

# HILTON DOUBLE TREE

## RAWALPINDI

### ENVIRONMENT IMPACT ASSESSMENT (EIA)

**PREPARED BY**

**“Engr. Muhammad Abdul Basit”**

## **EXECUTIVE SUMMARY**

Mr. Rizwan Sadiq and his partner Mr. Kamran Sadiq have planned to launch a project, named as **"HILTON DOUBLE TREE"** in Rawalpindi. The site of the project is located at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi. Currently the project is under planning stage and no construction work started.

As per requirement of Punjab Environment Protection Act, 1997 (Amended 2012) and Review of IEE and EIA Regulations 2000, the Environment Impacts Assessment of the proposed commercial building project is required. Mr. Ghulam Muhammad Attorney holder of the project has engaged Mr. Abdul Basit "Environmental Engineer" to undertake Environment Impact Assessment (EIA) study of commercial building project.

To establish the background environmental conditions of the project area, a detailed survey of the site was conducted. This included but not limited to topography, geology, hydrogeology, hydrology, climate, flora and fauna, socio-economic conditions, archaeology, present infrastructure and future proposed development plans for the project area. Information describing the existing environment was gathered from various sources including the client, statutory bodies, local interest groups and published work.

Proposed building project will have 12 Floors including 3 Basements, 141 guest rooms and offices of different sizes, parking capacity of 138 cars & 206 Bikes.

The approximate proposed cost for the Project is as follows:

Land Cost, Material & Civil Cost	=	400 million + 400 Million
Work Cost (Fabrication + Erection)	=	700 Million
Total Cost	=	1500 Million

Guidelines for sensitive and critical areas were reviewed, so that the proposed project is planned and sited in a way that protects the values of sensitive and critical areas. The project site is located at Rawalpindi outside the sensitive area.

The proposed site for project is located at Mumtaz Rawalpindi and is a vacant commercial plot with no any population around it with no chance of human population displacement to acquire the land. The site of the proposed project seems to have no visual impact on historical, archeological, and cultural resources and on landscapes, as the site does not fall near or in the boundaries of the protected areas. The project area is vacant. Hence resettlement and rehabilitation requirements are non-existent.

There is no surface water source near the project area. There is no environmentally sensitive area in the macro environment. No trees or greenery would be removed and no significant impact would occur on the demographic pattern or on the social and cultural values of the settled population.

NCPC-F analyzed the data of ambient air of proposed site. The findings of the monitoring indicate that the Ambient Air Quality of Rawalpindi is generally good. Levels of (CO, SO<sub>2</sub>, NO<sub>2</sub>, NO and PM<sub>10</sub>) are within the limits defined by USEPA, WHO and PEQS.

It was evident from the assessment of impacts that no significant damage to wildlife, vegetation or habitats is anticipated from the proposed project. Similarly no residential property recorded, Cultural/historical or archeological sites would be affected by the project. Furthermore, no adverse socio-economic impact of the project is envisaged. During construction phase of the project employment opportunities will be provided to local population.

Different methods are used for the impact identification. These include: Assessment through the stages of the Project, Checklists, Matrices and Networks. To minimize the effects of adverse impacts the EIA recommends mitigation measures. These mitigation measures include the use of alternative options, management and physical controls, or compensation in monetary terms.

The proposed mitigation measures are based on the understanding of the sensitivity and behavior of environmental receptors in the project area, the legislative controls that apply to the project and a review of good industry practices while operating in sensitive environments.

For the effective implementation and management of the mitigation measures, an Environmental Management Plan (EMP) has been prepared. The EMP satisfies the requirement of the Punjab Environmental Protection Act and ETA Regulations. The EMP outlines the aims and objectives, defines the responsibilities of the project owners and contractor(s), and lays down the required communication, reporting procedures and mechanism through which the proposed measures will be monitored.

The report also covers Monitoring Plan; it will help to ensure compliance with the relevant legislation, implementation of the mitigation measures and long-term minimization of negative environmental impacts. The Monitoring Plan present a schedule with a description of any proposed phasing of activities, recommended mitigation measures and proposed methods of compliance.

After screening of probable environmental impact it can be concluded that;

- Project activities will cause temporary impacts on local environment all of which are reversible. During operational stage the project will not pollute the environment in normal circumstances.
- No significant damage to wildlife, vegetation or habitats is anticipated from the proposed project
- No residential property, cultural/historical or archaeological sites would be affected by the project
- No adverse socio-economic impact of the project is envisaged
- During construction phase of the project employment opportunities will be provided to local population
- By adopting recommended mitigation and safety measures. Little environmental impacts of the project can be eliminated

Environmental Impact Assessment Report concludes that the setting up of Project building and the associated activities will lead to minor environmental effects which could be mitigated as illustrated in the report. The project will not add to degradation of the environment at the Project Area. Therefore, the proposed project is considered viable, of enormous potential benefits and environmentally friendly, as supported by this EIA report. Accordingly the EIA in the present form may be approved.

### **MAJOR IMPACTS:**

The EIA Report comprises baseline data on the existing condition of the physical and biological environment, the anticipated environmental impacts, and proposed mitigation measures. Field surveys were undertaken to assess the physical and biological environment. Data has been collected from secondary sources to supplement the findings of the field survey. All the issues such as the ecology, management of construction, shelter and sanitation, use of equipments and machineries, environmental health and safety, occupational hazard, social and environment management and monitoring plan have been dealt with in detail in the respective sections of the report. However, these are briefly enumerated below to have a quick assessment of the situation.

<b>CONSTRUCTION PHASE</b>			
<b>POTENTIAL NEGATIVE IMPACTS</b>	<b>RECOMMENDED MITIGATION MEASURES</b>	<b>MONITORING RESPONSIBILITY</b>	<b>PARAMETERS FOR MONITORING</b>
Dust Emissions	On exposed construction surfaces during dry/windy periods fugitive dust generation will be suppressed by spraying of water	Proponent/Contractor	Air Quality
Soil Erosion	Exposed surface will be resurfaced and stabilized as soon as possible	Proponent/Contractor	Soil
Solid Waste Generation	Dedicated waste segregation units will be provided. Recyclable items will be provided to recycling contractors	Proponent/Contractor	Solid Waste Management
Vehicular Traffic and Noise	Vehicles and other noisy equipments should be in good conditions. Noisy construction activities will be carried out only during normal working hours.	Proponent/Contractor	Noise Level
Health and Safety of Workers	All occupational health and safety requirements for work force will be adhered to.	Proponent/Contractor	Health and Safety
<b>OPERATION PHASE</b>			
<b>Potential Negative Impacts</b>	<b>Recommended Mitigation Measures</b>	<b>Monitoring Responsibility</b>	<b>Parameters for Monitoring</b>
Solid Waste	Waste will not be disposed off in the open and on-site Waste Bins will be installed.	Proponent	Solid waste Management
Noise Pollution	Generator and vehicles used during the operation will be properly tuned and maintained to minimize noise and air emission.	Proponent	Noise Level
Waste Water	Waste water from toilets will be excreted in septic tanks and then disposed in sewerage line of the society.	Proponent	Water Quality
Environment and Landscape	Plants will be planted at the available vacant place	Proponent	Environment and Landscape

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## SECTION 1 INTRODUCTION

### 1.0 Introduction of the Project

HILTON DOUBLE TREE will be the commercial building in Rawalpindi and will comprise of 141 guest rooms and offices. Mr. Rizwan Sadiq and Mr. Kamran Sadiq have planned to develop a project of commercial building at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi.

As the development of the project falls in Schedule-II, of Pakistan Environmental Protection Agency's (Review of IEE and EIA) Regulations, 2000, the Guidelines for the Preparation and Review of Environmental Reports, an Environment Impact Assessment Report (EIA) of HILTON DOUBLE TREE, Rawalpindi is required.

Mr. Ghulam Muhammad Attorney holder of the project has engaged Muhammad Abdul Basit "Environmental Engineer" to undertake Environment Impact Assessment (EIA) of HILTON DOUBLE TREE, Mumtaz City, Rawalpindi.

Project Attraction: Luxury guest houses with all necessary facilities at Beautiful scenic location of Rawalpindi are one of the main attractions.

Project Type: Master Planned Commercial building, with all facilities

Location: Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi.

HILTON DOUBLE TREE will be built in accordance with the modalities and procedures being followed by private building projects in Rawalpindi.

The Project will have 12 Floors including 3 Basements, 141 guest rooms and offices of different sizes and will be fully developed on 8.98 Kanals (5432.90 Sq. Yds). The plans include provision of the infrastructure facilities including electricity, Water Supply, Sui Gas, Sewerage, Storm Water Drainage and Telecommunications.

### 1.1 Consultant

Mr. Ghulam Muhammad Attorney holder of the project has engaged Mr. Abdul Basit "Environmental Engineer" to undertake Environment Impact Assessment (EIA) of "HILTON DOUBLE TREE", Tehsil & District Rawalpindi.

## **1.2 Objectives of the Project**

Islamabad is an expanding city with the growing need of world class facilities and services. It is the main axis of Pakistan for almost all the national and international activities. The proposed site being close to New Islamabad International Airport needs accommodation for visitors and tourists. The provision of luxury accommodation to the visitors is intensely required. The main objective of the proposed project is to provide world class living facilities to the visitors and also to the community of Rawalpindi, Islamabad as well as the surrounding areas which will add to upgrade the existing state of affairs of Islamabad, the Capital of Pakistan. To cope with the challenges of ever changing world criteria, it is necessary to keep our standards in line with international prerequisites. The proposed HILTON DOUBLE TREE will add a valuable contribution and present a new face to Rawalpindi and in turn to Pakistan.

## **1.3 Screening of the Project**

Development of the project falls in Schedule-II, of Pakistan Environmental Protection Agency's (Review of IEE and EIA) Regulations, 2000, the Guidelines for the Preparation and Review of Environmental Reports, an Environment Impact Assessment (EIA) of HILTON DOUBLE TREE, Rawalpindi is required.

## **1.4 Objectives of the EIA Study**

The overall objectives of this Environmental Studies are to promote such development activities, which are environmentally friendly and sustainable. The specific objectives of this EIA study include:

- Review of legislative and policy framework related to environmental and social aspects of EIA such as environmental legislations, policies, and environmental approvals for the developing projects and Punjab environmental quality standards (PEQS) etc. ;
- Review of baseline environmental conditions using both primary and secondary sources of information;
- Review of biophysical and socio-economic conditions in the project area.
- Identifying environmental impacts both during construction and operation phases of the project and suggest suitable mitigation measures; and
- Developing Environmental Management Plan (EMP) identifying roles and responsibilities of the institutions involved in the implementation of the project

## 1.5 Scope of the Study

The scope of this study includes the “preparation of the Environmental Impact Assessment (EIA) Report for the HILTON DOUBLE TREE, Rawalpindi”. For the preparation of this Report, both primary and secondary data have been utilized.

## 1.6 Project Area

The Project area of the HILTON DOUBLE TREE is located at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi.

## 1.7 Standards and Guidelines

Environmental Issues and control in Pakistan are governed by the Pakistan Environmental Protection Act, 1997 (Amended 2012). **Annexure-I** provide a brief of policy and legal framework relevant to this EIA study. Pakistan Environmental Assessment Procedures and Review of IEE and EIA Regulations, 2000 also have been taken into account, while preparing the EIA Report.

## 1.8 Time Period for the Project

The EIA study awarded to Muhammad Abdul Basit on 18<sup>th</sup> May, 2021 and total time period for the study is 2 and half months, to be completed up to 31<sup>th</sup> July, 2021. Figure 1.2 shows work Schedule of the Project.

Sr. No.	Description	Year
1	Project Planning	2021
2	Construction Scheduled	2022-2024
3	Construction Completed	2025

**Figure 1.2: Work Schedule of the Project**

## 1.9 Approach and Methodology

The methodology adopted for carrying out this Environmental Impact Assessment is based on the guidelines of the EPA. The salient features of each activity are provided in the following paragraphs:

### **Task 1: Desk Review of the Project Documents, Relevant Policies and Guidelines etc. and Interaction with the Client and other Line Agencies**

The Consultant mobilized its Project Team for collection and review of all relevant policies of the Government of Pakistan (GoP) on environmental issues. All available national publications and data on environment such as GoP's National Environment Policy (2005), National Conservation Strategy (1992), Pakistan Environmental Assessment Procedures (1997) etc. were consulted.

The Consultant simultaneously started interaction with the client and also remained in contact as and when required. At the same time, all other line agencies including government and non-government organizations were also consulted.

**Task 2: Survey of Biophysical and Socio-economic Parameters**

The survey of biophysical and socio-economic parameters includes collection of baseline data in the Project Area mainly consisting of the following parameters:

**Physical Environment**

- Climate
- Geology, Topography and Soil
- Hydrology
- Seismology
- Ground Water Quality
- Surface Water Quality
- Air Quality
- Noise and Vibration
- Solid Waste
- Terrestrial Flora and Fauna
- Protected Areas / Reserved Forests
- Rare / Endangered Species

**Social Environment**

- Demographic profile
- Settlement Pattern
- Housing patterns
- Economic Features
- Public facilities
- Physical and cultural heritage
- Recreational sites

The following tools / data are used for establishing the environmental and social profile of the Project Area:

**Site Reconnaissance:** The survey was conducted with the purpose to have a familiarity with the Project Area and to develop the study tools related to the features of the Area.

**Collection of Data from Primary Source:** The primary data was collected by developing various study parameters keeping in view the nature of the EIA study. The data was collected by applying the various study tools / techniques.

**Collection of Data from Secondary Sources:** The available published information related to the Project Area, relevant policies and guidelines prepared by various government organizations were obtained and reviewed. This review provided a base to go head.

**Impact Assessment:** The information related to bio-physical and socio-economic components was collected to assess the possible changes due to the proposed construction of the Project. The impacts were assessed both in qualitative and quantitative forms like changes in various environmental parameters, variations in those parameters and consequences of those variations. All the possible efforts are made to control changes in those variations and defining the possible mitigation measures.

**Public Consultation:** Public Consultation was also held to effectively involve the potential stakeholders in the preparation of this EIA Report.

**Documentation:** Based on all the above activities related to EIA process of Pak-EPA, this EIA Report is prepared.

## 1.10 Components of the Report

This EIA Report consists of the following eight Sections:

Section 1 gives the introduction to the EIA Report;

- Section 2 discusses the salient features of the relevant Environmental Policies and Legislations;
- Section 3 provides the outlook of the project description;
- Section 4 discusses the biophysical environmental conditions of the project area;
- Section 5 discusses the baseline social conditions of the project area;
- Section 6 is about findings of public consultation;
- Section 7 gives the detailed description of environmental impacts and their mitigation; and
- Section 8 provides outlook towards environmental management plan prepared for the project.

**SECTION 2****INSTITUTIONAL, LEGISLATIVE AND POLICY FRAMEWORK  
RELATED TO IEE / EIA REQUIREMENTS****2 Organizations for Environmental Management****2.0.1 Federal Government Institutions**

Headed by a federal minister, the Ministry of Climate Change heads the Federal EPA, Provincial EPAs, Local Government and Rural Development are the main government organization responsible for protection of environment and resource conservation. The Ministry works in collaboration with the Pakistan Environmental Protection Council (PEPC) and the Federal and Provincial Environmental Protection Agencies formed under PEPA 1997 (Amended 2012) (In Punjab, formerly it was Environmental Agency but now it is Environmental Protection Department i.e. EPD-Punjab). The PEPC and Pak-EPA (Federal Environmental Protection Agency) are primarily responsible for administering the provisions of the PEPA, 1997 (Amended 2012). The PEPC oversees the functioning of the Pak-EPA (Federal Environmental Protection Agency).

The Federal Government has formed the PEPC. Its members include the President of Pakistan, or a person appointed by the President, as the Chairperson; the Minister of the Ministry of Environment as the Vice-Chairperson; Governors of the Provinces; Ministers In-charge of the Ministry of Environment in the Provinces (there is Ministry of Environment in each province); Secretary to the Federal Government in-charge of the Ministry of Environment, (Federal Secretary); Director General Federal EPA (Pak-EPA); Heads of federal and provincial environmental protection departments; environmentalists and community representatives including Scientists. The functions and powers of the Council include formulation of National Environmental Policy, enforcement PEPA 1997 (Amended 2012), approval of the PEQS, incorporation of environmental considerations into National Development Plans and Policies and to provide guidelines for the protection and conservation of biodiversity in general and for the conservation of renewable and non-renewable resources.

The Federal Government has also formed the Federal EPA (Pak-EPA), which is headed by a Director General and has wide ranging functions given in PEPA 1997 (Amended 2012). These include preparation and co-ordination of National Environmental Policy for approval by PEPC, administering and implementing PEPA 1997 (Amended 2012) and preparation, revision or establishment of PEQS.

Federal EPA has over all jurisdictions over Environmental Impact Assessment or Initial Environmental Examination (EIA/IEE) issues. Federal jurisdiction is applicable to the projects as under:

- On federal land;
- Military projects
- Involving trans-country impacts; and
- Bearing trans-province impacts.

