

# NWFP Environmental Protection Agency

## Environmental Assessment Checklists and Guidelines

### Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page 1 of 22
-----	-------------------	--------------------------	--------------

## Contents

<b>1. Introduction</b> .....	<b>1</b>
<b>1.1 Scope of the Guidelines</b> .....	<b>2</b>
<b>1.2 How to use these Guidelines</b> .....	<b>2</b>
<b>1.3 Glossary</b> .....	<b>2</b>
<b>1.4 References</b> .....	<b>3</b>
<b>2. Project Profile</b> .....	<b>4</b>
<b>2.1 Description</b> .....	<b>4</b>
<b>2.2 Environmental Aspects</b> .....	<b>4</b>
<b>2.3 Mitigation Options</b> .....	<b>5</b>
<b>2.4 Environmentally Friendly Operations</b> .....	<b>7</b>
<b>Environmental Assessment Checklist</b> .....	<b>11</b>

## 1. Introduction

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Environmental protection and tourism are closely linked with each other, as vacations and outdoor recreation require a healthy environment and proper place to live. A tourist resort with clean environs - air, water and scenery is most sought after by leisure seekers. According to the World Tourism Organization (WTO, 1997), 'tourism that involves traveling to relatively undisturbed natural areas with the specified object of studying, admiring

and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both of the past and present) found in these areas is Ecotourism.

NWFP-Pakistan with its geographical diversity has been endowed with a wealth of eco-systems comprising biosphere reserves, mountains and forests, flora and fauna, lake, river and other water bodies.

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page 2 of 22
-----	-------------------	--------------------------	--------------

These eco-systems form the major resources for Ecotourism.

Unfortunately, during the last decade or so there has been a mushrooming of concrete buildings in the form of hotels, industries and lodging houses in eco-fragile areas, poaching of rare marine and wild life with little concern for the environment or aesthetics. This unplanned development activity has had an adverse effect on both environment and tourism.

For example, Kaghan valley, an important tourist resort and a long time favorite with domestic and international tourists, has been subjected to unregulated urban expansion during the last few years. This has resulted in the mushrooming of numerous multi-storey buildings around the valley. The hotels have been discharging sewage into the Kunhar river causing water pollution. The green area of this township has diminished rapidly, thereby, destroying the natural landscape, and the pedestrian path has become a regular vehicular road causing air and noise pollution.

### 1.1 Scope of the Guidelines

These guidelines are applicable to future developments of commercial and public tourist facilities, for example hotels and resorts in forest and ecologically sensitive areas.

Although for the regulatory purpose these guidelines are applicable to facilities that cater for tourist needs, many of its recommendations can be used to for constructing environmentally sound buildings for other purposes in the forest and ecologically sensitive areas.

### 1.2 How to use these Guidelines

The project proponent (the local government, municipal government, city government or the cantonment board) is obliged to use these guidelines. The project proponent has to fill in an environmental impact assessment form. The following steps are to be taken in this regard:

- Step 1: Provide information on project [use **Section I**]
- Step 2: Determine Applicability (*Are you sure that IEE or EIA is not required?*) [use **Section II**]
- Step 3: Describe the physical, biological and social environment [use **Section III**]
- Step 4: Assess potential impacts and applicable mitigation measures [use **Section IV**]
- Step 5: Provide undertaking to the EPA on mitigation measures and compliance [use **Section V**]

Completed form is to be submitted to the NWFP Environmental Protection Agency for evaluation. NWFP EPA may request for additional information or decide to undertake visit to the proposed project site in order to assess the environmental impact of the proposed project.

### 1.3 Glossary

**Act** means the Pakistan Environmental Protection Act, 1997

**Aesthetic Value** beauty of an area

**Contamination** introduction of impurities in the environment

**Conservation** refers to attempts to minimize the use of a natural resource

**Environment** means (a) air, water and

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>3</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors in sub-clause (a) to (f).

