

**Rum Protected Area  
Management plan  
2003- 2007**



**Prepared by  
The Royal Society for the Conservation of Nature**

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# **1 INTRODUCTION ABOUT THE PLAN**

## **1.1 Time Period and Review**

This management plan extends for 5 years from January 2003 until December 2007. A review programme is included in the Action Plan and a full review should be undertaken during the final year.

## **1.2 Plan Format**

This management plan used the accepted international format for management plans, with some adjustments to accommodate special needs of Wadi Rum and to account for recent developments in site management.

It consists of the following main sections:

### **1.2.1 SECTION (1): SITE DESCRIPTION**

This section clarifies the basic information of the Protected Area and documents its description according to the following categories:

#### **Physical Context**

- Location.
- Access Points.
- Map Coverage.
- Aerial Photographic Coverage.
- Photographic Coverage.

#### **Land Tenure and Status**

- Traditional Land Tenure
- Past Status and Interest
- Current Status
- Other Designations

#### **Land Use**

- Tourism
- Interpretation Use
- Educational Use
- Research Use
- Livestock Grazing

- Agriculture
- Settlement inside and around the Protected Area
- Mining
- Firewood Collection
- Concrete Dams and Reservoirs
- Sunken Water Cisterns
- Brick Storage Chambers

### **Management**

- Second Tourism Development Project

### **Environmental Information**

- Physical Environment
  - Climate
  - Hydrology
  - Geomorphology
  - Geology
  - Soil
  - Mineral Resources
- Biological Information
  - Bio-geographical Regions and Habitats
  - Vegetation Types
  - Vegetation Communities
  - Flora
  - Fauna

### **Cultural Information**

- Bedouin Communities
- Archaeology

### **Ecological Relationships**

## **1.2.2 SECTION (2): EVALUATION OF FEATURES**

This section presents an assessment of the conservation values of the Wadi Rum Protected Area according to recognized international criteria as listed below:

**Size**

**Diversity**

**Naturalness**

**Rarity**

**Fragility**

**Typicalness**  
**Recorded History**  
**Position in an Ecological Unit**  
**Intrinsic Appeal/ Landscape**  
**Public Access/ Use**  
**Education Use**  
**Interpretation and Awareness Raising**  
**Research**  
**Potential for Improvement of Ecological Values.**  
**Factors Influencing Management**  
**Local Community participation**

### **1.2.3 SECTION (3): OBJECTIVES OUTPUTS AND ACTION PLAN**

This section states the objective of the Protected Area and presents an action plan to meet these objectives.

**Principle Objective**  
**Operational Objectives**  
**Outputs**  
**Action Plan**

## **2 List of Acronyms**

RSCN: Royal Society for Conservation of Nature.

ASEZA: Aqaba Special Economic Zone Authority

ARA: Aqaba Regional Authority

MOTA: Ministry of Tourism and Antiquities

JUST: Jordan University for Science and Technology

IUCN: World Conservation Union

JCO: Jordan Cooperation Organisation

WWF: World Wildlife Fund

RTC: Rum Tourism Cooperative

NRA: Natural Resources Authority

GIS: Global Information System

GPS: Global Position System

RGC: Royal Geographical Centre

MCM: Million Cubic Meter

Km: Kilometer

Mm: Millimeter

T: Temperature

C: Degree Centigrade

A s l: Above sea level

MU: Memorandum of Understanding



## **SECTION (1): SITE DESCRIPTION**

**Physical Context**

**Land Tenure and Status**

**Land Use**

**Management**

**Environmental Information**

**Cultural Information**

**Ecological Relationships**

### 3 SECTION (1): SITE DESCRIPTION

**Site Name: Wadi Rum Protected Area**

**Site Status: Special Regulations Area**

**District: Aqaba Governate / Aqaba Special Economic Zone Authority (ASEZA).**

**Management Authority: Aqaba Special Economic Zone Authority (ASEZA).**

**Area: 720 km<sup>2</sup>**

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#### **3.1 Physical Context**

##### **3.1.1 Location / Boundaries:**

The Protected Area lies within the following coordinates: 717953E, 3288256N and 746357E, 3251331N.

The borders of the Protected Area extend from Qa Disi in the northeast to Jabal Al Fara'a in the southeast and to Wadi Sweibit in the southwest. Rum Village is the only settlement contained within the boundaries. The

location and full extent of the boundaries of the Protected Area are shown on Map 1.

### **3.1.2 Main Access Points:**

There are currently two main access points to the Protected Area. The first access point is located in the Rum Village, about 22 Km east the Desert High way from a junction near Rashidiyya Village. It is the most frequently used access point, accounting for over 80% of visitor traffic. The second access point is located on the northern boundary of the Protected Area near Disi Village, which lies 28 km east of the Desert Highway. Both access points are served by a metal led road linked directly to the main highway.

A large visitor centre is currently being built (September 2002) to act as the only gateway to the Protected Area. It is located 7 km north of Rum Village and 3 km south of Disi Road Junction (see map 1). It is expected to be operational by September 2003.

### **3.1.3 Map Coverage:**

Four sheets at a scale of 1:50.000. The sheet numbers are: 3049II Jebel Um Ishrin, 3149III Jebel El Qannasiya, 3148IV Jebel Um Sahn and 3048I Ein El Hashim.

### **3.1.4 Aerial Photographic Coverage:**

Scale 1:30.000, 1992 aerial survey, area reference J9208. Black and white prints covering all the Protected Area are available for sale in the Royal Geographical Centre (RGC) in Amman. Copies of these photographs exist in the management office of the Protected Area and in the headquarters of RSCN in Amman.

### **3.1.5 Photographic Coverage:**

Slide collection and prints of the Wadi Rum Protected Area are stored in the management office of the Protected Area and in the headquarters of RSCN in Amman.

## 3.2 Land Tenure and Status

Two distinct systems of land tenure are applied to the land in and around the Protected Area, which are the official and the traditional systems.

### 3.2.1 Traditional Land Tenure

Traditional land tenure is based on the actual recognition of the historical rights to a piece of land by other individuals or corporate groups, so the whole system depends on the mutually reciprocated recognition of claims. Challenges usually occur only over new areas of land where no precedence exists. The recognized tribal fronts in the Protected Area on Map2.

In Wadi Rum Protected Area, according to the Aqaba Regional Authority, there is no legal private land ownership anywhere in the Protected Area outside the boundaries of Rum Village, however traditional ownership of land according to recognized tribal fronts still appears to have greater validity than official ownership.

The traditional system of grazing rights practiced in Wadi Rum became the Rangeland Law in 1971, allowing all individuals and corporate groups common access to the land for pastoral purposes. Within the traditional system, temporary pastoral usage confers no long-term tenure to the user since the land is left unimproved. According to the same system, however, long-term use and development involving significant investment enables a priority of access rights to that user.

### 3.2.2 Past Status and Interest

The Government of Jordan recognized the importance of Wadi Rum as early as 1978, when it approved the IUCN / WWF study, which identified twelve sites as potential nature reserves representing the unique habitats and ecosystems occurring in Jordan. Wadi Rum was one of the sites reviewed in this study and proposed as a nature reserve. (*RSCN & IUCN / WWF project no: 1591, 1979 A proposal for wildlife reserves in Jordan*).

In 1991, the National Environment Strategy for Jordan identified Wadi Rum as an important site, requiring urgent action to ensure its protection. (*Ministry of Municipality of Rural Affairs and the Environment-*

*Department of Environment. 1991. National Environment Strategy for Jordan.)*

### **3.2.3 Current Status**

All the Wadi Rum Protected Area is the property of the Government of Jordan, except the land of Rum village, which is privately owned.

The land lies within the Aqaba Governorate, which is administered by the Aqaba Special Economic Zone Authority (ASEZA).

The Protected Area was designated as a Special Regulations Area in two phases; the first was on the 15<sup>th</sup> of November 1997 following a Cabinet decision. (Number: 27/11/3226). An area of 540 km<sup>2</sup> was designated in this phase. On the 24<sup>th</sup> of January 2002 the Cabinet agreed to extend the Protected Area south by 180 km<sup>2</sup>. (Cabinet decision no: 224/11/1/986). The Special Regulations Area status applies in perpetuity.

In August 2000, ASEZA was established as a replacement for the Aqaba Region Authority and supported by a framework of new legislation. This legislation that enabled the government to endorse Wadi Rum Protected Area regulations in January 2001.

### **3.2.4 Other Designations**

In 1999 the Wadi Rum Protected Area was identified as an Important Bird Area in the Middle East by the Bird Life International and compiled by M.I. Evans. (*Evans. M.I.1995. Important Bird Areas in the Middle East*)

It was also reconfirmed as an Important Bird Area during the national review of bird sites, which was conducted in 2000 by RSCN. (*RSCN. 2000. Important Bird Areas in the Hashemite Kingdom of Jordan*)

## **3.3 Land Use**

### **3.3.1 Tourism**

#### **(a): Historical Summary**

In 1988 Her Majesty Queen Noor visited Wadi Rum and noticed there was no clear mechanism for local people to benefit from the tourism operations at the site. She also noticed there was an urgent need to

organize visitors and provide services on site, not only by the private sector but also by the local people.

Following this visit, Queen Noor requested the formation of a special committee to help in establishing a local organization to represent the local communities and to help to organize tourism services and facilitate the sharing of benefits. Her majesty allocated 50,000 JDs to support the initiative. The members of the committee represented MoTA, the Governor of the district and RSCN.

The formula that the members of the committee came up with was to establish a cooperative to represent the local people and act on their behalf under the name Rum Tourism Cooperative (RTC). The Cooperative was officially registered by the Jordan Cooperative Organisation (JCO) as a bona fide organization on the 10<sup>th</sup> of October 1990. Its constitution was prepared by the JCO and its operation is technically governed the JCO's laws and regulations.

In 1996 another cooperative called "Disi Cooperative" was established in Disi Village, which is just outside the Wadi Rum Protected Area boundaries. In 2000 the "Sweelhyeen Cooperative" was also established to represent the Sweelhyeen tribe, whose members live in Salhiyya and Shakriyya villages outside the Protected Area. These cooperative were established to develop tourism services in the area and they follow the JCO regulations, which are similar to those of the RTC.

In January 1992 the RTC was authorized by the Minister of Tourism to collect entrance fees from visitors. These fees (currently 1 JD per person) provide the major source of income for the RTC.

(Further details about RTC and its operations are given in the institutional review of RTC prepared by RSCN in 1999).

#### **(b): Current Tourism Situation**

Tourism in Wadi Rum is the predominant land use and a major source of income for local Bedouin communities. It is also the principal cause of environmental degradation. The management of tourism, therefore, is the single most critical issue for the protected area. For this reason, a separate Tourism Management Plan has been prepared, annexed to this document, which describes in detail the background to tourism in Wadi Rum and the proposed strategy for tourism development in the Protected Area. The text below is extracted from this plan and briefly describes the current

tourism situation, without reference to problems and recommended actions, which are fully explored in the Tourism Plan

Visitors to Wadi Rum reached a peak of 103,000 in 1999, making it the third most visited tourism site in the Kingdom. However, the number declined enormously over the following two years in response to “September 11th” and the Palestinian crisis, to reach only 24,000 in 2002. In line with previous patterns in the region, a recovery is expected to happen, although analysts are worried that the shadow of war hanging over Iraq could make the recovery very prolonged.

Visitors to Wadi Rum fall into two basic categories: organised groups touring with buses or 4x4 vehicles owned or hired by registered tour operators; and independents, who arrive in their own vehicles (and often use them to tour the desert) or on public transport. These two groups account for approximately 65% and 35% of all visitors respectively. Observations suggest that the number of independents has increased steadily since 1994, in line with noticeable national and global trends. Most of the visitors are Europeans, from Germany, France, Britain, Spain and Italy. Jordanians and other Arabs currently account for a very small proportion of visitor totals.

The spectacular desert scenery of Wadi Rum is the primary interest of visitors, with secondary interests being Bedouin culture, archaeology, Lawrence of Arabia, “wilderness” and desert adventure. Standard activities for visitors are 4x4 tours, camel rides, hiking, camping, rock climbing and horse riding. Some special activities have been allowed on request including micro-light flying, ballooning and car rallying. The 4x4 tours are the most popular, with an estimated 85% of visitors using them. Most of the visitors engaged in these activities stay on site between 2 and 12 hours but a significant proportion (over 25%) camp for one night. There is no other form of accommodation in the immediate area, although some villagers rent out their houses and bed and breakfast in Rum village is planned. The number of adventure tourists in Rum is increasing and these groups tend to stay longer, usually between 2 and 12 days.

Tourism services within the Protected Area are provided by a mixture of local community and private sector operators, of which the key players are the Rum Tourism Cooperative, Diseh Cooperative, the manager of the Rum Village Rest House and several privileged operators, including the Hashemite Fund’s Eco-tourism Project and specialised guides from Rum Village. The Rum Tourism Cooperative is the largest community-led business and has a near monopoly on vehicle tours, although in terms of

throughput of tourism revenue, it is the manager of the Government rest house in Rum Village who channels the lion's share. He effectively controls the market in mainstream tourism because he controls the communication system in the village, having the only central fax and telephone, and he provides key facilities and services such as washrooms. There has also been a growing rivalry for tourism services between the Rum and Disi Cooperatives, which has, at times been highly antagonistic.

Infrastructure for tourism is being rapidly developed, with the construction of a new access road, visitor centre and facilities in Rum Village, under the Second Tourism Project. At the time of preparing this plan, the operational hub for on-site tourism management was still the rest house complex in Rum Village. A temporary improvement scheme was carried out around the rest house in 2001 to improve visitor flow from the parking lot and to provide a reception point where visitors purchase entrance tickets, arrange 4x4 vehicle tours, camel rides and overnight camping; and obtain general information about the site. The rest house itself continues to provide washrooms, food and drinks (including catering for large groups) and overnight accommodation in a large campsite to the rear of the building. By the early part of 2003, however, all of these facilities will be transferred or duplicated at the Visitor Centre, 7km north of the village, and this will become the gateway and operational hub for the protected area.

In preparation for the opening of the visitor centre, access points into the Protected Area were reduced from six to two (Rum Village and Disi Village) with the intention of making the visitor centre the single point of entry. The opening of the visitor centre will radically change the current dynamics of tourism management in Wadi Rum and will require very sensitive handling of inter-tribal issues. It has the potential, however, to ensure that tourism opportunities and revenues are more fairly distributed throughout the local communities.

Other recent initiatives in tourism management include (1) the ratification of legal regulations that enable the enforcement of appropriate behavior by visitors and service providers; (2) the introduction of ranger patrols to monitor and encourage adherence to the regulations; (3) the planning of a track network to reduce the level of "off-road" driving; (4) the development of an effective rotation system for the Rum Tourism Cooperative's tour vehicles; and (5) the production of signs, panels and publications that give visitors more information about the site and available activities.



### **3.3.2 Interpretation Use**

At present interpretation facilities in the Protected Area are limited to the temporary visitor- hub created around the rest-house in Rum Village. This has been providing essential information to visitors, through simple leaflets design panels and tour guides. A comprehensive interpretation plan for the protected area has been prepared which identifies the themes, messages and interpretation media that will be used to explain to visitors the importance of Wadi Rum and encourage appropriate behavior.

### **3.3.3 Educational Use**

The Protected Area has been used intensively for promotion of environmental awareness since its establishment, but was poorly used in the past because there were no facilities and staff dedicated to such activities. An educational programme targeting the schools of the area is being implemented, details of which are given in the school activity toolbox.

### **3.3.4 Research Use**

Archaeological research has been on going for many years, long before the Protected Area was established. Most of the results of the research and associated papers are lodged with the Ministry of Tourism and Antiquities. Intensive ecological research only started in 1999 with the Second Tourism Development Project, when a team of RSCN researchers were deployed on site for many months. A summary of their research results is given under “Environmental Information” and “Cultural Information”. During this period, a village house in Rum was rented as a research base. A new purpose –built research laboratory is included in the visitor centre complex and this will provide a base for future environmental research programmes.

### **3.3.5 Livestock Grazing**

The two types of livestock found within the protected area are the black “Baladi” goat and the black “Nejdi” sheep. These are favored over other types for their rugged nature and their suitability for grazing in desert areas.

The highest grazing activity is in the spring, decreasing in the other seasons. Wadi Ramman and Wadi Marsad, in the western part of the Protected Area, face the highest pressure during the spring; while in other seasons the grazing pressure concentrated more in the eastern parts. The

highest grazing pressure from camels is during the spring and summer in the central part of the Protected Area, in Wadi Rum and Wadi Um-Ishrin. Existing grazing patterns are shown on Map 2.

<b>Total numbers of goats counted during the Rangeland Inventory Survey, 2000</b>						
<b>Counting Round</b>	<b>Area</b>					
	<b>Wadi Marsa d</b>	<b>Wadi Ramman</b>	<b>Wadi Rum</b>	<b>Wadi Um-'Ishrin</b>	<b>Wadi Um-Harraq</b>	<b>UM MUQOUR</b>
<b>Spring 1</b>	<b>1852</b>	<b>2590</b>	<b>913</b>	<b>306</b>	<b>0</b>	<b>90</b>
<b>Spring 2</b>	<b>1834</b>	<b>2435</b>	<b>962</b>	<b>297</b>	<b>91</b>	<b>225</b>
<b>Summer 1</b>	<b>461</b>	<b>185</b>	<b>317</b>	<b>280</b>	<b>0</b>	<b>175</b>
<b>Summer 2</b>	<b>815</b>	<b>587</b>	<b>958</b>	<b>135</b>	<b>172</b>	<b>280</b>
<b>Winter 1</b>	<b>225</b>	<b>558</b>	<b>611</b>	<b>268</b>	<b>35</b>	<b>101</b>
<b>Winter 2</b>	<b>118</b>	<b>225</b>	<b>481</b>	<b>200</b>	<b>75</b>	<b>332</b>

Source: RSCN, 2001.

There has been a reduction in livestock numbers over recent years in Rum Village, attributed partly to the development of the tourism economy. Capital has been invested in tourism rather than in livestock. Similarly, a reduction in the livestock numbers at Diseh, Manasheer, and Twail may be linked to the expansion of the agricultural economy around these villages.

According to a preliminary study by Rowe *et al* (1990), livestock production in the Protected Area makes little sense as a commercial enterprise. However, the actual value of the livestock is a form of security when the tourism economy falters and provides basic food supplies.

### **Livestock Management**

While the economic benefits of Bedouin livestock is questionable, the main owners continue to invest in livestock. They usually own their own tanker trucks and dams, and many owners provide veterinary care for their stock. Many households also have mobile fences used for special feeding and care of pregnant goats or kids, and herds are often divided and given different diets according to their special needs.

(Further details of grazing patterns and tribal relationships are given in the rangeland study).

### **3.3.6 Agriculture**

There is very little agriculture inside the Protected Area. Several old agriculture fields are evident but most of these are no longer used.

Several fenced fields are scattered around the Protected Area. The current use of these fields is not entirely clear, although in the past they were used to farm barley. The investment in barley farming is no longer worthwhile due to a succession of drought years.

### **3.3.7 Settlements inside and around the Protected Area**

The current distribution of Bedouin villages in and around the Protected Area is related to water sources. In the 1950s the only year-round water sources were the springs along the eastern face of Jebel Rum and they stimulated the development of the current village at Rum.

In the 1960s the Zawayda sheikh talked to Crown Prince Hassan, who felt compelled to sink wells for the tribe in the Diseh area. By the mid-1980s pumps had been established at the sites of the five new Diseh villages: Disi, Tuweisah, Twail, Manasheer, and Al-Ghal. Today, many Zawayda call these villages home. The fact that the Zawayda now have virtually exclusive water rights at Disi, while the Zalabia at Rum benefit from the tourism income, is a source of envy and mutual distrust between both tribes. The Swelhiyyin tribe has settled in the area more recently. They have established two new villages, Salhiyya and Shakriyya.

Below is a brief description for each of the main villages present inside and around the protected area, and their locations are shown on Map 3.

#### **(a): Inside the Protected Area**

##### **Rum Village**

Rum Village lies in the heart of the protected area and is the only settlement inside the boundaries. Its community is part of a wider network of Bedouin tribes stretching as far as Aqaba and Saudi Arabia. The population of Rum Village is about 1000 people, made up of two tribes: the Zalabia tribe with 109 families, and the Sweelhiyyeen tribe with only 6 families. (*census 1999*)

To minimize the impact of expansion of Rum Village on the protected area, the government of Jordan defined the village boundaries, restricting its area to 404 donums.

### **(b): Outside the Protected Area**

#### **Shakriyya Village**

The residents of this village are Swelhiyyin. The population is relatively well educated, and depends mostly on employment as their principle source of income. A very small number of them remain pastoral, herding goats and camels.

#### **Diseh and Tuweisah**

These are the main villages of the Zawayda tribe. Agriculture is the main economic activity of these villages due to the availability of irrigation water. Rum Agricultural Company is a major employer of local wage labourers. For members of the tourism co-operative, tourism also provides a supplementary income.

#### **Manasheer, Al-Ghal, and Twail**

These villages are home to people of the Mizna tribe, which was originally part of the Zawayda tribe. The people here acquired recognition for land claims around the two government wells at Manasheer and Al-Ghal. Most of the population is employed by Rum Agricultural Company as wage labourers, although some also hold higher positions.

#### **Other Settlements**

Three other tribes are found on the margins of the reserve area: the 'Umran, Dbour, and Qudhman. The 'Umran and Dbour are Saudi Arabian Bedouins who came to Jordan in 1987. Both of these tribes are very small and depend on livestock, bringing it from Saudi Arabia and selling it in Jordan for a profit.

The very small Qudhman community lives in Rashidiyya village, with a few residents in Wadi Marsad at the western border of the Protected Area. Little information is available about their lifestyle.

### **3.3.8 Mining**

The Protected Area is located in the south of Jordan, which has significant mineral resources, although there is no specific study on the minerals that occur only in the Protected Area. The economically valuable minerals and rocks known to be present in the general area are quartz, feldspar and granite

No mining activities take place in the Protected Area nowadays because its importance for tourism has discouraged the Government from giving

mining permits. However it might become a real threat to the Protected Area if the economic value of mining rises above the expected income from tourism.

### **3.3.9 Firewood Collection**

In general, Bedouin lifestyle depends on the collection of firewood for cooking, heating, making coffee, etc. In Rum, Disi, and other villages with a tourism industry, tourists on camping safaris in the Protected Area constitute another important use for firewood.

### **3.3.10 Concrete Dams and Reservoirs**

Numerous small to large dams have been installed around the Protected Area, which serve to collect winter runoff from the mountains for livestock. Water availability is a major concern in such an arid area, so this catchment system ensures significant water storage.

### **3.3.11 Sunken Water Cisterns**

This type of water storage system allows fewer impurities into the water and reduces evaporation. They often meet domestic water requirements for individual households.

### **3.3.12 Brick Storage Chambers**

These small storerooms are usually built into rock overhangs, providing cool shelter for the storage of many products for months or even years. Dairy products such as “Semin” and “Jamid” can be stored there for a long time.

## **3.4 Management**

### **3.4.1 Second Tourism Development Project**

In 1998 the Government of Jordan, represented by the Ministry of Tourism and Antiquities (MoTA) and Aqaba Regional Authority (ARA) signed an agreement with the World Bank to receive a loan for the implementation of the Second Tourism Development Project, in which Wadi Rum was included as a major component.

As stated in the project document, the aim of the Wadi Rum component was to support and encourage tourism development that maximizes economic returns to local communities whilst protecting and conserving natural and cultural resources. Its specific objectives were:

- (a) To increase tourism revenue generated at the site
- (b) To maximize economic returns to the local community
- (c) To enable local Bedouin women to gain direct benefits from the Protected Area.
- (d) To conserve the ecological and archaeological resources

The Government of Jordan through the Aqaba Regional Authority contracted the Royal Society for the Conservation of Nature in 1998 to implement the Wadi Rum component of the project, building on the society credibility and experience in the management of protected areas. The contract was extended in 2001 for a further two years. It came to the end in January 2003.

### **3.4.2 Key Outputs of the Project**

#### **1: Completion of the base line ecological surveys**

The following surveys were completed in the protected area during the period from 1998 to 2001:

- Socio-economic survey.
- Institutional review and recommendation for institutional strengthening of Rum Tourism Cooperative.

- Vegetation Survey:
- Carnivores Survey
- Birds Survey
- Raptors Survey
- Ungulates Survey
- Invertebrates Survey
- Reptiles Survey
- Small Mammals Survey
- Archaeological Survey
- Rangeland survey

Reports of these studies are available in the management offices of the Protected Area in Rum and in RSCN's headquarter in Amman.

**2: Improved control of access and entrance charges:**

Visitor access points into the Protected Area were reduced from 6 to 2 (Rum Village and Disi) as a result of effective ranger patrols. This has enabled better regulation of visitor distribution and better collection of entrance fees. Few visitors are now able to enter the Protected Area without paying.

**3: Preliminary zoning scheme tested and evaluated:**

An initial zoning scheme was devised for Protected Area, which created three distinct zones with different permitted uses. This scheme was tested and evaluated through on-site trials and consultation with stakeholders and later modified in response to the feedback.

**4: Comprehensive patrol plan implemented:**

A ranger patrol programme was devised and implemented to make sure that hunting and other illegal activities are controlled and that visitors conform to necessary protection measures.

**5: Temporary visitor management scheme in Rum Village implemented:**

Simple changes were made to the infrastructure surrounding the rest house in Rum Village to improve its effectiveness as the main operational hub for tourism services in the Protected Area until the Visitor Centre opens in 2003. These changes included improved parking layouts and signage, provision of information panels and the creation of a visitor reception in a converted Hijazi railway car. These have proved highly successful in streamlining visitor flow, raising awareness of Wadi Rum's importance and in maximizing the collection of entrance fees.

**6: Rum Village vehicle pool regulated:**

At the request of the Rum Tourism Cooperative (RTC) the protected area management team adopted responsibility for the supervision and monitoring of RTC's vehicle pool, which is the largest pool of tour vehicles operating in the protected area. This has created more equality in the distribution of benefits to RTC members and has improved the service for tourists.

**7: Training programmes undertaken for drivers and tour guides:**

Workshops were held for local drivers and tour guides to improve their skills as interpreters and to make them aware of Protected Area goals and regulations.

**8: Protected Area regulations drafted and ratified by government:**

A set of legally enforceable regulations was finalized in 2001 and ratified by the Government in the same year. These enable the on-site management team to enforce compliance to a raft of measures addressing all activities that may damage Wadi Rum's intrinsic values, from off-road driving and waste disposal to mineral extraction and hotel developments.

**9: Agreement on organizational structures:**

Through an interactive workshop involving all stakeholders, agreement was reached on the most appropriate organizational structure for the Protected Area. This includes a distinct section of the organization tree devoted to tourism management, headed by a Tourism Manager who is responsible to the Protected Area Manager.

**10: Socio-economic programme developed:**

A handicrafts center was established in the Rum Village, that centre is producing handicrafts inspired by the nature of Wadi Rum, including silver jewelry, hand printed T shirts and sandblasted glass frames and cola cans.

This centre currently employs seven local women.

**11: Site management team recruited:**

Thirty-two staff were employed as the Protected Area management team, including the following positions:



<b>Position</b>	<b>No. of staff</b>
Manger of the protected area	1
Ecologist	1
Wildlife biologist	1
Rangers	8
Oryx rangers	2
Cleaners	5
Tourism manger	1
Interpretation officer	1
Reception staff	2
Rotation staff	3
Education and outreach staff	2
Financial and administration officer	1
Socio-economic staff	5

#### **12: Oryx re-introduction programme:**

RSCN started a pioneer reintroduction of Arabian Oryx into the Protected Area. The first stage of the programme had been completed by transferring ten animals to a pre release pen, which was constructed specifically for this purpose. The final aim of this programme is to release the animals to the wild.

#### **13: Near completion of the visitor centre:**

Construction of the large Visitor Centre, seven kilometers north of Rum Village, was approaching completion at the time of compiling this plan. The Centre will become the operational hub for all tourism services and visitor management when it opens in 2003, replacing the current hub at the rest house in Rum Village.

#### **14: Extension of the Protected Area:**

During 2002, the boundary of the Protected Area was extended southwards towards the border with Saudi Arabia, to encompass a further 170 square kilometers of land. This area is well vegetated and relatively unaffected by tourism activity or goat grazing and, as such, represents the most pristine desert habitat in the whole of the protected area. It is of prime importance for wildlife conservation and requires special protection measures.

### **3.4.3 Physical infrastructure and equipment**

Three houses in Rum village rented by ASEZA as temporary operational base for the management of the Protected Area. The first one is used as a management office from which the Protected Area coordinates all its management activities. The second one is used as a handicraft workshop for the socio-economic program, and the third one is used as accommodation for researchers. There are also two renovated train carriages from the Hijazi Railway fixed at the village entrance. They are used as a temporary reception office and a handicraft shop.

There is one asphalt road within the boundaries of the Protected Area, which leads to the Rum village from the desert High way. When the visitor centre is completed in 2003, it will provide a full complement of management facilities for the Protected Area including: management offices, research laboratory, visitors' reception, interpretation room, car park, multi-purpose hall, handicraft shops and a restaurant.

A new access road is under construction, which will bring all visitors to the centre via the road to Disi.

The Protected Area has been relatively well equipped through the "Second Tourism Project". The major items of equipment are:

- 4x4 vehicles
- Radio system.
- Computers and office equipment.
- Essential field equipment.

## **3.5 Environmental Information**

### **3.5.1 Physical Information**

#### **3.5.1.1 Climate**

The Protected Area is located in the dry and arid climatic region. There is no meteorological station in the Protected Area. The closest meteorological station is based in Aqaba. The mean annual minimum temperature is 15° Celsius while the mean annual maximum temperature is 30° Celsius. The maximum temperature recorded in the day in summer reached 45° Celsius, while the lowest temperature recorded at night reached 5° Celsius.

The mean annual rainfall for the Protected Area varies between 50 to 100 mm. In some drought seasons the area receives less than 50 mm/year.

### **3.5.1.2 Hydrology**

The Protected Area is part of the Southern Wadi Araba Surface Water Basin. This basin is one of the smallest surface water basins in the Kingdom. Its surface area is about 5721 km<sup>2</sup>. The area generally does not have any large surface water bodies, even during the winter season. This is mainly because of the sandy nature of the area's soil, which causes the direct loss of surface water.

In contrast, the Protected Area lies above one of the largest ground water basin in the country, which is the Southern Desert/Disi ground water basin. The salinity in the basin is one of the lowest in the country, which is about 500ppm. This makes the water of this basin very suitable for drinking.

There are only four known small freshwater springs within the Protected Area, which are:

- Abu 'Aineh spring.
- Qattar spring.
- Shallaleh spring.
- Sbakh spring.

### **3.5.1.3 Geomorphology**

The Protected Area is a tract of huge, precipitous, sandstone and granite mountains, reaching a height of 1754m on Jebel Rum, the highest mountain in the Protected Area and the second highest mountain in the country. The mountains in the Protected Area are separated from each other by flat, sandy 'corridor'-wadis. The northern part of Wadi Rum Protected Area comprises four major wadi systems, running roughly parallel on a north-south orientation at an elevation between 800-1100m. These wadis are (from west to east) Wadi Marsad, Wadi Rumman, Wadi Rum, Wadi Um-'Ishrin and Wadi Mahraj and Wadi Um-Harraq. To the south of these wadis lies an open sandy area of isolated peaks and mobile sand dunes known locally as Hadbat Qara. Further east is a closed network of smaller wadis with numerous small mountains and rocky outcrops beyond Jebel Khaz'ali, this area extends to Jebel Burdah in the east and Um Muqour in the south.