For all other cases, the concerned provincial Responsible Authority shall have jurisdiction. Federal EPA reserves the rights to review any Environmental Report at any time and to suspend the powers it has delegated to any Responsible Authority if it believes those powers have not been properly used. **Figure 2.1** shows the organizational chart of Punjab Environmental Protection Agency.

### PUNJAB ENVIRONMENT PROTECTION AGENCY ORGANIZATION CHART



**Figure 2.1: Organizational Chart of Punjab Environment Protection Agency**

## 2.0.2 Provincial Government Institutions

Each provincial government has its own environmental protection institution responsible for pollution control. The provincial Environmental Protection Agencies or Environmental Protection Departments (EPAs/EPDs) are the provincial counter parts of the federal EPA, which is authorized to delegate powers to its provincial counterparts. The Provincial Environmental Protection Agencies are formed by the respective provincial governments. A Director General who exercises powers delegated to him by the concerned provincial government heads the provincial EPA. The reports covering IEEs and EIAs are submitted to the concerned provincial EPAs for approval.

For public works, responsibility for IEE management & review and granting or refusing environmental approval, will be vested in the Planning and Development Departments (referred as P&Ds) responsible for economic and development planning at federal and provincial levels.

### **2.0.3 Local Government Institutions**

At the district level District Environment Officer (DEO) is the responsible person to look after the environmental issues in all the sectors. The issues identified by the DEO are referred to the provincial government for legal proceedings. The DEO can take action against any development activity contributing in the environmental degradation of the country.

## **2.10 ENVIRONMENTAL LEGISLATION AND POLICIES**

The development of statutory and other instruments for environmental protection has steadily gained priority in Pakistan since late 1970s.

## **2.11 PAKISTAN ENVIRONMENTAL PROTECTION ORDINANCE, 1983**

The Pakistan Environmental Protection Ordinance, 1983 (PEPO 1983) was the first piece of legislation designed specifically for the protection of the environment. The promulgation of this ordinance was followed, in 1984 by the establishment of the Pakistan Environmental Protection Agency, the primary government institution dealing with environmental issues. Significant work on developing environmental policy was carried out in late 1980s, which culminated in the drafting of Pakistan National Conservation Strategy. Provincial environment protection agencies were also established at about the same time.

## **2.12 NATIONAL CONSERVATION STRATEGY (NCS), 1992**

The Pakistan National Conservation Strategy (NCS) is the principal policy document for environment issues in the country that was developed and approved by the Government of Pakistan on March 1, 1992. The NCS works on a ten-year planning and implementation cycle. It deals with fourteen (14) core areas, which are stated hereunder:

- i. maintaining soils in crop land;
- ii. increasing irrigation efficiency;
- iii. protecting water sheds;
- iv. supporting forestry and plantations;
- v. restoring rangelands and improving livestock;
- vi. protecting water bodies and sustaining fisheries;
- vii. conserving biodiversity;
- viii. increasing energy efficiency;
- ix. developing and deploying material and energy renewable;
- x. preventing / abating pollution;

- xi. managing urban wastes;

- xii. supporting institutions for common resources;
- xiii. integrating population and environmental programs; and
- xiv. Preserving the cultural heritage.

Based on the NCS, policies are being framed for institutional strengthening and human resource development for environmental protection, especially at the local and provincial level.

The NCS is a policy document that deals with the core environmental issues in Pakistan at macro level and recommends an action plan to address these issues. Project specified mitigation prescriptions cannot be expected in NCS document, however, the principles of environment protection, conservation and management provided in the NCS document have to be used as guidelines during the planning and execution of Project.

As a signatory to the Convention on Biological Diversity in 1992, it was also felt necessary for Pakistan to develop a national strategy for the conservation of biodiversity. Accordingly, the Government of Pakistan constituted a Biodiversity Working Group, under the auspices of the Ministry of Environment, to develop a Biodiversity Action Plan (BAP) for the country, which was completed after an extensive consultative process. The plan, which has been designed to complement the NCS and the proposed provincial conservation strategies, identifies the causes of biodiversity loss in Pakistan and suggests a series of proposals for action to conserve biodiversity in the country. PEPC has approved the action plan and steering committees at federal and provincial levels have been formed to implement it.

BAP recognizes that at project level Environmental Impact Assessment (EIA) is used as a tool to identify environmental impacts of a proposed project and to plan for reducing adverse impacts. BAP further stipulates that an EIA should be initiated at an early stage in project development cycle and that public participation in review of potential effects is important.

### **2.13 PAKISTAN ENVIRONMENTAL PROTECTION ACT (PEPA) OF 1997 (AMENDED 2012)**

A comprehensive legislation was evolved over-time to prepare and implement national environmental policies. It is entitled as “the Pakistan Environmental Protection Act, 1997 (PEPA 1997) (Amended 2012)”. The PEPA 1997 was enacted repealing PEPO 1983. The PEPA 1997 provides the framework for implementation of National Conservation Strategy, protection and conservation of species, wildlife habitats and biodiversity, conservation of renewable resources, establishment of Environmental Tribunals, appointment of Environmental Magistrates, Initial Environmental Examinations (IEE), Environmental Impact Assessment (EIA), and promotion of public education and awareness of environmental issues through mass media.

The PEPA, 1997 (Amended 2012) is the basic legislative tool empowering the Government to frame regulations for the protection of the environment. The act is applicable to a broad range of issues and extends to air, water, soil, marine and noise pollution, as well as to the handling of hazardous wastes. Penalties have been prescribed for those contravening the provisions of the Act.

The following are the key features of the law that have a direct bearing on development project:

**Section 11(1)** states that “Subject to the provisions of this Act and the rules and regulations made there under, no person shall discharge or emit, or allow the discharge or emission of, any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the “Punjab Environmental Quality Standards”. The Pakistan Environmental Protection Agency (Pak-EPA), the body mainly responsible for enforcing the PEPA, 1997, has published Punjab Environmental Quality Standards (PEQS).

**Section 12(1)** requires that “No proponent of a project shall commence construction or operation unless he has filed with the Federal Agency an Initial Environmental Examination (IEE) or, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained from the federal agency approval in respect thereof”.

**Section 12(2)(b)** The Federal Agency shall review the Environmental Impact Assessment report and accord its approval subject to such conditions as it may deem fit to impose or require that the Environmental Impact Assessment be re-submitted after such modifications as may be stipulated, or reject the project as being contrary to environmental objectives. Thus for a development project, it is required as per the regulations, that an EIA/IEE report be submitted to the Pak-EPA, and approval obtained before undertaking any construction activity.

**Section 14** requires that “Subject to the provisions of this act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle, or import any hazardous substance except (a) under a license issued by the Federal Agency and in such manner as may be prescribed; or (b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement, or other instrument to which Pakistan is a party”. Enforcement of this clause requires the Pak-EPA to issue regulations regarding licensing procedures and to define ‘hazardous substance’.

## 2.14 PUNJAB ENVIRONMENTAL QUALITY STANDARDS

In order to control the Environmental Pollution, the Government of Pakistan has laid down Punjab Environmental Quality Standards (PEQS) for municipal and industrial liquid effluents, industrial gaseous emissions, motor vehicle exhaust and noise.

The standards specify the following:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea.
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources; and
- Maximum allowable concentration of pollutants (2 parameters) in gaseous emissions from vehicle exhausts and noise emission from vehicles.

#### 2.14.1 PAKISTAN (FEDERAL) EPA ENVIRONMENTAL ASSESSMENT PROCEDURES

Federal EPA has published a set of environmental guidelines for conducting environmental assessments and the environmental management of different types of development projects. The guidelines that are applicable to various development projects are listed below, followed by comments on their relevance:

- **Policy and Procedures of Filling, Review and Approval of Environmental Assessments, Pakistan Environmental Protection Agency, September 1997.** These guidelines define the policy context and the administrative procedures that govern the environmental assessment process, up to the approval of the environmental report. The section on administrative procedures has been superseded by the IEE/EIA Regulations, 2000.
- **Guidelines for the Preparation and Review of Environmental Reports, Pakistan Environmental Protection Agency, 1997.** The guidelines on the preparation and review of environmental reports specify the following for project components:
  - The nature of the information to be included in environmental reports;
  - The minimum qualifications of the EIA conductors appointed;
  - The need to incorporate suitable mitigation measures at every stage of project implementation; and

- The need to specify monitoring procedures.
  - The terms of reference for the reports are to be prepared by the project proponents themselves. The report must contain baseline data on the project area, detailed assessment thereof, and mitigation measures.
- **Guidelines for Public Consultation, Pakistan Environmental Protection Agency, May, 1997.** These guidelines deal with possible approaches to public consultation and techniques for designing an effective program of consultation of that reaches out of all major stakeholders and ensures the incorporation of their concerns in any impacts assessment study.

## 2.15 PAKISTAN ENVIRONMENTAL PROTECTION AGENCY (REVIEW OF IEE AND EIA) REGULATIONS, 2000

In exercise of the powers referred by the section 33 of the Pakistan Environmental Protection Act, 1997, Pakistan Environmental Protection Agency with the approval of, the Federal Government made the rules, namely: - Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

These regulations clearly defines the categories of the projects requiring an IEE/EIA, review fees by EPA, filing process of the environmental reports, public participation, decisions by EPA, conditions of approval, compliance reports and monitoring of the Environmental parameters, etc. Figure 2.2 shows the current IEE/EIA process in Pakistan. As per IEE/EIA Regulations, 2000 the review time period required for IEE is 45 days and for EIA is 90 days.

## 2.16 NATIONAL ENVIRONMENTAL POLICY, 2005

The National Environmental Policy provides an over reaching framework for addressing the Environmental issues facing Pakistan, particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of bio-diversity, decertification, natural disasters, and climate change. It also provides directions for addressing the cross-sectored issues as well the underlined causes of Environmental degradation and meeting International obligations.

The National Environmental policy, while recognizing the goals and objectives of National Conservation Strategy, National Environmental Plan and other existing environment related national policies, strategies and action plans provides broad guidelines to the Federal Government, Provincial Government, Federally Administrative Territories and local Governments for addressing environmental concerns and ensuring effective management of their environmental resources.

The Provincial, AJK, Northern Areas, and Local Governments, however may devise their own strategies, plans and programs in pursuit of this policy.

**Goal** – The National Environmental Policy aims to protect, conserve and restore Pakistan's environment in order to improve the quality of life citizens through sustainable development.

**Objectives** – The objectives of the policy include: -

- Conservation, restoration and efficient management of environmental resources.
- Integration of environmental considerations in policy making and planning processes.
- Capacity building of Government Agencies and other stakeholders at all levels for better environmental management.
- Meeting International obligations effectively in line with the National aspirations.

Creation of demand for environment through mass awareness and community mobilization.

## SECTION 3

### PROJECT DESCRIPTION

#### 3.0 General

Mr. Rizwan Sadiq and his partner Mr. Kamran Sadiq have planned to build the HILTON DOUBLE TREE located at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi. Currently the project is under planning stage and no construction work started.

#### 3.1 Type & Category of Project

As the development of the project falls in Schedule-II, of Pakistan Environmental Protection Agency's (Review of IEE and EIA) Regulations, 2000, the Guidelines for the Preparation and Review of Environmental Reports, an Environment Impact Assessment Report (EIA) of HILTON DOUBLE TREE, Rawalpindi is required. Mr. Ghulam Muhammad attorney holder of the project has engaged Muhammad Abdul Basit "Environmental Engineer" to undertake Environment Impact Assessment (EIA) study of the proposed project.

#### 3.2 Objective of the Project

The objective of the project is to provide luxury guest rooms and offices to local people as well as tourists for rent as well as ownership.

#### 3.3 Location of the Project

The proposed site for HILTON DOUBLE TREE is located at 33°35'12.4" N, 72°51'44.8" E in Mumtaz city, Rawalpindi. Location Map of the project is shown in **Figure 3.1**



Figure 3.1

### 3.4 Cost of the Project

The construction cost of HILTON DOUBLE TREE is estimated to be Rs. 1500 Million including the cost of land.

### 3.5 Alternatives Considered

This section covers the project alternatives which were examined for the proposed project in Rawalpindi. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options will be adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of appropriate option that was required to ensure optimal results within defined set of economic, environmental, health and safety constraints. In particular it outlines the following project options:

1. The "No Development Option".
2. Alternative Site Option.
3. Alternative technology.

### 3.5.1 No Development Option

The proposed project is development of commercial building. This project will provide better facilities at beautiful site. It will help to tackle the shortage of residential issues especially in peak season. The proposed project will provide additional income and gainful employment to the nearby population. The 'No-Project' option, if taken, will prevent the area fulfilling basic necessity demands.

Other impacts of the 'No-Project' option would be loss in employment and infrastructure development in the project area, as the project is likely to create some jobs and improve the existing infrastructure of the area. From the environmental point of view, this option would result in a loss of opportunity in further improvement of the environmental management of the area, through generation of environmental baseline data, and the mitigation and monitoring plans.

### 3.5.2 Alternative Site Option – Site Selection Criteria

In reference to the Project Site alternatives, several lands were evaluated. The final selection of site is based on following criterion:

***Accessibility:***

The site should be accessible from a permanent road to allow ready transport.

***Water:***

Availability of adequate water, which should also, meets drinking water standards.

***Soil conditions for civil structure:***

Suitability and stability of soil conditions required for the civil structures.

***Sufficient Land Availability:***

Availability of sufficient land to design and layout plan in an appropriate manner, with consideration of future expansions.

***Electricity:***

Availability of electricity from the WAPDA for an uninterrupted supply of power, required for the project.

***Conclusion:***

In view of all above criteria, it was concluded to construct the “HILTON DOUBLE TREE” at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi.

The project site is located in Rawalpindi, so administrative control on proposed project will be easily for proponent. The geographic position of the proposed project is very ideal which connects it to the transportation infrastructure of the country. The proposed project location is at Srinagar Highway as well as Motorway M1 & M2 which is providing direct access to the all of cities of Pakistan. Remaining proposed sites don't possess such a broad spectrum of commercial, industrial and management benefits.

**3.5.3 Technology Alternatives****a) WASTE HANDLING**

Only solid waste produce by the proposed project will be Domestic Solid Waste which could be easily disposed by transporting it to waste disposal site of Mumtaz City through their transport which is located near the proposed project site.

**b) LIQUID WASTE WATER TREATMENT**

Only liquid waste which will be produced by the proposed project will be domestic waste water, which will be first disposed in the Septic Tank and then disposed in Sewerage Line of the society.

**3.5.4 Rejected Alternatives**

As the proposed site is ideal for development of commercial building project on small piece of land and also this project do not have any adverse Environmental Impact, so in this regard no any alternative sites have been considered and also Proponent of the project does not own any other site.

### 3.6 Project Administrative Jurisdiction

The proposed project falls in the administrative jurisdiction of City District Government Rawalpindi and is located in Rawalpindi Development Authority.

### 3.7 Components of the Proposed Project

The main features of the proposed Project are as follows: -

- a) Total Area of the Project Site (Plot Size): 8.98 Kanals
- b) Number of Guest Rooms: 141
- c) Number of Entrances: 2 for Guests.
- d) Parking: Space is allocated at basement and around the project with parking space for 138 cars and 206 bikes.
- e) Utilities: The Utilities which will be provided for the proposed project will be access road, water supply, sewerage, electric supply, gas, and Septic Tank etc.

#### 3.7.1 Work Force Requirement (During Construction and Operation)

During Construction: approximately 50 laborers

During Operation: approximately 35 employees

#### 3.7.2 Expected Visitors and Occupancy

Expected visitors: approx 700

Total occupancy: 141 Guest Rooms, Offices

#### 3.7.3 Water Source and Consumption (During Construction and Operation)

Water source during construction: Society Water Supply System and Bore

Water source during operation: Society Water Supply System and Bore

Water Consumption / Requirement during Construction: 15000 gallons /day approx.

Water Consumption / Requirement during Operation: 20000 gallons /day approx.

Water Storage:

The water storage during the operational phase: OHWT & UGWT

### **3.7.4 Power Sources and Consumption during Operation**

Power Source: Local Power Company.

Power consumption: 4573 kilowatts approx.

### **3.7.5 Fire Fighting System**

The Fire fighting system at the proposed HILTON DOUBLE TREE will be sprinkler based. However, stand pipes, connected with the fire pumps, will be provided in the building with fire hose cabinets on each floor. Each cabinet shall house one 1.5" diameter hose of 100 ft length and attached to a gate valve of same diameter. Orifice plates will be provided at the hose cabinets to control pressure at required level as per manufacturer's requirements. The capacity of over head water tank will be 17,000 Gallons. A separate fire fighting pump will be installed which will be diesel operated.

A separate fire alarm system will also be installed in the shape of smoke detectors/ionization detectors on each floor of the proposed project.

### **3.7.6 Waste Water**

The type of effluent discharge from the proposed project will be domestic waste water (washrooms, kitchen, laundries, etc), from utilities and storm water (rain water runoff).

Amount of effluent/waste water discharge from the proposed project is estimated to be 80% of consumed water.

### **3.7.7 Solid Waste**

The amount of solid waste that will be generated from the proposed project during the low and peak seasons is estimated to be:

50 kg/day approx.