**Environmental Assessment** a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.

**Ecotourism** responsible travel to natural areas, often to see wild flora and fauna, that conserves the local environment and supports the local people

**Ecosystem** a biological community plus the surrounding physical environment

**Gradient** pertains to longitudinal slope of the rocks, which is expressed in ratio of rise or fall.

**Habitat** the general place or physical environment in which a population lives

**Impact on Environment** means any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

**Landslide** a slide of a large mass of dirt and rock down a mountain or cliff

**Landscape** scenery that can be seen in a single view

**Lightening Conductor** provides safe passage for the atmospheric lightening for the highest part of the structure to the

ground, in a way that there is no damage to the structure.

**Mitigation Measure** means a measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure.

**Pollution** the presence in the environment or the introduction into it, of substances that have harmful or unpleasant effects

**Preservation** refers to nonuse, such as a 'preserve' that is set aside and protected in its pristine natural state

**Regulations** means the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000

**Soil Erosion** physical removal of soil, either by wind or by running water

**Septic Tank** a tank (associated either with a sewage works or with a residence not connected to a sewer) in which the solid content of sewage is allowed to settle and accumulate and is purified by the action of anaerobic bacteria

**Threatened or Endangered Species** a species in danger of becoming extinct

#### **1.4 References**

- ▶ Negi, S.S. 1986. Hand book of Forestry. International Book Distributors.
- ▶ Hannshus, S. 2002. Environmentally Sound Construction Methods and Use of Appropriate Equipments. Ministry of Agriculture, Norway.
- ▶ Verma, P.K. 1980. Building Construction. Dehli Book Publisher.

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>4</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

- ▶ Mohammad, K. G. 1997. Revised Working Plan for the Upper Siren Reserved Forests. NWFP FMC Peshawar.
- ▶ [www.colorado.edu/masterplan/plan.cgi](http://www.colorado.edu/masterplan/plan.cgi).
- ▶ [www.colorado.edu/buildings/plan.cgi](http://www.colorado.edu/buildings/plan.cgi).
- ▶ [www.FIDICdirect.international.consulting.engineers.com](http://www.FIDICdirect.international.consulting.engineers.com)

## 2. Project Profile

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### 2.1 Description

Hotels and resorts are built in the northern areas of Pakistan both the private investors and the government. These buildings are constructed to facilitate the domestic and internal tourists who are attracted to the northern areas due to their natural beauty and clean environment. Ironically, these structures are slowly destroying the pure environment, the very commodity on which they survive.

The structures are built without any consideration of preserving the natural landscape. The structures are often built close to lakes, rivers and streams and end-up discharging their waste, directly or indirectly into the same water bodies. The solid waste from the hotels is often seen scattered on the hillsides and along the road.

### 2.2 Environmental Aspects

The environmental issues associated with the construction of hotels, resorts and other structures in forest and ecologically sensitive areas are described below.

#### ***Aesthetics***

Man-made structures in an otherwise undisturbed area is seen as lowering the aesthetic value of the area. This is particularly true, if no effort is made to design the structure in harmony with the surrounding, select a site that is least conspicuous, and use construction material that is indigenous.

#### ***Wastewater Disposal***

As no municipal sewage treatment system exists in the areas where the hotels and resorts are constructed, every unit needs to develop separate sewage treatment and disposal system. Such systems are difficult to make and maintain in areas where temperature is low, ground is hard and soil has limited ability to absorb. The result that even in areas where such system is constructed it is not unusual to see overflowing sewage and contamination of mountain springs, streams and river by domestic sewage.

#### ***Loss of Trees***

Construction of structures in forest settings requires removal of vegetation including trees. For one building the number of trees that are removed is usually small. However, for larger resorts and building complex a

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>5</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

significant number of trees are removed. Locally the impact is more enhanced in areas where a number of structures are developed in close vicinity.

### ***Solid Waste Disposal***

Waste is generated during building construction and operation. Building construction waste includes, removed vegetation, excess construction material, and excavated material. Inappropriate disposal of these, apart from creating pollution of water and soil, also lowers the general aesthetic value of the forests.

Once the hotel or resort becomes operational, the quantity of solid waste generated is directly proportional to the visitors to the hotel or resort. Heaps of litters consisting of plastic bags, wrapping papers, and packaging material, are commonly seen on both sides of the road and particularly close to popular recreation sites, roadside kiosks and mountain resorts.

