

² The 10th Annual IPK International’s World Travel Monitor Forum, an international event regarded as the industry’s most comprehensive market research effort, took place on October – November 2003 in Pisa, Italy. The most important research and policy-making organizations on the field of travel and tourism participated, including the World Tourism Organization,

6. Ecotourism Promotion and Investment Plan...

closeness to nature will continue to increase, especially among the older age groups.”

However, this growth is expected to be moderate rather than intensive. Behind this forecast lies what is perhaps the most significant development in international tourism: **the gradual incorporation of ecotourism principles and values into the mainstream, more traditional types of tourism.** For example, traditional sun and beach resorts around the world have been improving their environmental and social performance through certification programs such as Green Globe 21 and others, while non-specialty tour operators have engaged in programs oriented towards strengthening social and environmental responsibility at the destinations where they operate (such as the tour operators participating in the Tour Operators' Initiative for Sustainable Tourism). This development has had a tremendous impact on the traditional nature-based and ecotourism markets and it is resulting in two important trends:

- a) An increasing expansion of the “general consumer” segment, which is characterized by a desire to combine multiple activities in their trips, including but not limited to nature observation, experiencing local culture, participating in adventure sports, sightseeing, hiking and relaxing; and
- b) A slow-down and stabilization in the growth rates of “pure” ecotourism destinations and a steady growth in the number of nature-based products offered by “traditional” destinations, in combination with other products. As a report on the market for ecotourism published by WTO put it: “almost all countries in the world may be put on offer to ecotourists, since only a handful of destinations are considered to be more or less “pure” ecotourism destinations.”

In support of this last point, many beach destinations are offering inland excursions (of one or two days) into distinctive areas (Turkey beach+Cappadocia, Tunisia beach+Tozeur/Matmata; Greece beach+cruise/Pelopponese for example) in order to improve visitor satisfaction and differentiate the generic beach product. As we will present in the next section, these trends in “combo” travel packages present an extraordinary opportunity for the South Red Sea Coast (SRSC) region in general and the Eastern Desert in particular to diversify and expand their already successful tourist industry within a frame of sustainability.

6.1.4 The nature-based and ecotourism markets for the Red Sea Coast

For all its natural and cultural diversity, Egypt is not viewed in the international market as an “ecotourism destination”. Having positioned its product as a traditional cultural, archaeological, sightseeing destination a long time ago; Egypt has recently very successfully diversified into the mass-market beach holiday and recreational diving markets in the last decade. The Red Sea Coast in particular, has been the epicenter of this successful industry diversification and has become one of the world's top dive destinations thanks to the extraordinary coral reefs located in this area, and its proximity to the important European market. The unique natural resources of the area support a thriving dive industry focused on the towns of Hurghada and Marsa Alam, and comprised of hotels, resorts and small lodging operation in addition to diving, snorkeling, aqua center and live-aboard operations. A 2003 report on the dive industry in the region estimated that approximately 1.1 million visitors to the wider Red Sea Coast (including the South Sinai) came primarily to enjoy the coral reefs and

the European Travel Commission, Pacific-Asia Travel Association, the World Travel & Tourism Council, the Office of Travel & Tourism Industries of the US Department of Commerce, and the International Air Transport Association, among others.

6. Ecotourism Promotion and Investment Plan...

would not have come without them. Because of its reliance on the health of the coral reefs and because they constitute the main attraction for visitors into the area, the tourist industry of the Red Sea Coast is considered an essentially nature-based tourist industry, reliant upon the health of the corals and the waters that contain them.

Nevertheless, since the generally accepted image of “pure” ecotourism destinations favors forest areas, mountainous landscapes or regions of unusually rich biodiversity; Egypt’s ecotourism product could not compete in the “specialized ecotourism” niche. But because of the “general consumer’s” high interest in long distance travel and its desire for mixed programs in which sports activities or cultural locations are offered as well as nature experiences, the Eastern Desert is uniquely positioned to be a successful competitor in the “general consumer” niche.

6.1.5 Existing Nature And Ecotourism Demand

Using surveys conducted by RSSTI among international and Egyptian tour operators offering packages to the Red Sea Coast, as well as reports on the dive industry, we have prepared the following analysis of the existing nature and ecotourism demand for the area. This analysis is based on a characterization of the demand that acknowledges that diving and water-based activities are the main source of demand for nature-based tourism in the area, while desert excursions constitute complementary activities.