### **3.5.1.4 Geology**

The Protected Area lies in the generalized geological categories of Sandstone and Basement Complex. The geological layers in the area form a complex mosaic especially in the basement complex category.

According to the surveys made by the Natural Resources Authority, which are summarized on Map 4, there are 6 complex suites that comprise of several layers. Some suites are only represented by one layer such as Janub Metamorphic Suite. Below is a brief description of each one of these layers arranged in their typical arrangement through time:

#### **Upper Proterozoic**

The Upper Proterozoic is comprised of two complexes, which are as follows:

##### **• Aqaba Complex**

Aqaba complex is comprised of four suites, which are:

##### **1: Janub Metamorphic Suite**

It is found in the southern part of the protected area.

##### **2: Rumman Grandioritic Suite.**

This suite is represented in the Protected Area by three formations, which are:

A: Sabil Grandiorite: It can only be found in the southern mountain foot of Jebel Qattar.

B: Ishaar Monzogranite: It is found in several locations of the western and central parts of the protected area. These locations are the northern part of Hadbat Qara and the hills bordering it from the north, the mountain foot of Jebel Rumman and the western mountain foot of Jebel Rum and Jebel Qattar.

C: Qara Granite and Aplogranite sheets: This layer is restricted to the southwestern part of the protected area. This includes southern Wadi Marsad, Hadbat Qara, Al-Khmeilat and the southern mountain foot of Jebel Rum and Jebel Umm 'Ishrin.

##### **1: Urf Porphyritic Suite.**

This suite is represented in the Protected Area by two layers, which are:

A: Marsad Porphyritic: This formation is extremely restricted to the north-western mountain foot of Jebel Marsad.

B: Muhayrid Manzogranite: This formation is just restricted to the western mountain foot of Jebel Umm 'Ishrin and the eastern mountain foot of Jebel Rum.

## 2: Yutum Granitic Suite (Plutonic).

This suite comprises of three formations, which are:

A: Abu Jadda Granite: This layer is mainly found in the northwestern part of the Protected Area.

B: Humrat Granite: This layer is scarcely found, it is restricted to the lower northern and western parts of Rum Mountain and the lower western part of Marsad Mountain.

C: Ar-Rashidiyya Aplite: It is found in the lower central part of Rum Mountain, the lower western part of Marsad Mountain, Hadbat Qara and in Al-Khmeilat hills which are the on the southern edge of Rum Mountain.

### • **Aqaba/'Araba Complex**

Aqaba/'Araba Complex is only represented by one suite in the Protected Area, this is:

#### Qurainifat Volcanic Suite.

This suite is composed of scattered sheets in various parts of the protected area including the western part of Jebel Hubeyra, the north-western and southern edges of Jebel Rum, the south-western edge of Jebel Umm 'Ishrin and few of the northern hills in Hadbat Qara.

### Lower Paleozoic

The lower Paleozoic is only represented by one suite in the Protected Area, which is:

#### 1: Rum Sandstone Suite

This suite is comprised of four main formations, which are:

A: Salib Arkose (early Cambrian): This layer is found in the central and western mountains and hills of the protected area.

B: Umm 'Ishrin Sandstone (middle to late Cambrian): The most abundant sandstone type in the protected area. It is present in all parts of the protected area although it is not abundant in the eastern mountains, which have more Disi Sandstone.

C: Disi Sandstone (late Cambrian to early Ordovician): This layer is present in the central and eastern part of the Protected Area.

D: Umm Sahn Sandstone (early Ordovician): This layer of sandstone is present on the hilltops in the eastern part of the protected area, in

mountains like Judayda, Manfus and Su'eifan mountains. It is also present on the mountaintops of Um 'Ishrin mountains.

### **Quaternary**

It is composed of three formations, which are:

- a. Alluvial Fans and Scree Deposits: Those have formed at the mountain bases in almost all the mountains of the protected area.
- b. Alluvium Wadi Sediments, Sand and Sand Dunes: They are largely derived from the weathering of the sandstone, which has accumulated in the wadis predominantly in the eastern part of the Protected Area. The sand and wadi sediments are blown locally into sand dunes and pockets on hilltops.
- c. Mudflat: This was formed because of drainage ponding following infrequent rainfall. A very small part of the huge Disi Mudflat (Qa' Disi) is in the Protected Area on its north-eastern borders.

#### **3.5.1.5 Soil**

There are four major soil groups recorded in the Protected Area:

Torriorthent: This major soil group covers about 20% of the whole Protected Area and it is represented in the lower part of the alluvial fans.

Calcid: This major group soil is present in the upper parts of the alluvial fans and it covers about 25% of the protected area.

Torripsamment: The Torripsamment group covers about half of the protected area, which is an indication for the dominance of the sand alluvium in the area. The dominance of the alluvial sand is mainly caused by the erosion in the Sandstone Mountains mainly by rain.

Cambid: This soil group is found on the banks of the mudflats. It is barely represented in the protected except for the southern bank of Disi mudflat.

#### **3.5.1.6 Mineral Resources**

Recent studies indicate that the Protected Area contains the following minerals: Uranium (U) especially in the geological formation of Ram Sandstone Suite and Aqaba Complex. Gold (Au), Silver (Ag), Molybdenum (Mb), Tungsten (W), Niobium (Nb), Tantalum (Ta) Tin (Sn), Yttrium (Y), Thorium (Th), Vanadium (V) and Strontium (Sr).

None of these minerals was proven to be available for feasible commercial use except the Disi sandstone formation which is an important source of raw materials for glass production and has been used for commercial use.

### **3.5.2 Biological Information**

#### **3.5.2.1 Bio-geographical Regions and habitats**

Wadi Rum Protected Area lies in the Sudanian bio-geographical region, which is characterized by warm winters and very hot summers. The temperature ranges from 15° to 45°C, and rainfall from 50 to 100 mm/year. It is called Sudanian because it has some physical and biological characteristics similar to those occurring in Sudan and other tropical areas. Map no 5 describes the biogeographical regions of Jordan and the Protected Area.

#### **3.5.2.2 Vegetation Types**

There are three vegetation types present in the Protected Area as shown on Map 6. These are:

*3.5.2.2.1 Sand Dune Vegetation Type covering: 76.32% of the total area*  
This vegetation type is only found in the Sudanian Vegetation Region and the best examples in Jordan are found in the Wadi Rum Protected Area. It is dominated by shrubs (sand dunes fixatives), of which the main species are *Haloxylon persicum*, *Retama raetam*, *Calligonum comosum*, *Neurada procumbens* and *Hammada scopiara*.

*3.5.2.2.2 Acacia and Rocky Sudanian Vegetation Type: covering 3.15% of the total area*

This vegetation type is limited to the rocky areas in the protected area. In some places it occurs together with the Sand Dune Vegetation Type. The main species that characterize this type are: *Acacia raddiana*, *Anabasis articulata*, *Caralluma spp.*, *Fagonia spp.*, *Gymnocarpos decndrum* and *Helianthemum lippii*.

*3.5.2.2.3 Hammada Vegetation Type: covering 3.15% of the total area.*

This vegetation type covers more than 70% of Jordan's surface area, but in the Protected Area it is not widespread covering a little over 3%. The main species that characterize this type are: *Anabasis articulata*, *Retama raetam*, *Tamarix spp.*, *Achillea fragrantissima*, *Artemisia herba-alba* and *Zilla spinosa*.

### **3.5.2.3 Vegetation Communities**

Five main vegetation communities were identified in the Protected Area, as shown on Map 7, these are:

- Anabasis articulata* Vegetation Community: 52.6%. of the total area.
- Hammada salicornica* Vegetation Community: 10.5% of the total area.
- Haloxylon persicum* Vegetation Community: 13% of the total area.
- Urginea maritima* Vegetation Community: 0.6% of the total area.
- Mixed Vegetation Community: 23.3% of the total area.



### 3.5.2.4 Flora

A total number of 183 species were recorded within the Protected Area in the baseline surveys conducted in 1999 and 2000. These plants belong to 152 genus and 49 families.

The plants were categorized as follows:

- 2 new to Jordan
- 4 ferns
- 13 poisonous
- 15 rare
- 6 endemic
- 11 edible
- 5 ornamental
- 32 medicinal
- 57 common

The two species new to the flora of Jordan are *Satureja thymbrifolia* and *Gagea dayana*.

The arid Mediterranean forest of *Juniperus phoenica* in some of the high mountains of the Protected Area is considered to be a very important habitat because the Juniper trees are isolated old population in a Sudanian bio-geographical zone, where the climatic conditions do not normally favour the growth of Juniper.

The *Haloxylon persicum* communities, especially in the sand dune area, are also considered an important habitat, since they are particularly well developed and mature and act as fixatives for the sand dunes.

List of important plant species recorded in the Protected Area		
Family	Species	Status
ADIANTACEAE	<i>Adiantum capillus-veneris</i>	Declining
ANACARDIACEAE	<i>Pistacia atlantica</i>	Rare, threatened
ARECACEAE	<i>Phoenix dactylifera</i>	Rare
ASCLEPIADACEAE	<i>Caralluma aaronis</i>	Rare
ASPLENIACEAE	<i>Ceterach officinarum</i>	Declining
CARYOPHYLLACEAE	<i>Silene danaensis</i>	Rare, endemic South Jordan
CHENOPODIACEAE	<i>Haloxylon persicum</i>	Restricted
COMPOSITAE	<i>Iphiona maris-mortui</i>	Rare
COMPOSITAE	<i>Conyza triloba</i>	Rare
COMPOSITAE	<i>Crepis sancta</i>	Rare
COMPOSITAE	<i>Onopordum jordanicolum</i>	Rare, endemic
COMPOSITAE	<i>Onopordum transjordanicum</i>	Rare, endemic
COMPOSITAE	<i>Notobasis syriaca</i>	Endemic
CUPRESSACEAE	<i>Juniperus phoenica</i>	Restricted
GLOBULARIACEAE	<i>Globularia arabica</i>	Restricted

GYMNOGRAMMACEAE	<i>Anogramma leptophylla</i>	Extremely rare
LABIATAE	<i>Teucrium leucocladum</i>	Rare
LABIATAE	<i>Micromeria sinaica</i>	Rare, IUCN list
LABIATAE	<i>Satureja thymbrifloia</i>	Rare, new to Jordan
LILIACEAE	<i>Gagea dayana</i>	Rare, new to Jordan
MALVACEAE	<i>Althaea ludwigii</i>	Rare
MORACEAE	<i>Ficus pseudo-sycomorus</i>	Decreasing
OLEACEAE	<i>Olea europaea</i>	Only one tree
POLYGALACEAE	<i>Polygala hohenackeriana</i>	Extremely rare
POLYGONACEAE	<i>Calligonum comosum</i>	Rare, decreasing
RHAMNACEAE	<i>Rhamnus dispermus</i>	Rare
SCROPHULARIACEAE	<i>Scrophularia xylorrhiza</i>	Rare
SINOPTERIDACEAE	<i>Cheilanthus vellea</i>	Decreasing
SINOPTERIDACEAE	<i>Cheilanthus fragrans</i>	Decreasing

### 3.5.2.5 Fauna

Five different surveys have been conducted to assess the status and distribution of the faunal groups inhabiting the Protected Area. A full description of their distribution in Map 8

#### 3.5.2.5.1 Mammals

A total of 26 mammalian species were recorded in their natural habitats, falling into the following categories: one ungulate, 9 carnivores, 11 rodents, 3 bats, 1 insectivore and 1 hyraxidae species. Several species have a special conservation and ecological importance.

List of mammal species recorded in the Protected Area and their importance			
Common Name	Scientific Name	Global Status	National Status
<b>Canidae</b>			
Asiatic Jackal	<i>Canis aureus</i>	Not threatened	Rare
Grey Wolf	<i>Canis lupus</i>	Lower risk, least concern	Endangered
Blanford's Fox	<i>Vulpes cana</i>	List 5: data deficient	Vulnerable
Red Fox	<i>Vulpes vulpes</i>	Not threatened	Not threatened
<b>Felidae</b>			
Caracal	<i>Caracal caracal</i>	Not threatened	Endangered
Wild Cat	<i>Felis sylvestris</i>	Not threatened	Endangered
Sand Cat	<i>Felis margarita</i>	Lower risk, least concern	Endangered
Leopard	<i>Panthera pardus</i>	List 6: threatened critically endangered subspecies	Extinct
<b>Hyaenidae</b>			
Hyena	<i>Hyaena hyaena</i>	Not threatened	Vulnerable
<b>Rodentia</b>			
Asian Dormouse	<i>Eliomys melanurus</i>	Insufficiently known	Rare
Fat Sand Rat	<i>Psammomys obesus</i>	Medical importance	Medical importance
<b>Hyraxidae</b>			
Rock Hyrax	<i>Procavia capensis</i>	Insufficiently known	Rare
<b>Chiroptera</b>			
Botta's Serotine Bat	<i>Eptesicus bottae</i>	Insufficiently known	Rare
<b>Artiodactyla</b>			
Dorcas Gazelle	<i>Gazella dorcas</i>	Vulnerable	Endangered
Nubian Ibex	<i>Capra ibex nubiana</i>	Vulnerable	Endangered

### 3.5.2.5.2 Birds

A total of 119 bird species have been recorded in the Protected Area as follows:

Description of the status of birds recorded in the Protected Area	
Species	Description
34	Breeding or Holding Territory
85	Passage Migrants or Winter Visitors
2	New Breeding Species
25	Migrant species Recorded for the First Time
19	Raptor Species

Some of these bird species recorded in the Protected Area are of global or national conservation importance.

List of species and their status	
Scientific Name	Common Name
<b>Globally threatened</b>	
<i>Aquila heliaca</i>	Imperial Eagle
<i>Falco naumanni</i>	Lesser Kestrel
<b>Regionally threatened and declining species</b>	
<i>Gypaetus barbatus</i>	Lammergeier
<i>Neophrom percnopterus</i>	Egyptian Vulture
<i>Gyps fulvus</i>	Griffon Vulture
<i>Pernis apivorus</i>	Honey Buzzard
<i>Falco concolor</i>	Sooty Falcon
<i>Falco biarmicus</i>	Lanner
<i>Falco cherrug</i>	Saker Falcon
<i>Circaetus gallicus</i>	Short-toed Eagle
<i>Aquila chrysaetos</i>	Golden Eagle
<i>Aquila Verreauxii</i>	Verreaux's Eagle
<i>Hieraetus fasciatus</i>	Bonelli's Eagle
<i>Bubo bubo</i>	Eagle Owl
<i>Oenanthe monacha</i>	Hooded Wheatear
<i>Hippolais languida</i>	Upcher's Warbler
<i>Carpodacus synoicus</i>	Sinai Rosefinch
<b>Species restricted totally or partially to the Middle East</b>	
<i>Ammoperdix heyi</i>	Sand Partridge
<i>Strix butleri</i>	Hume's Tawny Owl
<i>Oenanthe monacha</i>	Hooded Wheatear
<i>Turdoides squamiceps</i>	Arabian Babbler
<i>Onychognathus tristramii</i>	Tristram's Grackle
<i>Pyconotus xanthopygos</i>	Yellow-vented Bulbul
<i>Oenanthe xanthopygna</i>	Red-tailed Wheatear
<i>Petronia brachydactyla</i>	Pale Rock Sparrow
<i>Serinus syriacus</i>	Tristram's Serin

The Wadi Rum Protected Area in general is an important raptor flyway during the migration seasons of spring and autumn. Sixteen migrant raptor species have been recorded using the area as a flyway during the autumn migration, in addition to three resident species. The Black Eagle (*Aquila verreauxii*), also known as Verreaux's eagle, was the most important because it has a vulnerable status in Jordan and the region in general.

### 3.5.2.5.3 Reptiles

A total of 34 reptile species were recorded in the Protected Area. Five of these species have a conservation importance on the national, regional or global level. These species are listed in the following table.

<b>List of species and their ecological importance</b>	
<b>Species</b>	<b>Ecological Importance</b>
Phrynocephalus arabicus	Expansion of its known range to cover the protected area
<i>Varanus greseus</i>	Listed on the 1994 IUCN Red Data List. Its current status is still unknown
<i>Ablepharus ruepellii</i>	A Mediterranean species found in isolated Mediterranean parts of the Sudanian biogeographic zones of the Protected Area
<i>Chamaeleo chamaeleon</i>	Another Mediterranean species found in isolated Mediterranean parts of the Sudanian biogeographical zones of the Protected Area
<i>Lacerta sp.</i>	A new species to science, it inhabits vertical rocky faces found in the Protected Area

#### 3.5.2.5.4 Invertebrates

A total of 77 arthropod species have been recorded in the Protected Area. *Orthetrum chrysostigma* and *Trithemis artereosa* are two dragonfly species that were found in the Protected Area around natural springs and represent important components of these small scale aquatic habitats. They also play a beneficial role in nature as predators of some pests such as mosquitoes.

A large number of ground beetles were found in the Protected Area and they are good biological indicators. Dung beetles from the Scarabaeidae family clean the environment by burying animal dung. Dermestid beetles are also important for cleaning the environment through the decomposition of dead animals. Many other darkling beetle species are also important in recycling organic matter.

### 3.6 Cultural Information

#### 3.6.1 Bedouin communities

There are six Bedouin tribes living inside or around the Protected Area: Zalabia, Zawayda, Swelhiyyin, 'Umran Qudhman and Dbour. These tribes do not usually stay in the same location through out the year. According to studies conducted in the Protected Area, they demonstrate

clear seasonal movement both within and outside of the Protected Area. (see Map 2).

The Protected Area represents a major source of income for the local tribes in different forms. Some use it for tourism and others for livestock grazing or agricultural activities as indicated in the table below.

**The following table is a profile of Rum village and other surrounding villages, and summarizes their main sources of income.**

Settlement	Tribes	Household Numbers	Population	Major Income
<b>Salhiyya</b>	Swelhiyyin	36	220	L E
<b>Shakriyya</b>	Swelhiyyin	35	140	T L E
<b>Rum</b>	Zalabia	120	1100	T L E
	Swelhiyyin	8	35	
<b>Disi</b>	Zawayda	210	1550	A T E
<b>Tuweisah</b>	Zawayda	105	650	A L E
<b>Mansheer</b>	M'zana	40	280	A L E
<b>Ghal</b>	M'zana	26	300	A L E

A: Agriculture, T: Tourism, L: Livestock, E: Employment

Source: Rowe *et al*, 1998

### 3.6.2 Archaeology

A total of 154 archaeological sites have been identified in the Protected Area spanning all eras from the Neolithic and including many Nabataean antiquities. Many of the sites have signs of Thamudic or Nabataean scripts, with the occasional examples of Greek. Most of the inscriptions are personal names written on sandstone cliff faces. Some of the rock art may be extremely old and has been dated to the Neolithic and Chalcolithic periods. Many of these sites are now on tourist routes and need special protection.

During the Byzantine and Islamic periods, the Protected Area seems to have been virtually uninhabited. In the early Islamic period towns existed at Aqaba and Humiema, and the wadis of the Protected Area were probably used as much as they are used today. Only very recently have modern villages of concrete houses been established around the site with fewer people living a nomadic lifestyle. Map 9 shows the known archaeological sites in the Protected Area.

The table below shows the seven most important archaeological sites in the Protected Area as defined by Ruben and Nasser, 1999:

Site Name	Brief Description
The Temple and Village	<ul style="list-style-type: none"> <li>❖ It was first reported in 1932.</li> <li>❖ There are Nabatean, Greek and Thamudic inscriptions in and around the temple.</li> <li>❖ It was first built between 9BC and 40AD and it went out of use by the 4<sup>th</sup> century AD.</li> <li>❖ It acted as a cultic centre and also it was undoubtedly a civic and an administrative centre.</li> </ul>
Ain Shallaleh	<ul style="list-style-type: none"> <li>❖ It was first reported in 1932.</li> <li>❖ One of the main springs that feeds the Rum temple and village area.</li> <li>❖ The Nabateans built a small shrine near it.</li> <li>❖ It has Nabatean and Greek inscriptions.</li> </ul>
Abu Nakheileh	<ul style="list-style-type: none"> <li>❖ It was first reported in 1947.</li> <li>❖ A Neolithic village.</li> <li>❖ It is postulated that it dates back to the seventh millennium BC.</li> </ul>
Hedeib Al-Fala	<ul style="list-style-type: none"> <li>❖ A variety of antiquities.</li> <li>❖ There are Thamudic inscriptions including a rare example of black paint.</li> <li>❖ One Nabatean inscription and rock art.</li> <li>❖ There is also a circular large house foundation.</li> </ul>
Um El-Qeseir	<ul style="list-style-type: none"> <li>❖ It was first reported in 1932.</li> <li>❖ There is a small Nabatean building that is most probably a cistern.</li> <li>❖ Nabatean and Thamudic inscriptions are found nearby.</li> <li>❖ Some Neolithic-Chalcolithic flints and pottery shreds of all dates were found nearby.</li> </ul>
Bir Rum Al-Atiq	<ul style="list-style-type: none"> <li>❖ A Nabatean dam that lies across the northern entrance of Wadi Rum.</li> <li>❖ It is a 50m long dam that has a rectangular enclosure on its east end.</li> <li>❖ There are some graves and cairns nearby which might be earlier than the dam itself.</li> </ul>
Khaz'ali	<ul style="list-style-type: none"> <li>❖ It was first reported in 1932.</li> <li>❖ There are Thamudic and Kufic inscriptions along with representations of people, feet and animals.</li> <li>❖ The inscriptions and rock are mainly in good conditions because they are mostly out of reach of people and weathering factors.</li> </ul>

### 3.7 Ecological relationships

The Wadi Rum Protected Area is located in the Sudanian Biogeographical Region, which is represented by three vegetation types: Hammada, Sand Dune and Acacia-Rocky Sudanian. The ecological relationships in the Protected Area were analyzed according to vegetation communities. These communities were studied during the Flora Baseline Survey that took place in the spring of 1999.

#### 3.7.1 *Anabasis* Vegetation Community

The *Anabasis* community is the largest vegetation community in the Wadi Rum Protected Area, comprising 52.6% of the total vegetation cover. The community is named after *Anabasis articulata*, the dominant species in the community type. It can be seen in most of the Area, mixed with other shrubs and herbs, notably *Zilla spinosa*, *Artemisia judaica*, *Gymnocarpos decandrum*, *Fagonia glutinosa*, *Dipcadi erythraeum* and some *Liliaceae* species. The elevation in this community ranges between 860m and 1060m above sea level and thirteen different geological strata are found in the underlying rock, of which wadi sediments and alluvial sand are the most widespread.

The *Anabasis* community dominates Wadi Marsad, the southern part of Wadi Rumman, Wadi Mahraj and Wadi Rum, in addition to the southern part of the protected area in general. It is also dominant in Khor Ajram, which is called after the Arabic name of *Anabasis*. The southern parts of the protected area are mainly rocky granite, covered with a hard crust of sand, which create the habitat conditions preferred by *Anabasis* (see Map 7).

Many of the plants recorded in the *Anabasis* community have an economic importance, especially as fuel wood and as food plants for livestock. The most palatable species for grazing are *Anabasis articulata*, *Retama raetam*, *Calligonum comosum*, *Zilla spinosa*, *Artemisia judaica*, *Stipa capensis*, *Gymnocarpos decandrum*, *Noaea mucronata*, *Hammada salicornic*, *Astragalus spinosus*, *Hlianthemum lippii*. The first three species in this list also provide the main source of fuel wood for local people. Other plants present in this community have more specialised uses. *Anabasis* itself is used as a washing agent due to its ability to foam and clean. *Calligonum comosum*, *Artemisia judaica*, *Hammada*



*salicornica* , *Urginea maritima* and *Fagonia glutinosa* are medicinal plants.

Two large carnivores were recorded in Anabasis areas: the Red Fox (*Vulpes vulpes*) and the Blandford's Fox (*Vulpes cana*). The Blandford's Fox was a first-time record for Wadi Rum and the most southerly so far recorded in Jordan. Several small mammals were associated with the community, notably: Cheesman's Gerbil (*Gerbillus cheesmani*), Wagner's Gerbil (*Gerbillus dasyurus*), Baluchistan Gerbil (*Gerbillus nanus*) and Sundevall's Jird (*Merionus crassus*). The Arabian Hare (*Lepus capensis*) was also recorded. It was noted that Anabasis areas had a greater density of rodent burrows than other vegetation communities, reflecting the succulent food source provided by *Anabasis* and the generally soft texture of the soils.

Out of the 119 bird species recorded in the Protected Area, 22 breeding species and 39 migrant and winter visitors were recorded in the *Anabasis* community. Some of these birds are regionally threatened, such as the Sinai Rosefinch (*Carpodacus synoicus*). Others are of a global importance like the Lesser Kestrel (*Falco naumanni*). The *Anabasis* community provides good feeding grounds and song posts for several birds. The Bar-tailed Desert Lark (*Ammomanes cincturus*), Desert Wheatear (*Oenanthe deserti*) and Mourning Wheatear (*Oenanthe lugens*) were recorded in large numbers throughout this community. It also provides good nesting sites for some species, including the Scrub Warbler (*Scotocerca inquieta*), as well as safe roosting and feeding habitat for migrant species. The migrant species particularly favour the Ratama stands growing within the *Anabasis* community.

In terms of reptiles, three out of the eight species recorded in the Protected Area were only found in the *Anabasis* community. These were the Sand Snake (*Psammophis shokari*), Sand Fish (*Scincus scicus*) and *Tripiocolotes nattarerei*.

Seventeen different invertebrate species were recorded in the *Anabasis* community, of which *Adesmia* species were the most common.

### **3.7.2 Hammada Vegetation Community**

This community derives its name from the dominant plant species, *Hammada salicornica*. It accounts for 10.5% of the total vegetation cover in the protected area. The other species associated with the Hammada community are *Neurada procumbens*, *Anabasis articulata* ., *Colchicum*

*sp.*, *Zilla spinosa*, *Noaea micronats*, *Medicago sp.* and several species of the *Liliaceae* family.

The distribution of Hammada vegetation is restricted to three areas: the middle part of Wadi Rum, the southern part of Wadi El-Khishkhash and scattered areas in Wadi Rumman. These areas range in elevation between 840m and 1160m above sea level and span fifteen geological formations, of which the most important are the alluvium fans and scree deposits, Abu Jadda granite, Um 'Ishrin sandstone and Marsad porphyritic. *Hammada salicornica* itself has an economic value as a forage plant for livestock. Several of the other species recorded in this community have medicinal properties.

Seven species of mammals were recorded in Hammada vegetation, including two species of the Canid family, the Wildcat (*Felis silvestris*) and the Red Fox (*Vulpes vulpes*). Two bat species were also recorded, one of which is Hemprich's Long-eared Bat (*Otonycteris hemprichi*), a new record for the Protected Area. The most common mammal species associated with the Hammada community type is Wagner's Gerbil (*Gerbillus dasyurus*), which is found in high population densities.

The Hammada vegetation community plays a major role in bird breeding and migration. It provides suitable habitat, nesting places and food sources for many species. As many as 20 different birds are known to breed in this community type and up to 10 species use it during migration or as winter visitors. Some of these birds have conservation importance on national, regional and global levels. The Eagle Owl (*Bubo bubo*) and Sinai Rosefinch (*Carpodacus synoicus*) are regionally threatened, the Sand Partridge (*Ammoperdix heyi*), Yellow-vented Bulbul (*Pyconotus xanthoprymna*) and Hooded Wheatear (*Oenanthe monacha*) are restricted to the Middle East and the Corncrake (*Crex crex*) and Lesser Kestrel (*Falco naumanni*) are globally threatened.

Six species of reptiles were recorded in this vegetation community, including *Acanthodactylus opheodurus*, for which it is the preferred habitat. The globally threatened Spiny-tailed Lizard (*Uromastix aegyptius*) is also known to occur. The other four species recorded, *Mesalina guttulata*, *M. oliveri*, *Acanthodactylus boskianus* and *A. schmidtii* were found in abundance.

Thirteen species of invertebrates were also recorded, including *Erodium edomitus* and *E. rothi rothi*, both of which are endemic to Jordan, and the

abundant *Trachyderma philistina* and *Erodium rothi*. These last two species are good prey items for reptiles and birds.

### 3.7.3 Haloxylon Vegetation Community

*Haloxylon persicum* is one of the main component shrubs of the vegetation in the protected area. It forms the dominant species of the Hammada plant community, which accounts for about 13% of the total vegetation of the Protected Area. This community grows in areas of deep sand outcropped from sandstone, at altitudes between 800m and 1050m above sea level. The Haloxylon shrub itself has a huge underground root system, important for sand fixation, especially in sand dune areas, where it is one of the few large shrubs that can tolerate such conditions. It is also a common and palatable species for livestock.

The Haloxylon community is dominant in the northern parts of Wadi Rum because of the prevalence of sandy soils. It is also prominent in other locations, including Wadi Mahraj, Wadi Um 'Ishrin, and Wadi Um Harraq, where the soil is also sandy but covered with gravel.

The Red Fox was the only large mammal recorded in this community. Three small mammals were recorded, of which the most abundant were Cheesman's Gerbil (*Gerbillus cheesmani*) and Wagner's Gerbil (*Gerbillus dasyurus*).

Many bird species were identified in the Hammada community. Some of were using it for breeding and others were recorded as passage migrants and winter visitors, including the Desert Lark (*Ammomanes deserti*) and Kestrel (*Falco tinnunculus*). A widespread passage migrant and summer breeding visitor is Black-eared Wheatear (*Oenanthe hispanica*). The Haloxylon bushes were used as song posts by several passerine species, and especially the Mourning Wheatear (*Oenanthe lugens*).

Four reptile species were recorded, of which the most abundant was *Acanthodactylus opheeodurus*. They also included the Broad-headed Agama (*Phrynocephalus arabicus*), an important species that is restricted to the southern part of Jordan.

Nine invertebrate species were recorded in the Haloxylon community, most of which belong to two genera, *Adesmia* and *Erodium*. The most abundant species found in the community was *Pimelia arabica arabica*, a type of darkling beetle

### **3.7.4 *Urginea* Vegetation Community**

The *Urginea* communities form part of the Sand Dune vegetation type. Collectively, they represent the smallest plant community in the Protected Area, comprising only 0.6 % of the total vegetation cover. The *Urginea* community is found at altitudes ranging between 1060m and 1100m above sea level in areas with a simple underlying geology, dominated by wadi sediments, Disi sandstone and Um Ishrin Sandstone.

The community is named after the dominant plant species, *Urginea maritima*, which grows on open sandy soil. It is restricted in distribution to the northern end of Wadi KhishKhash. The other species associated with this vegetation community are *Hammada salicornica* and *Anabasis articulata*. *Urginea* itself is a poisonous plant, not eaten by livestock, although it is used by local people for medicinal purposes.

The only large mammal recorded in the *Urginea* community was the Red Fox (*Vulpes vulpes*), which is widely distributed in the protected area as a whole. Birds are more numerous, however, with 13 breeding species and 13 migrants and winter visitors recorded. These include the Sinai Rosefinch (*Carpodacus synoicus*), a regionally threatened species. One reptile was recorded, a type of lizard called *Acanthodactylus ophioduru*, and ten invertebrates, of which the most abundant was *Anthia duodecimguttata*, a species of darkling beetle.