An efficient solid waste system (collection, storage & disposal) for the project will be established and its final disposal to the designated site will be ensured.

### 3.8 Construction Activities & Type of Machinery

The proposed project will be implemented in different stages i.e., excavation, piling and super structure. It also includes the Architectural Work, Site Survey and Geotechnical Investigations, Structural Work, Electrical, Mechanical and HVAC Works, Building Management and Control System. Activities of construction will mainly include:

- a) Piles and Piles Caps
- b) Column & Slabs
- c) Masonry & Plaster Work
- d) Internal Finishes
- e) External Finishes
- f) Plumbing Work
- g) Electrical Work
- h) HVAC Works
- i) Generators Standby
- j) Landscaping
- k) Punch List and Taking Over
- l) Taking Over and Inauguration

#### **Machinery Required**

The equipment & machinery required for the construction of the project will be cranes, batching plant, dozers, dumpers, pumps, mixers, vibrators, excavators, crane, air compressors, generators, etc.

### 3.9 Land Use

Currently the proposed land is vacant with no any construction started.

### 3.10 Transportation

The proposed project location is at Srinagar Highway as well as near M1 & M2 Motorway which is providing direct access to the all parts of the country.

### 3.11 Vegetation

No any vegetation grown on proposed project site only some shrubs like snatha are grown.

### 3.12 Proposed Schedule for Implementation

The construction of the proposed project will be completed by 2025. The schedule for HILTON DOUBLE TREE is as below: -

Sr. No.	Description	Year
1	Project Planning	2021
2	Construction Scheduled	2022-2024
3	Construction Completed	2025

### 3.13 Restoration and Rehabilitation Plan

The proposed site is vacant with no any human settlement on it. So restoration and Rehabilitation plan not required.

### 3.14 Government Approvals

The Rawalpindi Development Authority will provide its approval after issuance of NOC from EPA Punjab and it is pending due to this reason.

**SECTION-4****BIOPHYSICAL ENVIRONMENTAL BASELINE****4 General**

The proposed Project has been studied with respect to physical, biological and socio-economic environmental conditions. The objectives of establishing baseline environmental profile include: (a) determine pre-project state of affairs which can be used to assess post-project environmental conditions – both for better and worse; and (b) provide maximum information to the proponent and decision-makers for informed decision making.

In order to establish baseline conditions for the EIA study of Proposed Project, the information about the various environmental parameters was gathered from Government Departments, through review of previous and journals, and site visits. The Socio-Economic survey was conducted to get information about the socio-economic conditions of the communities living in the Project Area. Different tools such as questionnaire and focus group discussions were used to solicit their view points (including concerns and suggestions) about the proposed project.

**4.1 Physical Environment**

The physical environment includes topography, geology, and soils, seismology, climate, surface water, ground water ambient air quality and noise levels.

**4.1.1 Topography**

Rawalpindi falls in the Salt range and Potwar plateau. Physical features of Rawalpindi exhibit a rich variety which is continental in dimensions. In Rawalpindi one can find mountains, forests, plateaus, valleys, ravines, torrents, streams, plains and all possible species of topography which the physical process could produce during the course of ages. Rawalpindi is shaped like a square. At the top rise the Murree hills. These hills form offshoot of the Himalayan system. They rise in spurs rising to heights between 2,133 to 2,438 meters. Rawalpindi is drained by the Soan and its tributaries.

#### 4.1.2 Geology and Soils

Geologically, the high hills of Murree, Kahuta and Kotli Sattian Tehsils are composed of tertiary sand stone, lime stones and alluvial deposits. These sand stones apparently belong to the Sirmar and Siwalik series of the sub Himalayan system. Some of the strata yield excellent building material and are also quarried for road material. Lime stone is the character of the Margallah range, and this is the main cause of fertility of villages which lies at its base. It is found also but in limited quantity in Murree hills. The alluvial deposits occur chiefly in the lower portion of Kahuta Tehsils. In Rawalpindi Tehsils, lime stone crops- -out everywhere along with the low hills and in the plains kankar deposits are common. The pebble ridges, described as alluvial deposits in Kahuta hills are remarkable structural features of Kahuta and Rawalpindi Tehsils. Most of the forests in Rawalpindi are on pebbles ridges. Large isolated, boulders in many places seem to paint to a glacial epoch in the Potohar plain. Clay soils in Rawalpindi exhibit five distinct strata, from bottom to top:

- (i) Course pebbles with sand or clay;
- (ii) An alluvial stratum deposited by an older river system in the Soan Basin;
- (iii) Alluvial deposits of the present river system;
- (iv) An air-borne top layer of silt or clay (loess); and
- (v) Conglomerate and loose gravel deposits.

#### 4.1.3 Soil

No visible signs of soil contamination were observed at the project location during the site visits. There is no sign of soil erosion or landslide anywhere within 500 m of the project site.

#### 4.1.4 Climate

Seasonal climate conditions inter alia other environmental issues must be considered for the design and execution of a Project. The climate was an influencing factor affecting the construction of road and other engineering structure are the mean physical and chemical conditions including air, temperature, precipitation, humidity and evaporation. However to determine the overall effect of the climatic stresses, daily and seasonal temperature changes, site attitude, direct solar radiation, and precipitation must be considered.

The climate of the Project Area is classified as sub-humid to sub-tropical continental, receiving rainfall from both monsoon and western disturbances. The Project Area has hot summer and cold winters. In Rawalpindi, the mean maximum temperature ranges from 24° C to 39° C (75.2° F to 102.2° F) in June and the mean minimum temperature ranges from 3° C to 18° C (37.4° F to 64.4° F) in January. Temperatures vary from -1° C to 46° C (30.2° F to 114.8° F).

Hail Storms are frequent during the winter and they also occur often during the monsoon season. But the precipitation during the summer is mostly in the form of rain. The subdivision receives a very high amount of rainfall averaging 60.53 inches with the mean annual number of rainy days at 89.3. The rainfall is received both from the monsoon and western disturbances.

There are two maximums of rainfall. The primary maxima, giving the bulk of the rainfall by monsoon, lies in the months of July, August and September. The secondary maxima is experienced during the spring season in the months of February, March and April. July is the wettest month of the year receiving 14.26 inches of rain with a mean number of rain days at 15. It is followed very closely by August, which receives an average rainfall at 14 inches. The driest month of the year is November which receives only 0.87 inches of rainfall with only 1.7 days of rain. One day maximum annual rainfall per year is given in the **Table 4.1**.

**Table 4.1: One Day Maximum Annual Rainfall at Islamabad**

Year	Rainfall (mm)	Year	Rainfall (mm)	Year	Rainfall (mm)
1944	120.7	1960	69.3	1980	60
1945	104.1	1961	64.8	1981	123.8
1946	88.9	1962	90.9	1982	181.3
1947	31.5	1963	87.1	1983	172.4
1948	150.6	1964	71.6	1984	86.4
1949	66.6	1965	84.8	1985	140.5
1950	96.3	1966	73.9	1988	124.8
1951	312.4	1967	101.9	1989	124.7
1952	80.5	1972	53.3	1990	110
1953	205.7	1973	105.9	1991	73.9
1954	69.6	1974	133.9	1996	78.9
1955	86.4	1975	116.8	1997	194.7
1956	223.5	1976	120	1998	84.3
1957	71.1	1977	133.6	1999	91.7
1958	90.7	1978	113.1	2000	62.4
1959	140.2	1979	78.7	2001	411.4

Source: Metrological Department

Rawalpindi shows no prevailing wind directions in the mornings. Wind direction is evenly distributed throughout the year. In the late afternoon, winds are mainly from southwest, except in July and August when southeastern winds dominate. The meteorological conditions recorded during the monitoring were temperature, wind direction, wind speed, humidity and pressure. **Table 4.2** summarizes month-wise temperature, precipitation, and relative humidity.

**Table 4.2: Month-wise Temperature, Precipitation and Relative Humidity (Rawalpindi)**

Month	Mean Temperature		Precipitation (mm)	Relative Humidity (%)
	Maximum	Minimum		
January	17.6	26.0	56.0	63.5
February	19.1	5.1	73.5	61.8
March	23.9	9.9	89.8	56.6
April	30.1	15.0	61.8	40.1
May	35.3	19.7	39.2	34.1
June	38.6	23.7	62.2	36.0

Month	Mean Temperature		Precipitation (mm)	Relative Humidity (%)
	Maximum	Minimum		
July	35.0	24.3	267.0	60.7
August	33.4	23.5	309.9	70.3
September	33.5	20.6	98.2	61.3
October	30.9	13.9	29.3	54.9
November	25.4	7.5	17.8	59.6
December	19.7	3.4	37.3	65.0
<b>Annual</b>	<b>28.6</b>	<b>14.1</b>	<b>1142.1</b>	<b>55.8</b>

Source: District Census Report, Rawalpindi 1998

#### 4.1.5 Hydrology and Drainage

Drainage in subdivision is mainly affected by the streams, which drain in the east into the Jhelum River or in the south into the Soan River. The chief streams of the Soan drainage system are Khad Chhainti, Klad Biaga and Nala Dhalsans. There are also a number of mountain torrents that flow down from both sides of the spurs toward the south. On the eastern side of the subdivision where the slopes are steeper, the streams and torrents fall in to their respective Khads, namely the Khad Chhajjana and the Khad Thoon, without making a basin. Most of the streams and torrents are seasonal and come to life only during the rainy days. Moreover, these torrents and streams find their way to the Khads by the way of the narrow valleys through the high cliffs. These streams are usually known by the names of the villages by which they pass. Some are known simply as Khad, Kass or Kassi.

#### RIVERS

There are two rivers that touch the subdivision's borders in the east and in the southwest.

The **JHELUM is the river** that rises in Kashmir and after long journey through the mountains and rocks, enters into the subdivision near Chhaprian on the east side of Chajjana. A few miles below is Kalairi bridge that links Islamabad and Rawalakot by a road through the subdivision. Near the bridge at the mouth of the Mahl, a stream joins the Jhelum River from the left bank in Poonch territory. Here excellent fishing is to be had in August and September. The river runs downward smoothly and gently to the bottom of the high mountain on both the east and west sides. Several kilometers down from Kaliari, it enters into Kahuta subdivision at Azad Pattan, where the river is bridged. Thus the river forms the eastern boundary line.

The **SOAN RIVER** rises just below Murree and runs for the first 15 kilometers of its course at a steep gradient down southward cutting the foot ridges of Karor, then reaches the plains near Chirah. It then cuts through the Narrar Spur making a striking wild and rocky gorge, 1.5 kilometers in length at the eastern end the of which is still to be seen the picturesque old Ghakkar Fort of Phharwala.

This River is the southeastern border of the subdivision. A great part of Murree, Kotli Sattian and a portion of Kahuta hills are sloped downwards to river Soan.

#### 4.1.6 Land Use

The dominant land use is commercial area with no any vegetation on it and is surrounded by vacant commercial plots on all sides.

#### 4.1.7 Water Quality

The ground water is available at Society at a depth of water table ranges from 100 to 180 feet. The Project will use Bore Water as well as Society water supply system for Construction and Operation phase. The water quality analysis report is attached as **Annexure-1**.

#### 4.1.8 Ambient Air Quality

The ambient air quality was monitored at two locations. The ambient air quality was monitored for priority pollutants such as CO, NO, NO<sub>2</sub> and SO<sub>2</sub>. The monitoring period was 2 hours at each sampling point. The results obtained are tabulated under **Table 4.4**.

**Table 4.4: Ambient Air Quality Monitoring**

#	Parameter	Unit	Sample Description	
			Point 1	Point 2
1	CO	mg/m <sup>3</sup>	1.8	1.6
2	NO <sub>2</sub>	µg/m <sup>3</sup>	22.4	22.7
3	SO <sub>2</sub>	µg/m <sup>3</sup>	18.2	18.7
5	NO	µg/m <sup>3</sup>	10.8	10.2

The above table indicates that the concentrations of CO, NO<sub>2</sub>, and SO<sub>2</sub> are low at all points and well within limits.

#### 4.1.9 Noise Level

Noise levels were monitored with the help of a portable digital sound meter at two locations for twenty four (24) hours with an interval of one second. The hourly average data was provided by NCPC Foundation. The minimum and maximum noise levels observed at the given locations are tabulated under **Table 4.5**.

**Table 4.5: Noise Levels Measurement**

#	Parameter	Sample Description		
		Point 1	Point 2	Point 3
1	Noise	43.8	44.6	42.7

It is evident from the noise monitoring data that noise levels are on the higher side in the day time and night time. This is due to the traffic near the Project site and a small contribution may be from the commercial activities in the area.



#### 4.1.10 Seismology

Horizontal and vertical seismic forces transmitted to the support structures by the ground earthquake may cause extremely high mechanical stresses to engineering structures as well as roads, seismic adaptation which is primarily related to the appropriate design of support structures and connections between the units.

The Project Area is located in Seismic Zone 3, where 3 represent peak horizontal ground acceleration from 0.24 to 0.32g, where 3 represents upper moderate damage zone.

#### 4.2 Ecological Environment

The flora and fauna of the Himalayas varies with climate, rainfall, attitude, and soils. The climate ranges from tropical at the base of the mountains to permanent ice and snow at the highest elevations. The amount of yearly rainfall increases from west to east along the front of the range. This diversity of climate, attitude, rainfall and soil conditions generates a variety of distinct plant and animal communities.

As the Project Area falls in sub-range of Himalayas called as Lesser Himalaya, which is 2,000 to 3,000 meters high forming along the Main Boundary Thrust fault zone with a steep southern face and gentler northern slopes.

#### 4.2.1 Flora

No any flora is grown at the proposed project site as it is located inside the industrial area of RCCI Industrial Estate, Rawat and there exist industrial units at its surrounding.

Flora in Rawalpindi district varies with elevation. In the upper reaches of the Murree Hills, the main tree species include deodar (*Cedrus deodara*), biar (*Pinus wallichiana*), paludar (*Abies smithiana*), and barangi (*Quercus lassiflora*). Chir pine (*Pinus roxburghii*) covers the Lower hills, along with kao, or wild olive, phulai (*Acacia modesta*); (*Cedra la toona*); drek (*Melia sempervirans*); and sinetta (*Dodona burmanniawa*). Vegetation grows for the most part in scattered clumps. At lower elevations and in the plains, the most common trees are shisham (*Dalbergia sissoo*), toot (*Morus Alba*), drek (*Melia sempervirens*), phulai, (*Acacia modesta*), ber (*Zizyphus jujaba*), pipal (*Ficus religiosa*), kkar (*Acacia arabica*). Non-timber forest products include floral buds of the kachenar, pomegranate, blackberries, raspberries, cranberries, and wild pears. Trees are rare along the field boundaries and in cultivated areas, but stunted trees are common in the ravines.

The other vegetation that grows scattered is Myrsine African, *Carissa opaca* and *Acacia modesta*. The shrubs that also grow in lesser density are *Zizyphus nurnmufaria*, *Sagretia brandrethiana*, *Adhatoda vasica*. Grasses layer, which usually grows in depressions or on relatively moist soil under shade comprises of *Chrysopogon aucheri*, and *Andropogon*.

#### 4.2.2 Fauna

No tigers or leopards are found in the forests of Rawalpindi district. Jackals are still common, however, and there are few wolves, foxes and bears. Deer and wild goats are occasionally reported in the lower Murree Hills. Hare are found on all the low hills and in most of the ravines. Birds called chikors are found hills and low spurs. Grey partridges are common, but black partridges are rare. Ducks are found along the rivers and marshes. Geese are found in the Soan Valley and quail are common in spring and autumn.

Several kinds of fish such as rahu, mari, thaila, gulfam and daula fish can be found in the upper reaches of the Soan River. Only daula fish are reported downstream of Rawalpindi and at the confluence with the Lai Nullah.

No endangered or rare species of flora or fauna are present at the proposed project site.

#### 4.2.3 Protected Area

“An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means”.

According to the guidelines for sensitive and critical areas, Total area under conservation in Pakistan is 7, 661, 784 ha, which represents 9.53% of the total land area of the Pakistan. The protected areas are classifies as:

- A. National Parks;
- B. Wildlife Sanctuaries; and
- C. Game Reserves.

According to IUCN, Pakistan has a network of 225 Protected Areas comprising 14 National Parks, 99 Wildlife Sanctuaries and 96 Game Reserves.

### **A. National Parks**

A national park is an area of outstanding scenic merit, where the landscape, flora and fauna are protected and preserved in their natural state and public access for recreation, education and research is provided for. Margalla Hills National Park and Ayubia National Park are the nearest national parks to the Project site. National Parks are includes the Rawal Lake. Several wildlife species inhabit these areas as well as the green belts separating the city's sectors. Some of these green belts have a thick vegetation cover and provide their inhabiting wildlife with food and secure places for breeding and survival.

#### **Margalla Hills:**

The Margalla Hills National Park is located in Northern Pakistan in a region of Federal Capital Territory at the foot hills of the Himalayas with a covered area of 17, 386 ha and is a beautiful National Park. It is a home to the leopards, gray Goral, Barking deer, wild boar, Asiatic Leopard, Jackal, Red Fox, Fruit bat, Porcupine and even Gazelle. It is also home to some bird and reptiles such as Larks, Pheasants, Spotted Doves, Egyptian Vultures, Falcons, Hawks and Russell's viper, Indian Cobra and Saw-scaled Viper.