### ***Soil Erosion and Landslides***

Most soil erosion potential in a mountain hotel or resort project construction period. Ground surface and slopes that were previously covered with vegetation are exposed. Due to the construction activity the soil also loses its compaction. The area thus becomes prone to erosion by wind and water action.

Tree cutting alone simply does not directly cause erosion. However, removal of trees in a large area can indirectly affect the ground vegetation, which after losing the shade provided by the trees may eventually disappear and lead to erosion.

### ***Disturbance to Wildlife Habitat***

Forests are important habitat for different species of flora and fauna. Building construction causes direct and indirect disturbance to the habitat. Removal of trees, clearing and leveling of ground directly destroys the habitat. This may be a serious issue if project is inside or close to the habitat of threatened or endangered wildlife species.

## **2.3 Mitigation Options**

### ***Site Selection***

Hotels and resorts should not be located

- ▶ Deep inside the forest. Site close to existing road is preferable to avoid opening up new forest areas and construction of long access roads. However, construction on the edge of the road should be avoided
- ▶ On un-drained soils
- ▶ Close to streams and rivers and in the riparian zones
- ▶ In or within 1 km of critical wildlife habitats. Such habitats should be identified before the site is selected
- ▶ On steep slopes
- ▶ Thick forest that may require extensive cutting of trees
- ▶ Crest of mountains

### ***Aesthetics***

To minimize the visual and aesthetic impact of the structure, the design of the building and the layout of the facilities should be sympathetic to the character of the surrounding landscape.

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>6</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

- ▶ Stone masonry work is recommended for the building and hotel constructions in hilly tracts.
  - ▶ Where possible, wood should be used
  - ▶ Ridgelines should remain unbroken by the structures
  - ▶ The canopy of vegetated areas should not be broken
  - ▶ Colors and textures should relate to those of surrounding vegetation, soil and rocks
  - ▶ Where possible, materials which occur naturally in the surrounding landscape should be used and their surfaces left unpainted.
  - ▶ The color scheme should be so chosen that the building should naturally blend with the natural setting
- ▶ The construction waste should be recycled or reused as much as possible. Any leftover, material should be buried. However, no hazardous waste (oil filters, batteries, waste oil, etc.) should be buried.

### ***Soil Erosion and Landslides***

### ***Wastewater Disposal***

- ▶ No oil changes, refueling or lubricating of construction equipment should be conducted within 50 meters of open water.
- ▶ Appropriately sized septic tank and soaking pit should be constructed for disposal of wastewater. The tanks should not be located on steep slope or within 50 m of any water body, source of freshwater or cliff.

### ***Waste Disposal***

- ▶ Effort should be made to minimize the generation of waste
- ▶ During construction, all excess construction garbage should be continuously collected and disposed of at a designated area surrounded by containing walls.

- ▶ Low embankments should be protected from erosion by planting indigenous grasses.
- ▶ High embankments, ie, over 2 m high, should be protected by constructing stone pitching or a riprap across the embankment.
- ▶ The area of the construction site should be minimized. The site should be physically demarcated on the ground. No construction related activity should take place outside the demarcated zone to minimize disturbance to vegetation.
- ▶ Exposed soil should be revegetated quickly after construction and not exposed without mulch or vegetation over winter.
- ▶ Unpaved access roads should have a minimum of 10 cm of gravel.
- ▶ Design the facility in a way to minimize cut and fill. Attempt should be made to balance cut and fills to minimize the need for borrowing fill or removing excess materials.
- ▶ Measures should be undertaken to ensure that storm drains are periodically cleared to maintain storm water flow.
- ▶ Debris should not be buried in the foundation base. It causes uneven settling that leads to erosion.

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>7</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

- ▶ Seed and mulch should be used and temporary sediments control structures should be installed immediately following construction to reduce erosion.