### **3.7.5 Mixed Vegetation community**

The mixed vegetation community type is restricted to the northern part of the Protected Area, except for small areas in Wadi Marsad and Wadi Um 'Ishrin, and the southernmost part of Wadi Rum. It occurs in altitudes ranging between 810m and 1030m and across soils with a very variable underlying geology.

No single plant species is dominant in this community. A total of 15 species were recorded, including *Anabasis articulata*, *Haloxylon persicum*, *Ferula communis*, *Monsonia heliotropioides*, *Dipcadi erythraeum*, *Hammada salicornica* and *Gymnocarpos decandrum*. Several of these are palatable for livestock and have local medicinal uses.

Five mammals species were recorded in the mixed community. Two are canids, the Red Fox (*Vulpes vulpes*) and the Blanford's Fox (*Vulpes cana*), two are rodents, Cheesman's Gerbil (*Gerbillus cheesmani*) and the

Sundevall's Jird (*Merionus crassus*) and one is a bat species, the Grey Long-eared Bat (*Plecotus austriacus*).

Several bird species are utilizing this vegetation community, including the Hooded Wheatear (*Oenanthe monacha*) and the Sand Partridge (*Ammoperdix heyi*), which are regionally threatened. Five migrant species have also been recorded, including the Orphean Warbler (*Sylvia hortensis*), Barred Warbler (*Sylvia nisoria*) and Black Redstart (*Phoenicurus ochruros*).

Four species of reptiles were recorded in the community. One species, *Mesalina brevirostris*, was found to be restricted to this community.

Seventeen invertebrates were recorded in the mixed vegetation community, similar to those found in the anabasis vegetation community. Two of these species, belonging to the *Adesmia* genus, are endemic to Jordan.

### **3.7.6 Mountains**

Mountains cover about 46% of the total land surface of Wadi Rum and form a very important element in the nature and landscape of the Protected Area. Like other parts of the protected area, the mountains fall within the Sudanian biogeographical region, although they also contain several elements from other biogeographical regions, including the Irano-turanian and the Mediterranean.

The Wadi Rum mountains are composed of seventeen geological strata, of which the most dominant are Disi Sandstone, Um Ishrin Sandstone and Adu Jadda Granite. The unique formations produced by weathering of these strata have created special microhabitats for hundreds of species (including, perhaps, many undiscovered ones). The mountains of the Protected Area also provide an important refuge for many species because they are largely inaccessible to humans, making them “naturally protected”.

More than one hundred species of plants were recorded in the mountains of the protected area, including some species from the Mediterranean biogeographical region, such as *Juniperus phoenicia*, *Colutea istria* and *Pistacia atlantica*. A large number of the plants (25 species) are considered to have medicinal properties, including *Artemisia herba-alba*, *Artemisia judaica*, *Varthemia iphionoides*, *Salvia lanigera*, *Micromeria sinaicus* and *Citrullus colocynthis*. Another eight species are classified as

rare at the national level and two, *Iphiona maris-mortui* and *Satureja thymbrifolia*, are endemic to Jordan.

The large mammals known to be present in the mountains include the Wildcat (*Felis silvestris*), Red Fox (*Vulpes vulpes*) and Blanford's Fox (*Vulpes cana*). These were found to be using the many crevices at base of the mountains for shelter and safety. An important mammal recorded in the upper parts of the mountains is the Nubian Ibex (*Capra ibex nubiana*); a species seriously threatened by hunting. The other important mammal species restricted to the mountains is the Rock Hyrax (*Procavia capensis*).

Five species of rodents were found to be using the lower parts of the mountains in the protected area. These include three gerbils, Baluchistan Gerbil (*Gerbillus nanus*), Cheesman's Gerbil (*G. cheesmani*) and Wagner's Gerbil (*G. dasyurus*), the Sundevall's Jird (*Meriones crassus*) and the Garden Mouse *Eliomys melanurus*. Two species of bats were also recorded in the lower parts of the mountains, the Botta's Serotine Bat (*Eptesicus bottae*) and the Grey Long-eared Bat (*Plecotus austriacus*).

Thirteen birds were found to be breeding in the mountains and their rocky margins. These include the Sand Partridge (*Ammoperdix heyi*), Mourning Wheatear (*Oenanthe lugens*), Trumpeter Finch (*Bucanetes githagineus*), Sinai Rosefinch (*Carpodacus synoicus*), Brown-necked Raven (*Corvus ruficollis*), Tristram's Grackle (*Onycognathus tristramii*) and Rock Dove (*Colomba livia*). In addition, several species of raptors were recorded migrating over the mountains of the Protected Area, including Honey Buzzard (*Pernis apivorus*), Steppe Buzzard (*Buteo buteo*), Egyptian Vulture (*Neophron percnopterus*), Griffon Vulture (*Gyps fulvus*), Short-toed Eagle (*Circaetus gallicus*), Booted Eagle (*Hieraaetus pennatus*), Osprey (*Pandion heliaetus*), Red-footed Falcon (*Falco vespertinus*) and Lesser Kestrel (*Falco naumanni*). One of the very rare raptors recorded several times flying over jebel m-'Ishrin is the Verreaux's Eagle (*Aquila verreauxii*). This raptor is known to have been living in Wadi Rum for the past twenty years. Three owl species are also known to be breeding in the mountains of the area, using crevices as nest sites. These are the Eagle Owl (*Bubo bubo*), Little Owl (*Athene noctua*) and Hume's Tawny Owl (*Strix butleri*).

Some bird species are known to be restricted to the lower cliffs and slopes of the mountains. These include the Blackcap (*Sylvia atricapilla*), Tristram's Grackle (*Onycognathus tristramii*) and Yellow-vented Bulbul (*Pycnonotus xanthopygos*).

Since the reptile surveys to date have been restricted to the wadis and bottom edge of the mountains, the data for mountain habitats is lacking. The three species recorded in edge habitats are *Acanthodactyls boskianus*, *A. opheodurus* and *A. schmidti*, all types of lizard

Out of the seventeen species of invertebrates found so far in the mountains, the most abundant was *Erodius rothi rothi*. Four more species of this genus were also recorded. The genus *Adesmia* was also significantly represented in mountainous terrain, with three species recorded in abundance.

## **SECTION (2): EVALUATIONS OF FEATURES**

**Size**

**Diversity**

**Naturalness**

**Rarity**

**Fragility**

**Typicalness**

**Recorded History**

**Position in an Ecological Unit**

**Intrinsic Appeal/ Landscape**

**Public Access/ Use**

**Education Use**

**Interpretation and Awareness Raising**

**Research**

**Potential for Improvement of Ecological Values**

**Factors Influencing Management**

**Local Community participation**



## 4 SECTION (2): EVALUATION OF FEATURES

### 4.1 Size

Wadi Rum, at 720 square kilometers (720,000 dunums), is the largest protected area in Jordan. It has a perimeter length of over 98 km.

The relatively large size of Wadi Rum enables it to fully represent the Sudanian Biogeographical Region in Jordan, as exemplified in three distinct vegetation types: Hammada, Acacia-Rocky Sudanian and Sand Dunes. It also contains within its boundaries sizeable examples of all the major physical components of the Eastern Desert (Hisma) Land Type (mountains, wadis, sand dunes, springs), enabling the protected area to function as a single ecological system.

The Wadi Rum Protected Area appears to be sufficiently large to allow viable populations of key animal species to survive. Most important are the larger predators, since they are at the top of the ecological food pyramid and require extensive hunting territories, especially in desert ecosystems. Currently, Wadi Rum is known to hold small populations of the Grey Wolf, Caracal, Striped Hyena and Wild Cat and these have maintained their foothold over long periods of persecution. With adequate protective measures, these species should increase in numbers and maintain viable populations with the available resources in the Protected Area.

The fact that Wadi Rum is also large enough to contain several complete mountain massifs (over 46% of the total surface area) is important for the conservation of many species, as these massifs are protected from high levels of human disturbance by their inaccessibility. The distribution of the Nubian Ibex (*Capra ibex nubiana*) for example is limited to the large and complex mountains, where these ungulates can find safe shelter and bedding areas.

Large numbers of migrating birds, including many birds-of-prey, pass through Wadi Rum each year on their way between their wintering grounds in Africa and their breeding sites in Europe. In a sample survey conducted in 2000, 3,381 birds-of-prey of 19 species were recorded in less than one month. For birds like these, places where they can safely stop, rest and “re-fuel” are vital to their survival. The size, topography and varied habitats of Wadi Rum give it strategic importance as a sanctuary on this globally significant migration route.

## **4.2 Diversity**

From survey records to date (2002), the Wadi Rum Protected Area is known to support 439 species of plants, birds, reptiles and invertebrates. This level of species diversity is not exceptional for habitats within the Sudanian Biogeographical Region of Jordan, except in terms of bird species. The bird fauna of Wadi Rum is supplemented by many passage migrants and winter visitors, owing to its location on the Africa-Europe migratory flyway. Species diversity at high altitudes may also be exceptional for Jordan, as the protected area has some of the highest mountains in the Kingdom, but this has yet to be confirmed.

The diversity of some animal groups in the protected area is undoubtedly lower than would be expected, and especially of large mammals. Surveys undertaken so far, for example, have failed to verify the presence of typical large mammals such as striped hyena, and desert gazelles. This reflects continuous persecution by hunters combined with extensive habitat degradation. These impacts will be minimized under the management of the protected area, allowing such animals to re-colonize.

At the habitat level, diversity in the protected area is relatively high, compared to other known areas in Jordan with Sudanian vegetation types. As well as the more ubiquitous gravel and silt wadis, it has large areas of sand dunes and high mountains and many deep, shaded canyons.

Species diversity correlates highly with habitat diversity, since varied habitats provide more available ecological niches. The most species-rich areas within Wadi Rum for plants and each of the major animal divisions are shown on Maps 7 and 8.

## **4.3 Naturalness**

There is ample archaeological evidence to show that Wadi Rum has been inhabited and utilized by humans since prehistoric times and few areas (at the lower altitudes) have escaped human interference. The type of use has varied throughout the past, from transient pastoralism to elaborate settlements supported by trading, and mixtures of both. It is probable, however, that the extreme aridity of the area has limited occupation and development to the locality of springs and other water supplies, leaving large parts of what is now the protected area relatively free of long-term settlement. Hunting has been practiced by the local communities for centuries and it is clear from the ancient rock drawings that many large

animals were much more widespread than they are today and that some, such as the Arabian Oryx, were hunted to extinction.

The major human influences on the natural environment of Wadi Rum in modern times have been goat grazing and tourism. Tourism itself has had a major damaging impact on the vegetation, soils and landscape quality of the protected area and a survey undertaken by RSCN in 1999 revealed that every part of the protected area shows signs of disturbance by visitors.

Of all the habitat types in the Protected Area, the least disturbed by humans and therefore the most “natural”, are the mountaintops and cliff faces with their numerous cracks and crevices. Being generally inaccessible, they support relatively pristine ecological communities and they may, after further survey work, reveal new species for Jordan.

At the lower altitudes, the most pristine area of natural vegetation in the protected area lies within the recent extension, which links the old southern boundary to the Saudi Arabian border. This has relatively low levels of grazing and tourism use, allowing a greater coverage and density of characteristic desert plants to flourish.

#### **4.4 Rarity**

At the landscape level, the dramatic, wind eroded mountains of Wadi Rum are unique in Jordan and are generally acknowledged to be among the world’s finest examples of desert landscapes.

The high, difficult-to-access mountains, with their crevices and special vegetation cover, create a special habitat and refuge for different species of birds and mammals, many of which are absent or found in smaller numbers in surrounding desert ecosystems. They also enable elements of Mediterranean vegetation, such as Juniper trees, to exist in the Sudanian Biogeographical Zone, where normally they would be absent.

Eight of the plant species recorded in the Protected Area are considered rare and these include the Date Palm (*Phoenix dactylifera*) and *Caralluma aaronis* and two others, *Iphiona maris-mortui* and *Satureja thymbriifolia*, both of which are thought to be endemic to Jordan and Israel.

The Lesser Kestrel (*Falco naumanni*) and the Conrckreke (*Crex crex*) are two of the important bird species recorded in the protected area, since both are on the list of globally vulnerable species. Another species is the Verreaux’s Eagle (*Aquila verreauxii*), which is the largest eagle in the

Western Palearctic and rare at the regional level. Other birds rare at the regional level include the Eagle Owl (*Bubo bubo*) and Sinai Rosefinch (*Carpodacus synoicus*) that are regionally threatened, while Yellow-vented Bulbul (*Pycnonotus xanthoprymna*) and Hooded Wheatear (*Oenanthe monacha*) are restricted to the Middle East.

Of the mammals in the protected area, the Grey Wolf (*Canis lupus*) is globally threatened and the Nubian Ibex (*Capra ibex nubiana*) and Rock Hyrax (*Procavia capensis*) are nationally scarce. The rare and declining Sand Cat (*Felis margarita*) is also thought to be living in Wadi Rum, although there have been no sightings since the 1970s. Blanford's Fox (*Vulpes cana*) was recorded for the first time in 1999, making Wadi Rum the most southerly extent of its known distribution in Jordan..

Few of the reptiles are considered rare, except for the Broad-headed Agama Lizard (*Phrynocephalus arabicus*), which reaches the western limit of its range in Wadi Rum.

#### **4.5 Fragility**

While desert ecosystems are tolerant of extreme physical conditions, such as intense heat and cold, the plants and animals that live in these conditions must, of necessity, be highly specialised in order to survive; and it is well known that highly specialised species are more vulnerable to change. The slow growth rates of many desert plants, for example, which enables them to tolerate long periods of drought, is a severe disadvantage when they are exposed to physical damage from the wheels of vehicles. Repeated driving over desert shrubs effectively eliminates them from the habitat and recovery can take a very long time.

The three main shrub species in Wadi Rum are *Anabasis articulata*, *Hammada salicornica* or *Haloxylon persicum*. Large shrubs like these are scarce in desert habitats and each individual plant creates its own microclimate, providing shade, refuge (and food) for potentially hundreds of organisms like beetles, rodents and reptiles. Any sustained disturbance to these shrubs, therefore, has a very significant impact on the ecosystem as a whole.

Lack of water is an obvious factor contributing to the vulnerability of desert habitats and this makes the permanent water sources in the protected area of exceptional importance to the maintenance of biodiversity. The few scattered water springs are the sole water source for many animals, and especially the large mammals like the Syrian wolf, hyena and Nubian Ibex.

Any disturbance to any of these springs, like excessive water extraction and garbage dumping, can cause a major decline in animal populations

Another particularly fragile component of the Protected Area are the sparse stands of Phoenician Juniper (*Juniperus phoenica*) found on the mountaintops. Like the desert vegetation, each individual tree provides a refuge and food source for birds, mammals and invertebrates in an otherwise hostile environment. Persistent damage to these trees will impoverish the mountain habitat as a whole.

#### 4.6 Typicalness

Wadi Rum was identified as a potential Protected Area in 1979 through an IUCN sponsored study (*J. E. Clarke; A Proposal for Wildlife Reserves in Jordan 1979, IUCN*). It was selected because it was considered to be among the best examples of the Eastern Desert (Hisma) Land Type. This Land Type is very extensive in Jordan and is characterised by three main vegetation types: Sudanian, Sand Dunes and Acacia-rocky Sudanian. These three vegetation types are fully represented in the protected area and each of them is typical of its type in terms of species composition and community structure (see Biological Information). The relative extent of representation of these vegetation types in the Protected Area is shown in the table below:

Vegetation Types	% Representation of vegetation type to the total area of Jordan	% REPRESENTATION OF VEGETATION TYPE FROM THE TOTAL AREA OF THE PROTECTED AREA	% Representation vegetation type in the protected area compared with the country
Sand Dunes	1.6	76.3	28.7
Hammada	75	20.4	0.16
Acacia and Rocky Sudanian	3.37	3.3	0.6

As the table reveals, the Sand Dune Vegetation Type is particularly well represented in the Protected Area, accounting for almost 30% of Jordan's sand dune habitat.

While Wadi Rum has all the key components of the Hisma Land Type, with its characteristic plants and animals, it is far from "typical" in terms of landscape. The dramatic, sheer-sided mountains of Wadi Rum are not characteristic Hisma landscapes in Jordan, which largely consist of gently undulating gravel plains with occasional basins of sand. The exceptional scenery of Wadi Rum is undoubtedly one of the main reasons it was selected as a protected area.

#### **4.7 Recorded History**

Most of the recorded history of Wadi Rum is related to archaeology. The area has been extensively studied since 1932 and most of the research findings and papers are available in the Ministry of Tourism and Antiquities. In 1999, as part of the baseline research programme for the establishment of the Protected Area, a review of all known archaeological studies was conducted through the Royal Society for the Conservation of Nature (RSCN) and published as a report (*"Review of the Archaeology of the Wadi Rum Protected Area"*, I. Ruben and G. Nasser 1999). This review revealed clearly that Wadi Rum has been occupied and utilised by people over thousands of years, some of whom constructed settlements and traded and others who were nomadic and relied more directly on the desert's natural resources. All of these people have contributed to shaping the ecology of the Protected Area, as we see it today. One of the oldest records of human activity in Wadi Rum are the rock drawings left on rock faces throughout the Protected Area, some of which date back 3000 years and are themselves the subject of long-term studies by Italian archaeologist (Borzatti Von Lowenstern). Many of these drawings document the large wild animals that once existed in the area and include species that have since become extinct, such as the leopard and Arabian Oryx.

An important addition to the recorded history of Rum was the socio-economic survey carried out in 1997 as a prelude to the development of income generating activities for local people. This survey documents the main economic base of the existing Bedouin tribes and the extent of their reliance on tourism and livestock grazing. This will prove to be a valuable document as a comparative study for future research.

Historical records related to the natural history of Wadi Rum are scarce and generally limited to sporadic observations. The first such observations were

made in 1866 by Tristram (Mammals of the Holyland, Qumsiyeh 1996), who confirmed the presence of the Nubian ibex in the Rum mountains. Other sporadic observations of mammals were noted by Mountfort 1965; Atallah 1977; Amr & Disi 1988; Masseti 1990; Harrisson & Bates 1991 and Qumsiyeh et al. 1993. All of these records were based on short-term studies and opportunistic sightings. It was not until the start of the Second Tourism Project in 1998 that comprehensive baseline surveys were undertaken of the ecology of Wadi Rum. These surveys were commissioned through RSCN and included all the major physical and biological components of the site, including geology, soils, vegetation, mammals, birds, reptiles and invertebrates. While these surveys were essentially inventories, they reveal a worrying picture of the “ecological health” of Wadi Rum. It is very apparent that, overall, there has been widespread destruction of sensitive desert habitat through tourism activity and serious declines in large animal populations as a result of hunting pressure and habitat loss.

#### **4.8 Position in an Ecological Unit**

The Wadi Rum Protected Area forms a large part of the Hisma Basin, a shallow geological depression extending across southeastern Jordan to the Saudi Arabian border. This Basin is the water catchment and drainage basin for Wadi Rum and contains the large fossil water aquifer that supplies Diseh with irrigation water and that will soon be supplying drinking water to Amman.

Within the total area of the Hisma Basin, the Protected Area has more spectacular scenery and more ‘pristine’ habitat than any other site; and it is large enough as a sub unit of the Basin to conserve most desert species. However, serious disruption of the surface drainage patterns within the Basin could potentially reduce the ecological values of the Protected Area and this should be a consideration in the land uses allowed in the Basin in the future.

#### **4.9 Intrinsic Appeal/ Landscape**

Wadi Rum has enormous intrinsic appeal, largely because of its stunning desert scenery. The landscape is made up of huge mountains of sandstone and granite that emerge, sheer-sided, from wide sandy wadis to reach heights of over 1700 metres. Narrow canyons and fissures cut deep into the mountains and many rock faces have been eroded by wind-blasted sand to create strange and incredible shapes and extraordinary geological features like rock bridges. These dramatic elements of the landscape are the main

reason Wadi Rum has become one of the world's major destinations for desert tourism. In 1999, it attracted in excess of 100,000 visitors, making it the second most popular tourist site in Jordan.

The cultural dimensions of Wadi Rum are also part of its intrinsic appeal, and especially Bedouin culture. Many local Bedouins still live in goat hair tents among the mountains and create a special feature of the landscape. The traditions and life-style of the Bedouins are also of great interest to international visitors and form a major part of their tourism experience. The association of Wadi Rum with Lawrence of Arabia is another appealing aspect of local cultural history for many visitors, even though the facts about his use of the area are often distorted in promotional literature.

The importance of culture and landscape cannot be overlooked in the development and management of the protected area, since they are vital to its ability to generate tourism revenue and thus to its financial sustainability.

#### **4.10 Public Access/Use**

Wadi Rum is a major tourist site and until the year 2000 public access was unrestricted. Six main access points allowed visitors to enter virtually all parts of the Protected Area and, as tourist vehicles were transporting most of the visitors, the damaging impact of vehicle traffic on desert habitats was widespread and severe. During 2001, as part of an interim management scheme devised for the Second Tourism Project, public access was limited to 2 entry points, Rum Village and Disi Village and a zoning scheme was introduced, regulating the distribution and activities of visitors according to the perceived sensitivity of defined areas (see zoning scheme). These visitor control measures are still operational and are being enforced by the Protected Area rangers.

Despite the introduction of control measures, the problem of vehicle damage remains a critical issue. A plan was developed for the Interim Visitor Management Plan (RSCN 1998) to create a single network of graded vehicle trails reaching all the key attractions, in order to make desert tours more controlled and discourage off-track driving. On site experimentation with a mechanical grader (road grader) demonstrated that off-track driving could be reduced by over 70% if the desert tracks were smoothed out, but no progress has been made in purchasing or hiring a grading machine. This should be rectified as soon as possible.



Further regulation of visitor access and distribution is required to ensure full compliance with the zoning scheme and protected area regulations. This will be possible with the opening of the Visitor Centre in 2003, as it will create a single gateway to the protected area through which all visitors will pass. Management should ensure that visitors receive adequate guidance and information and that all tours and activities are coordinated through the Centre.

The public use of Wadi Rum is almost all tourism related. The most common activities undertaken by visitors are vehicle and camel tours, hiking, rock climbing, horseback treks and camping. These activities are unlikely to change significantly in the future, although efforts should be made to reduce the pressure on vehicle tours and promote alternatives that are less damaging to the desert ecosystem.

In addition to tourism activities, Wadi Rum is also used occasionally for special public or government events such as car rallies, marathons, army training and VIP parties. In most cases these events are highly damaging to both the ecology and image of the protected area and should be severely restricted.

#### **4.11 Educational Use**

The Protected Area has an enormous potential for educational use. It not only provides an accessible field study site exemplifying the desert habitats of Jordan, it also presents an ongoing case study of how tourism and other economic activities can be integrated with landscape and biodiversity conservation.

Historically, the only significant educational use of Wadi Rum has been for short field trips by colleges and universities. These visits continue to take place but are not coordinated with the Protected Area management, so students receive little information about the Protected Area and its conservation programmes. This needs to be addressed.

Under the Second Tourism Project, the RSCN developed an educational programme for Wadi Rum, targeted at the schools around the periphery of the protected area. This is now being implemented through the Protected Area Education Officer and involves the students in many on site activities, exploring different themes, from wildlife conservation to local community issues. The programme is being prepared as a Teachers Activity Pack that will be available for all schools in Jordan.

#### **4.12 Interpretation and Awareness Raising**

As most of the environmental problems in Wadi Rum stem from its tourism use, there is an urgent need to promote a greater understanding of the issue and encourage changes in behaviour in all the major users of the site, including visitors, external tour operators and local community service providers. So far, however, little attempt has been made to engage these users and explain the importance of the Protected Area and the need to regulate damaging activities in the interests of safeguarding both its ecological vitality and its economic value. Furthermore, the lack of on-site interpretation materials and programmes is denying the visiting public the chance to learn more about the natural wonders of Wadi Rum and how best to experience them, thus reducing the potential enjoyment they get from their visit.

A number of initiatives are being taken to address these needs, of which the most important are Education and Awareness Plan, Interpretation Plan and the construction of the Visitor Centre. The Interpretation Plan was completed in 2000 and some of its recommendations have been implemented; notably the installation of information panels in Rum Village and the preparation of information leaflets and other publications. Tour guide training courses have also been completed, since local tour guides are (and will continue to be) a key vehicle for interpreting the site. Many of its other recommendations await the completion of the Visitor Centre, which will provide the “central hub” for visitor information, including an interpretation hall, explaining the conservation importance of Wadi Rum, the threats it faces and the measures needed to ensure its protection.

In view of the critical importance of interpretation, efforts should be redoubled to accelerate progress on the visitor centre and to make the full implementation of the Interpretation Plan an immediate priority for the Protected Area management team.

#### **4.13 Research**

The initial survey work undertaken for the Second Tourism Project has produced a substantial amount of baseline information, but there will continue to be a need for further survey work to complete inventories and to determine ecological processes and relationships within the reserve. There will also be a continuous requirement for monitoring environmental changes in the Protected Area, to

understand and document the impacts of management and to guide future management programmes.

It is recommended to encourage and support outside researchers to carry out work identified as essential in the management plan and which the protected area does not have the resources to do. Any unsolicited research proposals received by the Protected Area Management should be judged on their merits and encouraged, provided they do not clash with existing principles and priorities for management of the Protected Area.

The establishment of “a research hub” in the new visitor centre will play an important role in facilitating and coordinating research programmes, and should improve the archiving of information by ensuring that the results of any research activities taking place on site are stored in the “hub” for the use of the management team and visiting researchers.

#### **4.14 Potential for Improvement of Ecological Values**

The degradation of Wadi Rum’s ecological values has been well documented. There is undoubtedly a significant potential for restoring and improving these values through the management approaches and recommendations already conceived and documented in this management plan and annexed publications (Visitor Management Plan, Interpretation Plan). Many key management actions have already been implemented, including the initial operation of the zoning scheme, the limiting of tourist access points, the improved regulation of hunting, the improved collection of litter, the better licensing of campsites and the better provision of information. However, the two most critical actions that will bring the greatest improvement in ecological values have yet to be implemented: the full operation of the zoning scheme and the establishment of a graded network of vehicle trails. These should be the urgent priority of the Protected Area Management Team.

#### **4.15 FACTORS INFLUENCING MANAGEMENT**

In order to determine the main factors influencing the management of Wadi Rum and identify the problems that need to be addressed in future management strategies, a problem analysis was carried out with the participation of all key stakeholders. These stakeholders included the protected area management team and representatives of AZEZA, RSCN, MOTA, RTC and local community decision makers.

During the analysis, the participants identified the main problem affecting the Wadi Rum Protected Area as:

***“The continuing deterioration of the natural and cultural resources of Wadi Rum, which is threatening the basis of the local tourist economy”.***

This problem was examined further and broken down into ‘immediate’ and ‘root causes’, which form the basis of the completed analysis, as presented in the table below. The results of this analysis, combined with the findings of the evaluation in Section 2, were used to determine the principal objective, operational objectives and outputs of this management plan.

#### **4.15.1 Problem Analysis for Wadi Rum Protected Area**

**Main Problem:** the continuing deterioration of the natural and cultural resources of Wadi Rum, which is threatening the local tourism economy.

<b>Immediate Causes</b>	<b>Root Causes</b>
Unregulated driving of cars in the protected area	Absence of clear and upgraded network of tracks inside the protected area
	Absence of clear and comprehensive plan for tour management inside the protected area
	The cars operate in the protected area are not properly equipped for this purpose.
	Poor information about the major attraction sites and the length of each trip.
	Weak level of awareness
	The drivers are not qualified enough to take environmental precautions in their driving

Poorly regulated camping inside the protected area	Absence of clear and comprehensive plan for campsite management inside the protected area
	Absence of clear procedures for setting up and managing campsites within the protected area
	The relation between the location of the campsites and traditional and tribal issues.
Accidental and deliberate damaging of archaeological sites through tourism activities and local use.	Absence of a plan for protection of archaeological sites.
	Removal of artefacts without permission
	Weak level of awareness about the importance of archaeological sites.
Over cutting of wood	Weak level of awareness about the importance of this issue for the protected area.
	Regulations not fully enforced
	Absence of cheap alternatives for wood.
	Easy access to all parts of the protected area.
	Presence of Bedouin camps in all parts of the protected area.
	Tourist camps in the protected area
Hunting and poisoning of animals	Weak level of awareness about the impact on wildlife.
	Regulations not fully enforced
	The local culture and tradition
	Easy access to all parts of the protected area.
	Availability of automatic machine guns.
	Availability of 4x4 cars in the area.
	Wild carnivores feeding on domestic livestock

Overgrazing	Weak level of awareness about the importance of this issue
	Lack of regulations regulating grazing
	Absence of grazing management plan for the protected area.
	Absence of alternative, economically feasible animals feed.
	The local culture and tradition
	Easy access to all parts of the protected area
Inappropriate sports and other activities allowed inside the protected area	Concentration of sports/activities in sensitive areas
	Political sensitivity. Difficulties in resisting pressure from other government agencies and VIPs
	Weak level of awareness about the impact of these sports on the protected area.
	The ancillary activities, which go with these sports.
Unregulated expansion of buildings within and outside Rum village.	Weak level of architectural awareness.
	Weak compliance to the Rum Village plan.
	The continuous increase population in Rum village.
Waste disposal in the protected area	Weak level of awareness by the local community and visitors.
	There is no solid and liquid waste management system.
	Regulations not fully enforced.
Potential mining of minerals in the Protected Area	Weak level of awareness among decision makers about the impact of mining on the protected area
	Government agencies controlling mining are not fully aware of the protected area boundaries.
	An easy source of income.

Multiple access points	Regulations not fully enforced
	Tribal conflicts over land rights.
	Absence of clear network of tracks inside the protected area.
	The local use of the protected area resources.
	Exploring new areas for visitors.
	Smuggling
Agricultural activities and use of pesticides within the protected area	Regulations not fully enforced
	Tradition and cultural issues related to land tenure
	Weak knowledge of the impact of pesticides on the protected area.
Over use of water resources and construction of small dams	There is no clear mechanism for water distribution.
	Shortage of water in the area.
	Weak level of awareness about water issues.
Unsanitary storage of animal feed inside the protected area	Local community dependency on livestock as a source of income.
	There are no regulations for construction of animal feed storage.
Direct interaction with visitors affecting cultural values	Weak level of awareness about cultural issues that can be affected by visitors.
	“Outsiders” entering the village community for accommodation without appropriate codes of behaviour and regulations.
Collection of specimens for the protected area without permission.	Regulations not fully enforced
	Lack of information for visitors on appropriate behavior and the regulations
Transmission of animals diseases from domestic livestock to wildlife	There is no program of veterinary care for domestic animals.
	Overlap zones between domestic and wild animals.
Invasive species	Increased urbanization of the area around the protected area.
	Weak level of awareness about the impact of invasive species, especially plants.

#### **4.15.2 Local Community Participation**

The project document for the Second Tourism Project emphasized the need to share tourism benefits with local communities and facilitate their participation in the management of the Protected Area. This reflects a growing, worldwide understanding that the fundamental rights and livelihoods of local people who rely on Protected Area lands must be accommodated in management strategies and that ecological and financial sustainability, as well as political support, are more likely to be achieved if local communities are involved in decision making. In the case of Wadi Rum, it also reflects the fact that the local Bedouin tribes were the first to capitalize on the tourism potential of Wadi Rum and effectively created the tourism business upon which the future of the protected area depends.

