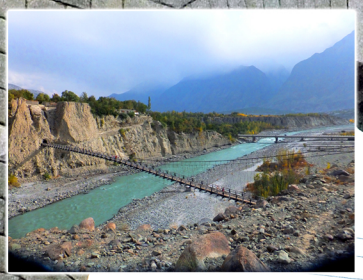
KARAKORAM INTERNATIONAL UNIVERSITY - GILGIT

FINAL REPORT
DECEMBER 2014



Initial Environmental Examination (IEE) of

CONSTRUCTION OF EDUCATION COMPLEX IN KARAKORAM INTERNATIONAL UNIVERSITY, GILGIT

EA Consulting Pvt Ltd

USAID
FROM THE AMERICAN PEOPLE

بسم الله الرحمن الرحيم

In The Name of Allah, The Most Beneficent, The Most Merciful

Initial Environmental Examination

Construction of Educational Complex in Karakoram International University

Revised Report
December 2014

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EXECUTIVE SUMMARY

Introduction

This report presents the findings of Initial Environmental Examination (IEE) study carried out by EA Consulting Private Ltd for the proposed IEQ project being undertaken at Karakoram International University, located in Gilgit city of the federal territory of Gilgit Baltistan in Pakistan.

The IEE has been prepared in compliance with the requirements of Pakistan Environmental Protection Act (PEPA) 1997, Pakistan Environmental Assessment procedures, 1997 and Pakistan environmental Protection Agency (Review of EIA/IEE) Regulalions-2000 compliance with the provisions of PEPA 1997, Section-12 requires that:

"No proponent of a project shall commence construction or operation unless he has filed with the government Agency designated by Federal Environmental protection Agency or provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause adverse environmental effects an environmental impact assessment, and has obtained from Government Agency approval in respect thereof."

The Pakistan Environmental Protection Act 1997 gives the following definition: "Initial Environmental Examination (IEE)" means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts of the environment of a proposed project to determine whether it's likely to cause an adverse environmental effect for requiring preparation of an environmental impact assessment".

An IEE is a concise document, which systematically considers all the likely impacts arising from a proposal, identifies which impacts need further consideration, and for those impacts provides mitigation measures which reduce the impacts to an acceptable level. Site survey would take place ahead of preparing the Initial Environmental Examination (IEE) report. Field data collection included observational surveys; consultations and meeting for data collection from the neighboring communities and NGO's etc as well as secondary information. Secondary information was collected from proponent, in-house sources, Government Departments and NGO's. Applicable international guidelines, conventions and environmental assessment procedures prepared by the Pakistan EPA have been gone through while preparing this document.

Project Overview

The Project consists of construction and assorted activities for a two-storey building with an area of 25,000 square feet. The building will house the Educational Complex which will facilitate the existing Department of Education at the Karakoram International University. The Educational Complex will include classrooms, multi-purpose halls, libraries, laboratories, lavatories and other amenities required.

Justification of Project

The existing department of education at Karakoram International University lacks adequate facilities and infrastructure. KIU along with its facilitating partner of the project i.e., USAID, as part of the latter's Improvement of Education (IEQ) plan, intend to upgrade these faculties with the inclusion of new building complexes which will enhance the function of these departments. In addition to

introducing state of the art education facilities at the new complex, it will afford the University to start Associate and Bachelors degree programs in Education.

Project Components

The new building complex will cover an area of 25,000 square feet over the allocated plot. It will comprise a two-storey structure with provision for future expansion on roof top. The complex will house the following facilities:

- Six Classrooms
- Multi-Purpose Hall with a storage room
- Three Science Laboratories
- One Library
- Resource Center (Micro Teaching Lab.)
- Conference Room
- Offices (for Dean, faculty, and post graduate students)
- Two Small Kitchens
- Electrical Room
- Toilets

Surrounding 5000 square feet area will devote to outdoor seating with vegetated wind corridors and courtyards. All structures will be designed to accommodate three floor levels for future extension. The design of the complex will incorporate construction materials and design features that will provide low-cost maintenance features and energy efficient implements.

The project site is located inside the existing boundaries of Karakoram International University. The University itself is situated at University Road, in the Gilgit city of District Gilgit.

Project Objectives

The main objectives of the project are to:

- Respond to the requirement for upgrading the existing Department of Education.
- Provide state of the art facilities for imparting quality education and training.
- Allow the conveying of Associate and Bachelor degree programs in Education.
- Create an environmentally and socially considerate facility whose design will incorporate sustainable features.
- Provide additional room for future development
- Justification for the Conduction of IEE of the Proposed Project

On the basis of the nature and scope of project, the proposed construction and operations of an Educational Complex at Karakoram International University has accordingly been categorized into Schedule-1, Category - I: Urban Development and Tourism Projects. Keeping in view the project categorization, submission of an IEE report to the relevant Environmental Protection Agency is mandatory, which in case of this project is 'Gilgit-Baltistan Environmental Protection Agency (GBEPA)'.

The Pakistan Environmental Protection Agency (Review of EIA/IEE) Regulations 2000 clearly define the categories of projects requiring an Initial Environmental Examination (IEE) or Environmental impact Assessment (EIA) in Schedules I & II respectively. According to Para 3 of EIA/IEERegulation-2000; The Regulations classifies projects on the basis of expected degree of adverse environmental impacts and list them into two separate schedules. Schedule I lists project that may have no significant environmental impacts and therefore require an IEE.

Based on the classification scale, the proposed construction and operations of an Educational Complex at Karakoram International University is included under Schedule 1 , Category – I: Urban Development Projects. Therefore formulation and submission of an IEE is deemed mandatory to the respective provincial authority for review, which is the Gilgit-Baltistan Environmental Protection Agency.

Scope of the Initial Environmental Examination

This IEE investigates the impacts likely to arise from the different activities including construction of the Ground+2 Educational Complex Building at the Karakoram International University, located in Gilgit City. The IEE has been prepared to achieve the following objectives:

- Identification and investigation of likely impacts of the proposed activities during the different phases of construction and operations on the physical, biological, and socio-economic environment of the project area;
- Proposal of adequate and defined mitigation and management measures that would help the proponent in conducting the operations in an environmentally sustainable manner;
- Develop an environmental Management Plan (EMP) for effective implementation of the recommendations of the IEE.

Study Methodology

This IEE investigates the impacts likely to arise from the different activities including construction, and operation of Educational Complex at KIU.

A. Understanding of the Proposed Operation

This step required collection of information from the proponent on the proposed and understanding the activities to identify potential impacts from them.

B. Review of Legislation and Guidelines

National legislation, international agreements, environmental guidelines, and industry practices were reviewed to set environmental procedures that the proponent will be required to adhere to during the different stages of project.

C. Secondary Data Collection

All available published and unpublished information pertaining to the background environment was obtained and reviewed. It included previous environmental studies and environmental baselines being conducted in the past in the project area and/or its surroundings. All data sources were carefully reviewed to collect project area's related information with regard to physical, biological and socio-economic environmental.

Findings

The construction of the Educational Complex itself presents very minor impacts, provided proper mitigation procedures, set forth in this document, are strictly adhered to. In order to aid the proponent, an Environmental Management Plan (EMP) has been created for the supervision and monitoring of the mitigation measures and ensuring their effectiveness. It explains the roles & responsibilities of work to the individuals of management and makes it easy to handle the issues with care. Procedures to work on EMP may be further refined by the proponent as per requirements on site. The main aspects covered in the EMP guidelines includes processes involve in EMP, management approach and implementation stages of EMP such as planning & design considerations, monitoring and mitigation plans during construction & operation and needs of training.

In performing of the IEE study, all relevant national legislations and regulations have been accounted for. Environmental and socio-economic baseline has been taken from previous reports, books and other literature available, specifically pertaining to the Gilgit city of Gilgit-Baltistan. An examination of all constructional and operational activities of the project was conducted along with a detailed field visit of the site by the IEE team of experts.

In conclusion, the IEE study determines that the construction of the Educational Complex in KIU would, with careful adoption of the mitigation measures and adherence to the EMP, pose no significant impact on the microenvironment and macroenvironment of the project area.

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ANNEXURES

1. INTRODUCTION

Name of Project	**Construction of Educational Complex**
Project Location	Karakoram International University, Gilgit City, Gilgit-Baltistan
Project Proponent	**Karakoram International University** University Road Gilgit City District Gilgit Gilgit-Baltistan, Pakistan. **Tel:** +92-0853-610847 **Fax:**+92-0853-610903
Donor Agency	**United States Agency for International Development** **Pakistan Office:** USAID/Islamabad, Unit 62206 – USAID Diplomatic Enclave, Ramna 5 Islamabad, Pakistan. Postal Code - M **Tel:** +92-51-208-00000 **Fax:** +92-51-227-6427
IEE Consultant	**EA Consulting Pvt. Ltd** AL-9, 15th Lane, Phase 7, DHA, Karachi, Pakistan. **Tel:**+92-21-111 111 584 **Fax:**+92-21-35841825 **Email:** info@eaworld.com

1.1. Project Background and its Need

Like many other developing countries, the situation of the education sector in Pakistan is not very encouraging. The low enrolment rates at the primary level, wide disparities between regions and gender, lack of trained teachers, deficiency of proper teaching materials and poor physical infrastructure of schools indicate the poor performance of this sector. Vacant teaching posts and untrained teachers both affect the quality of education provided to Pakistan's youth. In 2005/06, basic education had a vacancy rate of 6.5%, though the higher secondary level had the largest vacancy rate, with over 9% of the teaching positions remaining unfilled. Most teachers in the public school system had

received professional training: (only 5% were untrained). However, by comparison, over half of the teachers in private schools had received no professional training (UNESCO-2007).

The importance of powerful teaching is increasingly important in contemporary society. Standards for learning are now higher than they have ever been before, as citizens and workers need greater knowledge and skill to survive and succeed. The demands on teachers are increasing. Teachers need not only to be able to keep order and provide useful information to students but also to be increasingly effective in enabling a diverse group of students to learn ever more complex material.

Keeping in view the declining education quality in Pakistan, the United States Agency for International Development intends to initiate Improving Education Quality (IEQ) program in selected universities in Pakistan. The goal of USIAD-Pakistan's Improving Education Quality (IEQ) Program is to improve the quality of teaching and learning in public and private sector universities. One of the key components of the IEQ program is construction of the Faculties of Education at partner universities. The implementation of Improving Educational Quality (IEQ) Project would strengthen the Faculties of Education of these universities and is aimed to provide them technical assistance, training, planning support and learning through workshops and seminars.

USAID's IEQ Project is a five year, $220 million project and it will be implemented in different universities located in Punjab, Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Kashmir.

Proper classrooms are a basic need for any school and without enough classrooms; students are not able to utilize their learning time properly. At present, the faculties of education at USAID partner universities do not have proper facilities for students. All facilities need upgrading to improve the learning environment for teachers and students.

In order to start implementing the project, USAID intends to build an Educational Complex under IEQ (Improving Educational Quality) Project, at the Karakoram International University (hereinafter referred as Project Proponent) situated along the University road, Gilgit city in Gilgit-Baltistan. The project will be constructed inside the existing boundaries of the university.

The new complex will enable the university to start the two-year Associates Degree and four-year Bachelors of Education programs, which will replace all existing teacher education programs as directed in the 2009 National Education Policy.

1.2. Project Location

The location of the project is shown in Figures 1.1.

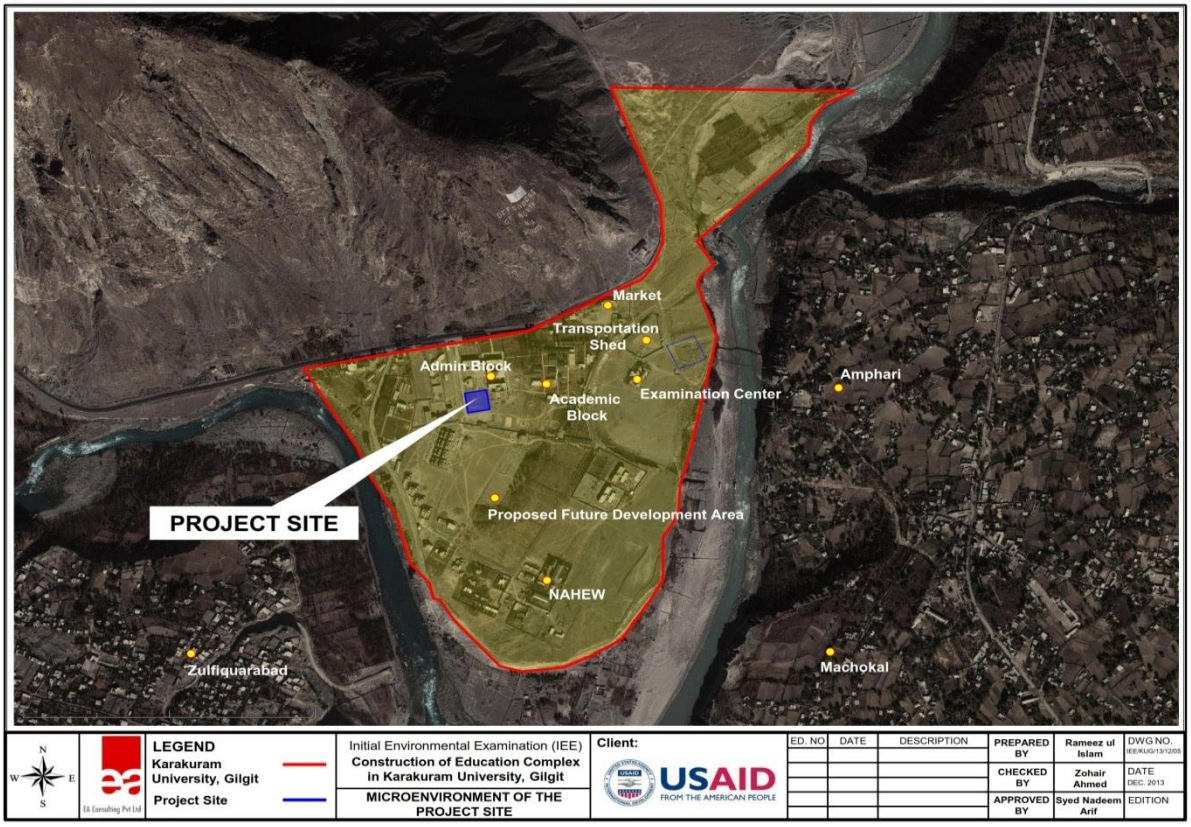


Fig 1.1: Satellite Image of Project Location

1.3. The Proponent

Karakoram International University (KIU) was established in 2002 by a charter from the federal government on the orders of General Pervez Musharraf, President of Islamic Republic of Pakistan. KIU is a multi-campus university with the main campus having nearly 2300 students, nearly 100 faculty members and over a hundred administrative staff in sixteen academic departments. The secondary campus of KIU in Skardu is located at Hussainabad road. Its inception took place in 2011 and it has been initiated with four disciplines i.e. English, Computer Sciences, Business Management, and Education.

1.3.1. Overview of Faculties

The Department of Education will be the first modern pedagogic department of Gilgit-Baltistan and it will be the center of excellence in the field of Quality Education in the country. The two-year ADE and four-year B.Ed. (morning/Evening/ Distance learning) programs is being launched in to provide better opportunities for professional growth and development of working school teachers in order to make them skillful so they can play a dynamic and vigorous role for achievement of the millennium development goals of universal literacy. The Department of Education produces teachers and experts by employing innovative techniques and promoting research activities to meet the educational requirements of the region. Department of Education promotes diversity, creativity and accountability for achieving excellence. The Department of Education aims to become one of the leading institutes of the region in the field of pedagogical sciences and research with qualified and motivated faculty in a supportive and collaborative environment.

1.4. USAID Profile

The U.S. Agency for International Development (USAID) is a leading U.S. Government agency responsible for the U.S. foreign development assistance. USAID works in approximately 100 countries around the world delivering humanitarian assistance, supporting social sector improvements, and facilitating economic development.

The United States sees a prosperous, secure, and stable Pakistan as vital to regional peace and security. USAID assistance programs in Pakistan were launched in 1961. As part of its commitment to the Pakistani people, the U.S. Government, through USAID, has provided nearly $2 billion in assistance since 2009. U.S. support is helping strengthen Pakistan's energy sector, increase the educational and economic opportunities available to Pakistan's citizens, improve the provision of health care services, and meet critical infrastructure needs in remote mountain areas. USAID also provides substantial relief and recovery assistance, such as when floods devastated the country in 2010.

USAID programs in Pakistan are focused on five key areas: energy, economic growth, stabilization, education, and health. To ensure that programs are responsive to local needs and have a sustainable impact, USAID has adopted a government-to-government model, in which the majority of programs are implemented through national and provincial governments. USAID also works extensively with local contractors and other indigenous institutions—an approach that ensures programs is aligned with local priorities and builds local capacity. Two cross-cutting themes—good governance and gender equity—inform all program design and serve as key measurements of success.

Working with other U.S. agencies, as well as donors and international development partners, USAID has focused its program over the last year on five areas essential to Pakistan's stability and long-term development and reflective of Pakistani priorities: energy, economic growth, stabilization, education and health.

Over the last year, USAID has streamlined the number of projects from approximately 150 to less than 70 and has also chosen to implement over half of all funding through local organizations in Pakistan – both government and non-government. Supporting the civilian government's capacity to meet the needs of its citizens is a vital element of USAID's program, as is working with non-governmental organizations and the private sector.

1.5. Project Characterization under PEPA 1997

Section 12 of Pakistan Environmental Protection Act 1997 and other regulatory documents such as Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations 2000 requires that every new development project in Pakistan has to be preceded by an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) depending upon the magnitude of the project and severity of impacts anticipated at the time of commissioning of the project.

PEPA (Review of IEE/EIA) Regulations 2000 categorize projects into two separate schedules depending on whether a project requires an IEE (Schedule-I) or an EIA (Schedule-II). The Regulations also require that all projects located in environmentally sensitive areas need submission of an EIA.

Schedule I categorizes those projects which are small scale projects or which have narrow range of environmental impacts pertaining to these activities. Schedule II includes projects which are expected to impose severe environmental impacts and need thorough evaluation prior to commencement of project activities.

On the basis of the nature and scope of project, the proposed construction and operations of an Educational Complex at Karakoram International University has accordingly been categorized into **Schedule-1, Category -I: Urban Development and Tourism Projects**. Keeping in view the project categorization, submission of an IEE report to the relevant Environmental Protection Agency is mandatory, which in case of this project is 'Gilgit-Baltistan Environmental Protection Agency (GBEPA)'.

An IEE study has been conducted for the project in this respect and the IEE report has been subsequently prepared to document the findings of the assessment.

1.6. The IEE Report

The present report deals with the observations and findings of the studies conducted for the assessment of potential environmental impacts anticipated during construction and operation of proposed project.

This document has been prepared to meet the legislative requirement of Pakistan Environmental Protection Act 1997, section 12 of which states, "No proponent of a project shall commence construction or operation unless he has filled with the Government Agency (Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be), an initial environmental examination or, where the project is likely to cause an Environmental Impact Assessment, and has obtained from the Government Agency approval in respect thereof."

This IEE has accordingly focused on making certain that:

- There is no negative environmental impact occurring from this project,
- If there is a negative impact, it is mitigated as much as possible through specified design and construction procedures, and
- Any remaining short term or long term negative impact is identified clearly and made known to all those likely to be affected.

1.7. Objectives of IEE Study

IEE study has been conducted by EA Consulting Private Ltd. for KIU, to respond to the regulatory requirement and assure the regulatory authority, in this case, the Gilgit-Baltistan Environmental Protection Agency (GBEPA) that the project and project activities during its different phases will not have adverse impact on its microenvironment and macro environment and adverse impact, if any will be appropriately mitigated to make it an environmentally sustainable Project.

This study has been carried out to provide all necessary information on the potential environmental and social impacts of proposed development to GBEPA and other relevant agencies.

The main objectives of IEE is to identify the environmental and socio-economic impacts both positive and negative that may result from activities during the different stages of the project and to provide appropriate methods to mitigate them.

The objectives set for the environmental assessment of this project while considering the prevailing environmental scenario are:

- To identify the aspects of the proposed project that are likely to cause social and environmental impacts in the area;
- To develop a baseline of its current environmental scenario as well as socioeconomic conditions;
- To identify and categorize positive and negative impacts;
- To highlight social issues and aspects together with environmental concerns which are particularly sensitive to impacts and their extent;
- To evaluate impacts due to construction activities, commissioning and operation of proposed project to its surroundings and compliance with the relevant environmental regulations of Pakistan;
- To suggest necessary mitigation measures in order to reduce or minimize the identified impacts on the environment and social domain;
- To provide recommendations / suggestions for the environmental monitoring and management of social and physical environment in the surroundings of project area;
- To ensure that all the important aspects of the project have been considered and all relevant stakeholders have been consulted in the assessment.

1.8. Scope of IEE Study

This study has covered all major areas of concern as per regulatory requirement. Scope of the IEE study included collection of data from different sources, development of baseline of the current physical, ecological, and social baseline of the area through surveys. In general, the study has been conducted in accordance with the Pakistan Environmental Protection Agency Review of EIA and IEE Regulations, 2000 and guidelines provided therein.

1.9. Adopted Methodology for IEE Study

Various steps were undertaken in order to conduct, prepare, and present this IEE report. Brief details on those steps are given below while description is documented in the subsequent sections of this report.

1.9.1 Understanding of the Proposed Development

This step required collection of information from the proponent i.e. KIU and donor agency USAID on the proposed activities and understanding these activities to identify potential impacts from them. This was the first step to embark on the study which was initiated by holding meetings with KIU and USAID officials especially with those related to execution of the project. The meetings were held to clarify the nature of activities during the different phases and magnitude of the impact on the physical and social environment. The

information provided was used by the experts to screen the potential environmental impacts that the project activities will have on the microenvironment and macroenvironment of the Project Site.

1.9.2 Review of Legislation and Guidelines

National legislation, international agreements and environmental guidelines were reviewed to set environmental standards that proponent will be required to adhere to during the different stages of the project. Special consideration has been given to the USAID Environmental Compliance Procedures, which details the environmental impact assessment procedures used by the U.S. Agency for International Development (USAID) on every program, project, activity and amendment USAID funds, to ensure the wise use of American taxpayer money through thoughtful, environmentally sound economic development. They have been promulgated as Title 22 of the Code of Federal Regulations, Part 216 (22 CFR 216).

1.9.3 Secondary Data Collection

All available published and unpublished information pertaining to the background environment was obtained and reviewed. It included previous environmental studies and environmental baselines being conducted in the past in the project area and/or its surroundings. All data sources were carefully reviewed to collect project area's related information with regard to physical, biological and socio-economic environment.

1.9.4 Field Data Collection

IEE team visited the project area during site visit, primary data and information on the physical, biological and socio-economic background conditions of the microenvironment and macro environment of project area was collected. Discussions were also held with the concerned local people in the project area to collect area specific primary information along with their views and concerns regarding the project activities. Surveys were carried out under the supervision of ecologists, geologist, environmentalists and sociologists, in order to investigate into various domains of environment and socio-economic sector to highlight various issues, and concerns that identified various aspects leading to subsequent assessment of impacts.

1.9.5 Baseline Studies

The environmental profile of the project area was established through secondary data as well as field surveys. The information was collected and compiled on environmentally important areas, ambient air quality, surface and groundwater resources, existing and proposed roads, local communities, agriculture, public services, and sites of archeological or cultural importance.

1.9.6 Impact Identification and Assessment

Potential impacts which may arise from project related activities were identified. These include effects on physical, biological, socio-economic, archaeological and cultural environment. Impacts were identified and assessed on the basis of field data, secondary data and expert opinion. The issues studied included potential project impact on:

- Geomorphology.
- Groundwater and surface water quality.
- Ambient air quality.
- Ecology of the area, including flora and fauna.
- Local communities.

Wherever possible and applicable, the discussion in this document covers the following:

- The present baseline conditions.
- The change in environmental parameters likely to be affected by project related activities.
- Identification of potential impact.
- Likelihood and significance of potential impact.
- Mitigation measures to reduce impact to the extent possible.
- Prediction of impact, including all long-term and short-term, direct and indirect, and beneficial and adverse impact.
- Evaluation of the importance or significance of impact based on available local, national, and international standards, or, where such standards were not available, the best practice elsewhere.
- Implementation of mitigation measures (i.e. environmental management).
- Determination of residual impact.
- Identification of controls and monitoring of residual impact.

1.9.7 Recommendations to Mitigate Impacts

Keeping in view the baseline data collected and impacts identified; mitigation measures were recommended to minimize, eliminate, or compensate for the potential environmental and social impacts on the zone of influence of the Project. Mitigation measures were recommended on the basis of past experience, legislative requirements and professional judgment.

1.9.8 Development of Environmental Management Plan (EMP)

Environmental management plan (EMP) was developed for effective implementation of the recommended mitigation measures. EMP included controls to minimize the identified impacts, and monitoring program to monitor residual impacts, if any, during the operation. The EMP also lays down procedures to be followed during the stages of project and identifies roles and responsibilities for all concerned personnel during the operation, including post project reporting.

1.9.9 Reporting

In the end, all activities/steps performed during IEE study were documented in shape of IEE report. It was compiled in the format/guideline given by Pakistan Environmental Protection Agency (PEPA) in Pakistan Environmental Assessment Procedures, 1997.

1.10. Report Structure

The IEE report has been structured and compiled as follows:

Chapter-1 provides an introduction and overview of the project and justification of IEE.

Chapter-2 details the project description, its objectives; considers the alternatives and reasons for selection of the preferred alternative; provides details on construction and operations related activities, and on utilities and facilities besides the schedule of implementation of different aspects of the Project.

Chapter-3 gives an overview of relevant national regulatory requirements along with international guidelines relevant to construction projects.

Chapter-4 provides description of the macroenvironment and microenvironment of the project area. It describes the existing physical and socioeconomic conditions that may likely be impacted due to development of the site, and owing to activities during construction and operation of the proposed educational complex as well as provision of infrastructure facilities associated with the project. The chapter describes the land-use of project's surrounding. It also deals with the quality of life, in particular the socio-economic, aesthetic and cultural values.

Chapter-5 describes the potential environmental and social impacts of the project on different aspects of the macro and microenvironment. While using the general guidelines it presents the screening of potential environmental impacts during construction, installation and operation stages of the project. The screening also yields the residual impacts resulting from adoption of mitigation measures that would be required to minimize the impacts.

Chapter-6 provides the environmental management and monitoring plan to be implemented in order to validate the mitigation measures.

Chapter-7 presents its conclusions.

The main text of the report is supported by Annexure that provides supplementary information.

1.11. Team of Experts

This IEE Report has been prepared by EA Consulting Pvt Ltd. EA Consulting organized and coordinated with the following team for the purpose of conducting the environmental assessment and preparing IEE report:

Table 1.1: List of IEE Study Team		
S.No.	**Name**	**Position in Project**
1	Mr. Syed Nadeem Arif	Project Manager
2	Dr. Mirza Arshad Ali Beg	Team Leader and Environmental Expert
3	Mr. Saquib Ejaz Hussain	Environmental & Social Consideration Specialist
4	Mr. Masood ur Rahman	Environmental Engineer
5	Mr. Ahmed Zohair	Environmental Engineer
6	Ms. Nida Kanwal	Sociologist
7	Mr. Ather Adil	Field Coordinator

2. PROJECT DESCRIPTION

2.1. Overview of the Project

At present, the faculties of education at the USAID partner universities in Pakistan do not have proper facilities for students. All the facilities need upgrading to improve the learning environment for teachers and students. In order to address these barriers, USAID intends to provide funding for building the educational complex in the Karakoram International University, one of the ten partner universities with USAID. This new development will become the part of existing Department of Education at the university. This new complex will enable the university to start two-year Associate Degree and four-year Bachelors of Education programs, which will replace the existing teacher education programs as directed in the 2009 National Education Policy.

Due to concerns regarding the budget levels available for operation and maintenance of university facilities and energy crisis in Pakistan, it will be made sure that the design of the complex will incorporate construction materials and design features that will provide low-cost maintenance features. Additionally, natural lighting and passive cooling (including the use of evaporative cooling techniques) would be maximized using "green building" concepts. Artificial lighting and mechanical ventilation would be used only for augmentation purposes. "Green building" concepts shall be developed individually for the proposed educational complex.

During the design phase of the facility following sustainable options will be given special consideration: a) low-cost maintenance features, b) green building concepts, c) energy efficient designs, d) accessibility for disabled, e) landscaping concepts, f) power generation through alternative energy sources such as solar, g) analysis of utility services, h) structural safety, and i) provision of safety barriers etc.

Figure 2.1 shows the microenvironment of proposed educational complex. Figure 2.2 shows the site layout plan of proposed educational complex.

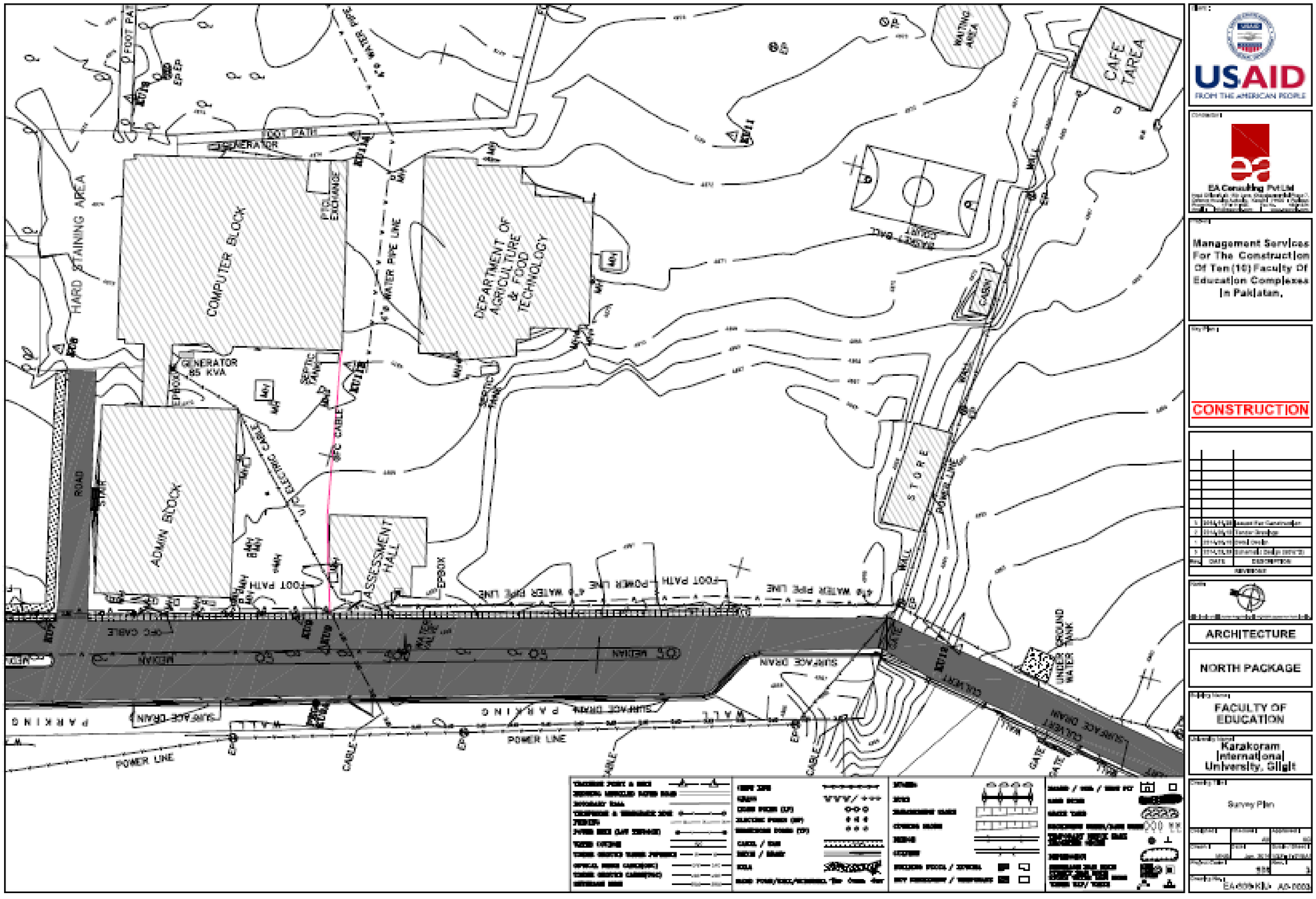


Fig 2.1: Microenvironment of proposed Educational Complex in KIU

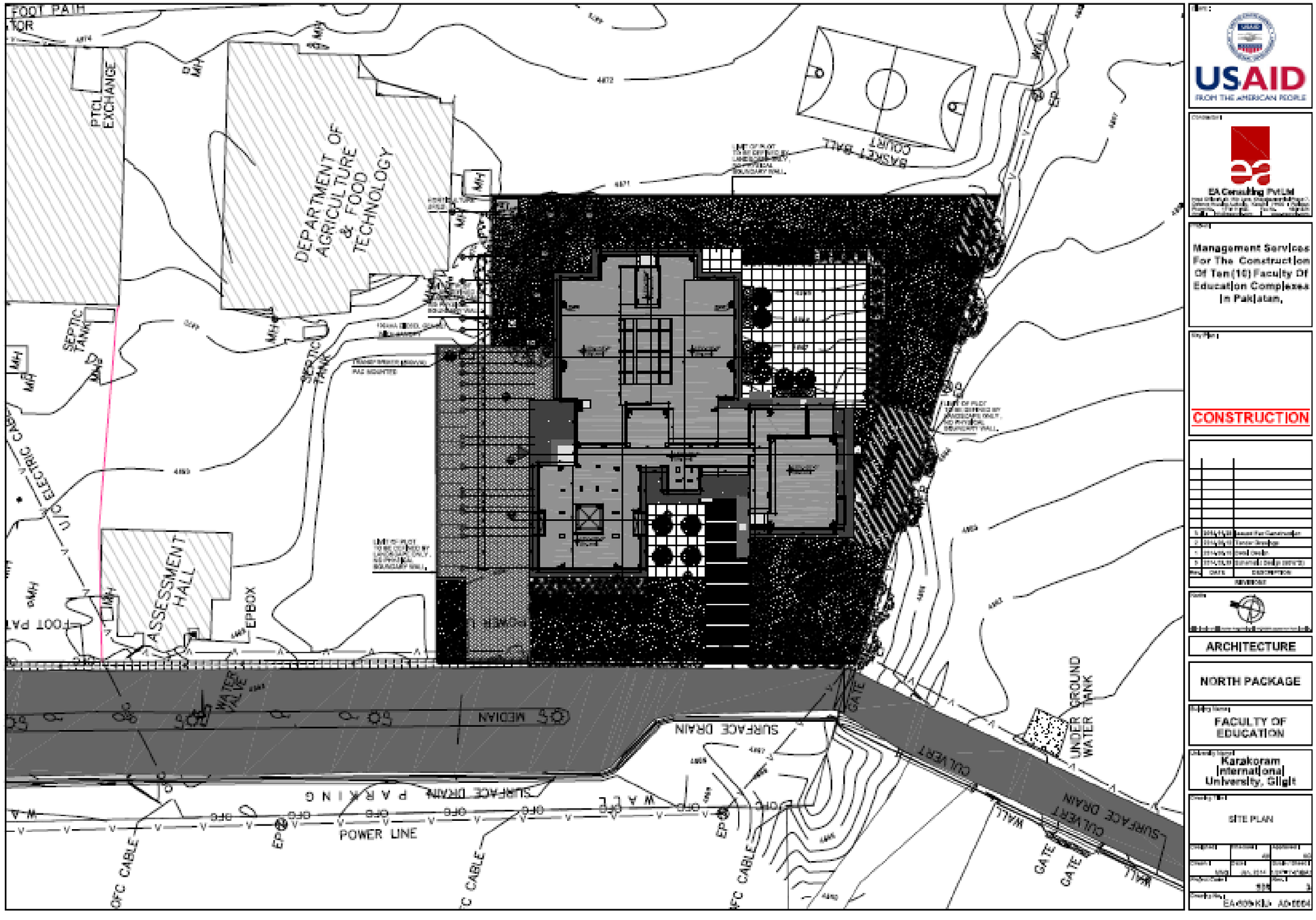


Fig 2.2: Layout Plan of proposed Educational Complex in KIU

2.2. Project Location

The project site is located within the existing boundary of Karakoram International University. KIU is situated at Nomal Road also called the University road. The confluence of River Gilgit coming in from the east and the Hunza River coming from the north forms a peninsula of sorts. KIU is located on top of this land mass and affords scenic views from all sides of the Gilgit valley. The university is a central feature of Gilgit city and is located within close access to common transport routes as well as the airport. The city center of Gilgit lies to the east of KIU. On the east of the University peninsula, lies the fertile terrain of Danyore. To the south of this peninsula, across the confluence point is Jutial. Figure 2.3 shows the satellite image of the project site.

Fig 2.3: Satellite view showing location of Karakoram International University and the Project Site

Table 2.1: Different views of Project Site & its Surroundings

	
Main Entrance to Karakoram University	Karakoram University Billboard
	
Project Site	Another view of Project Site
	
River Hunza inthe macroenvironment	

2.3. General Composition of Proposed Building

The building complex would have a total size (covered area) around 25,000 square feet. It will have two stories (ground and first floor). Typically, the ground floor will be approximately 13,000 sq. ft. and the first floor will be 9,000 sq. ft. The roof of the building will include the provision for a future expansion of 9,000 sq. ft. (same as area of first floor).

The complex will constitute the following major components:

- Six Classrooms
- Multi-Purpose Hall with a storage room
- Three Science Laboratories

- One Library
- Resource Center (Micro Teaching Lab.)
- Conference Room
- Offices (for Dean, faculty, and post graduate students)
- Two Small Kitchens
- Electrical Room
- Toilets(including handicap accessible)

Additionally, the roofs of the Multi-Purpose Hall and the Laboratories will be used to provide approximately 3,000 sq ft. of terrace area with outdoor seating on the first floor level. Further, outdoor seating will be provided in approximately 5,000 sq. of area devoted to vegetated wind corridors, "enclosed" gardens, and courtyards at the ground level. The elevator and stairwells will extend to the second floor level to accommodate future expansion and should extend access to terrace/roof seating. All structures (with the exception of the Multi-Purpose Hall) will be designed to accommodate three floor levels.