#### **Ayubia National Park:**

Ayubia National Park is one of the best representative areas of Himalayan Moist Temperature Forest, a sub-category of Montane Forests. It covers area of 1684 ha. It has been declared as a National Park in 1984, and falls in IUCN Category V.A n ethno botany initiative is being carried out in this area to demonstrate the sustainable use of plant resources as a means for protecting biodiversity.

**Rawal Lake:**

Rawal Lake is particularly important for thousands of birds that migrate from the cold northern areas during the winter season. These birds are diverse and include: Little Grebe, Little Cormorant, great Cormorant, Black Crown night Heron, Indian Pond Heron, Cattle Egret, Grey Heron, Common Quail, Moorhen, Long Legged Buzzard, Shikra etc.

**B. Wildlife Sanctuaries**

Wildlife Sanctuaries are areas set aside for the protection of wildlife. Public access is prohibited or regulated and no exploitation of forests is allowed.

As mentioned earlier, the provincial governments have listed 99 wildlife sanctuaries. On further classification, Punjab contains – 37, Sindh – 35, Northwest Frontier – 6, Balochistan – 15, Federal Territory – 1 and Northern Areas – 5.

There is no wildlife sanctuary in district Rawalpindi and Margalla Hills National Park in Islamabad is also declared as a wildlife Sanctuary.

**C. Game reserves**

Hunting and shooting of wild animals is regulated under permit. The numbers of shoots allowed in reserves varies, and is determined by provincial governments.

In addition, 96 other areas have been designated as game reserves and these govern an additional 4407 square miles of terrain, (Punjab – 19 areas, Sindh – 14 areas, Northwest Frontier – 38 areas, Balochistan – 7 areas, Northern Areas – 9 sites, Federal Territory – 1 and AJK – 8 sites).

There is no game reserve in district Rawalpindi and Margalla Hills National Park in Islamabad is also declared as a Game Reserved Area.

**SECTION – 5****SOCIAL BASELINE****5 General**

The Project Area is located at Plot # MC-H-W, Quaid Road East, Block Blue Zone, Mumtaz City, Near New Islamabad International Airport, Rawalpindi. The construction of the Project is planned in the territorial jurisdiction of Rawalpindi Development Authority. There are settlements, apartments, plazas and cottages near the project site.

**5.1 Methodology**

Social baseline was developed using both the primary and secondary sources of data. Social Survey was conducted in the nearby localities of the Project area located in Rawalpindi city to get primary information about the socio-economic status of these communities. For the purpose of social survey, structured interview schedule was used keeping in view the nature and level of the respondents, in which both open and close ended questions were used. During the survey 50 people were contacted to study the socioeconomic conditions of the nearby settlements. In addition, informal and formal group discussions were also held within these communities and with various potential NGOs to study their awareness, acceptance, concerns, preferences and perceptions about the construction of the project.

Documents related to historical records of population statistics like District Census Report of Rawalpindi (1998) was also used to get overall picture of the district population related to socioeconomic parameters.

**5.2 Political and Administrative Setup**

The proposed Project Area falls in the administrative jurisdiction of Tehsil Council, Rawalpindi, in the Rawalpindi District. District Co-ordination Officer is the highest ranked administrator in the District while Tehsil Municipal Officer is responsible to look after the administrative affairs of the Tehsil. The Tehsil administration is by the Tehsil Council. The total area of the District Rawalpindi is 5, 286 square kilometers.

**5.3 Demography**

### 5.3.1 Population Size, Growth and Distribution

Regionally the total population of the Rawalpindi District was 3, 363, 911 as enumerated in March, 1998 with an intercensal percentage increase of 58.6 since March, 1981 when it was 2, 121, 450 souls. The average annual growth rate of population in the District during intercensal period 1981-1998 was 2.7 percent. The total area of the district is 5, 285 square kilometers, which gives population density of 636 persons per square kilometer against 401 persons, observed in 1981 indicating a fast growth rate of the population. **Table 5.1** gives population, its intercensal increase and average annual growth rate since 1951.

**Table 5.1: Population and Intercensal Increase and Growth rates since 1951**

Description	1951	1961	1972	1981	1998
Population (in 000's)	872	1,086	1,745	2,121	3,364
Intercensal Increase (percent)	-	24.5	60.7	21.5	58.6
Average Annual Growth Rate (percent)	-	2.2	4.1	2.3	2.7

(Source: District Census Report, Rawalpindi, 1998)

### 5.3.2 Religion

The population of the Rawalpindi District of which the Project Area is an integral part is predominantly Muslim i.e. 97.72 %. The next higher proportion is that of Christians with 2.11 %. While other minorities like Ahmadis, Hindu etc. also live in small numbers are shown in **Table 5.3**

**Table 5.3: Percentage of Population by Religion and Rural/Urban Areas**

Religion	Rawalpindi		
	Average Area	Rural	Urban
<b>Muslims</b>	97.72	99.28	96.34
<b>Christians</b>	2.11	0.65	3.39
<b>Hindu</b>	0.01	0.01	0.02
<b>Ahmadis</b>	0.15	0.06	0.23
<b>Others</b>	0.01	0.01	0.02

(Source: DCR 1998, Rawalpindi District)

### 5.3.3 Races and Tribes

One of the important races and tribes living in the Rawalpindi District are the Rajputs, amongst whom the important sub-divisions are Bhatti, Rawal, Janjua, and Chohans. Dhunds and Satti inhabit the Murree and Kotli Sattian Hills. People of the District Rawalpindi are well built and of medium height and are considered to be among best soldiers in the Pakistan Army.

### 5.3.4 Mother Tongue

The mother tongue refers to the language used for communication between parents and their children in any household. Punjabi is the predominant language being spoken by majority of the population of the district i.e. Rawalpindi followed by Urdu etc.

### 5.3.5 Sex Ratio

Sex ratio, is 92.3%. The males are little less than females on the average. The growth rate in the subdivision was 0.12 during the census period 1981-1998.

### 5.3.6 Age Structure

In 1998, the proportion of the infants under one year was 2.2%, children under 5 years, 12.2%, children under 10 years 25.5%, under 15 years 38.6% of the total population. More than 18 years 54.6% and more than 21 years were 47.9% of the total population. The proportion of population of working age groups i.e. 15 to 64 years, were recorded as 57.8% and over 65 years 3.6%. **Table 5.4** gives detail on percentage of population by selected age groups, sex in rural and urban areas in 1998. (See **Table 5.4**).

**Table 5.4: Population Percentage Distributions by Selected Age Groups, Sex, and Rural/Urban Areas**

Age Group	All Areas			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Under-1	2.2	2.2	2.2	2.4	2.4	2.3	2.1	2.0	2.2
Age Group	All Areas			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Under-5	12.2	12.2	12.2	12.8	13.4	12.3	11.7	11.3	12.1
Under-10	25.5	25.5	25.5	26.7	27.7	25.7	24.4	23.7	25.3
Under-15	38.6	38.7	38.5	40.1	41.7	38.6	37.3	36.3	38.5
15 - 49	49.4	48.8	50.0	46.0	43.8	48.1	52.3	52.8	51.8
15 - 64	57.8	57.5	58.1	55.4	53.4	57.3	59.9	60.8	58.9
18 & above	54.6	54.4	54.7	53.1	51.2	54.9	55.9	57.1	54.6
21 & above	47.9	47.9	47.9	46.7	44.9	48.4	49.1	50.3	47.7
65 & above	3.6	3.8	3.4	4.5	4.9	4.2	2.8	3.0	2.6

### 5.3.7 Marital Status

The population above 15 years was further classified in to never married, married, widowed and divorced. Of that total population 35.7% were never married, 58.2% married, 5.7% widowed and 0.4% divorced. The percentage share of never married male was higher than the females, being 41.3% and 29.8% respectively. The percentage of never married females was higher in urban than rural areas. **Table 5.5** gives details about percentage of population 15 years and above by marital status, sex and rural and urban residence.

**Table 5.5: Population Percentage Distribution by Marital Status, Sex and Rural/Urban Areas**

Marital Status		All Areas	Rural	Urban
Never Married	Both Sexes	35.7	34.2	36.9
	Male	41.3	40.9	41.6
	Female	29.8	28.1	31.5
Married	Both Sexes	58.2	58.3	58.2
	Male	55.7	55.4	56.1
	Female	60.8	60.9	60.7
Widowed	Both Sexes	5.7	7.0	4.6
	Male	2.8	3.5	2.2
	Female	8.8	10.2	7.4
Divorced	Both Sexes	0.4	0.5	0.3
	Male	0.2	0.2	0.1
	Female	0.6	0.8	0.4

Source: DCR Rawalpindi, 1998

## 5.4 Quality of Life

### 5.4.1 Literacy

A person is treated as literate if he can read newspaper or a journal of same standard and can write a simple letter in any language. The literacy ratio in Rawalpindi district is 70.4% as per census of 1998.

During the survey it was observed that people of the Project Area are very much prone towards higher education of their children. **Table 5.6** shows the survey results analyzed for education level of the respondents. Out of the total survey respondents, only 04% were educated above intermediate level including college and university education. 20% were intermediate level, 19% were up to matriculation level but highest category was of illiterate people, which were 27.5%.

**Table: 5.6 Education Levels of the Respondents**

Sr #	Educational Level	Number	Percentage
1	Illiterate	22	27.5
2	Primary	10	12.5
3	Middle	14	17
4	Matric	15	19
5	Intermediate	16	20
6	Above Intermediate	3	04
<b>Total</b>		80	100

### 5.4.2 Professional Status

During the social survey, respondents were also asked about their occupational associations, and after analysis it was found that 38% of the total respondents were associated with labor, 20% with agriculture, 25% were shopkeepers and only 7% were teachers. **Table 5.7** shows the findings of the survey results.

**Table 5.7: Professional status of the Respondents**

Sr #	Professional Status	No. of Respondents	Percentage
1	Agriculture	16	20
2	Government Job	08	10
3	Shopkeeper's	20	25
4	Labor	30	38
5	Teachers	06	07
<b>Total</b>		80	100

### 5.4.3 Average Monthly Incomes

From the occupational affiliations of the respondents, it can be easily judged that affected communities belong to the income group of people whose income levels are low. **Table 5.8** depicts the analysis results of the surveyed data. It can be observed that majority (40%) of the respondents belong to income group of 10,000 – 15,000 and only 04% respondents were earning their incomes above 20,000. **Figure 5.3** shows the activities related to social survey of the Project Area.

**Table 5.8: Income Level of the Respondents**

Sr#	Income Level (Rs.)	No. of Respondents	Percentage
1	Less than 5,000	10	12
2	5,000 – 10, 000	27	34
3	10, 000 – 15, 000	32	40
4	15, 000 – 20, 000	08	10
5	20, 000 & above	03	04
<b>Total</b>		<b>80</b>	<b>100</b>

### 5.4.4 Economically Active Population

The economically active population is defined as the persons working, most of the time during the year preceding the cause date, looking for work, laid off and un-paid family helpers assisting their family. The economically active population of the district in the last census (1998) was 21.9% of the total population or 29.4% of the population 10 years and over, i.e. the population exposed to the risk of entering the economically active life anytime.

### 5.4.5 Unemployment Rate

Unemployment rate is measured as ratio of looking for work and laid off in total economically active population comprising employed, looking for work, laid off and un-paid family workers, generally representing in percentage. The unemployment rate in the district was 21.1%, which was mainly due to unemployment amongst males representing 21.8%, while female unemployment rate was just 0.9%.

## 5.5 Housing Patterns

### 5.5.1 Construction Type of the Houses

Project Area being commercial area in a newly planned housing society with not much population yet and is away residential area. At nearby residential area compact blocks of houses are rare as contrary to the other plain areas of the province. The houses are scattered and people try to construct their houses with the locally available construction material. During the survey, it was found that 40% houses of the respondents were built of pacca material and 60% were residing in semi-pacca houses built up with locally available construction material. **Table 5.9** shows the survey results.

**Table 5.9: Construction Type of the Houses**

Sr #	Type of Construction	No. of Respondents	Percentage
1	Pacca	32	40
2	Semi-pacca	48	60
3	Kacha	-	-
<b>Total</b>		<b>80</b>	<b>100</b>

### 5.5.2 Ownership Status of the Houses

Project Area being located inside the Islamabad and Rawalpindi jurisdiction and is newly planned so there are some rural settlements near it. In rural areas, the trend of giving the houses at rent is rarely found in the whole province. When respondents were asked about their ownership status of the houses, it was found after analysis that 100% respondents were residing in the self owned houses. Survey results are apparent from the **Table 5.10** given below.

**Table 5.10: Ownership Status**

Sr #	Status of House	No. of Respondents	Percentage
1	Self Owned	80	100
2	Rented	-	-
3	Free on Landlord Property	-	-
4	Relative House	-	-
<b>Total</b>		<b>80</b>	<b>100</b>

### 5.5.3 Time Period of Residence

Mouza Bajnial area is very old settlement, dates back to its origin before partition. After that it went on spreading and population increased with the passage of time. During survey, when people were discussed about their residence period in that area. It was found that they are living in that area since 30-40 years and have established their economic resources.

## 5.6 Public Facilities

### 5.6.1 Electricity

Predominant housing units (91.0%) are using electricity as source of light in the whole district both in rural and urban areas. In the villages, under study for this project electricity is available in the 100 houses.

### 5.6.2 Cooking Fuel

Sui Gas is not available in the village and people are mostly using wood as cooking fuel. If we have a look on the whole district, more than half (52.9%) of the housing units are using gas as cooking fuel in their houses and remaining population is using wood, kerosene oil and other sources of fuel.

### 5.6.3 Medical Facilities

Numerous civil hospitals are located in Rawalpindi, Murree, Gujar Khan, Kahuta and Taxila. Some of the main hospitals are Central Government Hospital, District Headquarter Hospital, Police Hospital, T.B. Hospital, WAPDA Hospital and Infectious Diseases Hospital.

At Samli there is S. Muhammad Hussain Government Tuberculosis and Sanatorium at Ghora Gali (Murree), Lawrence College Hospital and at Taxila the Mission Hospital. About 400 dispensaries are working in urban areas of the district. Basic Health units and Rural Health centers are providing medical facilities to the people of the area.

The Combined Military Hospital, Military Hospital and P.A.F. Hospital provide medical facilities to Armed Forces. The Cantonment General Hospital, Rawalpindi provides health facilities to residents of Rawalpindi Cantonment Board, Chaklala Cantonment Board and adjoining areas.

#### **5.6.4 Water Supply**

Water Supply facility is not available in Mouza Bajnial. People are using hand pump and bores and wells for portable water as percentage share does not exceed 9% at the district level.

#### **5.6.5 Commercial Banks**

The nearest bank facility is at Commercial Area of Top City and Mumtaz City. People have to come there for their financial handlings of routine activities.

#### **5.6.6 Communications**

The Project Area is connected with excellent metalled road which connects to Kashmir Highway which connects it with M1 & M2 and Rawalpindi Islamabad cities. The system of communication in Islamabad and Rawalpindi is very satisfactory. The Rawalpindi has total metalled road length of 1,446 kilometers.

The main line of the Pakistan Railways and the Grand Trunk Road parallel to the railways runs through the District Rawalpindi to various other cities like Peshawar, Kohat, Mianwali, Faisalabad, Lahore and Karachi.

### **5.7 MAIN PROFESSIONS AND OCCUPATIONS**

#### **Off-Farm Activities**

Off farm activities constitute dominant sector of the local economy. Most of the people were reported as engaged in service sector; employment with government and non-government organizations. Majority of people is employed mostly in clerical and low status jobs. Part of economically active population carries out daily wage work, wherever available, followed by an insignificant number of people engaged in commercial/business activities, such as general/grocery stores and public call offices.

#### **On-Farm Activities**

Farming and livestock management is the second major sector of local economy. Land holding, though very small, is predominantly used for agriculture farming. Major crops grown in the surrounding area in district Rawalpindi include wheat, maize etc.

## 5.8 Communities Acceptability about the Project

### 5.8.1 Awareness about the Project

Almost 100% respondents were aware of the Commercial Area with commercial buildings under construction on it. Construction of the proposed Project is one small part of the society. And none of the respondents was found who was unaware about the commercial activities in it. **Table 5.11** shows the awareness level of the respondents.