The attempt to bring about community involvement in Wadi Rum started in 1998, at the very start of the Second Tourism Project, when a steering group of key stakeholders was created by RSCN to guide and monitor the implementation of the project. It included two representatives elected by the seven Bedouin tribes having traditional tribal fronts within the Protected Area. The other stakeholders represented (in equal numbers) were ASEZA, RSCN. For the first few months, the steering group was highly effective and played a major role in reviewing and shaping zoning plans and the interim visitor management plan. However, inter-tribal conflicts and misunderstandings about RSCN's role in tourism development led to an impasse in the work of the committee and it was dissolved.

The loss of the on-site steering group has been partially compensated for by the inclusion of a local community representative on the overall Steering Committee for the Protected Area. This Committee was created under the legislation for the Protected Area and is effectively the official policy-shaping and decision-making mechanism for the site. At the time of preparing this management plan, the appointed representative is the Head of the Rum Tourism Cooperative.

Other mechanisms to facilitate community involvement have been established, including the appointment of community liaison and outreach/education officers in the core management team of the Protected Area. These officers are responsible for bridging the issues and concerns of local people with those of the protected area, through day-to-day contact with individuals, community groups and institutions like cooperatives and



schools. They are also developing education and outreach programmes that help to raise the level of awareness and understanding about the goals of the Protected Area.

The staffing policy of the Protected Area also furthers local community participation by making a commitment to the recruitment and training of local people for all protected area jobs. At present a total of 32 jobs have been created for the core management team, of which only one is filled by a “non-local” person.

In addition to staff posts, RSCN was effective in developing a volunteer programme to support tourism and hunting enforcement programmes. Several volunteers from the local people joined the programme to date and have made a major contribution to the on-going work of the Protected Area.

In terms of benefit sharing, the Rum Tourism Cooperative continues to receive the one-Dinar entrance fee currently paid by visitors and through the development of ranger patrols and better visitor information facilities, the proportion of visitors entering the Protected Area without paying fees has decreased, thereby generating more revenue for the Cooperative.

When the visitor centre and other facilities are completed in the near future, the entrance fees are scheduled to increase significantly in order to provide revenue for the management costs of the protected area, as well as for the local community. In these future scenarios, the amount of income received by the Rum Tourism Cooperative is likely to increase significantly and other Tourism Cooperatives will be eligible to share in the revenue, which is not the case at present (details given in the Tourism Management Plan).

While there has undoubtedly been some progress in addressing issues of community involvement and benefit sharing during the setting-up of the Protected Area, there is a long way to go before the management approach in Wadi Rum can be described as truly “participative”. The main Steering Committee is too remote from the people to address their day-to-day concerns and the Tourism Cooperatives do not necessarily reflect the full spectrum of community opinions and needs. In the area of tourism development, for example, there is a need to find a vehicle for accommodating the views of the younger entrepreneurs, and especially those pioneering adventure tourism in the protected area. These individuals have a good understanding of environment-friendly tourism but are socially isolated from the leadership and decision making machinery of the well-established Tourism Cooperatives. The completion of the new visitor centre

as a single gateway to the Protected Area will also require mechanisms to be found that facilitate better inter-tribal cooperation and wider benefit sharing.

The intention to continue the development of community involvement mechanisms is embraced in both the principal and operational objectives of this management plan (see section 3) However, considerable persistence and open-mindedness will be required to meet these objectives in reality. The long-term goal of the Protected Area management authority should be to create an effective management partnership with local communities that builds upon the shared interests of all parties.

## **SECTION (3): OBJECTIVES OUTPUTS AND ACTION PLAN**

**Principle Objective**

**Operational Objectives**

**Outputs**

**Action Plan**

## **5 SECTION (3): OBJECTIVES OUTPUTS AND ACTION PLAN**

### **5.1 Principle objective:**

To develop appropriate and sustainable tourism within the Wadi Rum Protected Area and conserve the site's significant natural and cultural values, while maximizing the economic returns to local communities and increasing their participation in management.

### **5.2 Operational objectives and outputs**

#### **5.2.1 Tourism Development**

1: To continue and promote conservation oriented tourism development in accordance with the annexed tourism development plan.

#### **Outputs**

- 1.1: Well-implemented tourism development plan.
- 1.2: Comprehensive tourism procedures.
- 1.3: Updated tourism development plan.

#### **5.2.2 Habitats Conservation**

2: To conserve and where necessary restore the representative habitats of the Protected Area.

#### **Outputs**

- 2.1: Well-implemented zoning plan.
- 2.2: Well-implemented rangeland scheme.
- 2.3: Established graded track network, regularity maintained.
- 2.4: Well-implemented monitoring programme.
- 2.5: Detailed research programme applied to key management issues.
- 2.6: Completed baseline survey especially for the Protected Area extension.
- 2.7: Fully equipped lab to serve the research programme of the Protected Area.
- 2.8: Established metrological station in the Protected Area.
- 2.9: All relevant regulations effectively enforced.

### **5.2.3 Species conservation**

3: To conserve viable populations of characteristics species in the protected area, with special emphasis on key and flagship species.

#### **Outputs**

3.1: Implemented system for regulating specimen collection.

3.2: Oryx herd released into the Protected Area and effectively monitored.

3.3: Husbandry of captive Oryx maintained to humane standards.

3.4: Prepared and Implemented conservation programme targeting ibex as a flagship species.

3.5: All relevant regulations effectively enforced.

### **5.2.4 Cultural Conservation**

4: To prevent damage to all key archaeological sites and any others well visited by tourists.

#### **Outputs**

4.1: Visitors' management plan for priority archaeological sites.

4.2: An implemented monitoring programme to assess impact at each priority site.

4.3: Visitor information available on appropriate use of archaeological sites.

5: To encourage the perpetuation of the traditional Bedouins lifestyles where economically feasible and culturally acceptable.

#### **Outputs**

5.1: Bedouin traditions featured in tourism experiences.

5.2: Bedouin culture and tradition respected and facilitated through Protected Area management programmes.

5.3: Bedouin history and culture professionally documented and an archive created.

### **5.2.5 Awareness and Education**

6: To develop an ongoing site-based education programme addressing the root causes of environmental issues in the Protected Area, targeted at schools in the Gweira district and other visiting schools.

## **Outputs**

- 6.1: Existing education programme effectively implemented.
- 6.2: Well-trained local nature clubs supervisors in target schools.
- 6.3: Regular meeting of the local environmental education committee.
- 6.4: Education programme reviewed and evaluated.
- 6.5: Developed educational programme using the Internet center.

7: To develop an ongoing awareness programme for all users and stakeholders of the protected area addressing the identified root causes of environmental problems and to generate support for, and appreciation for the protected area.

## **Outputs**

- 7.1: Existing education and awareness strategy implemented.
- 7.2: Existing interpretation plan fully implemented.
- 7.3: Well-designed interpretation facilities within the visitors centre.
- 7.4: Local guides well qualified in interpretation and visitor management.
- 7.5: Production of regular newsletter of the Protected Area.

### **5.2.6 Community work and outreach**

8: To continue to develop mechanisms for further community participation in the management of the Protected Area.

## **Outputs**

- 8.1: Continuous local participation in the official management committee of the Protected Area.
- 8.2: Regular consultation with local communities over Protected Area development.
- 8.3: Local community working groups created for tourism development issues.

9: To continue to manage and develop income generation initiatives, which complement the management of the Protected Area and address local community needs.

## **Outputs**

- 9.1: Continuous expansion of handcraft production.
- 9.2: Well-implemented marketing plan emphasizing the link with the Protected Area.

### **5.2.7 Legal and institutional arrangements**

10: To continue developing management systems and procedures and building the capacity of the Protected Area team to be able to implement the site based management programmes.

#### **Outputs**

10.1: Well-trained team and capable of implementation of Protected Area management plan.

10.2: Organizational structure reviewed and modified as required.

10.3: Management systems and procedure completed, documented and operational.

11: To continue developing the mechanisms of coordination and communication with all institutions that have a direct relationship with the Protected Area management.

#### **Outputs**

11.1: Signed memorandum of understanding with all target institutions.

11.2: Regular coordination meetings with all target institutions.

12: To develop and implement a comprehensive enforcement plan that covers all the laws and regulations governing the use of the Protected Area.

#### **Outputs**

12.1: Existing enforcement plan effectively implemented.

12.2: Continuous liaison with the governor, Badia Police, Tourism Police and any other enforcement agencies to support the enforcement plan.

12.3: Voluntary scheme for community participation developed and promoted.

### **5.2.8 Buildings, vehicles and equipment**

13: To ensure that the visitor centre and any other Protected Area buildings are well maintained and functional at all times.

#### **Outputs**

13.1: Quality standards defined for maintenance and cleanliness.

13.2: A regular maintenance programme in place.

13.3: All buildings cleaned to appropriate standards.

13.4: Insurance premium for all Protected Area buildings and equipment renewed annually.

14: To ensure that an adequate number of vehicles and other items of essential equipment are available for the effective management of the Protected Area.

**Outputs**

- 14.1: Procedures developed for proper use of cars and equipment.
- 14.2: Effective maintenance system for cars and other essential equipment.
- 14.3: Phased replacement of existing cars with models better suited to desert conditions.

**5.2.9 Financial Sustainability**

15: To develop systems that enable Protected Area revenue to be allocated directly to the on-site conservation programme and encourage financial sustainability.

**Outputs**

- 15.1: Effective fee collection system in place.
- 15.2: Well-implemented system for franchising onsite services.
- 15.3: Financial system efficient and operational.
- 15.4: Business plan prepared and implemented.



### **5.3 Action Plan**



Output 1.2: Comprehensive tourism procedures.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.2.1	Identify issues that need regulations after finishing visitor centre	Tourism																				
1.2.2	Gather and evaluate information for each issue	Tourism																				
1.2.3	Consult local community and area users about suggested regulations	Tourism																				
1.2.4	Prepare draft regulations	Tourism																				
1.2.5	Finalize regulations and approve them from ASEZA	PA manager																				
1.2.6	Supply regulations for all users	Tourism																				
1.2.7	Start implementing of new regulations	Tourism																				
1.2.8	Review procedures and amend them when needed	Tourism																				

Output 1.3: Updated tourism development plan.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.3.1	Prepare a document describing criteria and basis for the plan review process	Tourism																				
1.3.2	Monitor locals and visitors response towards implementing plan according to agreed criteria.	Tourism																				
1.3.3	Start plan review process	Tourism																				
1.3.4	Approve the plan by local community representatives	Tourism																				
1.3.5	Approve the plan by ASEZA and MOTA	Tourism																				
1.3.6	Start implementation of the new plan.	Tourism																				

**Objective 2: To conserve and where necessary restore the representative habitats of the Protected Area.**

Output 2.1: Well-implemented zoning plan.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.1.1	Include the zoning plan procedure in Rum protected Area interpretation plan and publication material.	Tourism																				
2.1.2	Train reception staff on illustrating the zoning plan for the Rum Protected Area visitors	Tourism																				
2.1.3	Monitor the implementation of the zoning plan procedure through the rangers	Rangers																				
2.1.4	Carry out a periodic revaluation for the zoning plan and patrolling and amend it if necessary	Ecologist																				

Output 2.2: Well-implemented rangeland scheme.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.2.1	Consult the targeted groups on the implementation mechanism for the grazing plan	PA Manager																				
2.2.2	Prepare procedure for implementing the grazing plan based on the consultation process.	PA Manager																				
2.2.3	Integrate the grazing plan with the patrolling plan.	Rangers																				
2.2.4	Start implementing and monitoring the grazing procedure.	Rangers																				
2.2.5	Carry out a periodic evaluation for the grazing procedure.	PA Manager																				

Output 2.3: Established graded track network, regularity maintained.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.3.1	Obtain offers for grading and maintaining the track network and contract a specialised company for this purpose.	PA Manager																				
2.3.2	Start the suggested monitoring program for the track network.	PA Manager																				
2.3.3	Review the track network plan and amend it if necessary.	Tourism																				
2.3.4	Review the grading and maintenance mechanisms for the track network and improve it if necessary.	PA Manager																				

Output 2.4: Well-implemented monitoring programme.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	A. Flora monitoring program																					
2.4.1	Update the List of Plants and Herbarium of Wadi Rum Protected Area.	Ecologist																				
2.4.2	Monitor Freshwater Spring Vegetation (Nab'a Al Qattar, Shallalat Laurence and, Nab'a Lawrence)	Ecologist																				
2.4.3	Monitor the Acacia Trees	Ecologist																				
2.4.4	Monitor the Haloxylon Shrubs	Ecologist																				
2.4.5	Monitor the False Fig Trees	Ecologist																				
2.4.6	Monitor the Tamarisk Trees	Ecologist																				



	B. Fauna monitoring program	Resp.	2003				2004				2005				2006				2007			
	Invertebrates		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.4.7	Monitor the population change of the darkling beetles like <i>Trachyderma hispida</i> , <i>Trachyderma philistina</i> and <i>Erodium rothi</i> .	Ecologist																				
2.4.8	Monitors the population change of the dragonflies.	Ecologist																				
	Reptiles																					
2.4.9	Monitor and assess the relative abundance of Rum Protected Area reptile species.	Ecologist																				
2.4.10	Establish and monitor <i>Phrynocephalus arabicus</i> distribution and relative abundance inside the protected area.	Ecologist																				
2.4.11	Monitor and evaluate the risk of road killed incidences for the nocturnal reptile species.	Ecologist																				

	Birds	Resp.	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.4.12	Monitor the bird species status and distribution. (Repeat of current survey including the extension area)	Ecologist																				
2.4.13	Monitor the Autumn and Spring raptor migration in the Rum Protected Area.	Ecologist																				
	Rodent																					
2.4.14	Assess and monitor the fluctuations in density of rodent species.	Ecologist																				
	Carnivores																					
2.4.15	Monitor the carnivore's species status and distribution. (Repeat of current survey)	Ecologist																				

Output 2.5: Detailed research programme applied to key management issues.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.5.1	Monitor the Sand Dunes Movements within the Protected Area.	Ecologist																				
2.5.2	Monitor the Change in the Vegetation Communities within the Protected Area.	Ecologist																				
2.5.3	Test the Seeds Viability for the Main Trees Species.	Ecologist																				
2.5.4	Carry out the livestock counting, through the year in three counts, each two years.	Ecologist																				
2.5.5	Assess and understand the Bedouin tribes' movements.	Ecologist																				
2.5.6	Monitor the effect of grazing on vegetation cover in the different grazing zones of the protected area.	Ecologist																				

Output 2.6: Completed baseline survey especially for the protected area extension																						
No	B. Flora Research	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.6.1	Carry out the biomass productivity study once every five years.	Ecologist																				
2.6.2	Carry out a flora baseline survey in the proposed extension area for Rum Protected Area	Ecologist																				
	<b>B. Fauna Research</b>																					
	<b>Invertebrates</b>																					
2.6.3	Carry out a comprehensive sampling for the macro-invertebrates with particular emphasis on the extension area.	Ecologist																				
2.6.4	Assess the presence and distribution of the butterfly fauna of the protected area.	Ecologist																				
	<b>Reptiles</b>																					
2.6.5	Carry out a reptiles phase II survey to include the extension area.	Ecologist																				
2.6.6	Carry out a nocturnal reptile species survey.	Ecologist																				

No	Birds	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.6.7	Determine the breeding bird densities.	Ecologist																				
2.6.8	Assess the breeding bird success.	Ecologist																				
2.6.9	Carry an owls and nightjars survey	Ecologist																				
2.6.10	Carry out a detailed study on the nationally important Sooty falcon.	Ecologist																				
	Bats																					
2.6.11	Assess the presence and distribution of bat species at Wadi Rum Protected Area including the extension area.	Ecologist																				
	Ungulates																					
2.6.12	Carry out an aerial survey to assess the presence and distribution of Nubian Ibex.	Ecologist																				

No	Carnivores	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.6.13	Carry out a separate carnivore survey in the area south of the protected area reaching the Saudi borders.	Ecologist																				
	C. Archaeological sites Research																					
2.6.14	Systematic walking survey to look for new sites																					
2.6.15	Revisiting some of the previously recorded sites, particularly those which have structures, in order to confirm their locations and current state of preservation.																					
2.6.16	Recording properly the observed paved enclosures (a sanctuary, as opposed to a domestic structure).																					
2.6.17	Interviewing the local communities to find out about previously unknown sites and also to help in relocating sites.																					

Output 2.7: Fully equipped lab to serve the research programme of the protected area.																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.7.1	Determine the needed equipment and its specifications.	Ecologist																				
2.7.2	Obtain offers for buying these equipment.	Ecologist																				
2.7.3	Purchase the needed equipment.	ASEZA																				
2.7.4	Carry out a training course on how using these equipment.	Ecologist																				
2.7.5	Prepare a procedures for using these equipment	Ecologist																				
2.7.6	Prepare a procedure for the use the lab.	Ecologist																				

<b>Output 2.8: Established two meteorological stations in the protected area.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.8.1	<b>Identify the needed meteorological parameters and measurements.</b>	Ecologist																				
2.8.2	Identify the needed equipment and materials.	Ecologist																				
2.8.3	<b>Consult the meteorological department in Amman.</b>	Ecologist																				
2.8.4	Identify the needed resources for the station establishment.	Ecologist & PA Manager																				
2.8.5	Purchase the needed equipments and materials in coordination with meteorological department.	ASEZA																				
2.8.6	Carry out a training course on the data gathering and analysis for Rum Protected Area responsible staff. This course will be carried out in coordination with meteorological department.	Meteorological dep.																				



<b>Output 2.9: All relevant regulations effectively enforced</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.9.1	<b>Determine and collate the laws that related to the protected area conservation.</b>	PA Manager																				
2.9.2	<b>Seek the mandate for implementing these laws</b>	PA Manager																				
2.9.3	<b>Follow up the implementation of the systems and procedure mentioned in the Patrol and enforcement plans</b>	Rangers																				
2.9.4	<b>Assess the technical and manpower resources needed for implementing these laws and acquire them.</b>	PA Manager & Rangers																				
2.9.5	<b>Follow up violation cases and archive them.</b>	Rangers																				
2.9.6	<b>Review the patrolling plan</b>	PA Manager																				

**Objective3: To conserve a viable populations of characteristics species in the protected area, with special emphasis on key and flagship species.**

<b>Output 3.1: Implemented system for regulating specimen collection.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.1.1	Prepare a model memorandum about alive and non-alive specimen gathering in Rum in accordance to Rum laws and approve it legally	Ecologist																				
3.1.2	Supply memo to relevant stakeholders	Ecologist																				
3.1.3	Monitor specimen gathering by rangers and document violations	Ecologist																				
3.1.4	Review and assess memo	Ecologist																				

Output 3.2: Oryx herd released into the Protected Area and effectively monitored. "As specified in the Oryx strategy"																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	<b>A: Management of the Oryx programme and enforcement</b>																					
3.2.1	Keep close contact with RSCN of all issues related to the Oryx.	PA Manger																				
3.2.2	Discuss with Saudi Arabian authority the issue of tranboundary movement of the Oryx.	PA Manger																				
3.2.3	Prepare and implement a patrol plan specifically for the Oryx.	PA Manger																				
3.2.4	Develop a MOU with RSCN about the management of Oryx programme.	PA Manger																				
	<b>B: Trial release</b>																					
3.2.5	Evaluate adaptation of the animals to the desert conditions in Wadi Rum.	Ecologist																				
3.2.6	Select the herd for the trial release.	Ecologist																				
3.2.7	Conduct a medical check up and vaccinate them.	Ecologist																				
3.2.8	Conduct a trial release.	Ecologist																				
3.2.9	Monitor the behaviour of the animals in the wild.	Ecologist																				
3.2.10	Evaluate the results of the trail release.	Ecologist																				

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	C: Final release																					
3.2.11	Conduct the final release.	Ecologist																				
3.2.12	Monitor the herd in the wild.	Ecologist																				
	D: Awareness campaign																					
3.2.13	Conduct series of meetings with heads of tribes about Oryx release to gain their support.	PA Manger																				
3.2.14	Conduct series of meetings with decision makers to gain their support for the Oryx release.	PA Manger																				
3.2.15	Integrate the Oryx story in the interpretation plan.	PA Manger																				
3.2.16	Reprint the Oryx newsletter and distribute it to target groups.	PA Manger																				
3.2.17	Organise the final release under the patronage of the Royal family.	PA Manger																				

<b>Output 3.3: Husbandry of captive Oryx maintained to humane standards.</b>																						
<b>No</b>	<b>Activity</b>	<b>Resp</b>	<b>2003</b>				<b>2004</b>				<b>2005</b>				<b>2006</b>				<b>2007</b>			
			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
3.3.1	Continue medical check up and vaccinate them when required.	Ecologist																				
3.3.2	Supply the Oryx with the feed and water.	Ecologist																				
3.3.3	Maintain the recoding system of the Oryx.	Ecologist																				
3.3.4	Monitor the newborn Oryx and fit tags in their ears.	Ecologist																				
3.3.5	Conduct a regular counting for the Oryx.	Ecologist																				
3.3.6	Keep close contact with RSCN of all issues related to the Oryx.	PA Manger																				

<b>Output 3.4: Prepared and Implemented conservation programme targeting ibex as a flagship species.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.4.1	Identify Ibex distribution in Rum and prepare maps	Ecologist																				
3.4.2	Develop and implement a special monitoring programme for Ibex	Ecologist																				
3.4.3	Conduct an awareness plan concerning Ibex significance	Awareness																				

<b>Output 3.5: All relevant regulations effectively enforced. See output 2.9</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

**Objective 4: To prevent damage to all key archaeological sites and any other well visited by tourists.**

**Output 4.1: Visitor's management plan for priority archaeological sites.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4.1.1	Determine the most important and visited archaeological sites and collect information about the number and uses for these sites during the visits.	Tourism																				
4.1.2	Prepare a preliminary onsite plan for management visitors in these sites.	Tourism																				
4.1.3	Consult the users and stakeholders	Tourism and Pa Manager																				
4.1.4	Prepare the final plan and obtain approval.	Tourism																				
4.1.5	Distribute the final plan for the relevant stakeholders and users	Tourism																				
4.1.6	Start implementing the plan	Tourism																				
4.1.7	Monitor the plan implementation and amend it if necessary.	Tourism																				

<b>Output 4.2: An implemented monitoring programme to assess impact at each priority site.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q!	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q!	Q2	Q3	Q4
4.2.1	<b>Prepare and implement a monitoring programme for visitors' impact on the priority sites.</b>	Ecologist																				
4.2.2	<b>Determine the nature and intensity of visitors' activities effect on the priority sites.</b>	Ecologist																				
4.2.3	<b>Prepare a report illustrating the results of this study.</b>	Ecologist & Tourism																				
4.2.4	<b>Integrate these results in the review the onsite future plans for the management the visitor and their impact on these sites.</b>	Ecologist & Tourism																				

<b>Output 4.3: Visitor information available on appropriate use of archaeological sites (See output 2.1)</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q!	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q!	Q2	Q3	Q4



Objective (5): To encourage the perpetuation of the traditional Bedouins lifestyles where economically feasible and culturally

<b>Output 5.1: Bedouin traditions featured in tourism experiences.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.1.1	Assess the current situation for the different tourism activities that related to the Bedouins lifestyle and document it	Tourism																				
5.1.2	Review the study of the Bedouin's life in Rum Area and merge it with the different tourism programmes	Tourism																				
5.1.3	Develop two tourism activities in the area related to the Bedouin's life at minimum.	PA Manager																				
5.1.4	Set up a program for the tourism activities based on the seasonal Bedouin activities.	Tourism																				
5.1.6	Set up an organisation mechanism for Camel racing in areas that not affect the nature of the site periodically.	Tourism																				

<b>Output 5.2: Bedouin and culture and tradition respected and facilitated through Protected Area management programmes..</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.2.1	<b>Define the Bedouin's traditions that should be respected and protected.</b>	PA Manager																				
5.2.2	<b>Develop a uniform for protected area staff reflecting the tradition of the area.</b>	PA Manager																				
5.2.3	<b>Set up procedure for assuring implementing this uniform</b>	Tourism																				
5.2.4	<b>Encourage and assure all local communities inside the desert at Rum area to use the Bedouin's tents</b>	PA Manager																				
5.2.5	<b>Assure on the service staff to behave and committed to the Bedouin's tradition</b>	Tourism Manager																				

<b>Output 5.3: Bedouin history and culture professionally documented and archive created.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.3.1	<b>Get the Bedouin lifestyle and tradition survey final report from the Canadian researcher.</b>	PA Manager																				
5.3.2	<b>Review and assess the survey report and try filling the gaps in it.</b>	PA Manager																				
5.3.3	<b>Merge the survey information and result into the Rum village museum.</b>	PA Manager																				

**Objective 6: to develop an ongoing site-based education programme addressing the root causes of environmental issues in the protected area, targeted at schools in the Gweira district and other visiting schools.**

<b>Output 6.1: Exiting education program effectively implemented.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.1.1	<b>Publish the activities guide / Publications</b>	Awareness																				
6.1.2	<b>Carry out a workshop for the decision makers to launch the education programme and it's publications.</b>	Awareness																				
6.1.3	<b>Distribute the guide to the targeted schools in the education programme</b>	Awareness																				
6.1.4	<b>Organize a schedule for the targeted schools visits and implement the onsite activities.</b>	Awareness																				
6.1.5	<b>Organize and implement periodic programme for visiting the targeted schools and holding lectures and activities.</b>	Awareness																				
6.1.6	<b>Carry out an annual competition.</b>	Awareness																				
6.1.7	<b>Organize camps for students annually.</b>	Awareness																				
6.1.8	<b>Organize annual environment festival</b>	Awareness																				

<b>Output 6.2: Well-trained local nature clubs supervisors in targeted schools.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.2.1	Assess the training needs for local nature clubs supervisors in the targeted schools.	Awareness																				
6.2.2	Prepare an annual training programme.	Awareness																				
6.2.3	Prepare annual reports on this training programme.	Awareness																				

<b>Output 6.3: Regular meeting for the local environmental education committee.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.3.1	Carry out an annual election for the committee.	Awareness																				
6.3.2	Hold a monthly meeting	Awareness																				
6.3.3	Prepare minutes of meeting and distribute them to the committee members.	Awareness																				

<b>Output 6.4: Education programme reviewed and evaluated.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.4.1	<b>Implement the follow up schedule that mention in the education program strategy and public awareness program.</b>	Awarenes s																				
6.4.2	<b>Analyse the results of this program and review the programme if needed.</b>	Awarenes s																				

<b>Output 6.5: Developed educational programme using the Internet centre.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.5.1	<b>Follow up the internet connection problem at the centre</b>	Awareness																				
6.5.2	<b>Prepare maintenance program for the centre periodically.</b>	Awareness																				
6.5.3	<b>Promote the centre activities for the targeted groups.</b>	Awareness																				
6.5.4	<b>Develop an agreement with the targeted groups on the uses of the centre.</b>	Awareness																				
6.5.5	<b>Implement the activities inside the centre.</b>	Awareness																				
6.5.6	<b>Evaluate the centre performance including the activities that carried in it.</b>	Awareness																				
6.5.7	<b>Prepare a new programme based on the results of the evaluation.</b>	Awareness																				
6.5.8	<b>Implement the new programme.</b>	Awareness																				

**Objective7: To develop an ongoing awareness programme for all users and stakeholders of the protected area addressing the identified root causes of environmental problems and to generate support for, and appreciation for the protected area.**

<b>Output 7.1: Existing education and awareness strategy implemented.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.1.1	Conduct a programme for visiting decision makers to gain needed support	PA Manager																				
7.1.2	Supply decision makers with Rum publications	PA Manager																				
7.1.3	Exchange visits in formal and social ceremonies with locals and decision makers	PA Manager																				

<b>Output 7.2: Existing interpretation plan fully implemented.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.2.1	Contract a company to finalize interpretation signs according to plan	Tourism																				



<b>Output 7.3: Well-designed interpretation facilities within the visitors centre.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.3.1	Identify messages and stories for display in visitor centre	Tourism																				
7.3.2	Identify equipment needed to interpretate messages	Tourism& Awareness																				
7.3.3	Contract a company to prepare designs	PA Manager																				
7.3.4	Identify lectures room needs and equipment and supply them	PA Manager																				
7.3.5	Continuous follow up for interpretation rooms and equipment and their development	Awareness																				

<b>Output 7.4: Local guides well qualified in interpretation and visitor management.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.4.1	Continue implementing local guides licensing with ASEZA	PA Manager																				
7.4.2	Conduct a periodical training programme for guides	Tourism																				
7.4.3	Continuous evaluation for guides	Tourism																				
7.4.4	Conduct new training programmes based on evaluation	Tourism																				

<b>Output 7.5: Production of regular newsletter of the Protected Area.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.5.1	Identify newsletter main theme, and write articles and gather pictures and information	PA Manager																				
7.5.2	Prepare bids for design and printing, and contract a company to implement	PA Manager																				
7.5.3	Supply newsletter to target groups	PA Manager																				

**Objective 8: To continue to develop mechanisms for further community participation in the management of the Protected Area.**

**Output 8.1: Continuous local participation in the official management committee of the Protected Area.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
8.1.1	Continue to conduct monthly meeting for management committee	PA Manager																				
8.1.2	Distribute meeting minutes after documentation	PA Manager																				
8.1.3	Review committee role every two years	PA Manager																				

**Output 8.2: Regular consultation with local communities over Protected Area development.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
8.2.1	Identify local community representatives	PA Manager																				
8.2.2	Conduct meetings with local community representatives to discuss issues related to managing Rum area and any urgent case	ASEZA																				

<b>Output 8.3: Local community working groups created for tourism development issues.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
8.3.1	Identify topics that need consulting tour operators and agree it within independent committees	PA Manager																				
8.3.2	Establish specialized committees for each topic	PA Manager																				
8.3.3	Conduct committee monthly meeting	PA Manager																				
8.3.4	Review committees every two years	PA Manager																				

**Objective 9: To continue to manage and develop income generation initiatives, which complement the management of the Protected Area and address local community needs.**

<b>Output 9.1: Continuous expansion of handcraft production.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
9.1.1	Develop new products related to Rum area and based on local and international customer needs	Handicraft Centre																				
9.1.2	Conduct feasibility studies for new products	Handicraft Centre																				
9.1.3	Produce a group of prototypes and assess their marketing	Handicraft Centre																				
9.1.4	Identify new production lines manpower and technical needs and supply them	Handicraft Centre																				
9.1.5	Start production	Handicraft Centre																				
9.1.6	Evaluate products and develop whenever needed	Handicraft Centre																				

<b>Output 9.2: Well-implemented marketing plan emphasizing the link with the Protected Area.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
9.2.1	Develop and implement a group of procedures to ensure that Rum shop is ready to display and market Rum products	Handicraft Centre																				
9.2.2	Sign memorandum of cooperation with RSCN and other marketing agencies	Handicraft Centre																				
9.2.3	Implement periodical evaluation for markets and products offers and demands	Handicraft Centre																				
9.2.4	Develop new marketing systems	Handicraft Centre																				
9.2.5	Prepare periodical reports	Handicraft Centre																				

**Objective 10: To continue developing management systems and procedures and building the capacity of the Protected Area team to be able to implement the site based management programmes.**

**Output 10.1: Well-trained team and capable of implementation of Protected Area management plan.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
10.1.1	Review the staff need after the visitor centre.	PA Manager																				
10.1.2	Conduct training need analysis for new staff.	PA Manager																				
10.1.3	Continue implementation of the existing training programme.	PA Manager																				
10.1.4	Review training needs for staff annually according to the individual performance review.	PA Manager																				
10.1.5	Implement an annual training programme for staff according to their job description.	PA Manager																				

**Output 10.2: Organisational structure reviewed and modified as required.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
10.2.1	Review the existing organisational structure.	PA Manager																				
10.2.2	Implement the new structure.	PA Manager																				

<b>Output 10.3: Management systems and procedures completed, documented and operational.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
10.3.1	Review and analyse the existing systems and procedure.	PA Manager																				
10.3.2	Amend and improve the existing systems according the analysis.	PA Manager																				
10.3.3	Develop procedure for subjects that don't have procedure.	PA Manager																				
10.3.4	Obtain official approval for the new procedures.	PA Manager																				
10.3.5	Prepare manual documents all the operation procedures.	PA Manager																				
10.3.6	Start implementation of the new procedures.	PA Manager																				



**Objective 11: To continue developing the mechanisms of coordination and communication with all institutions that have a direct relationship with the Protected Area management.**

**Output 11.1: Signed memorandum of understanding with all target institutions.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
11.1.1	Define related institutions and the type of relation with the PA.	PA Manager																				
11.1.2	Agree common understanding and phrase that in official memorandum of understandings format	PA Manager																				
11.1.3	Implement the memorandum of understandings.	PA Manager																				
11.1.4	Review the memorandum of understandings and amend them when necessary.	PA Manager																				

**Output 11.2: Regular coordination meetings with all target institutions (See output 7.1)**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

**Objective 12: To develop and implement a comprehensive enforcement plan that covers all the laws and regulations governing the use of the Protected Area.**

Output 12.1: Existing enforcement plan effectively implemented (See output 2.9).