### **Fire Prevention**

- ▶ Lightning conductors should be provided in the building constructed in the forests.
- ▶ A fire contingency plan should be prepared. The hotel or resort company should designate one of its staff as Fire Boss, who should be provided training in fire fighting and civil defense, particularly forest fire.
- ▶ No open fires should be lit in the hotel or resort premises

### **Preservation of Habitat**

- ▶ Cutting of trees and removal of vegetation should be minimized.
- ▶ Plantation should be undertaken to compensate for any tree removed for construction of the facility.
- ▶ Customers should be made aware of environmentally sensitive areas and the need and importance to preserve them.
- ▶ Only native species should be planted.

## **2.4 Environmentally Friendly Operations**

Visitors to the forests and mountain resorts see these areas as unspoiled and environmental friendly. The hotels and resorts, as hosts to the tourists, are faced with the challenge of preserving this environment and conserving the natural resources. Hotel and tourism organizations around the world are

taking action and are recognizing that they need to be more pro-active to safeguard their key asset, an unspoiled environment.

The hotels are going 'green' to:

- ▶ Reduce consumption and improve efficiency both of which results in reduced costs
- ▶ Gain customer loyalty
- ▶ Enhance environmental profile and public image
- ▶ Improve competitive position
- ▶ Motivate staff and local community benefits.

Environmentally friendly hotel and resort operations could mean many things some of the practical suggestions are the following

- ▶ Conserve energy
- ▶ Conserve water
- ▶ Minimize solid waste
- ▶ Manage landscape
- ▶ Work with staff and communities to improve the environment

### **Conserving Energy**

Many studies have shown that hotels often use substantial amounts of energy in a very inefficient manner and that energy conservation measures are often the easiest, quickest and cheapest way to reduce costs and be environmentally pro-active.

The main uses of energy in small hotels and resorts include:

- ▶ Air conditioning
- ▶ Heating hot water
- ▶ Laundry
- ▶ Lighting

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>8</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

- ▶ Appliances in guest rooms and offices
- ▶ Cooking and refrigeration equipment
- ▶ Fuel for vehicles

Conserving energy saves money for the hotel and also provides significant environmental benefits. A large part of the energy consumed by hotels is supplied from thermal power plants and this contributes to global warming and other air pollution problems.

Minimizing the use of energy can be undertaken in numerous ways as follows:

- ▶ Make maximum use of natural ventilation
- ▶ Regularly clean air conditioner filters, light fittings and fridge seals
- ▶ Ensure staff and encourage guests to close doors and windows in air conditioned premises
- ▶ Close curtains to minimize solar gain
- ▶ Minimize decorative lighting
- ▶ Make maximum use of daylight
- ▶ Set water heaters at a temperature not above 60 °C
- ▶ Drain and flush hot water tank every 6 months to reduce scale build up and deposits which reduce efficiency
- ▶ Encourage staff to turn off lights and equipment after use, particularly gas burners in kitchens
- ▶ Maximize the use of fans rather than air-conditioners

- ▶ Install key-tag devices inside rooms for lighting, air conditioners and appliances
- ▶ Insulate hot water pipes
- ▶ Install solar heating for hot water system
- ▶ Shade windows from direct sun
- ▶ Replace incandescent with low-energy fluorescent light bulbs
- ▶ Install sensors and timers in intermittently used public areas so lights are switched off when not required
- ▶ Install sub-metering to monitor use in different sections of the hotel
- ▶ Review the capacity of central equipment relative to actual load – oversized equipment operates less efficiently
- ▶ Protect air-conditioners from the elements e.g. sun, saltwater and wind

### **Conserving Water**

Water is a scarce resource and water conservation should be a very important environmental goal. Even where the hotels purchase water, they often give little thought to conserving water supplies even though they can consume very large quantities.

Principal uses and areas of water use in small hotels and resort:

- ▶ Guest's rooms
- ▶ Cooking in the kitchen
- ▶ Public area toilets in bars, restaurants etc
- ▶ Laundry
- ▶ Swimming pool, and
- ▶ Gardens.