**Table 5.11: Awareness about the Project Area**

Sr#	Response	Number	Percentage
1	Those who know	80	100
2	Those who don't know	-	-
<b>Total</b>		<b>80</b>	<b>100</b>

### 5.8.2 Accessibility of the Project

After the sample survey it was observed that 98.7% respondents favored the construction of the proposed project while remaining 1.25% did not favor the Project implementation (**Table 5.12**)

**Table 5.12: Acceptability of the Project**

Sr#	Response	Number	Percentage
1	In Favor	79	98.7
2	Not in Favor	1	1.25
<b>Total</b>		<b>80</b>	<b>100</b>

### 5.8.3 Perceptions about the Project

#### Perceived Impacts during Construction Stage

Based on the sample survey and informal meetings conducted with the people of the Project Area, the various perceived impacts of the respondents during construction stage of the project are tabulated in **Table 5.13** (multiple response), 20% of the respondents think that with the construction of the proposed project will cause dust emissions, In nineteen percent (19%) cases, people expressed that construction activity at site will result in creating job opportunities for the local people. Eighteen percent (18%) perceive that it will produce noise and vibrations due to movement of heavy machinery which will result in disturbing the routine activities of the nearby communities. In sixteen percent (16%) cases the respondents showed their serious concern that during construction; movement of the females going outside for will be disturbed. In 9% cases, respondents did not give any response regarding impacts of this proposed Project during construction.

**Table 5.13: Impacts during Construction Stage**

Sr #	Perceived Impacts	Frequency	Percentage (%)
1	Dust Emissions	45	20
2	Employment Opportunities	41	19
3	Noise and Vibration Problem	40	18
4	Movement Problem for the Females in Their Routine Life	35	16
5	Increased Commercial Activity	25	11
6	Debris Fall	15	07
7	No Response	20	09
<b>Total</b>		<b>221*</b>	<b>100</b>

\*Multiple Responses

#### **Perceived Impacts during Operation Stage**

At the operational stage, (Table 5.14-multiple response), twenty two percent (22%) of the responses thought that construction of the proposed project would result in creating job opportunities for the local people. In nineteen percent (19%) cases respondents considered the increased commercial activity at the project site. In 13% & 05% cases responses were that implementation of the Project will create movement problem for the pedestrians and traffic jams due to increased number of vehicles. In twenty six percent (26%) cases, the respondents did not give any response.

**Table 5.14: Impacts during Operation Stage**

Sr #	Impacts During Operational Stage	No. of Respondents	Percentage (%)
1	Employment Opportunities for the Local People	25	22
2	Increased Commercial Activity	21	19
3	Movement Problem for the Females	17	15
4	Pedestrians Movement Problems	14	13
5	Traffic Jams at the Entrance	05	05
6	No Response	31	26
<b>Total</b>		<b>113*</b>	<b>100</b>

\*Multi Responses

#### **Protective Measures Suggested by the Respondents**

**Table 5.15** (multi response), shows the protective measures suggested by the respondents during the field survey. It is evident from the Table that out of total 160 responses, 28% responses highlighted the need to provide local people jobs on priority basis. 20% responses emphasized that dust and noise should be controlled by adopting the latest techniques. 09% considered that it is necessary to chalk out proper management plan for traffic so that movement of the locals is disturbed at the minimum. Construction at day time only was in 6% and 8% cases respectively, while 29% provided no response/suggestion.

**Table 5.15: Protective Measures Suggested by the Respondents**

Sr #	Measures Suggested	Frequency	Percentage (%)
1	Priority in Jobs for Local People	45	28
2	Dust and Noise Control	32	20
3	Controlled Movement of Traffic	15	09
4		10	06
5	Construction at Day Time Only	12	08
6	No Response	46	29
<b>Total</b>		<b>160</b>	

\*Multiple Responses

## 5.9 Archaeological Sites

There is no archaeological site within 1,000 meter of the proposed project site.

Rawalpindi has numerous sights of architectural masterpieces. A few of the heritage buildings are Purana Qil'aa (The Old Fort), Bagh Sardaran (Chief's Gardens), [Haveli Sujaan Singh](#) (the remains of the Sikh Nawabs of Rawalpindi; the grand building has been converted into [Fatima Jinnah](#) Women University, which is the only female university established in the region).

Other ancient buildings include [Jain Mandir](#), [Jain Temple](#). Gordon College, a prestigious institution of high learning was set during the [British Raj](#). The shrine of [Hazrat Sakhi Shah Chan Charagh](#) is one of the centres devotees flock to. An institution of high devotion and solace located near the famous [Raja Bazar](#). He is the patron saint of the city and regarded as one of the two protectors of the twin cities, i.e., [Islamabad](#) and Rawalpindi, with [Hazrat Bari Imam](#), his cousin brother.

## 5.10 Historical Sites

Rawat Fort is 17 km (11 mi) east of Rawalpindi, on the Grand Trunk (G.T.) Road leading to Lahore. [Gakhars](#), a fiercely independent tribe of the [Pothohar Plateau](#), built the fort in the early 16th century. The grave of a [Gakhar](#) Chief, Sultan Sarang Khan is inside the fort. He died in 1546 fighting against the forces of [Sher Shah Suri](#). A climb up the broken steps inside the tomb is rewarded with a panoramic view of the plateau and the [Mankiala](#) Stupa.

Besides Rawat, about an hour's drive from Rawalpindi on the Grand Trunk Road toward Peshawar, is Attock Fort. The Akbari fort is not open to the public as it is in active military use.

[Pharwala](#) Fort is about 40 km (25 mi) from Rawalpindi beyond Lehtrar road. It is a [Gakhar](#) fort built in the 15th century on the ruins of a 10th century Hindi [Shahi Fort](#). Emperor [Babur](#) conquered it in 1519. Later, in 1825, [Sikhs](#) expelled Gakhars from this fort. Though in a crumbling state, it is still an attraction for castle lovers. The fort, situated in prohibited area, is only open to Pakistani visitors.

***Rawalpindi***

The famous recreational sites in the Rawalpindi city are Ayub National Park and Liaquat Memorial Park (Company Bagh).

***Islamabad***

The key places of interest in Islamabad are the Margalla Hills, Shakarparian, Rawal Lake, Islamabad Park, Rose and Jasmine Garden, Murghazar Mini Zoo, Children's Park and Fatima Jinnah Park, etc.

## SECTION 6

### PUBLIC CONSULTATION

#### 6.0 General

Consultation with the stakeholders is a tool for managing two-way communication between the project sponsor and the public. Its goal is to improve decision-making and build understanding by actively involving individuals, groups and organizations which have a stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

Consultation with the community and their active participation plays a vital role in successful implementation of the development projects. To identify the different types of stakeholders and ascertain their perceptions about the construction of the HILTON DOUBLE TREE, Rawalpindi, an impact assessment survey was conducted. Stakeholders were consulted with the help of structured/semi-structured tools. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed on the following pages.

#### 6.1 Proponent

Mr. Rizwan Sadiq and Mr. Kamran Sadiq are proponent of the project and they deals with its construction as well as operational activities.

#### 6.2 Responsible Authority

The proposed project site falls in the administrative jurisdiction of Rawalpindi Development Authority.

### 6.3 Objectives of the Public Consultation

Public consultation plays a vital role in studying the effects of the Project on the stakeholders and in the successful implementation and execution of the proposed Project. Public involvement is a compulsory feature of environmental assessment which leads to better and more acceptable decision-making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to a rise and to identify those which are not known or are unique to the construction of the proposed project.

The important general objectives of the Consultation process are:

- Information dissemination, education and liaison;
- Identification of problems and needs;
- Collaborative problem solving;
- Reaction, comment and feedback on proposed Project; and
- Documenting mitigation measures proposed by the stakeholders.

### 6.4 Methodology

The consultants carried out public consultations at various locations around the proposed Project Site. The Stakeholders consultation during this phase of the work targeted the Kashmir Highway, Mouza Bajnial, various NGOs and administrative and educational institutions in the Project Area. Following strategy was adopted for public consultation:

- Selection of the stakeholders for consultation, reconnaissance of the proposed Project Site and initial discussions with the residents, office workers, pedestrians and shopkeepers etc.
- Appraising the targeted stakeholders initially for the purpose of consultation and working out a schedule for holding regular consultation meetings;
- Meetings with the stakeholders through the participation of consultants, environmental and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc; and
- All the meetings were held in open atmosphere in which participants expressed their views freely.

## 6.5 Major Stakeholders identified

In the Project Area, all the possible stakeholders were identified during the survey. Following is the list of potential stakeholders in the Project Area.

- Local residents
- Teachers
- Shop owners
- Office Workers
- Laborers
- Pedestrians
- Mosque users
- Transport users
- Non-government organizations (NGOs)

## 6.6 Categories of Stakeholders Consulted

The stakeholders contacted during the survey belonged to different categories of people and institutions as below:

- NCPC Foundation
- Forest Department
- Wild Life Department
- EPA Rawalpindi Office
- Local residents
- Office Workers
- Shop Owners
- School Teachers
- Councilors
- NGOs

Schedule of consultations is given below in **Table 6.1**.

**Table 6.1: Schedule of Consultations**

Sr #	Date	Venue	Contact Person
1	12-06-21	Rawalpindi	Muhammad Bilal s/o Mubarak Ali
2	12-06-21	Rawalpindi	Fatima Bibi w/o Nasir Iqbal
3	12-06-21	Rawalpindi	Faisal Nadeem s/o Eid Muhammad
4	25-06-21	Rawalpindi	Muhammad Tahir s/o Qamar Zaman
5	25-06-21	Rawalpindi	Abdul Sattar s/o Haji Ali Khan
6	25-06-21	Rawalpindi	Zeshan Mughal s/o Hamza
7	15-07-21	Rawalpindi	Muhammad Ajmair s/o Muhammad Riaz
8	15-07-21	Rawalpindi	Farukh s/o Muhammad Jamil
9	17-07-21	Rawalpindi	NCPC Foundation, Morgah
10	17-07-21	Rawalpindi	Officials of Punjab Forest Department Rawalpindi
11	19-07-21	Islamabad	Officials of WWF in Islamabad

## 6.7 Issues Discussed

Following issues were discussed during the stakeholder's consultation:

- Overall activities of the project and their possible impacts;
- Possible impacts on natural vegetation, flora and fauna;
- Possible mitigation measures;
- Beneficial factors and involvement opportunities of the local people in the set of activities of Project; and
- Management of traffic during construction and operational phase of the project.

## 6.8 Findings of the overall Discussions

- Construction of the project should be completed in the designated time frame;
- Project will not cause intrusion upon the privacy of residents of the area;
- There will be additional load on the water extraction, creating the problem of water shortage with the passage of time;
- There must be proper system for solid waste management and its final disposal;
- There must be proper disposal for the waste water generated;
- There will be increase in dust, noise and smoke emissions during construction;
- Proper parking area should be provided in the project design;
- The proposed project will help in the promotion of tourism;
- It will enhance the accommodation facilities for visitors/tourists;
- There will be 24 hours hustle and bustle in the residential area due to the incoming and outgoing guest from the building;
- Project will increase revenue generation for the Government;
- It will create employment opportunities for the local people;
- Local people should be given preference for employment in the proposed project;
- There will be disturbance in the ecological and biodiversity patterns of the project area;
- Proper management of traffic during construction and operation stages must be done to avoid disturbance to people;

Meetings were also held with officials of WWF and Punjab Forest Department to discuss perceived impacts of such developmental activities taking place in the vicinity of Rawalpindi City. The recorded concerns as follows:

- The officials inquired about the facilities being planned for the treatment of waste water and handling of solid waste to be generated from the proposed project;
- The Project as envisaged would cause the demolition of the natural vegetation and would result in adverse environmental impacts;
- The proposed project will impact negatively on ground water resources of the area;
- Community development programs would be helpful to gratify some of the issues of the community;
- Proper management plans would help to reduce the environmental impacts of the proposed project;

- Improvement of the landscape of the project area to conserve the biodiversity of the area is necessary;
- Emphasis would be on plantation of indigenous plants.

On the positive side, in these meetings, the participants also considered that the construction of the proposed Project will overcome the shortage of accommodation facilities, generate employment opportunities and revenue for the Government and promote tourism.

## **6.9 Address of Concerns**

Efforts have been made in the preparation of this Environmental Impact Assessment Report to address all the concerns raised by the stakeholders during the consultation meetings. Proper management plans have been proposed in the relevant sections to deal with all the issues related to biodiversity conservation, management and disposal of solid waste, waste water disposal and safeguarding interests of the local people.

## SECTION – 7

### ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

#### 7.0 General

This section presents likely positive and negative environmental impacts together with the proposed mitigation measures to prevent and/or alleviate them to the extent possible during the design, construction and operational phases of the proposed project.

#### 7.1 Potential Impacts and Mitigation Measures during the Design Phase

##### 7.1.1 Land Use

There will be very less impact on the land use because the proposed project is located on the small piece of land. Construction of the proposed project will not affect the land use rather it will enhance the commercial land value in the nearby localities/settlements.

***Mitigation:***

The design of the proposed project will be prepared in a way that minimum land use is changed and maximum area will be allocated for the landscape. In addition, during the design stage the site activities will be controlled to avoid the change in land use.

##### 7.1.2 Land Acquisition

The proposed land for construction of HILTON DOUBLE TREE is already owned by Mr. Rizwan Sadiq and Mr. Kamran Sadiq and is located on Srinagar Highway as well as near M1 & M2 Motorway, Rawalpindi. The land owned by Mr. Rizwan Sadiq and his partner Mr. Kamran Sadiq is 9.89 Kanals. Therefore, there is no negative impact related to land acquisition.

### 7.1.3 Waste/Storm Water Discharge

Estimated waste water discharge from HILTON DOUBLE TREE will be 16000 gallons/day during peak season. Therefore, improper disposal of sewage/storm water will affect the local drainage/sewerage system of the project area. The sewerage waste water will be disposed off in society sewerage system. So there will be no negative impact on these localities.

**Mitigation:**

The designer will design the waste/storm water drainage system according to the following:

- i. National Plumbing Code, USA
- ii. Building Code of Pakistan.

### 7.1.4 Seismic Hazard

The Project Area is located in Seismic Zone, where 2B (upper moderate damage zone) represents peak horizontal ground acceleration from 0.16 to 0.24g. In this Zone, designing of various types of buildings should be done on the basis of Peak Ground Acceleration (PGA) for rock sites.

A moderate to high intensity earthquake impacting the Project Site can adversely impact the development. This factor requires special consideration of the designers keeping in view the earthquake of Oct 08, 2005. This will be a major negative impact.

**Mitigation:**

The proposed structure of the HILTON DOUBLE TREE will be designed and constructed to withstand moderate to large earthquakes. For seismic hazard analysis, updated structural and seismic evaluations will be consulted.

### 7.1.5 Traffic/Parking Problem

During the operation stage in peak season, traffic in and around the Project Area will increase and may cause congestion and parking problems. This will be a moderate negative impact.

***Mitigation:***

Adequate parking facilities will be provided for the visitors/residents. Space will be designed for parking of vehicles at Basements and ground floor. This parking facility in the proposed Project will be helpful in avoiding any kind of traffic congestion.

**7.1.6 Ground Water Consumption**

Construction of the building will put heavy demand on water supply. Prolonged and high water consumption may lower the underground water table in the long run and affect water supply system of surrounding areas due to excessive withdrawal of water. This will be a moderate negative impact.

***Mitigation:***

The proposed project will have 141 guest rooms and offices will use bore and society water supply system for fulfilling their water requirement. The Proponents will appoint a manager for the project who will also ensure effective project management, efficient use of resources and incorporation of design and infrastructure measures for water conservation.

**7.1.7 Emergency Response**

Disasters such as earthquakes, flooding (flash floods) and other manmade disasters such as fires may occur, which have to be considered for minimizing their impacts. This will be a moderate negative impact.

***Mitigation:***

The Building Regulations of Rawalpindi Development Authority (RDA) will be kept in view. Complete equipment control system, fire escape stairs and secured access system supplemented with close circuit surveillance equipment/alarms will be included in the design of the project. Adequate internal and external water distribution system will be designed, with standby system for sufficient water from bore and water supply system, which could also supply adequate quantity of fire fighting during emergency.

### 7.1.8 Fire Fighting System & Storage

Inefficient fire fighting system and insufficient storage of fire water may cause severe damage to the project building. This will be a moderate negative impact.

***Mitigation:***

Storage for firefighting will be provided in OHWT with a capacity of 17000 Gallons and UGWT with capacity of 30000 Gallons. The pumps for firefighting will maintain constant pressure in the system. Stand pipes, connected with fire pumps, will be provided in the building with one fire hose cabinet in the Project. Cabinet will house one 1.5" diameter hose of 100 ft length and attached to a gate valve of same diameter. Orifice plates will be provided at the hose cabinets to control pressure at required level as per manufacturer's requirements.

Special provisions for fire safety in the project building will also be considered during the design phase. These will be:

- Fire fighting sand/water buckets;
- Alarms required to warn people of fire;
- Fire extinguishers for firefighting;
- Materials to be used in the construction of the building to slow fire growth;
- Construction/construction material to limit fire spread from one area to another.

### 7.1.9 Impact of Shadow

Shadows are generally calculated using three factors; time, geographic location and object dimension. The sun rises in the east and casts its earliest (and longest) shadows towards the west. Later in the morning, the sun rises higher in the sky, casting shorter shadows towards the northwest. At noon, the sun is at its highest point in the sky and casts the shortest shadows of the day to the north. In the afternoon, the sun continues to move west and begins to descend, casting longer shadows toward the northeast and east.

Shadows resulting from the proposed project need not to be considered because the proposed building is not significantly taller than the existing buildings in the project area.