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

**Output 12.2: Continuous liaison with the governor, Badia Police, Tourism Police and any other enforcement agencies to support the enforcement plan.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
12.2.1	Conduct a workshop with the governor, badia police, tourism police to brief them about the patrol plan.	PA Manager																				
12.2.2	Form a working group to follow coordination in implementation of the plan.	PA Manager																				
12.2.3	Write regular reports about progress in implementation of the patrol plan.	PA Manager																				
12.2.4	Conduct regular meeting to review progress in implementation of the plan.	PA Manager																				

<b>Output 12.3: Voluntary scheme for community participation developed and promoted.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
12.3.1	Form a voluntary group to support the management of the PA.	Education																				
12.3.2	Develop mechanisms to promote voluntary work in the enforcement scheme.	Education																				
12.3.3	Arrange annual volunteers ceremony.	Education																				

**Objective 13: To ensure that the visitor centre and any other Protected Area buildings are well maintained and functional at all times.**

<b>Output 13.1: Quality standards defined for maintenance and cleanliness.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
13.1.1	Conduct study tours to appropriate place and consult relevant people.	PA Manager																				
13.1.2	Develop systems and procedures for quality control.	PA Manager																				
13.1.3	Train the PA staff on the system implementation.	PA Manager																				
13.1.4	Develop a manual for the system and procedures.	PA Manager																				
13.1.5	Write the system and procedure in a contract form.	PA Manager																				
13.1.6	Sign contracts with qualified franchisee on the system implementation.	PA Manager																				
13.1.7	Review the system and procedure and amend them when necessary.	PA Manager																				

<b>Output 13.2: A regular maintenance programme in place.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
13.2.1	Define buildings and utilities need regular maintenance.	Admin																				
13.2.2	Define maintenance need for each building and develop schedule for regular maintenance.	Admin																				

<b>Output 13.3: All buildings cleaned to appropriate standards</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
13.3.1	Define buildings and utilities need regular cleaning.	Admin																				
13.3.2	Define cleaning need for each building and develop schedule for regular cleaning.	Admin																				
13.3.3	Distribute the programme to the implementing staff and (franchisee company).	Admin																				
13.3.4	Monitor implementation of the procedures by responsible staff.	Admin																				

<b>Output 13.4: Insurance premium for all Protected Area buildings and equipment renewed annually.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
13.4.1	Obtain tenders for insurance for PA buildings and equipment and sign contracts with qualified companies.	Admin																				
13.4.2	Follow up implementation of contracts.	Admin																				
13.4.3	Renew contracts before termination.	Admin																				

**Objective 14: To ensure that an adequate number of vehicles and other items of essential equipment are available for the effective management of the Protected Area.**

**Output 14.1: Procedures developed for proper use of cars and equipment.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
14.1.1	Produce a list of existing cars and equipment and their proper use.	Admin																				
14.1.2	Develop a system and procedures cars and equipment use.	Admin																				
14.1.3	Monitor regularly the implementation of the system and improve it when required.	Admin																				

**Output 14.2: Effective maintenance system for cars and other essential equipment.**

No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
14.2.1	Develop a filing system for existing cars and equipment and their status.	Admin																				
14.2.2	Develop a system and procedures for proper maintenance of cars and equipment according to ASEZA procedures.	Admin																				
14.2.3	Follow regular maintenance for cars.	Admin																				

<b>Output 14.3: Phased replacement of existing cars with models better suited to desert conditions.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
14.3.1	Conduct a regular assessment for cars and equipment according to their "shelf life".	Admin																				
14.3.2	Purchase cars and equipment as a replacement for existing ones.	Admin																				



**Objective 15: To develop systems that enable Protected Area revenue to be allocated directly to the on-site conservation programme and encourage financial sustainability.**

<b>Output 15.1: Effective fee collection system in place.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.1.1	Develop a comprehensive procedure for money collection from the site and make sure it is deposited in the PA bank account.	Admin																				
15.1.2	Obtain a bank guarantee from all the finance staff.	Admin																				
15.1.3	Develop an action plan for starting money collection from the PA.	Admin																				
15.1.4	Obtain a monthly statement form the bank.	Admin																				
15.1.5	Evaluate the effectiveness of the system and improve it when needed.	Admin																				

<b>Output 15.2: Well-implemented system for franchising onsite services.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.2.1	Define and classify buildings and service, which can be franchised.	Admin																				
15.2.2	Advertise for franchising.	PA Manager																				
15.2.3	Sign contacts with selected companies and individuals.	PA Manager																				
15.2.4	Monitor implementation of the contracts.	Admin																				

<b>Output 15.3: Financial system efficient and operational.</b>																						
No	Activity	Resp	2003				2004				2005				2006				2007			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.3.1	Meet with ASEZA and define mechanisms for to start implementation of the financial system.	PA manager																				
15.3.2	Monitor expenditure according to financial system.	Admin																				
15.3.3	Monitor income according to financial system.	Admin																				
15.3.4	Evaluate the system and amend it when required.	PA Manager																				

<b>Output 15.4: Business plan prepared and implemented.</b>																						
<b>No</b>	<b>Activity</b>	<b>Resp</b>	<b>2003</b>				<b>2004</b>				<b>2005</b>				<b>2006</b>				<b>2007</b>			
			<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
15.4.1	Develop TOR for the consultant that will prepare the plan.	PA Manager																				
15.4.2	Recruit a consultant according to TOR.	PA Manager																				
15.4.3	Develop procedures for implementation of the plan.	Admin																				
15.4.4	Implement procedures, which guarantee effective implementation of the plan.	Admin																				
15.4.5	Evaluate the plan and emend it when needed.	Admin																				

## **6 Annexes**

**Rum Protected Area**  
**Activity guide-line for the zoning and**  
**grazing plan in the Protected Area**

**Activity guide-line for the zoning plan in the  
Rum Protected Area**

<b>Zone</b>	<b>Intensive use zone</b>	<b>Wilderness Area</b>
<b>Area</b>	<b>290 km<sup>2</sup></b>	<b>439 km<sup>2</sup></b>
<b>Allowed Activities</b>	Hiking: Open	Hiking: 150/Day
	Climbing: Open	Climbing: 40/Day
	Camping: Open	Camping: 150/Day
	Safari Trips: Open	
	Biking trip	Camel Riding: 50/Day
	Camel Riding: Open	
	Horse Riding: 50/Day	Horse Riding: 15/Day
	Research and Surveys: Open	Research and Surveys: 15 researchers / day
	Grazing: Only local people (See grazing plan)	Grazing: Only local people (See grazing plan)
	Setting up Bedouins tents. Only local people	Setting up Bedouins tents. Only local people
	Marathon: 250/Year	
	Camel Racing 1/Month	
	Cars Parking: The Village and the visitor Center	
	Agriculture: The Village and the Visitor Center	
	Infra-structure development: The Village and the Visitor Center	
	Gliding 5 a year	
	Ballooning: Fixed to the visitors center	

<b>Zone</b>	<b>Intensive use zone</b>	<b>Wilderness Area</b>
<b>Forbidden Activities</b>	Military trainings, Horse and Car racing	Constructing and Infra-Structure
	Hunting	Hunting
	Wooding	Wooding
	Mining	Mining
	Fireworks and shooting	Agriculture
		Fireworks and shooting
		Gliding and Ballooning
		Car Racing
		Marathon racing
		Camel Marathon racing
		Horse Racing
		Military Activities
		Social Activities
		Car Trips

### Grazing Regulations in the Rum Protected Area

<b>Zone</b>	<b>Area (km<sup>2</sup>)</b>	<b>6.1 Percentage</b>	<b>Grazing Period</b>
<b>No Grazing Zone</b>	27 km <sup>2</sup>	3.8%	No grazing all around the year
<b>Seasonal Grazing Zone</b>	361 km <sup>2</sup>	49%	Spring-Summer
<b>Grazing Zone</b>	278 km <sup>2</sup>	38%	Grazing all around the year
<b>Grazing Zone (only Sweilhiyyeen &amp; Qudman)</b>	14 km <sup>2</sup>	2%	The Northern part of Wadi Marsad
<b>Grazing Zone (only Zalabia &amp; Sweilhiyyeen)</b>	48 km <sup>2</sup>	7%	The Northern part of Wadi Rum & Wadi Raman



# **Wadi Rum Protected Area Visitor Management Plan**

**February 2003**



**Prepared by the  
Royal Society for the Conservation of Nature**

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# Wadi Rum Protected Area Visitor Management Plan

## Background to the plan

The spectacular desert scenery of Wadi Rum is becoming one of Jordan's major tourist attractions, with visitor numbers approaching one hundred thousand, making it the third most popular site in the Kingdom. By the year 2004 the total number is expected to reach a quarter of a million.

This growing tourism pressure, however, has been responsible for serious damage to the special landscape and ecology of Wadi Rum. The unregulated vehicle tours, in particular, have caused a huge proliferation of tracks across the desert and degraded large areas of vegetation and sand dunes. There has also been a marked increase in littering and the defacement of archaeological sites by graffiti.

To safeguard the unique natural character of Wadi Rum, it was declared a Special Regulations Area by the Aqaba Regional Authority in 1997 and included in the World Bank assisted 2<sup>nd</sup> Tourism Project, which began in 1998. This project is an initiative to re-develop tourism in Rum so that it can be sustained without causing serious environmental impact, while still generating significant revenue and other benefits for local communities.

An important element of the project is the preparation of a **visitor management plan**, addressing the causes of the visitor-related environmental problems in Wadi Rum. This plan has been approached in two stages: an interim visitor management plan dealing with "emergency" measures that could be taken while the conservation management plan and new infrastructure were being developed; and a definitive visitor management plan, prescribing a long-term strategy for the site, with the management plan and infrastructure in place and operational.

The interim plan was completed in 1999 and has been used to guide on site management actions to the present day (August 2002). The plan presented in this document is the definitive visitor management plan, which has been developed alongside the conservation management plan and will supersede the interim plan as the guiding reference for the site managers. It builds extensively on the interim plan, since both plans have been required to address the fundamental causes of environmental degradation in the protected area. It also gives considerable attention to the role of the new Visitor Centre, which is scheduled to be completed and functional during the early part of 2003. This Centre will be the operational hub for tourism management throughout the protected area and its effective operation will be crucial to meeting long-term conservation and tourism goals.

## Format and content of the plan

The plan is broken down into five main sections, as follows:

### **Section One: Key developments since the Interim Visitor Management Plan**

This section summarizes the changes that have taken place in the protected area since 1999 as a result of the Tourism Project and the Interim Visitor Management Plan, which are of particular relevance to visitor management. As such, it helps to

define the context for the visitor management strategy and recommendations prescribed in this definitive plan

### **Section Two: Evaluation of the Existing Situation**

This presents a review of the current situation in terms of how visitors use and affect the site, how they are managed and what the impact of recent changes in management has been. It also defines the implications of the current situation for the future management of the site.

### **Section Three: Summary of key Issues to be addressed**

Here, the key findings of the Evaluation are summarized as bullet points, providing the guidelines and rationale for the recommendations and plan of action presented in the following section.

### **Section Four: Recommended Strategy**

This section makes recommendations for dealing with the key issues identified in sections 2 and 3. It is broken down into subsections, each dealing with a specific topic. The principal recommendations are summarised as bullet points at the end of each subsection. It includes a detailed sub-section on the role of the Visitor Centre, which is due for completion in the first half of 2003 and will provide the new operational hub for visitor management within the protected area.

### **Section Five: Action Plan**

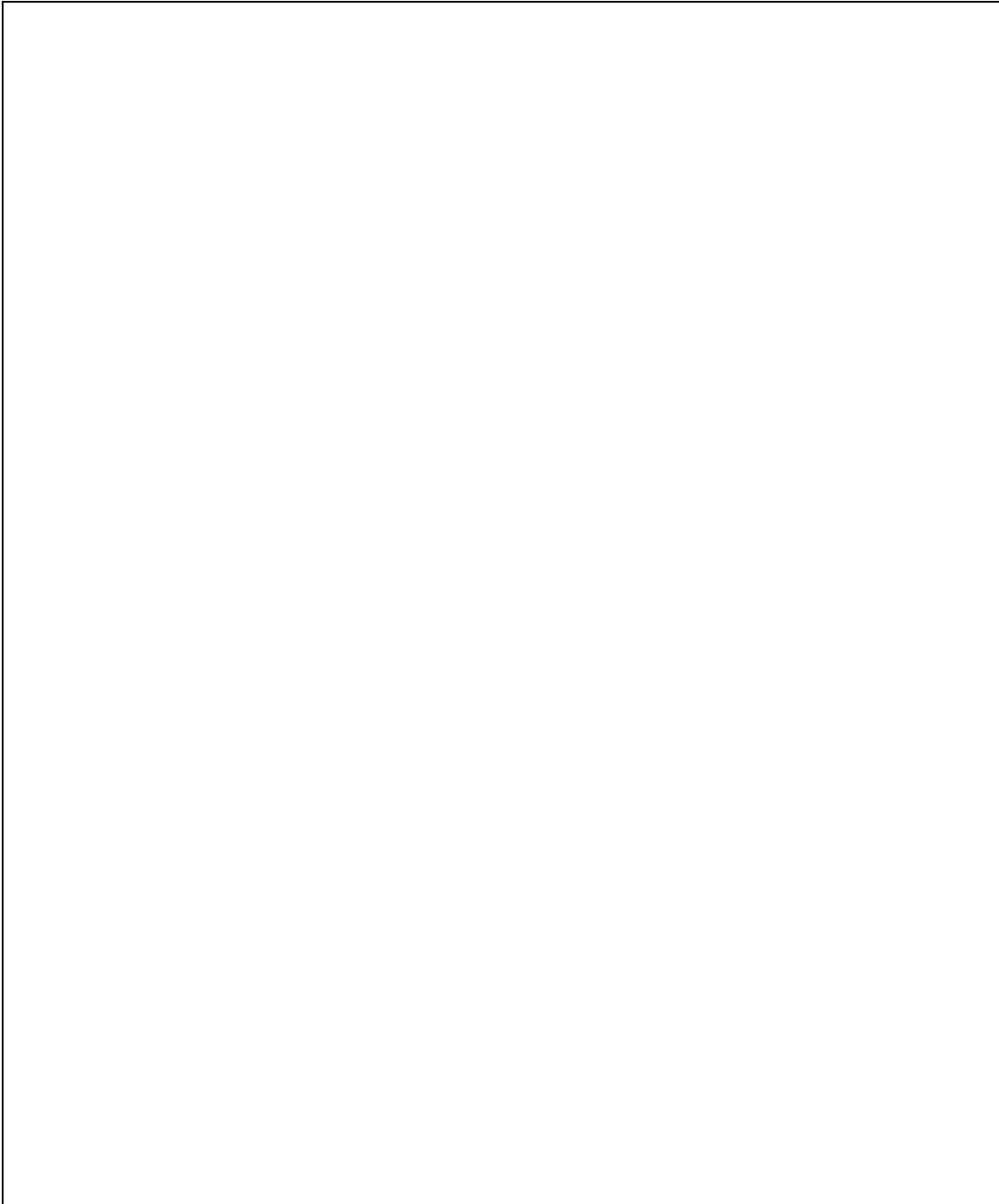
The Action Plan presents the recommendations against a 3-year time frame for implementation.

### **Annexes**

The Annexes contain supporting documents, including the protected area regulations, promotional materials, and guidelines for the zoning scheme.

## General site map

This map shows the location and main features of the Wadi Rum Protected Area, including boundaries and the main infrastructure and facilities. It is positioned at this point in the document to help readers understand the context of the references made in the rest of the visitor management plan.



## **Section One**

### **Key developments since the Interim Visitor Management Plan**

## 1.0 Key developments since the interim visitor management plan

Over the three years since the Interim Visitor Management plan was prepared (July 1999 – July 2002), many changes have taken place in the Wadi Rum Protected Area that are of great significance for both ongoing and future tourism management programmes. These changes, which are summarized in bullet points below, help to establish the context for the recommendations made in this definitive plan.

- ❑ **Creation of site management team and ranger patrols:** Twenty eight staff have been employed as the core protected area management team, including eight as rangers. These rangers now have an established patrol programme that enables them to monitor and guide the activities of visitors so that they conform with necessary protection measures
- ❑ **Improved control of access and entrance charges:** Visitor access points into the protected area have been reduced from 6 to 2 (Rum Village and Disi) as a result of effective ranger patrols and this enables more influence on visitor distribution and better collection of entrance fees. Few visitors are now able to enter the protected area without paying.
- ❑ **Protected area regulations drafted and ratified by government.** A set of legally enforceable regulations was finalized in 2001 and ratified by the Government in the same year. These enable the on-site management team to enforce compliance to a raft of measures addressing all activities that may damage Wadi Rum's intrinsic values, from off-road driving and waste disposal to mineral extraction and hotel developments.
- ❑ **Preliminary zoning scheme tested and evaluated.** The first zoning scheme devised for the Interim Management Plan, which created three distinct zones in the protected area with different permitted uses, was tested and evaluated through on-site trials and consultation with stakeholders. Responses suggest that the zoning scheme needs to be modified.
- ❑ **Temporary visitor management scheme in Rum Village implemented.** Simple changes were made to the infrastructure surrounding the rest house in Rum Village to improve its effectiveness as the main operational hub for tourism services in the protected area until the Visitor Centre opens in 2003. These changes included improved parking layouts and signage, provision of information panels and the creation of a visitor reception in a converted Hijazi railway car. These have proved highly successful in streamlining visitor flow, raising awareness of Wadi Rum's importance and in maximizing the collection of entrance fees.
- ❑ **Rum Village vehicle pool regulated:** At the request of the Rum Tourism Cooperative (RTC) the protected area management team adopted responsibility for the supervision and monitoring of RTC's vehicle pool, which is the largest pool of tour vehicles operating in the protected area. This has created more equality in the distribution of benefits to RTC members and has improved the service for tourists.
- ❑ **Training programmes undertaken for drivers and tour guides.** Workshops were held for local drivers and tour guides to improve their skills as interpreters and to make them aware of protected area goals and regulations.

- **Agreement on organizational structures:** Through an interactive workshop involving all stakeholders, agreement was reached on the most appropriate organizational structure for the protected area. This includes a distinct section of the organization tree devoted to tourism management, headed by a Tourism Manager who is responsible to the Protected Area Manager.
- **Near completion of the Visitor Centre:** Construction of the large Visitor Centre seven kilometers north of Rum Village was approaching completion at the time of compiling this plan. The Centre will become the operational hub for all tourism services and visitor management when it opens in 2003, replacing the current hub at the rest house in Rum Village. The role of the Centre has been given prominence in this management plan, since it will determine all visitor activities in the protected area.
- **Extension of the protected area:** During 2001, the boundary of the protected area was extended southwards towards the border with Saudi Arabia, to encompass a further **180 square kilometres** of land. This area is well vegetated and relatively unaffected by tourism activity or goat grazing and, as such, represents the most pristine desert habitat in the whole of the protected area. It is of prime importance for wildlife conservation and requires special protection measures.



## **Section Two**

### **Evaluation of the Existing Situation**

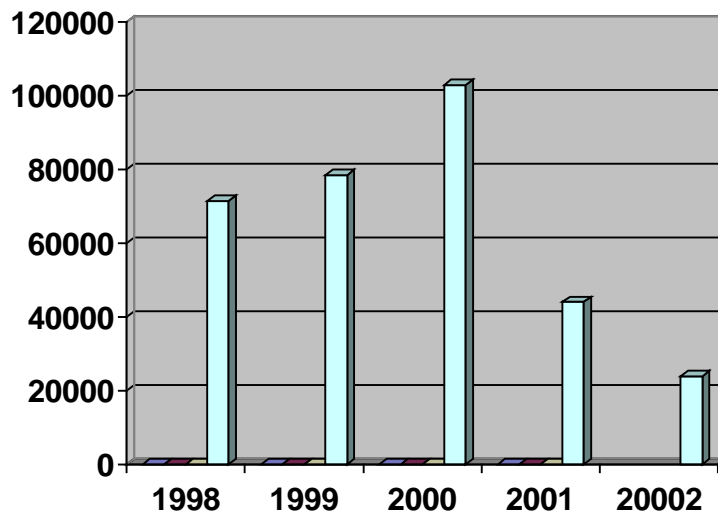
## 1.0 Evaluation of the existing situation

### 1.1 Visitor use and distribution

#### 1.11 numbers and trends

Total visitor numbers recorded at Rum Village over the last five years are shown in the table below. This reveals a dramatic (almost catastrophic) fall in visitors during 2001 and 2002 as a result of September 11<sup>th</sup> and the Palestinian crisis. Prior to 2001, numbers had been increasing almost exponentially, reaching an all time record of nearly 103,000 in the year 2000. Jordan is, of course, no stranger to fluctuations in tourists as a result of political tensions in the region and a recovery is expected to happen. However, this latest downturn has been one of the worst ever recorded and analysts are worried that the shadow of war hanging over Iraq could make the recovery very prolonged.

Table 1: visitor numbers in Wadi Rum between 1998 and 2001



In 1996, before the start of the Second Tourism Project, consultants employed by the World Bank (GHK<sup>1</sup>), attempted to predict visitor use trends in Wadi Rum using previous Ministry of Tourism statistics. Their prediction is shown in Table 2.

Table 2: Estimates of future visitors to Wadi Rum (GHK 1996)

<b>Year</b>	<b>Total No</b>	<b>% increase</b>	<b>Peak Month No.</b>
1996	91,760	35%	13,765
1997	123,875	35%	18,580
1998	148,650	20%	20,810
1999	178,385	20%	24,975
2000	205,145	15%	28,720
2001	235,915	15%	30,670

This table was used to calculate the required parking spaces for the new Visitor Centre, although clearly, the numbers they anticipated have proved to be highly

<sup>1</sup> Wadi Rum Village and Tourism Infrastructure, report for the Ministry of Tourism, World Bank, GHK International, 1996

exaggerated. The total for the year 2000, for example, is over 100,000 higher than the real figure. Notwithstanding the difficulties of predictions, the real-life trend before September 11<sup>th</sup> showed a promising future for tourism in Wadi Rum and the expectation is that a full recovery will take place in the not-too-distant future.

### 1.12 categories and interests

Visitors to rum fall into two basic categories: organised groups touring with coaches or 4x4 vehicles owned or hired by registered tour operators; and independents, who arrive in their own vehicles (and often use them to tour the desert) or on public transport. In 1994, these two groups accounted for 65% and 35% of all visitors respectively. Observations suggest that the number of independents has increased steadily since 1994, in line with noticeable national and global trends (see 1.16, Adventure tourism). The average size of organised groups is around 20 individuals.

While there is little survey information on visitor interests, it is clear from observations and casual questioning that most people are attracted to Rum by the desert landscape. Secondary interests are the Bedouin, archaeology, “wilderness” and the associations of the site with Lawrence of Arabia.

### 1.13 Visitors’ origin

The vast majority of visitors to Rum are foreigners and most of them are Europeans, especially from Germany, France, Britain and Italy. North Americans represent only a small proportion of the total visitors. Jordanians and other Arabs account for an extremely small proportion of visitor totals.

The most obvious change in recent years has been the increase in visitors from Israel. During 1996, the year after the peace Accord, they accounted for nearly 12% of the total intake. This trend, however, was short-lived. In the wake of September 11<sup>th</sup> and the Palestinian crisis, the tourist trade between Jordan and Israel has collapsed.

### 1.14 Length of stay

The most recent available analysis was undertaken in 1994 (Tony Escritt <sup>2</sup>) and it divides visitors into two categories (1) independents, who are people using their own vehicles; and (2) organised tours, who are groups of people relying on coaches or hired fleets of 4x4 vehicles. The average length of stay for the people in these two categories is summarised below:

Table 3

<b>Category</b>	<b>Length of stay</b>	<b>% of total</b>
Independent	less than 6 hours	16%
	6 hours to one whole day	47%
	1 - 12 nights	37%
Organised tours	less than 6 hours	20%
	6 hours to one whole day	54%
	1 - 12 nights	26%

<sup>2</sup>Tony Escritt, Wadi Rum, A Visitor Survey, 1994

It is clear that the majority of both categories are short-stay visitors, although the proportion of overnight visitors is far from insignificant (approaching one-third). Using the predictions of future visitor numbers, that overnight proportion could represent over 70,000 people if numbers return to predicted levels after the current regional crisis has abated. It is also highly likely that the proportion of day visitors will increase significantly with the construction of the visitor centre, as it will provide better and more attractive facilities for short-term users.

### 1.15 Main activities

Visitors to Rum engage in one or more of the following activities: 4x4 tours, camel rides, hiking, camping, rock climbing and horse riding; and very occasionally special activities have been allowed including micro-light flying, ballooning and car rallying. Of all these activities, the 4x4 tours are by far the most popular, with an estimated 85% of visitors using them. During 2002, the tours were rationalized into nine main packages, lasting from 2 to 12 hours, which encompass all the popular visitor sites (see vehicle routes and packages under 'Visitor Centre').

Camping is the next most significant activity, undertaken by about one third of all visitors (there is no other form of accommodation in the immediate area, although some villagers rent out their houses). Most campers use the organised Bedouin-style campsites, arranged through the Rum Tourism Cooperative, of which there are eight within the protected area (Map 2) and two large ones recently completed near the boundary at Diseh. A few visitors stay with Bedouin families and a small number wild camp with their own tents, in vehicles, or simply in sleeping bags 'under the stars'.

Camel rides are still a popular activity but most people take only short treks, usually to Lawrence's' Spring (Abu Aineh Well), a distance of about 2.5 kilometers. Horseback tours are also available, through an independent French operator living in the area, but the take-up is small and largely restricted to pre-booked tours. For both camels and horses, operators offer long treks lasting up to seven days and including overnight camping.

As yet, hiking is not a major visitor activity in Rum, although interest and demand appear to be increasing<sup>3</sup>. Potential hikers are probably deterred by the heat and the general dearth of information about possible hiking trails. It is also an area where is easy to get lost if you are not an experienced map-reader; and good maps are extremely difficult to find. Some hiking routes are outlined in Tony Howard's booklet, *Treks and Climbs in the Mountains of Rum and Petra* (1987), and new publications are being prepared by the Protected Area Authority, showing selected trails.

Climbing is a specialised activity and limited to trained enthusiasts but it has been growing in popularity in Rum as the area becomes better known on the international climbing agenda. Much of this can be attributed to the efforts of the dedicated British climbers, Tony Howard and Di Taylor, who have promoted the climbing routes of Rum over many years through publications and films. In 1998, estimated 3-400 serious climbers used Rum, staying for periods of up to 10 days. All qualified climbers appear to agree, however, that Rum is only suitable for experienced practitioners, not for beginners. The type of rock and climbs and the lack of emergency services make it hazardous for all but experienced people.

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<sup>3</sup> Geraldine Chaterlard, Tony Howard, Di Taylor and Anne Mauve, Recommendations for sustaining adventure tourism in Wadi Rum, paper April 2002."

### 1.16 Adventure tourists

Visitors who stay in Wadi Rum over two nights for active pursuits like climbing, trekking and safaris (horse, camels and vehicles), as described above, are categorized as “adventure tourists”. In Wadi Rum they represent the second largest category of visitors, after the big groups of day visitors or “mass tourists”. Until recently, the significance of these adventure tourists had been largely overlooked but it is now clear that they make a significant contribution to the Rum tourism economy, especially as they stay longer and use more local services than any other visitor type. The majority of adventure tourists stay in and around the protected area from 2 to 12 nights, traveling as small organized groups (12 people on average) or as “independents”. It has been estimated that, in a good year, up to 280 adventure tourists per day are visiting Rum through the spring and autumn seasons<sup>4</sup>. In 1996, which was regarded as a good year, this represented around 33,600 nights in total. Contrary to popular misconceptions, adventure tourists are not impoverished backpackers, but usually high-income earners seeking different holiday experiences.

Tour operators specializing in adventure holidays, both local and international, have argued that current protected area regulations are inhibiting the development of adventure tourism. In particular, they would like to: (1) abolish number limits for adventure tourists in the zoning scheme, (2) continue wild camping in all areas; and (3), choose their own guides and drivers without reference to the RTC and Disi cooperatives rotation systems. They are also seeking improvements in guide and driver training and emergency and rescue services.

### 1.17 Distribution patterns

Since 1999, the number of access points for visitors into Wadi Rum has been reduced from 6 to 2, through the introduction of site ranger patrols. At present (August 2002) the two officially sanctioned access points to the protected area are the villages of Rum and Disi. About 75% of all visitors enter through Rum Village and 20% through Disi village (see Map 1). A small number still enter the site “unofficially” using obscure wadi’s but rangers are now able to check vehicles for entrance tickets and redirect them if necessary. The southern exit point still remains and tourists can leave the protected area for Aqaba using overland trails.

After entering the protected area, virtually all tourists visit a small group of well-known scenic and archaeological sites, usually in 4x4 vehicles. There are 14 key sites in this group, all of which are situated in the eastern third of the protected area, except one, Jebel Amud, which lies outside the boundary to the north of Disih village (see Map 1). As might be expected, the visitor attractions nearest the arrival points in Rum and Disih villages are the most popular, being the shortest and cheapest vehicle trips.