- a) **Size of the market.** It is estimated that around 26% of all visitor arrivals to the Red Sea Coast are divers who chose the area because of the coral reefs. These are considered part of the “experienced ecotourist” segment. In 2002, this was equivalent to 374,434 divers out of a total 1,400,000 visitors to the Red Sea Governorate. The remaining 74% of visitors exceeding one million, however, are drawn to the area for its natural characteristics (weather, beaches, etc.) and is considered part of the “general consumer” niche. This group also includes family and friends of divers and constitutes a potential market for desert excursions; particularly as part of a combination package.
- b) **Growth rates.** Tour operators and the dive industry alike agree that the demand for nature-based products in the region will grow at a faster pace than other products, particularly given the robust and sustained growth of the diving market. However, they also agreed that the pace of growth will depend on the quality of the environment and the services provided (which is perceived as deteriorating) as well as the political environment of the region. A large percentage of this growth is expected to come from non-traditional markets such as Eastern European and Nordic countries.
- c) **Demographic profile.** There is not a clear demographic profile in terms of age, gender or education as all group ages are equally represented in the diving and beach markets. There was, however, a tendency to have younger types (25-45 years) among the “general consumer” groups, more interested in enjoying nature, relaxing and getting to know local culture.
- d) **Trip duration.** The average duration of a visitor trip into the SRSC is estimated to be 7.6 days. This number is higher than the national average (6.3 days) and it related to the specialty activities undertaken in the area.

6. Ecotourism Promotion and Investment Plan...

- e) **Average expenditure.** The kind of activities carried out by visitors in the SRSC and their longer than average trip duration determine a higher than average expenditure per visitor. This was US\$1,002 in 2002, higher than the national average for more than US\$200. However, tour operators indicated that, given the visitors profile (diving enthusiasts and beach lovers), this higher than average expenditure rate did not necessarily translate into willingness to pay more for services not directly related to their preferred activity.
- f) **Motivations.** Most tour operators offering diving packages in the region agreed that the main motivation of their customers is to enjoy the natural environment and obtain diving certification. Therefore, divers are less likely to engage in desert excursions or similar activities. The surveys also showed that non-divers are more likely to be interested in such activities, especially if they are spending more than 5 days at the beach. The future growth of a market for desert excursion however, will be closely linked to the price and quality of the experience. All operators agreed that first quality interpretation is critical to meet the needs of a clientele potentially interested in a desert exploration and visitation centers were mentioned as a required facility. They also indicated that small, locally owned and environmentally friendly lodging establishments could create value-added to this product.

6.1.6 Estimation Of Potential Nature And Ecotourism Demand

The implications of a successful nature park that is popular with foreign and domestic visitors for the economy of the lower Red Sea coast are profound. In order to give planners, future operators and potential investors a very approximate idea of visitor volumes, the total expenditure base and potential fee collections, a rough estimate of possible visitor volume and spending is presented in the following exhibit, based on recent work evaluating tourism along the Red Sea coast³ and nature tourism patterns in Egypt and the region. The total volume of visitor arrivals in 2003 was 5.75 million, of which 1.5 stayed along the Red Sea coastline. Potentially 1.15 or 20% could be considered cultural visitors focusing primarily on the Nile valley experience in Upper Egypt (Luxor, Aswan and cruises).

The Southern Red Sea Region can be established as an exciting and educational travel experience only if they are well managed and marketed accordingly. They will draw business from two key sources: from beach vacationers staying in the coastal resorts, and also from cultural tourism focused mainly in Luxor and Aswan, and also on the Nile's very substantial cruise ship fleet [to exceed 100 vessels, possibly 10,000 beds]. If established as a genuine nature-tourism destination, the lower coast will eventually generate a flow of nature-based visitors coming primarily for that experience. The following text presents some of the market dynamics at play. The potential Egyptian market is not evaluated because of the distance from greater Cairo and Alexandria, and because of the low spending power of the local population.

a) Capture from Beach-based tourism

The estimate assumes that a portion of beach tourists lodged along the lower coast will partake in nature tourism activities, during all seasons except during the four hottest months.

³ RSSTI, "Economic Profile of Red Sea Tourism and the Dive Industry", June 2003. Paper delivered at *Sustainable Tourism Egypt* conference, May 2003.