The project is located at the elevation of approximately 1667 ft, so, the sun rises during morning will cast very small shadow, on account of the project building not so high as compared to other buildings. At noon, the shadow effect will be negligible due to sun, being at the peak height in the sky. In the afternoon, while the sun will descend casting low shadow of the building behind the Project building.

The effect of shadows on land uses may be positive, including cooling effects during warm weather. They may also be negative, such as the loss of natural light necessary for solar energy purposes or the loss of warming influences during cool weather. The effect of the shadow of the building will reduce the growth of the plants; this impact is minor negative in nature. However, no shadow would fall on to the residential land uses of the project area. This impact is permanent and minor negative in nature.

***Mitigation:***

Shade loving plants will be planned to be grown in front of the project building to reduce the impacts of the shadow on the plants.

## **7.2 Potential Impacts and Mitigation Measures during the Construction Phase**

### **7.2.1 Air Pollution**

The construction activities produce fugitive and point emissions from different sources. In case of the proposed project, the sources of air emissions would be excavation operation, exhaust of generators, exhaust of construction machinery and equipment continues operation of machinery and movement of the cranes, heavy trucks and vehicles. The air emissions may cause health impacts such as dryness and roughness of the throat; eye, nose, throat irritations and coughing etc to the workers staff of contractor and to the people in nearby localities. These emissions may also affect the bio-physical environment. These impacts would be temporary and moderate negative in nature.

***Mitigation:***

The construction contractor of the Project will ensure regular spraying of water on all temporary service and access roads to minimize the dust generation and regular monitoring of all vehicles, equipment, and machinery used for construction. All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions. Also, the vehicles carrying construction materials and the construction material storage areas will be covered with tarpaulin.

**7.2.2 Noise Pollution & Vibration**

The noise and vibration may be produced due to the operation of generators and construction machinery/equipment. Exposure to continuous higher noise levels may induce the following health impacts on the workers such as increase in blood pressure, hypertension, temporary hearing loss, etc. However, the impacts of noise pollution and vibration would be temporary and minor negative in nature.

***Mitigation:***

Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

- Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built muffing devices.
- Confining of excessively noisy areas and limiting the work to normal working hours in the day.
- Providing the construction workers with suitable hearing protection like ear cap, or ear muffs and training them in their use.

### 7.2.3 Dust

Substantial quantity of dust in and around the active construction area may be generated from the excavation operations, traffic/machinery movement and transportation of construction material at the Project Site. Prolonged exposure to dust might result in respiratory tract infections and asthmatic problems to the construction workers, the native of the area and commuters. This will be a moderate negative impact.

***Mitigation:***

The majority of dust problems caused during the construction phase of the Project will be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- All excavation work will be sprinkled with water;
- Construction workers will be provided with masks for protection against the inhalation of dust; and

### 7.2.4 Disposal of Construction Waste/Excavated Material

Dumping of construction wastes/excavated material, in the surrounding area may limit the use of land in the Project Area. The solid waste may be generated due to different construction activities and it will mainly include surplus excavated and construction material. It may also be generated from the construction camps. The indiscriminate disposal of solid waste may cause dust emissions due to wind blowing thereby affecting the health of the workers working or passing in the immediate vicinity of solid waste heaps. The impacts of solid waste would be temporary and minor negative in nature.

***Mitigation:***

Management of construction activities will be done in a way to ensure minimum degradation to the soil around the Project Area and dumping of excavated waste and waste generated from the construction camps will be done at a designated site approved by RDA. The contractors will be bound by contractual obligations to take care of the waste generated from the construction activities.

### 7.2.5 Health and Safety Workers

The Health and safety issues are associated with the operation of construction machinery and equipment, which may cause minor and severe injuries to workers.

***Mitigation:***

In order to prevent and/or alleviate these issues, measures such as use of well maintained machinery and equipment, and training of the workers in the construction safety shall be taken. Provision of personal protective equipment/clothing for laborers during construction activities, e.g. helmet, adequate footwear, protective goggles, gloves etc will be made and their usage will be strictly ensured. A contingency plan in case of major accidents will also be elaborated.

Moreover, the safety of public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers, flags and proper illumination at night.

### 7.2.6 Sanitation and Solid Waste Disposal

During the construction stage, the sanitary wastewater and solid waste will be generated at the workers camp(s). If this wastewater and solid waste is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the wastewater may also percolate the soil, thereby, polluting the groundwater. This may pose a moderate negative impact.

***Mitigation:***

The contractor will provide pit latrines, septic tanks for labor camps to treat the sanitary wastewater before its discharge in to any surface water body or final disposal. The solid waste will be collected from the camp site and dumped at a designated site approved by RDA.

### 7.2.7 Surface/Ground Water

Construction waste, if left unattended will result in forming leach ate that will percolate through the soil strata and will reach underground water table and hence, will end up contaminating it. There is portability that various materials like fuel, lubricant oil and other oily products, which are used during the construction phase may contaminate groundwater, if they are not handled properly. This maybe a moderate negative impact.

***Mitigation:***

Mitigation measures will include; Protection of surface and groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its portable quality; The solid waste will be disposed off in officially designated land fill sites to sustain the water quality for domestic requirements and water required for construction may be obtained in such a way that the water availability and supply to nearby communities remain unaffected. Monthly monitoring of the waste water before its final disposal will also be conducted and the results will be compared to the Punjab Environmental Quality Standards (PEQS).

**7.2.8 Re-location of Utilities**

The construction of the proposed project will not involve relocation of any public utilities and therefore will not cause any impact.

**7.2.9 Traffic Management**

During the construction phase, the movement of heavy machinery and transportation of raw material and equipment may cause traffic problems. As a result the daily activities of the people of nearby may be disturbed, which will require proper mitigation measures. This impact is temporary and minor negative in nature.

***Mitigation:***

Mitigation measures will include; Proper traffic management plan will be needed to avoid traffic jams/public inconvenience; Movement of vehicles carrying construction materials should be restricted during the daytime to reduce traffic load and inconvenience to the local residents; The executing agency is required to maintain liaison between the Traffic Police, local residents/travelers and the contractor to facilitate traffic movement during the construction stage.

### 7.2.10 Flora

Construction of the proposed Project will involve cutting/clearing of bushes only. This may not affect the ecology and species of birds of the area. This will be a moderate negative impact.

***Mitigation:***

Mitigation measures mentioned below will however be adopted to minimize the impacts of the proposed project on the flora at the Project Site.

- New saplings will be planted in place of each uprooted tree/bush around the building to compensate for the loss;
- Clearing of land and cutting of trees shall be avoided as far as possible;
- Camp sites shall be located in areas with minimum vegetation cover;
- After construction instead of introducing new ornamental plants, local tree and plants species, as cleared from the Project Site, will be planted for landscaping. In addition to providing a better view to the area, the proposed vegetations will help minimize the excess noise, vehicular emissions and dust pollution.

### 7.2.11 Fauna

The project is proposed on small piece of land on the bank of Srinagar Highway, probability of fauna at proposed site negligible and will not cause any effect. However, following mitigation measures will be adopted for any issue.

***Mitigation:***

- New and good condition machinery with minimum noise will be used in construction;
- Contractor will ensure that no hunting, trapping of animal will be carried out during construction;

- The camps will be properly fenced and gated to check the entry of wild animals in search of eatable goods. Similarly, waste of the camps will be properly disposed off to prevent the chances of eating by wild animals, which may prove hazardous to them; and
- Special measures will be adopted to minimize impacts on wild birds such as avoiding noise generating activities during the critical period of breeding.

#### 7.2.12 Poverty Alleviation

Construction of the proposed project will generate the employment opportunities for the population living in the surrounding areas. During the construction phase number of laborers including skilled and unskilled will be needed and hire from the local population. The jobs will be provided to the locals on temporary and permanent basis. With the start of construction of this Project, local people will be engaged in employment which will ultimately improve their socio-economic conditions. This will be a potential positive impact.

#### 7.2.13 Social/Cultural Disturbances

Problems for the residents of the area/nearby communities may occur due to increased construction/commercial activity. People might think that their family life and traditional rituals are at jeopardy.

***Mitigation:***

Mitigation measures will include: Adequate training of the work force (involved both in the construction process and in the commissioning) to regard the rituals of the area so that the locals do not feel insecure and local people will be involved by employing them during the construction process.

### 7.3 Potential Impacts and Mitigation Measures during the Operational Phase

#### 7.3.1 Air Pollution

During operational stage of the proposed project the continues operation of generators, air conditioners, etc. may deteriorate the quality of air if not managed properly. Increase in traffic volume during the peak season will also deteriorate the air quality. This will be a minor negative impact.

**Mitigation:**

In order to minimize air pollution, following mitigation measures are recommended:

- Traffic management plan will be prepared and implemented by the Project Proponents especially for the peak season time to ensure smooth flow of vehicles on the Road;
- An air quality monitoring and improvement plan will be developed to keep the air pollution levels from generators, air conditioners, plant room etc;
- Indoor air quality will be monitored on regular basis for parameters like CO, CO<sub>2</sub>, NO<sub>2</sub>, VOC's, etc. and appropriate mitigation measures will be implemented;
- Fresh air will be regulated to maintain the acceptable indoor CO<sub>2</sub> level in the space and achieve saving in energy on partial occupancy;
- For control of indoor air quality (IAQ), carbon filters will be used in addition to normal filters to remove odor from circulating air. In addition, ducted return air instead of from ceiling plenum will be provided;
- Vehicles with excessive smoke emissions will not be allowed to enter the proposed project Building;
- Basement will be ventilated to exhaust smoke and other gases emitted by vehicles. CO<sub>2</sub> and CO sensors will be provided to monitor air inside the basements to maintain the acceptable level of these gases. The exhausted air from the basements will be filtered to arrest smoke and odor to ensure clean air environment around the project site; and
- Use of gas generators will be preferred for low emissions.
- Plantation of maximum number of trees inside the boundary of project building site and placement of ornamental plants inside the Project to minimize the effect of air pollution.

### 7.3.2 Noise Pollution

Noise is considered as an interference to and imposition upon comfort, health and the quality of life. Given the conditions like exposure limit and time, noise may have both physiological as well as psychological effects on human health. Physiological effects include dizziness, nausea, unusual blood pressure variation, physical fatigue, loss of hearing, etc. While reduced mental capability and irritations may attribute to psychological effects.

During the operational stage, noise levels are anticipated to increase. Noise will be generated due to increased commercial activity, movement of vehicles in the parking area, operation of generators, etc. for each proper mitigation measures are required. This will be a permanent moderate negative impact.

**Mitigation:**

Noise in the Project will be controlled through proper sound proofing/rubber lining of walls which will be built in to the design/interior decoration of the project building. Noise levels of generators, etc. will be monitored and workers of the area will be provided with ear muffs and noise protection gears. Conventional methods of noise control such as enclosures, noise absorption materials and silencers may also be applied for the generators, pump room, etc. There will also be prohibition on the use of horns near the project building.

### 7.3.3 Ground Water

Prolonged water consumption may in the long run lower/deplete the underground water table. This will be a moderate negative impact.

**Mitigation:**

An effective water conservation plan will be developed and employees of the building will be trained in operational water conservation measure such as use of water efficient/economy appurtenances and reuse of wastewater for gardening. Following operational measures will be adopted for water conservation:

- The water taps will be regularly checked for any leakage and buckets will be used for holding water.

- It will be made sure that all faucets, circulating pumps etc. do not leak and are properly maintained;
- Leakage or dripping faucet, pump or toilet will be immediately reported;
- Utility bills will be kept in track for the consumption of water;
- Water-saving equipment will always be used and purchased;
- Treated water will be used for watering of lawns and other services.
- An effective employee training program about water conservation will be established.

#### **7.3.4 Waste Water**

Waste water generated from the building will be approximately 80% of the water consumed. It is anticipated that wastewater will increase the pollution load in terms of Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) etc. This will be a minor negative impact.

##### **Mitigation:**

The proponents of the project will construct septic tanks for treatment to bring the wastewater quality within the NEQS before its final disposal. The treated wastewater will be disposed in soakage pit as well as reused for watering the lawns and other services.

#### **7.3.5 Solid Waste**

Solid waste generated from the project will be mostly paper and food waste. Total solid waste generated from the project will be approximately 50 kg per day during the low and peak seasons which will have to be properly managed otherwise may cause contamination/pollution, nuisance to the employee/workers, visitors and may deteriorate the aesthetics of the building and can also become a breeding place of mosquitoes inside the project building. This will be a minor negative impact.

***Mitigation:***

Proper waste storage bins will be provided at each floor. Waste will be collected and disposed off at a proper disposal site approved by RDA.

**7.3.6 Emergency Response**

The operation of the proposed project will involve employees and visitors/residents who may become ill or have work related accidents. In addition, disasters such as earthquakes and fires may occur which have to be considered for minimizing their impacts. This will be a permanent moderate negative impact.

***Mitigation:***

An Emergency Plan for earthquake and manmade disasters will be developed by the project Management. Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and paramedics. In addition, training of the staff/employees regarding the emergency procedures/plans will be regularly conducted.

**7.3.7 Traffic Management**

During the operational phase, the number of vehicles entering/exiting the building will increase. This may result in traffic congestion on the Road problems to the pedestrians on the way to the Srinagar Highway, Rawalpindi especially at peak season. This will be a moderate negative impact.

***Mitigation:***

There will be prohibition of roadside parking in front of the building. A traffic management plan will be designed with the help of Traffic Police Department for the peak season to avoid any traffic related issues.

### 7.3.8 Drinking Water Contamination

Water pollution can originate at the internal water network. If the pipes and the overhead water storage tanks are not cleaned properly, they may lead to bacteriological contamination of the potable/drinking water and thus will lead to infectious diseases/health problems to the employees, residents and visitors of the Project. This is a moderate negative impact.

***Mitigation:***

- Management of HILTON DOUBLE TREE will install small water filtration units with required capacity at each floor in order to avoid any bacterial contamination in the drinking water;
- Water dispensers will also be used in the project where necessary;
- Overhead water storage tank(s) will regularly be cleaned on quarterly basis;
- Water Quality Monitoring will also be conducted on quarterly basis and the quality will be maintained according to EPA Guidelines for drinking water.

### 7.3.9 Flora

No negative impacts are envisaged on the flora of the area during the operational phase. However, improper maintenance of the saplings planted against the trees cut for the proposed Project may adversely affect the growth of those saplings which were planted to improve the environmental aesthetics of the Project Area.

### 7.3.10 Social Disturbances

Establishment of this project may cause problems for the residents of the nearby areas due to increased commercial activity and traffic rush. However, the project area is always a commercial area, where commercial activities are already in progress. This will be a minor/negligible negative impact.

***Mitigation:***

Adequate training will be provided to the work force/employees of the project (involved both in construction process and during operational stage) for minimizing disturbance to the locals and a setting up a grievance reprisal system.

## 7.4 Impact Identification with Checklist

The method of checklist has the advantage of being simple to understand and use good for site selection and priority setting but has the disadvantage of not to distinguish between direct and indirect impacts and they do not link actions and impacts.

A Checklist of environmental parameters for project has been developed on experience basis to evaluate the impacts of various actions affecting the Environmental Resources and values with the recommended feasible protection measures.

### **CHECKLIST:**

This lists significant environmental effects know to have occurred in past development projects. This is arranged to permit (i) ready screening out of non-pertinent items by checking the column 'No significant effects"; and (ii) ready grading of significant environmental effects by degree of effect. The following checklists show Checklists of Environmental Parameters for project.