Figure 2.4 and 2.5 shows the floor plans of ground floor and first floor:

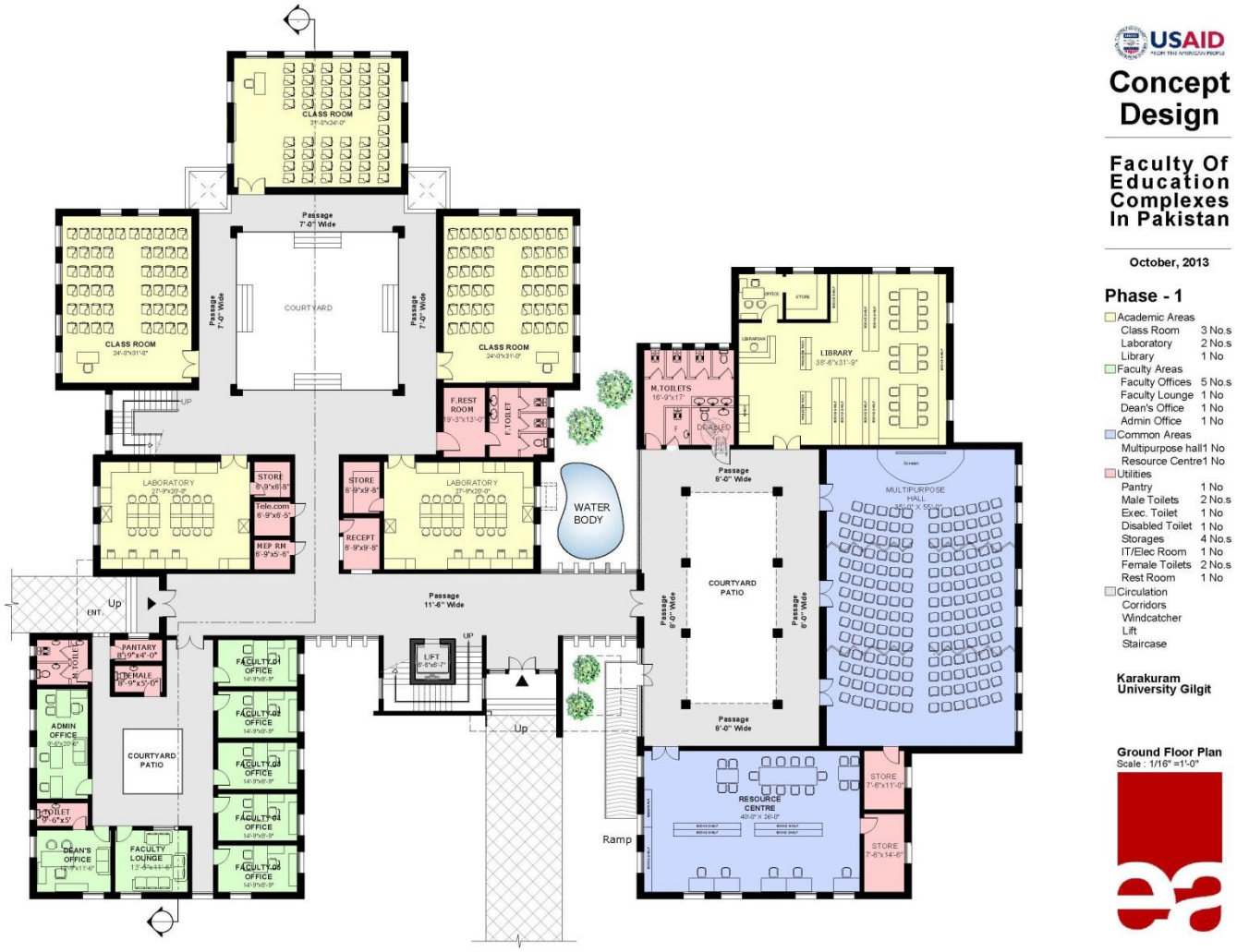


Fig 2.4: Ground Floor Plan of proposed Educational Complex in KIU

Fig 2.5: First Floor Plan of proposed Educational Complex in KIU

2.4. Basic Design Features

Due to concerns regarding the budget levels available for operation and maintenance of university facilities in Pakistan, it is imperative that the design of the complexes incorporate construction materials and design features that will provide low-cost maintenance features. Additionally, natural lighting and passive cooling (including the use of evaporative cooling techniques) should be maximized using "green building" concepts. Artificial lighting and mechanical ventilation should be used only for augmentation purposes.

2.4.1. Furniture and Equipment

Furniture and equipment will include the following:

- Desks, Chairs, Tables, and Book Shelves
- Multipurpose Hall seating(removable chairs and tables)
- Electronic White Boards for Classrooms(solar energy operated) (may not beneeded in all class rooms)
- Audio Visual Equipment for Auditorium(solar energy operated)
- Video Conferencing Equipment for Conference Room(solar energy operated)
- Signage for Identification of Exits, Rooms, and Facilities
- Drinking Fountains
- Audio visual equipment for classrooms
- Wireless Routers for Wi-Fi(solar energy operated)
- Diesel Generator (50 kVA)
- Elevator
- Fire Extinguishers
- Smoke Detection and Fire Alarm System
- Public Address System
- Refrigerator and Microwave for Kitchens
- Computers
- Books

2.4.2. Accessibility for the Disabled

All buildings will include appropriate provisions for accessibility for the disabled.

Provisions for the disabled shall include:

- Ramps
- Handrails
- Elevator

- Handicap Toilet Facilities
- Handicap access to all classrooms, resource center, library, multipurpose hall and all public seating areas

2.4.3. Green Building Concepts

Each building complex shall incorporate "green" building concepts. Anticipated "green" building features include:

- Solar Panels for Artificial Lighting and Fans
- Light Emitting Diodes (LEDs) for Lighting
- Predominantly Natural Ventilation (Cross Ventilation and Stack Flow Ventilation)
- Wind catchers to Enhance Ventilation
- Vegetated Wind Corridors, "Enclosed" Gardens, and Courtyards to Promote Natural Cooling
- Fountains, Misters, and Landscaping to Promote Natural Cooling
- Use of Treated Gray Water to Irrigate Vegetation
- Expanded Polystyrene Rigid Roof Insulation Panels or Spray Polyurethane
- Foam Insulation with Light Colored, Reflective Roof Coverings to Reduce Heat Transmission
- Cavity Wall Construction to Insulate the Building
- Recessed Window Wells and Light Shelves to Control Natural Lighting
- Brise Soleil, Pergolas, Parasols, Trellises, Canopies, and Other Sun Shade Structures over Roofs, Passageways, and Courtyard Areas
- Trellises and Sun Screens on the Southern Exposure for Walls and Windows
- Turf-stone or Other Permeable Pavers for Outdoor Paths and Courtyard Areas
- Solar Air Heating (for Selected Areas)

2.4.4. Solar Power Systems

Availability of a reliable source of electricity is a specific concern within the project area. The Contractor shall develop a standard design for a low-cost, low-maintenance solar power system for the Department of Education complexes. It is envisaged that light emitting diode (LED) light fixtures and ceiling fans will use direct current (DC) for basic artificial lighting and ventilation. To the extent practicable, electric wall sockets will use the existing electrical grid as a power source. It is envisaged that all of the complexes will use solar panels as the sole source of power for dedicated lighting and ventilation circuits.

2.4.5. Architectural Finishes

Architectural finishes will be subject to negotiation, but the following are suggested:

- EIFS (Synthetic Stucco), Fair Face Concrete, Color Crete, or Brick with Optional Stone and/or Ceramic Tile Inlays for Exterior Walls
- Terrazzo Floors
- Porcelain Tiles in Toilets
- Terrazzo Roof Tiles for Terraces and Light Colored, Reflective Roof Coverings for Other Roof Areas

2.4.6. Building Landscaping

To the maximum practicable extent, the landscaping will be done using the local vegetation. An appropriate irrigation system will be installed for horticultural activities.

2.5. Sequence of Construction Activities

Tentative sequence of construction activities to be carried out is given below:

- Mobilization of Contractors.
- Site Offices of contractors. (water supply & Drainage)
- Cleaning of site
- Demolishing (If any)
- Stacking of construction materials.
- Excavation for Foundation
- Stacking / disposal of excavated materials.
- Foundation Treatment (Termite)
- Construction of Foundations (Concreting etc)
- Masonry Work
- Scaffolding / Form Work
- Concreting of Beams / Slab
- MEP works.
- Plaster Work
- Wood Work (Doors)
- Metal Work (Windows)
- Flooring.
- Roof insulation & Water Proofing Treatment (Bitumen / Chemicals)
- Polish / Paint work inside
- Floor finishing (Polish Materials)
- Paint work outside

- Pavements / road work outside.
- Cleaning of Site.
- Plantation etc.

2.6. Construction Schedule and Methodology

2.6.1. Foundations and Below-Grade Construction

Excavation for the foundations and below-grade construction work will be made in accordance with recommendation of Geotechnical investigation. Foundation work would typically include the use of bobcats, rock-breakers, loaders, pumps, motorized concrete buggies, concrete pumps, jack hammers, pneumatic compressors, and a variety of small, mostly hand-held tools, as well as dump trucks and concrete trucks. Excavated material would be disposed of off-site via trucks.

2.6.2. Building Shell and Core Construction

Construction of the exterior enclosure, or "shell" of the building would include construction of the building's framework (installation of beams and columns), floor decks, facade (exterior walls and cladding), and roof construction. These activities would require the use of cranes, compressors, personnel and material hoists, front-end loaders, concrete pumps, on-site bending jigs and a variety of hand-held tools, in addition to the delivery trucks bringing construction materials to the site. At the same time, infrastructure connections would be built. These include lines for water, sewer, storm-water, electricity, and telecommunications.

2.6.3. Interior Construction and Finishing

This stage would include the construction of interior walls, installation of lighting fixtures and interior finishes (flooring, painting, etc.), as well as mechanical and electrical work, such as the

- Installation of elevators
- Internal and external pipe works
- Fire Protection & Life Safety Systems
- Electrical Distribution
- Emergency Lighting Installations
- Lightning Protection

Equipment used during interior construction would include exterior hoists, pneumatic equipment, delivery trucks, and a variety of small hand-held tools.

2.6.4. Construction Material and other Supplies

Main construction material to be used during the construction phase will include paving stones, cement, reinforcement, cement blocks, crush, gravel, sand and steel.

Additionally paints, glass, wood, tiles, aluminum PVC/GI pipes, concrete/cement pipes, electric cables, etc. will be used during the different phases of construction. The materials will be transported by trucks to the project site, where they will be stored until moved to different locations as and when required.

2.6.5. Workforce for Construction

The workforce for the project in construction period is estimated to be 50 persons. Local residents will be given priority for unskilled labor during construction work. Skilled technical persons will be employed for technical jobs.

2.6.6. Electricity Supply during Construction Phase

Electricity requirement during the construction phase of the proposed project would be fulfilled through existing KIU's power supply system based on Power Department of Giligt-Baltistan. Backup diesel generators shall also be made available at the project site in order to get power during load shedding or breakdowns.

2.6.7. Water Requirement during Construction Phase

Water requirements during the construction phase of the proposed project would be fulfilled through the existing surface water resources being utilized by the university. This mainly refers to sourcing water from the Gilgit River flowing past the university.

2.6.8. Fuel Supplies

Diesel will be the fuel consumed during the construction phase by vehicles, equipment, and backup power generation. Diesel will be procured locally and a tanker will deliver it to the project site.

2.6.9. Construction Period

The construction period for the proposed project is estimated to be 18 months.

2.7. Waste Streams from Construction Activities

2.7.1. Wastewater

The wastewater that will be generated during construction phase will be mainly domestic sewage and shall be generated at the construction camp and offices. The wastewater will mainly be of non-hazardous nature and can be safely routed to the drains after initial sedimentation to remove solids (if any).

2.7.2. Solid Waste

Considerable amount of construction wastes will be generated during different activities. The wastes will be recycled where applicable. Non-hazardous wastes including construction camp kitchen wastes can be disposed of at any secondary waste collection facility available nearby with the provision to undertake all waste disposal activity in an environmental acceptable manner. This includes segregation of recyclable waste and disposal of non-hazardous and non-recyclable waste at the waste collection facility. If considered

appropriate, the university management can also opt for undertaking the waste management through EPA approved waste management contractor.

2.7.3. Air Emissions

Sources of air emissions during construction activities will include:

- Dust emissions due to earthworks, transportation of materials and from stock piles
- Operation of generators
- Vehicular emissions
- Emissions from heavy equipment and machinery

All relevant measures shall be employed to keep the emissions to their lowest levels.

2.7.4. Demobilization and Site Restoration

On completion of the construction and commissioning phase, the construction contractor will demobilize from site and construction camps will be removed. Temporary infrastructure will be decommissioned and sites shall be restored. This will involve:

- Removing the temporary construction camps
- Closing all the temporary waste pits
- Removing all waste and leftover construction materials from the site
- Leveling and restoration of areas

2.8. Project Utilities / Amenities during Operational Phase

2.8.1 Water

Water requirement for the proposed educational complex during operational phase is estimated to be 4500 US gallons per day. Surface water is the main source of water used in the project area. Water shall be sourced from the existing water supply system of the university based on water supply from Gilgit River. There are three overhead water tanks available in the university capable of storing 40,000 liters each.

2.8.2 Electricity

The electric power load for everyday operations of the proposed project is estimated to be 100kVA. Power shall be supplied from KIU's existing power system. Keeping in view frequent power failures, backup power system shall be provided using stand-by diesel generator of appropriate capacity. Since, consideration of solar power system is included in the future provision and it is highly likely that with a passage of time backup power system will be completely converted to solar power generation system.

2.8.3 Natural Gas

Natural gas is not available in the whole district. Two major alternatives of the natural gas in the area are wood and Liquefied Petroleum Gas (LPG). It is estimated that 200 cubic feet per hour natural gas shall be required, but due to its nonexistence in the area, LPG of the

comparable amount shall be utilized. It will be brought to the project site in cylinders and shall be used in strict accordance with the relevant Health and Safety guidelines.

2.8.4 Wastewater

The wastewater generated from the proposed educational complex will mainly comprise domestic wastewater generated from kitchens, toilets and washing of areas. It is estimated that 4100 US gallons of wastewater shall be produced per day. There is no wastewater / sewage treatment facility present in Gilgit city. Karakoram International University has its own wastewater treatment facility, which consists of appropriately designed septic tanks and soaking pits. The existing wastewater treatment system is capable of handling the extra load from the proposed construction and shall be able to treat the wastewater in accordance with the National Environmental Quality Standards (NEQS). In addition, water conservation strategies shall be employed where possible to minimize wastage of water.

2.8.5 Solid Waste

The solid waste generated during the operations of educational complex shall be managed by utilizing recognized solid waste management methodologies. Source segregation techniques shall be applied and separate waste collection bins (specific to waste type) shall be provided at different locations in the building. The domestic wastes generating from the proposed facility shall include food waste, used papers, plastic, packing material, office stationery etc. Food waste would be sent to an approved municipal land fill site and waste containing glass, plastic to an approved waste contractor for recycling/reuse or safe disposal.

2.8.6 Fire Protection and Safety System

Fire protection and life safety system shall be installed in accordance to NFPA (National Fire Protection Association). The fire suppression systems provided for the project shall include:

- Smoke Detection System
- Fire Alarm System, and,
- Fire extinguishers at appropriate locations

2.8.7 Illumination

LED based lighting system shall be installed in the proposed complex. The lighting layout shall be designed to meet the recommended lighting levels as per prevailing international standards. Emergency lighting shall be provided on the escape routes, fire alarm call points and firefighting equipment.

2.9. Air Emissions

Overall air emission sources during the operations of the educational complex shall include:

- Exhaust emissions from vehicles in the parking area
- Emissions from standby power generators

Gaseous emissions of significance would be from the standby power generators and would include pollutant gases such as Carbon dioxide (CO_2), Carbon Monoxide (CO) oxides of Nitrogen (NOx) and oxides of Sulphur (SOx) besides particulate matter. The stack emissions would depend on the quality and quantity of fuel used by the standby generators and the power generations system. Preliminary estimates suggest that the emissions would be localized into the microenvironment of the project and will not be significant.

2.10. Health, Safety & Security

A high degree of general safety and security will be maintained, including information on procedures in the event of an emergency. Dustbins, where provided, will have lids. Adequate levels of lighting at night for safety and comfort in all public areas, including on stairways, car parks and paths/steps to the property at night, will be provided. Emergency lighting will be available, e.g. torch or emergency search lights.

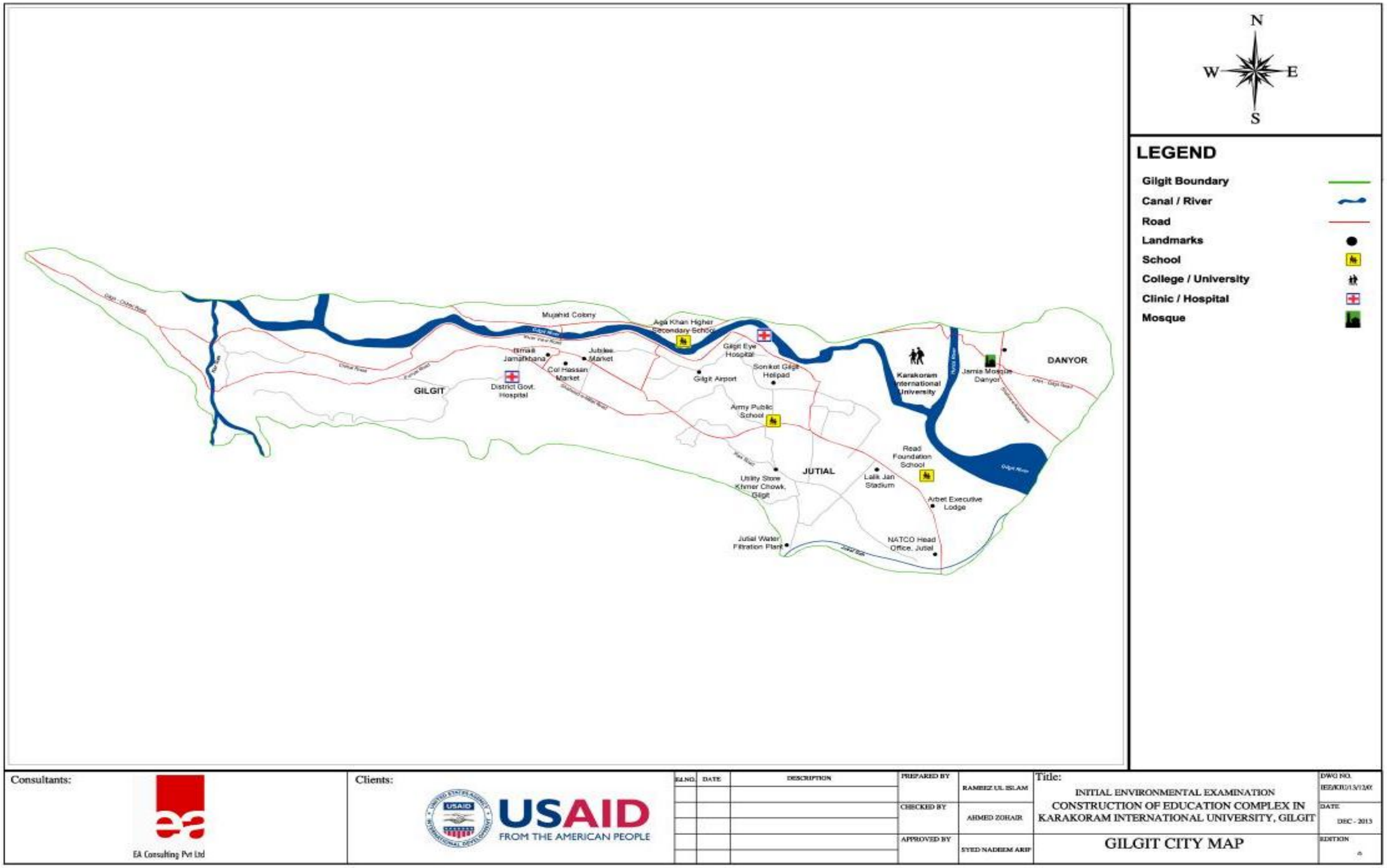


Fig 2.6: Gilgit City Location Map

3. ENVIRONMENTAL LEGISLATIONS AND GUIDELINES

3.1. Introduction

This chapter provides synopsis of policies, legislation, and guidelines that may have relevance to the proposed construction of the Educational Complex at Karakoram International University. The proponent will comprehensively follow the relevant requirements of the policy documents and legislative framework as well as those recommendations as described in the national and international guidelines for the proposed construction project. Many of those guidelines have been incorporated in the mitigation measures and the Environmental Management Plan (EMP) which has formulated for the better environmental and social impacts management.

3.2. Environmental Policies at National Level

3.2.1. National Conservation Strategy

The National Conservation Strategy (NCS) is the primary policy document of the Government of Pakistan (GoP) on national environmental issues. The policy was approved by the Federal Cabinet in March 1992. The strategy also recognized by international donor agencies, principally, the World Bank. The NCS, it identifies 14 core areas including conservation of biodiversity, pollution prevention & abatement, soil & water conservation and preservation of cultural heritage. It also recommends immediate attention to the stated core areas in order to preserve the country's environment.

A mid-term review of the achievements of the NCS in 2000 concluded that achievements under the NCS have been primarily awareness raising and institutional building rather than actual improvement to environment and natural resources and that the NCS was not designed and is not adequately focused as a national sustainable development strategy (GoP, November 2002). Thus the need for a more focused National Environmental Action Plan (NEAP) emerged which can practically improve the national environment with greater emphasis on poverty reduction and economic development in addition to sustainable ecosystem.

NEAP was approved by the Pakistan Environmental Protection Council under the chairmanship of the President/Chief Executive of Pakistan in February 2001. NEAP now constitutes the national environmental agenda and its core objective is to initiate actions that safeguard public health, promote sustainable livelihoods and enhance the quality of life of the people of Pakistan.

The GoP and United Nations Development Programme (UNDP) have jointly initiated an umbrella support programme called the NEAP-Support Programme signed in October 2001 and implemented in 2002. The development objective supported by NEAP-Support Programme is environmental sustainability and poverty reduction in the context of economic growth.

3.2.2. Biodiversity Action Plan

The key to protecting the biological heritage of Pakistan lies in the involvement of local people and in the support provided by competent institutions for conservation and sustainable use. The Government of Pakistan has recognized the importance of these measures in the preparation of the National Conservation Strategy and in becoming a signatory to, and ratifying, the Convention on Biological Diversity (CBD) in 1994. Developing the Biodiversity Action Plan for Pakistan, 2000 has been the most significant direct steps towards addressing the biodiversity loss.

3.3. National Environmental Legislations

3.3.1. Pakistan Environmental Protection Act 1997

The Pakistan Environmental Protection Act, 1997 is the basic legislative tool empowering the government to frame regulations for the protection of the environment.

The Act is broadly applicable to air, water, soil and noise pollution, as well as the handling of hazardous waste. Penalties have been prescribed for those who contravene the provisions of the Act. The powers of the Federal and Provincial Environmental Protection Agencies (EPAs) were also considerably enhanced under this legislation and they have been given the power to conduct inquiries into possible breaches of environmental laws either of their own accord, or upon the registration of a complaint.

Under section 12 of Act, no project involving construction activities or any change in the physical environment can be commence unless the fulfillment of prerequisite i.e. to conduct IEE or EIA and a report submitted to the Federal or Provincial EPA. It is attached in this report as Annexure-I.

3.3.2. Pakistan Environmental Protection Agency Review of IEE and EIA Regulations 2000

The PEPA review of IEE and EIA regulations, 2000 (the 'regulations'), prepared by the PEPA under the powers conferred upon it by the Pakistan Environmental Protection Act, provide the necessary details on the preparation, submission and review of the IEE and the EIA.

The regulation classifies projects on the basis of expected degree of adverse environmental impacts and lists them in two separate schedules. Schedule-I lists projects that may not have significant environmental impacts and therefore require an IEE. Urban development and tourism projects are included in Schedule-I. Schedule-II lists projects of potentially significant environmental impacts requiring preparation of an EIA. It is attached as Annexure-II in this report.

3.3.3. National Environmental Policy 2005

NEP is the primary policy of Government of Pakistan addressing environmental issues. The broad goal of NEP is "to protect, conserve, and restore Pakistan's environment in order to improve the quality of life of the citizens through sustainable development" The NEP identifies a set of sectoral and cross-sectoral guidelines to achieve its goal of sustainable

development. It also suggests various policy instruments to overcome the environmental problems throughout the country.

3.4. National Environmental Guidelines

3.4.1. The Pakistan Environmental Assessment Procedures 2000

PEPA prepared the Pakistan Environmental Assessment Procedures in 1997. The guidelines pertaining to the review process of impact assessments have been recently given regulatory status in the Review of IEE and EIA Regulations 2000. The package of regulations prepared by PEPA with relevance to this IEE includes:

- Policy and Procedures for Filing, Review and Approval of Environmental Assessments;
- Guidelines for the Preparation and Review of Environmental Reports;
- Guidelines for Public Consultation
- Sectoral Guidelines for Environmental Reports - Housing Estates and New Town Developments

Policy and procedures for filing, review and approval of environmental assessments: These guidelines define the policy context and the administrative procedures that will govern the environmental assessment process, from the project pre-feasibility stage, to the approval of the environmental report. According to the procedures laid out in the policy guidelines, IEE's or EIA's are to be filed with the EPA of the province where the project is to be implemented. The PEPA has, however, been given the right to review any environmental report at any time and the power to revoke the decision of the provincial EPA, if it deems this to be necessary. Projects have been classified in the policy guidelines by expected degree of adverse environmental impacts. Those projects having potential environmental impacts are listed in Schedule-A. Projects which have comparatively slightly narrow environmental issues and can be managed by less extensive analysis are included in Schedule-B. The proposed Karakoram University project is also included in the Schedule-B under Urban Development and Tourism projects. Finally, Schedule-C, includes those projects which doesn't fall in Schedules A&B and do not require an EIA or IEE but an environmental approval will be sought

Guidelines for the preparation and review of environmental reports: It requires proponents to prepare terms of reference for the environmental assessment reports. It requires that all studies should contain baseline data on the area and must contain an assessment of the potential environmental impacts and the recommended mitigation measures.

Guidelines for public consultation: These guidelines are a part of a package of regulations and guidelines. It provides assistance throughout the environmental assessment of project by involving the public which can lead to better and more acceptable decision-making.

Public involvement, undertaken in a positive manner and supported by a real desire to use the information gained to improve the proposal, will lead to better outcomes, and lay the basis for on-going positive relationships between the participants.

Sectoral Guidelines for Environmental Reports - Housing Estates and New Town Developments: These guidelines are set for building housing estates and township in Pakistan to look specifically at the environmental impacts. In the scenario of hotel and shopping mall development project, these guidelines are considerable as the hotel is providing accommodation facilities and the nature of impacts are similar as they are in the housing projects.

The guidelines examine impacts which may be experienced during the construction and operation phases of project as well as mitigation measures and alternatives that should be considered. The environmental report should only deal with issues relevant to the specific proposal. The focus of the environmental report should be on key environmental issues.

3.4.2. Revised National Environmental Quality Standards (NEQS)

The NEQS were first promulgated in 1993 and were last revised in 2000. These are the basic guidelines for liquid effluent and gaseous emissions of municipal and industrial origin to comply with. These standards present the maximum allowable concentration for liquid effluent before its discharge into sea, inland water & sewage (total 32 parameters to comply with) and gaseous emissions in the ambient air from industrial sources (total 16 parameters to comply with). These standards are shown in Annexure-IV.

3.4.3. NEQS for Ambient Air 2010

The NEQS for Ambient Air was issued in 2010 and standards for ambient air quality have been established in this document. Currently the standards effective January 2013 are to be followed for ambient air quality measurements.

3.4.4. National Standards for Drinking Water Quality(NSDWQ) 2010

The National Standards for Drinking Water Quality were issued in 2010 and it provides the Physical, Chemical, Organic, Radioactive and Microbiological Standards for Drinking Water Quality.

3.4.5. NEQS for Ambient Noise 2010

The NEQS for Ambient Noise was issued in 2010 and it specified the Daytime and Night time Limits for Ambient Noise Limits dB(A) Leq for Residential, Commercial, Industrial and silence zones. The Standards effective from 1st July 2012 are to be followed.

3.4.6. Pakistan Penal Code

The Pakistan Penal Code (1860) authorizes fines, imprisonment or both for voluntary corruption or fouling of public springs or reservoirs so as to make them less fit for ordinary use.

3.4.7. The Antiquities Act 1975

The Antiquities Act of 1975 ensures the protection of cultural resources in Pakistan. The act is designed to protect "antiquities" from destruction, theft, negligence," unlawful excavation, trade and export. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The law prohibits new construction in the proximity of a protected

antiquity and empowers the GoP to prohibit excavation in any area, which may contain articles of archaeological significance.

3.5. International Environmental Performance Standards/Guidelines

3.5.1. USAID Environmental Compliance Guidelines 22 CFR 216

These procedures are used by United States Agency for International Development, to ensure that environmental factors and values are integrated into the USAID decision-making process. These procedures also assign responsibility within the Agency for assessing the environmental effects of USAID's actions.

i) Aims: Briefly put these procedures aim to achieve the following objectives for all projects which are funded by USAID in partner countries:

1) Provide advance notice that certain types of projects will automatically require detailed environmental analysis thus eliminating one step in the former process and permitting early planning for that particular activity.

2) Permit the use of specially prepared project design considerations or guidance to be substituted for environmental analysis in selected situations.

3) Advocate the use of indigenous specialists to examine pre-defined issues during the project design stage.

4) Clarify the role of the Bureau's Environmental Officer in the review and approval process.

5) Permit in certain circumstances, projects to go forward prior to completion of environmental analysis.

ii) Policy: The following outlines the environmental policy of the USAID for all endeavors carried out by the Agency.

(1) Ensure that the environmental consequences of USAID financed activities are identified and considered by USAID and the host country prior to a final decision to proceed and that appropriate environmental safeguards are adopted;

(2) Assist developing countries to strengthen their capabilities to appreciate and effectively evaluate the potential environmental effects of proposed development strategies and projects, and to select, implement and manage effective environmental programs;

(3) Identify impacts resulting from USAID's actions upon the environment, including those aspects of the biosphere which are the common and cultural heritage of all mankind; and

(4) Define environmental limiting factors that constrain development and identify and carry out activities that assist in restoring the renewable resource base on which sustained development depends.

(iii) Components of the Environmental Compliance Procedures.

The general components of USAID Environmental Compliance procedures are summarized as below:

(1) Preparation of the Initial Environmental Examination.

An Initial Environmental Examination is the first review of the reasonably foreseeable effects of a proposed action on the environment. Its function is to provide a concise statement of the factual basis for a Threshold Decision as to whether an Environmental Assessment or an Environmental Impact Statement will be required

(2) Threshold Decision.

The Initial Environmental Examination will include a Threshold Decision. It is a formal USAID decision which determines, based on an Initial Environmental Examination, whether a proposed USAID action is significantly affecting the environment. A Positive Threshold Decision shall result from a finding that the proposed action will have a significant effect on the environment. An Environmental Impact Statement shall be prepared if required pursuant to relevant clauses of the Procedures. If an impact statement is not required, an Environmental Assessment will be prepared. Lastly the respective Bureau or Office will record a Negative Determination if the proposed action will not have a significant effect on the environment.

(3) Scope of Environmental Assessment or Impact Statement.

After a Positive Threshold Decision has been made that an Environmental Assessment is required, the originator of the action shall commence the process of identifying the significant issues relating to the proposed action and of determining the scope of the issues to be addressed in the Environmental Assessment. Persons having expertise relevant to the environmental aspects of the proposed action shall also participate in this scoping process. (Participants may include but are not limited to representatives of host governments, public and private institutions, the A.I.D. Mission staff and contractors.) This process shall result in a written statement which shall include the following matters:

(a) A determination of the scope and significance of issues to be analyzed in the Environmental Assessment or Impact Statement, including direct and indirect effects of the project on the environment.

(b) Identification and elimination from detailed study of the issues that are not significant or have been covered by earlier environmental review, or approved design considerations, narrowing the discussion of these issues to a brief presentation of why they will not have a significant effect on the environment.

(5) Preparation of Environmental Assessments:

If the Threshold Decision is positive the originator of the action will be responsible for the preparation of an Environmental Assessment and/or Environmental Impact Statement as required. Draft Environmental Impact Statements will be circulated for review and comment as part of the review of Project Papers. The final approval of the Project Papers and the method of implementation will include consideration of the Environmental Assessment.

(6) Processing and Review within USAID.

Initial Environmental Examinations, Environmental Assessments and/or final Environmental Impact Statements will be processed pursuant to standard USAID procedures for project approval documents. Environmental Assessments and final

Environmental Impact Statements will be reviewed as an integral part of the Project Paper or equivalent document. In addition to these procedures, Environmental Assessments will be reviewed and cleared by the Bureau Environmental Officer. They may also be reviewed by the Agency's Environmental Coordinator who will monitor the Environmental Assessment process.

(7) Environmental Review after Authorization of Financing.

Environmental review should occur at the earliest time in design or implementation at which a meaningful review can be undertaken, but in no event later than when previously unidentified subprojects or aspects of projects, programs or activities are identified and planned. To the extent possible, adequate information to undertake deferred environmental review should be obtained before funds are obligated for unidentified subprojects or aspects of projects, programs or activities.

(8) Monitoring. To the extent feasible and relevant, projects and programs for which Environmental Assessments have been prepared should be designed to include measurement of any changes in environmental quality, positive or negative, during their implementation. This will require recording of baseline data at the start. To the extent that available data permit, originating offices of A.I.D. will formulate systems in collaboration with recipient nations, to monitor such impacts during the life of A.I.D.'s involvement. Monitoring implementation of projects, programs and activities shall take into account environmental impacts to the same extent as other aspects of such projects, programs and activities. If during implementation of any project, program or activity it appears to the Mission Director, or officer responsible for the project, program or activity, that it is having or will have a significant effect on the environment that was not previously studied in an Environmental Assessment or Environmental Impact Statement, the procedures contained in this part shall be followed including, as appropriate, a Threshold Decision, Scoping and an Environmental Assessment or Environmental Impact Statement.

(9) Revisions. If, after a Threshold Decision is made resulting in a Negative Determination, a project is revised or new information becomes available which indicates that a proposed action might be "major" and its effects "significant," the Negative Determination will be reviewed and revised by the cognizant Bureau and an Environmental Assessment or Environmental Impact Statement will be prepared, if appropriate. Environmental Assessments and Environmental Impact Statements will be amended and processed appropriately if there are major changes in the project or program, or if significant new information becomes available which relates to the impact of the project, program or activity on the environment that was not considered at the time the Environmental Assessment or Environmental Impact Statement was approved. When ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. If so, the procedures outlined in this part will be followed.

3.5.2. EBRD Sub-sectoral Environmental & Social Guidelines 2008

This Policy covers the environmental and social dimensions of sustainable development laid down by the European Bank for Reconstruction and Development (EBRD). The Policy outlines how the Bank will put into practice its commitment to promote environmental and

social sustainability by: establishing environmental and social performance requirements that are expected to be met in acceptable timeframes, defining the respective roles and responsibilities in achieving sustainable outcomes in line with the policy and the performance requirements, setting a strategic goal to promote projects with high environmental and social benefits.

The following general procedures are used by United States Agency for International Development, to ensure that environmental factors and values are integrated into the U.S.A.I.D. decision-making process. These procedures also assign responsibility within the Agency for assessing the environmental effects of A.I.D.'s actions.

4. ENVIRONMENTAL &SOCIOECONOMIC BASELINE

4.1 General

This section details the physical, ecological and socioeconomic environments of the project area. Discussion on the natural environment covers the area's physical and meteorological features, including geology, water resources, climate and air quality. Overview of vegetation, wildlife and natural habitats are included in the Ecological section. Lastly, the socioeconomic environment includes details of the area's population and households, education, health, gender issues, water supply, agriculture, transport and communications, and occupations and income. Figure 1 shows the project location of the proposed educational complex in the context of the district and the territory at large.

4.2 Physical Profile

4.2.1. Geography and Topography

Gilgit-Baltistan is the northern-most territory of Pakistan. It is bordered on the north by Afghanistan's Wakhan Corridor, and on the south-west by Azad Jammu and Kashmir, with Khyber Pakhtunkhwa province on its west. Indian-administered Jammu and Kashmir lies on the territories' southeast with China bordering the north-east. Formerly referred to as the Northern Areas, the territory was given constitutional recognition as a distinct province by the Gilgit Baltistan Empowerment Act of 2009 and has thus been formally integrated into the country.

Gilgit-Baltistan is composed of dominating mountainous terrain, with some of the world's highest elevations to be found amongst its many mountain ranges. The region is home to the confluence of three prominent ranges, namely the Himalayas, the Karakoram and the Hindu Kush, with their convergence point located at Concordia. The glaciers found in the province account for a critically large volume of annual flow into the downstream rivers of Pakistan, with entire regions depending on the water resources stored in these veritable water towers. These frigid masses account for the largest concentration of glaciers outside the polar regions. Biafo, Baltoro, Batura and Siachen are the most prominent amongst these glaciers.

Gilgit Baltistan spans over an area of 27,180 square miles (70,400 square kilometers). Gilgit Baltistan is located within Longitude 72°30' - 77°50'E and Latitude 34°04'-26°39'20" N. The province has been divided into seven districts namely Gilgit, Ghezir, Diamar, Astore, Skardu, Hunza Nagar and Ghanche. The project site comes within the Gilgit district of the province, particularly in Gilgit town.

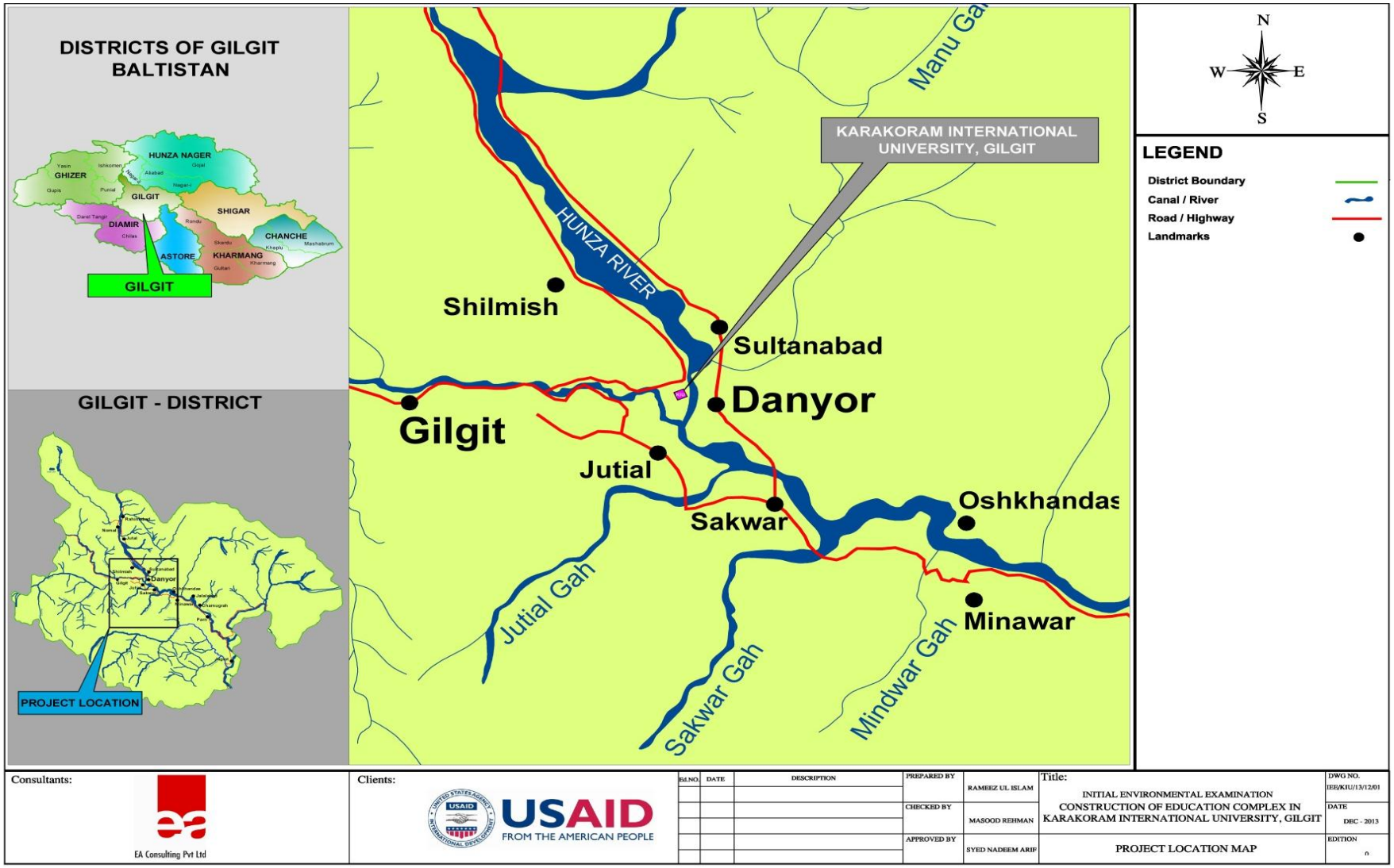


Fig4.1: Project Location Map

Fig 4.2: Divergent features of Gilgit City

4.2.2. Geology

Geologically this is a very significant area as it lies on crux of two meeting tectonic plates, being the Indian plate and the Eurasian plate. This collision of landmasses has resulted in the uplifting of strata, forming the mountain ranges of Himalayas, Karakoram and the Hindu Kush; all three comprising a great majority of the Gilgit-Baltistan area. In fact the confluence point of these three prominent mountain ranges lies in the district of Gilgit, at Concordia, adjacent to neighboring Skardu. Most elevations in the region are at the minimum 1,500meters above sea level with more than half the area above the4,500 meters mark. The region contains many of the highest peaks in the world including K-2, Nanga Parbat, and Rakaposhi. A vast number of glaciers dot the Gilgit-baltistan province, with Gilgit district being no exception.