6. Ecotourism Promotion and Investment Plan...

A 250-day year is used to reflect this. Of the Red Sea's capture of 1.5 million visitors, only the nearest fourth of the total, staying in resorts below the Safaga area, is considered. A modest share of 2.5% is assumed since most visitors will pursue water sports, diving activities, and inland excursions to the Nile Valley. Some will opt for the deep desert experience offered in the lower coast. In particular repeat visitors are a potential market. Finally, the growing resort capacity at the nearby Port Ghalib development, to eventually contain thousands of rooms, will provide a steadily growing and very international clientele. The capture is some 233 visitors per day or 58,278 annual visitors. This volume can be handled easily in ten motor coaches each day.

b) Capture from Cultural tourism

Discovery of the ages-old overland trade route between the Mediterranean and the Red Sea and Far Eastern destinations far beyond, offers great appeal for cultural visitors. The opening up of SRSR with its cultural assets will create a new overland link between the famed Nile Valley antiquities, and the increasingly famous Red Sea. Again a modest 2.5% share of the cultural market is factored into this analysis, representing 79 visitors per day [250 operating days per year]. This adds nearly 20,000 visitors per year to the visitor volume.

c) Total capture & expenditure

The final section of the exhibit provides total visitor volumes and expenditure, nearly 78,000 visitors and US\$3.9 million. This figure includes all kinds of spending such as transport, guiding services, food & beverage, equipment rentals, souvenirs and the like. A share of this expenditure can fund the management framework responsible for the Gimal Hamata Protectorate Area and any other such managed areas through a system of direct and indirect levies. These volumes of visitors and of spending could be quickly reached and exceeded if a variety of well-conceived nature and adventure services is offered to these international visitor segments.

Because of the presence of an extended fringing reef of corals along this coastline, there is a major seasonal offsetting pattern between the dive market, which continues through the summer, and the cultural market, which is weak in the summer because of the heat. With some planning it may be possible to shift guiding teams and rangers off the desert in the summer onto the coastline working in the dive industry. The suspension of recreational services in summertime can be managed, as there appears to be some potential for alternate activities for the labor during the summer season.

Exhibit: Estimation of Nature Visitors & Expenditure for Lower Red Sea Coast

<i>total visitors to Egypt 2003</i>	5.75	<i>million visitors</i>
<u>capture from beach market</u>		
Red Sea beach share	1.5	million visitors
lower RS coast 25%	0.39	million visitors
visitor/days @8.8 days	3.4	million visitor-days
visitor spend @\$126.7	431.2	US\$ millions

6. Ecotourism Promotion and Investment Plan...

ave. daily visitors lower RS	9,325	visitors per day
assumed capture/day 2.5%	233	visitors per day
operating days per year	250	days [summer excluded]
assumed capture/year	58,278	nature visitors
revenue/year @\$50	2.91	US\$ millions
<u>capture from culture market</u>		
cultural visitors 20%	1.15	million visitors
ave. daily visitors	3,151	visitors per day
assumed capture/day 2.5%	79	visitors per day
operating days per year	250	days [summer excluded]
assumed capture/year	19,692	visitors
revenue/year @\$50	0.98	US\$ millions
<u>total capture</u>		
Aggregate activity measures:		
assumed capture/day	312	visitors @250days/yr
revenue/day @US\$50	15,594	US\$ - per day
annual visitors	77,970	visitors
annual visitor-spend	3.90	US\$ millions - per year
<i>N.B.: Revenue covers all expenses such as transport, guiding, fees, et cetera.</i>		
<i>source: RSSTI, Ministry of Tourism statistics.</i>		

6.1.7 Strengths And Weaknesses Of The SRSR's Ecotourism Product

These concepts are provided from the standpoint of the marketability of the nature experiences to be offered in the inland areas of the lower coast. The area's key strengths could include:

- *Excellent combinability*: Nature activities can be easily combined with Egypt's cultural product [Luxor & Aswan plus cruises], and with its beach product, pulling tourists from both sources.
- *Proximity to Port Ghalib, the coast's future flagship*: This high-quality, integrated resort city will rival Hurghada as the coast's future hub. The easy availability of nature experiences will further strengthen its market appeal.

What appears today to be the remoteness of the lower RSC, is not a major handicap as a few operators have already started to operate in the lower RSC. Responses to the questionnaires and interviews with the tour operators indicate expectations of the enduring marketability of the lower coast, and rising business making possible an expansion of their operations. There is a definite emphasis in the industry on combination packages offering two [or more] experiences within one trip to one country.

The area's key weakness could be:

6. Ecotourism Promotion and Investment Plan...

- *Lack of a banner or “marquee” attraction:* The White Desert and Mount Sinai are well-known attractions. Other than the coral reefs, the RSC lacks such a feature.

Educational services can be provided through trained guides and different types of interpretive exhibits to develop the educational value at the Protectorate Area, thereby overcoming this weakness. The *Roman Road* crossing Wadi Gimal is a feature building definite interest for cultural visitors. The area will have to earn its value in the marketplace to develop a good international reputation.