In an attempt to rationalize and simplify the vehicle tour system for visitors, six “standard” tour packages with fixed prices were created in 2001, incorporating all the popular sites shown on map 1. The three most visited sites, Abu Aineh Well, Khazali and the Sand Dunes were made highlights on the “standard” 2-hour tour, to cater for the short-stay bus parties. With the opening of the new visitor centre as the main gateway to the site and operational hub for tourism, new tour packages will need to be developed that integrate and rationalise the current tours operating out of Rum and Disi Villages.

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<sup>4</sup> As footnote 3 above.

### 1.18 Zoning scheme

A preliminary zoning scheme for the whole of the protected area was devised for the interim visitor management plan in 1999 as the main tool for shaping visitor distribution patterns. It divided the protected area into three zones, 'Wilderness', 'Semi Intensive' and 'Intensive', each of which had different use levels and permitted activities. The scheme received widespread consultation over the intervening three years and some elements have been tested, such as regulating vehicle access and camping in the Wilderness Zone, although without legal enforcement. It also received criticism from adventure tour operators who believed it was too restrictive. To accommodate these responses and practical experiences, the zoning scheme has been revised by the protected area management team (see Section 4).

Another key development that will affect visitor distribution is the extension of the protected area towards the Saudi Arabian border to incorporate a further *150 square kilometers* of desert habitat. This extension supports the most pristine desert ecology in the whole of the protected area and should be incorporated into the wilderness zone, with special measures to ensure the maintenance of its ecological integrity (see Map 1).

### **1.2 Tourism impact**

The most noticeable and serious impact of tourism in Rum is the degradation of the desert habitat and landscape by vehicles. As mentioned previously, virtually all visitors take a vehicle tour to the well-known sites and on peak days this can account for over 80 individual tours. From Rum Village alone there are 250 vehicles running desert tours and with the vehicles from Dizeh Cooperative, the Hashemite Fund, private sector operators and individual 4x4 owners, the fleet of vehicles potentially available to take tours at any one time exceeds 500. The effects of this extreme vehicle pressure are obvious. Vehicle tracks have proliferated across virtually every accessible space in the protected area, causing severe damage to the vegetation cover and scarring of the landscape (Figure 1).

Observations of driving habits in Wadi Rum revealed five main reasons for the excessive track proliferation: (1) soft sandy soils causing deep ruts in vehicle tracks, (2) dust clouds affecting vehicles driving in convoy, (3) time pressures on drivers, (4) competition between drivers, and (5) the use of inadequate 2-wheel drive vehicles. More details of these observations, together with a summary of the research undertaken on the effects of vehicles in Wadi Rum and similar fragile desert habitats are given in Annex 1.

In the 1999 interim visitor management plan, several measures were recommended to counteract vehicle damage, including the creation of a single track network between key visitor sites, the use of a grading machine to maintain a rut-free surface along the track network, the introduction of a vehicle spacing scheme and better training for drivers. Most of these measures have not been introduced to date (February 2002) and driving in Wadi Rum remains largely a "free-for-all". The control of vehicle routes in the protected area should be a priority for management.

### 1.21 Littering

While littering is still widespread in Rum, even in the remotest corners of the protected area, the collection of litter has improved markedly with the development of the site ranger service and the employment of 5 cleaners based in Rum Village. More awareness raising is needed, however, to encourage tourists and tour operators, and

the villagers and Bedouin themselves, to take more responsibility for keeping the protected area clean.

#### 1.22 Graffiti

Many of the sites with ancient rock inscriptions are showing signs of modern graffiti, usually carved with sharp instruments or occasionally applied with paint. Some archaeologists argue that the ancient rock drawings are, in themselves, a form of graffiti and that modern graffiti will be valuable to the archaeologists of the future. However, the old drawings provide an important documentation of the life-style and resources of the people who once lived in the area and this should not be damaged, effaced or confused by new carvings from people living outside. Not all the graffiti, however, is caused by visitors. Army training still continues in the protected area and in 2002, one such training group left several large paint marks after a surveying course. The control and monitoring of graffiti applied by tourists is now the role of the site rangers and the problem is expected to decline to rapidly with enforcement through ranger patrols, but more should be done to regulate the activities of army training exercises.

#### 1.23 Camping

Camping itself is not seriously damaging but the servicing of campers does create unwanted impacts. Multiple vehicle tracks to campsites, parking areas, and the disposal of solid and liquid waste all contribute to degradation of the landscape. Standards and regulations for campsites have been devised and are being applied in the licensing system. Specific areas have also been designated for any further development of permanent and semi-permanent sites to contain excessive provision of tented accommodation and to limit environmental impact (Map 1, Section 4).

#### 1.24 Climbing

Climbing is a minority activity but it has the potential to cause damage, either by disturbance to mountain living wildlife (including cliff nesting birds) or by dislodging loose rocks and vegetation. Discarded or permanently fixed climbing equipment such as cams, slings and ropes can also be visually intrusive. A code of practice for climbers has been prepared by climbing experts and will be published during 2003.

#### 1.25 Special events

Special events like ballooning, micro-light flying, car rallying, camel racing and marathons have been allowed in the protected area from time to time. All of them, however, have resulted in some detrimental impact. Ballooning and micro-lights for example, while not directly damaging, created visual and noise pollution in the desert landscape, and possibly disturbed wildlife. The camel races and marathons were accompanied by an entourage of support vehicles and onlookers and these intensified the pressure on the desert ecosystem, especially as the organizers were unable to control them effectively. Rallying is directly damaging to vegetation and soils and is not appropriate in a protected area.

#### 1.26 General disturbance

Even though visitor pressure is concentrated in one-third of the protected area, tourism activities have affected all parts of the site. People engaged in minority interests like climbing, hiking and horse riding penetrate the more remote areas and many vehicle tours, especially private sector operators, take wilderness-seeking groups into the "back country". These remote areas provide some of the last refuges for desert wildlife and the very presence of people and vehicles can affect animal

populations, especially those species that are rare, endangered or naturally very timid.

### **1.3 On-site tourism management**

#### **1.31 Operational hub**

At the time of writing, the operational hub for on-site tourism management in Wadi Rum was still the rest house complex in Rum Village. A temporary improvement scheme was carried out around the rest house in 2001 to improve visitor flow from the parking lot and to provide a reception point where visitors purchase entrance tickets, arrange 4x4 vehicle tours, camel rides and overnight camping; and obtain general information about the site. The rest house itself continues to provide washrooms, food and drinks (including catering for large groups) and overnight accommodation in a large campsite to the rear of the building. All of the facilities in the rest house area play an important role in influencing the way visitors use the site and their length of stay. During 2003, however, all of these facilities will be transferred or duplicated at the Visitor Centre, 7km north of the village, and this will become the operational hub for the protected area. Shifting the focus of tourism operations has major implications for the Rum village economy and this needs to be addressed in the development of tour packages operating out of the Visitor Centre.

#### **1.32 Tour operators and service providers**

Within and away from the rest house complex, the activities and distribution of visitors is largely determined by the following tour operators and service providers: the Rum Tourism Cooperative, the manager of the rest house, privileged private sector operators, including the Hashemite Fund's Eco-tourism Project, and the Diseh Cooperative.

##### **Rum Tourism Cooperative (RTC)**

The RTC was created in 1990 as a vehicle by which the villagers of Rum (Zalabia tribe) could capitalize on the growing tourism business. It is an ngo affiliated to a national federation of cooperatives and has a constitution that allows shareholders to receive annual dividends from the provision of tourism services. Despite the name of the RTC, its constitution does not categorically state that it can provide tourism services, although it received an official letter from the Ministry of Tourism in 1991 granting it the right to do so and to charge entrance fees.

The most important aspect of the RTC is that it has a near monopoly on vehicle tours. It has 250 vehicles available on its register, comprising an assortment of jeeps and pick-ups, most of which are over 5 years old and many are without 4-wheel drive. They all belong to shareholders and, officially, each member is entitled to only one vehicle.

Each day, RTC vehicles are lined-up in an open space alongside the rest house awaiting customers. They are organized according to a rotation system, whereby every vehicle owner is listed and moves 'up the list' to the front of the line-up to collect the next tour group; a similar system to a taxi rank. At the request of the RTC, the rotation system is now supervised and monitored by the Protected Area Authority to avoid the problems of "queue jumping" experienced in the past. Bookings and ticket sales for vehicle tours have also shifted to the visitor reception point, replacing direct negotiations with the drivers in the pool. Tours have also been packaged into 6 main options with fixed prices and these are displayed and explained in the rest house reception, making it easier for visitors to select a tour of their choice.



From the early part of 2003, all RTC's vehicle tours will be operating out of the Visitor Centre and this will require a new vehicle rotation and booking system to be developed, since the vehicle pool for all the on-site tour operators will be centralized. The capacity of most of the RTC vehicles is 6 passengers, which means that coach parties, for example, may hire up to 8 vehicles in convoy. The vehicles are nearly all open-sided jeeps or pick-ups, which visitors appear to prefer to the closed-topped versions. Safety standards are not yet enforced and there are many recorded incidents of vehicles breaking down en-route or becoming stuck in the sand; and they rarely carry water, food or emergency equipment. A small grant has been brokered by the site management authority to provide loans for upgrading RTC vehicles and this should improve safety standards.

At stopping points, passengers get out of their vehicle and are directed to the key features, such as inscriptions or geological features, by either the driver or by the tour guide accompanying the group. Many drivers are not fluent in English or other foreign languages and give limited information during the tours, although the Protected Area Authority has provided training courses over the last two years and standards are improving. The length of time spent at each point is determined by the group size, the distance from the vehicle and the amount of information given by the guide or driver. Where the driver is not articulate, visitors are often allowed to explore the site at their own pace.

The other activity over which the RTC has a virtual monopoly is camping. It organises Bedouin style camps in 8 main locations, including the provision of food, lighting, toilets and bedding. It does this for all visitors, including those who have arranged their tours through independent, external tour companies.

During 2001, a full institutional review of the RTC was undertaken to identify its strengths and weaknesses and to recommend actions for improving its efficiency as a service provider. The review was conducted with the full approval and involvement of the RTC management board and its findings were well received by both the Board and its members. However, there has been a general reluctance to implement any of the recommendations, despite frequent consultation with the protected area staff and, apart from the car rotation system, the basic organizational structure and management operations of the RTC remain unchanged.

#### Manager of the rest house

The Ministry of Tourism owns the rest house but its management is leased through a bidding system to the private sector. The current manager plays a very influential role in the organisation of tourism on site. He deals directly with outside travel companies and is largely responsible for arranging the itineraries of pre-booked tours, including lucrative special interest tours such as camel trekking, climbing and long camping trips. As one researcher put it, "he effectively controls the market in mainstream tourism" (Rowe 1998<sup>5</sup>). He is able to maintain this position largely because he controls the communication system in the village, having the only central fax and telephone, and he provides (and controls) key facilities and services such as washrooms. According to Rowe (1998) he is seen by outside operators as the acceptable face of Rum tourism, since he is able to offer a professional service and can be counted on to deliver a service to specification.

Most of the business brought to Rum by the rest house manager is subcontracted to the Rum Tourism Cooperative and in this sense he acts as a "middle man" for services such as jeep tours and camping.

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<sup>5</sup>The Socio-economic Organization of the Wadi Rum Reserve Population: Challenges and Opportunities for Conservation and Tourism Development: Rowe, Ra'el, Eid Zalabia, 1998

The shift of tourism facilities from the rest house to the Visitor Centre in the near future will radically change the pivotal role of the rest house manager and the dynamics of business operations in the protected area as a whole.

#### Privileged private sector operators

There are a number of private sector operators who have special arrangements or concessions for utilising the Rum protected area. These include a small number of individuals from Rum Village, and incidental members of the RTC, who work by prior arrangement with external travel companies, in a similar way to the rest house manager but on a smaller scale. Most of these 'independents' are well-trained guides who have gained the respect (and high fees) from their clients and tend to get repeat business from the same companies. In addition, there is a French-owned horseback tour company and the eco-tourism project of the Jordanian Hashemite Fund for Human development. This project has become a significant player in the rum tourism scene, having a fleet of twenty-one 4x4 vehicles donated by the Spanish Government, available for desert tours. It is based outside the protected area, in the nearby village of Gweira and deals exclusively with pre-booked tours. Some of the income generated by the project is being invested to provide social services for the Rum Village community.

#### Diseh Cooperative

The Diseh Cooperative handles just under 20% of all tourists to the protected area (Rowe 1998). It has made significant investments in facilities, including a campsite and washrooms and the construction of a rest house similar to the one in Rum Village. Its methods of operation are different to the RTC in that it licenses several independent operators to provide services, such as campsites and restaurants, and it welcomes outside investors. Like the RTC, it offers vehicle tours through its members but it maintains stricter controls on safety standards and on driver competence. Furthermore, it does not levy an entrance fee and this makes tours cheaper for visitors. When the Visitor Centre opens, the Diseh Cooperative will be encouraged to transfer its vehicle operations to the Centre and join the same pool as the RTC and other on-site operators. Its tours will then be priced the same as all other operators.

#### Independents

There is a small minority of visitors who use their own 4x4 vehicles and camping equipment and determine their own itineraries, without reference to any of the operators described above. These 'independents' tend to be Jordanians and foreign residents who know the site well and have a particular interest in wilderness trekking; and are competent enough to manage in desert conditions. As a result of their competence, they often penetrate areas of the site well away from the tourist "hot spots".

### **1.4 Economics of tourism**

Full details of the economics of tourism in Rum are given in the two other reports prepared for the project: the socio-economic study (Rowe 1998) and the institutional review of the RTC (RSCN 1999). In this report, the economics are only considered in relation to visitor management.

Pricing is obviously an influence on the activities which visitors undertake. The relatively low cost of the short jeep tours, for example, will be an important reason for their popularity, although the time constraints of day visitors will be an equally important consideration. Cost is also seen as a factor encouraging the increase in tour groups entering the protected area through Diseh, since the cooperative does not charge entrance fees (Rowe 1998).

More important than pricing, is the distribution and use of the revenue generated on site. At present virtually all of this revenue is channelled to the Rum Tourism Cooperative and the manager of the rest house. There is an agreement between these operators to share the entrance fee according to a 60:40 ratio, in recognition of the services provided in the rest house, and a large cut of camping and catering fees also goes to the rest house manager. The benefits received by both parties are illustrated in the tables below.

Table 4: Analysis of income distribution for a typical tour group of 20 on a day visit (RSCN 1999).

<b>Income from tourists</b>	<b>RTC share</b>	<b>Rest house manger's share</b>
Entrance fees JDs 20	12 JDs (60%)	8 JDs (20%)
2-hour vehicle tour JDs 60	60 JDs (100%)	-
Meals and drinks JDs 200	-	200 JDs (100%)
<b>Totals JDs 280</b>	<b>72 JDs</b>	<b>208 JDs</b>
<b>% share without meals</b>	<b>26%</b>	<b>74%</b>
<b>% share with meals</b>	<b>90%</b>	<b>10%</b>

Table 5: Analysis of the income distribution for a typical camping group of 20 individuals (RSCN 1999)

<b>Income from tourists</b>	<b>RTC share</b>	<b>Rest house manager's share</b>
entrance fee JDs 20	12 JDs (20%)	8 JDs (40%)
Transport to site JDs 40	40 JDs	
Bedouin tents JDs 162	162JDs	
Fire wood JDs 40	40 JDs	
Water tanker JDs 20	20 JDs	
Camping fee + meals JDs 700		700 JDs
vehicle tour JDs 60	60 JDs	
<b>Totals JDs 1042</b>	<b>334 JDs</b>	<b>708 JDs</b>
<b>% share</b>	<b>32 %</b>	<b>68%</b>

According to estimates by Rowe (1998), the RTC members make an average of only 1164.8 JD annually (\$1617), although as he points out, this does not reflect the true picture of income distribution. Members with several vehicles and camels are

obviously earning much more, and there are tips and “hidden services” not officially accounted for. The handful of specialist guides, for example, can earn relatively large sums, exceeding 400 JD per week when in demand. However, even accounting for such anomalies and variations, there is little doubt that income levels for the majority of the RTC shareholders are very low; and that the manager of the rest house has a substantial income by virtue of his role as professional “middle man”.

The outcome of the current system of revenue generation and distribution is a lack of incentives to invest in the development and improvement of visitor services and in the protection of the site. The rest house manager has made improvements in the quality of basic services at the rest house, such as the washrooms, but these serve to enhance the profitability of his enterprise and do little to affect visitors’ enjoyment of the rest of the protected area. With the RTC, most of its shareholders receive such small or modest incomes, they are unlikely to support investments in vital improvements such as new vehicles, safety standards, provision of information, ranger and guide services and the enforcement of regulations; and all of these aspects affect the type and quality of experiences visitors receive and are therefore important considerations in any management strategy.

### **1.5 Regulations and enforcement**

Specific regulations governing the use and conservation of the protected area were finally drafted by the Aqaba Authority (ASEZA) in 2001 and ratified by the Jordanian Government in the same year. These regulations potentially allow the on-site management team to enforce compliance to a raft of measures addressing all activities that may damage Wadi Rums intrinsic values, from off-road driving and waste disposal to mineral extraction and hotel developments. An Arabic copy of the regulations is included as Annex 2. A major break-through in the drafting of the legislation was the transfer of enforcement powers to the site staff, enabling them to deal with transgressions on the spot. This will make day-to-day enforcement much more efficient and effective. However, this concession only applies legally to AZEZA employees and the site staff have only recently been transferred to ASEZA (February 2003). They therefore have little experience of implementing their enforcement responsibilities and are still relying on the Tourist Police, local governor and the Community Liaison Officer, who is an AZEZA employee.

### **1.6 Other users of Rum**

In the context of this visitor management plan, it is important to stress that tourists are not the only users of the protected area. It has been the home of several Bedouin tribes for centuries and it has been a base for the army and Badia police for many years. These groups of people have also had a very considerable impact on the area; and, indeed, the Bedouin communities have shaped much of the character of the landscape we see today. Grazing by goatherds, for example, has totally altered the vegetation composition and structure and, combined with other factors, is contributing to the degradation of the landscape and ecology. Bedouins have also been driving trucks across the desert for a long time, irrespective of tourists, and created much of the basic track network. The visitor management plan, therefore, while addressing the need to manage tourists more effectively, should be seen in relation to the other users of Rum.

## **1.7 The new visitor centre**

### **Background**

Prior to the implementation of the 2<sup>nd</sup> Tourism Project, the World Bank commissioned consultants to prepare a basic development strategy for Rum (GHK<sup>6</sup> 1996). This strategy recommended the construction of a large visitor centre at the edge of the protected area, on the main access road to Rum Village and overlooking the famous landmark of the 'seven pillars of wisdom' (see Figure 3). The centre was seen as providing a single gateway to the protected area, in an attractive and dramatic setting, and a much needed operational and administrative hub for management and tourism operations.

The basic layout of the buildings is shown in Figure 3. They cover a gross area of 2,934 square metres and include the following: offices for visitor reception and protected area administration, interpretation halls, restaurant and café, shops and an eco-conference room. There is also a very large car park, accommodating up to 20 coaches and 200 cars. The Centre was due to open in 2001, but it is now scheduled for completion during the second half of 2003.

The most important aspect of the centre is that it will be the only significant gateway to the protected area and virtually all visitor movements and activities, including vehicle tours, will be controlled and managed from it. In effect, it will centralise visitor management and make it easier to administer. However, in doing this it will shift the current focus of tourism operations away from Rum Village, seven kilometres to the north, and this has major implications for the village community and its economy. Large masses of people will no longer visit the village automatically as they do now and this will deprive many small businesses of their customer base. The village rest house and restaurants, for example, provide most of the food and drinks for tourists but when the centre is built it will be hard for them to compete with the fine buildings and views afforded by the new restaurants in the centre. To prevent the village from losing its commercial vibrancy it will be very important to ensure that it continues to offer attractions to visitors and that this need is considered in the development of new tour packages. It will also be important to ensure that local people will be given opportunities to exploit business opportunities generated by the centre and that, ultimately, the improved tourism management engendered by the centre will bring them better economic returns.

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<sup>6</sup> Wadi Rum Village and Tourism Infrastructure, a study for the Ministry of Tourism, GK International and World Bank, 1996

## **Section Three**

### **Summary of Main Issues and Problems**

### 3.0 Summary of Main Issues and Problems

The evaluation identified the main issues and problems affecting visitor management in Wadi Rum and these are summarised below. This summary was used to shape the strategic recommendations presented in Part Four.

- ❑ Despite the dramatic fall in visitor numbers following September 11<sup>th</sup> and political tensions in the region, the long term trend suggests that visitor numbers to Rum will increase significantly. It is therefore essential to have a fully operational visitor management system in place to prevent further degradation of the site.
- ❑ To ensure full and effective visitor management, all visitors should access the Protected Area through the Visitor centre. The Deseh access point should be gradually closed, following consultation with the Deseh Tourism Cooperative.
- ❑ As tourism activities have adversely affected all parts of the protected area, the zoning scheme should be finalized and enforced, taking into account the lessons learnt over the last three years and the comments of the adventure tourism lobby.
- ❑ Vehicle tours continue to be the main cause of environmental damage in Rum and there is an urgent need to implement the measures recommended in the Interim Management Plan; notably the creation of one track network, the grading of track surfaces and continued training for drivers and guides.
- ❑ The number of tour operators in Rum is increasing (Deseh, QAF and private sector) and all of their operations should be coordinated under the umbrella of the Protected Area Authority to ensure that site protection and tourism development are effectively integrated.
- ❑ The RTC, as the principal community-based tour operator, has implemented few of the recommendations of the institutional review continues to invest little in service improvements or site protection. Efforts should continue to develop the capacity of this organization to provide better services.
- ❑ The importance of adventure tourism in Wadi Rum needs to be more widely recognized and promoted.
- ❑ The independent entrepreneurial tour operators in Rum should be drawn more into the decision making structure of tourism management in the protected area
- ❑ Almost one third of visitors camp overnight but camping provision is not adequate to meet future demand and the standards need to be improved. Other forms of overnight accommodation also need to be considered.

- ❑ The new visitor centre will radically alter the focus of commerce in the protected area and introduce a new order of control over visitor use and services. These could potentially undermine local community business interests and create conflict with the management authority.
- ❑ The financial benefits from tourism are not fairly distributed, either within the RTC or between the RTC and private sector operators, and especially the manager of the rest house. Presently, this manager takes the lion's share of camping income and has a virtual monopoly on externally arranged tours. None of the current tourism income is invested in site protection or improvement of services.
- ❑ Mechanisms generating income for site protection and management need to be developed
- ❑ Legally binding regulations governing the use of the protected have been ratified by the Government but enforcement mechanisms need to be finalized and implemented
- ❑ Local communities have largely been responsible for developing tourism in Rum and they receive most of the financial benefits, but these benefits are not fairly distributed and the recipients are concentrated in one tribal group when there are several others with land fronts inside the protected area. Relieving tribal conflicts over tourism is vital to ensuring coordinated development and effective protection for the whole of the site. This will be very important in the context of the Visitor Centre, since it will provide the only gateway to the protected area and all local tourism cooperatives will be required to operate out of this Centre.
- ❑ The special ecological value of the southern extension of the protected area needs to be recognised in visitor management and conservation strategies.



**Section Four**

**Visitor Management Strategy and Action Plan**

## 4. Visitor management strategy and action plan

### 4.1 Overall management of tourism

The Protected Area of Wadi Rum constitutes a single geographical unit of exceptional ecological and scenic value, within which a wide range of tourism activities take place, facilitated by numerous service providers from private sector companies, tribal cooperatives and other NGOs. It is essential for the unity of the protected area that all the disparate tourism operations are managed and coordinated by a single management agency, so they can be integrated into the framework of conservation programmes and the legal regulations developed to protect the site.

In recognition of this need for a single, competent agency, one of the principal objectives of the Second Tourism Project was to create a protected area management team, under the umbrella of the Aqaba Special Economic Zone Authority (ASEZA), capable of overseeing tourism developments and operations throughout the site. The Royal Society for Nature Conservation (RSCN) was commissioned to recruit and prepare this team on behalf of ASEZA and, as part of the process, workshops were held with all key stakeholders, including representatives of the tourism cooperatives, to identify and agree the roles and organisational structure of the team. This exercise produced an organisational structure with a large segment devoted to tourism, comprising over 15 staff, under the leadership of a Tourism Manager, as shown in Figure 2.

The Tourism Manager will be critical to the success of visitor management in the years to come, as the tourism operations in Wadi Rum are highly complex and will require extraordinary abilities in planning, organisation and diplomacy. For this reason, the investment already made in building the capacity of the Tourism Manager and his support staff must be continued and intensified as an ongoing institutional requirement of the Protected Area's development programme.

#### 4.1.1 Role of the local community and private sector

Local people are the main beneficiaries of tourism in Rum and this should continue to be the case, not only as a matter of principal, but to ensure their involvement and cooperation in the future, without which the site would be impossible to manage. This means that the local cooperatives and other "home grown" tourism businesses should maintain, if not increase, their role as the principal service providers for the protected area. In order to do this, however, they still need to improve the quality and efficiency of their operations if they are to compete effectively with external private sector companies. For example, during the Second Tourism Project, attention was focussed on the RTC, as the largest community based cooperative engaged in tourism, but it has so far failed to implement most of the recommendations of the institutional review conducted on its behalf.

To ensure that tourism revenue is more widely and fairly distributed, and available for investment in services and site protection, the pivotal position occupied by the Rest House Manager should be reassessed and moves made to build the same level of efficiency and professionalism into the local service providers. His role as "clearing house" for external tour companies should be gradually adopted by the Tourism Management staff employed with the core management team. This will help ensure that revenues are more equably disbursed in line with project objective In terms of

future tourism development in the Protected Area, ASEZA should aim to make the local community service providers true partners in the development process, including the small entrepreneurial private operators as well as the cooperatives. To this end, mechanisms should be institutionalised for engaging and involving these providers in the development process. One possibility would be the creation of a Tourism Steering Group or Forum, which meets regularly to an agreed agenda. The allocation of office space for their use in the new Visitor Centre would also improve coordination and cooperation, since it will become the sole hub of tourism activity.

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#### *Principal recommendations*

- *Prepare an annual training and development programme for the Tourism Manager and support staff*
  - *Develop a capacity building programme for the RTC and Diseh Cooperative to enable them to provide better quality tourism services*
  - *Reduce the dependency on the Manager of the Rest House by strengthening local providers and through the transfer of the “middle manager” role to the core team Tourism Manager.*
  - *Create a Tourism Steering Group, comprising representatives of cooperatives and local private operators*
  - *Coordinate and regulate the activities of all tour operators and service providers through the core team Tourism Manager.*
- 

## **4.2 Regulating visitor entry, distribution and activities.**

### **4.2.1 Access points**

Regulating visitor access into the Protected Area is the key to effective visitor management. The fewer the access points, the easier it will be to influence distribution, activities and behaviour. Already, the main access points into the Protected Area have been reduced from seven to two, through the use of ranger patrols and signs. The two that have remained open (“officially”) are Rum Village and Disi Village (see Map 1), although it is clear that total conformity to these two access points has yet to be achieved.

The new Visitor Centre has been designed and located to provide a single access point to the Protected Area. When this is operational, the Disi and Rum Village access points should be phased out, with the full agreement and support of the Rum and Disi Tourism Cooperatives. Successful phasing out of these access points and the transfer of Bedouin tourism services to the Centre will depend on the inter-tribal agreements that are made for sharing the tourism business at the Centre itself. The possible options for sharing mechanisms are described in 4.2.2 below. However, at this juncture, it is important to stress that closing access points is a very sensitive issue for local people and needs to be handled with the utmost care and diplomacy. It is a process that will require patience and tolerance and close cooperation with local community decision makers. In the interests of creating the right climate for this cooperation, the access control signs erected by ASEZA should be rephrased to avoid the present officious language and rangers should be clearly instructed in how to deal with breaches of access regulations in a sensitive and appropriate way.

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#### *Principal recommendations*

- *Replace existing access control signs with new signs presenting more appropriate and diplomatic texts*
  - *Phase out use of Disi and Rum Village access points, after opening of centre.*
  - *Develop a course for rangers in negotiation skills appropriate for dealing sensitively with local people who may violate protected area regulations*
- 

### **4.2.2 The Visitor Centre**

The Visitor Centre is a large complex of buildings, situated seven kilometres north of Rum Village (Map 1, Figure 3). A new access road has been constructed to bring tourist traffic to the Centre via a scenic loop from the old Disi road. When the Centre is operational, all tourists will be expected to start their visit from the Centre. The complex is due to be opened during the second half of 2003.

The Visitor Centre was conceived and designed as a single gateway to the protected area, on the assumption that such a gateway would facilitate the effective management of the site by concentrating all tourism and site administration in one strategically positioned hub. While this is undoubtedly logical in management terms, the architects of the concept failed to understand the importance and complexity of tribal relationships and territories in Wadi Rum. In reality, the imposition of a “single gateway” requires three (and possibly more) tribal groups to operate and share the tourism business from a single operational base and to largely ignore their traditional territorial boundaries. This presents a considerable and difficult challenge to the site managers, especially as the Bedouin of Rum have a long and acrimonious history of tribal rivalry for tourism dividends. Efforts have already been made to find mechanisms for solving the problem and options are discussed in detail later in this section. It should, however, be noted here that failure to find a viable, long-term solution will undermine the fundamental concept and purpose behind the visitor centre complex in its current location.

#### **4.2.2.1 Arrival, fee collection and orientation**

All visitors will arrive at the Centre via the new loop road and will be required to stop in the car park before entering the complex. Provision has been made in the car park design for bus passengers to be dropped in front of the entrance gates before the bus is parked. Cars will park directly in the allocated bays, as in a normal car park. Private 4x 4 vehicles wishing to proceed into the protected area will also be required to stop in the car park before picking up their tickets, passes and registration documents.

From the car park, visitors will be directed by signs and (possibly) by attendants to the Visitor Centre entrance gate, where they will pay their mandatory entrance fee at the booths and pick-up their free map and brochure. The gate has been designed with three entrance channels to speed up visitor flow when the number of arrivals is high. However, it was noted in a recent site visit that only one of these channels has a payment booth. This negates the purpose of the three channels, as visitors will still be forced to queue in one channel in order to pay their entrance fees, even when the site is busy. The inclusion of two more payment booths should be added as a matter of priority. Also, since Wadi Rum attracts many coach tours and organised groups, one of these booths should be earmarked for group bookings, where tour leaders can pick up tickets for their groups without significant delays. One further modification required in the interests of efficient visitor management is an exit channel near the entrance gate that allows visitors to leave the Centre without passing the payment

booths. This should be fitted with a one-way turnstile to prevent visitors entering without paying.

Having collected their tickets and leaflets at the gates, visitors will enter the “plaza” of the Visitor Centre, where they will have several options:

- Choosing and booking their preferred activities,
- Visiting the café and interpretation halls
- Taking a walk around the peripheral trail
- Eating and drinking in the restaurants
- Using the washrooms
- Shopping for gifts

A range of media, including information leaflets and panels, direction signs and trained guides, will orientate visitors and provide guidance on the available options. A give-away leaflet has already been prepared for distribution with each entrance ticket, which contains a fold-out map of the site with an inset showing the layout of the Visitor Centre and a summary of all the essential information visitors need to enjoy their visit (Annex 3). In addition to this, a console of information panels in the centre of the “plaza” should be provided, supported by direction signs that give visitors all the basic information about where to locate facilities and activities. Trained local guides (“meeter –greeters”) will be equally essential for orientating visitors and at least two should be on hand in the “plaza” at any one time.