Fig 4.3: Varied landscape of Gilgit

Gilgit lies on a seismically active belt. Now when major development schemes involving sizeable engineering works are being planned and are underway, an accurate knowledge of seismicity is essential especially in the wake of recent earthquake.

The seismic map of the region prepared by Pakistan Meteorological Department, Geophysical Centre, Quetta, indicates that Gilgit lies in a very active seismic zone and the seismic factor in this zone has been evaluated as "Zone of noticeable seismic danger" with acceleration values of 0.05 to 0.15 g. and to the immediate north and north-west lies the "Zone of significant seismic danger" with acceleration value of 0.15 to 0.2g.

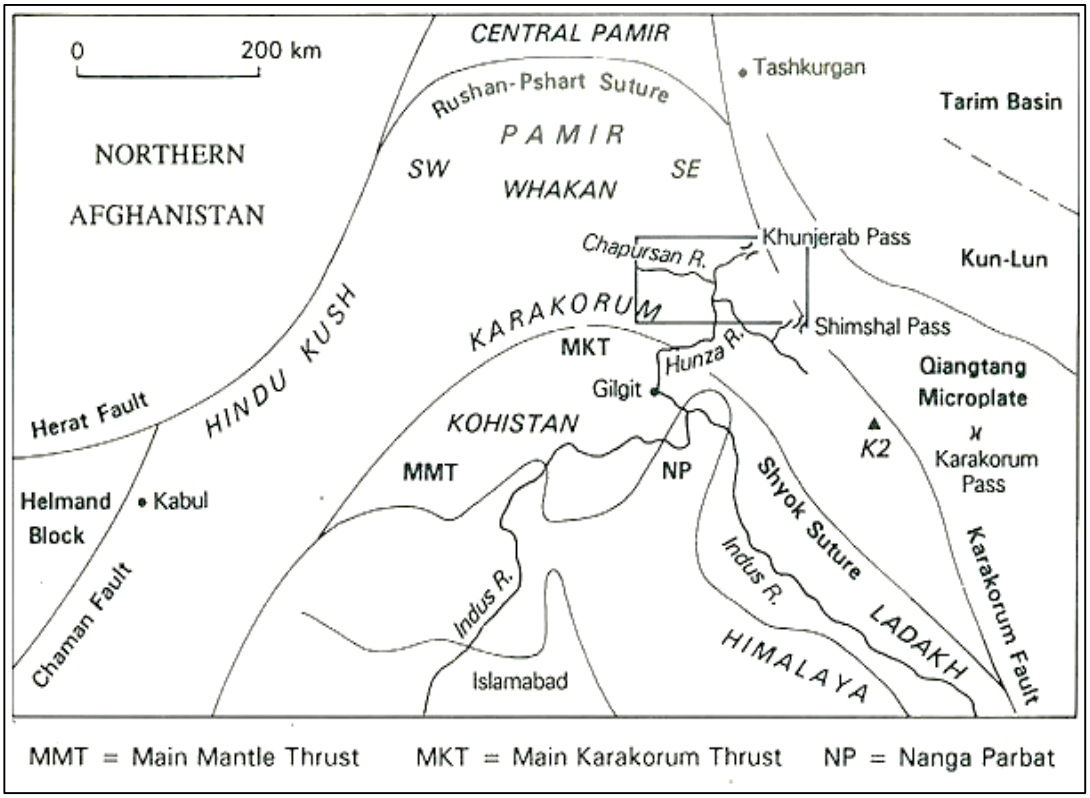


Fig 4.4: Seismic map of Gilgit and its surroundings

Two devastating earthquakes occurred in the Northern Areas in near past on 28th December 1974 and 12th September, 1981 near the villages of Pattan and Sazine with magnitudes 6.1 and 5.7. Considerable Loss to the building was experienced in Gilgit as well during the Sazine earthquake .

4.2.3. Soils

Glacial eroded deposits dominate the soil landscape of project area. Close inspection shows the soil to be light loose clay, mixed with fine sand. It shows a variety of character traits, being hard with a smooth surface in some areas, whilst crumbling easily in others. Large round stones dot many parts of the terrain in the region as well as the grounds of the proposed site.

Fig 4.5: Surface geology and terrain features of Project Area

4.2.4. Hydrology

Gilgit Baltistan is home to some of the most extensive glacier deposits in the world. In fact the lengths of some of these glaciers are second only to the polar deposits of Antarctica and the Arctic Circle. The climate of Gilgit affords a snow cover which extends from 30 to 40 percent of the provincial area. This coupled with the massive glacial deposits, contribute to a large water reserve, as the melt water from these sources fills many streams and nullahs and a pair of crucial rivers, the Hunza River and the Gilgit River. These rivers and their adjunct streams feed into the Indus River which in turn forms the backbone of water provision for a large portion of the downstream basin of Pakistan. The Indus River itself originates from Indian controlled Kashmir, along with the Shyok River, their many tributaries providing the local populace venues for fishing, navigation via boats and also recreational purposes.

Along with the Indus, the other major rivers of Gilgit are the Khunjerab River, Astore Riverand the aforementioned Hunza River and the Gilgit River, both of which form the confluence where the project site is located. Surface water quality sampling was conducted from the rivers, the findings of which are presented in Table 4.1.

Fig 4.6: River Hunza flowing on the east side of project area with Danyore across the bank

Table 4.1: Surface Water Quality Parameters

ANALYTICAL TEST REPORT					
S. No.	**Parameters to be Analyzed**	**Standard NEQS**	**Units**	**Results**	**Test Method**
1	pH value	6.5-8.5	-	7.85	USEPA 150.1
2	Total Dissolved Solids(TDS)	<1000	mg/L	510.0	Hach 8160
3	Total Hardness(as $CaCO_3$)	<500	mg/L	275	Hach 8213
4	Turbidity	<5	NTU	1.25	-
5	Nitrate(NO_3)	≤50	mg/L	1.2	Hach 8039

Table 4.1: Surface Water Quality Parameters					
ANALYTICAL TEST REPORT					
S. No.	**Parameters to be Analyzed**	**Standard NEQS**	**Units**	**Results**	**Test Method**
6	Nitrite(NO_2)	≤3	mg/L	0.9	Hach 8153
7	Phenolic compounds(as phenol)	<0.002	mg/L	BDL	USEPA 420.1
8	Chloride(as Cl^-)	<250	mg/L	110	Hach 8206
9	Flouride(as F^-)	≤1.5	mg/L	1.0	USEPA 340.1
10	Residual Chlorine	0.5-1.5	mg/L	1.4	Hach 8167
11	Total Coliform	0cfu/100ml	mg/L	65*	-
12	Fecal Coliform	0cfu/100ml	cfu	42*	-
13	Escherichia Coli(E-Coli)	0cfu/100ml	cfu	7*	-
Results of surface water quality monitoring conducted by EMC					

Rainfall is limited and thus an insufficient source to rely on for daily uses. Terrestrial sources such as ground water springs are also very sparse and only found at select sites. In the absence of these sources, the locals directly source glacial melt water for irrigation and consumption. Locally made channels called Khuls are fed by melt water from snow and glaciers. These channels are 2-4 feet wide and of similar depth. They are diverted into the habitations where they fulfill the agricultural and domestic demands of the populace. In Gilgit Town where the Project Site is located, there are five drinking water supplies, fed by two water channels built around 30 years ago. Prominent nallahs in Gilgit city are Jutial Nala, Kanudas Nala, Kargah Nala and Daniyor Nala.

There are sizable variations in the stream flow in the region, depending on meteorological conditions and the melting rates in the summer months. A particularly warm summer may account for higher melt water, but comes at a cost of slightly diminished glacial storage. Conversely prolonged durations of snow fall and cover can cause glacial melting to cease and therefore reduce stream flow. The highest flows are recorded from July to September, when snow melts in the mountains.

The movement of the massive glacial masses causes erosion of the valley beds; the erosion byproducts i.e. the sediments thus released are transported via the streams and channels. These sediments provide valuable fertility to the soils downstream and account for a large portion of the sediment movement in the entire Upper Indus system. In hydrological values, 72 percent of the mean annual flow of the River Indus originates from the Gilgit-Baltistan region as measured upstream of Tarbela. The water quality of the Indus river has been reported as excellent for use in irrigation, consumption, household and commercial usage.

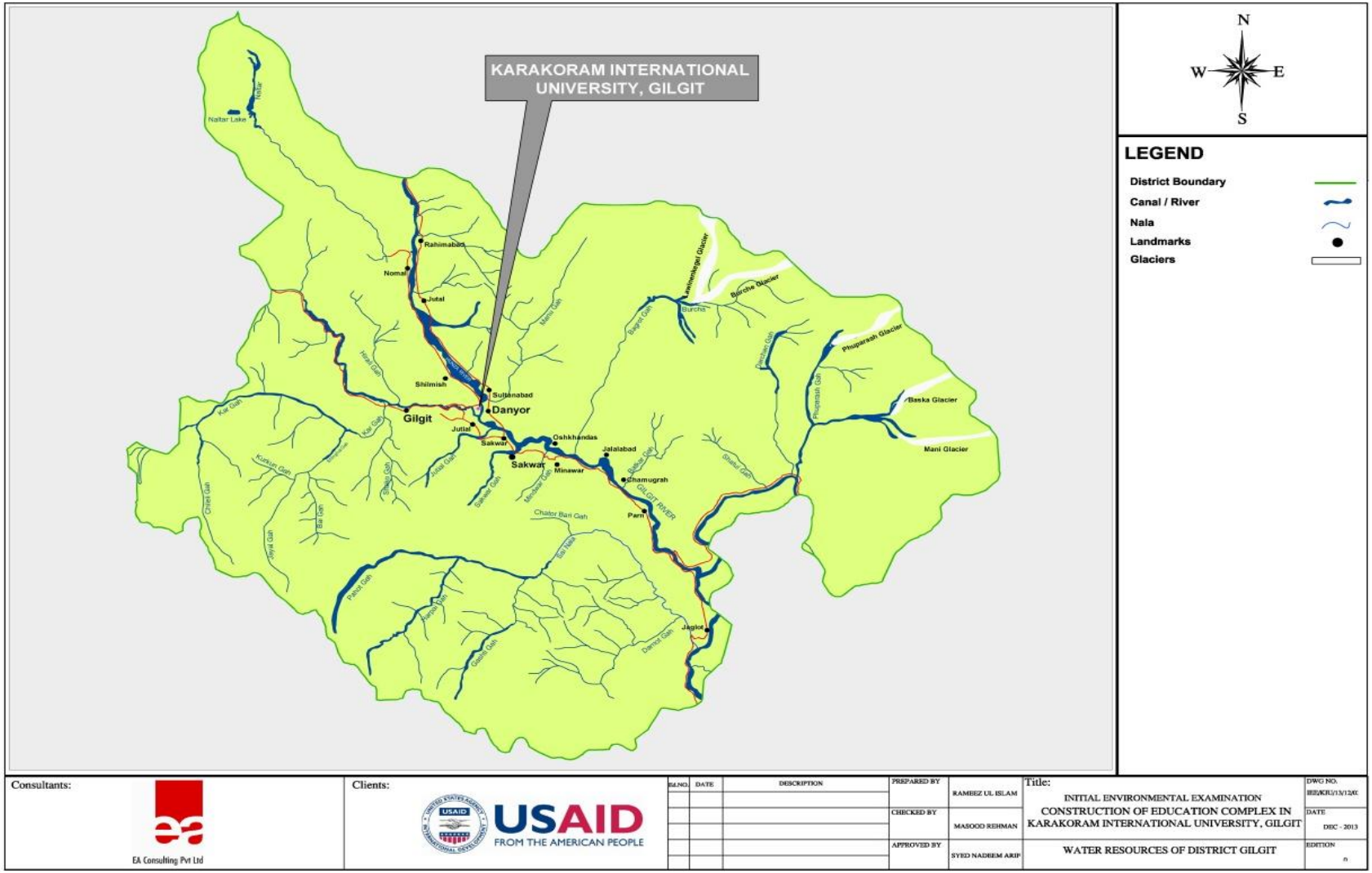


Fig 4.7: Water Resources of Gilgit District

4.2.5. Climate

The climatic conditions of Gilgit Baltistan vary widely owing mostly to the undulating landscape with mountainous elevations and deep valleys creating sharp disparities in weather. While the eastern part of the Himalayas has moist weather patterns, the westward regions of Karakoram and Hindu Kush has dry, mostly arid climate. The Himalayas play a role in halting the progress of seasonal monsoons, leaving the western bound area in their foot-hills with little precipitation for the better part of the year. The region is classified as a cold desert with low overall precipitations, low temperatures in winter months and heavy snowfall on elevations.

Gilgit itself being a valley nestled between elevated ranges is subjected to prolonged winters, lasting upto eight to nine months a year. Winter temperatures have been recorded as low as less than -10°C. On the other hand the summer season, although brief, may witness days of extreme temperatures, shooting up to 40°C on occasions. This extreme variation may result in landslides and avalanches. The mean monthly temperature values are given in Table 4.2.

Table 4.2: Mean Temperature Records of Gilgit District

S.No.	Month	Mean Temperature °C	
		Daily Minimum	Daily Maximum
1	January	-2.7	9.3
2	February	0.2	12
3	March	5.4	17.9
4	April	9.4	23.9
5	May	11.7	28.4
6	June	15.2	34.3
7	July	18.8	36.1
8	August	18.1	35.3
9	September	12.7	31.6
10	October	6.6	25.3
11	November	0.6	17.8
12	December	-2.4	11

Precipitation is meager in Gilgit, with the annual rainfallrarely exceeding 150mm-200 mm.As the elevation rises however, snowfall increases with the equal of 2000mm of snow recorded per year. Table 4.3 provides the monthly precipitation recorded for Gilgit city.

Table 4.3: Mean Monthly Precipitation of Gilgit District

S.No.	Month	Mean Total Rainfall (mm)
1	January	4
2	February	6
3	March	12.6
4	April	23
5	May	25.3

Table 4.3: Mean Monthly Precipitation of Gilgit District		
S.No.	**Month**	**Mean Total Rainfall (mm)**
6	June	6.1
7	July	15.6
8	August	15.5
9	September	6.5
10	October	8.4
11	November	1.8
12	December	4.1

Fig 4.8: Landscape of Project Site

Global climate change has caused elevated temperatures which cause glacial deposits to recede, with melt volumes increasing. This can create a two-fold danger. In the short term, the higher volumes of melt water due to higher summer temperatures may threaten downstream regions which include nearly the entire Indus river basin, with floods. Secondly in the longer term, the reduced glacial deposits will imply lesser natural storage of water, as these glaciers take centuries to accumulate.

Fig 4.9: View of Gilgit River

4.2.6. Air Quality

Gilgit's comparatively small size, less population and its remote location between mountains affords it an overall suitable climate. General air conditions of the Gilgit area are classified as good and well within international air quality parameters.

The people of Gilgit rely primarily on wood combustion for heating and cooking. This creates combustion byproducts i.e. smoke and soot, which are dispersed into the atmosphere. The combustion byproducts may contain up to a number of toxic pollutants including sulfur dioxide, nitrogen oxides, aldehydes, dioxin, carbon monoxide, and aromatic hydrocarbons. Increasing population has led to an increase in vehicular traffic on the roads, leading to higher volumes of emissions. Higher population also places a demand for new housing and development works such as roads, the construction of which creates sizable pollutants in the form of dust and particulates. Table 4.4 depicts the ambient air quality of the project area in order to gauge existing site conditions.

Table 4.4: Details the Results of Ambient Air Quality Monitoring

TEST REPORT AMBIENT AIR QUALITY												
Date	**Time / Duration**	**Testing Parameters**	***NEQS Limits**	**Units**	**Readings. Avg / hrs.**							
					L1	**L2**	**L3**	**L4**	**L5**	**L6**	**L7**	**L8**
31/10/2013	11:00am To 16:00 pm	CO	10	mg/m^3	1.4	1.2	1.0	1.1	0.7	0.6	1.0	1.1
		NO	40	$\mu g/m^3$	8.8	9.5	10.2	7.6	6.8	5.4	4.9	5.2

Table 4.4: Details the Results of Ambient Air Quality Monitoring												
TEST REPORT AMBIENT AIR QUALITY												
Date	**Time / Duration**	**Testing Parameters**	***NEQS Limits**	**Units**	**Readings. Avg / hrs.**							
					L1	**L2**	**L3**	**L4**	**L5**	**L6**	**L7**	**L8**
		NO_2	80	$\mu g/m^3$	14.8	13.2	13.8	12.3	10.3	11.4	12.6	14.1
		SO_2	120	$\mu g/m^3$	1.1	0.8	0.2	0.0	BDL	0.2	BDL	0.1
		PM10	150	$\mu g/m^3$	98	76	63	57	71	49	55	62
		$PM_{2.5}$	35	$\mu g/m^3$	12.5	11.3	13.7	10.2	9.8	8.7	7.6	6.9
		SPM	500	$\mu g/m^3$	137	144	123	98	84	72	62	88
		Lead (pb)	1.5	$\mu g/m^3$	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Results of air quality monitoring conducted by EMC												

Left unchecked, all these emissions contribute to an increase in the overall deterioration of the ambient air. This is exacerbated by Gilgit's high altitude which renders inhabitants vulnerable to aerial pollutants like carbon monoxide, leading to ailments such as respiratory infections, bronchitis and lung cancer. The Department of Health reports a prevalence of respiratory ailment related casualties in the Gilgit Baltistan region. Sound planning and mitigation is required to contain the emissions from all such anthropogenic activities and to enhance the natural ambient air quality of the area. Noise monitoring has been conducted on site, the results of which are presented in Table 4.5.

Table 4.5: Noise Monitoring Results				
S. No.	Sampling Time/Duration	*NEQS Limits : 50dB(A) Leq *Category of Area / Zone - Silence Zone (D)		
		Sample Location	Noise Level Readings. Avg / hrs.	Remarks
1	11:0:0Am To 16:0:0Pm	L1	45.0	
2		L2	47.0	
3		L3	48.0	
4		L4	50.0	
5		L5	52.0	higher
6		L6	46.0	
7		L7	49.2	
8		L8	51.0	higher
Results of noise monitoring conducted by EMC				

Fig 4.10: Panoramic view of Project Area's surroundings

4.3 Ecological Profile

4.3.1. Fauna

Faunal assemblages found within the district and the project area is described under separate headings based on biological classes.

4.3.1.1. Mammals

Previous studies have indicated the presence of 54 species of mammals in the Gilgit-Baltistan region. Although a majority of them are found in areas of the province other than Gilgit district, a brief discussion regarding their prevalence is paramount given their rich diversity and their status as vulnerable species. A number of large mammal species inhabit the region, chief amongst them the fabled Snow Leopard, the Himalayan Brown Bear, the Marco polo Sheep, the Flare-horned Markhor, the Ladakh Urial and the Himalayan Lynx. These species require large ranges and as such their habitats are continuously under threat of encroachment by expanding human population centers and villages, placing a burden on their numbers.

Table 4.6: List of Mammalian Species in Gilgit Baltistan			
S. No.	**Scientific Name**	**Common Name**	**Distribution in NA**
1	Canis lupus	Indian wolf	Gilgit, Upper Hunza and Baltistan regions
2	Capra falconeri	Flare-horned markhor	Randu Valley in Baltistan, lower Astore, Tangir, and Gilgit region
3	Felis lynx	Himalayan lynx	Associated with alpine slopes above the tree line in both Gilgit and Balistan regions
4	Hylopetes cinereus	Woolly flying squirrel	Upper Diamir District, Sai Nullah, lower Astore
5	Moschus chrysogaster	Musk deer	Lower Hunza, Naltar, Astore region, lower Baltistan region; associated with birch and juniper scrub
6	Ovis ammon poli	Marco Polo sheep	Killick and Mintaka areas adjacent to KNP
7	Ovis vignei vignei	Ladakh urial	Thalay Valley, Nar Gorro, Sarfranga and Karrpochu mountains in Baltistan
8	Pseudois nayaur	Blue sheep	Shimshal Valley, Sokhitrabad Nullah near KNP, Baltoro Glacier Valley and Braldu Valley in Baltistan region
9	Uncia uncia	Snow leopard	Occurs throughout NA, with strongholds in Baltistan and Hunza regions
10	Ursus arctos	Himalayan brown bear	Fragmented populations associated with alpine meadows and alpine zones; main strongholds include the Deosai Plateau, KNP, Astore and the areas around Nanga Parbat
11	Ursus thibetanus	Himalayan black bear	Astore, Chilas, Darel and Tangir areas of Diamir District

4.3.1.2. Birds

The geographic location of the Gilgit Baltistan region makes it an ideal habitat for a large number of avifaunal i.e. bird species. Nestled between the hinterlands of Central Asia and the plains of South Asia, separated by the Himalayan and Karakoram mountain ranges, the region serves as transitory and breeding area for many bird species. Although very little research has been conducted into avifaunal diversity, owing to the remoteness of the region, it is estimated that 230 species of birds can be found throughout the mountainous terrain of Gilgit-Baltistan. Prime locations for bird diversity include Nalter Wildlife sanctuary in Nalter valley, Khunjerab National Park in Gojal Valley, Hunza and the Deosai plains in Baltistan. Table 4.7 provides a list of the avifaunal diversity reported in the region based on prior studies.

Table 4.7: List of Avifaunal Species in Gilgit Baltistan		
S.No.	**Scientific Name**	**Common Name**
1	Aythya nyroca	Ferruginous duck
2	Bradypterus major	Long-billed bush warbler
3	Cophophorus impejanus	Himalayan monal pheasant
4	Falco naummani	Lesser kestrel
5	Ficedula subrubra	Kashmir flycatcher
6	Lerwa lerwa	Snow partridge
7	Phylloscopus tytleri	Tytler's warbler
8	Rynchops albicollis	Indian skimmer
9	Vanellus gregarius	Sociable lapwing

4.3.1.3. Freshwater Fish

Owing to glacial melt and thawing snow, there are numerous streams and alpine lakes in Gilgit-Baltistan. The fish diversity however is relatively limited in these waters. A numbers of factor play their part in this regard, such as low water temperatures, high turbidity from erosion spills into the waters, low benthic productivity, and seasonally high flow speeds of water. Nevertheless the assortment of fish species that exists is an integral part of the region's biodiversity. A list of reported ichtyfaunal species i,e, fishes is provided in Table 4.8.

Table 4.8: List of Ichthyofaunal Species recorded in Gilgit Baltistan		
S.No.	**Species Name**	**Common Name**
1	Oncorhynchus mykiss	Rainbow trout
2	Salmo trutta fario	Brown trout
3	Cyprinus carpio	Gulfam
5	Ptychobarbus conirostris	Sianian
9	Schizothorax esocinus	Chakhat
10	Schizothorax longipinnis	Damnian
11	Schizothorax nasus	Chochan
12	Schizothorax plagiostomus	Gahi Cheemo
13	Schizothorax skarduensis	Khaduk
15	Glyptostrnum reticulatum	Snow trout
17	Triplophysa gracilius	Jungli chemo
19	Triplophysa stoliczkai	Konozobo
20	Triplophysa tenuicauda	Jungli chemo

Fig 4.11: Status of vegetation near the project site

4.3.2. Flora

Gilgit-Baltistan hosts a rich floral setting, although the exact number and types of species found in the region is yet to be thoroughly studied and catalogued. The abundance in the region's floral diversity can be attributed to the rapid variations in elevations, terrain features and water availability. This variation creates distinct micro-environments which nourish different species of plants, shrubbery and trees.

As a contrast, the project site itself exhibits very little in terms of floral vegetation, although lush vegetation could be spotted just across the bank of River Hunza, in Daniyor which is a predominantly agricultural part of Gilgit city. Site vegetation is limited to scattered presence of small bushes and shrubs and no trees were observed within the area surveyed for the proposed building construction.

Fig 4.12: Flora in macroenvironment

4.3.3. Protected Areas

Because of the region's unique significance of scenic areas and diverse habitats, a number of Protected Areas have been established by the Government. In Gilgit district there are 2 wildlife sanctuaries and 3 game reserves. The Central Karakorum National Park is purported to be Pakistan's largest national park, and a part of Gilgit district on the north eastern edge lies within it. None of these protected areas are in proximity to the project area however and it is inferred that the activities from the proposed project will no impact these areas in any way.

Table 4.9: Protected Areas in District Gilgit

S.No.	Name	District	Area (Sq. Km)
	National Parks		
1	Central Karakoram	Gilgit (Partial)	17,295
	Wildlife Sanctuaries		
2	Kargah	Gilgit	709
3	Naltar	Gilgit	435
	Game Reserves		
4	Chassi Baushdar	Gilgit	593
5	Danyor Nullah	Gilgit	709
6	Kilikmintaka	Gilgit	528

As per the conservation laws, wildlife sanctuaries impose greater protection than national parks, while game reserves afford no protection to habitat but merely regulate hunting.

4.4 Socio-Economic Baseline

4.4.1. Overview of Gilgit District

As per the latest administrative revisions, Gilgit-Baltistan consists of seven districts, with further tehsil subdivisions, these being: into seven districts namely Gilgit, Ghezir, Diamar, Astore, Baltistan, Hunza Nagar and Ghanche.

Table 4.10: Administrative areas of Gilgit-Baltistan

S. No.	District	Tehsils	S. No.	District	Tehsils
1	Ghanche	Khaplu	6	Skardu	Skardu
		Mashabrum			Rondu
2	Gilgit	Gilgit	7	Hunza Nagar	Gojal
3	Ghizar	Punial			Aliabad
		Ishkoman			Nagar-I
		Gupis			Nagar-II
		Yasin			
4	Astore	Astore			
5	Diamir	Chilas			
		Darel Tangir			

Gilgit is the administrative capital of Gilgit Baltistan. The district is bordered on the north by Hunza Nagar district, Ghizer district lies to the east, Diamer district to the south and Skardu lies in its east. Gilgit is located at an area of 72,496 km in the North east of Pakistan situated within the massive Karakorum Range.Gilgit city, the district capital, is nestled in a valley (of the Karakorum Mountains, surrounded by high peaks ranging from 1600 m to 2000m on either side. The valley ranges from the top at Shandur Pass in the north-west. The valley culminates at the confluence of Gilgit River and Hunza River, a place locally known as Dou Pani (regionally translate as Two Waters or Two Rivers). Karakoram International University lies on the promontory of this confluence and contains the project site.

Fig 4.13: Gilgit City

4.4.2. Demographic Profile

The last sanctioned census of Pakistan (in 1998) the population of Gilgit Baltistan (the known as Northern Areas) at884,000 whereas current projected population of the province is 1,156,890. In the same census the population of Gilgit District was reported as approximately243,324 and projected population for 2011 being 342,800. It is estimated that approximately 30% of the Gilgit Baltistan population resides in this district, owing to its central location and position as a regional economic hub, with an annual population growth rate of the district being 2.74%.

4.4.3. Education Profile

Gilgit has relatively the highest literacy rate compared to rest of the region. There are a number of primary education imparting institutions in the district. It is estimated that 64% of children of school going age are currently admitted in schools, whereas the same figure for the province of Punjab is 52% and that of neighboring Khyber Pakhtunkhwa is 48%. Female literacy rate is 36% as opposed to male literacy rate of 64%. Karakoram International University has been established as a degree imparting institution catering to a vast diaspora of students from all over the region. In this regard the role of international funding bodies has been substantial in developing education focused programs in the region which have benefited the area greatly.


Fig 4.14: Stakeholder Consultation & Site Survey

4.4.4. Health Profile

In Gilgit Baltistan, the public health sector provides for a number of health facilities distributed over different levels of administrative hierarchy. Ascending from bottom to top, there are 15 Basic Health Units (BHU), 2 Rural Health Centers (RHC), 27 Tehsil head Quarters (THQ) Hospitals and 5District Headquarters Hospitals.

Table 4.11: Health Facilities in Gilgit-Baltistan

S. No.	Type of Health Facility	Abb.	No.
1	District Headquarters Hospital	DHQH	5
2	Tehsil Headquarters Hospital	THQ	27
3	Rural Health Centers	RHC	2
4	Basic Health Units	BHU	15

In a recent survey conducted by a funding body in 2012, it was reported that at the Secondary Health Care level, which includes all 5 DHQs and 27 THQs in Gilgit Baltistan, crucial medical facilities were available and in fair condition. Facilities include Labor rooms, OPDs, Blood Bank, Clinical labs, Operation theatres, Pediatrics. Facilities which were found lacking atsecondary healthcare level were on-site residences for critical health support staff such as Lab technicians, Blood bank technicians, Nurses, Anesthetists and Gynecologists. Residences for the above would ensure 24 hour access to these critical services.

Another major hurdle in access to healthcare is the remoteness of settlements and lack of transportation links. The transportation links which do exist are subject to calamities such as landslides and heavy snowfall andthus limit the prospect of patients reaching proper health care facilities which may be in proximity.

Common ailments which have been reported throughout the region are respiratory maladies, cholera and dermal allergies. Likely causes include contaminated drinking water supplies due to adulteration with solid wastes. The region reports a large volume of Maternal Mortality and Morbidity rates amongst women. This can be attributed to lack of women health issues awareness in the populace, an issue which is being covered at lengths by a number of NGOs such as Aga Khan Development Network, UNICEF etc.

4.4.5. Water Supply and Sanitation Profile

The populace of Gilgit city depends on two types of water resources for daily usage; water channels fed by mountain streams and in some cases wells dug to source underground water. The part of town south of the river Gilgit, which includes the city center, Airport, Nagral colony and Jutial etc. is served by fiveseparate drinking water supply points. The water in these is fed by two water channels. The part of the city on the northern bank of river gilgit which includes Mujahid Colony, City courts and the KIU campus itself, rely on piped water fed from the river. In some parts of the city, ground water is also purportedly used, via water wells.

Water quality sampling of drinking water in the project area of Karakoram University yielded the following results:

Table 4.12: Water Quality Test Results

ANALYTICAL TEST REPORT							
S. No.	Parameters to be Analyzed	Standard	Units	Results			Test Method
		NEQS		Sample # 1 Time: 2:00pm	Sample # 2 Time: 2:10pm	Sample # 3 Time: 2:20pm	
1	pH value	6.5-8.5	-	7.23	7.24	7.29	USEPA 150.1
2	Total Dissolved Solids(TDS)	<1000	mg/L	495.9	496	499	Hach 8160
3	Total Hardness (as $CaCO_3$)	<500	mg/L	250	250	251	Hach 8213
4	Turbidity	<5	NTU	1.00	1.0	1.0	-
5	Nitrate(NO_3)	≤50	mg/L	1.5	1.54	1.49	Hach 8039
6	Nitrite(NO_2)	≤3	mg/L	1.9	1.8	1.9	Hach 8153
7	Phenolic compounds (as phenol)	<0.002	mg/L	BDL	BDL	BDL	USEPA 420.1
8	Chloride(as Cl^-)	<250	mg/L	120	121	120.9	Hach 8206
9	Flouride(as F^-)	≤1.5	mg/L	1.0	1.2	1.2	USEPA 340.1
10	Residual Chlorine	0.5-1.5	mg/L	0.1	0.9	0.8	Hach 8167
11	Total Coliform	0cfu/100ml	mg/L	0	0	0	-
12	Fecal Coliform	0cfu/100ml	cfu	0	0	0	-
13	Escherichia Colim (E-Coli)	0cfu/100ml	cfu	0	0	0	-
BDL=Below Detection Limit							

Wastewater

Gilgit city like the rest of Gilgit Baltistan lacks a dedicated sewerage and wastewater drainage system. Open surface drains laid next to households collect wastewater and discharge directly into nearby water streams or river, with no intermittent effluent treatment before discharge. Wastewater quality sampling in the project area yielded the results depicted in Table 4.13. Use of soak pits is also observed, which have been reported as unlined and therefore contribute to ground water pollution. Open field disposal of human waste in also prevalent, which in some cases contributes to excrement being used as manure for use in agriculture.

Table 4.13: Wastewater quality of Project Area

ANALYTICAL TEST REPORT								
S.NO.	Parameters to be Analyzed	Standard	Units	Results				Test Method
		NEQS		Sample # 1 Time: 3:20pm	Sample # 2 Time: 3:30pm	Sample # 3 Time: 3:40pm	Sample# 4 Time: 3:50pm	
1	pH value	6-9	-	7.9	7.8	7.91	7.9	USEPA 150.1
2	Biochemical oxygen Demand$(BOD)_5$ at 20^0C	80	mg/L	60	60.2	60.9	60.4	Hach method
3	Chemical Oxygen Demand(COD)	150	mg/L	130	130.9	130.4	130.2	Hach 8000
4	Total Suspended Solids(TSS)	200	mg/L	19	20	18	19	Hach 8006
5	Total Dissolved Solids(TDS)	3500	mg/L	721	721.4	722	721.6	Hach 8160

Storm water drains where provided by the NAPWD, or in most cases built by inhabitants on self-help basis, are often littered with garbage disposal and thus choked. This drainage water is used for irrigation of fields as well at variouslocations whilst, surplus water is naturally disposed of in nearby rivers or streams– thus polluting the fresh water bodies.

4.4.6. Solid Waste Management Profile

A basic system of Municipal Solid Waste (MSW) collection exists in Gilgit city whereby garbage is dumped in trolleys, mostly located around the city center. These trolleys are transferred via tractors to a dumping site, located near the KIU campus. In addition, waste bins have been provided around the city, focused on the bazaar areas.


Fig 4.15: Solid waste disposal area on the bank of River Gilgit

A lack of consumer-oriented and austere life style amongst the local population has contributed to lower anticipated volumes of solid waste. In a previous study it was estimated that daily solid waste generated amounts to 0.4 kg per person. In spite of this the facilities of solid waste disposal are very limited. Households located near flowing water bodies have been known to dump their wastes directly into the water. In fact the two water supply channels which provide a majority of Gilgit city with drinking water are littered with garbage, presenting a clear and present threat to the health of the populace.

4.4.7. Energy Profile

A. Electricity

1. Supply

NAPWD figures estimate that 42% of households in Gilgit Baltistan have access to electrical power. The commercial establishments such as markets have access to electricity, although power cuts are common and were observed during baseline survey, especially in the evening hours. The continuous provision of electric power however is dependent on the seasons; in spite of higher demands for electric heating, the supply is diminished due to reduced flows in waterways. Conversely in summers with greater flows, the demand increases because of requirement or air conditioning and running of fans to combat searing temperatures especially in low-lying areas and valleys.

Seasonal population movements also affect the overall demand for energy. During the winter, there is a movement of people from the high altitude areas to the lower valleys. During the summer, there is a significant influx of tourists to the region which requires additional power for appliances and cooling.

2. Generation

A large portion of electric power generation in Gilgit-Baltistan is implemented through hydro power stations; which use the moving water bodies i.e rivers and streams to move turbines, generating electric power. Gilgit city in particular is fed through 11 kilovolt transmission lines. The power feeders are supplied by a network of hydel power plants and some thermal plants as well. The region is independent of the national power grid and sustains itself through its own power generation.

Facts published by NAPWD indicate that overall there are 81 hydropower stations in Gilgit-Baltistan, with a total installed capacity of 46 megawatts. NAPWD also reports that for Gilgit, the power demand is estimated as 24 megawatts, whereas the current

hydropower capacity provides for 8 megawatts. The supply decreases further in winter due to reduced flows in the streams, dropping to a mere 2.7 megawatts. Naturally this causes regular and frequent power cuts in the city.

Firewood provides the primary fuel source for households in Gilgit, and is used for cooking food as well as heating homes in cold weather. Firewood is sourced from tree plantations in Gilgit, as well as imported from Punjab and other parts of the country. It is estimated that an average household consumes 755 kilograms of firewood in summer and 1172 kilograms in winters. Other energy sources include dung cakes sourced from livestock and kerosene oil used for lamps in households. In some parts of the district diesel powered generators are also used, especially in commercial establishments, and were observed in the NLI market during the baseline survey.

In Gilgit, surface water is abundant and there is good potential of hydropower generation.

4.4.8. Transportation Profile

The Karakoram Highway (KKH) connects the province of Gilgi-Baltistan to rest of the country, and extends north into China. Gilgit city is situated 10 kilometers off the KKH. A number of bus services ply the route from Islamabad to Gilgit via KKH, bring passengers to their destinations in Gilgit and then further up into the higher regions of Skardu and Hunza.

A popular alternate to road travel is by air. Gilgit city has a small but regionally crucial domestic airport situated in the east of the city.Pakistan International Airlines (PIA) operates daily flights on the Islamabad-Gilgit route. Travel by air takes a approximately 45–50 minutes .Gilgit airport has a short runway, which can only be used by small aircraft, in this case the ATR aircraft. Due to weather conditions, there can be significant delays in the flights, as the route is precarious and goes through mountains and over the river.

Fig 4.16 (L) Gilgit Airport - (R) ATR Aircraft

As the city is bifurcated into north and southern portions by the Gilgit river, there are currently six crossover bridges for commute between the two. Whereas the eastern part of the city are connected to the remainder via Shaheed-e-Millat road. University road along which the KIU is locate, runs parallel to the Gilgit River all the way to Nomal up north. The urban settlement has metal and un-metal roads ranging from 15-70 Kilometers of paved roads consisting of radial roads, distributaries links and access roads.