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>9</b> of <b>22</b>
-----	-------------------	--------------------------	----------------------------

Many different ideas are suggested to reduce the consumption of water:

- ▶ Invite guests to decide when they want their towels or bed linen changed
- ▶ Encourage/train staff to practice water conservation
  - ▷ Turn off taps and report leaks
  - ▷ Quickly fix leaking taps, pipes and toilet cisterns
- ▶ Minimize water use in the garden
- ▶ Reduce water delivery in taps and showers, through the installation of:
  - ▷ low flow devices or aerators on shower heads
  - ▷ spring-loaded taps
  - ▷ dual-flush toilets or a manual hand-pressed flush system
  - ▷ sensors on urinals which ensure flushes occur only when required
- ▶ Use suitably treated wastewater for reuse in the hotel, e.g. in water features or for garden watering
- ▶ Install sub-meters on key areas of water use—monitoring water use is a precursor for management and
- ▶ Collect rainwater for irrigation purposes

***Minimising Solid Waste***

Poor waste management is an issue which is readily noticed by visitors and can seriously undermine their experience and perception of an unspoiled environment and that of the hotel or resort. A substantial reduction in waste can almost always be achieved through no-cost or low-cost options. Often all

that is required is a change in management practices.

In contrast, organizing for the safe disposal of all residual waste often poses a serious dilemma for small hotels, especially those in forest settings, and the strategies adopted will have to reflect the local circumstances.

- ▶ If you cannot compost paper, cardboard etc, then burn it, rather than bury it
- ▶ Bury rather than burn plastics
- ▶ Identify and separate out hazardous waste—batteries, pesticide cans etc, and take them to the municipal dump or store in a single location
- ▶ Avoid over-packaged goods
- ▶ Purchase goods in bulk, preferably in refillable or returnable containers
- ▶ Avoid disposable items, e.g. plastic/ styrofoam/cardboard plates, cups, paper serviettes, and table mats
- ▶ Avoid plastic cutlery and disposable utensils
- ▶ Minimize food wastage through portion control, self service, appropriate food storage
- ▶ Store food in reusable plastic containers to reduce use of plastic film

***Landscape Management***

- ▶ Plant native species which are known to attract birds,
- ▶ Use organic fertilizers and natural pest control methods
- ▶ Avoid (or minimize) use of chemical pesticides, herbicides, bactericides and fungicides

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>10</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

- ▶ Water the garden at night to minimize evapotranspiration
- ▶ Include plaques on native species to educate visitors
- ▶ Use hoses with nozzle shut offs
- ▶ Use gray water from the hotel to water the garden
- ▶ Install drip irrigation systems

### **Staff and Local Communities**

A hotel cannot in isolation from the local community or maintain different environmental standards within the organization. The staff will always remain the key to successful environmental management and their positive participation crucial for the implementation of any program. In reality many activities are impossible without their cooperation. There will always be a pressing need to provide employees with an understanding of environmental issues as they relate to the hotel and tourism business. For many staff members environmental concerns will be confusing and even imposing and for them awareness training will be very important and a cornerstone of any environmental initiative.

Enabling enlightened environmental management in hotels through staff acceptance and participation will also have a multiplier effect in their own lives and in the communities in which they live. For this reason environmental awareness programs amongst the staff and even the local community have a dual benefit and are very appropriate in the circumstances of the forest settings.

Provision of training and resources for employees can include:

- ▶ Put up posters to remind staff of actions they can take to reduce environmental impact
- ▶ Provide incentives for staff to reward new ideas for good environmental practice
- ▶ Undertake awareness training sessions on environmental practice and topics
- ▶ Organize staff and/or local community 'clean-ups' or equivalent functions
- ▶ Incorporate an environmental section within the induction training program.

Assistance to local communities to improve environmental management can include:

- ▶ Waste management
- ▶ Employment for casual 'clean up campaigns'
- ▶ Awareness programs
- ▶ Provision of litter bins
- ▶ Assistance with rubbish disposal, and
- ▶ Cooperation with recycling.

Assist local communities conserve and manage 'tourist attractions' on their land i.e. waterfalls, historic sites, forest walks or recreation areas.