6.1.8 Ecotourism Promotion Strategy Recommendations

Word of mouth is the most successful marketing tool for ecotourism. This process will gain momentum as the number of packages and visitor volume to the lower coast's SRSC grows. Formal promotion strategies [tools] can include:

- *Travel writers & specialty tour operators:* Once a visitor center is operating, regional and European and American groups such as these can be invited to tour the area and review in the world of travel journalism.
- *Website outreach:* The entity managing the protectorate can sponsor a dual website, in part aimed at the international ecotourism market, and in part aimed at the clubs, associations and specialty outfitters running nature-based trips.
- *Partner park relationship:* The Wadi Gimal Hamata protectorate can enter into a partnership with a comparable desert park in the USA, Turkey or South Africa for promotional advantage and technical exchanges.
- *Egyptian specialty groups:* The protectorate can also provide information through visits and special invitations to youth and sporting groups in Egypt to inform their memberships of its attractions.

6.2 INVESTING IN ECOTOURISM ON THE SRSC

6.2.2 Current ecotourism investment trends in the SRSC

Currently purely nature-based or ecotourism businesses are very scarce in the region, limited to a handful of outfitters or tour operators offering desert or mountain experiences. The capital investment for these is limited to outfitting equipment, vehicles, communications and office equipment as well as office space, typically very limited. These operations are easily portable meaning they can be readily shut down or transferred to Sinai or the Western desert should the owners chose to move. The business is in a very incipient stage.

6.2.3 Funding Sources

Personal wealth and profits derived from other activities are typical funding sources at present for these businesses. Nature-based businesses are few in Egypt, operating mainly in the

6. Ecotourism Promotion and Investment Plan...

western desert. The lack of familiarity with this type of business by lenders and perceptions of high risk are major negative factors imposing personal wealth requirements, and guarantees, thereby restricting available credit. However, there are some successful travel businesses that operate nature-based trips as a minor activity. Because of their success these are perceived to be lower credit risks and have access to commercial credit sources.

Where overnight accommodation in the form of lodges and camps are to be developed, an ecotourism project may qualify for sources of funding such as:

- *The National Bank of Egypt*. It operates a few funds on behalf of foreign donors and development banks available to hotel or tourism projects.
- *The Environmental Protection Fund*: Some tourism related projects may qualify. The involvement of the Ababda tribe in the project may be a critical factor for eligibility in some cases.
- *The Export Development Bank of Egypt*: If a project can substantiate that it targets a foreign clientele, it may qualify for a fund promoting exports.
- *The North African Enterprise Development office*: Opened in Cairo in 2003, this is a World Bank agency supporting small & medium enterprises in Egypt, Morocco and Algeria.

6.2.4 Funding Sources For Micro-Enterprise

These will be listed in the final version of this report. Some donor agencies operating funds in Egypt are managing funds [usually through Egyptian financial intermediaries] for micro-enterprise. Ecotourism projects involving aspects such as:

- overnight accommodation [hotel funding]
- employment for local tribes [indigenous peoples support]
- environmentally sensitive project design or management [best practices at work]
- foreign clientele orientation [export promotion]
- low net worth of project owner [micro-enterprise promotion]

in addition, some foreign embassies and NGO's also operate such funds and can be approached. Each source has very specific eligibility requirements that need to be carefully understood. Examples of such sources [donors and otherwise] include:

- the World Bank/IFC Environmental Opportunities Facility
- funds run by DANIDA, CIDA
- funds run by USAID like DCA, CIP, Millennium Challenge Account.

6.2.5 Investment Promotion Activities

TDA can undertake activities such as the following to promote investment in ecotourism.

- *Egyptian Hotel Association and Egyptian Tourism Federation*: It can inform the memberships of such organizations about investment opportunities along the lower RSC in investment-oriented events [meetings, joint press releases and similar].
- *Business councils and chambers of commerce*: It can undertake similar efforts vis-à-vis the broader investment community. Some industrial groups with no connection to tourism may wish to enter this sector.
- *Tourism Investment Conferences [in Egypt and abroad]*: In addition to promoting sound investment in traditional hotels and resorts, TDA must also announce ecotourism possibilities.
- *Web-based investment promotion*: TDA can include ecotourism opportunities in its website investment promotion efforts, including for example downloadable documents on specific opportunities.

It is important that TDA conduct investment outreach to the general business community, to secure new thinking and capital for this specialty form of tourism. It must also endeavor to get the mainline tour operators [including the cruise lines] to extend their operations into the lower RSC.

APPENDIX A: CLASSIFIED INVENTORY OF ECOTOURISM RESOURCES