Fig 4.17 Connecting Bridge over Gilgit River

4.4.9. Economy and Employment Profile

Throughout Gilgit, and commonly all over Gilgit-Baltistan, the prevalent occupations of people are agriculture, services and trade. Mining is also practiced wherever there are means and methods available. Since the opening of the Karakoram Highway (KKH) in 1980s there has been a sharp increase in trading, as material from across the border in China is brought in droves and sold at local markets or stored and transported, bound for major cities in the rest of the country. The trade has also invigorated the hospitality and transport sectors as various inns and terminals have sprouted since then to cater the traders and the merchants.

Fig 4.18 Markets located at the city center; NLI Market

A large chunk of Gilgit's population engages in agriculture and ascribes to a rural lifestyle. In Gilgit city itself, the area of Daniyor, located across the River Hunza from KIU Campus is well known for its orchards and agrarian fields.Common produce crops include vegetables, wheat, barley,maize, potatoes and fruits. Because of the high elevations with much of the mountains rising above the tree line, very little area is able to sustain vegetative agricultural practice. Livestock are another significant avenue of income for locals, which

were observed in proximity of the site, as herders moved their flocks from nearby hills to pastures further down the Gilgit valley.

Fig 4.19: Livestock Shepherd & Flock, north of university campus.

Tourism has also played an important part in the region's commerce, although the venture sees dwindling prospects in recent years. Gilgit city being the staging point for various such expeditions towards the peaks for mountaineers, as well as the valleys further north, has benefited much from tourism and continues to do so, albeit in a diminishing way.

Fig 4.20: Pakistan Tourism Development Corporation (PTDC) Motel in Gilgit city

4.4.10. Households and Settlements

Being a mountainous regions, most of the human habitations are found in the form of villages and small towns, nestled in valleys. Due to lack of proper planning regulations, the housings in these settlements are spread out in non-uniform and scattered pattern.Typical household count ranges from 1000 to 3000 households. Stones, Earthen bricks and Wood are the most ubiquitous construction materials used, although their individual prevalence may vary from area to area depending on availability and cost.

5. POTENTIAL ENVIRONMENTAL IMPACT ASSESSMENT

This Chapter presents the screening of potential environmental impacts likely to arise due to the construction of the Education Complex at Karakoram International University of (KIU). Using the standard guidelines as well as professional judgment, it evaluates the positive and negative impact of emissions and waste discharges on the ambient environment, air shed, water shed and the living environment around project site.

The screening process, besides identifying significant environmental impacts and the existence of residual impacts, suggests mitigation measures and construction management practices which, once adopted, will reduce and/or compensate for the impacts.

5.1. Screening of Alternatives

The alternatives available are:

1. No Action alternative, continuation with the existing condition
2. Project alternative; undertaking proposed development

5.1.1. No Project Alternative

The project has been proposed in the wake of KIU's increasing need to improve the quality of teaching and learning by constructing new facilities of education in the university. For this purpose new educational complex in the university will be constructed which will enable the university to start the two-year Associates Degree and four-year Bachelors of Education programs.

In this scenario, No Project alternative is not a viable option for the University since it does not allow for provision of required educational facilities which will be needed in future to expand the infrastructural capacity of KIU.

5.1.2. Project Alternative

- The proposed development activities would increase the learning facilities in the university by establishing another department where state-of-the-art learning facilities would be provided to the students.
- The development would refurbish the facility by adding more features and amenities to the existing university infrastructure.
- There is ample space available at the proposed site. This can be utilized to house laborers and store equipment and safely stockpile construction materials in a controlled environment.
- Proximity to the existing University facilities means ready access to water, power and other necessities to enable rapid construction of the complex.

Screening of alternatives finds three possible location alternatives for the project which are discussed subsequently.

5.1.2.1 Alternative 1

Alternative 1 is the site located at far edge of the University. This site (shown in figure 5.1) is not considered a preferred alternative for the project due to following weaknesses:

- The site is currently an undeveloped area in terms of infrastructure; arrangement for provision of utilities like water, power and natural gas supplies will have to be made since at present the site does not have proper connections for these utilities.
- Undertaking the project at this location will lead to disturbance of the currently undisturbed land area. On the contrary, location alternative 3 (preferred alternative) is already developed land area (disturbed land in the context of environment).
- This site is located outside the university boundary and at distance from other existing units/departments thus also associates a security hazard.

5.1.2.2 Alternative 2

Alternative 2 is the project site located near the River bank as shown in the map (figure 5.1). Selection of this site for the project is again not a feasible option for the following reasons:

- Similar to Alternative 1, the site is also an undeveloped land area where site development for construction would be required including surface preparation work.
- Utilities connection at this location will have to be arranged.
- The site is located close to River which underlays a future stability hazard for the building.
- The site is also located outside the University boundary associating security concerns.

5.1.2.3 Alternative 3 (Preferred Alternative)

The preferred location for the project is the site within the boundaries of the University adjacent to the KIU's Administration Block. The site has been selected since it addresses all issues that were associated with alternatives 1 and 2 including:

- Availability of utilities connections,
- Location within the KIU boundary and
- Already developed (disturbed area in context of environment) site for future construction work.

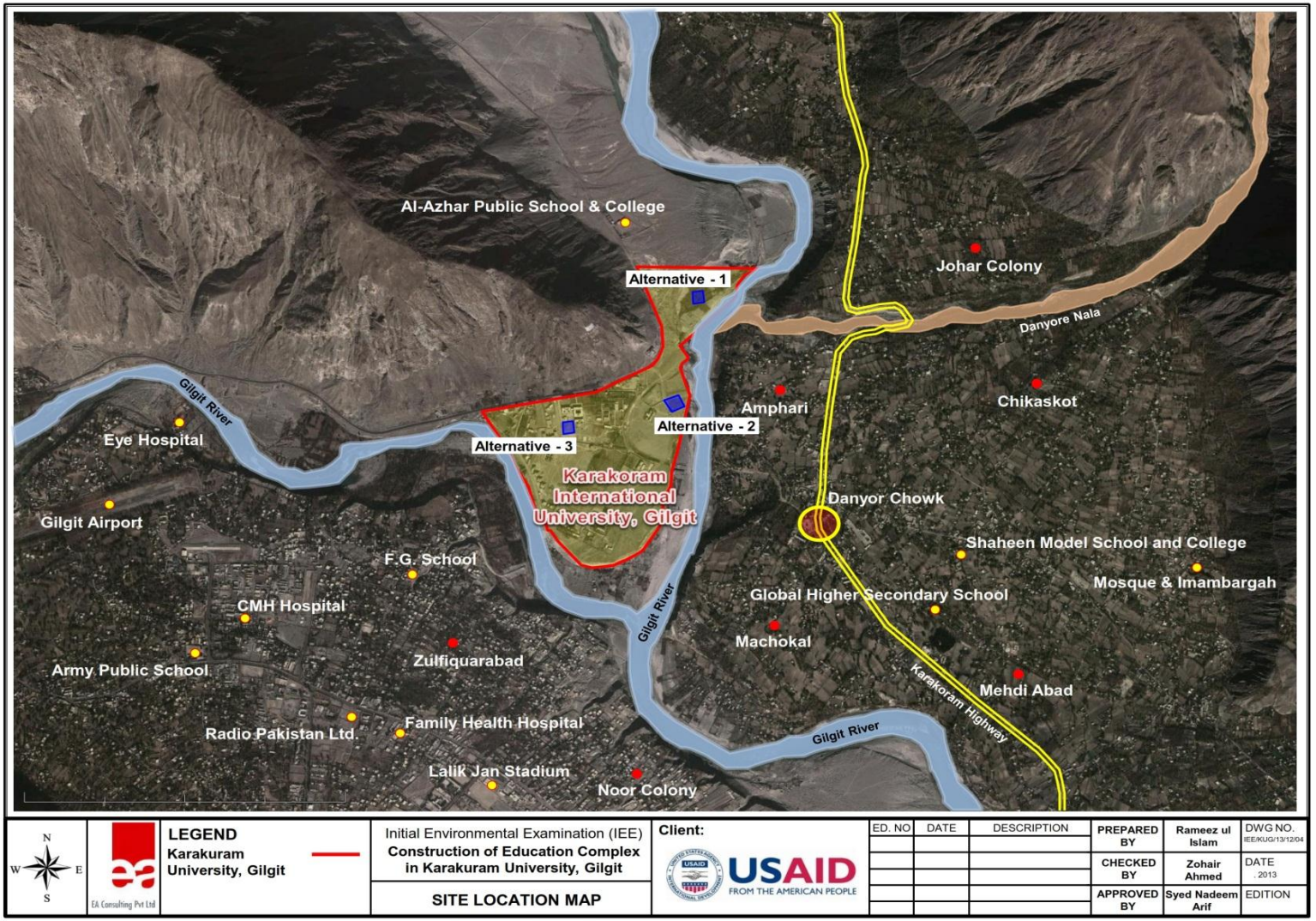


Fig 5.1: Location of Alternatives

5.2. Screening Methodology

Impact assessment was based on preparation of checklist of impacts, likelihood and severity of each impact. The checklist was later used for detail description of each impact.

The methodology for assessment of impacts included:

- Review of General Guidelines and Standard Conditions for Small Scale Construction;
- Identification of potential environmental impacts by conducting survey and using checklists;
- Assessment of the intensity and significance of potential impacts by carrying out environmental analysis;
- Defining mitigation measures to reduce impacts to as low as practicable;
- Predicting any residual impacts, including all long-term and short-term, direct and indirect, and beneficial and adverse impacts;
- Guidelines and checklists were used for the verification of permissible levels of environmental parameters.

The environmental aspects of the project were also identified by situation analysis related to present land use, damage to vegetation, noise and other forms of nuisance during construction at site, air pollution due to fugitive dust emission and operation of equipment during construction, air pollution due to burning of wastes.

5.3. Screening of Potential Environmental Impacts at Design Stage

Impacts anticipated during the design phase of the proposed project include those from pre-construction activities including transportation of construction material and machinery, campsite establishment, land clearing and human activity. All these activities would entail consideration of following environmental issues/impacts during the design phase:

- Air Emissions particularly dust
- Soil erosion
- Impact on landform/ topography
- Noise
- Landscape impact

1. Impact Assessment

The microenvironment i.e. the 25,000 square feet project site within the university boundary is presently an open land area having vegetation in the form of grass, small shrubs and limited number of trees at the edges of the site. The site is separated from the nearby living area by the boundary wall of the university and therefore all activities are confined with the university boundary.

Project site is the property of KIU and implementation of the proposed project does not involve any land acquisition. Since the project site is within the boundaries of KIU, there is

also no form of damage to any business activity whatsoever going on in the project area as well as to any residential localities in the project area.

2. Soil Erosion and Air Emissions (Dust and Vehicular Emissions)

Air emissions are likely to impact the air quality of the microenvironment during transportation of construction materials and construction machinery and during site preparation work (excavation, earth work, and foundation work). Since the site is unpaved, movement across site can lead to significant dust emissions thereby affecting the staff onsite and reducing the aesthetic quality of site.

Mitigation Measures

- The drivers will be advised to observe site limits during mobilization onsite.
- Frequently used unpaved tracks will be made moist by water sprinkling to reduce dust emissions.
- Construction material will be stored under coverings to prevent dust emissions.
- Idle equipment will be turned off to prevent excessive emissions. Similarly engines will be turned off when vehicle is not in use.

3. Landform

Microenvironment of the project exhibits consistent landform type with little to no topographic variations across the site although the macroenvironment has varied elevation comprising features such as hills and mountains with significant altitude.

Site preparation work onsite for construction of new campus within KIU would not affect the existing landform type of the project area since the surface is leveled land area and would only require removal of scarce vegetation for further earthwork and excavation. Mitigation measures in this regard are therefore not required.

4. Noise

Noise can be an issue during transportation of construction material and machinery (pre-construction phase) and also during campsite activities from increased human activity. The only receptors of this increased noise levels would be the staff and students working in the existing departments of KIU or passing close to the project site. The impact is anticipated to be of minor nature since the increase in the current noise levels of project site will be insignificant and perceivable only to those working on the site.

5. Landscape Impact

Mobilization of construction machinery and equipment onsite as well as campsite activities has the tendency to degrade the aesthetic value of project site which currently present a beautiful view. The impact of design phase and construction phase activities will be short term and will last only till the completion of construction work on the project site.

Mitigation measures

Construction site can be fenced to confine the activities within site and block the view from those passing by the site. This will control the negative visual impact of site activities on the surroundings.

5.4. Screening of Potential Environmental Impacts in Construction Stage

Development work at KIU involves construction of a ground plus 2 story building to be used as an Educational Complex. The construction work entails activities commonly anticipated for a general construction work such as site clearing, leveling of surface, excavation, grading, material transfer, concrete manufacturing, laying foundations, erection of physical structures etc. Since the scope of construction is small, these activities would also be of small scale and magnitude. However, the impacts can be effectively mitigated to reduce their strength. Noise, fugitive dust emissions due to construction and transportation, generation of waste effluents and improper solid waste dumping are the sources of nuisance for the local community.

Screening of impacts from the above said construction activities lead to identification of following environmental constraints;

- Impact on ambient air quality through dust and emissions from fuel combustion
- Noise Effects
- Ground Vibration
- Changes in landscape pattern
- Local disturbance
- Generation of wastewater
- Solid waste
- Health safety hazards
- Soil contamination

5.4.1 Air Emissions

Air emissions are released into the ambient environment from activities that generate dust or exhaust emissions such fuel combustion (Generators, food preparation at campsite), using diesel operated equipment, transport of material and surface leveling and excavation. Extent of emissions depends on the extent and duration of activities that generate dust or pollutants.

Construction machinery, diesel generators and project vehicles will release exhaust emissions, containing carbon monoxide (CO), sulphur dioxide (SO2), oxides of nitrogen (NOx), and particulate matter (PM), which can deteriorate the ambient air quality in the immediate vicinity of the project site. Furthermore, construction activities such as excavation, leveling, filling and vehicular movement on unpaved tracks may cause fugitive dust emissions.

Most significant impact of these emissions is the deterioration of air quality caused from release of dust and pollutant emissions. Workers and other community members inhaling the air can be seriously affected if they get to breath in this polluted air for long. Reduced visibility is another impact linked to dust emissions.

The expected air pollutants released during the construction and associated impacts include;

- Dust /Particulate matter
- Smoke/ Fume
- Lead

Mitigation Measures

- Cover construction materials and stockpiled soils if they are a source of fugitive dust.
- Cover storage piles at concrete batch plants if they are a source of fugitive dust.
- Keep soil moist while loading into dump trucks to minimize fugitive dust.
- Keep soil loads below the freeboard of the truck to minimize fugitive dust.
- Minimize drop heights when loaders dump soil into trucks.
- Tighten gate seals on dump trucks.
- Cover dump trucks before traveling on public roads.
- When possible, schedule construction activities during periods of low winds to reduce fugitive dust.
- Conduct any slash burning in compliance with open burning permit requirements.
- Enact fugitive dust and vehicle emission controls.
- Establish and enforce speed limits to reduce airborne fugitive dust.
- When feasible, shut down idling construction equipment.

5.4.2 Wastewater

Wastewater is generated during construction work as;

a. Construction runoff and drainage including dewatering operations

b. Runoff from general construction activities and

c. Sewage effluents

The wastewater can impact the quality of the receiving water body if it contains large quantities of suspended matter or pollutants such diesel or grease content. If discharge of wastewater is uncontrolled or is not properly routed, the construction site can get swampy and this may interfere with the construction work onsite.

Mitigation Measures

Mitigation measures for control of wastewater include;

- The use of sediment traps;

- The regular maintenance of on-site drainage schemes to remove accumulated sediment and prevent flooding and overflow.
- Temporary ditches should be provided to facilitate runoff discharge via silt retention facilities. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates.
- Ideally the construction should be programmed to minimize surface excavation and earth works during the rainy season (April to September).
- All exposed earth areas should be fully restored as soon as possible after earth works have been completed.
- Exposed slopes or stockpiles should be covered by tarpaulins or similar fabrics during rainstorms.
- Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.

5.4.3 Solid waste

Solid waste would generally comprise of empty containers of diesel oil, metal scrap, used filters, and discarded mechanical parts and solid waste. Domestic waste would be disposed at designate municipal solid waste site. Most of the containers, mechanical parts and discarded material would be sold to downstream recyclers and re-users.

1. Non-hazardous Waste

Non-hazardous waste includes mainly the construction waste generated as a result of land clearing activities along with construction work. Construction waste may include Concrete, wood, and asphalt (from roads and roofing shingles), Gypsum (the main component of drywall),metals, bricks, glass, and plastics, salvaged building components, such as plumbing fixtures, pieces of concrete, wood ends, nails and other ferrous products, casing materials, piping and wires among others.

Solid waste management and containment procedures as outlined in the national guidelines and standards should be adopted to properly dispose of construction waste.

Mitigation Measures

General recommendations for the management of non-hazardous waste specifically construction waste are as follows:

- Recycle or reclaim material where possible
- If recycling is not practical, waste must be disposed through an appropriate off-site disposal facility in an environmentally acceptable manner and in compliance with local laws and regulations
- A comprehensive waste disposal plan shall be developed to effectively manage these wastes in large quantities.

- The construction waste shall be sent for recycling like damaged pipes, left over steel, wooden and plastic pieces. The left over waste will then be taken away to the dumping sites for disposal.
- The construction material will be kept in a covered area, especially during the rainy season.
- The excavated soil will be re-used by adopting different methods, which will be used as a filling material for the construction of the Complex.
- Separately labeled waste containers for different types of waste will be deployed, in order to treat the waste depending on its type.
- The waste bins will be properly marked for each type of waste produced during the constructional activities.
- The project area will contain a marked sewage and litter facility to overcome the problem of unchecked dumping of waste.
- Use of asbestos containing materials is prohibited and shall be actively discouraged.
- Use of lead based paints is prohibited
- Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste.
- Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time.

2. Hazardous Waste

Hazardous materials exhibit flammability, corrosiveness, toxicity and therefore form a hazard to public health and well-being if not handled and disposed carefully, thus the moniker. The handling, storage, and transportation of hazardous waste should be managed properly to minimize the dangers associated with these materials. Hazardous waste should be handled according to the characteristics and source of the waste materials and in accordance with applicable local guidelines and regulatory procedures.

Mitigation Measures

Some useful waste management practices to deal with hazardous waste are described below:

- All hazardous material such as flammable materials, fuels etc. should be stored in clearly labeled containers and vessels.
- Storage and handling of hazardous materials should be in accordance with local regulations or international standards, and appropriate to their hazard characteristics.
- Storage facilities should be regularly inspected and to be leakage monitoring to be ensured.
- Curbs or drip pans should be provided under potential leak source (e.g. vessel and pumps) to contain any spillage of flammable liquids.

5.4.4 Noise

Noise is generated during construction work from;

- The use of construction equipment
- Movement of construction vehicles for material transport
- Human activity

Mitigation Measures

Few noise sources are difficult to control such as noisy processes or noisy equipment during construction. However applying standard practices during construction work can bring the impact to an acceptable level. Mitigation measures given below should be adopted and adhered to. Suitable mitigation practices are given below;

- Noisy activities should be preferably isolated from work areas and such activities should be carried out together; this reduces the overall impact of noise.
- Onsite concrete preparation should be avoided
- Workers should be instructed on the use of PPE if they need to work in noisy areas
- Only the equipment in good condition (well-tuned) should be used for construction work
- Activities should be scheduled at day time so that the neighboring community or people are not affected
- Canopies to be used for equipment when noise is unavoidable

5.4.5 Occupational Health and Safety

1. Over-exertion

Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction site. It is important that workers know the right working practices and postures so that the unforeseen could be avoided.

Mitigation Measures

- Workers should be trained with lifting and materials handling techniques before the construction of the project, including the placement of weight limits above which mechanical supports or two-person lifts are necessary.
- Work site layout should be planned to minimize the need for manual transfer of heavy loads.
- Tools should be selected and work stations should be designed to reduce force requirements and holding times, which promote improved postures, including, where applicable, user adjustable work stations.
- Administrative controls, such as job rotations and rest or stretch breaks should be implemented into the work processes.

2. Slips and Falls

Slips and falls on the same elevation associated with poor housekeeping and safety practices, such as excessive material, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground, are also among the most frequent cause of lost time accidents at construction site.

Mitigation Measures

Recommended methods for the prevention of slips and falls from, or on, the same elevation include:

- Good house-keeping practices such as sorting and placing loose construction materials in established areas away from foot paths.
- Clean up of excessive waste debris and liquid spills on regular basis.
- Electrical cords and ropes to be located in common areas and marked corridors.
- Slip retardant footwear to be used.

3. Work at Heights

Falls from elevation associated with working with ladders and scaffolding are among the most common cause of fatal or permanent disabling injury at construction site. If fall hazards exist, a fall protection plan will be in place which includes one or more of the following aspects, depending on the nature of the fall hazard.

Mitigation Measures

- Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters or at any height if the risk includes falling into operating machinery, into water or other liquid, into hazardous substances, or through an opening in a work surface.
- Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards as well as fall rescue procedures to deal with workers whose fall has been successfully arrested.
- Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labeling covers for openings in floors, roofs, or walking surfaces.

4. Struck By Objects

Construction activities of the project may pose significant hazards related to the potential fall of materials or tools, as well as ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities.

Mitigation Measures

Techniques for the prevention and control of these hazards include:

- Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap.

- Temporary fall protection measures in scaffolds and out edges of elevated work surfaces would be used, such as hand rails and toe boards to prevent materials from being dislodged.
- Appropriate PPE such as safety glasses with side shields, face shields, hard hats,and safety shoes, would be wore.

5. Moving Machinery

Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site may pose temporary hazards, such as physical contact, spills, dust, emissions, and noise.

Heavy equipment operators have limited fields of view close to their equipment and may not see pedestrians close to the vehicle. Center-articulated vehicles create a significant impact or crush hazard zone on the outboard side of a turn while moving.

Mitigation Measures

Techniques for the prevention and control of these impacts include:

- The location of vehicle traffic, machine operation, walking areas, and controlling vehicle traffic will be planned and segregated through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic.
- The visibility of personnel will be ensured through the use of high visibility vests when working in or walking through heavy equipment operating areas as well as training of workers to verify eye contact with equipment operators before approaching the operating vehicle.
- Inspected and well-maintained lifting devices will be used that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations.

6. Other Site Hazards

Construction of site may pose a risk of exposure to dust, chemicals, hazardous or flammable materials, and wastes in a combination of liquid, solid, or gaseous forms.

Mitigation Measures

It can be prevented through the implementation of project specific plans and other applicable management practices, including use of PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection.

5.5. Screening of Potential Impacts in Operation Phase

During operational phase of the project, various activities may have impact on some or other environmental parameters. Various environmental attributes are to be studied during this phase for their overall impact on the surrounding environment.

5.5.1 Solid Waste Generation & Disposal

Proposed project will generate solid waste from academic units of the project. The different types of wastes need to be handled as per their needs and regulatory requirements. It is not possible to dispose of all type of wastes onto the land and has to be dealt with depending upon their type and characteristics. Source and nature of different type solid waste generated during project operation phase is shown in table below.

Table 5.1: Source and composition of solid waste generated during operation phase

S. No.	Source of solid waste	Composition	Type of solid waste
1	Kitchen	Food leftovers, vegetable peels, plastic, house sweepings, clothes, ash, etc.	Non-hazardous
2	Classrooms, Library, Offices, Laboratory, Multi-purpose Hall, Auditorium, Conference Room, Storage Area and Student Office	Paper, cardboard, plastic, wastes like batteries, bulbs, tube lights etc.	Non-hazardous

If solid waste is not properly managed then it can pose a serious environmental threat and pollution not only for the faculty, staff and students but also for the visitors of the complex as well as to the surrounding settlements. Improper disposal of solid waste can lead to blockage of drainage systems and choking of water bodies. Some of these waste materials especially the plastic/polythene are not biodegradable and may cause long-term impacts on the environment.

Mitigation Measures

The following migration measures would be adopted to mitigate the impacts imposed upon the project site due to the solid waste generation activities in the operational phase:

- All solid waste from the complex will be segregated according to type and nature. Nearly half of the waste generated is expected to be organic in nature i.e. biodegradable and the remaining as recyclable. Therefore, waste segregation will reduce the overall quantity of waste required to be disposed.
- The biodegradable waste can be composted and later used as manure in the gardens and green belts located in the university.
- Storage bins will be placed at accessible places and in suitable numbers to collect waste and prevent.
- Waste bins will be emptied on daily basis to prevent accumulation and putrefaction of waste.

- Different colored bins will be placed in the complex to separately collect the recyclable and non-recyclable waste. Otherwise, all solid waste will be segregated into organic and recyclable waste at source and then collected and transported for disposal.
- It is recommended that an EPA approved waste contractor be hired to manage the different types of solid waste effectively.
- All waste collection facilities (storage bins, containers) will be placed at dry and covered places to water accumulation during rainy season.

Table 5.2: Waste Disposal Plan (Operation Phase)

S. No.	Type of solid waste	Source	Nature of Solid Waste	Disposal
1	Domestic Waste	Kitchen waste	Non-Hazardous, non-recyclable	Waste generated from kitchen areas will be collected and disposed to nearby waste collection facility located in the area. It can also be manipulated in composting which can later be used in the gardens as manure.
		Educational units (classrooms, offices etc.)	Non-Hazardous, Recyclable and non-recyclable	Recyclable waste will be segregated from other type of waste to reduce the quantity of waste finally disposed. Non-recyclable waste will be collected and disposed to nearby waste collection facility located in the area.
		Washrooms	Non-Hazardous	Waste from washrooms (discarded tissues, papers, packaging etc.) will be handled and disposed with other waste collected from other areas of the building.

5.5.2 Wastewater Generation & Disposal

The project on becoming functional will generate wastewater which will be mainly sewage. Small quantities of hazardous waste will also be produced during the maintenance activities in the building (such as oil-based waste etc.). The cleaning waste during the operational phase is mainly generated by the use of surfactants and cleaning agents during cleaning activities in the building.

The wastewater generated can be a potential source of pollution to the surface and ground water resources of the area.

Mitigation Measures

Following measures will be adopted for effective management of wastewater during the operational phase of the project:

- Grease interceptor and/ or oil skimmer to be installed on kitchen effluent to remove grease content from the wastewater.
- Waste segregation measures would be employed to minimize entry of solid waste into the wastewater stream.
- Water conservation strategies will be employed to avoid wastage of water.
- Periodic preventive maintenance of pumps, diffusers and other ancillary equipment is recommended.
- Provision of sedimentation tank or holding tank is recommended so that the effluent is primary treated and then disposed of to the main sewer line.
- The cleaning agents used should be non-hazardous. It's anticipated at this stage that the wastewater generated during the operation phase of the project will be mainly non-hazardous due to the harmless nature of activities proposed for the operation phase of the project.

5.5.3 Water Consumption& Quality Assurance

Water requirement during the operation phase of the project will be done effectively in order to reduce the amount of wastewater generation in this phase. Additionally relevant quality standards will be maintained to ensure that the water is fit for purpose using guidelines of established NEQS water metrics.

Mitigation Measures

Adherence to the following measures will ensure efficient use of water during the subsequent stage of operation:

- A complete record of water consumption during the operation phase will be maintained.
- Water treatment systems shall be designed to cater for the entire Department of Education to maintain water quality.
- A low-cost, low maintenance water filtration system such as a Kanchan assembly can be implemented to keep water purity levels within acceptable parameters, especially coliform levels which indicate presence of harmful pathogens.
- All water treatment systems shall meet WHO specified water quality parameters to be deemed acceptable foe use.
- It is envisioned that compartmentalized water streams can be provided for potable and non-potable uses such as washing, flushing etc.
- Water conservation practices will be adopted to prevent wastage of water.
- The water supply lines will be checked and repaired for leaks, if any, in order to reduce wastage of water.

- Use of water efficient sanitary fittings such as low flush toilets will be ensured throughout the Project cycle.

5.5.4 Energy Consumption

During operation, the academic unit and kitchen will use a lot of electrical energy mainly for academic purposes including lightning, running of fans / air-conditioning equipment, running of refrigerating systems, pumping water into reservoirs.

During operation phase, power supply from KIU Campus will be used. A back up diesel operated generator will also be installed in case of emergency or suspension of power supply from the mains. The power produced will be significant in terms of costs both environmental and economic. Since energy produced from non-renewable resource results in CO2, SO2, and NOx emissions, it is important to ensure that energy is used prudently and best management practices are adopted in building design. Energy saving techniques such as Energy efficient mechanical systems and Passive ventilation/cooling will be employed to conserve energy.

Since electricity generation involves utilization of natural resources, excessive electricity consumption will strain the resources and negatively impact on their sustainability.

Mitigation Measures

- The energy-efficient lighting system installed for the project will contribute immensely to energy saving during the operational phase of the project.
- The faculty and student body of the complex will be sensitized to ensure energy efficiency in their domestic operations.
- The energy usage during the operational phase will be monitored and targets would be set for efficient use of energy.

5.5.5 Air Emissions

During the operational phase, air emissions will mainly come from generators. If vented at lower heights, the exhaust gases are likely to disperse locally and cause localized pollution to the working staff. Other emissions coming from this project will be from the exhausts of additional traffic movement related to proposed project activity.

Mitigation Measures

Impacts of Emissions may be reduced to prescribed level by attempting the following measures:

- Monitor all exhausts at regular frequency.
- Regularly carry out ambient air quality monitoring at various points on the access road and immediately outside the proposed project premises.
- Carry out regular maintenance of generators.

5.5.6 Traffic Flow and Congestion

Traffic will be generated in the operational phase of the project due to the visitors to the project site. With this project coming on stream, it is expected that the traffic flow is going to increase.

Moreover, induction of traffic management plan will result in the smooth flow of traffic during the rush hours.

Mitigation Measures

Following measures will be adopted by to minimize the impacts of traffic flow.

- Traffic management plan will be introduced to manage smooth flow of vehicular traffic and to avoid traffic jam and long queues.
- Traffic management plan will be implemented and monitored.
- Vehicles will be parked at designated parking areas during operational phase.
- Parking of vehicles alongside the road would be prohibited at all times.
- Engineering design to examine vehicles exit and entry strategy so that it aligns with the traffic flow to cause minimum hindrance.
- Ramp slopes and passage areas to cater for worst case scenarios traffic flow on the main and service roads.

5.5.7 Fire

Fire is one major hazard due to short circuit, etc. Fires can cause loss of life and property. However at the same time fires have the potential to severely harm the people in the vicinity and affect the environment.

Mitigation Measures

Risks involve with the fire hazard can be reduced by adopting following measures:

- Standard fire and smoke detection and protection devices such as alarms, fire hoses and hydrants to be provided in all critical.
- The facility will possess a detailed emergency and evacuation plan that will be regularly drilled to make sure that the responsible staff remains trained at all times.
- Firefighting equipment such as fire extinguishers and hydrant systems will be maintained at strategic locations within the premises.
- Regular inspection and servicing of the extinguishers will be undertaken by a reputable service provider and record of such inspections should be maintained.
- Signs such as “NO SMOKING” will be prominently displayed within the premises, especially in parts where inflammable material are handled.

5.5.8 Socioeconomic Impacts

A. Employment Opportunities

The labor force to be sourced locally from Gilgit and surrounding settlements will be deployed at the project. Some people will be employed by the project as management agents, caretakers, cleaners, security personnel and technicians.

B. Provision of Market for the Supply of Building Materials

The project will require the supply of large quantities of building materials which will be sourced locally. This provides ready market for building material suppliers such as quarrying companies, hardware shops and individuals with such materials.

C. Increased Business Opportunities

The large number of project staff required will provide ready market for various goods and services, leading to several business opportunities for small scale traders such as food vendors around the construction site.

D. Revenue to National and Local Government

Through payment of relevant taxes, rates and fees of the government and the local authority, the proposed project will contribute towards the national and local revenue earning.

E. Improved Security

Security will be ensured around the complex through presence of 24-hour security guards. This will lead to improvement in the general security of the surrounding area.

Table 5.3: Potential Environmental Impact during Different Stages of the Project						
Actions Affecting Environmental Resources & Values	**Damage to Environment**	**Recommended Mitigation Measures**	**Significance of Impact**			
			None	**Small**	**Medium**	**Major**
Environmental Problems during Construction Phase						
Dust Emission during Construction	Air pollution	Careful planning.	X			
Contaminated Land	Soil and water pollution	Careful planning to minimize the problem.		X		
Construction Waste	Soil contamination, water and air pollution	Adequate monitoring & disposal during construction			X	
Change in Ambient Air Quality	Nuisance due to dust esp. by PM_{10}, spoil property and cause visibility issues.	Careful planning to minimize air emissions.		X		
Wastewater Generation & Disposal	Deterioration of surface and ground water quality, disturbance to flora and fauna as well as contamination of soil surface	Careful monitoring of effluent discharge			X	
Solid Waste Generation & Disposal	Effect the health of the workers, cause soil and water pollution	Careful planning to minimize the problem.			X	
Noise & Vibration	Nuisance problem	Careful planning and management of noise producing activities			X	
Vehicular Traffic	Environmental degradation	Careful planning and management		X		
Occupational Health & Safety	Over exertion, slips and falls as well as site hazards	Implementation of appropriate procedures		X		
Environmental Hazards during Operation Phase						
Inadequate management and monitoring of operation	Environmental degradation, waste of resources and time	Properly programmed operations and their monitoring		X		

Table 5.3: Potential Environmental Impact during Different Stages of the Project						
Actions Affecting Environmental Resources & Values	**Damage to Environment**	**Recommended Mitigation Measures**	**Significance of Impact**			
Wastewater Generation & Disposal	Deterioration of surface and ground water quality, disturbance to flora and fauna as well as contamination of soil surface	Careful monitoring of effluent discharge		X		
Solid Waste Generation & Disposal	Effect the health of the workers, cause soil and water pollution	Careful monitoring to minimize the problem.		X		
Energy Consumption	Utilization of natural resources	Careful monitoring to save the natural resources.		X		
Illumination	Cause of light pollution for the neighbourhood	Careful planning to solve the problem.		X		
Explosion; fire hazard associated with fuel storage	Occupational hazard, possible environmental degradation	Storage of fuel at safe place in special purpose containers		X		
Changes in land uses	Possible loss in land use	Careful planning	X			
Environmental Aesthetics	Loss of environmental aesthetics	Careful planning	X			

6. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

6.1. Introduction

The scope of the present IEE study includes delineation of Environmental Management Plan (EMP). The aim of an environmental management plan is to provide an approach for managing and monitoring environment related issues and describes the institutional framework for environmental management and resource allocations to be carried out by the proponent for mitigating the negative impacts during construction and operation phases of the proposed project.

EMP is a dynamic and a live document that is under constant review having periodic revisions and may be updated as required. Any amendments in the procedures, information are notified to the concerned personnel after the approval from the competent authority for subsequent implementation.

For successful environmental practices an essential requirement of the PEPA 1997 is to develop an environmental management plan (EMP) to guide through the procedures to the management and employees of the organization for continual improvement.

The EMP has been prepared following all the applicable Pakistan Environmental Protection Agency guidelines. Special consideration has been given to USAID Environmental Compliance Procedures (22CFR216) and the relevant recommendations of Initial Environmental Examination study conducted by USAID. This USAID IEE along with the recommendations for EMMP is attached with this report as Annexure V.

Environmental Mitigation and Monitoring Plan (EMMP) has been made part of this document, which defines all the impacts and their mitigation measures with highlighting the responsible personnel to work along with providing an idea of cost factors required to implement this EMMP.

6.2. Objectives of EMP

The EMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the construction and the operation phase of the project but also ensures that environmental standards and good housekeeping are maintained. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity. Some of the key objectives of EMP are to:

- Outline functions and responsibilities of responsible persons.
- State and implement standards and guidelines which are required under environmental legislations particular in context to the project.
- Facilitates the implementation of the mitigation measures by providing the technical details of each project impact, and proposing implementation schedule of the proposed mitigation measures.

- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented.
- Identify training requirements at various levels and provide a plan for the implementation of training sessions.
- Identify the resources required to implement the EMP and outline corresponding financing arrangements; and
- Providing a cost estimate for all proposed EMP actions.

6.3. EMP Process

The EMP comprises of the following parts and defines the methods and procedures of implementation.

- Organizational structure and roles and responsibilities of project personnel.
- Specific requirements for the implementation of the EMP.
- Mitigation or impact management matrix.
- Monitoring plan with the emphasis on specific parameters to monitor.

In the preparation of this plan several aspects concerning the siting, designing, construction and operation of the proposed Educational Complex have been taken into consideration.

6.4. Management Approach

The environmental management will require specific approach in order to handle the issues effectively. Director Planning and Development of the university will assign the roles and responsibilities to be performed during the construction and operations stages of the project. Compliance with EMP will be the responsibility of the KIU management at each stage of project. The management will ensure that all activities during construction stage do not create adverse environmental effects. Contractor and sub-contractor will work in environment friendly manner under the supervision of Planning and Development Department. All the regulatory agencies including GBEPA will be contacted as and when required to get advice for environmental management and they will be kept informed of the environmental conditions of the area periodically by KIU management and their contractors/sub-contractors.

Some of the approaches to be followed during the environmental management practices are given below:

- Compliance with the relevant legislative and regulatory requirements of the project.
- Developing appropriate monitoring indicators in order to assess the performance as well as magnitude of impact on the ecosystem (core impacts).
- Regular review of the project activities and assessing their impacts on the environment.
- Setting project's key environmental concerns and addressing issues through public support, awareness and publicly reporting its progress.

- Communicating broadly with internal and external stakeholder on issue of environmental concerns.

6.5. Maintenance of the EMP

EMP needs to be revised on periodic basis to maintain up-to-date environmental management requirements with the changing physical and regulatory constraints. Therefore outlining and defining the responsibilities of personnel and activities under the project's operation execution, implementation, operation & monitoring and decommissioning phase are integral part of maintenance of the EMP. Dissemination of reviewed and revised EMP need to be notified to all stakeholders particularly, relevant government and municipal agencies so that their modified role is also redefined and re-established in the overall environmental management process.

6.6. Health, Safety and Environment Management System

Health, Safety and Environment Management System is essential and integral component of the environmental management system for the safe and secure working environment assuring sustained development, dependent on health associated performance of human resources. HSE issues and aspects are outlined in EMP with mitigation measures based on principles of best management practices. HSE management system undertakes carrying out a complete assessment, evaluating, monitoring, identifying and control measures (mitigation) of all potential hazards and risks arising during the construction, operation and decommissioning phases of the proposed project. It needs to ensure that the Health and Safety Plan (HSP) along with the Health and Safety Rules is established, documented and enforced. The plan also outlines roles, responsibilities and expected outcomes of proper implementation with respect to the environment, health and safety management of various phases of the project. These measures should be implemented to ensure that no significant adverse, health and safety impacts occur due to proposed activities associated with the project.

Protection of the campus population in general and workforce health and safety in particular during both construction and operations is of paramount importance to the project. Utilizing expert personnel and adopting tailor made Environment, Health and Safety Management System (EHSMS) that is specifically designed for the project, the potential health and safety hazards and risks associated with the project as identified and assessed, would then be mitigated by adopting standard procedures for various operations at facilities in the project.