No:	Version: B	Date: 21 May 2004	Page 11 of 22
-----	------------	-------------------	---------------

## Environmental Assessment Checklist

### Section I: Project Description

File No \_\_\_\_\_ (To be filled by EPA)

Date \_\_\_\_\_

#### General Information

1. Project Name or Title \_\_\_\_\_
2. Project Proponent (Department, organization, or owner) \_\_\_\_\_
3. Address \_\_\_\_\_
4. Telephone \_\_\_\_\_
5. Fax \_\_\_\_\_
6. E-mail \_\_\_\_\_
7. Representative of the Proponent \_\_\_\_\_
8. Designation \_\_\_\_\_
9. Name of the person who conducted this assessment \_\_\_\_\_
10. Designation \_\_\_\_\_
11. Qualification \_\_\_\_\_

#### Project Information

12. Project Location \_\_\_\_\_
13. Name of Forest \_\_\_\_\_
14. Cost of the Project \_\_\_\_\_
15. Period of construction (start and end dates) \_\_\_\_\_
16. Total land area: \_\_\_\_\_ m<sup>2</sup>
17. Size of the Facility (Rooms and beds) \_\_\_\_\_
18. Brief Project Description \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Please attach a map of the proposed project area*

19. What material will be used for the external finish of the facilities? \_\_\_\_\_  
\_\_\_\_\_

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>12</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

20. Number and type of major construction equipment that will be used \_\_\_\_\_

\_\_\_\_\_

21. The total construction material that will be utilized? \_\_\_\_\_

\_\_\_\_\_

22. Will any new land be acquired? \_\_\_\_\_

If yes, please specify

The total area: \_\_\_\_\_

Present ownership of land \_\_\_\_\_

What is the present use of the land? \_\_\_\_\_

How the land will be acquired (Through Land Acquisition Act or Direct Purchase)? \_\_\_\_\_

When the compensation will be paid? \_\_\_\_\_

23. In case of state land, are there any squatter settlements on the land? \_\_\_\_\_

If yes, please specify

Number of settlements \_\_\_\_\_

Will any compensation be paid? \_\_\_\_\_

When the compensation will be paid? \_\_\_\_\_

24. Is construction work during the night planned? \_\_\_\_\_

25. How many trees will be removed from the construction site? \_\_\_\_\_

26. Describe the proposed wastewater disposal system? \_\_\_\_\_

### Section II: Screening

Is the proposed facility or part of the facility inside an ecologically sensitive area:

Yes  No

If yes, then the project would require an initial environmental examination or an environment impact assessment. Refer to the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000 for appropriate category.

### Section III: Environmental Profile

1. Describe the terrain of the project area:  Flat or Level (Slope < 3%)

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>13</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

- Level to moderately steep (Slope 3%-30%)
- Moderately steep to mountainous (Slope > 30%)

2. Are there signs of soil erosion or landslide anywhere within 500 m of the proposed site?

- Yes       No

If yes, please describe (where, nature) \_\_\_\_\_  
 \_\_\_\_\_

3. Is there any surface water body (river, canal, stream, lake, wetland) within 1,000 m of the proposed site?

- Yes       No

If yes, describe each water body:

Name (including type, ie, river, canal or stream)	Dimensions	Status and Uses (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, eg, agriculture, domestic, industrial, washing, fishery)

4. Is there any groundwater well on the proposed site or within 500 m of the proposed site?

- Yes       No

**Construction of Tourist Facilities in Ecologically Sensitive Areas**

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>14</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

If yes, describe each well:

<b>Type</b> (Dug well, tube well, hand pump)	<b>Location</b> (Village, road, mohalla, etc. and distance from the site)	<b>Depth and Yield</b>	<b>Uses</b> (Drinking, agriculture, domestic, industrial, washing, livestock)

5. Is any critical wildlife habitat found on, or within 1 km of the proposed site of the facility?

Yes       No

If yes, please describe \_\_\_\_\_  
 \_\_\_\_\_

It is recommended that the opinion of the NWFP Wildlife Department should be obtained regarding the wildlife sensitivity of the proposed site.