Actions Affecting Environment Resources and Values	Damage to Environment	Recommended Feasible Protection Measures	Significance of Impact			
			None	Minor	Medium	Major
A. Environmental Problems Due To Project Location						
Disruption of Hydrology	Impairment of other beneficial water uses	Careful site planning and project design	X			
Resettlement	Social inequities	Appropriate resettlement planning and budgeting	X			
Encroachment on historic/cultural values	Loss of Ecological values	Careful site planning and project design	X			
Regional Flooding hazards	Hazard to Residents	Careful site planning and project design	X			
Waste emissions related to sitting	Intensification of problems of pollution control	Careful site planning and project design		X		

**Exhibit 7.1 Environmental Problems Due To Project Location**

Actions Affecting Environment Resources and Values	Damage to Environment	Recommended Feasible Protection Measures	Significance of Impact			
			None	Minor	Medium	Major
B. Environmental Problems Due To Inadequate Design, Including Assumption Relating to O & M						
Environmental pollution control operations		Careful design/O & M/Monitoring and use of appropriate environmental standards	X			
a) Surface waters (fresh/estuarine /marine)	a) Impairment of downstream beneficial water uses	a) – same -	X			
b) Ground Water	b) Impairment of downstream beneficial water uses	b) – same -	X			
c) Air Environment	c) Impairment of air quality	c) – same -		X		
d) Noise	d) Nuisance of health hazards	d) – same -	X			
Impacts on adjacent land economic users including recreation/tourism	Impairment of land uses	Careful design/O&M/monitoring and use of appropriate environmental standards	X			
Occupational Health and Safety hazards	Hazards to workers health and safety	Careful design and operation planning		X		
Bio Hazards/Spills/Fires/Explosions	Hazards to workers health and safety	Careful design and operation planning		X		

**Exhibit 7.2 Environmental Problems Due To Inadequate Design, Including Assumptions Relating to O & M**

Actions Affecting Environment Resources and Values	Damage to Environment	Recommended Feasible Protection Measures	Significance of Impact			
			None	Minor	Medium	Major
C. Environmental Problems In Construction Stage						
Continuing Erosion of unprotected area	Impairment of downstream water land uses	Careful construction stage planning plus monitoring	X			
Other Construction Stage Hazards	Depends on nature of effect	Careful construction stage planning plus monitoring	X			
Monitoring during construction	Without it, construction contractor not like it to observe constraints	Incorporate monitoring requirements in construction contracts	X			
Depreciation of Environmental aesthetics	Loss in these values	Adequate attention to O & M parameter	X			
Erosion/silt runoff during construction	Damage to water quality and land uses	Careful planning to minimize hazards, plus competent cleanup system	X			
Uncovered Cut and Fill area	Soil erosion/silt runoff and consequent damages to properties and aesthetics	Careful construction planning, plus monitoring	X			
Quarrying Hazards	Hazards to safety of workers and others nearby	Careful construction planning, plus monitoring	X			

**Exhibit 7.3 Environmental Problems in Construction Phase**

Actions Affecting Environment Resources and Values	Damage to Environment	Recommended Feasible Protection Measures	Significance of Impact			
			None	Minor	Medium	Major
A. Environmental Problems Relating to Inadequate Operations						
Inadequate O & M due to poor management	Failure to achieve protection to residents and environment assumed in design	Careful O & M plus training and monitoring	X			
Operations Monitoring	Without it operations not likely to observe constrains	Incorporate carefully prepared monitoring program into O & M plan	X			
Traffic congestion and blockage of access to site	Loss of time and fuel and accidents	Careful construction planning, plus monitoring	X			
Monitoring of deficiencies	Unnecessary damages to environment	Monitoring essential for ensuring careful/competent operation	X			

#### **Exhibit 7.4 Environmental Problems Relating to Inadequate Operations**

### **7.5 Potential Environmental Enhancement Measures**

The preventive, mitigation, compensatory and enhancement measures to be taken up during design, construction and operation stages are listed below.

#### **7.5.1 Mitigation Measures during Design Stage**

- Adequate drainage facilities will be provided.
- Provision of approach road.
- Design of the infrastructures like water and electricity supply, drainage and solid waste disposal, with adequate safety margin and as per applicable design codes and norms.
- Provision of adequate green areas.

## 7.5.2 Mitigation Measures during Construction Phase

### Land Environment:

- Proper drainage facilities will be provided along the roads.
- Appropriate measures like green areas plantation would be undertaken.
- The quantity of earth generated from cutting shall be used as filling material during site development.
- The small amount of construction debris and surplus excavated material will be disposed of in suitable pre-identified areas.
- Dumping areas will be biologically reclaimed.

### Water Environment:

- The construction activities/erosion would be limited to possible smallest area.
- Control of quality of construction wastewater within the construction site through suitable drainage system with traps for arresting the sediment load for its proposed disposal into the main natural drainage system around the site.
- Implementation of suitable disposal methods of sediment/construction debris in tune with the local condition to avoid water logging at construction site.
- Proper drainage and sanitation facilities shall be provided at the construction site.

### Air Environment:

- Proper and prior planning and appropriate sequencing and scheduling of all major construction activities.
- Identification of infrastructural supports needed for the construction programme and ensuring their timely availability.
- Construction materials would be stored in covered stores or enclosed spaces.
- Adequate dust suppression measures such as regular sprinkling of water around vulnerable areas of the construction site by suitable means, to control fugitive dust during construction, material handling/over hauling activities particularly near habitation.
- Stringent construction material handling/overhauling procedures
- Regular inspection of haul roads and construction site should be carried out to ensure regular and timely removal of construction debris to the dumping site.
- Low emission construction vehicles and generator sets should be used.

- It would be ensured that all the vehicles plying during construction are properly tuned and maintained to keep emissions within the permissible limits.
- Construction machinery should be in good working condition and engines turned off when not in use.

#### **Noise Generation:**

- Careful planning of the operation of construction equipment is required during this period so that minimum disturbances are caused.
- Construction camp and temporary labour sheds would be located away from the immediate vicinity of the construction site and major road traffic.
- Provision of protective gears such as ear muffers for construction personnel exposed to high noise levels.
- Low noise construction equipment should be used as far as possible.
- It would be ensured that the equipment used during construction is properly maintained to keep noise emissions within the permissible limits.
- Construction machinery should be in good working condition and engines turned off when not in use.

#### **Biological Environment:**

- Avenue plantation is proposed to be implemented.
- Provision of cooking fuel for construction workers to avoid cutting/felling of trees for fuel wood. Wherever possible, site cooking will be avoided.

#### **Social Environment:**

- Significant number of semi-skilled and unskilled labourers would be recruited from the nearby areas to create some employment opportunities and sense of well being among local people. This will also reduce social tension of migration.
- Some of the construction materials like stone chips and sand will be procured locally. Thus, there is a possibility of generation of local trading opportunities.
- Most of the construction work is labour intensive. As most of the job will be done by contractors, it will be ensured that the contractor's workers are provided with proper camp facilities including sanitation, drinking water supply, washing facilities and primary health facilities.

- Proper accommodation would be provided in the construction camps for the skilled personnel.
- Adequate safety measures complying with the occupational safety manuals to prevent accidents/hazards to the construction workers.
- Provision of construction camps facilities at designated and demarcated sites for all construction workers with the following amenities:
  - a) Adequate potable water supply
  - b) Adequate sanitary facilities with removable septic tanks
  - c) Washing facilities for the workers
  - d) Solid waste collection and disposal system
  - d) Primary health facilities at construction site
  - e) Electricity

### **7.5.3 Mitigation Measures during Operation Phase**

- Future residents must comply with the RDA Regulations, which make it mandatory for households to use plastic bags, refuse bins and receptacles for the storage of household waste until they are collected by the local authorities.
- Septic tank will be constructed for sewage disposal.
- The proponent must strictly adhere to the regulations and specifications on water supply and pipe laying works within the building.
- Periodical maintenance of road and drainage system.

## SECTION 8

### ENVIRONMENTAL MONITORING & MANAGEMENT PLAN

#### 8.0 General

This section provides brief description of environmental issues, mitigation measures to eliminate and/or reduce environmental and social impacts to an acceptable level, institutional arrangement for the implementation of the mitigation measures and also carrying out environmental monitoring for air quality, water quality and noise pollution related parameters.

#### 8.1 Environmental Management

The objective of the Environmental Management Plan (EMP) is to address all the major environmental issues and provide framework for the implementation of the proposed mitigation measures during the construction and operational phases of the proposed project. The proper implementation of the EMP will ensure that all the adverse environmental impacts identified in the EIA are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned institutions or regulatory agencies. The implementation of EMP should be carefully coordinated with the design and construction program of the project to ensure that relevant mitigation measures are implemented at the appropriate stage and that adequate resources are properly allocated to achieve the desired results.

For effective environmental management, the client should assign the necessary responsibilities to an environmental committee (EC) through manager environment HILTON DOUBLE TREE, which should be responsible for environmental monitoring of the proposed project. The project manager environment will be assisted by an environmental engineer and sociologist in implementing the mitigation measures proposed in EMP.

The contractor will be responsible for the implementation of the proposed project under the supervision of the HILTON DOUBLE TREE Management. The contractor would be bound to follow the provisions of the contract documents especially about environmental protection and apply good construction techniques and methodology without damaging the environment. Obligation of the contractor, to safeguard, mitigate adverse impacts and rehabilitate the environment would be addressed through environmental provisions in the contract document as already highlighted in Section-6 and through adequate implementation at site.

## **8.2 Staff and Training**

### **8.2.1 Environmental Committee and its Responsibilities**

HILTON DOUBLE TREE management will form up an environmental committee (EC), which will be responsible for the environmental management and supervisory affairs during the construction phase of the proposed project.

The responsibilities of the environmental committee (EC) are as follows: -

- To ensure implementation of all the proposed mitigation measures during and after the proposed project.
- To organize routine monitoring of motor vehicle emissions, air quality, traffic, noise and vibration; etc. In case, the noise and emission levels exceed the acceptable levels; a penalty or ban must be enforced;
- To develop operational guidelines and implementation schedule;
- Receiving complaints from residents and institutions and assisting the local environmental authority including liaison with EPA, Punjab;
- To ensure that the proposed project is implemented in an environmentally friendly manner, causing least harm to the existing environment including flora and fauna, sites of religious and cultural significance etc; and

- To make sure that the businesses and affecters if any of the proposed project are relocated or compensated in the most judicious manner.

### **8.2.2 Equipments and Instruments**

Air quality monitoring during different stages of project will be carried out by a private laboratory hired by project management for comprehensive monitoring during different stages of the proposed project.

### **8.2.3 Technical Training Programs**

In order to raise the level of professional and managerial staff, they need to upgrade their knowledge in the related areas. The Environmental committee would play a key role in this respect and arrange the trainings.

Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the contractor(s) workforce to implement effective environmental protection measures. A domestic training program is proposed to train the contractor(s) staff who will be involved in the construction phase and the professional staff from the Project Management involved at the operational stage.

## **8.3 Environmental Monitoring Plan (EMP)**

Environmental Monitoring is undertaken both the construction and operational phases to ensure the effectiveness of the proposed mitigation measures. In order to respond to the anticipated environmental concerns at an early stage and to determine the intensity of the impact, prediction is required. Specific monitoring programs are outlined below as well as responsibilities for the collection and analysis of data and the reporting requirements.

The salient objectives of the environmental monitoring plan are: -

- a) To respond to the anticipated and unanticipated environmental impacts when the project is under implementation;
- b) To make regulations and improve traffic management and environmental controls based on the monitoring data. The EPA is entrusted with the overall responsibility of monitoring the environment in the Provision;
- c) To evaluate the effectiveness of mitigation measures;

#### **8.3.1 Construction Phase**

##### **a) Air Quality**

Air quality monitoring will be carried out every six months during the construction phase at the locations selected by the Environmental Committee (EC).

The following parameters will be monitored:

- CO
- NO
- NO<sub>2</sub>
- SO<sub>x</sub>

##### **b) Ground Water Quality**

Ground water quality monitoring will be done annually during the construction phase at the locations selected by the Environmental Committee (EC). The following parameters will be monitored:

- Total Coli forms
- Fecal E. Coli
- Total Colony Count

- Fecal Enterococci
- pH Value
- Total Dissolved Solids (TDS)
- Total Hardness
- Fluoride
- Chloride
- Total Suspended Solids (TSS)
- Iron
- Sulphate
- Arsenic
- Conductivity

**c) Noise Levels**

The noise levels monitoring will be carried out on quarterly basis at representative in the Project Area.

### **8.3.2 Operational Phase**

**(a) Indoor Air Quality**

Indoor Air quality monitoring will be done bi-annually during the operational phase at the representative locations. The following parameters will be monitored:

- CO
- NO
- CO
- PM
- Formaldehyde
- Ozone
- VOC's
- Microbial Pollution in the interior surfaces of HVAC System

**b) Ground Water Quality**

Ground water/drinking water quality monitoring will be done quarterly during the operational phase at the locations specified by the Management of the Project. The following parameters will be monitored:

- Total Coliforms
- Fecal E. Coli
- Total Colonial Count
- Fecal Enterococci
- pH Value
- Total Dissolved Solids (TDS)
- Total Hardness
- Fluoride
- Chloride
- Total Suspended Solids (TSS)
- Iron
- Sulphate
- Arsenic
- Conductivity

**d) Noise Levels**

The noise level monitoring will be carried out every six months at each floor of the Project at specified locations.

**8.3.3 Responsibilities for Monitoring and Reporting**

The EC will be responsible for environmental monitoring and reporting throughout the construction and operation phases. Environmental monitoring reports for the site will be prepared on quarterly basis and complete record will be maintained at the site office. Contents of the reports will include results of environmental monitoring in comparison to the standards for the various parameters, location and sampling time along with recommendations. One

report will be submitted during the construction phase to each of the following authorities and institutions: (i) HILTON DOUBLE TREE Management and (ii) EPA Punjab, whereas, during the operational phase one report will be submitted to the each of the following authorities: (i) HILTON DOUBLE TREE Management (ii) EPA Punjab.

#### **8.4 Environmental Action Plan**

The Environmental Action Plan provides the framework for the implementation of the mitigating measures and environmental management and monitoring during the construction and operation phases of the proposed project. **Table 8.1 (a, b & c)** gives portray impacts, targets, mitigations and the responsible organizations for the implementation of the mitigation measures during the design, construction and the operation phases respectively. While **Table 8.2** gives annual estimate for monitoring of the environmental quality parameters during both phases of the proposed Project.

#### **8.5 Environmental Technical Assistance and Training Plan**

An environmental and social training and Technical Assistance (TA) program will be carried out to build the HILTON DOUBLE TREE capacity to effectively implement the EMP, as well as to facilitate the improved environmental management of future projects by increasing the environmental and social awareness of HILTON DOUBLE TREE staff in general. HILTON DOUBLE TREE will engage TA consultant to manage the environmental training program. The objective of the TA will be to help establish appropriate systems, and to train senior staff responsible for managing environment, operations, and planning, who can then impart training at a broader level within and outside the HILTON DOUBLE TREE (i.e., the training of trainers). The TA consultant will organize training courses for HILTON DOUBLE TREE staff, train the staff in specialized areas such as air and noise pollution monitoring; develop environment operation manuals in consultation with the Federal EPA. The details of this training program are presented in **Table 8.3**.

**Table 8.1(a): Environmental Management Plan (Design Phase)**

<b>Aspect</b>	<b>Impacts</b>	<b>Mitigation Measures</b>	<b>Responsibility</b>
<b>Land use</b>	Construction of the proposed Project will affect the land use due to various anthropogenic activities.	<ul style="list-style-type: none"> <li>The design of the proposed Project will be prepared in a way that minimum land use is changed and maximum area will be allocated for the landscape.</li> <li>During the design stage the site activities will be controlled to avoid the change in land use.</li> </ul>	HILTON DOUBLE TREE Management
<b>Waste/Storm Water Discharge</b>	Improper disposal of sewage/storm water may affect the area.	The designer will design the waste/storm water drainage system according to the following: <ul style="list-style-type: none"> <li>i) National Plumbing Code, USA</li> <li>ii) Building Code of Pakistan</li> </ul>	HILTON DOUBLE TREE Management
<b>Seismic Hazard</b>	A moderate to high intensity earthquake impacting the Project Site can adversely impact the development.	The proposed structure of the HILTON DOUBLE TREE will be designed and constructed to withstand moderate to large earthquakes. For seismic hazard analysis updated structural and seismic evaluations will be consulted.	HILTON DOUBLE TREE Management
<b>Traffic/Parking Problem</b>	During the operation stage, traffic in and around the Project Area will increase and will cause congestions and parking problems.	Space for vehicles has been allocated at the self owned adjacent land.	HILTON DOUBLE TREE Management
<b>Ground Water Consumption</b>	Prolonged and high water consumption may in the long run lower the underground	<ul style="list-style-type: none"> <li>A detailed ground water hydrological study will be conducted to foresee the impact of water extraction and recharge, so that there is no negative impact on the surrounding area and delivery of services;</li> <li>The Proponents will appoint a consultant to ensure effective project management, efficient</li> </ul>	HILTON DOUBLE TREE Management

	water table.	use of resources and incorporation of design and infrastructures measures for water and designing of wastewater treatment plant keeping in view the re-use of treated water;	
<b>Emergency Response</b>	Disasters such as earthquakes, flooding (flash Floods) and other manmade disasters such as fires may occur, which have to be considered for minimizing their impacts.	<ul style="list-style-type: none"> <li>• The building regulations of RDA will be consulted;</li> <li>• Complete equipment control system, fire escape stairs and secured access system supplemented with close circuit surveillance equipment/alarms will be included in the design of the Tower;</li> <li>• Adequate internal and external water distribution system will be designed, with standby system for sufficient water from tube well, which could also supply adequate quantity for firefighting during emergency; and</li> <li>• Provision for pumping out water from basement will be kept, to meet any emergency incase of water flooding the basement.</li> </ul>	DC
<b>Fire Fighting</b>	Inefficient fire fighting system and insufficient storage of fire water may cause severe damage to the building.	<ul style="list-style-type: none"> <li>• Storage for firefighting will be provided in water storage reservoir. The pumps of firefighting will maintain constant pressure in the system;</li> <li>• Stand pipes, connected with fire pumps, will be provided in the building with fire hose cabinet in the Project;</li> <li>• Cabinet will house one 1.5" diameter hose of 100 ft length and attached to a gate valve of same diameter. Orifice plates will be provided at the hose cabinet to control pressure at required level as per manufacturer's requirements.</li> </ul>	HILTON DOUBLE TREE Management
<b>Additional Load on Existing Utilities</b>	Water and electricity pipelines, telephone lines and sewerage system will come under additional pressure because the demand of the proposed project will be of a high magnitude.	<ul style="list-style-type: none"> <li>• The design of the building will include two service cores which by virtue of their placement provide buffer zones, helping in insulating internal spacing thereby reducing air-conditioning loads;</li> <li>• The design of the building will be energy efficient (30 – 40% less energy consumption as compared to conventional methods).</li> <li>• Every Guest Room will have its own separate power supply;</li> <li>• Location of Air Handling Units on each floor will be on the shaded side will save on energy consumption.</li> </ul>	DC
Shadow	Shadow may	Shade loving plants will be planned to be grown	HILTON DOUBLE

	affect the plantation in the surrounding of the Project.	in front of the project building to reduce the impacts of the shadow on the plants.	TREE Management
Reflection	Reflection may cause disruption in day to day activities and to the birds.	<ul style="list-style-type: none"> <li>• The reflection impact can be minimized by planning to grow the tall plants in front of the building, which not only reduce the heat reflection but also provide the place for the birds to take rest;</li> <li>• Also, the use of laminated glare glass can reduce the impacts of reflection; and</li> <li>• "Paralytic Reflective Glass" a glass that reduces solar heat gain by blocking most of the solar infrared wavelengths while still transmitting a high percentage of visible light may also be used to reduce the heat reflection impacts.</li> </ul>	HILTON DOUBLE TREE Management