6.7. Roles and Responsibilities

Environmental management will be the integral part of the KIU's Health, Safety and Environment Program. Therefore, committing to reduce the environmental impacts will reflect the management approach and belief that good governance and performance in this area is synonymous with running a well-managed and efficient operations.

During the construction phase, main responsibility of environmental performance will be on the shoulders of Director Planning &Development (KIU).Hewill be assisted in daily activity monitoring by the Project Manager. Another important role for the management of EMP shall be played by HSE Officer, who will assist the Project Manager.

In operational phase of the project, overall management of environmental performance and implementation of the EMP shall be supervised by the Director of Proposed Educational Complex i.e. Director IEQ Project, while the daily management will be performed by the Building Maintenance Supervisor. Under their surveillance, environmental management during operations will be performed as per the mitigation and monitoring plans outlined in this EMP. A brief structure of role and responsibilities is given below:

6.7.1 Top Management of Project

Environmental management plan (EMP) will be regulated by the Director P&D. Some of the key roles& responsibilities are given below.

- To cooperate and liaise with relevant environmental agency if required.
- To evaluate the progress of development and implementation of this management plan.
- To approve any change in the EMP with the consultation of respective managers, if appropriate.

With the supervision of Director P&D, the most important role for the implementation of EMP shall be the Project Manager, who will be responsible to keep Director P&D up to date about all the project activities, status of EMP implementation and changes (if required) in the EMP.

6.7.2 Project Manager

The role of Project Manager is very important. The success of an EMP will mainly depend upon effective management of the EMP by Project Manager. Following are some of the major roles and responsibilities:

- Ensure that the contractor staff is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment.
- Ensure that all stipulations within the EMP are communicated and adhered to by contractor(s).
- Monitor the implementation of the EMP throughout the project by means of sit inspections and meetings. This will be documented as part of the minutes of the site meeting documents.
- Be fully conversant with the Initial Environmental Examination of the project, the conditions of the approval of IEE (once issued), and all relevant environmental legislations.
- Conduct audits to ensure compliance to the EMP.
- Liaise with the top management (as defined above) and delegate the HSE Officer on matters concerning the environment.
- Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution on the site.
- Confirm activities to the demarcated construction site.

6.7.3 HSE Officer

The role of HSE officer will be vital during the construction phase. The person will be the key advisor on environmental issues to the Project Manager. Key responsibilities of HSE Officer include:

- Be fully conversant with the Initial Environmental Examination of the project, the conditions of the approval of IEE (once issued).
- Be fully conversant with the Environmental Management & Monitoring Plan.
- Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance with these.
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMP.
- Take appropriate action if the specifications contained in the EMP are not followed.
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- Review and approve construction methods, with input from the Project Manager, where necessary.
- Ensure that activities on site comply with all relevant environmental legislation.
- Order the removal of person(s) and/or equipment in contravention of the specifications of the EMP.
- Compile progress reports on regular basis.

6.7.4 Construction Contractor

The role and responsibilities of the management of the contractor company will consist of the following basic points:

- To make sure that staff is cooperative with the Project Manager and HSE Officer.
- To carry out construction activities in environmentally sound manner.
- To coordinate with the HSE officer to resolve issues arise during construction phase.
- To manage and implement environmental management practices as per the impact assessment report as well as HSE polices belong to both contractor and project manager.
- To manage construction crew and reduce the environmental impacts.
- To appoint a dedicated environment officer that will understand and tackle environmental issues more easily.

6.7.5 Monitoring Consultant

Monitoring Consultant will monitor the construction activities and compliance of EMP by the Proponent and the Construction Contractors. The Monitoring Consultant will:

- Ensure that all environmental and social parameters / provisions comply with the applicable standards;

- Ensure that day-to-day construction activities are carried out in an environmentally sound and sustainable manner. Organize periodic environmental training programmes and workshops for the Contactor's staff and Site staff in consultation with the administration; and
- Develop "good practice" construction guidelines to assist the Contractors and Administrative staff in implementing the EMP.

Organogram for the management of EMP is mentioned as Figure 6.1. Assessment of impacts shows that constructions phase of the project would raise some impacts of medium magnitude therefore it will be required by the proponent to follow the EMP in order to keep the impacts controlled. As far as the operation phase is concerned, there would be no environmental impacts of significance.

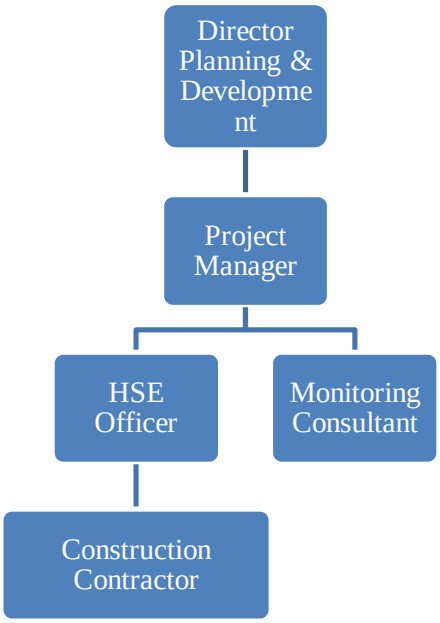


Fig 6.1: Organogram for the Management of EMP during Construction Phase

6.8. Regulatory requirements

6.8.1 Approvals, Authorizations and Permits

The list of potential approvals, authorizations and permits required for the Project from various agencies including, federal, provincial, municipal are given below:

- Gilgit Baltistan Environment Protection Agency (GBEPA)
- Sanction of utilities from concern department such as Sui Southern Gas Company (SSGC), Power Department of Giligt-Baltistan, PTCL and other civic agencies including District Government of Gilgit, etc.

6.8.2 Environmental Quality Objectives

This section outlines criteria for management's quality objectives and generation of solid waste and wastewater quality, air and noise quality. The project manager shall review Environmental Objectives once a year and try to complete them in the stipulated time

frame. This will also include any applicable treatment criteria meeting the National Environmental Quality Standards (NEQS) as per Pakistan Environment Protection Act 1997.

6.9. Environmental Compliance

The management will be responsible for the regular audit and review of the environmental management and safety management. This will include both on-site auditing and review of performance reports. Additional onsite inspections and investigations will be undertaken in the event of significant environmental incidents. These will be undertaken in conjunction with the relevant government agencies.

The management will participate in the audits and inspections and investigations. The management will also be responsible for regular review of the environmental performance of the site and site personnel, and for the reporting on the implementation of commitments made in the EMP.

6.10. Audits

In particular, there will be:

- Annual audit reports.
- A triennial review and improvement of the EMP.

Management recognizes that periodic external compliance audits and inspections will be made to monitor, assess and validate the level of performance and compliance pursuant to the commitments made in the accepted Environmental and Monitoring Management Plan. Management also proposes to conduct the following in-house audits:

A. Site Internal Environmental Audit

It is required in order to enable site management to assess the day-to-day environmental management of activities at the site. Environmental activities include all aspects of operations that result in emissions, effluent or wastes, etc.

B. Environmental Management Systems Audit

It is required to assess the implementation and operational success of the EMS at the site. This is achieved by assessing the objectives, organizational structure, responsibilities, procedures, processes and resources available at the site. The EMS Audit is a systems assessment, rather than an audit of environmental compliance, which is assessed through the Site Internal Environmental Audit.

6.11. Implementation Stages of EMP

The success of the management plan will lie with its implementation. An EMP requires to be executed in three stages. Those are, planning & design stage, construction stage and operation stage.

6.11.1 Planning and Design of Proposed Project

There are three main components to consider in an EMP prior the construction phase. Implementation of EMP at this stage may tackle the environmental issues before they arise. Those components are given below:

A. Design of Project

If any changes in the design parameters are likely to arise any environmental impacts than those changes will need to be assessed. If the impacts are found to be different and in excess of those mentioned in the IEE report than the project management will be liable to develop further mitigation measures with respect to the changes and required to seek approval for the required changes from Gilgit-Baltistan EPA as well as other regulatory authorities as required.

B. Approvals

Obtaining NOC from GBEPA shall not relieve the proponent from other obligations and hence the proponent and the contractor will require obtaining all relevant clearances and necessary approvals required by the government prior to commencing the proposed project.

C. Contractual Provisions

The requirements of environmental impact assessment in terms of environmental mitigation shall be incorporated into the operations plans and procedures of the contract. Therefore, signing of contract will strictly bind contractor to follow those procedures and must comply the environmental regulations.

6.11.2 Construction Phase

In order to implement EMP successfully during construction phase, it is required to follow mitigation measures and monitoring plan strictly. Trainings for the staff will be required at each step and phase.

A. Environmental Mitigation and Monitoring Plan

It defines all the impacts and their remedial with highlighting the responsible personals to work on those mitigations. It also gives an idea of budget required to implement a particular activity. The Mitigation and Monitoring Plan is given as table 6.1 for construction phase and table 6.2 for Operational Phase. All these impacts and mitigations have already been discussed with details in the previous section of this report. The proponent and construction contractor will be required to adhere to this EMP throughout the project. For making this EMMP, the recommendations of Initial Environmental Examination study conducted by USAID are given special consideration.

B. Training

This is another major step for the implementation of EMP. All the employees will require to be trained appropriately to follow the EMP effectively. The training can also provide workers an awareness regarding minimized waste generation, conservation of resources such as water, power and natural gas etc. The HSE officer will be required to determine the training requirements of the staff in consultation with the Project Manager following that Monitoring Consultant will provide trainings to the staff.

6.12. Environmental Monitoring

The objective of the environmental monitoring during the construction and operation phase will be:

- To check compliance of the contractors with the EMP by monitoring activities of the project on a daily basis (compliance monitoring).
- To monitor impacts of the operation in which there has been a level of uncertainty in prediction such as impacts of noise, water abstraction etc. and to recommend mitigation measures if the impacts are assessed to be in excess of or different from those assessed in the IEE.

To achieve these objectives, the following monitoring programme will be implemented.

6.12.1 Compliance Monitoring

It would be required by the project management to comply with the Environmental Management Plan detailed in the subsequent section. The compliance shall also require periodic reporting of the monitoring results in form of report submitted to the Environmental Protection Agency. During the construction phase, it will be on monthly basis. It is also understood that monitoring shall be done by an independent consultant /organization.

6.12.2 Environmental Reporting

Monitoring Report

A periodic monitoring report will be prepared by KIU representative to submit the findings of monitoring activity carried out during construction and operation phase of the project.

The report will include the following:

- Introduction
- Details of the Project Activities
- Natural Resource used during the Project.
- List of Non-compliances recorded.
- Effects of the Project on Communities and Physical Resources.
- Photographic Records
- Approvals provided during the project
- Change managements statements

- Conclusion

6.13. Emergency Response Plan (ERP)

Emergency situations may arise unexpectedly during the operation phase of the project and at times it can severely impair the routine activities going on in the campus. It is therefore important that precautionary arrangements in the form of Emergency Response Plan are in place and routinely practiced and reviewed for disaster mitigation, preparedness, response, and recovery. This would enable the university management to maintain activities during and after any emergency or incident. Emergency Response Plan for the project given below.

6.13.1 Purpose of ERP

The Emergency Response Plan establishes a basic plan for the faculty, staff and students for responding to major emergencies likely to be encountered in the campus. The Plan describes the roles and responsibilities of the personnel during an emergency situation. Personnel with specific responsibilities to be carried out during an emergency at both a department and University level are expected to understand the procedures for which they are responsible.

This Emergency Response Plan will be invoked whenever an emergency affecting the campus cannot be managed through normal channels. Response to an emergency will be conducted within the framework of the Plan whenever possible.

The Emergency Response Plan is designed to protect lives and property through effective use of University and community resources. The Plan identifies specific departments and individuals that are responsible for emergency response with critical support services and it provides a management structure for coordinating and deploying essential resources.

6.13.2 Scope

The ERP presented here is generic and an "all hazards" plan and may be activated in response to a broad range of emergency incidents including (but not limited to):

- Fires and Explosions
- Civil Disturbances
- Extended Power Outages
- Bomb Threat/Detonation
- Epidemic/Illnesses and Mass Casualty Incidents
- Natural disasters

6.13.3 Emergency Levels

For planning purposes, emergency situations are subdivided into three levels which are based on the severity of the situations:

Level 1 – Minor Localized Incident: A minor, localized department or building incident that is resolved through normal channels with existing department plans, campus resources,

and /or limited outside help. The incident does not affect the overall functioning capacity of the Complex/Campus. Emergency Response Plan would not be activated.

Level 2 – Emergency: A major incident or event that completely disrupts one or more operations of the Campus. Multiple University resources are involved in addition to outside assistance. The Emergency Response Plan will be activated.

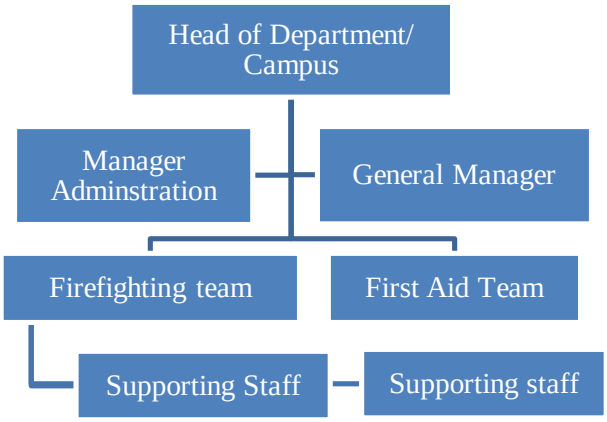
Level 3 – Disaster: A major incident or disaster that seriously impairs or halts the operations of the University. The Emergency Response Plan activated.

6.13.4 Role & Responsibilities

Overall responsibility of implementation of ERP shall rest with the head of the department/campus who will further depute other persons/staff to undertake specific jobs during an emergency situation. He will also periodically review the preparedness of the emergency response team against the ERP.

1. Emergency Response Team

During an emergency situation the Emergency Response Team is responsible for executing the Emergency Response Plan at the direction of the Head of Department/Campus. The Emergency Response Team is also responsible for reviewing and updating the Emergency Response Plan and running periodic tabletop exercises to test the plan's effectiveness. The Emergency Response Team will consist of following members:



Emergency Response Team

2. Responsibility of Faculty and Staff

Faculty members should be prepared to direct their students to assembly areas in the event of an emergency and account for every student. Every member of the Faculty and Staff should read and be familiar with applicable emergency plans and familiarize themselves with emergency procedures and evacuation routes. Faculty and Staff must be prepared to assess situations quickly but thoroughly, and use common sense in determining a course of action.

3. Students

All students should familiarize themselves with the emergency procedures and evacuation routes in buildings in their use. Students should be prepared to assess situations quickly but

thoroughly and use common sense in determining a course of action. They should evacuate to assembly areas in an orderly manner when directed to do so by emergency personnel or when an alarm sounds. Faculty, Staff and Students should also be able to execute safety procedures (which should be communicated to them during periodic emergency training sessions).

6.13.5 Contact Centres

A list will be developed (format given below) to include all hospitals/clinics, bomb disposal units, fire department and police stations along with their contact numbers to be used at time of need.

S. No.	Name of Emergency Centre	Contact Information

6.13.6 Implementation of ERP

The emergency situations most likely to be encountered at the new campus of the university include fire and natural disasters such as heavy rains causing flooding, earthquake and windstorms. Response measures to be undertaken in such situations are shown below. The measures given below are not all encompassing and it is recommended that in addition to the measures suggested below, the response team should also undertake other necessary actions to ensure minimum damage to life and property and swift control over the situation.

1. Fire

- In case of fire, affected area should be immediately evacuated.
- In case of small scale fire, portable extinguishers should be used to put out the fire. Portable extinguishers should be located at accessible places in the campus with directions to use. Such areas should be labeled with warning signs to intimate others of the risk of fire.
- Smoke detectors should be placed at risky areas where there is a hazard of fire.
- Firefighting team should be called immediately in case the fire is spreading and not easily controllable (medium to large scale fire) and the area should be evacuated.

2. Fire alarm system

For fire alarm system, particular reference shall be made to:

- BS 5839
- NFPA 72

The fire alarm system shall be addressable type, including manual call points, smoke detectors, heat detectors and alarm bells all linked to addressable central fire alarm control panel. The system shall be capable of operating manually through a break glass or automatically through smoke or heat detector. The panel shall be batteries power packed. The system shall be UL/FM approved make.

Wiring in separate recessed conduit pipe shall be used. The cable shall be 2 core shielded twisted fire rated cable.

Similarly extinguishers will be placed at appropriate intervals as per code requirements.

Wiring for Fire Alarm System: Wiring in separate recessed conduit pipe shall be used. The cable shall be 2 core shielded twisted fire rated cable.

Similarly extinguishers will be placed at appropriate intervals as per code requirements.

3. Natural disasters (Earthquakes, floods, and heavy rains and others)

- Emergency Response Team should be called.
- Evacuation should be immediately ensured by all the staff and students present in the building.
- Directions for assembly area should be displayed at the walls to immediate guidance.
- Alarms should be activated in case of a natural disaster to communicate the danger to the staff and students.
- Guidelines should be displayed at suitable places to guide the students and other persons on how to react in case of an emergency event.

6.13.7 Community Grievance

Although the odds are small, the project can result in social constraints during the construction and operation phases due to increased human intervention and temporary change in land use due to campsite establishment, construction work and equipment mobilization. Movement of locals may be impeded due to use of existing tracks /roads during transportation of construction material and equipment and movement of workers across site.

Consequently, it is necessary to address the complaints of the locals in a swift manner to avoid social conflicts. For this purpose, the project manager/ construction contractor or University representative will maintain a register of complaints received from local communities and measures taken to mitigate these concerns. All community complaints received will be sent to the KIU management for further action.

A proposed grievance redress mechanism for the project is proposed below.

Figure 6.2: Proposed Grievance Redress Mechanism

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
Air Emissions						
1	Air Emissions	▪ Cover construction materials and stockpiled soils if they are a source of fugitive dust. ▪ Cover storage piles at concrete batch plants if they are a source of fugitive dust. ▪ Keep soil moist while loading into dump trucks to minimize fugitive dust. ▪ Keep soil loads below the freeboard of the truck to minimize fugitive dust. ▪ Minimize drop heights when loaders dump soil into trucks. ▪ Tighten gate seals on dump trucks. ▪ Cover dump trucks before traveling on public roads. ▪ When possible, schedule construction activities during periods of low winds to reduce fugitive dust. ▪ Conduct any slash burning, in compliance with open burning permit requirements. ▪ Enact fugitive dust and vehicle emission	Air quality monitoring at the construction site shall be required. The location of the monitoring should be at or near the centre point of project site. Following parameters need to be monitored: ▪ Sulphur Dioxide(SO2), ▪ Oxides of Nitrogen (NO and NO2), ▪ Ozone (O3), ▪ Suspended particulate Matter (SPM), ▪ Respirable Particulate Matter (PM10 & PM2.5), ▪ Carbon Monoxide (CO), ▪ Lead (Pb) ▪ Meteorological Parameters ▪ Stack gas analysis as per National Environmental Quality Standards	Monthly Monitoring and Quarterly Reporting	a- Monitoring Consultant would be hired by the Proponent to: 1- Conduct Air Quality Monitoring 2- To check the status of implementation of Mitigation Measures 3- To report the results to GBEPA & Proponent quarterly b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost for Air Emissions Monitoring at 1 location – 1time per month = Rs. 20,000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		controls. ▪ Establish and enforce speed limits to reduce airborne fugitive dust. ▪ When feasible, shut down idling construction equipment.				
Wastewater						
2	Wastewater	▪ The use of sediment traps; ▪ The regular maintenance of on-site drainage schemes to remove accumulated sediment and prevent flooding and overflow. ▪ Temporary ditches should be provided to facilitate runoff discharge via silt retention facilities. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. ▪ Ideally the construction should be programmed to minimize surface excavation and earth works during the rainy season (April to September). ▪ All exposed earth areas should be fully	1- Sampling of wastewater at construction site shall be required. 2- Visual Inspection of wastewater discharge points, sewage pits, septic tanks, and toilets shall be required to check any abnormal discharges or leakages. Following parameters needs to be monitored: ▪ Temperature Increase ▪ pH value (acidity/basicity) ▪ 5-day biochemical oxygen demand (BOD)5 at 20oC ▪ Chemical oxygen demand (COD)	Monthly Monitoring and Quarterly Reporting	a- Monitoring Consultant would: 1- Conduct Sampling of Wastewater 2- Perform analysis of wastewater samples 3- Check the status of implementation of Mitigation Measures 4- Report it to GBEPA & Proponent quarterly b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost for Wastewater Sampling & Analysis for 1 sample – 1 time per month = Rs. 18,000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		restored as soon as possible after earth works have been completed. ▪ Exposed slopes or stockpiles should be covered by tarpaulins or similar fabrics during rainstorms. ▪ Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	▪ Total suspended solids ▪ Total dissolved solids ▪ Grease and oil ▪ Phenolic compounds (as phenol) ▪ Chloride (as Cl) ▪ Fluoride (as F) ▪ Cyanide (as CN) total ▪ An-ionic detergents (as MB As) ▪ Sulfate (SO4) ▪ Sulfide (S) ▪ Ammonia (NH3) ▪ Pesticides ▪ Cadmium ▪ Chromium (trivalent and hexavalent ▪ Copper ▪ Lead ▪ Mercury ▪ Selenium ▪ Nickel ▪ Silver ▪ Total toxic metals			

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
			▪ Zinc ▪ Arsenic ▪ Barium ▪ Iron ▪ Manganese ▪ Boron ▪ Chlorine			
Solid Waste						
3-a	Non- Hazardous Solid Waste	▪ Recycle or reclaim material where possible ▪ If recycling is not practical, waste must be disposed through an appropriate off-site disposal facility in an environmentally acceptable manner and in compliance with local laws and regulations ▪ A comprehensive waste disposal plan shall be developed to effectively manage these wastes in large quantities. ▪ The construction waste shall be sent for recycling like damaged pipes, left over steel, wooden and plastic pieces. The left over waste will then be taken away	1- The monitoring of non-hazardous solid waste generation sources shall be required by means of Visual Inspections. 2- This should require strict monitoring during Excavation, Foundations and other earth works. 3- Visual Inspection of Kitchen areas will be required 4- There will be stringent need of monitoring that waste management plan is followed by the staff or not.	Monthly by IMC & Weekly by HSE Officer	a- Monitoring Consultant would: 1- Check the status of implementation of Mitigation Measures 2- To report it to GBEPA & Proponent quarterly b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures	Monitoring Consultant Charges for this activity- 1 time per month Rs. 20,000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		to the dumping sites for disposal. ▪ The construction material will be kept in a covered area, especially during the rainy season. ▪ The excavated soil will be re-used by adopting different methods, which will be used as a filling material for the construction of the Complex. ▪ Separately labeled waste containers for different types of waste will be deployed, in order to treat the waste depending on its type. ▪ The waste bins will be properly marked for each type of waste produced during the constructional activities. ▪ The project area will contain a marked sewage and litter facility to overcome the problem of unchecked dumping of waste. ▪ Use of asbestos containing materials is prohibited and shall be actively discouraged. ▪ Use of lead based paints is prohibited ▪ Use of building materials that have				

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		minimal packaging to avoid the generation of excessive packaging waste. ▪ Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time.				
3-b	Hazardous Solid Waste	▪ All hazardous material such as flammable materials, e.g. fuels etc. should be stored in clearly labeled containers and vessels. ▪ Storage and handling of hazardous materials should be in accordance with local regulations or international standards, and appropriate to their hazard characteristics. ▪ Storage facilities should be regularly inspected and to be leakage monitoring to be ensured. ▪ Curbs or drip pans should be provided under potential leak source (e.g. vessel and pumps) to contain any spillage of flammable liquids.	1- The monitoring of hazardous solid waste generation sources shall be required by means of Visual Inspections. 2- This should require strict monitoring of the fuel storage areas, storage areas for any other flammable material and movement of vehicles carrying fuel. 3- There will be stringent need of monitoring that waste management plan is followed by the staff or not.	Monthly by IMC & Weekly by HSE Officer	a- Monitoring Consultant would: 1- Check the status of implementation of Mitigation Measures 2- To report it to BEPA & Proponent quarterly b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures	Monitoring Consultant Charges for this activity- 1 time per month Rs. 20,000/-
4	Noise&	▪ Noisy activities should be preferably	▪ Leq (dBA)	Monthly Monitoring		Cost for Noise

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
	Vibration	isolated from work areas and such activities should be carried out together; this reduces the overall impact of noise. ▪ Onsite concrete preparation should be avoided ▪ Workers should be instructed on the use of PPE if they need to work in noisy areas ▪ Only the equipment in good condition (well-tuned) should be used for construction work ▪ Activities should be scheduled at day time so that the neighboring community or people are not affected ▪ Canopies to be used for equipment when noise is unavoidable	▪ 16 hours/day ▪ Measuring 3 times per hour ▪ L10 (dB), Acceleration (m/sec^2) ▪ 16 hours /day ▪ Measuring 3 times per hour	and Quarterly Reporting	a- Monitoring Consultant would: 1- Conduct Noise and Vibration Monitoring 2- Check the status of implementation of Mitigation Measures 3- Report it to GBEPA& Proponent quarterly a- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	& Vibration Monitoring for 2 locations – 1 time per month = Rs. 9,000/-
Occupational Health & Safety						
5a	Over - exertion	▪ Workers should be trained with lifting and materials handling techniques before the construction of the project, including the placement of weight limits above which mechanical supports or two-person lifts are necessary.	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would: 1- Conduct Training of Staff Regarding EHS issues during Construction Works	Cost of Training per Session = Rs.55000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		▪ Work site layout should be planned to minimize the need for manual transfer of heavy loads. ▪ Tools should be selected and work stations should be designed to reduce force requirements and holding times, which promote improved postures, including, where applicable, user adjustable work stations. ▪ Administrative controls, such as job rotations and rest or stretch breaks should be implemented into the work processes.			b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	
5b	Slip and Falls	▪ Good house-keeping practices such as sorting and placing loose construction materials in established areas away from foot paths. ▪ Clean up of excessive waste debris and liquid spills on regular basis. ▪ Electrical cords and ropes to be located in common areas and marked corridors. ▪ Slip retardant footwear to be used.	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would: 1- Conduct Training of Staff Regarding EHS issues during Construction Works b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost of Training per Session = Rs.55000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
5c	Work at Heights	▪ Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of at minimum 200 pounds, when working at heights equal or greater than two meters or at any height if the risk includes falling into operating machinery, into water or other liquid, into hazardous substances, or through an opening in a work surface. ▪ Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards as well as fall rescue procedures to deal with workers whose fall has been successfully arrested. ▪ Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labeling covers for openings in floors, roofs, or walking surfaces.	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would: 1- Conduct Training of Staff Regarding EHS issues during Construction Works b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost of Training per Session = Rs.55000/-
5d	Struck By Objects /	▪ Maintaining clear traffic ways to avoid driving of heavy equipment over loose	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would:	Cost of Training per

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
	Proximity Hazards	scrap. ▪ Temporary fall protection measures in scaffolds and out edges of elevated work surfaces would be used, such as hand rails and toe boards to prevent materials from being dislodged. ▪ Appropriate Personal Protection Equipment such as safety glasses with side shields, face shields, hard hats, and safety shoes, would be wore.			1- Conduct Training of Staff Regarding EHS issues during Construction Works b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Session = Rs.55000/-
5e	Moving Machinery	▪ The location of vehicle traffic, machine operation, walking areas, and controlling vehicle traffic will be planned and segregated through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. ▪ The visibility of personnel will be ensured through the use of high visibility vests when working in or walking through heavy equipment operating areas as well as training of workers to verify eye contact with	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would: 1- Conduct Training of Staff Regarding EHS issues during Construction Works b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost of Training per Session = Rs.55000/-

Table 6.1: Environmental Mitigation and Monitoring Plan - Construction Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget (Notional)**
		equipment operators before approaching the operating vehicle. ▪ Inspected and well-maintained lifting devices will be used that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations.				
5f	Other Site Hazards	▪ It can be prevented through the implementation of project specific plans and other applicable management practices, including use of PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection.	Training of EHS Issues required	4 sessions a year	a- Monitoring Consultant would: 1- Conduct Training of Staff Regarding EHS issues during Construction Works b- HSE Officer will have the overall responsibility to monitor the implementation of Mitigation Measures.	Cost of Training per Session = Rs.55000/-
6	Other Expenses (Service Charges and Transportation of Monitoring Consultant)					Rs. 200,000/-

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
Solid Waste Generation and Disposal						
1	Solid Waste Generation and Disposal	▪ Storage facilities will be created and established by taking into account quantities of waste generation in the academic unit. ▪ A storage facility will be so placed that it is accessible to faculty and students of the project. ▪ A storage area will be allocated for storage and pre- treatment of the waste. This storage area will be covered and the pollutants from the waste would not affect the surrounding. ▪ Local authorities will provide different colored bins for different categories of waste. ▪ All solid waste will be segregated into organic and recyclable waste at source and then collected, stored and transported for ultimate safe disposal. ▪ Handling and disposal of such waste will be managed by a dedicated waste managing contractor. ▪ The solid waste management plan will be	1- In the operational phase, monitoring of solid waste generation, its management and disposal will be required. 2- The locations for monitoring include Kitchen areas, activities that require replacement of old equipments and any demolition.	Monthly	Building Maintenance Supervisor reporting to Director of Educational Complex	In house Job- No cost required

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
		developed and facilities for collection, storage and transportation will be established and organized. ▪ Adequate provision will be made for storage of solid waste.				
Wastewater Generation and Disposal						
2	Wastewater Generation and Disposal	▪ Grease interceptor and/ or oil skimmer to be installed on kitchen effluent to maintain oil levels within NEQS limits. ▪ Waste segregation measures would be employed to minimize entry of solid waste into the wastewater stream. ▪ Water conservation strategies will be employed to avoid wastage of water. ▪ Periodic preventive maintenance of pumps, diffusers and other ancillary equipment's. ▪ Periodic monitoring of wastewater to ensure compliance with NEQS. ▪ Provision of sedimentation tank or holding tank, so that the effluent is primary treated and then disposed off to the main sewer line. ▪ The cleaning agents used will be non-	Monitoring of wastewater management shall be required. It includes visual inspection of drainage system, wastewater / sewage pits, septic tanks and soaking pits.	Monthly	Building Maintenance Supervisor reporting to Director of Educational Complex	In house Job-No cost required

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
		hazardous.				
Water Conservation and Maintenance of Water Quality						
3	Water Conservation and Quality Assurance	▪ A complete record of water consumption during the operation phase will be maintained. ▪ Water treatment systems shall be designed to cater for the entire Department of Education to maintain water quality. ▪ A low-cost, low maintenance water filtration system such as a Kanchan assembly can be implemented to keep water purity levels within acceptable parameters, especially Coliform levels which indicate presence of harmful pathogens. ▪ All water treatment systems shall meet WHO specified water quality parameters to be deemed acceptable foe use. ▪ It is envisioned that compartmentalized water streams can be provided for potable and non-potable uses such as washing, flushing etc. ▪ Water conservation practices will be adopted to prevent wastage of water.	Monitoring of drinking water shall be required. Following parameters will required to be monitor: ▪ Bacterial parameters ▪ Physical parameters ▪ Chemical parameters (Inorganic and Organic both) ▪ (National Environmental Quality Standards)	Monthly	a- Building Maintenance Supervisor - For Water Conservation b- Director of Educational Complex will need to hire an Environmental Consultant for conducting Water Quality Monitoring and Analysis	Cost for Water Sampling & Analysis for 1 sample – 1 time per month = Rs. 10,000 + Service Charges

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
		▪ The water supply lines will be checked and repaired for leaks, if any, in order to reduce wastage of water. ▪ Use of water efficient sanitary fittings such as low flush toilets will be ensured throughout the Project cycle.				
Energy Consumption						
4	Energy Consumption	▪ The energy-efficient lighting system installed for the project will contribute immensely to energy saving during the operational phase of the project. ▪ The occupants of the building will be sensitized to ensure energy efficiency in their domestic operations. ▪ The energy usage during the operational phase will be monitored and targets would be set for efficient use of energy.	1- Monitoring of building's own renewable power generation system such as solar power system, solar water heating system etc shall require being monitor. 2- Visual inspection of all areas inside the building shall be required to check the usage of electricity, water and natural gas to make sure that these are not being over utilized.	Daily	Building Maintenance Supervisor reporting to Director of Educational Complex	In house Job- No cost
Air Emissions						
5	Air Emissions	▪ Monitor standby generator exhausts at regular frequency. ▪ Carry out regular maintenance of	Stack gas analysis as per National Environmental Quality Standards shall be required	Yearly	Director of Educational Complex will need to hire an Environmental Consultant for conducting	Cost for Air Emissions Monitoring at 1 location – 1time

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
		generators.			Air Emissions Monitoring	per month = Rs. 10,000 + Service Charges
Traffic Flow and Congestion						
5	Traffic Flow and Congestion	▪ Traffic management plan will be introduced to manage smooth flow of vehicular traffic and to avoid traffic jam and long queues. ▪ Traffic management plan will be implemented and monitored. ▪ Vehicles will be parked at designated parking areas during operational phase. ▪ Parking of vehicles alongside the road would be prohibited at all times. ▪ Engineering design to examine vehicles exit and entry strategy so that it aligns with the traffic flow to cause minimum hindrance. ▪ Ramp slopes and passage areas to cater for worst case scenarios traffic flow on the main and service roads.	1- It will be required to monitor that traffic management plan is followed or not. 2- Management of traffic in the parking lots shall be required.	Daily	Building Maintenance Supervisor reporting to Director of Educational Complex	In house Job- No cost
Fire						
6	Fire	▪ Standard fire and smoke detection and	1- Visual inspection of fire	Bi-annually	Building Maintenance	No additional

Table 6.2: Environmental Mitigation and Monitoring Plan - Operational Phase of the Project						
S. No.	**Activity**	**Mitigation Measures**	**Monitoring Indicators**	**Monitoring and Reporting Frequency**	**Responsibility**	**Indicative Budget**
		protection devices such as alarms, fire hoses and hydrants to be provided in all critical. ▪ The facility will possess a detailed emergency and evacuation plan that will be regularly drilled to make sure that the responsible staff remains trained at all times. ▪ Firefighting equipment such as fire extinguishers and hydrant systems will be maintained at strategic locations within the premises. ▪ Regular inspection and servicing of the extinguishers will be undertaken by a reputable service provider and record of such inspections should be maintained. ▪ Signs such as "NO SMOKING" will be prominently displayed within the premises, especially in parts where inflammable material are handled.	extinguishers shall be needed to check whether they are at proper places or not. 2- Inspection of all fire extinguishers and other fire fighting equipments shall be required by local Civil Defence Department.		Supervisor reporting to Director of Educational Complex	Cost

7. CONCLUSION

Initial Environmental Examination (IEE) was conducted on behalf of United States Agency for International Development (USAID), for the proposed construction and associated activities of Educational Complex at the Karakoram International University, in Gilgit Baltistan. The findings from the study performed have been categorically recorded and presented in the current report. To ensure compliance of both the study and formulation of the reporting, all relevant national and international legislations were followed and adhered to.

A baseline line survey conducted by the IEE team provided the basis of establishing environmental baseline of the region which surrounds and includes the project site. The information collected was used to compose profiles of the natural, socioeconomic, and cultural environments likely to be affected by the project.

All proposed activities were reviewed and their possible consequent impacts assessed. For mitigation of these minor impacts, a comprehensive Environmental Management Plan has been put together and provided in the report for adherence which will ensure the avoidance of environmental degradation or contamination and provide sustainable development outcome.

In light of the study conducted, it is the finding of the IEE that the proposed construction activities in the project area at Karakoram International University will not cause adverse environmental impacts of such nature that could not be mitigated via proper construction methodologies and suggested counter measures. It is thus recommended that the IEE be approved with the condition that any and all corrective and mitigation measures presented in this report be implemented with diligence. The provided EMP in the report will aid the proponent in significantly diminishing any minor impacts which may arise, and will provide guidelines and measures to ensure sustainable and eco-responsible execution of the project works.

ANNEXURES

ANNEX – I

Pakistan Environmental Protection Act, 1997

The Gazette of Pakistan

EXTRAORDINARY
PUBLISHED BY AUTHORITY
==========
ISLAMABAD, SATURDAY,, DECEMBER 6,1997

PART I

Acts, Ordinances, President's Orders and Regulations

SENATE SECRETARIAT

Islamabad, the 6th December, 1997

No. F. 9(46)/97-Legis.- The following Acts of Majlis-e-Shoora (Parliament) received the assent of the Acting President on 3rd December, 1997 are hereby published for general information :-

Act No. XXXIV OF 1997

An Act to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development

WHEREAS it is expedient to provide for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development, and for matters connected therewith and incidental thereto;

1. Short title, extent and commencement.---(1) This Act, shall be called the Pakistan Environmental Protection Act, 1997

(2) It extends to the whole of Pakistan.

(3) It shall come into force at once.

2. Definitions.—In this Act, unless there is anything repugnant in the subject or context,—

(i) "adverse environmental effect" means impairment of, or damage to, the environment and includes—

(a) impairment of, or damage to, human health and safety or to biodiversity or property;

(b) pollution; and

(c) any adverse environmental effect as may be specified in the regulations;

(ii) "agricultural waste" means waste from farm and agricultural activities including poultry, cattle farming, animal husbandry residues from the use of fertilizers, pesticides and other farm . chemicals;

(iii) "air pollutant" means any substance that causes pollution of air and includes soot, smoke, dust particles, odour, light, electro-magnetic, radiation, heat, fumes, combustion exhaust, exhaust gases, noxious gases, hazardous substances and radioactive substances;

(iv) "biodiversity" or "biological diversity" means the variability among living organisms from all sources, including inter alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems;

(v) "Council" means the Pakistan Environmental Protection Council established under section 3;

(vi) "discharge" includes spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping;

(vii) "ecosystem" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit;

(viii) "effluent" means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapour;

(ix) "emission standards" means the permissible standards established by the Federal Agency or a Provincial Agency for emission of air pollutants and noise and for discharge of effluent and waste;

(x) "environment" means—

(a) air, water and land;

(b) all layers of the atmosphere;

(c) all organic and inorganic matter and living organisms;

(d) the ecosystem and ecological relationships;

(e) buildings, structures, roads, facilities and works;

(f) all social and economic conditions affecting community life; and

(g) the inter-relationships between any of the factors specified in sub-clauses (a) to (f);

(xi) "environmental impact assessment" means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed;

(xii) "Environmental Magistrate" means the Magistrate of the First Class appointed under Section 24 ;

(xiii) “Environmental Tribunal” means the Environmental Tribunal constituted under section 20 ;

(xiv) "Exclusive Economic Zone" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(xv) "factory" means any premises in which industrial activity is being undertaken;

(xvi) "Federal Agency" means the Pakistan Environmental Protection Agency established under section 5, or any Government Agency, local council or local authority exercising the powers and functions of the Federal Agency;

(xvii) "Government Agency" includes—

(a) a division, department, attached department, bureau, section, commission, board, office or unit of the Federal Government or a Provincial Government;

(b) a developmental or a local authority, company or corporation established or controlled by the Federal Government or Provincial Government; and

(c) a Provincial Environmental Protection Agency. ; and

(d) any other body defined and listed in the Rules of Business of the Federal Government or a Provincial Government.