Another key focal point will be the Visitor Reception. This should be prominently signposted so that it is clearly visible from the entrance gate. The Reception should have all printed information, including maps, and trained reception staff that can answer enquiries and explain the range of services available. It should also be the place where visitors book and pay for their preferred tours and where private 4x4 customers register their vehicles.

As the Reception will be multifunctional, it should be carefully designed to maximise efficiency. The counter space should be large enough to allow many visitors to be dealt with at one time and it will need to be subdivided into sections that separate information services from bookings, payments and registrations. To reduce dependency on available staff, external information panels should be sited alongside the reception counter, giving essential details of activities, routes, prices and booking procedures, as well information on the protected area zoning scheme, regulations and codes of behaviour.

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#### *Principal recommendations*

- *Add two more payment booths at the entrance gates to the Visitor Centre*
  - *Add a one-way exit channel from the Visitor Centre plaza to the parking area*
  - *Distribute the “give-away” leaflet to every visitor entering the Visitor Centre*
  - *Provide a console of display panels in the plaza giving all required information to orientate and guide visitors*
  - *Provide trained ‘orientation guides’ (meeter-greeters) for the Visitor Centre*
  - *Ensure design of visitor reception area and counter enables many people to be dealt with at one time and are subdivided into functional sections for bookings, payments and registrations*
  - *Site information panels alongside or within reception area that give all required orientation information*
-

#### 4.2.2.2 Activity management

##### (i) Vehicle tours

Vehicle tours are the most popular (and most environmentally damaging) activity in the Protected Area. At present most of them are provided by the Rum and Disi Bedouin cooperatives, operating out of Rum and Disi Villages. As the Visitor Centre will be the single point of entry to the Protected Area for all visitors, the intention is to bring the operational base for vehicle tours to the Centre itself in order to give the Bedouin cooperatives maximum contact with visitors and greater business opportunities. Having the vehicles in one operational hub will also make the general administration and regulation of vehicle tours easier to implement and ensure that the zoning scheme and other management tools for influencing visitor distribution can be effectively applied.

The alternative strategy to the centralised management of vehicle tours is to have a shuttle service of buses running between the Centre and the villages, but this would demand complex administration and logistics and investment in suitable vehicles, with no guarantee of that an efficient service could be maintained. Also, as most tourists to Rum arrive in large buses, they would be required to spend too much time transferring between vehicles (large bus to small bus to jeep), which would reduce the time they have in the desert, increase the chances of “mix ups” over schedules and destinations and generally reduce the quality of their Rum experience.

Notwithstanding the obvious advantages of a central vehicle pool, the operation of vehicle tours from the Visitor Centre poses many difficulties in terms of tribal relationships. Until now, the Zalabiyya from Rum Village have secured the lion’s share of the vehicle tours, since they have the largest territory inside the Protected Area and the largest vehicle fleet. The Zawayda from Disi Village have gradually increased their share of the tourism business to approximately 20% but their territory inside the Protected Area is relatively small and contains few of the major tourist attractions. The Swalaheen are new on the tourism scene and their territory and vehicle fleet is much smaller than the other two players.

Historically, there has been great rivalry between the Rum and Disi tribal groups over tourism development, which at times has become very aggressive. The Rum Zalabiyya have resented Disi’s encroachment into the tourism business on the grounds that tourism is the only potential livelihood for them, whereas Disi has access to a huge underground aquifer that enables them to prosper from agriculture. Operating all vehicle tours out of the Visitor centre will require the three tribal groups to work together from a single base and share tourism dividends on a more equitable basis; and it may also require them to share access rights to their traditional tribal territories. Given the tribal tensions over tourism, this level of cooperation will not be easy to achieve.

A number of options have been proposed for dealing with the inter-tribal issues presented by the Visitor Centre, which are summarised in Annex 4. **The preferred option is to share the vehicle tours between the tribes according to a quota system.** This would operate as follows:

- A single vehicle pool would be established at the Visitor Centre, containing cars from the Rum, Disi and the Swelhiyyin tourism cooperatives. The cars would be lined up like a taxi rank, where the first car in the line up would have priority for the next group of customers. Visitors would book their tour package at the

reception in the Visitor Centre and the required number of cars from the line-up would be called to a pick-up point to collect them (see Centre layout plan)

- A quota would be agreed for the percentage of Disi and Swelhiyyin vehicles allowed to operate in the vehicle pool. Based on the current distribution of tourism business, an appropriate starting quota for the Disi cooperative might be 20%. This could be applied to the vehicle pool as a direct mathematical translation of the quota: i.e. every 5<sup>th</sup> tour package (or every 5<sup>th</sup> car in the line up) would be taken by a Disi driver. Arriving at a suggested quota for the Swalaheen is more difficult, as they have only recently entered the vehicle tour business. A figure of 5% is recommended as a negotiating baseline, which would enable them to have every 20<sup>th</sup> tour package (every 20<sup>th</sup> car in the line-up)
- As all the well-known tourist sites would be promoted from the Visitor Centre, each of the cars in the vehicle pool would be able to take their passengers throughout the Protected Area, irrespective of tribal territories.

This option has several advantages. It ensures that all tribes get access to the “tourism cake” and are able to share the cake to an agreed and accountable formula. It also maintains the Rum Zalabiyya’s perceived right to a majority share of tourism services, and it encourages all tribal groups to see the Protected Area as a single management unit.

Securing full agreement on this preferred option from all of the tribal factions will be a difficult task, although on-going discussions with the Bedouin cooperatives are showing some promising outcomes. The Head of the RTC has already accepted in principle the idea of sharing the visitor centre vehicle pool with the Disi and Swalaheen cooperatives. This marks a significant breakthrough, especially as the RTC operates the largest vehicle fleet and has most of the well-known tourist attractions within its territory.

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*Principal recommendations*

- *Establish a single vehicle pool at the Visitor Centre, containing cars from Rum, Disi and Swelhiyyin tourism cooperatives*
- *Conduct negotiations to agree a quota for the percentage of Disi and Swelhiyyin vehicles allowed to operate in the vehicle pool, based on an assessment of the current distribution of tourism business*

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*Location of the vehicle pool*

Another crucial issue related to the vehicle pool is its location in the visitor centre complex. In the site plans, the pool is located in the main parking lot, which will make it very difficult to manage. As the parking lot is located outside the Visitor Centre entrance gates, arriving visitors will be required to enter the visitor centre first to pay their entrance ticket and book their vehicle tour and then return to the parking lot. This negates the concept of the Centre as the gateway to the protected area and it mixes incoming and outgoing streams of visitors, with a consequent need to have ticket checks and monitoring. Also there is a likelihood that visitors newly arrived at the parking lot will face “hassling” from the vehicle drivers to take one of their tours. A better location for the vehicle pool and passenger pick-up point is on the opposite side of the Visitor Centre to the parking lot (south side), as shown on the plan in Figure 3. By the time visitors reach this point, they will have booked and paid for their tours, so there is little chance of being “hassled” by drivers and they will feel they

have passed through the gateway and entered the Protected Area for the start of their experience.

The optimal flow pattern for visitors at the Centre is a linear progression that can be summarised as follows:

*Arrival at the car park - entry into the Centre through the gates - purchase entry tickets - receive information on vehicle tours from Reception – book the tour - walk to the vehicle pool and pick-up-point – start the journey into the desert.*

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*Principal recommendation*

- *Re-locate the vehicle pool for tours to the south side of the visitor centre*

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Private tourist vehicles

Private tour operators and individuals wishing to enter the protected area with their own desert vehicles should be required to register at the visitor centre reception. This will ensure that vehicle and visitor numbers can be monitored and user limits within the zoning scheme are met (see zoning scheme and administration sections). A simple registration form should be produced, requiring drivers or tour leaders to state vehicle ID numbers, destinations, passenger numbers and length of stay. It will also provide an opportunity to disseminate information about the rules and regulations governing vehicle activities in the protected area.

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*Principal recommendation*

- *Introduce registration scheme at the Visitor Centre for private vehicles, recording details of vehicle ID numbers, destinations, number of passengers and lengths of stay.*

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Non-tourist vehicles

Most of the Bedouin living inside the protected area have a vehicle for everyday use and frequently enter and leave the protected area for non-tourism purposes. Many of these vehicles, however, are also used to “double-up” as tourism vehicles when needed. It is therefore vital to be able to distinguish between vehicles being used for tourism and non-tourism purposes within the protected area, in the interests of visitor management and fee collection and to prevent undue interference in the daily lives of the local communities. The proposed solution for dealing with this issue is to introduce a simple colour coded vehicle identification system. All vehicles belonging to residents inside the protected area would be given a coloured “resident’s sticker”, to be prominently displayed on the windscreen. This would enable them to pass across the protected area boundary and throughout the protected area without constant checking by rangers or visitor centre staff. Vehicles being used legitimately for transporting tourists would be required to pick up a separate coloured identity disk from the visitor centre at the start of their excursion and return it at the end. These discs would be numbered and designed to fit into a special attachment on the vehicle, always located in the same place on every one. Other categories of vehicle users, such as friends and relatives of residents or people engaged in work, like builders, would not require a coloured identity, since they could be distinguished by the absence of discs. Rangers carrying out routine monitoring of activities in the



protected area would therefore be able to distinguish between vehicles, even at a distance, and this would minimise the need for excessive “policing”.

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*Principal recommendations*

- Provide “residents sticker” to distinguish the cars belonging to people living inside the protected area
  - Produce coloured identity discs to exhibit on vehicles being used for carrying tourist, which would be collected from and returned to the Visitor centre at the start and end of the tours.
- 

Vehicle routes and tour packages

All vehicle tours will begin from the Visitor Centre, once it is fully operational. A set of tour packages, with the Centre as the starting point, has been developed in consultation with local tour operators, as shown in the table below. These packages include all the well known sites of interest in Rum, within the tribal territories of both the Disi and Rum Village communities. They will help to rationalise vehicle routes and improve the general organisation of vehicle tours, as well as helping visitors to choose a tour suited to their preferences and time limits.

Table 6: Proposed vehicle tour packages from the Visitor Centre

<b>Tour package (See map 1 for locations of sites)</b>	<b>Distance In Km</b>	<b>Max time</b>
<b>Alameleh inscriptions (via Seven Pillars of Wisdom)</b>	14	1hr
<b>Sunset sites – Diseh</b> (winter and summer – via Seven Pillars and Alameleh inscriptions)	16	3hrs
<b>Siq Um Tawaqi</b> (via Lawrence’s picture)	20	2hrs
<b>Khazali Canyon</b> (via Seven Pillars, Anfashieh inscriptions, sand dunes, map and Lawrence’s House)	35	2.5hrs
<b>Sunset sites – Rum</b> (winter and summer – via Seven Pillars, Anfashieh inscriptions, sand dunes, and Khazali Canyon)	40	3hrs
<b>Burrah Canyon – short trip</b> (via Seven Pillars and Lawrence’s House)	50	4hrs
<b>Burrah Canyon – long trip</b> (via Anfashieh inscriptions, Lawrence’s House, Khazali Canyon, Lawrence’s Spring and Um Frouth Bridge)	50	4hrs
<b>Burdah Rock Bridge</b> (via Alameleh inscriptions, Siq Um Tawaqi and Lawrence’s House)	60	Full Day
<b>Burdah Rock Bridge</b> (via Lawrence’s House, Khazali Canyon and Um Frouth Rock Bridge)	60	Full Day
Day hire for customized tour	Open	-
Day hire for transporting luggage	Open	-

This table and associated site map will be included in the “give-away” leaflet distributed at the Visitor Centre entrance gates (see Annex 3) and displayed on signs alongside the Visitor Reception. Visitors will simply select their preferred tour and book their vehicle through the reception staff. Each booked vehicle will then depart on its tour using prescribed routes, as explained in the section on vehicle tracks and networks.

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*Principal recommendation*

- Introduce packages of vehicle tours that start from the visitor centre and extend throughout the traditional territories of all three participating tribes

### Vehicle condition and safety

Most of the local community vehicles operating tours are over 5 years old and lack basic safety features such as roll bars, fixed seat cushions and seat belts. Attempts were made in 1999 to agree safety standards with the tourism cooperatives, based on recommendations received from the Royal Automobile Club in Amman. However, the cooperatives considered many of these recommendations to be unnecessary, impractical or too expensive for them to contemplate and virtually no progress was made on this front until the end of 2002. At this time RSCN submitted a proposal to the small grants committee of the Global Environment Facility (GEF) for assistance with an improvement scheme for Rum vehicles. This was eventually accepted for the RTC and they are now (February 2003) introducing a loan scheme for their members to enable them to carry out essential safety modifications. A second application has been prepared for the Disi Cooperative and, if this is successful, the majority of tour vehicles operating in Wadi Rum will meet basic safety standards over the next two years. However, in view of the critical importance of safety issues for visitors, a system should be developed with the main operators to ensure that regular vehicle checks are made and safety standards regularly monitored, with a view to linking vehicle safety checks to securing licences for carrying tourists.

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#### *Principal recommendation*

- *Introduce annual safety checks for tour vehicles according to agreed guidelines*

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#### (ii) Camel rides and treks

Camel rides are the most popular tourist activity after vehicle tours. At present most of them begin in Rum Village and are limited to short treks to and from Lawrence's Spring - a round trip of about 4 kilometres. As with the vehicle tours, the intention is to move the operational hub for camel tours to the Visitor Centre to maximise their availability for visitors and avoid the need for shuttle services to Rum village. The presence of camels at the Centre will also add a more Arabian character to the buildings. Centralizing camel operations at the Centre, however, creates a number of problems that need to be addressed. The camels that presently wait for tourists around the periphery of Rum Village are tended by young boys and men who live in the village. As their houses are close by, they can easily keep an eye on the camels and provide food and care when needed. This arrangement allows the senior men of the households to continue running vehicle tours and other tourism services without worrying about the camels. If the camel tours are going to be run from the new Visitor Centre, provision has to be made for the care and attention of the animals at the Centre itself. Following discussions between RSCN and the camel owners, the facilities that will be needed are:

- A line (or lines) of tethering posts, where individual camels can be tied while waiting for riders.
- A covered store for hay and other camel food and for saddles.
- A small office or room where the camel attendants can wait, rest and receive bookings for treks.

The preferred location for these camel facilities is on the southern periphery of the Visitor Centre, as shown in Figure 3.

On the assumption that the recommended camel facilities will be installed, a new set of camel tours has been devised radiating out from the Visitor Centre. These are shown in the table below. Like the proposed vehicle tours, they offer routes within the Disi and Rum Village “territories” and the options available to visitors have been extended to include a number of long treks and overnight stays.

Table 7: Proposed camel tour packages from the Visitor Centre

<b>Tour Destinations (see map for location of sites)</b>	<b>Km</b>	<b>Max time</b>
<b>Seven Pillars of Wisdom</b>	3	1hr
<b>Alameleh inscriptions</b> (via Seven Pillars of Wisdom)	14	4hrs
<b>Rum Village</b> (via Seven Pillars of Wisdom)	14	4hrs
<b>Siq Um Tawaqi</b> (via Seven Pillars, Alameleh inscriptions and Lawrence’s picture)	20	6hrs
<b>Lawrence’s Spring</b> (via Seven Pillars and Rum Village)	20	6hrs
<b>Khazali Canyon</b> (via Seven Pillars and Lawrence’s Spring)	28	8hrs
<b>Sunset sites</b> (via Alameleh inscriptions)	16	Overnight
<b>Burrah Canyon - Rum</b> (via Seven Pillars, Lawrence’s Spring, Khazali Canyon, Anfashieh inscriptions and sand dunes)	45	Overnight
<b>Burrah Canyon – Disi</b> (via Seven Pillars, Alameleh inscriptions and Siq Um Tawaqi)	45	Overnight
<b>Burdah Rock Bridge - Rum</b> (via Seven Pillars, Rum Village, Lawrence’s Spring, Khazali Canyon and Um Frouth Rock Bridge)	60	Overnight
<b>Burdah Rock Bridge - Diseh</b> (via Seven Pillars, Alameleh Inscriptions, Siq Um Tawaqi)	60	Overnight
Day hire for customized tour	Open	-
Day hire for transporting luggage	Open	-

Arrangements for booking camel tours will basically follow those proposed for vehicles. Visitors will choose their preferred tour from the give away leaflet or information signs at the Centre, make their bookings through the reception staff, be led to the camel station by a guide and embark on their tour. The allocation of camel rides between the tribes will be according to the quota system prescribed for vehicles: i.e. one in every 5 tours to Disi and one in every 20 tours to the Swelhiyyin: the remainder to the Rum Village tribes.

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*Principal recommendations*

- *Provide facilities to enable camel tours to operate from the Visitor Centre*
  - *Introduce packages of camel tours that start at the Visitor Centre and extend throughout the protected area*
- 

**(iii) Other tourist activities**

Other tourists activities, such as horse trekking, climbing, hiking and camping will be organised and facilitated through the Visitor Centre, except where these activities have been prearranged through independent tour operators prior to the visitors’ arrival. Information on the various activity options, as well as booking facilities, will be available in the Visitor Reception and staff will be trained to deal with enquiries effectively. In the interests of safety, it is recommended that climbers and hikers are required to register at the Centre, giving details of their itineraries.

For pre-booked activities, coordination and information exchange between the private tour operators and Centre staff will be essential to ensure that tribal quotas, user limits and registration requirements can be enforced and maintained. Climbers and trekkers have suggested creating a climbing or adventure tour office in Rum Village, which could have a role in tour organisation, and there may be offices in the Visitor Centre for local service providers. If these become a reality, coordination arrangements with the Centre will need to be institutionalised and carefully managed.

#### 4.2.2.3 Managing quotas and user limits

The quota system proposed for distributing vehicle and camel tour business equably between tribal groups, as described above, will need to be monitored and managed carefully to make it work effectively and to maintain harmonious tribal relations. The critical point in the system will be at the vehicle and camel pick-up points, where visitors begin their tours. Line-ups of vehicles and camels will need to be established like taxi ranks and these line-ups carefully supervised to ensure that agreed quotas are met in practice (e.g. every 5<sup>th</sup> and 20<sup>th</sup> vehicle or camel in the line-ups is allocated to Disi and Swelhiyyin drivers or guides respectively). In view of the tribal sensitivities over this issue, supervision of the line-ups should be carried out by the Protected Area Authority, as a neutral 'third party'. This is currently happening with the supervision of the vehicle line up operating out of Rum Village. At the request of the Rum Tourism Cooperative, protected area personnel now supervise the vehicle rotation system on behalf of the Cooperative.

Good record keeping will be an essential part of the line-up supervisors' role, as the payment of tourist fees to the three tribal cooperatives will depend on knowing the number of tourists the vehicles and camels belonging to these cooperatives carried on any one day. This requirement could be simplified by the ticketing system employed at the Visitor Centre. If the tour tickets issued to visitors are coded and incorporate a tear-off section, the driver of the vehicle or camel handler could take the tear-off portion from each visitor as they arrive at the pickup point and, at the end of the day, hand them to the visitor reception accountant for correlation with the ticket stubs held centrally. The fees due to the driver, guide or cooperative could then be calculated directly.

As with all procedures involving local communities, transparency of operations will be essential to build trust and support. The precise management of the quota system should be developed with the full involvement of the tribal cooperatives and they should have access to all relevant accounts. A small 'quota working group' could also be established with representatives of all the key players to oversee developments.

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#### *Principal recommendations*

- *Car pool quota system supervised at the Visitor Centre by protected area personnel*
  - *Develop good record-keeping and ticketing system at vehicle and camel line-ups to record number of tourists carried by each tribal cooperatives*
  - *Create 'quota working group' to oversee development of recording and book-keeping system*
-

### User limits in the Wilderness Zone

The Protected Area Zoning Scheme sets user limits for tourist activities in the Wilderness Zone, including vehicle and camel tours, climbing and hiking (see 'Zoning Scheme'). There is also site specific number limits for campsites. (see Annex 5). **To ensure that these user limits are enforced and maintained, careful daily monitoring of visitor numbers and distribution throughout the protected area is a prerequisite.** This will require a central record keeping system (database) in the Visitor Centre into which all relevant details of visitor activities on site are continuously logged. The system will need to keep records of visitor numbers under activity type, area, dates and length of stay and it should be mandatory for all tour operators and service providers to feed information into this system directly, face to face, or by telephone. Tour operators, for example, will need to check-in with the central office to determine availability of spaces for activities in the wilderness zone or in campsites before confirming bookings made from outside. A computerised database and written procedures will need to be prepared to ensure the system operates effectively. These procedures should include appropriate responses for when user limits are reached, such as notifying rangers (see below) and tour operators and for advising day visitors of available alternatives.

The maintenance and management of the database and coordination procedures should be made a principal responsibility of the visitor reception staff and continuously monitored by the Tourism Manager. It is also important that visitors themselves are made aware of the existence of user limits and the reasons they exist, at the earliest opportunity, through promotional materials and on-site information panels, the protected area website and through the information sent by tour operators.

#### 4.2.2.4 Communication with rangers

One of the key functions of rangers is to enforce protected area regulations and ensure that agreed user limits are adhered to within the Wilderness Zone and facilities like campsites. In order to do this, they will need to be kept informed by Visitor Centre staff when daily limits for specific activities have been met, as calculated by the booking records and ticket sales maintained in the Centre. If for, example, 20 jeep tours are sold for the Wilderness Zone in one day, thus reaching the proposed limit for the Zone, the reception staff at the Centre should have a procedure for notifying the Head Ranger. He or she will then inform the field rangers on duty in the area so they can maintain a watching brief and carry out spot checks. Such a communication system and procedure will require direct radio or mobile phone links between the Centre and Head Ranger and between the Head Rangers and the field rangers. It will also require a communications focal point in the Centre, who's primary responsibility is to keep rangers updated and who responds to the feedback from the field.

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#### *Principal recommendations*

- *Set up central database in Visitor Centre that constantly monitors visitor numbers and activities against zoning scheme limits*
  - *Publicise zoning scheme and user limits in all visitor information and promotional materials*
  - *Develop communication system between visitor reception and rangers to enable daily user limits to be monitored and maintained*
-

#### 4.2.2.5 Information and interpretation

The Visitor Centre will be the focal point for information and interpretation media and services within the protected area. For the large majority of visitors it will be their first point of contact with the site and it should provide all the information they need to enable them to understand and enjoy the wonders of Wadi Rum. This information can be provided in four main ways: (i) information panels and signs; (ii) printed materials; (iii) exhibitions and displays; and (iv), person-to-person, through centre staff and guides. The essential information required by visitors will be:

- Details of activities (things to do)
- Location information (maps)
- Rules and regulations
- Fees and charges
- Details of accommodation

Most of this information can be given on signs and panels carefully sited in and around the Visitor Centre and on the “give away” leaflet to be handed to every visitor at the entrance gates (see Annex 3). Reception staff and guides will also play a major role in disseminating this basic information.

The Visitor Centre will also have two large interpretation halls, containing exhibits that will describe and explain the Protected Area in terms of its natural and cultural importance, the human pressures it is facing and the conservation work being carried out to protect the site. These exhibits will also explain how visitors themselves can help to support the conservation effort. A “story line” for the interpretive exhibits has already been proposed by RSCN in the Wadi Rum Interpretation Plan, prepared in October 2001. This plan presents a full strategy for all signing, information needs and interpretation programmes throughout the Protected Area and should be referred to as the definitive guide.

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#### *Principal recommendations*

- *Implement the recommendations of the Interpretation Plan*

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#### **4.2.3 Zoning scheme**

Zoning is a simple, well recognised tool for determining the distribution of visitor pressure in protected areas. It involves the division of the protected area into sectors, each of which is allocated a different use level according to its relative sensitivity to human disturbance. Areas supporting endangered plant and animal populations, for example, or fragile archaeological sites, may be designated “restricted” or “wilderness” zones, where the permitted level of human use and infrastructure is minimal. More resilient areas might be designated as “intensive” or “semi-intensive” zones, where higher use levels are possible without causing undue environmental impact.

Zoning in a ‘new’ site, with little tourism activity, is relatively easy to apply but in sites like Rum, with a long history of tourism use, any zoning plan must take into account traditional or accepted use patterns: firstly because this use is notoriously difficult to change rapidly without creating serious conflict; and, secondly, because local

communities, tour operators and other stakeholders who have shaped the established use patterns, and have built businesses or procedures around them, need time to accommodate changes.

The first zoning scheme proposed for Wadi Rum (Interim Visitor Management Plan 1999) had three major zones: 'intensive use zone', 'semi intensive use zone' and 'wilderness zone'. The intensive zone covered the area where tourism activity was already concentrated and no user limits were defined for vehicle and camel tours, climbing, hiking and the other significant tourist pursuits. For the other two zones, user limits were imposed on key activities, with the most stringent controls in the Wilderness Zone. This scheme was field tested by the protected area management team for over two years and discussed at length with local community and tour company representatives. As a result of this testing and consultation process, the overall zoning scheme was revised and simplified, such that it now has only two zones and the user limits have been adjusted to accommodate local community and tourism industry perspectives. A site map showing the two zones and the main activity restrictions is shown as Figure 4. The detailed activity guide-line for each zone is presented in Annex 5

For all intents and purposes, the new zoning scheme has already been adopted. User limits are being applied by protected area staff and tourism service providers and rangers are monitoring use levels. However, current tourist numbers are extremely low by 'normal' standards because of political tensions in the region and the Visitor Centre has yet to be opened. When visitor numbers pick-up and the Centre is fully operational, the management of the zoning scheme will become more complex and difficult. The requirements for effective management are discussed earlier in the plan under 'Visitor Centre' (section 4.2.2). However, it is important to emphasise here that an effective communication system must be established between the Visitor Centre and the ranger team, so that rangers in the field know when user limits for particular activities have been reached on any one day; and also to enable the rangers to feedback to the Centre field data on visitor numbers, so that the issuing of tickets and permits can be regulated accordingly. It is also important to emphasise that the zoning scheme itself will be one of the essential tools for ensuring that the physical and ecological values of Wadi Rum are restored and maintained and its implementation should be made a top priority for the Protected Area staff.

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*Principal recommendations*

- *Develop operational procedures for the zoning scheme, linked to the Visitor Centre, to enable it to be effectively implemented and enforced*

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#### **4.2.4 Vehicle track network**

##### **4.2.4.1 Rationalising the network**

Most tourists are transported around the protected area in vehicles and the resulting proliferation of tracks is the main cause of environmental damage. It is therefore essential to substantially reduce the number of tracks being used and created. This can be achieved by rationalising the network so that only one main route system is permitted. Such a system needs to achieve not only the required environmental benefits but should maintain or improve the quality of visitor's experience and have the flexibility to be changed when the need arises.

The new route system should be created from the most frequently used existing tracks (since they usually represent the shortest distance between stopping points) in a series of “loop trails”, linking all the key visitor attractions. The use of loop trails enables the development of loop-based tour packages which give considerable flexibility to accommodate visitor choice but will maintain tight control on vehicle movements. They also allow a one-way flow of vehicles to be imposed which reduces congestion and track widening caused by over-taking.

A total of nine main loop trails are proposed, conforming to the packaged vehicle tours listed in Table 6 above. All of these begin at the Visitor Centre and extend throughout the protected area, visiting different combinations of known attractions. The possible routes for these loop-trail packages are shown in Figure 5. This network of loops should be defined on the ground and pre-tested with operators before finalising. Some flexibility will need to be built into the network and combinations of loops would be possible, but only by prior agreement. Cross cutting between loops and deviations from the tracks should not be permitted, once the loop system is fully operational.

The creation of loop trails was first proposed in the Interim Visitor Management Plan of 1999 but little progress has been made in establishing them on the ground, largely because of lengthy delays in acquiring a grading machine to define the network and smooth out track surfaces (see below). **Since vehicle tracks are the main cause of environmental degradation in Rum it is vital that the issue of the grading machine is resolved immediately and that the proposed loop trails are tested, evaluated and phased-in over the shortest practical time period.**

#### 4.2.4.2 Upgrading the surface of vehicle tracks

If one main track system is to be established, the surface of the tracks within this system will need to be improved so that they do not become rutted by the vehicles using them; otherwise the vehicles will not stay on the network and its object will be defeated. Several options have been proposed for doing this, identified from the experiences of other desert parks throughout the world. They include surfacing with desert-coloured asphalt, with compressed gravel, with chemical agents that bind the sand, such as Dead Sea water; and with a tough wire mesh buried just below the surface. Other techniques involve smoothing out the sandy surface of the tracks with devices attached to modified vehicles. In Ras Mohammed National park in Egypt, for example, they use a large concrete sled pulled behind a standard tractor; in other parks, grading machines have been used like the ones employed in preparing normal roads. For Wadi Rum, these smoothing-out techniques appear to be the best options, firstly because most of the other options would be very expensive for the length of the track network in Rum, as well as being difficult to construct and maintain; and secondly they would not be appropriate for a “desert wilderness” protected area, where the aim is to keep it as natural looking as possible.

Experiments with grading machines were conducted in Wadi Rum during 2001 and 2002, using machines hired from local contractors. These experiments demonstrated that grading was a potentially successful way of creating a smooth track network. In one trial in which one of the main tracks leading out of Rum Village was graded for a distance of over 3 kilometres, vehicle counts undertaken by protected area staff recorded more than 85% of tour vehicles keeping to the graded track. On the basis of these results, a strong recommendation was made to employ a grading machine and driver under contract, full-time, to develop and maintain the track network. Unfortunately funding and administrative issues have delayed action on this recommendation and, at the time of writing this plan (February 2003), there was no grading machine on-site, operating to an agreed plan. As stated above, this problem must be resolved as soon as possible if environmental quality in Wadi Rum is to be restored.



### **Vehicle spacing**

To avoid problems of dust and crowding on the desert tours, drivers should ensure that vehicles are spaced in both distance and time. This will mean departing from the start of the tour and from the stopping points en-route at spaced intervals (recommended 10 minutes -with groups in convoy treated like one vehicle) and allowing a comfortable distance between vehicles during travel. The need for phased departures at stopping points is important because visitors spend variable amounts of time at these points and vehicles will tend to catch up with one another.

This spacing discipline should become standard practice for drivers and guides, as it is in many African national parks. In the Kenya game reserves for example, when a safari vehicle reaches a stopping point, the driver simply informs his passengers that he will be delaying their departure time for a few minutes to allow the preceding vehicle to leave, in order that they will see more and get more enjoyment from their trip. Drivers from all the operators in Rum will need to be encouraged to adopt this discipline and the time required to maintain the spacing will need to be accounted for in the tour packages.

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#### *Principal recommendations*

- *Acquire or hire grading machine and employ full-time to establish, grade and maintain track network*
- *Establish the nine recommended loop trails for initial testing*
- *Phase-in compulsory use of loop trails with full consultation with service providers*
- *Evaluate loop trail network after trial period and adjust accordingly*
- *Introduce vehicle spacing discipline with service providers*
- *Ensure compliance with network and spacing requirements, under protected area regulations.*

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### **4.3 Enforcement of regulations**

A set of regulations for the protected area, drafted by RSCN and ASEZA, was approved by the government during 2001. These provide a legal framework for supporting effective visitor management, including crucial aspects such as access and distribution and vehicle management. They also deal with more general site protection measures such as controls on disturbing wildlife and damaging natural features. An Arabic copy of the regulations is included as Annex 2.