*Please attach the relevant opinion or no objection certificate of the NWFP Wildlife Depart if the opinion of the Department has been sought.*

6. How many trees are there on the proposed site? \_\_\_\_\_

Please list by species \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7. What other flora species are found on the proposed site? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

8. Please provide the traffic count for all main roads adjacent to the proposed site or roads that will provide access to the site. The count should be based on data collected, for both directions, on at least three typical working days. Use the following format:

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>15</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

Road \_\_\_\_\_ Count Location \_\_\_\_\_

	6:00 am- 9:00 am	9:00 am- 12:00 noon	12:00 noon- 3:00 pm	3:00 pm- 6:00 pm	6:00 pm- 9:00 pm
Large vehicles (trucks, buses, tractor trolleys, Minibuses)					
Medium sized vehicles (Suzuki pickups, cars, jeeps, taxis)					
Small vehicles (Rickshaws, motorcycles, scooters)					
Slow vehicles (animal-driven carts, tongas)					
Others					

*(Please add additional sheets for every road)*

9. What is the present land use in the vicinity (roughly a radius of 500 m) of the proposed site?

	<b>Residential</b> (Thick, Moderate, Sparse)	<b>Commercial</b> (Office, Shops, Fuel Stations)	<b>Open Land</b> (Parks, Farmlands, unutilized plots, barren land)	<b>Industrial</b>	<b>Other</b>
Description					

*(Please attach a map of the proposed project site and indicate roughly the area that you have considered for this evaluation)*

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>16</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

10. Please describe all the sensitive receptors within 500 m of the proposed site:

Type (schools, colleges, hospitals, and clinics)	Name	Size (Number of students or number of beds)	Location (Village, road, mohalla, etc.)	Distance from Site

11. Roughly, how many houses are within a radius of 500 m of the proposed site?  
\_\_\_\_\_

12. What proportion of the houses in the area are *pukka*, *semi-pukka*, and *kutchra*? \_\_\_\_\_

13. How are the general hygienic conditions of the project area?

Generally clean

Fair

Poor

14. Is there any bad odor in the project area?

Yes       No

What is the source of the odor? \_\_\_\_\_

15. What are the main sources of income of the surrounding community? \_\_\_\_\_

16. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 1,000 m of the proposed scheme?

Yes       No

If yes, please describe? \_\_\_\_\_

## Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>17</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

17. What other main sources of pollution exist within a radius of 500 m of the proposed site:

<b>Name of the Source</b>	<b>Type of Pollution</b> (Noise, air water)	<b>Location</b> (Village, road, mohalla, etc.)	<b>Distance from Site</b>

### Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>18</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

## Section IV: Impact Assessment and Mitigation Measures

<i>Potential Negative Environmental Impacts</i>	<i>Tick, if relevant</i>	<i>Mitigation Measures</i>	<i>Tick, if proposed</i>	<i>Monitoring Plan</i>
Site Selection and Design	<input type="checkbox"/>	The facility is not located deep inside the forest	<input type="checkbox"/>	
		The site is located ___ m from an existing road	<input type="checkbox"/>	
		The facility is located on well-drained soils	<input type="checkbox"/>	
		The facility is not located close to streams and rivers and in the riparian zones	<input type="checkbox"/>	
		The facility is not located in or within 1 km of critical wildlife habitats	<input type="checkbox"/>	
		The facility is not located on steep slopes	<input type="checkbox"/>	
		The facility is not located in thick forest	<input type="checkbox"/>	
		The facility is not located on the crest of mountains	<input type="checkbox"/>	
		The facility has been designed in a way to minimize cut and fill.	<input type="checkbox"/>	
Aesthetics	<input type="checkbox"/>	Ridgelines will remain unbroken by the structures	<input type="checkbox"/>	
		The canopy of vegetated areas will not be broken	<input type="checkbox"/>	
		Colors and textures will relate to those of surrounding vegetation, soil and rocks	<input type="checkbox"/>	

*Continued...*

### Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>19</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