(xviii) "hazardous substance" means—

(a) a substance or mixture of substances, other than a pesticide as defined in the Agricultural Pesticides Ordinance, 1971 (II of 1971), which, by reason of its chemical activity or toxic, explosive, flammable, corrosive, radioactive or other characteristics,

causes, or is likely to cause, directly or in combination with other matters an adverse environmental effect; and

(b) any substance which may be prescribed as a hazardous substance;

(xix) "hazardous waste" means waste which is or which contains a hazardous substance or which may be prescribed as hazardous waste and includes hospital waste and nuclear waste;

(xx) "historic waters" means such limits of the waters adjacent to the land territory of Pakistan as may be specified by notification under section 7 of the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(xxi) "hospital waste" includes waste medical supplies and materials of all kinds, and waste blood, tissue, organs and other parts of the human and animal bodies, from hospitals, clinics and laboratories;

(xxii) "industrial activity" means any operation or process for manufacturing, making, formulating, synthesising, altering, repairing, ornamenting, finishing, packing or otherwise treating any article or substance with a view to its use, sale, transport, delivery or disposal, or for mining, for oil and gas exploration and development, or for pumping water or sewage, or for generating, transforming or transmitting power or for any other industrial or commercial purpose;

(xxiii) "industrial waste" means waste resulting from an industrial activity;

(xxiv) "initial environmental examination" means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an adverse environmental effect for requiring preparation of an environmental impact assessment;

(xxv) "local authority" means any agency set up or designated by the Federal Government or a Provincial Government, by notification in the official Gazette, to be a local authority for the purposes of this Ordinance;

(xxvi) "local council" means a local council constituted or established under a law relating to local government;

(xxvii) "motor vehicle" means any mechanically propelled vehicle adapted for use upon land whether its power of propulsion is transmitted thereto from an external or internal source, and includes a chassis to which a body has not been attached, and a trailer, but does not include a vehicle running upon fixed rails;

(xxviii) "municipal waste" includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like;

(xxix) "National Environmental Quality Standards" means standards established by the Federal Agency under clause (e) of sub-section (1) of section 6 and approved by the Council under clause (c) of sub-section (1) of section 4;

(xxx) "noise" means the intensity, duration and character of sounds from all sources, and includes vibration;

(xxxi) "nuclear waste" means waste from any nuclear reactor or nuclear plant or other nuclear energy system, whether or not such waste is radioactive;

(xxxii) "person" means any natural person or legal entity and includes an individual, firm, association, partnership, society, group, company, corporation, co-operative society, Government Agency, non-governmental organization, community-based organization, village organization, local council or local authority and, in the case of a vessel, the master or other person having for the time being the charge or control of the vessel;

(xxxiii) "pollution" means the contamination of air, land or water by the discharge or emission of effluent or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or substances alters unfavourably the chemical, physical, biological, radiational, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity;

(xxxiv) "prescribed" means prescribed by rules made under this Act;

(xxxv) "project" means any activity, plan, scheme, proposal or undertaking involving any change in the environment and includes—

(a) construction or use of buildings or other works;

(b) construction or use of roads or other transport systems;

(c) construction or operation of factories or other installations;

(d) mineral prospecting, mining, quarrying, stone-crushing, drilling and the like;

(e) any change of land use or water use; and

(f) alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems, factories or other installations;

(xxxvi) "proponent" means the person who proposes or intends to undertake a project;

(xxxvii) "Provincial Agency" means a Provincial Environmental Protection Agency established under section 8;

(xxxviii) "regulations" means regulations made under this Act;

(xix) "rules" means rules made under this Act;

(xl) "sewage" means liquid or semi-solid wastes and sludge from sanitary conveniences, kitchens, laundries, washing and similar activities and from any sewerage system or sewage disposal works;

(xli) "standards" means qualitative and quantitative standards for discharge of effluent and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the National Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations;

(xlii) "sustainable development" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs;

(xliii) "territorial waters" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, l 976 (LXXXII of 1976);

(xliv) "vessel" includes anything made for the conveyance by water of human beings or of goods; and

(xlv) "waste" means any substance or object which has been, is being or is intended to be, discarded or disposed of, and includes liquid waste, solid waste, waste gases, suspended waste, industrial waste, agricultural waste, nuclear waste, municipal waste, hospital waste, used polyethylene bags and residues from the incineration of all types of waste.

3. Establishment of the Pakistan Environmental Protection Council.— (1) The Federal Government shall, by notification in the official Gazette, establish a Council to be known as the Pakistan Environmental Protection Council consisting of—

(i) Prime Minister or such other person as the Prime Minister may nominate in this behalf.		Chairperson
(ii) Minister incharge of the Ministry or Division dealing with the subject of environment.		Vice Chairperson
(iii) Chief Ministers of the Provinces.	.....	Members
(iii) Ministers Incharge of the subject of environment in the Provinces.		Members
(iv) Such other persons not exceedingthirty-five as the federal Government may appoint, of which at least		Members

twenty shall be non-officials including five representatives of the Chambers of Commerce and Industry and industrial associations and one or more representatives of the Chambers of Agriculture, the medical and legal professions, trade unions, and non-governmental organizations concerned with the environment and development, and scientists, technical experts and educationists	
(v) Secretary to the Government of Pakistan, incharge of the Ministry or Division dealing with the subject of environment	Member/ Secretary

(2) The Members of the Council, other than ex-officio members, shall be appointed in accordance with the prescribed procedure and shall hold office for a term of two years.

(3) The Council shall frame its own rules of procedure.

(4) The Council shall hold meetings, as and when necessary, but not less than two meetings, shall be held in a year.

(5) The Council may constitute committees of its members and entrust them with such functions as it may deem fit, and the recommendations of the committees shall be submitted to the Council for approval.

(6) The Council, or any of its committees, may invite any technical expert or representative of any Government Agency or non-governmental organization or other person possessing specialized knowledge of any subject for assistance in performance of its functions.

4. Functions and powers of the Council.—(1) The Council shall—

(a) co-ordinate and supervise enforcement of the provisions of this Act; and

(b) approve comprehensive national environmental policies and ensure their implementation within the framework of a national conservation strategy as may be approved by the Federal Government from time to time;

(c) approve the National Environmental Quality Standards;

(d) provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources.

(e) co-ordinate integration of the principles and concerns of sustainable development into national development plans and policies;

(f) consider the National Environment Report and give appropriate directions thereon;

(2) The Council may, either itself or on the request of any person or organization, direct the Federal Agency or any Government Agency to prepare, submit, promote or implement projects for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, and the sustainable development of resources or to undertake research in any aspect of environment.

5. Establishment of the Pakistan Environmental Protection Agency.----(1) The Federal Government shall, by notification in the official Gazette, establish the Pakistan Environmental Protection Agency to exercise the powers and perform the functions assigned to it under this Act and the rules and regulations made thereunder.

(2) The Federal Agency shall be headed by a Director-General who shall be appointed by the Federal Government on such terms and conditions as it may determine.

(3) The Federal Agency shall have such administrative, technical and legal staff, as the Federal Government may specify, to be appointed in accordance with such procedure as may be prescribed.

(4) The powers and functions of the Federal Agency shall be exercised and performed by the Director-General.

(5) The Director-General may, by general or special order, delegate any of the powers and functions to staff appointed under sub-section (3).

(6) For assisting the Federal Agency in the discharge of its functions the Federal Government shall establish Advisory Committees for various sectors and appoint as members thereof eminent representatives of the relevant sector, educational institutions, research institutes and non-governmental organizations.

6. Functions of the Federal Agency.—(1) The Federal Agency shall—

(a) administer and implement this Act and the rules and regulations made;

(b) prepare, in co-ordination with the appropriate Government Agency and in consultation with the concerned sectoral Advisory Committees, national environmental policies for approval by the Council;

(c) take all necessary measures for the implementation of the national environmental policies approved by the Council;

(d) prepare and publish an annual National Environment Report on the state of the environment;

(e) prepare, establish and revise the National Environmental Quality Standards with approval of the Council:

Provided that before seeking approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standards for public opinion in accordance with the prescribed procedure; and

(f) ensure enforcement of the National Environmental Quality Standards;

(g) establish standards for the quality of the ambient air, water and land, by notification in the official Gazette in consultation with the Provincial Agency concerned:

Provided that—

(i) different standards for discharge or emission from different sources and for different areas and conditions may be specified;

(ii) where standards are less stringent than the National Environmental Quality Standards prior approval of the Council shall be obtained;

(iii) certain areas, with the approval of the Council, may exclude from carrying out specific activities, projects from the application of such standards;

(h) co-ordinate environmental policies and programmes nationally and internationally;

(i) establish systems and procedures for surveys, surveillance, monitoring, measurement, examination, investigation, research, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment in various sectors;

(j) take measures to promote research and the development of science and technology which may contribute to the prevention of pollution, protection of the environment, and sustainable development;

(k) certify one or more laboratories as approved laboratories for conducting tests and analysis and one or more research institutes as environmental research institutes for conducting research and investigation for the purposes of this Act.

(l) identify the needs for and initiate legislation in various sectors of the environment;

(m) render advice and assistance in environmental matters including such information and data available with it as may be required for carrying out the purposes of this Act:

Provided that the disclosure of such information shall be subject to the restrictions contained in the proviso to sub-section (3) of section 12;

(n) assist the local councils, local authorities, Government Agencies and other persons to implement schemes for the proper disposal of wastes so as to ensure compliance with the standards established by it;

(o) provide information and guidance to the public on environmental matters;

(p) recommend environmental courses, topics, literature and books for incorporation in the curricula and syllabi of educational institutions;

(q) promote public education and awareness of environmental issues through mass media and other means including seminars and workshops;

(r) specify safeguards for the prevention of accidents and disasters which may cause pollution, collaborate with the concerned person in the preparation of contingency plans for control of such accidents and disasters, and co-ordinate implementation of such plans;

(s) encourage the formation and working of non-governmental organizations, community organizations and village organizations to prevent and control pollution and promote sustainable development;

(t) take or cause to be taken all necessary measures for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development; and

(u) perform any function which the Council may assign to it.

(2) The Federal Agency may—

(a) undertake inquiries or investigation into environmental issues, either of its own accord or upon complaint from any person or organization;

(b) request any person to furnish any information or data relevant to its functions;

(c) initiate with the approval of the Federal Government, requests for foreign assistance in support of the purposes of this Act and enter into arrangements with foreign agencies or organizations for the exchange of material or information and participate in international seminars or meetings;

(d) recommend to the Federal Government the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and the purposes of this Act, including—

(i) incentives, prizes awards, subsidies, tax exemptions, rebates and depreciation allowances; and

(ii) taxes, duties, cesses and other levies;

(e) establish and maintain laboratories to help in the performance of its functions under this Act and to conduct research in various aspects of the environment and provide or arrange necessary assistance for establishment of similar laboratories in the private sector; and

(f) provide or arrange, in accordance with such procedure as may be prescribed, financial assistance for projects designed to facilitate the discharge of its functions.

7. Powers of the Federal Agency.—Subject to the provisions of this Act, the Federal Agency may—

(a) lease, purchase, acquire, own, hold, improve, use or otherwise deal in and with any property both moveable and immovable;

(b) sell, convey, mortgage, pledge, exchange or otherwise dispose of its property and assets;

(c) fix and realize fees, rates and charges for rendering any service or providing any facility, information or data under this Act or the rules and regulations;

(d) enter into contracts, execute instruments, incur liabilities and do all acts or things necessary for proper management and conduct of its business;

(e) appoint with the approval of the Federal Government and in accordance with such procedures as may be prescribed, such advisers, experts and consultants as it considers necessary for the efficient performance of its functions on such terms and conditions as it may deem fit;

(f) summon and enforce the attendance of any person and require him to supply any information or document needed for the conduct of any enquiry or investigation into any environmental issue;

(g) enter and inspect and under the authority of a search warrant issued by the Environmental Court or Environmental Magistrate, search at any reasonable time, any land, building, premises, vehicle or vessel or other place where or in which. there are reasonable grounds to believe that an offence under this Act has been, or is being, committed;

(h) take samples of any materials, products, articles or substances or of the effluent, wastes or air pollutants being discharged or emitted or of air, water or land in the vicinity of the discharge or emission;

(i) arrange for test and analysis of the samples at a certified laboratory;

(j) confiscate any article used in the commission of the offence where the offender is not known or cannot be found within a reasonable time:

Provided that the power under clauses (f), (h), (I) and (j) shall be exercised in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898). or the rules made under this Act and under the direction of the Environmental Court or Environmental Magistrate; and

(k) establish a National Environmental Co-ordination Committee comprising the Director-General as its chairman and the Director Generals of the Provincial Environmental Protection Agencies and such other persons as the Federal Government may appoint as its members to exercise such powers and perform such functions as may be delegated or assigned to it by the Federal Government for carrying out the purposes of this Act and for ensuring inter provincial co-ordination in environmental policies.

8. Establishment, powers and functions of the Provincial Environmental Protection Agencies.—(1) Every Provincial Government shall, by notification in the official Gazette, establish an Environmental Protection Agency, to exercise such powers and perform such functions as may be delegated to it by the Provincial Government under sub-section (2) of section 26.

(2) The Provincial Agency shall be headed by a Director-General who shall be appointed by the Provincial Government on such terms and conditions as it may determine.

(3) The Provincial Agency shall have such administrative, technical and legal staff as the Provincial Government may specify, to be appointed in accordance with such procedure as may be prescribed.

(4) The powers and functions of the Provincial Agency shall be exercised and performed by the Director-General.

(5) The Director General may, by general or special order, delegate any of the powers and functions to staff appointed under sub-section (3).

(6) For assistance of the Provincial Agency in the discharge of its functions, the Provincial Government shall establish Sectoral Advisory Committees for various sectors and appoint members from amongst eminent representatives of the relevant sector, educational institutions, research institutes and non-governmental organizations.

9. Establishment of the Provincial Sustainable Development Funds.— (1) There shall be established in each Province a Sustainable Development Fund.

(2) The Provincial Sustainable Development Fund shall be derived from the following sources, namely:—

(a) grants made or loans advanced by the Federal Government or the Provincial Governments;

(b) aid and assistance, grants, advances, donations and other non-obligatory funds received from foreign governments, national or international agencies, and non-governmental organizations; and

(c) contributions from private organizations and other persons.

(3) The Provincial Sustainable Development Fund shall be utilized in accordance with such procedure as may be prescribed for—

(a) providing financial assistance to the projects designed for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, the sustainable development of resources and for research in any aspect of environment; and

(b) any other purpose which in the opinion of the Board shall help achieve environmental objectives and the purposes of this Act.

10. Management of the Provincial Sustainable Development Fund.—(1) The Provincial Sustainable Development Fund shall be managed by a Board known as the Provincial Sustainable Development Fund Board consisting of—

(i) Chairman, Planning and Development Board/Additional Chief Secretary Planning and Development Department	Chairperson
(ii) such officers of the Provincial Governments, not exceeding six, as the Provincial Government may appoint including Secretaries incharge of the Finance, Industries and Environment Departments	Members
(iii) such non-official persons not exceeding ten as the Provincial Government may appoint including representatives of the Provincial Chamber of Commerce and Industry, non governmental organizations, and major donors.	Members
(iv) Director-General of the Provincial Agency	Member/Secretary

(2) In accordance with such procedure and such criteria as may be prescribed, the Board shall have the power to—

(a) sanction financial assistance for eligible projects;

(b) invest moneys held in the Provincial Sustainable Development Fund in such profit-bearing Government bonds, savings schemes and securities as it may deem suitable; and

(c) take such measures and exercise such powers as may be necessary for utilization of the Provincial Sustainable Development Fund for the purposes specified in sub-section (3) of section 9.

(3) The Board shall constitute committees of its members to undertake regular monitoring of projects financed from the Provincial Sustainable Development Fund and to submit progress reports to the Board which shall publish an Annual Report incorporating its annual audited accounts and performance evaluation based on the progress reports.

11. Prohibition of certain discharges or emissions.—(1) Subject to the provisions of this Act and the rules and regulations 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 National Environmental Quality Standards or, where applicable, the standards established under sub-clause (I) of clause (g) of sub-section (1) of section 6.

(2) The Federal Government may levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1), to be calculated at such rate, and collected in accordance with such procedure as may be prescribed.

(3) Any person who pays the pollution charge levied under sub-section (2) shall not be charged with an offence with respect to that contravention or failure.

(4) The provisions of sub-section (3) shall not apply to projects which commenced industrial activity on or after the thirtieth day of June, 1994.

12. Initial environmental examination and environmental impact assessment.—(1) No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof.

(2) The Government Agency shall subject to standards fixed by the Federal Environmental Protection Agency—

(a) review the initial environmental examination and accord its approval, or require submission of an environmental impact assessment by the proponent; or

(b) review the environmental impact assessment and accord its approval subject to such conditions as it may deem fit to impose, 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.

(3) Every review of an environmental impact assessment shall be carried out with public participation and no information will be disclosed during the course of such public participation which relates to—

(i) trade, manufacturing or business activities, processes or techniques of a proprietary nature, or financial, commercial, scientific or technical matters which the proponent has requested should remain confidential, unless for reasons to be recorded in writing, the Director General of the Federal Agency is of the opinion that the request for confidentiality is not well-founded or the public interest in the disclosure outweighs the possible prejudice to the competitive position of the project or its proponent; or

(ii) international relations, national security or maintenance of law and order, except with the consent of the Federal Government; or

(iii) matters covered by legal professional privilege.

(4) The Government Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination or environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the initial environmental examination or, as the case may be, the environmental impact assessment shall be deemed to have been approved, to the extent to which it does not contravene the provisions of this Act and the rules and regulations.

(5) Subject to sub-section (4) the appropriate Government may in a particular case extend the aforementioned period of four months if the nature of the project so warrants.

(6) The provisions of sub-sections (1), (2), (3), (4) and (5) shall apply to such categories of projects and in such manner as may be prescribed.

(7) The Government Agency shall maintain separate registers for initial environmental examination and environmental impact assessment projects, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be open to inspection by the public at all reasonable hours and the disclosure of information in such registers shall be subject to the restrictions specified in sub-section (3).

13. Prohibition of import of hazardous waste.—No person shall import hazardous waste into Pakistan and its territorial waters, Exclusive economic Zone and historic waters.

14. Handling of hazardous substances.—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 licence 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.

15. Regulation of motor vehicles.---(l) Subject to the provisions of this Act, and the rules and regulations, no person shall operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the National Environmental Quality Standards, or where applicable the standards established under clause (g) of sub-section (I) of section 6.

(2) For ensuring compliance with the standards mentioned in sub-section (1), the Federal Agency may direct that any motor vehicle or class of vehicles shall install such pollution control devices or other equipment or use such fuels or undergo such maintenance or testing as may be prescribed.

(3) Where a direction has been issued by the Government Agency under subsection (2) in respect of any motor vehicles or class of motor vehicles, no person shall operate any such vehicle till such direction has been complied with.

16. Environmental protection order.---(1) Where the Federal Agency or a Provincial Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of the provisions of this Act, rules or regulations or of the conditions of a licence, and is likely to cause, or is causing or has caused an adverse environmental effect, the Federal Agency or, as the case may be, the Provincial Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Federal Agency or Provincial Agency may consider necessary within such period as may be specified in the order.

(2) In particular and without prejudice to the generality of the foregoing power, such measures may include—

(a) immediate stoppage, preventing, lessening or controlling the discharge, emission, disposal, handling, act or omission, or to minimize or remedy the adverse environmental effect;

(b) installation, replacement or alteration of any equipment or thing to eliminate, control or abate on a permanent or temporary basis, such discharge, emission, disposal, handling, act or omission;

(c) action to remove or otherwise dispose of the effluent, waste, air pollutant, noise, or hazardous substances; and

(d) action to restore the environment to the condition existing prior to such discharge, disposal, handling, act or omission, or as close to such condition as may be reasonable in the circumstances, to the satisfaction of the Federal Agency or, Provincial Agency.

(3) Where the person, to whom directions under sub-section (1) are given, does not comply therewith, the Federal Agency or Provincial Agency may, in addition to the proceedings initiated against him under this Act, the rules and regulations, itself take or cause to be taken such measures specified in the order as it may deem necessary and may recover the reasonable costs of taking such measures from such person as arrears of land revenue.

17. Penalties.—(1) Whoever contravenes or fails to comply with the provisions of sections 11, 12, 13 or section 16 or any order issued thereunder shall be punishable with fine which may extend to one million rupees, and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues:

Provided that if contravention of the provisions of section 11 also constitutes contravention of the provisions of section 15, such contravention shall be punishable under sub-section (2) only.

(2) Whoever contravenes or fails to comply with the provisions of section 14 or 15 or any rule or regulation or conditions of any licence, any order or direction, issued by the Council or the Federal Agency or Provincial Agency, shall be punishable with fine which may extend to one hundred thousand rupees, and in case of continuing contravention or failure with an additional fine which extend to one thousand rupees for every day during which such contravention continues.

(3) Where an accused has been convicted of an offence under sub-sections (1) and (2), the Environmental Court and Environmental Magistrate, as the case may be, shall, in passing sentence, take into account the extent and duration of the contravention or failure constituting the offence and the attendant circumstances.

(4) Where an accused has been convicted of an offence under sub-section (1) and the Environmental Court is satisfied that as a result of the commission of the offence

monetary benefits have accrued to the offender, the Environmental Court may order the offender to pay, in addition to the fines under sub-section (1), further additional fine commensurate with the amount of the monetary benefits.

(5) Where a person convicted under sub-sections (1) or sub-section (2) had been previously convicted for any contravention under this Act, the Environmental Court or, as the case may be, Environmental Magistrate may, in addition to the punishment awarded thereunder—

(a) endorse a copy of the order of conviction to the concerned trade or industrial association, if any, or the concerned Provincial Chamber of Commerce and Industry or the Federation of Pakistan Chambers of Commerce and Industry;

(b) sentence him to imprisonment for a term which may extend to two years;

(c) order the closure of the factory;

(d) order confiscation of the factory, machinery, and equipment, vehicle, material or substance, record or document or other object used or involved in contravention of the provisions of the Act:

Provided that for a period of three years from the date of commencement of this Act the sentence of imprisonment shall be passed only in respect of persons who have been previously convicted for more than once for any contravention of sections 11, 13, 14 or 16 involving hazardous waste;

(e) order such person to restore the environment at his own cost, to the conditions existing prior to such contravention or as close to such conditions as may be reasonable in the circumstances to the satisfaction of the Federal Agency or, as the case may be, Provincial Agency; and

(f) order that such sum be paid to any person as compensation for any loss, bodily injury, damage to his health or property suffered by such contravention.

(6) The Director-General of the Federal Agency or of a Provincial Agency or an officer generally or specially authorised by him in this behalf may, on the application of the accused compound an offence under this Act with the permission of the Environmental Tribunals or Environmental Magistrate in accordance with such proceedure as may be prescribed.

(7) Where the Director-General of the Federal Agency or of a Provincial Agency is of the opinion that a person has contravened any provision of Act he may, subject to the rules, by notice in writing to that person require him to pay to the Federal Agency or, as the case may be, Provincial Agency an administrative penalty in the amount set out in the notice for each day the contravention continues; and a person who pays an administrative

penalty for a contravention shall not be charged under this Act with an offence in respect of such contravention.

(8) The provisions of sub-sections (6) and (7) shall not apply to a person who has been previously convicted of offence or who has compounded an offence under this Act who has paid an administrative penalty for a contravention of any provision of this Act.

18. Offences by bodies corporate.— Where any contravention of this Act has been committed by a body corporate, and it is proved that such offence has been committed with the consent or connivance of, or is attributed to any negligence on the part of, any director, partner, manager, secretary or other Officer of the body corporate, such director, partner, manager, secretary or other officer of the body corporate, shall be deemed guilty of such contravention along with the body corporate and shall be punished accordingly:

Provided that in the case of a company as defined under the Companies Ordinance, 1984 (XLVII of 1984), only the Chief Executive as defined in the said Ordinance shall be liable under this section.

Explanation.— For the purposes of this section, "body corporate" includes a firm, association of persons and a society registered under the Societies Registration Act, 1860 (XXI of 1860), or under the Co-operative Societies Act, 1925 (VII of 1925).

19. Offences by Government Agencies, local authorities or local councils.—Where any contravention of this Act has been committed by any Government Agency, local authority or local council, and it is proved that such contravention has been committed with the consent or connivance of, or is attributable to any negligence on the part of, the Head or any other officer of the Government Agency, local authority or local council, such Head or other officer shall also be deemed guilty of such contravention along with the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

20. Environmental Tribunals.—(1) The Federal Government may, by notification in the official gazette, establish as many Environmental Tribunals as it consider necessary and, where it establishes more than one Environmental Tribunals, it shall specify territorial limits within which, or the class of cases in respect of which, each one of them shall exercise jurisdiction under this Act.

(2) An Environmental Tribunal shall consist of a Chairperson who is, or has been, or is qualified for appointment as, a judge of the High Court to be appointed after consultation with the Chief Justice of the High Court and two members to be appointed by the Federal Government of which at least one shall be a technical member with suitable professional qualifications and experience; in the environmental field as may be prescribed.
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(3) For every sitting of the Environ mental Tribunal, the presence of the Chairperson and not less than one Member shall be necessary.

(4) A decision of an Environmental Tribunal shall be expressed in terms of the opinion of the majority of its members, including ;the Chairperson, or if the case has been decided by the Chairperson and only one of the members and a there is a difference of opinion between them, the ;decision of the Environmental Tribunal shall be expressed in terms of the opinion of the Chairperson.

(5) An environmental Tribunal shall not, merely be reason of a change in its composition, or the absence of any member from any sitting, be bound to recall and rehear any witness who has given evidence, and may act on the evidence already ;recorded by, or produced, before it.

(6) An Environmental Tribunal may hold its sittings at such places within its territorial jurisdiction as the Chairperson may decide.

(7) No act or proceeding of an Environmental Tribunal shall be invalid by reason only of the existence of a a vacancy in, or defect in the constitution, of, the Environmental Tribunal.

(8) The terms and conditions of service of the Chairperson and members of the Environmental Tribunal shall be such as may be prescribed.

21. Jurisdiction and powers of Environmental Tribunals.—(1) An Environmental Tribunal shall exercise such powers and perform such functions as are, or may be, conferred upon or assigned to it by or under this Act or the rules and regulations made thereunder.

(2) All contravention punishable under sub-section (1) of section 17 shall exclusively be triable by an Environmental Tribunal.

(3) An Environmental Tribunal shall not take cognizance of any offence triable under sub-section (2) except on a complaint in writing by--

(a) the Federal Agency or any Government Agency or local council; and

(b) any aggrieved person, who has given notice of not less than thirty days to the Federal Agency, or the Provincial Agency concerned, of the alleged contravention and of his intention to make a complaint to the Environment Tribunal.

(4) In exercise of its criminal jurisdiction, the Environmental Tribunals shall have the same powers as are vested in Court of Session under the Code of Criminal Procedure, 1898 (Act V of 1898).

(5) In exercise of the appellate jurisdiction under section 22 the Environmental Tribunals shall have the same powers and shall follow the same procedure as an appellate court in the Code of Civil Procedure, 1908 (Act V of 1908).

(6) In all matters with respect to which no procedure has been provided for in this Act, the Environmental Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908 (Act V of 1908).

(7) An Environmental Tribunal may, on application filed by any officer duly authorised in this behalf by the Director-General of the Federal Agency or of Provincial Agency, issue bailable warrant for the arrest of any person against whom reasonable suspicion exist, of his having been involved in contravention punishable under sub-section (1) of Section 17:

Provided that such warrant shall be applied for, issued, and executed in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898):

Provided further that if the person arrested executes a bond with sufficient sureties in accordance with the endorsement on the warrant he shall be released from custody, failing which he shall be taken or sent without delay to the officer in-charge of the nearest police station.

(8) All proceedings before the Environmental Tribunal shall be deemed to be judicial proceedings within the meaning of section 193 and 228 of the Pakistan Penal Code (Act XLV of 1860), and the Environ mental Tribbunal shall be deemed to be a court for the purpose of section 480 and 482 of the Code of Criminal Procedure, 1898 (Act V of 1898).

(9) No court other than an Environmental Tribunal shall have or exercise any jurisdiction with respect to any matter to which the jurisdiction of an Environmental Tribunal extends under this Act, the rules and regulations made thereunder.

(10) Where the Environmental Tribunal is satisfied that a complaint made to it under sub-section (3) is false and vexatious to the knowledge of the complainant, it may, by an order, direct the complainant to pay to the person complained against such compensatory costs which may extend to one hundred thousand rupees.

22. Appeals to the Environmental Tribunal.—(1) Any person aggrieved by any order or direction of the Federal Agency or any Provincial Agency under any provision of this Act, and rules or regulations may prefer an appeal with the Environmental Tribunal within thirty days of the date of communication of the impugned order or direction to such person.

(2) An appeal to the Environmental Tribunal shall be in such form, contain such particulars and be accompanied by such fees as may be prescribed.

23. Appeals from orders of the Environmental Tribunal.---(l) Any person aggrieved by any final order or by any sentence of the Environmental Tribunal passed under this Act may, within thirty days of communication of such order or sentence, prefer an appeal to the High Court.

(2) An appeal under sub-section (l) shall be heard by a Bench of not less than two Judges.

24. Jurisdiction of Environmental Magistrates.—(l) Notwithstanding anything contained in the Code of Criminal Procedure, 1898 (Act V of 1898), or any other law for the time being in force, but subject to the provisions of this Act, all contravention punishable under sub-section (2) of section 17 shall exclusively be triable by a judicial Magistrate of the first class as Environmental Magistrate especially empowered in this behalf by the High Court.

(2) An Environmental Magistrate shall be competent to impose any punishment specified in sub-sections (2) and (4) of section 17.

(3) An Environmental Magistrate shall not take cognizance of an offence triable under sub-section (I) except on a complaint in writing by—

(a) the Federal Agency, Provincial Agency, or Government Agency or a local council; and

(b) any aggrieved person.

25. Appeals from orders of Environmental Magistrates.—Any person convicted of any contravention of this Act or the rules or regulations by an Environmental Magistrate may, within thirty days from the date of his conviction, appeal to the Court of Sessions whose decision thereon shall be final.

26. Power to delegate.—(1) The Federal Government may, by notification in the official Gazette, delegate any of its or of the Federal Agency's powers and functions under this Act and the rules and regulations to any Provincial Government, any Government Agency, local council or local authority.

(2) The Provincial Government may, by notification in the official Gazette, delegate any of its or of the Provincial Agency's powers or functions under this Act and the rules and regulations to any Government Agency of such Provincial Government or any local council or local authority in the Province.

27. Power to give directions.—In the performance of their functions under this Act-

(a) the Federal Agency and Provincial Agencies shall be bound by the directions given to them in writing by the Federal Government; and

(b) a Provincial Agency shall be bound by the directions given to it in writing by the Provincial Government.

28. Indemnity.—No suit, prosecution or other legal proceedings shall lie against the Federal or Provincial Governments, the Council, the Federal Agency or Provincial Agencies, the Director-Generals of the Federal Agency and the Provincial Agency, members, officers, employees, experts, advisers, committees or consultants of the Federal or Provincial Agencies or the Environmental Tribunal or Environmental Magistrates or any other person for anything which is in good faith done or intended to be done under this Act or the rules or regulations made thereunder.

29. Dues recoverable as arrears of land revenue.—Any dues recoverable by the Federal Agency or Provincial Agency under this Act, or the rules or regulations shall be recoverable as arrears of land revenue.

30. Act to override other laws.—The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force.

31. Power to make rules.—The Federal Government may, by notification in the official Gazette, make rules for carrying out the purposes of this Act including rules for implementing the provisions of the international environmental Agreements, specified in the Schedule to this Act.

32. Power to amend the Schedule.__The Federal Government may, by notification in the official Gazette, amend the Schedule so as to add any entry thereato or modify or omit any entry therein.

33. Power to make regulations.---(1) For carrying out the purposes of this Act, the Federal Agency may, by notification in the official Gazette and with the approval of the Federal Government, make regulations not inconsistent with the provisions of this Act or the rules made thereunder.

(2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for—

(a) submission of periodical reports, data or information by any Government agency, local authority or local council in respect of environmental matters;

(b) preparation of emergency contingency plans for coping with environmental hazards and pollution caused by accidents, natural disasters and calamities;

(c) appointment of officers, advisers, experts, consultants and employees;

(d) levy of fees, rates and charges in respect of services rendered, actions taken and schemes implemented;

(e) monitoring and measurement of discharges and emissions;

(f) categorization of projects to which, and the manner in which, section 12 applies;

(g) laying down of guidelines for preparation of initial environmental examination and environmental impact assessment and Development of procedures for their filing, review and approval;

(h) providing procedures for handling hazardous substances; and

(i) installation of devices in, use of fuels by, and maintenance and testing of motor vehicles for control of air and noise pollution.

34. Repeal, savings and succession.—(1) The Pakistan Environmental Protection Ordinance 1983 (XXXVII of 1983) is hereby repealed.

(2) Notwithstanding the repeal of the Pakistan Environmental Protection Ordinance, l983 (XXVII of 1983), any rules or regulations or appointments made, orders passed, notifications issued, powers delegated, contracts entered into, proceedings commenced, rights acquired liabilities incurred, penalties, rates, fees or charges levied, things done or action taken under any provisions of that Ordinance shall, so far as they are not inconsistent with the provisions of this Act be deemed to have been made, passed, issued, delegated, entered into, commenced, acquired, incurred, levied, done or taken under this Act.

(3) On the establishment of the Federal Agency and Provincial Agencies under this Act, all properties, assets and liabilities pertaining to the Federal Agency and Provincial Agencies established under that Ordinance shall vest in and be the properties, assets and liabilities, as the case may be, of the Federal Agency and Provincial Agency established under this Act.

SCHEDULE

(See section 31)

1. International Plant Protection Convention, Rome, 1951.

2. Plant Protection Agreement for the South-East Asia and Pacific Region (as amended), Rome, 1956.

3. Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of its Distribution Area in South-West Asia (as amended), Rome, 1963.

4. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971 and its amending Protocol, Paris, 1982.

5. Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), 1972.

6. Convention on International Trade in Endangered Species of Wild Funa and Flora (CITES), Washington, 1973.

7. Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.

8. Convention on the Law of the Sea, Montego Bay, 1982.

9. Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985.

10. Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987 and amendments thereto.

11. Agreement on the Network of Agriculture Centres in Asia and the Pacific, Bangkok, 1988.

12. Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, Basel, 1989.

13. Convention on Biological Diversity, Rio de Janeiro, 1992.

14. United Nations Framework Convention on Climate Change, Rio De Janeiro, 1992.

ANNEX – II

Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000

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

S.R.O. 339 (1)/2001. - In exercise of the powers referred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), Pakistan Environmental Protection Agency, with the approval of the Federal Government is pleased to make the following Rules, namely : -

1. Short title and commencement

(1) These regulations may be called the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

(2) They shall come into force at once.

2. Definitions

(1) In these regulations, unless there is anything repugnant in the subject or context –

(a) "Act" means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);

(b) "Director-General" means the Director-General of the Federal Agency;

(c) "EIA" means an environmental impact assessment as defined in section 2(xi);

(d) "IEE" means an initial environmental examination as defined in section 2(xxiv); and

(e) "section" means a section of the Act.

(2) All other words and expressions used in these regulations but not defined shall have the same meanings as are assigned to them in the Act.

3. Projects requiring an IEE

A proponent of a project falling in any category listed in Schedule I shall file an IEE with the Federal Agency, and the provisions of section 12 shall apply to such project.

4. Projects requiring an EIA

A proponent of a project falling in any category listed in Schedule II shall file an EIA with the Federal Agency, and the provisions of section 12 shall apply to such project.

5. Projects not requiring an IEE or EIA

(1) A proponent of a project not falling in any category listed in Schedules I and II shall not be required to file an IEE or EIA:

Provided that the proponent shall file –

(a) an EIA, if the project is likely to cause an adverse environmental effect;

(b) for projects not listed in Schedules I and II in respect of which the Federal Agency has issued guidelines for construction and operation, an application for approval accompanied by an undertaking and an affidavit that the aforesaid guidelines shall be fully complied with.

(2) Notwithstanding anything contained in sub-regulation (1), the Federal Agency may direct the proponent of a project, whether or not listed in Schedule I or II, to file an IEE or EIA, for reasons to be recorded in such direction:

Provided that no such direction shall be issued without the recommendation in writing of the Environmental Assessment Advisory Committee constituted under Regulation 23.

(3) The provisions of section 12 shall apply to a project in respect of which an IEE or EIA is filed under sub-regulation (1) or (2).

6. Preparation of IEE and EIA

(1) The Federal Agency may issue guidelines for preparation of an IEE or an EIA, including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.

(2) Where guidelines have been issued under sub-regulation (1), an IEE or EIA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify in the IEE or EIA any departure therefrom.

7. Review Fees

The proponent shall pay, at the time of submission of an IEE or EIA, a non-refundable Review Fee to the Federal Agency, as per rates shown in Schedule III.

8. Filing of IEE and EIA

(1) Ten paper copies and two electronic copies of an IEE or EIA shall be filed with the Federal Agency.

(2) Every IEE and EIA shall be accompanied by –

(a) an application, in the form prescribed in Schedule IV; and

(b) copy of receipt showing payment of the Review Fee.

9. Preliminary scrutiny

(1) Within 10 working days of filing of the IEE or EIA, the Federal Agency shall –

(a) confirm that the IEE or EIA is complete for purposes of initiation of the review process; or

(b) require the proponent to submit such additional information as may be specified; or

(c) return the IEE or EIA to the proponent for revision, clearly listing the points requiring further study and discussion.

(2) Nothing in sub-regulation (1) shall prohibit the Federal Agency from requiring the proponent to submit additional information at any stage during the review process.

10. Public participation

(1) In the case of an EIA, the Federal Agency shall, simultaneously with issue of confirmation of completeness under clause (a) of sub-regulation (1) of Regulation 9, cause to be published in any English or Urdu national newspaper and in a local newspaper of general circulation in the area affected by the project, a public notice mentioning the type of project, its exact location, the name and address of the proponent and the places at which the EIA of the project can, subject to the restrictions in sub-section (3) of section 12, be accessed.

(2) The notice issued under sub-regulation (1) shall fix a date, time and place for public hearing of any comments on the project or its EIA.

(3) The date fixed under sub-regulation (2) shall not be earlier than 30 days from the date of publication of the notice.

(4) The Federal Agency shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.

(5) All comments received by the Federal Agency from the public or any Government Agency shall be collated, tabulated and duly considered by it before decision on the EIA.

(6) The Federal Agency may issue guidelines indicating the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment.

11. Review

(1) The Federal Agency shall make every effort to carry out its review of the IEE within 45 days, and of the EIA within 90 days, of issue of confirmation of completeness under Regulation 9.

(2) In reviewing the IEE or EIA, the Federal Agency shall consult such Committee of Experts as may be constituted for the purpose by the Director-General, and may also solicit views of the sectoral Advisory Committee, if any, constituted by the Federal Government under sub-section (6) of section 5.

(3) The Director-General may, where he considers it necessary, constitute a committee to inspect the site of the project and submit its report on such matters as may be specified.