The on-site enforcement of these regulations was only made possible very recently (February 2003), when the protected area team was transferred from RSCN to the employment of ASEZA (The regulations stipulate that only ASEZA personnel are able to enforce government regulations). To date, therefore, there is little experience of enforcing the official regulations on site. Most of the enforcement duties will fall to the team of rangers, who will need to work in partnership with the tourist and Badia police and the local community. The main job of the rangers will be to patrol the area, monitoring and enforcing compliance with the regulations. Technically, under the regulations, the rangers are now empowered to apprehend violators, expel them from site and impose on-the-spot fines. These are serious responsibilities that will need to be executed with tact and diplomacy, so as not to alienate visitors and local people.

There was a clear intention in the Second Tourism Project to involve local people in the enforcement of regulations in order to build more popular support for protection measures. An initial attempt to do this was made by the protected area management team during 2002 by seeking volunteers to join ranger patrols and generally support the enforcement programme. This proved moderately successful, with five people volunteering to work with site staff over several months. However, if a community

based enforcement approach is to be developed and sustained over the long term, more effort will be needed to develop a strategy for extending the level of community involvement.

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*Principal recommendations*

- *Set up training programme for rangers in enforcement of regulations and develop required procedures and monitoring system*
  - *Develop a strategy for increasing the involvement of local people in the enforcement programme*
- 

#### **4.4 Facilities and services**

The visitor centre will bring significant improvements in the range and quality of facilities and services, as discussed previously. However, there are two aspects of service provision which have not been specifically addressed so far: overnight accommodation and tour guides.

##### **4.4.1 Overnight accommodation**

Camping is the main form of overnight accommodation and statistics suggest that about 32 % of visitors camp out in Rum. Currently, all the camping services are provided through a partnership between the Rest House manger and the RTC and most people seem to be satisfied with the service. However, since camping represents the main form of available accommodation, there is a need to provide a wider range of standards, with some camps offering better toilet facilities and a generally higher level of comfort and cleanliness. This would be best achieved by constructing more 'permanent' sites like the Dana campsite, where effort is concentrated on providing "5-star" service. Two such sites have been established by private developers at the border of the protected area, near Disi, and one more luxury site has apparently been planned by a major hotel chain. These may not, however, be sufficient to meet future demand and other sites could be accommodated in the protected area if the need arises. They should be sited in remote corners of the intensive use zone and be required to retain a Bedouin character, in keeping with the landscape of Wadi Rum

Apart from camp sites, there is virtually no other form of accommodation in the protected area, although there are plans to encourage bed and breakfast in Rum Village. The consistent policy of the ARA and MOTA to resist private hotel developments must be applauded but for a site as large and impressive as Rum, with anticipated visitor levels of over 250,000 people, there will be demand for alternatives to camping. This demand could be met by providing a limited number of small guest houses, built from sympathetic materials and operated by local people, similar to the Dana Guest House. This Guest House has become the "cash cow" for the Dana reserve and contributes a significant proportion of the reserve's running costs. Similar ventures in Wadi Rum could bring the same benefits, if supervised and managed under the umbrella of the site management agency.

##### **4.4.2 Tour guides**

Good progress was made during the Second Tourism Project in improving the quality of tour guides in Wadi Rum. A series of workshops were held for both private sector and tourism cooperative guides, covering interpretation techniques and language skills. However, there remains a need to develop a continuous training and development programme for guides and especially for the drivers of the local tour vehicles. At the height of a good tourist season, there can be over 100 vehicle tours

in progress at any one time and only a small proportion of the drivers have reached adequate proficiency in English and presentation skills. It is also important that all guides and drivers are well briefed about protected area regulations, conservation programmes and any other key developments. An institutionalised 'Guides Forum' and annual capacity building programme, facilitated through the Protected Area Management Agency, would ensure an exchange of information and views and the continuous improvement of guiding services.

#### **4.4.3 Franchise of facilities and services**

There are a number of facilities and services within the protected area that could be franchised or leased to private sector businesses, including campsites and the shops and restaurants in the new Visitor Centre. To date, the only significant business leased to a private company is the rest house in Rum Village and, while it appears to be efficiently run, it gives relatively little financial return to the local economy. The construction of the visitor centre gives an opportunity to make lease arrangements with local community businesses or individual entrepreneurs, which will maximise the benefits to the indigenous population. The leasing of shops and restaurants in the Visitor Centre will be a particularly sensitive issue because they are, in reality, competing directly with the shops and restaurants created in Rum Village by the Bedouin themselves. It is therefore essential that local people are given a chance to be involved in the business operations at the Centre and a plan for dealing with this should be prepared immediately.

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#### *Principal recommendations*

- *Produce clear guidelines for campsite establishment and management and continue to improve standards*
- *Create more permanent campsites with "5-star" service.*
- *Investigate the feasibility of creating small guest houses as alternative overnight accommodation.*
- *Introduce the bed and breakfast scheme into Rum Village*
- *Establish a 'Guides Forum' to oversee the continuous capacity building of guides and drivers*
- *Give priority to local community businesses and entrepreneurs for facility leases.*

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#### **4.5 A future for Rum Village**

The current role of Rum Village as the hub for tourism activities in the protected area will be superseded by the new Visitor Centre when it opens. This will draw away the customer base from most of the facilities that have been created in the Village by entrepreneurial Bedouin. While many of the Bedouin will simply transfer their business interests to the Centre, the Centre complex itself does not allow for the continuous free development of opportunistic business initiatives as the Village once did. There will also be many small traders who will have no opportunity to re-locate their individual enterprises and they will lose their livelihoods without the tourist trade.

For these reasons, strategies are needed to maintain the economic life of Rum Village. One option is to make the Village a "compulsory" stopping off point for all vehicle and camel tours that use the Wadi Itself as a primary route-way. If this is to succeed, however, the village needs to have some attractions that can compete with the Visitor Centre, or tourists will simply wish to return to the Centre directly. In previous plans for the Village, prepared under the Second Tourism Project, the army fort in the centre of Rum Village was to be turned into a museum of Bedouin life. This

would undoubtedly be a major attraction for visitors and this idea should be pursued as rapidly as possible.

An additional possibility is to make the Village the focal point for adventure tourists. These are a growing sector of the tourism business in Rum and they stay longer within the Protected Area than most other tourist groups. They also rely more on local guides and support staff, eat in local restaurants and buy a lot of their provisions from local shops. Rum village already acts as the main base for adventure seekers but it could be further developed to provide more essential facilities, such as improved bed and breakfast accommodation, better stocked shops for camping, hiking and field supplies and an adventure/climbing information office. One suggestion made by the climbing fraternity is to set up a search and rescue point with the information office to create a de facto adventure centre, where hikers, trekkers and climbers could meet and plan itineraries and share experiences. With these possibilities in mind, meetings should be held with adventure tour providers to discuss the options and to prepare a plan for creating such an adventure hub in Rum.

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*Principal recommendations*

- *Create a museum of Bedouin life in the army fort*
- *Make the village a "compulsory stop" on all vehicle and camel tours using Wadi Rum as a route-way*
- *Prepare a plan for making the Village a centre for adventure tourists*
- *Establish a search and rescue centre in the village and an office for adventure tourists*

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#### **4.6 Promoting adventure tourism**

As described in Section Two, adventure tourists are a significant and growing category of visitors to Wadi Rum, who tend to stay longer than most other visitor categories and use more local services. Promoting adventure tourism in Rum is clearly a desirable objective, because visitors interested in outdoor pursuits are more sympathetic to environmental concerns and are more likely to contribute to the livelihood of local communities.

During 2002, several adventure tour operators and interested parties complained that zoning restrictions and the compulsory use of drivers and vehicles from the cooperative vehicle pools were inhibiting the development of adventure tourism. After a series of discussions and consultations, the zoning scheme and associated user limits were simplified and a compromise reached on vehicles and drivers. However, it is apparent that not enough attention has been given to the needs of adventure tourists and it is recommended that further meetings between operators and protected area staff take place in order to develop joint initiatives for expanding the adventure tourism market for Wadi Rum. A suggestion is made above that Rum Village becomes a hub for adventure seekers and eco-tourists as a means of supporting the village economy. This idea should be viewed in the context of a wider strategy for promoting adventure tourism within the protected area.

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*Principal recommendations*

- *Develop joint initiatives with local private operators to expand and cater for the needs of adventure tourists in Wadi Rum*
- *Develop Rum Village as a centre for adventure tourists (as above)*

#### **4.7 Visitor safety**

Wadi Rum is a harsh environment, being very hot and very dry for most of the year. It is also very rugged and remote from large centres of population. Visitors entering the protected area are therefore at risk, especially those engaged in long tours, if they are not well equipped or run into difficulties. Climbers face particularly high risks and there have been a number of serious accidents in recent years.

While people engaged in high risk activities have an obligation to be well equipped and prepared, there is also an obligation on the protected area management agency to provide essential first-aid and rescue services. At present these are provided in emergencies by the army and police but they have not been formalized. To improve the effectiveness of these services, a first-aid and rescue post should be set-up in Rum Village (or the visitor centre), manned 24 hours a day in the peak season and supported with basic rescue equipment and medical supplies. It might be possible to establish this post in the army base in the old fort and arrange for trained service men to provide the 24-hour coverage.

The registration scheme for hikers and climbers recommended elsewhere in this plan would also assist rescue operations by providing details of their whereabouts, group size and activities. Further support will also be available from the new ranger team, who should have good communication links with the rescue post.

Vehicle tours are the other main safety issue in Rum and safety measures for these are dealt with in other sections of the report.

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#### *Principal recommendations*

- *Establish a first-aid and rescue post in Rum Village (or Visitor Centre)- see 'adventure tourism'*
- *Introduce registration scheme for hikers and climbers (see Visitor Centre)*

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#### **4.8 Entrance fees and service charges**

The current entrance fee for Wadi Rum is 1 JD (\$0.71), all of which is received by the Rum Tourism Cooperative (RTC). As yet, none of the entrance fee is used to support the management of the protected area or improvements in services.

The facilities and services to be incorporated into the Visitor Centre and the improvements which have been made to the site management over the last 3 yrs, warrant a substantial increase in the entrance fee. The interpretation media in the Centre will also establish the identity of Wadi Rum as a world class protected area and emphasize the contribution that entrance fees make to its care and protection.

The new entrance fee structure should be as simple as possible to make it easy to understand and administer. Visitors should also be required to pay the same entrance fee regardless of their destination or length of stay. This is their contribution to protecting a very special area in a country which does not have national resources to subsidise conservation.

The entrance fee structure proposed for the Protected Area, upon the opening of the Visitor Centre is as follows:

Jordanians and residents: 2 JD  
 Other nationalities : 7 JD

This fee structure is in line with other protected areas in Jordan. For comparison, the Dana Protected Area, the nearest equivalent to Wadi Rum, charges 1 and 5 JD respectively. Dana, however, is a smaller site and does not have a Visitor Centre complex that can compare with the one being constructed in Wadi Rum. Entrance fees for foreign visitors at the world famous archaeological site at Petra are much higher, being 20 JD (pre September 11<sup>th</sup>), although local and resident rates are set at only 1JD.

The fees for Rum would be collected from the entrance booths at the Visitor Centre and held centrally by the site management agency for distribution to local community recipients and a site management fund. The only local community recipient at the present time is the Rum Tourism Cooperative (RTC), which has been granted authority to utilise the existing entrance fee. However, with the creation of a single gateway at the Visitor Centre and the centralisation of local community tourism services at the Centre, involving three tribal groups, there is a case to be made for sharing revenue from entrance fees with the other tourism cooperatives (see Visitor Centre, section 4.2).

The suggestion to create a site management fund builds on the requirements of the Second Tourism Project, which stipulated that revenue raised on site should be directed to the future management costs of the Protected Area. The fund will need to be created by ASEZA and procedures devised to ensure that the money invested in the fund can legally be allocated to Wadi Rum. The specific designation this fund will be critical to the future of the protected area, as management costs will be high, especially as they will include the ongoing development and maintenance of the visitor Centre, which is a large facility requiring many staff.

The proportion of the entrance fees received by the key recipients requires further thought and discussion but an initial recommendation is shown in the table below.

Table 8: Suggested entrance fee distribution, post visitor centre

Entrance fee source	Total amount	Proportion to Management Fund	Proportion to local community recipients
Jordanians, residents	2 JD	1JD	1JD
Other nationalities	7JD	5JD	2JD

In this suggestion, one third of entrance fee revenue is allocated to the local community. Since only the RTC has received entrance fee revenue to date, and since it operates in the largest tribal territory in the Protected Area, any new system for apportioning entrance fee revenue to more stakeholders should recognise the pre-eminence of the RTC in tourism operations. It is therefore suggested that the apportionment is linked to the quota system recommended for vehicle and camel tours: ie: 75% for the RTC, 20% for the Disi Cooperative and 5% for the Swelhiyyin Cooperative. This will reflect the current division of the “tourism cake” and it will also generate an increase in revenue for the RTC, in recognition of its pre-eminence and its willingness to share the cake with other players. However, for any of the recipients to receive this revenue, they should be required to meet agreed conditions and standards for services, commit a proportion of their revenue to service improvements and demonstrate a fair distribution of dividends between its members.

These suggestions for fee restructuring can only be considered as tentative at this stage. Once the operating costs of the Protected Area are known, a **business plan should be prepared** so that future fee scenarios can be based on required income.

#### Other service costs

Fee rates for vehicle tours provided by internal operators have been fixed by the Ministry of Tourism. However, it is well known that drivers and tourists negotiate over fees and the actual charges can differ significantly from the official rates. Also, prices for camel rides are usually negotiated directly with the camel owner or caretaker and they vary according to the distance and the visitor's prowess in bargaining. There is clearly a need to standardise prices and give visitors a fair deal. This will largely be achieved when the Visitor Centre is operational, as tours will be promoted as a series of "fixed priced packages", as explained in section 4.2.2, and the payment points and pick-up points will be separated, so the drivers and camel guides will have no direct role in collecting cash.

Camping prices are considered high. A visitor will pay around 50JD per night, including entrance fee, transport to the site and food and drinks. Most of this sum is accounted for by food and the camping fee (around 35JD). For this relatively high charge, the camping facilities and services should be improved.

As tourism activities directly contribute to environmental degradation, there is a case for introducing a small "conservation levy" on all vehicle tours, camping fees and food and drinks so that additional income can be generated for the site management fund. This levy could be set at a modest 10% of the total charge and it could be presented and promoted as a separate charge on bills and receipts, like sales tax, so that customers know they are contributing to the care and protection of the site. The centralisation of services at the Visitor Centre will make the proposed charge relatively simple to introduce and administer.

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#### *Principal recommendations*

- *Finalise new entrance fee rates to coincide with the opening of the Visitor Centre*
  - *Introduce a 10% "conservation levy" on vehicle tours, camping and food services..*
  - *Create a Rum Management Fund for receiving site generated income, including entrance fees and conservation levy and use to support management costs..*
  - *Prepare a business plan for the protected area*
  - *Review camping and other service charges with service providers*
-

## Action Plan



Recommendations	Implementation Time Frame																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Overall visitor management</b>																				
▪ Prepare an annual training and development programme for the Tourism Manager and support staff	x				X				X				X				X			
▪ Develop a capacity building programme for the RTC and Disi Cooperative to enable them to provide better quality tourism services		X				X				X				X				X		
▪ Reduce the dependency on the Manager of the Rest House by strengthening local providers and through the transfer of the “middle manager” role to the core team Tourism Manager.				X																
▪ Create a Tourism Steering Group, comprising representatives of cooperatives and local private operators		X																		
▪ Coordinate and regulate the activities of all tour operators and service providers through the core team Tourism Manager.		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Regulating visitor entry, distribution and activities</b>																				
▪ Replace existing access control signs with new signs presenting more appropriate and diplomatic texts.	X																			
▪ Develop a course for rangers in negotiation skills appropriate for dealing sensitively with local people who may violate protected area regulations	X																			
▪ Close Disi access after visitor centre is opened						X														
<b>Visitor Centre</b>																				
▪ Add two more payment booths at the entrance gates to the Visitor Centre	X																			
▪ Add a one-way exit channel from the Visitor Centre plaza to the parking area	X																			
▪ Distribute the “give-away” leaflet to every visitor entering the Visitor Centre			X																	
▪ Provide a console of display panels in the plaza giving all required information to orientate and guide visitors		X																		
▪ Provide trained ‘orientation guides’ (meeter-greeters) for the Visitor Centre			X																	

Assumed that Q3, year 1 will be the opening of the Visitor Centre

Recommendations continued – visitor centre	Implementation Time Frame																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
▪ Ensure design of visitor reception area and counter enables many people to be dealt with at one time and are subdivided into functional sections for bookings, payments and registrations	X																			
▪ Site information panels alongside or within reception area that give all required orientation information		X																		
▪ Establish a single vehicle pool at the Visitor Centre and relocate it to the south side of the Centre	X																			
▪ Conduct negotiations to agree a quota for the percentage of Disi and Swalaheen vehicles allowed to operate in the vehicle pool		X																		
▪ Introduce registration scheme at the Visitor Centre for private vehicles, recording details of vehicle ID numbers, destinations, number of passengers and lengths of stay.			X																	
▪ Provide “residents sticker” to distinguish the cars belonging to people living inside the protected area			X																	
▪ Produce coloured identity discs to exhibit on vehicles being used for carrying tourist, which would be collected from and returned to the Visitor centre at the start and end of the tours			X																	
▪ Introduce packages of vehicle tours that start from the visitor centre and extend throughout the traditional territories of all three participating tribes			X																	
▪ Introduce annual safety checks for tour vehicles according to agreed guidelines	X			X				X				X				X				X
▪ Provide facilities to enable camel tours to operate from the Visitor Centre	X	X																		
▪ Introduce packages of camel tours that start at the Visitor Centre and extend throughout the protected area			X																	
▪ Car pool quota system supervised at the Visitor Centre by protected area personnel			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
▪ Develop good record- keeping and ticketing system at vehicle and camel line-ups to record number of tourists carried by each tribal cooperatives		X																		

Assumed that Q3, year 1 will be the opening of the Visitor Centre

Recommendations continued – visitor centre	Implementation Time Frame																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
▪ Create 'quota working group' to oversee development of quota recording and book-keeping system		X																		
▪ Set up central database in Visitor Centre that constantly monitors visitor numbers and activities against zoning scheme limits		X	X																	
▪ Publicise zoning scheme and user limits in all visitor information and promotional materials		X	X																	
▪ Develop communication system between visitor reception and rangers to enable daily user limits to be monitored and maintained		X	X																	
▪ Prepare administrative and operating procedures for all other Visitor Centre functions	X	X	X																	
▪ Implement the recommendations of the Interpretation Plan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Zoning scheme</b>																				
▪ Develop operational procedures for the zoning scheme	X	X																		
<b>Vehicle track network</b>																				
▪ Acquire or hire grading machine and employ full-time to establish, grade and maintain track network	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
▪ Establish the nine recommended loop trails for initial testing	X	X	X																	
▪ Phase-in compulsory use of loop trails with full consultation with service providers			X	X	X	X	X													
▪ Evaluate loop trail network after trial period and adjust accordingly						X	X													
▪ Introduce vehicle spacing discipline with service providers				X	X															
▪ Ensure compliance with network and spacing requirements, under protected area regulations.				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Enforcement scheme</b>																				
▪ Set up training programme for rangers in enforcement of regulations and develop required procedures and monitoring system	X	X			X	X														
▪ Develop a strategy for increasing the involvement of local people in the enforcement programme		X	X	X																

Recommendations continued	Implementation Time Frame																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Facilities and services</b>																				
▪ Produce clear guidelines for campsite establishment and management and continue to improve standards			X	X																
▪ Create more permanent campsites with "5-star" service.									X	X	X									
▪ Investigate the feasibility of creating small guest houses as alternative overnight accommodation.					X															
▪ Introduce the bed and breakfast scheme into Rum Village					X															
▪ Establish a 'Guides Forum' to oversee the continuous capacity building of guides and drivers		X																		
▪ Give priority to local community businesses and entrepreneurs for facility leases.			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>A future for rum village</b>																				
▪ Create a museum of Bedouin life in the army fort		X	X	X																
▪ Make the village a "compulsory stop" on all vehicle and camel tours using Wadi Rum as a route-way				X																
▪ Prepare a plan for making the Village a centre for adventure tourists		X	X																	
▪ Establish a search and rescue centre in the village and an office for adventure tourists			X	X																
<b>Promoting adventure tourism</b>																				
▪ Develop joint initiatives with local private operators to expand and cater for the needs of adventure tourists in Wadi Rum		X	X	X																
▪ Develop Rum Village as a centre for adventure tourists (as above)			X	X																

Assumed that Q3, year 1 will be the opening of the Visitor Centre

Recommendations continued	Implementation Time Frame																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Visitor safety</b>																				
▪ <i>Establish a first-aid and rescue post in Rum Village (or Visitor Centre)- see 'adventure tourism'</i>			X	X																
▪ <i>Introduce registration scheme for hikers and climbers (see Visitor Centre)</i>			X																	
<b>Entrance fees and service charges</b>																				
▪ <i>Finalise new entrance fee rates to coincide with the opening of the Visitor Centre</i>	X																			
▪ <i>Introduce a 10% "conservation levy" on vehicle tours, camping and food services..</i>				X																
▪ <i>Create a Rum Management Fund for receiving site generated income, including entrance fees and conservation levy and use to support management costs..</i>	X																			
▪ <i>Prepare a business plan for the protected area</i>	X																			
▪ <i>Review camping and other service charges with service providers</i>				X																

Assumed that Q3, year 1 will be the opening of the Visitor Centre

## **Annex 1**

### **Desert Tracks and Suggestions for Improvements**

**The Royal Society for the Conservation of Nature**

**2<sup>nd</sup> Tourism Development Project**

**Wadi Rum Component**

**Desert Tracks and Suggestions for Improvement**

## **Introduction:**

Rum Protected Area is one of most famous desert place in the world. It forms 2% of the world's sand dunes areas. The sand dunes consist 45% of Rum total area. The area is fragile and supports rare and endemic wildlife species.

## **Negative impact of tourism on the landscape of Wadi Rum**

The unsustainable use of the sand has cause habitat degradation. especially the use of vehicles for transporting tourist and visitors inside the protected area. These journeys might reach 136 trip/day in the peak season time. There are 350 vehicles in Rum village, 200 in Disi and 50 cars belong to the Hashemite fund and other private 4x4's.

100-230 cars enter the protected area daily. The current use of these cars has lead to serious impacts on the desert habitats and causing a serious vegetation loss.

Some studies were conducted in similar areas proven that uncontrolled use of cars in the desert might lead to the following impacts:

- Loss of vegetation cover and different species habitats.
- Degradation of the upper soil layer which will lead to the loss of algae and fungus species.
- Compression of soil layers to 30 cm which will prevent the evaporation of rain and thus destroy the animals dens.
- Reduction of photosynthesis process by 60% as a result of accumulated dust.
- Intensity of floods
- Accelerate soil erosion

### **Reasons for multiple tracks in Wadi Rum**

- To avoid getting stuck in the desert sand.
- To avoid the dust
- Competition between drivers.
- To satisfy visitors and provide better enjoyment.
- To avoid rutting tracks
- 2 wheels vehicles: to avoid getting stuck so, they don't use the existing tracks



## **A Suggested strategy to overcome the problem of multiple tracks in the protected area**

- 1: Enforce the zoning scheme (as it is in the interim visitors management plan).**
- 2: Enforce the official access points to the protected area.**
- 3: Improve cars quality and gradually ban 2 wheel cars.**
- 4: Conduct a targeted education programme for jeep tours drivers.**
- 5: Define a set of tracks in the protected area that reach all visitors attraction sites and improve these tracks.**

### Technical suggestions for tracks improvement

- The use of desert-like colored asphalt
- The use of stones and compressed gravels for constructing these tracks.
- The use certain chemicals that helps in hardening the soil (Dead sea water)
- The use certain machines to maintain these tracks (Grader)

### **Evaluation of proposed options:**

#### **Colored asphalt**

##### **Advantages:**

- It Keep the tracks for long period without a need for maintenance.
- It could blend with the desert colors.

##### **Disadvantages:**

- It effects negatively on the landscape of the desert.
- This will facilitate the movement of buses and small vehicles which will make it difficult to control.
- High capital cost
- It is not environmentally friendly.

#### **Use of chemicals: Sea water**

Before we use this method we have to define the tracks and compress them by roller then add sea water.

##### **Advantages:**

- It Keep the tracks for relatively longer period.
- Availability of seawater.
- Hard surface.
- Relatively low running cost.

**Disadvantages:**

- This method increases the salinity of soil (in the case of using salty sea water)
- The tracks colour turn to black after using it so it effects on the desert
- High costs due to the large amount of water needed.
- It might lead to introduction of new plants species, which are salt tolerant.

**The use of stones and compressed gravels****Advantages:**

- It Keep the tracks for long period without a need for maintenance.
- It could blind with the desert colors.

**Disadvantages:**

- It effects negatively on the landscape of the desert.
- This will facilitate the movement of buses and small vehicles which will make it difficult to control.
- High capital cost
- It is not environmentally friendly.
- Cause the roads rotting after use

**The use of Grader****Advantages:**

- Relatively environmentally friendly.
- Short-term impact.
- Availability of the technology locally.
- It doesn't effects on the desert landscape and scenery.
- It builds on the local knowledge (They used this method before)

**Disadvantages:**

- Running cost is expensive relatively.
- It needs continuous maintenance.
-

Results of using graders as an experiment

1: We had graded a track that is heavily used by local people for jeep tours, After five days of grading we found the following results

<b>Day</b>	<b>No. of cars entered the area</b>	<b>No. of cars used the graded track</b>	<b>Percentage of usage</b>
<b>1</b>	120	76	63,33%
<b>2</b>	83	52	62,65%
<b>3</b>	96	58	60,42%
<b>4</b>	89	49	55%
<b>5</b>	104	54	51,92%

**So**, the results of this experiment show that there is a direct relation between the comfortably of the track and the percentage use. The percentage of compliance to the graded tracks decreased after awhile because the track loses its comfortability to driving.

It is estimated that tracks need grading weekly but of course this period will vary according to number of cars drive through this track.

2: We had asked people who are involved in tourism about their opinion of this method of maintaining the tracks of the protected area and following are the results of their responses:

- 75% prefer the new tracks and grader technique
- 15% prefer the old road
- 10% prefer the asphalt technique.
-



## **Annex 2**

### **Protected Area Regulations in Arabic**

## **Annex 3**

### **Give Away Information Leaflet**

## **Annex 4**

### **Options for Managing Tourism Cooperatives' Vehicle Tours From the Visitor Centre**

## **Options for the Management of Vehicle Tours Post Visitor Centre**

### **Preferred options.**

In these options, all vehicles from the Rum, Disi and Swelhiyyin cooperatives would operate out of the new visitor centre. This would be the most efficient system to administer and would maximize control over vehicle distribution and behaviour, leading to improved environmental management and conservation.

It should be noted at this point that the Head of the RTC has accepted in principal the idea of sharing the visitor centre vehicle pool with the Disi and Swelhiyyin cooperatives

#### **Option one: sharing vehicle tours according to visitor preference**

- ❑ Vehicles would be divided into two separate pools at the visitor centre site<sup>7</sup>.
- ❑ 9 tour packages would be created, six in the Rum tribal area and 3 in the Disi tribal area
- ❑ The 9 packages would be illustrated and described in information leaflets and panels offered at the visitor centre – as in draft visitors' guide
- ❑ Customers would choose their preferred tour and buy their ticket at the central booking office/reception in the visitor centre
- ❑ Customers choosing a Rum-based package would be directed to the Rum vehicle pool and those choosing a Disi package to the Disi pool. Revenue from the tours would be divided between the cooperatives according to ticket receipts, as each package would have a separate ticket.

#### Advantages

Customer driven. Maintains tribal territories. Vehicle pools kept separate – less likelihood of aggression and hassling customers.

#### Risks

Customer preferences may lead to an unfair distribution of income, since their choices will depend on a variety of factors that cannot be easily predicted. With only 3 packages, Disi will not be able to compete in pricing. There will be two rota systems to manage and monitor. Possibility of corruption.

#### **Option two: sharing vehicle tours according to quotas.**

- ❑ A single vehicle pool would be established, containing cars from Rum, Disi and the Swelhiyyin<sup>8</sup>

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<sup>7</sup> The location of the vehicle pool site (s) is extremely critical to the effective management of vehicle tours. Ideally it (they) should be to the south of visitor centre plaza and booking office



- ❑ A quota would be agreed for the percentage of Disi vehicles allowed to operate in the vehicle pool. Based on the current distribution of tourism business, a starting quota could be 20%.
- ❑ This quota would be applied to the vehicle pool as a direct mathematical translation of the quota: ie at a 20% quota, every 5<sup>th</sup> tour package (or every 5<sup>th</sup> car in the line-up) would be taken by a Disi driver.

#### Advantages

Only one vehicle pool to manage. No tribal fronts to worry about. Not dependent on visitor preferences, so income levels will be predictable and proportional. Protected area recognized as a single management unit. Reduces inter-tribal competition.

#### Risks

Tribes will not agree on the proportions. Opens the door to other tribes' requests. Rum may disagree to free access for Disi (and other tribes) throughout the protected area.

### ***Less favoured options***

These options require vehicle tours to be managed away from the visitor centre, negating its intended role as the principal gateway and operation hub for the protected area

### **Option 3: maintaining the Disi vehicle tours through an independent access from Disi Village.**

- ❑ The Disi Cooperative would continue to promote its tours through Disi Village, bypassing the visitor centre.
- ❑ A small reception point would be established at the Disi entrance to the protected area
- ❑ The Cooperative would be required to charge entrance fees, but they would be given a share of the fee, like Rum. All vehicles entering would need to be registered.
- ❑ Effective coordination and communication mechanisms would need to be established to ensure that zoning regulations could be met.

#### Advantages

Disi cooperative keep their independence. No tribal fights over territory and tourism dividends. Income will depend on their own efforts. May bring them to the table, when they see the benefits of operating out of the visitor centre.

#### Risks

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<sup>8</sup> Rum have already agreed to allow 7 cars from the Swalaheen into the Rum rota system

Disi will continue to insist on getting a share of the business generated at the visitor centre. They may refuse to charge entrance fees. They will lose out to Rum in the long run as the Visitor Centre will become a major attraction in its own right. Administration and coordination with the visitor centre operations could be very problematical and inefficient.

**Option 4: Run all tours from existing village hubs and provide shuttle service from the visitor centre.**

- ❑ Existing tribal tour packages would continue to operate out of Rum and Disi Villages.
- ❑ Tourists would be shuttled to the villages from the visitor centre by mini-buses or coaches (?)

**Advantages**

Maintains the status quo. Little tribal friction. No unsightly vehicle pools or harassment of tourists at the visitor centre. Continues to support the self generated businesses in the villages

**Risks**

Undermines the main purpose and management role of the visitor centre, as originally intended. Makes vehicle distribution difficult to control and coordinate. Vehicle management becomes distant from the protected area management hub. Requires investment in shuttle vehicles and a highly efficient shuttle system that can deal with peak tourist loads (unlikely). Requires the tourist to transfer vehicles many times, leading to potential frustration, discomfort and mis-timing.

**Annex 5**  
**Zoning Scheme Guidelines**