...Continues

<i>Potential Negative Environmental Impacts</i>	<i>Tick, if relevant</i>	<i>Mitigation Measures</i>	<i>Tick, if proposed</i>	<i>Monitoring Plan</i>
		The color scheme will be so chosen that the building will naturally blend with the natural setting	<input type="checkbox"/>	
Wastewater Disposal	<input type="checkbox"/>	No oil changes, refueling or lubricating of construction equipment will be conducted within 50 meters of open water.	<input type="checkbox"/>	
		Appropriately sized septic tank and soaking pit will be constructed for disposal of wastewater. The tanks will not be located on steep slope or within 50 m of any water body, source of freshwater or cliff.	<input type="checkbox"/>	
Waste Disposal	<input type="checkbox"/>	Effort will be made to minimize the generation of waste	<input type="checkbox"/>	
		During construction, all excess construction garbage will be continuously collected and disposed of at a designated area surrounded by containing walls.	<input type="checkbox"/>	
		The construction waste will be recycled or reused as much as possible. Any leftover, material will be buried.	<input type="checkbox"/>	
		No hazardous waste will be buried.	<input type="checkbox"/>	
Soil Erosion and Landslides	<input type="checkbox"/>	Low embankments will be protected from erosion by planting indigenous grasses.	<input type="checkbox"/>	

*Continued...*

### Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>20</b> of <b>22</b>
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...Continues

<i>Potential Negative Environmental Impacts</i>	<i>Tick, if relevant</i>	<i>Mitigation Measures</i>	<i>Tick, if proposed</i>	<i>Monitoring Plan</i>
		High embankments, ie, over 2 m high, will be protected by constructing stone pitching or a riprap across the embankment.	<input type="checkbox"/>	
		The area of the construction site will be minimized. The site will be physically demarcated on the ground. No construction related activity will take place outside the demarcated zone to minimize disturbance to vegetation.	<input type="checkbox"/>	
		Exposed soil will be revegetated quickly after construction and not exposed without mulch or vegetation over winter.	<input type="checkbox"/>	
		Unpaved access roads will have a minimum of 10 cm of gravel.	<input type="checkbox"/>	
Water and Soil Contamination	<input type="checkbox"/>	Measures will be undertaken to ensure that storm drains are periodically cleared to maintain storm water flow.	<input type="checkbox"/>	
		Debris will not be buried in the foundation base.	<input type="checkbox"/>	
		Seed and mulch will be used and temporary sediments control structures will be installed immediately following construction to reduce erosion.	<input type="checkbox"/>	
Fire Prevention	<input type="checkbox"/>	Lightening conductors will be provided in the building.	<input type="checkbox"/>	

*Continued...*

### Construction of Tourist Facilities in Ecologically Sensitive Areas

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>21</b> of <b>22</b>
-----	-------------------	--------------------------	-----------------------------

...Continues

<i>Potential Negative Environmental Impacts</i>	<i>Tick, if relevant</i>	<i>Mitigation Measures</i>	<i>Tick, if proposed</i>	<i>Monitoring Plan</i>
		A fire contingency plan will be prepared	<input type="checkbox"/>	
		One person of the staff will be designated as Fire Boss, who will be provided training in fire fighting and civil defense, particularly forest fires.	<input type="checkbox"/>	
		No open fires will be lit in the hotel or resort premises	<input type="checkbox"/>	
Preservation of Habitat	<input type="checkbox"/>	Cutting of trees and removal of vegetation will be minimized.	<input type="checkbox"/>	
		Plantation will be undertaken to compensate for any tree removed for construction of the facility.	<input type="checkbox"/>	
		Customers will be made aware of environmentally sensitive areas and the need and importance to preserve them.	<input type="checkbox"/>	
		Only native species will be planted.	<input type="checkbox"/>	

No:	Version: <b>B</b>	Date: <b>21 May 2004</b>	Page <b>22</b> of <b>22</b>
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## Section V: Undertaking

I, \_\_\_\_\_ (*full name and address*) as proponent for \_\_\_\_\_ (*name, description and location of project*) do hereby solemnly affirm and declare:

1. The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge
2. I fully understand and accept the conditions contained in the Guidelines for \_\_\_\_\_ (*name, number and version of the guidelines*)
3. I undertake to design, construct and operate the project strictly in accordance with the project described in Form I, submitted with this undertaking.
4. I undertake to implement all mitigation measures and undertake monitoring stated in Form IV, submitted with this undertaking.

Date \_\_\_\_\_

Signature \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

(with official stamp/seal)

Witnesses:

Signature

Name

Address

1

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_