(4) The review of the IEE or EIA by the Federal Agency shall be based on quantitative and qualitative assessment of the documents and data furnished by the proponent, comments from the public and Government Agencies received under Regulation 10, and views of the committees mentioned in sub-regulations (2) and (3) above.

12. Decision

On completion of the review, the decision of the Federal Agency shall be communicated to the proponent in the form prescribed in Schedule V in the case of an IEE, and in the form prescribed in Schedule VI in the case of an EIA.

13. Conditions of approval

(1) Every approval of an IEE or EIA shall, in addition to such conditions as may be imposed by the Federal Agency, be subject to the condition that the project shall be designed and constructed, and mitigatory and other measures adopted, strictly in accordance with the IEE/EIA, unless any variation thereto have been specified in the approval by the Federal Agency.

(2) Where the Federal Agency accords its approval subject to certain conditions, the proponent shall –

(a) before commencing construction of the project, acknowledge acceptance of the stipulated conditions by executing an undertaking in the form prescribed in Schedule VII;

(b) before commencing operation of the project, obtain from the Federal Agency written confirmation that the conditions of approval, and the requirements in the IEE/EIA relating to design and construction, adoption of mitigatory and other measures and other relevant matters, have been duly complied with.

14. Confirmation of compliance

(1) The request for confirmation of compliance under clause (b) of sub-regulation (2) of Regulation 13 shall be accompanied by an Environmental Management Plan indicating the measures and procedures proposed to be taken to manage or mitigate the environmental impacts for the life of the project, including provisions for monitoring, reporting and auditing.

(2) Where a request for confirmation of compliance is received from a proponent, the Federal Agency may carry out such inspection of the site and plant and machinery and seek such additional information from the proponent as it may deem fit:

Provided that every effort shall be made by the Federal Agency to provide the requisite confirmation or otherwise within 15 days of receipt of the request, with complete information, from the proponent.

(3) The Federal Agency may, while issuing the requisite confirmation of compliance, impose such other conditions as the Environmental Management Plan, and the operation, maintenance and monitoring of the project as it may deem fit, and such conditions shall be deemed to be included in the conditions to which approval of the project is subject.

15. Deemed approval

The four-month period for communication of decision stipulated in sub-section (4) of section 12 shall commence from the date of filing of an IEE or EIA in respect of which confirmation of completeness is issued by the Federal Agency under clause (a) of sub-regulation (1) of Regulation 9.

16. Extension in review period

Where the Federal Government in a particular case extends the four-month period for communication of approval prescribed in sub-section (5) of section 12, it shall, in consultation with the Federal Agency, indicate the various steps of the review process to be taken during the extended period, and the estimated time required for each step.

17. Validity period of approval

(1) The approval accorded by a Federal Agency under section 12 read with Regulation 12 shall be valid, for commencement of construction, for a period of three years from the date of issue.

(2) If construction is commenced during the initial three year validity period, the validity of the approval shall stand extended for a further period of three years from the date of issue.

(3) After issue of confirmation of compliance, the approval shall be valid for a period of three years from the date thereof.

(4) The proponent may apply to the Federal Agency for extension in the validity periods mentioned in sub-regulations (1), (2) and (3), which may be granted by the Federal Agency in its discretion for such period not exceeding three years at a time, if the conditions of the approval do not require significant change:

Provided that the Federal Agency may require the proponent to submit a fresh IEE or EIA, if in its opinion changes in location, design, construction and operation of the project so warrant.

18. Entry and inspection

(1) For purposes of verification of any matter relating to the review or to the conditions of approval of an IEE or EIA prior to, during or after commencement of construction or operation of a project, duly authorized staff of the Federal Agency shall be entitled to enter and inspect the project site, factory building and plant and equipment installed therein.

(2) The proponent shall ensure full cooperation of the project staff at site to facilitate the inspection, and shall provide such information as may be required by the Federal Agency for this purpose and pursuant thereto.

19. Monitoring

(1) After issue of approval, the proponent shall submit a report to the Federal Agency on completion of construction of the project.

(2) After issue of confirmation of compliance, the proponent shall submit an annual report summarizing operational performance of the project, with reference to the conditions of approval and maintenance and mitigatory measures adopted by the project.

(3) To enable the Federal Agency to effectively monitor compliance with the conditions of approval, the proponent shall furnish such additional information as the Federal Agency may require.

20. Cancellation of approval

(1) Notwithstanding anything contained in these Regulations, if, at any time, on the basis of information or report received or inspection carried out, the Federal Agency is of the opinion that the conditions of an approval have not been complied with, or that the information supplied by a proponent in the approved IEE or EIA is incorrect, it

shall issue notice to the proponent to show cause, within two weeks of receipt thereof, why the approval should not be cancelled.

(2) If no reply is received or if the reply is considered unsatisfactory, the Federal Agency may, after giving the proponent an opportunity of being heard:

(i) require the proponent to take such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or

(ii) cancel the approval.

(3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.

(4) Action taken under this Regulation shall be without prejudice to any other action that may be taken against the proponent under the Act or rules or regulations or any other law for the time being in force.

21. Registers of IEE and EIA projects

Separate Registers to be maintained by the Federal Agency for IEE and EIA projects under sub-section (7) of section 12 shall be in the form prescribed in Schedule VIII.

22. Environmentally sensitive areas

(1) The Federal Agency may, by notification in the official Gazette, designate an area to be an environmentally sensitive area.

(2) Notwithstanding anything contained in Regulations 3, 4 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Federal Agency.

(3) The Federal Agency may from time to time issue guidelines to assist proponents and other persons involved in the environmental assessment process to plan and prepare projects located in environmentally sensitive areas.

(4) Where guidelines have been issued under sub-regulation (3), the projects shall be planned and prepared, to the extent practicable, in accordance therewith and any departure therefrom justified in the EIA pertaining to the project.

23. Environmental Assessment Advisory Committee

For purposes of rendering advice on all aspects of environmental assessment, including guidelines, procedures and categorization of projects, the Director-General shall constitute an Environmental Assessment Advisory Committee comprising –

(a) Director EIA, Federal Agency … Chairman

(b)	One representative each of the Provincial Agencies	…	Members
(c)	One representative each of the Federal Planning Commission and the Provincial Planning and Development Departments	…	Members
(d)	Representatives of industry and non-Governmental organizations, and legal and other experts	…	Members

24. Other approvals

Issue of an approval under section 12 read with Regulation 12 shall not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law for the time being in force.

SCHEDULE I
(*See* Regulation 3)

List of projects requiring an IEE

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock, stud and fish farms with total cost more than Rs.10 million

2. Projects involving repacking, formulation or warehousing of agricultural products

B. Energy

1. Hydroelectric power generation less than 50 MW

2. Thermal power generation less than 200 KW

3. Transmission lines less than 11 KV, and large distribution projects

4. Oil and gas transmission systems

5. Oil and gas extraction projects including exploration, production, gathering systems, separation and storage

6. Waste-to-energy generation projects

C. Manufacturing and processing

1. Ceramics and glass units with total cost more than Rs.50 million

2. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost less than Rs.100 million

3. Man-made fibers and resin projects with total cost less than Rs.100 million

4. Manufacturing of apparel, including dyeing and printing, with total cost more than Rs.25 million

5. Wood products with total cost more than Rs.25 million

D. Mining and mineral processing

1. Commercial extraction of sand, gravel, limestone, clay, sulphur and other minerals not included in Schedule II with total cost less than Rs.100 million

2. Crushing, grinding and separation processes

3. Smelting plants with total cost less than Rs.50 million

E. Transport

1. Federal or Provincial highways (except maintenance, rebuilding or reconstruction of existing metalled roads) with total cost less than Rs.50 million

2. Ports and harbor development for ships less than 500 gross tons

F. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume less than 50 million cubic meters of surface area less than 8 square kilometers

2. Irrigation and drainage projects serving less than 15,000 hectares

3. Small-scale irrigation systems with total cost less than Rs.50 million

G. Water supply and treatment

Water supply schemes and treatment plants with total cost less than Rs.25 million

H. Waste disposal

Waste disposal facility for domestic or industrial wastes, with annual capacity less than 10,000 cubic meters

I. Urban development and tourism

1. Housing schemes

2. Public facilities with significant off-site impacts (e.g. hospital wastes)

3. Urban development projects

J. Other projects

Any other project for which filing of an IEE is required by the Federal Agency under sub-regulation (2) of Regulation 5

SCHEDULE II

(*See* Regulation 4)

List of projects requiring an EIA

A. Energy

1. Hydroelectric power generation over 50 MW
2. Thermal power generation over 200 MW
3. Transmission lines (11 KV and above) and grid stations
4. Nuclear power plans
5. Petroleum refineries

B. Manufacturing and processing

1. Cement plants
2. Chemicals projects
3. Fertilizer plants
4. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost of Rs.100 million and above
5. Industrial estates (including export processing zones)
6. Man-made fibers and resin projects with total cost of Rs.100 M and above
7. Pesticides (manufacture or formulation)
8. Petrochemicals complex
9. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, textiles (except apparel),printing and publishing, paints and dyes, oils and fats and vegetable ghee projects, with total cost more than Rs.10 million
10. Tanning and leather finishing projects

C. Mining and mineral processing

1. Mining and processing of coal, gold, copper, sulphur and precious stones
2. Mining and processing of major non-ferrous metals, iron and steel rolling
3. Smelting plants with total cost of Rs.50 million and above

D. Transport

1. Airports

2. Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with total cost of Rs.50 million and above

3. Ports and harbor development for ships of 500 gross tons and above

4. Railway works

E. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume of 50 million cubic meters and above or surface area of 8 square kilometers and above

2. Irrigation and drainage projects serving 15,000 hectares and above

F. Water supply and treatment

Water supply schemes and treatment plants with total cost of Rs.25 million and above

G. Waste Disposal

1. Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, incineration of hospital toxic waste)

2. Waste disposal facilities for domestic or industrial wastes, with annual capacity more than 10,000 cubic meters

H. Urban development and tourism

1. Land use studies and urban plans (large cities)

2. Large-scale tourism development projects with total cost more than Rs.50 million

I. Environmentally Sensitive Areas

All projects situated in environmentally sensitive areas

J. Other projects

1. Any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5.

2. Any other project likely to cause an adverse environmental effect

SCHEDULE III
(See Regulation 7)

IEE/EIA Review Fees

Total Project Cost	IEE	EIA
Upto Rs.5,000,000	NIL	NIL
Rs.5,000,001 to 10,000,000	Rs.10,000	Rs.15,000
Greater than Rs.10,000,000	Rs.15,000	Rs.30,000

SCHEDULE IV

[*See* Regulation 8(2)(a)]

Application Form

1.	Name and address of proponent		Phone: Fax: Telex:	
2.	Description of project			
3.	Location of project			
4.	Objectives of project			
5.	IEE/EIA attached?	IEE/EIA :	Yes/No	
6.	Have alternative sites been considered and reported in IEE/EIA?		Yes/No	
7.	Existing land use		Land requirement	
8.	Is basic site data available, or has it been measured?	(only tick yes if the data is reported in the IEE/EIA) Meterology (including rainfall) Ambient air quality Ambient water quality Ground water quality	<u>Available</u> Yes/No Yes/No Yes/No Yes/No	<u>Measured</u> Yes/No Yes/No Yes/No Yes/No
9.	Have estimates of the following been reported?	 Water balance Solid waste disposal Liquid waste treatment	<u>Estimated</u> Yes/No Yes/No Yes/No	<u>Reported</u> Yes/No Yes/No Yes/No
10.	Source of power		Power requirement	
11.	Labour force (number)	Construction: Operation:		

<u>Verification.</u> I do solemnly affirm and declare that the information given above and contained in the attached IEE/EIA is true and correct to the best of my knowledge and belief.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

SCHEDULE V
[*See* Regulation 12]

Decision on IEE

1. Name and address of proponent _____

   _____

2. Description of project _____

3. Location of project _____

4. Date of filing of IEE _____

5. After careful review of the IEE, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:

   _____
   _____

   or (b) that the proponent should submit an EIA of the project, for the following reasons –

   _____
   _____

   [Delete (a) or (b), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VI
[*See* Regulation 12]

Decision on EIA

1. Name and address of proponent _____

   _____

2. Description of project _____

3. Location of project _____

4. Date of filing of EIA _____

5. After careful review of the EIA, and all comments thereon, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:

   _____
   _____

   or (b) that the proponent should submit an EIA with the following modifications-

   _____
   _____

   or (c) to reject the project, being contrary to environmental objectives, for the following reasons:

   _____
   _____

   [Delete (a)/(b)/(c), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VII

[*See* Regulation 13(2)]

Undertaking

I, (full name and address) as proponent for (name, description and location of project) do hereby solemnly affirm and declare that I fully understand and accept the conditions contained in the approval accorded by the Federal Agency bearing tracking no._____ dated _____, and undertake to design, construct and operate the project strictly in accordance with the said conditions and the IEE/EIA.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

Witnesses
(full names and addresses)

(1) _____

(2) _____

SCHEDULE VIII
(*See* Regulation 21)
Form of Registers for IEE and EIA projects

S. No.	Description	Relevant Provisions
1	2	3
1.	Tracking number	
2.	Category type (as per Schedules I and II)	
3.	Name of proponent	
4.	Name and designation of contact person	
5.	Name of consultant	
6.	Description of project	
7.	Location of project	
8.	Project capital cost	
9.	Date of receipt of IEE/EIA	
10.	Date of confirmation of completeness	
11.	Approval granted (Yes/No)	
12.	Date of approval granted or refused	
13.	Conditions of approval/reasons for refusal	
14.	Date of Undertaking	
15.	Date of extension of approval validity	
16.	Period of extension	
17.	Date of commencement of construction	
18.	Date of issue of confirmation of compliance	
19.	Date of commencement of operations	
20.	Dates of filing of monitoring reports	
21.	Date of cancellation, if applicable	

ANNEX – III

National Environmental Quality Standards (NEQS)

REGISTERED No. M-302
L. 7646

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PUBLISHED BY AUTHORITY

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ISLAMABD, THURSDAY, AUGUST 10, 2000

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PART-II

Statutory Notification (S.R.O)

GOVERNMENT OF PAKISTAN

MINISTRY OF ENVIRONMENT, LOCAL GOVERNMENT AND
RURAL DEVELOPMENT

NOTIFICATION

Islamabad, the 8th August 2000

S.R.O. 549 (I)/2000.___ In exercise of the powers conferred under clause (c) of sub-section (1) of section of 6 of the Pakistan environmental Protection Act. 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to direct that the following further amendments shall be made in its Notification No. S.R.O. 742(I)/93, dated the 24th August, 1993, namely: ___

In the aforesaid Notification, in paragraph 2._____

[4138(2000)/Ex.GAZ]

Price : Rs. 5.00

(1) for Annex, I the following shall be substituted, namely:_____

Annex-I

"NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR MUNICIPAL AND LIQUID INDUSTRIAL EFFLUENTS (mg/I, UNLESS OTHERWISE DEFINED)

S. No.	Parameter		Revised Standards		
		Existing Standards	Into Inland Waters	Into Sewage Treatment (5)	Into Sea ( )
1	2	3	4	5	6
1.	Temperature or Temperature Increase *	40^0C	≤3°C	≤3°C	≤3°C
2.	pH value (H^+) .	6-10	6-9	6-9	6-9
3.	Biochemical Oxygen Demand $(BOD)_5$ at 20^0C (1)	80	80	250	80**
4.	Chemical Oxygen Demand (COD) (1)	150	150	400	400
5.	Total Suspended Solids (TSS)	150	200	400	200
6.	Total Dissolved Solids (TDS)	3500	3500	3500	3500
7.	Oil and Grease	10	10	10	10
8.	Phenolic compounds (as phenol)	0.1	0.1	0.3	0.3
9.	Chloride (as $C1^-$)	1000	1000	1000	SC***
10.	Fluoride (as F^-)	20	10	10	10
11.	Cyanide (as CN^-) total ..	2	1.0	1.0	1.0
12.	An-ionic detergents (as MBAS) (2)	20	20	20	20
13.	Sulphate (SO_4^{2-})	600	600	1000	SC***
14.	Sulphide (S^{2-})	1.0	1.0	1.0	1.0
15.	Ammonia (NH_3)	40	40	40	40
16.	Pesticides (3)	0.15	0.15	0.15	0.15

1	2	3	4	5	6
17.	Cadmium [4]	0.1	0.1	0.1	0.1
18.	Chromium (trivalent and hexavalent [4].. ..	1.0	1.0	1.0	1.0
19.	Cooper [4]	1.0	1.0	1.0	1.0
20.	Lead [4]	0.5	0.5	0.5	0.5
21.	Mercury [4]	0.01	0.01	0.01	0.01
22.	Selenium [4]	0.5	0.5	0.5	0.5
23.	Nickel [4]	1.0	1.0	1.0	1.0
24.	Silver [4]	1.0	1.0	1.0	1.0
25.	Total toxic metals	2.0	2.0	2.0	2.0
26.	Zinc	5.0	5.0	5.0	5.0
27.	Arsenic [4]	1.0	1.0	1.0	1.0
28.	Barium [4]	1.5	1.5	1.5	1.5
29.	Iron	2.0	8.0	8.0	8.0
30.	Manganese	1.5	1.5	1.5	1.5
31.	Boron [4]	6.0	6.0	6.0	6.0
32.	Chlorine	1.0	1.0	1.0	1.0

Explanations:

1. Assuming minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Federal Environmental Protection Agency. By 1:10 dilution means, for example that for each one cubic meter of treated effluent, the recipient water body should have 10 cubic meter of water for dilution of this effluent.

2. Methylene Blue Active Substances; assuming surfactant as biodegradable.

3. Pesticides include herbicides, fungicides, and insecticides.

4. Subject to total toxic metals discharge should not exceed level given at S. N. 25.

5. Applicable only when and where sewage treatment is operational and BOD_5=80mg/I is achieved by the sewage treatment system.

6. Provided discharge is not at shore and not within 10 miles of mangrove or other important estuaries.

* The effluent should not result in temperature increase of more than 3^0C at the edge of the zone where initial mixing and dilution take place in the receiving body. In case zone is not defined, use 100 meters from the point of discharge.

** The value for industry is 200 mg/I

*** Discharge concentration at or below sea concentration (SC).

Note:_____ 1. Dilution of liquid effluents to bring them to the NEQS limiting values is not permissible through fresh water mixing with the effluent before discharging into the environment.

2. The concentration of pollutants in water being used will be substracted from the effluent for calculating the NEQS limits" and

(2) for Annex-II the following shall be substituted, namely:____

Annex-II

"NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR INDUSTRIAL GASEOUS EMISSION (mg/Nm^3, UNLESS OTHERWISE DEFINED)."

S. No.	Parameter	Source of Emission	Existing Standards	Revised Standards
1	2	3	4	5
1.	Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale	40% or 2 Ringlemann Scale or equivalent smoke number
2.	Particulate malter	(a) Boilers and Furnaces		
	(1)	(i) Oil fired	300	300
		(ii) Coal fired	500	500
		(iii) Cement Kilns	200	300
		(b) Grinding, crushing, Clinker coolers and Related processes, Metallurgical Processes, converter, blast furnaces and cupolas.	500	500
3.	Hydrogen Chloride	Any	400	400

1	2	3	4	5
4.	Chlorine	Any	150	150
5.	Hydrogen Fluoride	Any	150	150
6.	Hydrogen Sulphide	Any	10	10
7.	Sulphur Oxides (2) (3)	Sulfuric acid/Sulphonic acid plants		
		Other Plants except power Plants operating on oil and coal	400	1700
8.	Carbon Monoxide	Any	800	800
9.	Lead	Any	50	50
10.	Mercury	Any	10	10
11.	Cadmium	Any	20	20
12.	Arsenic	Any	20	20
13.	Copper	Any	50	50
14.	Antimony	Any	20	20
15.	Zinc	Any	200	200
16.	Oxides of Nitrogen	Nitric acid manufacturing unit.	400	3000
	(3)	Other plants except power plants operating on oil or coal:		
		Gas fired	400	400
		Oil fired	-	600
		Coal fired	-	1200

Explanations:-

1. Based on the assumption that the size of the particulate is 10 micron or more.

2. Based on 1 percent Sulphur content in fuel oil. Higher content of Sulphur will case standards to be pro-rated.

3. In respect of emissions of Sulphur dioxide and Nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to National Environmental Quality Standards (NEQS) specified above, comply with the following standards:-

A. **Sulphur Dioxide**

Sulphur Dioxide Background levels Micro-gram per cubic meter (ug/m^3) Standards.

Background Air Quality (SO_2 Basis)	Annual Average	Max. 24-hours Interval	Criterion I Max. SO_2 Emission (Tons per Day Per Plant)	Criterion II Max. Allowable ground level increment to ambient (ug/m^3) (One year Average)
Unpolluted	<50	<200	500	50
Moderately Polluted*				
Low	50	200	500	50
High	100	400	100	10
Very Polluted**	>100	>400	100	10

* For intermediate values between 50 and 100 ug/m^3 linear interpolations should be used.

** No projects with Sulphur dioxide emissions will be recommended.

B. Nitrogen Oxide

Ambient air concentrations of Nitrogen oxides, expressed as NO_x should not be exceed the following:-

Annual Arithmetic Mean	100ug/m^3 (0.05 ppm)

Emission level for stationary source discharge before missing with the atmosphere, should be maintained as follows:-

For fuel fired steam generators as Nanogram (10^0-gram) per joule of heat input:

Liquid fossil fuel	130
Solid fossil fuel	300
Lignite fossil fuel	260

Note:- Dilution of gaseous emissions to bring them to the NEQS limiting value is not permissible through excess air mixing blowing before emitting into the environment.

[File No. 14(3)/98-TO-PEPC.]

HAFIZ ABDULAH AWAN
DEPUTY SECRETARY (ADMN)

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ISLAMABAD, FRIDAY, NOVEMBER 26, 2010

PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN

MINISTRY OF ENVIRONMENT

NOTIFICATIONS

Islamabad, the 18th October, 2010

S. R. O. 1062(I)/2010.—In exercise of the powers conferred under clause (c) of sub-section (I) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Environmental Quality Standards for Ambient Air.

National Environmental Quality Standards for Ambient Air

Pollutants	Time-weighted average	Concentration in Ambient Air		Method of measurement
		Effective from 1st July, 2010	Effective from 1st January 2013	
Sulphur Dioxide (SO_2)	Annual Average*	80 $\mu g/m^3$	80 $\mu g/m^3$	-Ultraviolet Fluorescence method
	24 hours**	120 $\mu g/m^3$	120 $\mu g/m^3$	
Oxides of Nitrogen as (NO)	Annual Average*	40 $\mu g/m^3$	40 $\mu g/m^3$	- Gas Phase Chemiluminescence
	24 hours**	40 $\mu g/m^3$	40 $\mu g/m^3$	

[2944(2010)/Ex. Gaz.] *Price: Rs. 5.00*

Pollutants	Time-weighted average	Concentration in Ambient Air		Method of measurement
		Effective from 1st July, 2010	Effective from 1st January 2013	
Oxides of Nitrogen as (NO_2)	Annual Average*	40 $\mu g/m^3$	40 $\mu g/m^3$	- Gas Phase Chemiluminescence
	24 hours**	80 $\mu g/m^3$	80 $\mu g/m^3$	
O^3	1 hour	180 $\mu g/m^3$	130 $\mu g/m^3$	-Non dispersive UV absorption method
Suspended Particulate Matter (SPM)	Annual Average*	400 $\mu g/m^3$	360 $\mu g/m^3$	- High Volume Sampling, (Average flow rate not less than 1.1 m3/minute).
	24 hours**	550 $\mu g/m^3$	500 $\mu g/m^3$	
Respirable Particulate Matter, PM_{10}	Annual Average*	200 $\mu g/m^3$	120 $\mu g/m^3$	-β Ray absorption method
	24 hours**	250 $\mu g/m^3$	150 $\mu g/m^3$	
Respirable Particulate Matter, $PM_{2.5}$	Annual Average*	25 $\mu g/m^3$	15 $\mu g/m^3$	-β Ray absorption method
	24 hours**	40 $\mu g/m^3$	35 $\mu g/m^3$	
	1 hour	25 $\mu g/m^3$	15 $\mu g/m^3$	
Lead Pb	Annual Average*	1.5 $\mu g/m^3$	1 $\mu g/m^3$	- ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	2 $\mu g/m^3$	1.5 $\mu g/m^3$	
Carbon Monoxide (CO)	8 hours**	5 mg/m^3	5 mg/m^3	- Non Dispersive Infra Red (NDIR) method
	1 hour	10 mg/m^3	10 mg/m^3	

*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly /8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.

S. R. O. 1063(I)/2010.— In exercise of the powers conferred under clause (c) of sub-section (1) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Standards for Drinking Water Quality.

National Standards for Drinking Water Quality

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Bacterial			
All water intended for drinking (e.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water entering the distribution system (E.Coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water in the distribution system (E. coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.	Must not be detectable in any 100 ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12 month period.	Most Asian countries also follow WHO standards
Physical			
Colour	≤ 15 TCU	≤ 15 TCU	
Taste	Non objectionable/Acceptable	Non objectionable/Acceptable	
Odour	Non objectionable/Acceptable	Non objectionable/Acceptable	
Turbidity	〈 5 NTU	〈 5 NTU	
Total hardness as $CaCO_3$	< 500 mg/l	----	
TDS	〈 1000	〈 1000	
pH	6.5 – 8.5	6.5 – 8.5	
Chemical			
Essential Inorganic	***mg/Litre***	***mg/Litre***	
Aluminium (Al) mg/l	≤ 0.2	0.2	

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Antimony (Sb)	≤ 0.005 (P)	0.02	
Arsenic (As)	≤ 0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
Barium (Ba)	0.7	0.7	
Boron (B)	0.3	0.3	
Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
Chloride (Cl)	< 250	250	
Chromium (Cr)	≤ 0.05	0.05	
Copper (Cu)	2	2	
Toxic Inorganic	***mg/Litre***	***mg/Litre***	
Cyanide (CN)	≤ 0.05	0.07	Standard for Pakistan similar to Asian developing countries
Fluoride (F)*	≤ 1.5	1.5	
Lead (Pb)	≤ 0.05	0.01	Standard for Pakistan similar to most Asian developing countries
Manganese (Mn)	≤ 0.5	0.5	
Mercury (Hg)	≤ 0.001	0.001	
Nickel (Ni)	≤ 0.02	0.02	
Nitrate (NO_3)*	≤ 50	50	
Nitrite (NO_2)*	≤ 3 (P)	3	
Selenium (Se)	0.01(P)	0.01	
Residual chlorine	0.2-0.5 at consumer end 0.5-1.5 at source	—	
Zinc (Zn)	5.0	3	Standard for Pakistan similar to most Asian developing countries

* indicates priority health related inorganic constituents which need regular monitoring.

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Organic			
Pesticides mg/L		PSQCA No. 4639-2004, Page No. 4 Table No. 3 Serial No. 20- 58 may be consulted.***	Annex II
Phenolic compounds (as Phenols) mg/L		≤ 0.002	
Polynuclear aromatic hydrocarbons (as PAH) g/L		0.01 (By GC/MS method)	
Radioactive			
Alpha Emitters bq/L or pCi	0.1	0.1	
Beta emitters	1	1	

*** PSQCA: Pakistan Standards Quality Control Authority.

Proviso:

The existing drinking water treatment infrastructure is not adequate to comply with WHO guidelines. The Arsenic concentrations in South Punjab and in some parts of Sindh have been found high then Revised WHO guidelines. It will take some time to control arsenic through treatment process. Lead concentration in the proposed standards is higher than WHO Guidelines. As the piping system for supply of drinking water in urban centres are generally old and will take significant resources and time to get them replaced. In the recent past, Lead was completely phased out from petroleum products to cut down Lead entering into environment. These steps will enable to achieve WHO guidelines for Arsenic, Lead, Cadmium and Zinc. However, for bottled water, WHO limits for Arsenic, Lead, Cadmium and Zinc will be applicable and PSQCA Standards for all the remaining parameters.

S. R. O. 1064(I)/2010.—In exercise of the powers conferred under clause (c) of sub-section (1) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Environmental Quality Standards for Noise.

National Environmental Quality Standards for Noise

S. No.	Category of Area / Zone	Effective from 1st July, 2010		Effective from 1st July, 2012	
		Limit in dB(A) Leq *			
		Day Time	Night Time	Day Time	Night Time
1.	Residential area (A)	65	50	55	45
2.	Commercial area (B)	70	60	65	55
3.	Industrial area (C)	80	75	75	65
4.	Silence Zone (D)	55	45	50	45

Note: 1. Day time hours: 6.00 a. m to 10.00 p. m.

2. Night time hours: 10.00 p. m. to 6.00 a.m.

3. Silence zone: Zones which are declared as such by the competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.

4. Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.

*dB(A) Leq: Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

[No. F. I(12)/2010-11-General.]

MUHAMMAD KHALIL AWAN,
Section Officer (PEPC).

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ANNEX – IV
USAID IEE Document with Recommendations for EMMP

OAPA Tracking #: OAPA-12-JUN-PAK-0030

USAID | PAKISTAN
FROM THE AMERICAN PEOPLE

Attachment J-1

INITIAL ENVIRONMENTAL EXAMINATION

PROGRAM/ACTIVITY DATA:

Country: Pakistan

Activity Name: Improving Education Quality Project

Funding Begins: FY 2012 **Funding Ends**: June 2018 **LOP Amount: $220,000,000**

IEE Prepared By: Arturo Acosta **Date:** June 18, 2012

IEE Amendment (Y/N): N

ENVIRONMENTAL ACTION RECOMMENDED: (Place X where applicable)

Categorical Exclusion	[X]	Deferral	[ ]
Positive Determination	[ ]	Negative Determination	[X]
With Conditions	[X]	Exemption	[ ]

1 BACKGROUND AND ACTIVITY/PROGRAM DESCRIPTION

1.1 Purpose and Scope of IEE

The IEE will provide the environmental threshold decision for the Project as required in 22 CFR 216.3. The project will provide technical assistance, training, planning support, and learning through workshops and seminars. Some participant training and field trips are envisioned. All these activities will be recommended for Categorical Exclusion. A Negative Determination for purchase of equipment is recommended. In addition there will be construction of educational facilities which will be recommended for Negatives Determination with Conditions.

1.2 Background

In 2009, recognizing the importance of a stable and prosperous Pakistan to America and indeed global security, the United States Congress passed the "Enhanced Partnership with Pakistan Act." Subsequently, an Agreement was reached in 2010 which seeks to: (a) improve the Government of Pakistan's capacity to address the country's most critical infrastructure needs; (b) help the Pakistani government address basic needs and provide improved economic opportunities in areas

vulnerable to extremism; and (c) strengthen Pakistan's capacity to pursue economic and political reforms that reinforce stability.

With funding made available through the Act, the US Government has made a significant contribution to the construction of schools throughout Pakistan. While increased numbers of classrooms have a positive impact on expanding access to education, the full measure of Congress' intentions is unlikely to be achieved without a corollary focus on improving the quality of instruction being offered in the classrooms.

At the national level, a poorly educated population lowers Pakistan's competitiveness in international markets, slows the country's integration into the global economy, and limits prospects for broad-based economic growth. It also makes it difficult for Pakistan to complete the transition to a fully functioning democracy with a well-informed population able to hold its government accountable and engage constructively as responsible citizens. At the individual level, low levels of education prevent opportunity for upward mobility and diminish peoples' hopes for building better lives for themselves and their children. As Pakistan's 2003 Poverty Reduction Strategy notes, "education is probably the most significant factor characterizing the differences between poor and non-poor households."

According to the 2010 Brookings report, primary school enrollment is a strong predictor of conflict. The report cites literature which suggests than "an increase in primary enrollment rates from well below the world average of 87 percent to well above the mean can cut the risk of conflict by nearly three-quarters." The report goes on to submit that education quality and content may be "just as important" for promoting stability. It offers several reasons why poor education could contribute to militancy and conflict such as:

- Governance-related grievances: Limited access to high quality education can fuel perceptions that government is neglecting its people. This, in turn, can inflame core grievances. Moreover, corruption for financial or political gain can erode a citizen's trust in government.
- Narrow worldviews: Research shows that poor education is associated with more extremist views, including authoritarianism, intolerance and prejudice.
- A lack of citizenship skills: Preliminary research confirms the importance of critical thinking and citizenship skills in reducing the appeal of violent conflict. While evidence shows that many terrorist recruits are well-schooled, research does not often take into account the content of what students are actually learning. Interestingly, engineers and graduates of technical schools are overrepresented among leaders of extremist organizations. Brookings cites a study that finds engineering students tend to suffer from two specific intellectual deficits: they are more likely to treat ambivalence as illegitimate and to repress difference and dissent; and they are more prone to seeing history as shaped by the clash between good and evil and conspiratorially ascribing the forces of evil to one identifiable foe. Brookings recognizes that the study is subject to critique.
- Increased opportunities for recruitment: Assuming education translates into employment, education can shrink the recruitment pool from which the leaders of militant groups draw supporters.

1.3 Activities

The Implementing Education Quality Project (IEQ) is a five year, $220 million project. It will be implemented in Punjab, Khyber Pakhtunkhwa, Balochistan, Gilgit-Baltistan, FATA, Azad Kashmir and the Islamabad Capital Territory. It will not be implemented in Sindh because the USAID-funded Sindh Basic Education Project is already undertaking similar activities that IEQ is designed to support. Also, activities in Punjab, at least initially, will be limited to supporting private sector schools. USAID leaves open the possibility of adding support for Punjab's public sector institutions at a later date. The project's focus elsewhere in the country will be on supporting public sector schools. More limited support to private sector schools may be provided in one or more of these geographic regions.

Mechanisms for implementing the country-led approach will be developed in collaboration with Pakistani counterparts and the implementing partner(s) after the award(s) are made. At that time, strong consideration will be given to adopting the Pre-Service Teacher Education Program (Pre-STEP) approach of organizing a political level steering committee and a technical level advisory committee in each province or area. There may also be an opportunity to link onto the mechanisms and systems Pre-STEP has established.

Innovation will be front and center as a tool for reaching underserved populations, reducing costs, and increasing transparency and efficiency. Much of the innovation will be technology based, such as the use of information technology to allow teachers in cluster groups to communicate with each other in peer mentoring activities; the use of text messaging to provide coaching messages to teachers, and the development of electronic and virtual teaching and learning materials for schools in remote areas. Other innovations will be non-technical practices that have demonstrated their value elsewhere but are not yet widespread in Pakistan. An example is the successful program in South Africa whereby teachers are taught to develop their own teaching materials which the project then publishes and disseminates, resulting in more location-relevant materials, a heightened sense of accomplishment for participating teachers, and greater enthusiasm for teaching and learning materials.

The project will also be creative in the use of incentives. Performance benchmarks will be established for teachers, schools, districts and provinces in partnership with Pakistani counterparts. Success at meeting key benchmarks will trigger certain rewards, also to be developed in partnership with Pakistani counterparts. Rewards could be in the form of recognition, participation in intra or interprovincial exchanges, computers, libraries and so forth.

IEQ will ensure that a conflict and crisis sensitive approach is used to implement and monitor interventions. Whenever possible, the implementation will use approaches and strategies that mitigate identified sources of fragility and build resilience. This will include promoting inclusion and discouraging practices that exclude students because on the basis of physical disabilities, gender, ethnic or religious identity, or socio-economic status; as well as ensuring that project-supported learning and teaching materials are inclusive and promote tolerance and peaceful solutions to conflict; support practices that entrench transparency and accountability; and assist in planning and preparedness for crisis response and conflict-related shocks.

IEQ will act in a deliberate, pro-active way to take advantage of opportunities to build on and complement other related USG efforts. A smooth transition is envisioned between IEQ's efforts to improve in-service education and the USAID-supported pre-service (Pre-STEP) program. The collective activities of the two projects will help establish a system in which Pakistan's teachers benefit from a cohesive continuum of training and professional development. The project will also be tightly coordinated with the Sindh Basic Education Program so that lessons learned are shared and to help USAID stay in lock step with national and provincial education reforms. Whenever possible, IEQ will seek to improve the quality of education at schools that have been constructed with USG support. Additionally, IEQ managers will explore opportunities for supporting and/or complementing the State Department's 1,001 Nights TV program by, for instance, funding translation of the program into different languages or supporting the production of locally-produced comic books based on the series. Also, IEQ intends to build synergies with projects supported by other donors.

Finally, additional resources for the project will be leveraged through public-private partnerships. US-based and other information technology companies will receive prime attention for partnership. Opportunities with Pakistani companies will also be explored, particularly those that participate in the US business forums in Lahore and Karachi. Experience worldwide as well as in Pakistan has demonstrated that the private sector is especially willing to co-finance technology solutions in the education sector.

When Global Development Alliance (GDA) or other public- private partnership mechanism is used, due diligence of the potential partner should be conducted in accordance with ADS 204.3.9(a) in also results in Negative Determination with Conditions (NDC) for proposed activity.

Education Results

IEQ will result in 2.5 million new readers by focusing on three intermediary results:

IR1 Improved education opportunities;
Sub IR1.1 Improved educational facilities;
Sub IR1.2 Increased access to high-quality learning materials; and
Sub IR1.3 Increased access to scholarships.

IR2 Improved quality of education;
Sub IR2.1 Improved policies, laws, guidelines for teachers; and
Sub IR2.2 Improved reading skills for children in primary grades.

IR3 Improved accountability in education;
Sub IR3.1 Effective civil society for oversight, engagement, and advocacy; and
Sub IR3.2 Improved management capacity at provincial and district levels within the education department.

Each of the three intermediate results is described below. In most instances, activities to support public and private sector school activities will be implemented separately. Where opportunities exist to support joint public-private sector activities, they will be exploited. In undertaking the activities indicated below, IEQ will seek to:

- Improve the capacity of the current stakeholders;
- Bring new actors in, such as teacher training colleges, when it promotes a continuum of teacher and educator professional development from pre-service to in-service, and local NGOs in order to broaden the network of education support organizations; and
- Help to define roles and responsibilities of various actors relevant to the IEQ objectives and build functional relationships between.

Construction

Proper classrooms are a basic need for any school. Without enough classrooms, students are not able to utilize their learning time properly. At present the faculties of education at partner universities do not have proper facilities for students. Teacher training institutes in higher education are suffering from chronic under-funding and support in Pakistan. All facilities need upgrading to improve the learning environment for teachers and students. This activity will address physical rehabilitation and construction needs of selected universities.

One of the key components of the IEQ program is physical rehabilitation or construction of the Faculties of Education at partner universities. Upgrading these facilities will enable the universities to start the two year Associates Degree and four year Bachelors of Education programs, which will replace all existing teacher education programs as directed in the 2009 National Education Policy.

It is envisioned that the design for the Faculty of Education buildings will be completed through a USAID direct contract with an American architect and engineering company, who will also provide construction management and oversight. Construction will be completed by a Pakistani firm. The construction of faculties of education is similar to USAID's Teacher Education Program which is improving pre service education at 90 universities and colleges nationwide. The IEQ will work with the universities to establish two year Associate Degrees and four year Bachelor of Education programs. This includes developing curriculum for the program and implementing a communication campaign so potential students are aware of the new programs.