**Table 8.1 (b): Environmental Management Plan (Construction Phase)**

Aspect	Impacts	Mitigation Measures	Responsibility
<b>Air Pollution</b>	The construction activities produce fugitive and point emissions from different sources. The air emissions may cause health impacts such as dryness and roughness of the throat; eye, nose, throat irritations and coughing etc to the workers and staff of contractor. These emissions may also effect the bio-physical environment.	<ul style="list-style-type: none"> <li>• The construction contractor of the Project will ensure regular spraying of water on all temporary service and access roads to minimize the dust generation and regular monitoring of all vehicles, equipment, and machinery used for construction; All vehicles, machinery, equipment and generators used during construction will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions;</li> <li>• Also, the vehicles carrying construction materials and the construction material storage areas should be covered with tarpaulin.</li> </ul>	CC, EC & HILTON DOUBLE TREE Management

<b>Noise Pollution &amp; Vibration</b>	Exposure to continuous higher noise levels and vibration may induce the following health impacts on the workers such as increase in blood pressure, hypertension etc.	<ul style="list-style-type: none"> <li>• Selection of the up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built muffing devices;</li> <li>• Confining of excessively noisy areas and limiting the work to normal working hours in the day;</li> <li>• Providing the construction workers with suitable hearing protection like ear cap, or ear muffs and training them in their use.</li> </ul>	CC, EC & HILTON DOUBLE TREE Management
<b>Dust</b>	Prolonged Exposure to dust might result in respiratory tract infections and asthmatic problems to the construction workers, the natives of the area and commuters.	<ul style="list-style-type: none"> <li>• All excavation work will be sprinkled with water;</li> <li>• Construction workers will be provided with masks for protection against the inhalation of dust; and</li> <li>• Vehicle speed on the roads along the Project Site will be prescribed and controlled accordingly.</li> </ul>	CC, EC & HILTON DOUBLE TREE Management
<b>Disposal of Construction Waste/Excavated Material</b>	Dumping of construction wastes/excavated material in the surrounding area may limit the use of land in the Project Area.	<ul style="list-style-type: none"> <li>• Management of Construction activities will be done in a way to ensure minimum degradation to the soil around the Project Area and dumping of excavated waste will be done at a designated site approved by RDA; and</li> <li>• The contractors will be bound by contractual obligations to take care of the waste generated from the construction activities.</li> </ul>	CC, EC HILTON DOUBLE TREE Management
<b>Health &amp; Safety of Workers</b>	The health and safety issues are associated with the operation of construction machinery equipment, which may cause minor and severe injuries to workers.	<ul style="list-style-type: none"> <li>• Use of well-maintained machinery and equipment and training of the workers in the construction safety shall be taken;</li> <li>• Provision of protective clothing for laborers handling hazardous materials, e.g. helmet, adequate footwear, protective goggles, gloves etc.;</li> <li>• A contingency plan in case of major accidents may also be elaborated; and</li> <li>• The safety of the public at all stages of the construction will be</li> </ul>	CC & EC

		ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags and proper illumination at night	
<b>Sanitation and Solid Waste Disposal</b>	If the waste water is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the waste water may also percolate the soil, thereby, polluting the ground water.	<ul style="list-style-type: none"> <li>• The contractor will provide pit latrines, septic tanks for labor camps to treat the sanitary wastewater before its discharge into public sewer;</li> <li>• The solid waste will be collected from the camp site and dumped at a designated site approved by RDA.</li> </ul>	CC & EC
<b>Surface/Ground Water</b>	<ul style="list-style-type: none"> <li>• Surface water near the Project Area may further get contaminated due to the disposal of construction waste generated during the project activity;</li> <li>• There is a probability that various materials like fuel, lubricant oil and other oily products, which are used during the construction phase may contaminate groundwater.</li> </ul>	<ul style="list-style-type: none"> <li>• Protection of surface and groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality;</li> <li>• The solid waste will be disposed off in designated landfill sites to sustain the water quality for domestic requirements and water required for construction may be obtained in such a way that the water availability and supply to nearby communities remain unaffected;</li> <li>• Monthly monitoring of the waste water before its final disposal will also be conducted and the results will be compared to the Punjab Environmental Quality Standards (PEQS).</li> </ul>	CC & EC
<b>Traffic Management</b>	The movement of heavy machinery and transportation of raw material and equipment may cause traffic problems. As the result the daily activities of the people nearby localities may be disturbed.	<ul style="list-style-type: none"> <li>• Proper traffic management plan will be needed to avoid traffic jams/public inconvenience;</li> <li>• Movement of vehicles carrying construction materials should be restricted during the day time to reduce traffic load and inconvenience to the local residents; and</li> <li>• The executing agency is required to maintain liaison between the traffic police, local residents/travelers and the</li> </ul>	CC, Traffic Police

		contractor to facilitate traffic movement during construction stage.	
<b>Flora</b>	Construction of the proposed project will involve cutting of bushes and some small trees. Tree cutting may affect the ecology and species of birds of the area.	<ul style="list-style-type: none"> <li>• New saplings will be planted in place of each uprooted tree/bush around the building to compensate for the loss;</li> <li>• Clearing of land and cutting of trees shall be avoided as far as possible;</li> <li>• Camp sites shall be located in area with minimum vegetation cover;</li> <li>• After construction instead of introducing new ornamental plants, local tree and plant species, as cleared from the Project Site, will be planted for landscaping. In addition to providing a better view to the area, the proposed vegetations will help minimize the excess noise, vehicular emissions and dust pollution.</li> </ul>	EC & HILTON DOUBLE TREE Management
<b>Fauna</b>	Due to the construction activities of the proposed Project, the free movement of fauna would be disturbed. Another impact on the fauna of the Project Area will be the probable dislocation of the birds/animals (rodents) from their nests and burrows.	<ul style="list-style-type: none"> <li>• Plantation of large number of trees in the Project Area to regain the ecological habitat;</li> <li>• New and good condition machinery with minimum noise will be used in construction;</li> <li>• Contractor will ensure that the no hunting, trapping of animal will be carried out during construction;</li> <li>• The camps will be properly fenced and gated to check the entry of wild animals in search of eatable goods. Similarly waste of the camps will be properly disposed off to prevent the chances of eating by wild animals, which may prove hazardous to them; and</li> <li>• Special measures will be adopted to minimize impacts on wild birds such as avoiding noise generating activities during the critical period of breeding.</li> </ul>	EC HILTON DOUBLE TREE Management

<b>Social/Cultural Disturbances</b>	Problems for the residents of the area/nearby communities may occur due to increased construction/commercial activity	Mitigation measures will include: Adequate training of the work force (involved both in the construction process and in the commissioning) to regard the rituals of the area so that the locals do not feel insecure and local people will be involved by employing them during the construction process.	CC, EC & HILTON DOUBLE TREE Management
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**Table 8.1(c): Environmental Management Plan (Operational Phase)**

Aspect	Impacts	Mitigation Measures	Responsibility
			Implementation
<b>Air Pollution</b>	The continues operation of generators, air conditioners etc. may deteriorate the quality of air if not managed properly. Increase in traffic volume during peak season will also deteriorate the air quality.	<ul style="list-style-type: none"> <li>Traffic management plan will be prepared and implemented by the Project Proponents especially for the peak season time to ensure smooth flow of vehicles on Srinagar Highway;</li> <li>An air quality monitoring and improvement plan will be developed to keep the air pollution levels from generators, air conditioners, plant room etc.;</li> <li>Indoor air quality will be monitored on regular basis for parameters like CO, CO<sub>2</sub>, NO<sub>2</sub>, etc. and appropriate mitigation measures will be implemented;</li> <li>Fresh air will be regulated to maintain the acceptable indoor CO<sub>2</sub> level in the space and achieve saving in energy on partial occupancy;</li> <li>For control of indoor air quality (IAQ), carbon filters will be used in addition to normal filters to remove odor from circulating air. In addition, ducted return air instead of from ceiling plenum will be provided;</li> <li>Vehicles with excessive smoke emissions will not be allowed to enter the proposed</li> </ul>	EC & HILTON DOUBLE TREE Management

		<p>project building;</p> <ul style="list-style-type: none"> <li>• Basements will be ventilated to exhaust smoke and other gases emitted by vehicles. CO<sub>2</sub> and CO sensors will be provided to monitor air inside the basements to maintain acceptable level of these gases. The exhausted air from the basements will be filtered to arrest smoke and odor to ensure clean air environment around the project building; and</li> <li>• Use of gas generators will be preferred for low emissions.</li> <li>• Plantation of maximum number of trees inside the boundary of project building and placement of ornamental plants inside the building to minimize the effect of air pollution</li> </ul>	
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<b>Noise Pollution</b>	During the operational stage, noise levels are anticipated to increase. Noise will be generated due to increased commercial activity, movement of vehicles in the parking area, operation of generators etc.	<ul style="list-style-type: none"> <li>• Noise in the Building will be controlled through proper sound proofing/rubber lining of walls which will be built in to the design/interior decoration of the commercial building;</li> <li>• Noise levels of generators, plant rooms etc. will be monitored and workers of the area will be provided with ear muffs and noise protection gears; and</li> <li>• There will also be prohibition on the use of horns near the Project building.</li> </ul>	EC & HILTON DOUBLE TREE Management
<b>Ground Water</b>	Prolonged water consumption may in the long run lower/deplete the underground water table.	<ul style="list-style-type: none"> <li>• An effective water conservation plan will be developed and employees of the Project building will be trained in operational water conservation measures such as use of water efficient/economy appurtenances and reuse of wastewater for gardening;</li> <li>• The water taps will be regularly checked for any leakage and buckets will be used for holding water.</li> <li>• It will be made sure that all faucets, circulating pumps etc. do not leak and are properly maintained;</li> <li>• Leakage or dripping faucet, pump or toilet will be immediately reported;</li> <li>• Utility bills will be kept in track for the consumption of water;</li> <li>• Water-saving equipment will always be used and purchased;</li> </ul>	HILTON DOUBLE TREE Management

		<ul style="list-style-type: none"> <li>• Treated water from wastewater treatment plant will be reused for watering of plants and other services; and</li> <li>• An effective employee training program about water conservation will be established.</li> </ul>	
<b>Waste Water</b>	It is anticipated that wastewater will increase the pollution load in terms of Biological Oxygen demand (BOD), Chemical Oxygen Demand (COD) etc	<ul style="list-style-type: none"> <li>• The proponents of the project will construct septic tanks for treatment to bring the wastewater quality within the PEQS before its final discharge;</li> <li>• The treated wastewater will be disposed in society sewerage line.</li> </ul>	HILTON DOUBLE TREE Management
<b>Solid Waste</b>	Total solid waste generated from the HILTON DOUBLE TREE will be approximately 50 kg per day which will have to be properly managed otherwise may cause contamination/pollution, nuisance to the employee/workers, visitors and may deteriorate the aesthetics of the building and can also become a breeding place of mosquitoes inside the Project building.	<ul style="list-style-type: none"> <li>• Proper waste storage bins will be provided at each floor;</li> <li>• Waste will be collected and disposed off at a proper disposal site approved by RDA.</li> </ul>	HILTON DOUBLE TREE Management & RDA
<b>Emergency Response</b>	The operation of the proposed project will involve employees and visitors who may become ill or have work related accidents. In addition, disasters such as earthquakes and fires may also occur.	<ul style="list-style-type: none"> <li>• An Emergency Plan for earthquake and manmade disasters will be developed by the project Management;</li> <li>• Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and paramedics; and</li> <li>• Training of the staff/employees regarding the emergency procedures/plans will be regularly conducted.</li> </ul>	HILTON DOUBLE TREE Management
<b>Traffic Management</b>	During the operational phase, the number of vehicles entering/exiting	<ul style="list-style-type: none"> <li>• There will be prohibition of roadside parking in front of the Project Building and provision of separate routes for</li> </ul>	HILTON DOUBLE TREE Management

	the building will increase. This may result in traffic congestion on Srinagar Highway, especially at peak season	entry and exit to avoid any traffic congestion; and <ul style="list-style-type: none"> <li>• A traffic management plan will be designed with the help of Traffic Police Department for the peak season to avoid any traffic related issues.</li> </ul>	& Traffic Police Department
<b>Drinking Water Contamination</b>	Water pollution can originate at the internal water network. If the pipes, especially at peak season and the overhead water storage tanks are not cleaned properly, they may lead to bacteriological contamination of the potable/drinking water and thus will lead to infectious diseases/health problems to the employees and visitors of the guest rooms.	<ul style="list-style-type: none"> <li>• Management of HILTON DOUBLE TREE will install small water filtration units with required capacity at each floor in order to avoid any bacterial contamination in the drinking water;</li> <li>• Water dispensers will also be used in the rooms and offices, where necessary;</li> <li>• Overhead water storage tank(s) will regularly be cleaned on quarterly basis;</li> <li>• Water Quality Monitoring will also be conducted on every six months and the quality will be maintained according to EPA Guidelines for drinking water</li> </ul>	HILTON DOUBLE TREE Management
<b>Social Disturbances</b>	Establishment of the project may cause problems for the residents of the nearby areas due to increased commercial activity and traffic rush. People might think that due to these activities, their daily routine life is disturbed	<ul style="list-style-type: none"> <li>• Adequate training will be provided to the work force/employees of the HILTON DOUBLE TREE (involved both in construction process and during operational stage) for minimizing disturbance to the locals and a setting up a grievance reprisal system</li> </ul>	HILTON DOUBLE TREE Management

**Table 8.2: Budget Estimate for Environmental Monitoring During the Construction and Operation Phases**

Components	Parameters	No. of Samples	Frequency	Responsibility	Duration	Cost (Rs.)
<b>Construction Phase (2 years)</b>						
<b>Air Quality</b>	CO, NO <sub>x</sub> , SO <sub>x</sub> , PM <sub>10</sub>	5×4=20	Quarterly	Contractor/EC	24 hours	140,000/-
<b>Ground Water Quality</b>	Total Coliforms, Fecal E. Coli, Total Colonial Count, Fecal Enterococci, pH, TDS, Total Hardness, Nitrate, Chloride, Sodium	4	Quarterly	Contractor/EC	-	20, 000/-
<b>Noise Level</b>	-	4	Quarterly	Contractor/EC	24 hours	2000/-
<b>Total</b>						<b>1, 62, 000/-</b>
<b>Operation Phase (2 years)</b>						
<b>Indoor Air Quality</b>	Physical, Chemical, and Microbiological parameters.	All Floors	Bi-annually	HILTON DOUBLE TREE Management	Morning/Evening	35,000/-
<b>Ground/Drinking Water Quality</b>	Total Coliforms, Fecal E. Coli, Total Colonial Count, Fecal Enterococci, pH, TDS, Total Hardness, Nitrate, Chloride, Sodium	2	Every six months	HILTON DOUBLE TREE Management	-	10, 000/-
<b>Noise Level</b>	-	4	Quarterly	HILTON DOUBLE TREE Management	24 hours	2, 000/-
<b>Total</b>						<b>47, 000/-</b>
<b>Grand Total</b>						<b>2,09, 000/-</b>

**KEY**

EC – Environmental Committee

DC Design Consultant

CC Construction Contractor

**Table 8.3 – Personnel Training Program/TA Services**

<b>Provided by</b>	<b>Contents</b>	<b>Trainees/Events</b>	<b>Duration</b>
TA Consultants/ organizations specializing in environmental management and monitoring	Short seminars and courses on Environmental laws and regulations daily monitoring and supervision	Three seminars for proposed Project staff	3 days
TA Consultants/ organizations specializing in social management and monitoring	Short seminars and courses on social awareness	Three seminars for Project staff dealing in social matters	3 days
TA Consultants/ organizations specializing in occupational health and safety issues	Short lectures relating to occupational health and safety	Two seminars for contractor's staff	4 days