The Higher Education Commission and the Provincial Departments of Education support the Faculties of Education construction at IEQ supported universities. The contractor will work under a steering committee constituted by HEC and the Provincial Departments of Education, and will be jointly monitored by USAID and GOP officials.

The IEQ supports the new construction and rehabilitation of Faculties of Education in partner universities that will lead to long-term, high visibility investment in the quality of education in Pakistan. The intervention is strategically important as it will allow universities to train more, highly qualified teachers. Increasing the supply and improving qualifications of teachers will lead to improved quality and improved enrollment in schools in Pakistan. Additionally, this intervention will provide immediate, visible support to public Pakistani universities, a key component of USG efforts to strengthen the public education system in Pakistan.

Provision of equipment

This activity will address physical rehabilitation needs, purchase of training materials, including ICT facilities, and language and science laboratories, and procuring new reference materials for

the Faculty of Education libraries of selected universities. The IEQ will primarily procure teaching and learning materials and equipment such as furniture, books, laboratory equipment for science and language labs, and computers. This equipment will be used to build the organizational capacity of the Faculties of Education to better prepare student teachers to enter the workforce. The IEQ will not procure chemicals, animals, or other agents.

2.0 COUNTRY AND ENVIRONMENTAL INFORMATION (BASELINE INFORMATION)

Studies conducted by the Government of Pakistan (GOP) and donor agencies in Pakistan have highlighted a number of environmental issues. Broadly, the areas of concern identified include water, energy, pollution and waste management, irrigated agriculture, and biodiversity. Overall, these studies reveal deterioration in all these areas. The increasing pollution of water, air and land continues to have an enormous impact on people's health, especially that of vulnerable groups such as children. The quality and quantity of renewable natural resources such as water, forests and other vegetation, and key biological habitats have declined. The GOP, private sector and civil society have not responded adequately to meet these challenges. There have, however, been some exceptions -- such as the switchover to cleaner fuels in the transport subsector.

3.0 NATIONAL ENVIRONMENTAL LEGISLATION

3.1 Pakistan Environmental Protection Act 1997

The Pakistan Environmental Protection Act 1997 is the basic legislative tool empowering the government to frame regulations for the protection of the environment. This Act broadly applies to air, water, soil and noise pollution, and the handling of hazardous waste. Penalties have been prescribed for those who contravene the Act's provisions. This legislation considerably enhanced the powers of the Federal and Provincial Environmental Protection Agencies (EPAs). They now have the power to conduct inquiries into possible breaches of environmental laws, either of their own accord or upon the registration of a complaint.

Pursuant to this Act, no project involving construction activities or any change in the physical environment can commence until the prerequisite IEE or Environmental Impact Assessment (EIA) has been conducted and a report submitted to the Federal or Provincial EPA.

3.2 Pakistan Environmental Protection Agency (PEPA) Review of IEE and EIA Regulations 2000

The PEPA review of the 2000 IEE and EIA regulations (the 'regulations') provides the necessary details on the preparation, submission and review of the IEE and the EIA reports. The regulation classifies projects on the basis of expected degree of adverse environmental impacts and lists them in two separate schedules. Schedule-I lists projects that may not have significant environmental impacts and therefore require an IEE. Urban development projects are included in Schedule-I. Schedule-II lists projects of potentially significant environmental impacts requiring preparation of an EIA. This regulation, however, does not have any other category for projects that would neither fall under Schedule-I nor under Schedule-II as has been done in the guidelines listed under "Pakistan Environmental Assessment Procedure 1997".

3.3 National Environmental Quality Standards (NEQS) 2000

First promulgated in 1993, the NEQS were last amended in 2000. These constitute the basic guidelines with which municipal and industrial origin liquid effluent and gaseous

emissions must comply. These standards present the maximum allowable concentration for liquid effluent before it's discharge into sea, inland water and sewage (total 32 parameters with which to comply) and gaseous emissions in the ambient air from industrial sources (total 16 parameters with which to comply).

4.0 EVALUATION OF PROJECT/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

4.1 **Technical assistance activities:** The technical assistance, training programs, provision of scholarships, improving teaching learning processes, policy reform initiatives and adult literacy activities are not expected to produce any adverse environmental impact on the natural or physical environment and are therefore recommended for Categorical Exclusion per 22 CFR 216.2 (c)(2) (i) which presents the following criterion: "education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities etc.)."

4.2 **Provision of Equipment/furniture:** The purchase of training materials including ICT facilities, language and science laboratories, procuring new reference materials for the university's libraries, teaching and learning materials and equipment such as furniture, books, laboratory equipment for science and language labs, and computers are not expected to produce any potential adverse environmental impact on the natural or physical environment and are therefore recommended for Negative Determination.

4.3 **Small-scale construction/rehabilitation components:** Small-scale rehabilitation or construction of new or existing infrastructure facilities on existing developed land and/or alignments may have minor adverse environmental impacts. Therefore, these small-scale activities qualify for Negative Determination with Conditions per 22 CFR 216.3 (3)(iii), the Conditions being environmentally sound design, M&E, and best management practices to minimize erosion and debris and waste production, and proper disposal of debris and waste. The implementation contractors and partners shall be provided direction by USAID in developing and implementing an environmental assessment checklist, and in monitoring and evaluating their projects to assure implementation of sound environmental design and management. The checklist shall be site-specific and identify mitigation measures and Best Management Practices (BMPs) to implement. In addition, if the sustainability of an activity requires participation of the Government of Pakistan (GOP), it is recommended that the GOP shall sign an agreement to take responsibility for sustaining the activity through long-term operation and maintenance, provision of power source or fuel, and other appropriate actions. Effective use of renewable energy will be encouraged for energy security and to minimize dependency on petroleum products. The USAID Contract Officer's Representative and Mission Environmental Officer will have oversight and M&E responsibility during design, construction, and start-up.

The Contractor will conduct environmental screening to identify and document those construction activities that are small in scale and at lower risk of causing environmental damage. For these projects the Contractor will prepare environmental guidelines and environmental monitoring plans that will be used to minimize and mitigate potential environmental impacts. The environmental guidelines and mitigation plans will include procedures for supervising construction activities to assure that identified mitigation measures have been addressed as planned.

4.4 **Medium- or large-scale new construction / rehabilitation components:** Medium- and large-scale construction/rehabilitation of new and existing facilities (not covered under

small-scale construction activities above) on existing buildings on developed areas such as university campuses is not expected to have significant adverse environmental impacts. In addition, USAID must review the designs as is the normal procedure for all construction not classified as small-scale construction. The implementing partners will screen all such construction for potential environmental impacts by preparing an Environmental Document Form (EDF) (Attachment 1) that must be approved by the Mission MEO. The implementing partners will prepare Environmental Mitigation and Monitoring Plan (EMMP) (Attachment 2) for all moderate risk activities and will monitor implementation to ensure enforcement of the mitigating measures.

5.0 RECOMMENDED THRESHOLD DECISIONS & MITIGATION ACTIONS

5.1 Categorical Exclusion: (about 60% of project funding). Except to the extent the program includes activities directly affecting the environment (such as construction of facilities), program activities that are primarily technical assistance, training and consultative processes and media components of the program are not expected to have any adverse impact on the natural or physical environment, and therefore are recommended for **Categorical Exclusion** per 22 CFR 216.2(c)(1)(i) and 22 CFR 216.2(c)(2)(i) and (iii).

5.2 Negative Determination: (about 3 % of the project funding). Equipment including computers procured under this project require appropriate disposal at the end of their useful life. The project will include requirements for proper disposal in all authorizations for such procurement. A Negative Determination per 22 CFR 216.3(a)((2)(iii) is recommended for purchase of all equipment provided in the project.

5.3 Negative Determination with Conditions: (about 37% of project funding)

A. **Small Scale Construction/Renovation Activities** sub-activity under the public private partnership project, the school rehabilitation/construction and furnishing project has the potential of minor to moderate adverse impacts on the natural or physical environment. Therefore, these activities are recommended for **Negative Determination with Conditions** per 22 CFR 216.3(a)((2)(iii), the **Conditions** being environmentally sound design, monitoring & evaluation (M&E), and best management practices to minimize erosion and debris and waste production and proper disposal of debris and waste.

B. **Medium- or large-scale new construction / rehabilitation components:** Medium- and large-scale construction/rehabilitation of new and existing facilities (not covered under small-scale construction activities above) on existing buildings on in developed areas such as university campuses is not expected to have significant adverse environmental impacts. **Negative Determination with Conditions** per 22 CFR 216.3(a)((2)(iii), the **Conditions** that the implementing partners will screen all such construction for potential environmental impacts by preparing an Environmental Document Form (EDF) (Attachment 1) that must be approved by the Mission MEO. The implementing partners will prepare Environmental Mitigation and Monitoring Plan (EMMP) (Attachment 2) for all moderate risk activities and will monitor implementation to ensure enforcement of the mitigating measures.

Other conditions:

The implementing partners will ensure that:

1. ALL activities including buildings construction, rehabilitation and renovation activities will be implemented in accordance with the Pakistani environmental, OHS, construction legislation, regulations, standards, norms and guidelines and national obligations under ratified international environmental agreements (see: http://www.environment.gov.pk) and in their absence in accordance with the best international practice appropriate to the seismicity levels in Pakistan and in the respective districts; these should be acceptable to USAID.
2. For GDA and other types of Private-Public partnering, as part of the due diligence investigation of a potential alliance partner, it is essential to investigate what is often called the "triple bottom line" , i.e., whether the prospective partner is socially responsible, environmentally accountable and financially sound (see **ADS 204.3.9a)**. For purposes of this discussion, due diligence means that, while the **22 CFR 216** environmental review procedures may not be applicable to a non-USAID funded parallel program or activity implemented under an alliance, USAID is still concerned about a proposed alliance partner's past record of environmental accountability and how it might affect the partner's specific plans under the alliance. It is important that USAID align itself with private sector entities whose interests are compatible with USAID's and whose business practices do not pose risks to the alliance's or USAID's reputation. USAID will look for 'signs' that the proposed partners' operational practices incorporate, for instance, commitment to human rights, decent work conditions, environmental protection, and community involvement.

   Examples might include:

- A written and publicly available:
  - environment policy
  - worker health and safety policy
  - disclosure practice for reporting non-compliance with environmental laws and regulations
  - indigenous people and human rights policy
- A sustained record of compliance with their above policies in all countries in which they operate.
- A sustained record of compliance with environmental laws and regulations in all countries in which they operate, including no outstanding environmental regulatory actions or lawsuits.
- A board member or other senior corporate manager charged and empowered with ensuring corporate environmental responsibility.
- An internal environmental assurance or management system such as ISO 14000 or other widely used green certification standards.

  More detailed guidance on environmental due diligence is available from the USAID internal website in the **GDA Tools for Alliance Builders, Appendix XI, Due Diligence Guide. [Note: This guidance is only available on the USAID intranet at http://inside.usaid.gov/GDA/resources/tools.pdf.]**

3. All activities will be implemented in accordance with good design and best implementation practice guidance provided in the Asia environmental guidelines at www.usaid.gov/our_work/environment/compliance/ane/guidelines.htm;

Environmental Guidelines for Small Scale Activities in Africa, 2nd edition as provided at **http://www.encapafrica.org**; IFC *Environmental, Health and Safety Guidelines* as provided at: http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

and World Bank *1999 Pollution Prevention and Abatement Handbook* as provided at **http://wwwwds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000094946_99040905052283**; EBRD Sub-sectoral Environmental and Social Guidelines (**http://www.ebrd.com/about/policies/enviro/sectoral/**); ADB Environmental Guidelines (**http://www.adb.org/Water/CFWS/Roadmap-Sectoral-Guidelines.pdf**); World Bank Environmental Assessment Handbook and Updates (**http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTENVASS/0,,contentMDK:20282864~pagePK:148956~piPK:216618~theSitePK:407988,00.html**).

4. All pilot and small-scale rehabilitation, renovation and construction activities will be conducted in accordance with Pakistani Environmental Health and Safety (EHS) and construction norms and standards (and in their absence, in accordance with the best international practices appropriate to the seismicity levels in Pakistan and in the respective districts; should these be acceptable to USAID). Pakistan environmental protection regulations are available at **www.environment.gov.pk**.
5. The Implementer shall include environment compliance considerations into all aspects of the project implementation and will promote and train local counterparts on environmental requirements and standards across all of the IEQ activities; such proposed activities will be included in annual work plans, and results will be reported in annual reports.
6. Each activity will be reviewed by a qualified, MEO-approved environmental impact professional(s) (EIP) will assess and recommend further environmental actions to be taken.
7. The implementing partners shall minimize the use of, and properly dispose of hazardous materials and wastes for the small scale construction activities. The implementing partners will adhere to USEPA guidance at **www.epa.gov/asbestos** and **www.epa.gov/lead/pubs/renovation.htm** for dealing with asbestos and lead. The implementing partners will screen all such grants for potential environmental impacts by preparing an Environmental Document Form (EDF) (Attachment 1). The implementing partners will prepare Environmental Mitigation and Monitoring Plan (EMMP) (Attachment 2) for all moderate risk activities and will monitor implementation to ensure enforcement of the mitigating measures. All such reviews and conditions will be documented, reviewed by the COR/AOR and the Mission Environmental Officer (MEO) for the program, and maintained in project files and documentation.
8. Documenting environmental baseline conditions in an environmental documentation form (EDF) prior to activity implementation is an integral part of preparing an activity-specific Environmental Monitoring and Mitigation Plan (EMMP).
9. The contracts, grants and cooperative agreements with the implementing partners will include a requirement to follow all recommendations of this IEE, including completed EDF, a FEMMP, site specific mitigation and monitoring plans, and mitigation and monitoring reports; the implementing partners will be responsible for training their staff, grantees, subcontractors, and counterparts on the contract's environmental requirements and for ensuring their compliance with these requirements.

grantees, subcontractors, and counterparts on the contract's environmental requirements and for ensuring their compliance with these requirements.

10. The Implementer shall develop an Environmental Manual (EM) for NDC activities; the EM should among other things: establish environmental screening, eligibility and selection (exclusion, if appropriate) criteria; provide environmental data and reviewed report forms (EDF/RR) standard environmental mitigation and monitoring measure for the anticipated (sub-) sectoral activities distilled from the guidelines referred to in # 2 above and acceptable best international practice and GOP guidance; and provide acceptable format for an environmental mitigation and monitoring plan (EMMP) COR and MEO will approve the EM.
11. The implementing partners will adhere to the standard conditions for construction, water and sanitation, operations and maintenance, health clinics and medical facilities provided at Attachment 3. Construction designs for medium and large scale construction will be reviewed by USAID prior to construction.
12. Implementer will seek concurrence and obtain all applicable permits and licenses from the national duly authorized environmental and relevant agencies. Implementer will also seek concurrence from the duly provincial environmental agency(ies) on each the EMMP. The Contractor is required to obtain a letter from the local or regional office for environmental protection stating that the office: a) has been contacted by the contractor concerning the project activities; b) will maintain contact with the project; and c) will be aware of the potential environmental impacts of the project to help ensure that no detrimental impact will result from this project.
13. The Implementer shall minimize the use of, and properly dispose of hazardous materials and wastes for the small scale construction activities. The implementing partners will adhere to USEPA guidance at **www.epa.gov/asbestos** and **www.epa.gov/lead/oubsJrenovation.htm** for dealing with asbestos and lead.
14. The COR will ensure that the Implementer has sufficient financial resources and staff with expertise in an environmental field and resources to develop and implement environmental compliance, mitigation, monitoring measures, document and report on the required scope of environmental compliance work.
15. Monitoring will be conducted during the project (beginning with a baseline) to determine the environmental impact (positive and/or negative) of all project activities. Contractor shall use only qualified staff for overseeing the mitigation and monitoring work. Monitoring shall occur during implementation as stipulated in the MEO approved EMMP. The Contractor will ensure that the environmental procedures are implemented, potential impacts mitigated. If unmitigated significant environmental impacts are discovered through regular monitoring and evaluation of project activities, immediate actions will be taken to rectify the situation.
16. When asbestos and/or lead-containing paints are encountered, these will be treated in accordance with the best international industry and management practice, acceptable to USAID in accordance with guidance at **http://www.epa.gov**
17. The design and construction should be preferably done to the Leadership in Energy and Environment Design (LEED) Green Building standards, developed by the U.S. Green Building Council (USGBC, at **http://www.usgbc.org**).
18. The contractors shall minimize the use of, and properly dispose of hazardous materials and wastes for the small scale construction activities.

19. Implementer(s) shall document and regularly report to USAID on the implementation of the Negative Determination with Conditions (NDC) activities; reporting will include photographic documentation and site visit reports confirming implementation of the agreed EMMP, photos of site-specific activities prior to, during and after construction, during operation.
20. All environmental conditions established in this IEE shall be duly transposed in RFP and Contract.
21. COR, together with the MEO, USAID/Pakistan will explain and clarify, at the project launch, to the Implementer environmental conditions and compliance procedures established in this IEE and the Contract.
22. If any un-anticipated potentially significant environmental and social impacts are expected to arise, the COP shall promptly notify the COR and MEO/DMEO and seek guidance on the proper course of action.
23. USAID/Pakistan COR and MEO/DMEO shall regularly audit the Contractor's processes and related documents to ensure 22 CFR 216 environmental compliance throughout the life of the Contract.
24. The recipient will properly manage and dispose equipment when its useful life ends. For procuring of electronic and miscellaneous equipment and furniture, the implementing partners will adhere to USAID's general policies on commodity eligibility provided at http://www.usaid.gov/policy/ads/300/31251m.pdf and will not finance unsafe or ineffective products, such as certain pesticides, food products, or pharmaceuticals and other commodities not eligible for financing under this policy.
25. When equipment (computers, laboratory equipment, etc.) is procured, at the end of its life, it will be disposed in an environmentally safe manner by a certified company in accordance with Pakistani laws, and in their absence, in accordance with international best practices acceptable to USAID (alternatively, when procuring equipment from a licensed provider/dealer an agreement may be reached that such equipment will be returned to the dealer for its environmentally safe disposal).
26. USAID will arrange for mandatory environmental training for the key personnel of implementing partner and other stakeholders by the REA/Asia & OAPA and/or the MEO before construction or reconstruction activities begin.
27. When GDA mechanism is used, due diligence on potential partner should be conducted in accordance with ADS 204.3.9(a) in also results in NDC for proposed activity.

5.4 Summary Table for Proposed Activities and Recommended Threshold Decision:

The originator of this action has determined that the following activities of the Improving Education Quality Project have no adverse effect on the physical and/or natural environment under: (I) Categorical Exclusion per 22CFR216.2(c)(2)(i) and (iii); and (II) Negative Determination with Conditions per 22 CFR 216.3(2)(iii). The table below applies and provides environmental determinations to the illustrative activities of the "Improving Education Quality Project – IEQP.

Activities	Effects on natural or physical environment	Recommended Threshold Determination
Education and Professional Development		
In collaboration with IEQ partner universities develop/ establish two year Associates Degrees and four year Bachelor of Education programs, including development of curriculum for the program and implementing a communication campaign so potential students are aware of the new programs.	No adverse effect on the natural or physical environment.	**Categorical Exclusion** per 22 CFR 216.2(c)(2)(i) and (iii).
Improvement of pre-and in-service training curricula		
Technology based innovation, such as the use of information technology to allow teachers in cluster groups to communicate with each other in peer mentoring activities; the use of text messaging to provide coaching messages to teachers, and the development of electronic and virtual teaching and learning materials for schools in remote areas.		
Development of location-relevant teaching material by teachers, which the project then publishes and disseminates.		
Rewards on achieving performance benchmarks established for teachers, schools, districts and provinces in partnership with Pakistani counterparts.		
Supporting and/or complementing opportunity for State Department's 1,001 Nights TV program by, funding translation of the program into different languages or supporting the production of locally-produced comic books based on the series.		
Training of teachers, school administrators on policy, planning implementation and improved education standards		
Education, technical assistance, or training programs.		
Analysis, studies, academic or research workshops and meetings.		
Document and information transfer.		
Increase access to scholarships.		
Improve policies, laws, guidelines for teachers.		
Improved reading skills for students/teachers in partner educational facilities.		
Effective civil society for oversight, engagement, and advocacy.		
Improve management capacity at provincial and district levels within the education department.		
Provision of mentoring and academic support to teachers to improve techniques and promote a conducive learning environment.		
Capacity building of national and federal governments to improve teaching and learning.		

Activities	Effects on natural or physical environment	Recommended Threshold Determination
Education and Professional Development		
Development of policy and standards for teachers' professional development and role of private schools in service delivery.	No adverse effect on the natural or physical environment.	**Categorical Exclusion** per 22 CFR 216.2(c)(2) and (iii).
Development of monitoring and evaluation systems.		
Procurement and supply of Equipment		
Purchase equipment and materials including ICT facilities, language and science laboratories, procuring new reference materials for the Faculty's libraries, teaching and learning materials and equipment such as furniture, books, laboratory equipment for science and language labs, and computers.	Minor environmental effect. This requires disposal methods to be included in documents authorizing purchase.	**Negative Determination.** per 22 CFR 216.3(2)(iii)
Construction		
GDA and Public Private partnerships require due diligence IAW ADS **204.3.9a.**	Minor to moderate adverse effect on the natural and physical environment.	**Negative Determination with Conditions** per 22 CFR 216.3(2)(iii)
New construction and rehabilitation of buildings/education facilities and Faculties of Education in the IEQ partner universities, public and private schools and other education facilities. USAID shall review construction designs relating to this activity.	Minor to moderate adverse effect on the natural and physical environment.	**Negative Determination with Conditions** per 22 CFR 216.3(2)(iii)
Small-scale construction to upgrade education facilities and improve learning environment at partner education facilities. Some further guidance on best practices can be found at http://www.encapafrica.org/EGSSAA/construction.pdf	Minor to moderate adverse effect on the natural and physical environment.	**Negative Determination with Conditions** per 22 CFR 216.3(2)(iii)

6 Resources Allocation, Training and Reporting requirements:

- Reports will be submitted to the Contracting Officer's Representative (COR) and Mission Environmental Officer (MEO) at the completion of activity.
- Reporting will include photographic documentation and site visit reports which fully document that all proposed mitigation and monitoring procedures were followed throughout implementation of the subject work.
- The Contractor's progress report to USAID shall contain a section specific to environmental mitigation and monitoring and will include project summaries along with environmental impacts, success or failure of mitigation measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project, mitigation measures or monitoring procedures.
- COR/MEO will explain to the Contractor(s) all environmental Conditions established in this IEE and their applicability to specific activities.

7 LIMITATIONS OF THE IEE

This assistance doesn't cover activities involving:

1. Assistance for the procurements (includes payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean-up of spray equipment, and disposal) of pesticides (where pesticides cover all insecticides, fungicides, and rodenticides, etc. covered under the "Federal Insecticide, Fungicide, and Rodenticide Act" FIFRA) or activities involving procurement, transport, use, storage, or disposal of toxic materials. All the proposed activities involving assistance for the procurement or use, or both, of pesticides in the existing and expanded geographic areas shall be subject to the procedures prescribed in 22 CFR 216.3(b)(I)(i) through (v). USAID/Pakistan has BEO/OAPA-approved Programmatic PERSUAP, which shall be used for any procurement, use and/or recommendation for use of pesticides. Referred USAID/Pakistan programmatic "umbrella" PERSAUP (PPERSUAP), covers procurement, use or recommendation of use of pesticides in all sectoral ongoing and planned programs and projects in the country for the forthcoming 3-5 years.
2. Assistance, procurement or use of genetically modified organisms (GMOs), will require preparation of biosafety assessment (review) in accordance with ADS 201.3.11.2(b) in an amendment to the IEE reviewed by the Agency Biosafety Review Advisor and approved by Asia BEO.
3. Procurement or use of Asbestos Containing Materials (ACM) i.e. piping, roofing, etc., Polychlorinated Biphenyl's (PCB) or other toxic/hazardous materials prohibited by US EPA as provided at **http://www.epa.gov/asbestos** and/or under international environmental agreements and conventions e.g. Stockholm Convention on Persistent Organic Pollutions as provided at **http://chm.pops.int**
4. USAID/Pakistan restricts the use of USAID funds, directly or indirectly, to produce, acquire, use, transport, store, sell, or otherwise deal with ammonium nitrate (AN) for agricultural applications of calcium ammonium nitrate (CAN) for agricultural or construction/demolition purposes.
5. Activities involving support to wood processing, agro-processing, industrial enterprises and regulatory permitting GDA and/or DCA.

Any of these actions would require an amendment to the IEE duly approved by the BEO.

8 REVISIONS

In accordance with 22 CFR 216.3(a)(9,) if a project is revised or new information becomes available, including during preparation of an EDF, which indicates that a proposed action might be "major" and its effects "significant," the Determination will be reviewed and revised by the originator(s) of the program and projects and submitted through the MEO to the Bureau Environmental Officers, OAPA, for approval and, if warranted, an environmental assessment will be launched and scoping statement and environmental assessment report prepared. The scoping and EA process, if determined necessary during scoping, will follow and comply with 22 CFR 216.3(a)(4).

CLEARANCES AND APPROVAL OF RECOMMENDED ENVIRONMENTAL ACTIONS:
IEE for the Improving Education Quality Project

Initial Environmental Examination for Improving Education Quality Project.

CLEARANCES:

Jo Lesser-Oltheten Office of Education Director		18 June 12 Date
Albert Merkel Mission Environmental Officer		18 June 2012 Date
Andrei Barannik Regional Environmental Advisor, Asia & OAPA	Concurred by email	6/15/2012 Date
Steve Majors Program Office Director		18 June 12 Date
Jeff Bakken Deputy Mission Director (A)	JNBakken	18 JUN 12 Date
APPROVAL:		
Karen Freeman Mission Director (A)		6/19/12 Date
Gordon Weynand Bureau Environmental Officer, OAPA		6/22/12 Date

OAPA Tracking #: OAPA-12-JNB-PAK-0030

Attachment 1

Environmental Documentation Form

INSERT PROJECT NAME

A. Applicant information

Contractor/grantee(organization)	Parent grant or project
individual contact and title	Address, phone and email (if available)
activity (brief description)	Amount
Location of activity	Start and end date of activity

B. Activities, screening results, and recommended determination

TABLE 1 **Proposed Sub-activities**	**Screening result** (Step 3 of instructions)			**Recommended Determinations** (Step 6 of instructions. Complete for all moderate and high-risk activities)		
	Very Low Risk	Moderate Risk	High Risk	No significant adverse impact	specified mitigation, no significant adverse	Significant Adverse impact
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

(continue on additional page if necessary)

C. Summary of recommended determinations **(check all that apply)**

	The activity contains. . .	*(equivalent regulation 216 terminology)*
☐	Very low risk sub-activities	*categorical exclusion(s)*
☐	After environmental review, sub-activities determined to have **no significant adverse impacts**	*negative determination(s)*
☐	After environmental review, sub-activities determined to have **no significant adverse impacts, given appropriate mitigation and monitoring**	*negative determination(s) with conditions*
☐	After environmental review, sub-activities determined to have **significant adverse impacts**	*positive determination(s)*

D. Certification:

I, the undersigned, certify that:

1. The information on this form is correct and complete

2. The following actions have been and will be taken to assure that the activity complies with environmental requirements established for the **INSERT PROJECT NAME** under the Code of Federal Regulations 22 CFR 216:

- These design elements and best practices will be followed in implementing this activity, except with the approval of USAID.
- Any specific mitigation or monitoring measures described in the attached information will be implemented in their entirety.
- Compliance with these conditions will be regularly confirmed and documented by on-site inspections during the activity and at its completion.

_____ _____

(Signature) (Date)

BELOW THIS LINE FOR USAID USE ONLY

Approval

USAID Project Officer ☐ Approved ☐ Rejected	(print name)	(signature)
USAID MEO or DMEO ☐ Approved ☐ Rejected	(print name)	(signature)

USAID comments: (if documentation is rejected, comments must be provided to applicant)

Attachment 2

Environmental Mitigation and Monitoring Plan (EMMP)

- An EMMP should either be included in or developed for (1) **all IEEs** that have at least one "Negative Determination with Conditions" (or for activities for which an environmental review has been completed pursuant to an IEE requirement) and (2) all Environmental Assessments (EAs).
- If the EMMP is not developed as part of the IEE, the implementing partner should usually lead development of the EMMP, subject to review and oversight by the MEO and COTR/AOTR.
- In all cases, the tasks identified in the EMMP are incorporated into the implementing partner's Work Plan, budget, and reporting.
- The following EMMP format is recommended. It can be adapted, as necessary.

Environmental Mitigation and Monitoring Plan
Activity Title:
Implementing Partner:

Activity	Mitigation Measure(s)	Monitoring Indicator(s)	Monitoring and Reporting Frequency	Party(ies) Responsible	Indicative Budget
List all activities in IEE that received a "negative determination with conditions." *Do not list any other activities in separate rows.*	If mitigation measures are well-specified in the IEE, quote directly from IEE If they are not well-specified in the IEE, define more specifically here.	Specify indicators to (1) determine if mitigation is in place and (2) successful. For example, visual inspections for seepage around pit latrine; sedimentation at stream crossings, etc.)	For example: "Monitor weekly, and report in quarterly reports. If XXX occurs, immediately inform USAID activity manager."	If appropriate, *separately* specify the parties responsible for mitigation, for monitoring and for reporting.	

Attachment 3

Standard Conditions for Small-Scale Construction

Small-scale construction activities occur in association with a wide variety of development projects financed by USAID. Construction activities include demolition; site clearing; soil grading, leveling and compaction; excavation; pipe and equipment installation; and the erection of physical structures. These activities have the potential to result in significant adverse environmental impacts, but most of those impacts can be mitigated down to acceptable levels through the use of good construction management practices.

These standard conditions have been developed to ensure that small-scale construction activities do not result in significant adverse environmental impact. When adherence to these conditions is required as a condition of small-scale construction contracts, no significant adverse environmental impact is presumed to result from activity implementation. Project officers, COTRs/AOTRs, activity manager, Mission Environmental Officers, Contract Officers and implementing organizations must nonetheless be aware that these standard conditions are generic in nature, and that additional potentially significant adverse environmental impacts may be associated with small-scale construction activities. ***It is the responsibility of the individual USAID missions, and/or their implementing contractors and grantees, to monitor construction and to ensure that significant adverse environmental impacts do not result from these programs.***

For the purposes of this guidance, "small-scale" construction activities are defined here as those that cost less than $100,000 per construction project. Because of the exceptionally diverse physical conditions under which Bureau construction activities take place and the very broad kinds of construction that take place, the following standard conditions are to be followed "as practicable and appropriate."

Standard Conditions for Small-Scale Construction Projects

- Establish and adhere to construction timetables that minimize disruption to the normal activities of the construction area.
- Coordinate truck and other construction activity to minimize noise, traffic disruption and dust.
- Develop and implement appropriate human health and worker safety measures during construction.
- Post construction timetables and traffic diversion schedules at the project site.
- Where significant environmental impacts may occur, document and photograph pre-construction and post-construction conditions.
- Avoid subsidence and building stabilization problems through proper foundation excavation, fill placement and borrow pit management.
- Fill should avoid pockets of segregated materials, it should use well-graded materials, and it should be compacted to recognized standards.
- Backfill and/or restore borrow areas and quarries before abandonment unless alternative uses for those sites are planned.

- Control runoff into borrow pits.
- Provide temporary sanitation at the construction site.
- Recover and replant topsoil and plants as practicable.
- Set protocols for vehicle maintenance to control contamination by grease, oil and fuels.
- Install temporary erosion control and sediment retention measures when permanent ones either are not feasible or are delayed.
- Avoid pollution of waterways with stockpiled construction materials.
- Cover stockpiled construction materials, as practicable.
- Place solvents, lubricants, oils, and other semi-hazardous and hazardous liquids over a lined area with appropriate secondary containment in order to contain spillage. Test the integrity of bulk storage tanks and drums, and secure valves on oil and fuel supplies.
- Build appropriate containment structures around bulk storage tanks and materials stores to prevent spillage entering watercourses.
- Handle, store, use and process branded materials in accordance with manufacturer's instructions and recommendations.
- Take waste materials to appropriate, designated local disposal areas.
- Avoid the use of cement; paper; board; sealant and glazing formulations; piping; roofing material; or other materials containing asbestos.
- Do not use PCBs in electric transformers.
- Avoid sealant and glazing formulations that use lead as a drying agent.
- Use lead-free paint, primers, varnishes and stains.
- Minimize the use of solvent-based paints, or replace with water-based materials.
- Minimize burning of waste materials.
- Employ techniques to minimize dust and vapor emissions as practicable (e.g., road speed limits, air extraction equipment, scaffolding covers, road spray).
- Recycle wastewater to the extent practicable.
- Build tanks or other separators for silt-laden material prior to allowing significant outflow into watercourses.
- Build collection channels leading to oil and/or silt traps, particularly around areas used for vehicle washing or fuelling.
- Seal or remove abandoned drains to minimize water contamination.
- Segregate waste which can be salvaged, re-used or recycled.
- Introduce measures to control and minimize the volume of waste on site.
- Employ sensitive strategies with regard to trees, watercourses, plant or animal species or habitats, and important historical and archaeological features.
- As practicable, landscape construction sites in a way that is appropriate to local conditions.
- Minimize the disturbance of, and reduce the spread of, ground contaminants.
- Do not build structures in sensitive areas such as wetlands.
- If waste will be buried on site, avoid siting burial pits up-gradient from drinking water sources such as wells. Pits should be lined with impermeable material (e.g., clay or polyethylene).
- If waste will be buried on site, avoid siting waste pits where water tables are high or underlying geology makes contamination of groundwater likely. If no alternative site is available, ensure that pits are lined with impermeable material.
- Provide for the safe disposal of gray water from bathing and washing.

Additional Conditions to Minimize Impact of Parking Facility Construction

- Compact substrate materials appropriately.
- Where applicable, apply sealant at earliest possible time to limit runoff from unsealed asphalt.
- Provide adequate drainage for the surface area to be paved.
- Return unpaved areas to original or improved contours following construction.
- Re-vegetate areas where vegetation was removed or destroyed during construction.
- Provide vegetation strips within parking lot where possible, including shade trees.
- Retain tree(s) along parking facility and adjacent roadsides.

Standard Conditions for Small-Scale Water and Wastewater Activities

USAID's Bureau for Asia finances, directly or indirectly, a large number of water and wastewater activities. These occur in both rural and urban areas, and in association with residential, commercial, industrial and medical facilities. Water and wastewater activities have the potential to result in significant adverse environmental impacts, but most of those impacts can be mitigated down to acceptable levels through the use of good siting, design, construction, operations and maintenance practices.

These standard conditions for small-scale water and wastewater activities have been developed by USAID's Asia Bureau to ensure that water and wastewater activities financed by the Bureau do not result in significant adverse environmental impact. When adherence to these conditions, as practical and appropriate, is required as a condition of water and wastewater contracts, no significant adverse environmental impact is presumed to result from activity implementation. Project Officers, CTOs, Mission Environmental Officers, Contract Officers and implementing organizations must nonetheless be aware that these standard conditions are generic in nature, and that additional potentially significant adverse environmental impacts may be associated with water and wastewater activities. ***It is the responsibility of the individual USAID missions, and/or their implementing contractors and grantees, to monitor water and wastewater activities and to ensure that significant adverse environmental impacts do not result.***

For the purposes of this guidance, "small-scale" water and wastewater activities are defined as those that cost less than $200,000 per individual construction project. Because of the exceptionally diverse physical, biological and social environments under which Bureau water and wastewater projects take place, and the broad kinds of water and wastewater activities that are financed, these standard conditions are to be followed "as practicable and appropriate."

Standard Conditions for Water and Wastewater Activities

Standard Siting Conditions

- Site water supply facilities in a way that minimizes the potential for contamination, taking into account existing and likely future land use patterns in the water supply—i.e., wellhead protection, or upper watershed—area.
- Site wastewater facilities in a way that minimizes their potential for contaminating water supply sources, or for exposing human populations to water-borne contaminants.
- Avoid siting water supply and wastewater facilities in flood-prone areas.
- Do not site water and wastewater facilities on active faults or other areas where ground stability problems such as soil creep occur.
- Locate wastewater facilities downwind of local population.
- Build latrines and similar sanitation facilities down gradient of water supply wells. As necessary, evaluate depth to water table including seasonal fluctuations. Pit latrines should not be installed where the water table is shallow or the composition of the overlying deposits make groundwater vulnerable to contamination.
- Employ sensitive siting strategies that take into appropriate consideration impact on trees, wetlands and watercourses, important plant and animal habitat, and significant historical and archaeological resources. Avoid or mitigate adverse impacts to these resources.

Standard Design Conditions

- In general, design water supply facilities to protect water quality, minimize the potential for contamination, and minimize operation and maintenance costs.
- In general, design wastewater facilities to avoid contamination of water supplies and human exposure, and minimize operation and maintenance costs.
- In general, do not construct new wastewater pipelines unless treatment is provided at the outfall.
- Where latrines are installed, use improved ventilated pit designs that reduce insect vectors.

Standard Construction Conditions

- Establish and adhere to construction timetables that minimize disruption to the normal activities of the construction area.
- Post construction timetables and traffic diversion schedules at the project site.
- Coordinate truck and other construction activity to minimize noise, traffic disruption and dust.
- Develop and implement appropriate human health and worker safety measures during construction as well as during operation and maintenance phases.
- Where significant environmental impacts may occur, document and photograph pre-construction and post-construction conditions.
- Avoid subsidence and building stabilization problems through proper foundation excavation, fill placement and borrow pit management.

- Fill should avoid pockets of segregated materials, it should use well-graded materials, and it should be compacted to recognized standards.
- Backfill and/or restore borrow areas and quarries before abandonment unless alternative uses for those sites are planned.
- Control runoff into borrow pits.
- Install temporary erosion control and sediment retention measures when permanent ones either are not feasible or are delayed.
- Provide temporary sanitation at the construction site.
- Set protocols for vehicle maintenance to control contamination by grease, oil and fuels.
- Build collection channels leading to oil and/or silt traps, particularly around areas used for vehicle washing or fuelling.
- Build appropriate containment structures around bulk storage tanks and materials stores to prevent spillage entering watercourses.
- Build tanks or other separators for silt-laden material prior to allowing significant outflow into watercourses.
- Avoid pollution of waterways with stockpiled construction materials.
- Cover stockpiled construction materials, as practicable.
- Minimize the disturbance of, and reduce the spread of, ground contaminants.
- Handle, store, use and process branded materials in accordance with manufacturer's instructions and recommendations.
- Use lead-free paint, primers, varnishes and stains.
- Minimize the use of solvent-based paints.
- Introduce measures to control and minimize the volume of waste on site.
- Segregate waste that can be salvaged, re-used or recycled.
- Take waste materials to appropriate, designated local disposal areas.
- Minimize burning of waste materials.
- If waste will be buried on site, avoid siting burial pits up-gradient from drinking water sources such as wells. Pits should be lined with impermeable material (e.g., clay or polyethylene).
- If waste will be buried on site, avoid siting waste pits where water tables are high or underlying geology makes contamination of groundwater likely. If no alternative site is available, ensure that pits are lined with impermeable material.
- Provide for the safe disposal of gray water from bathing and washing.
- Recycle wastewater to the extent practicable.
- Seal or remove abandoned drains to minimize water contamination.
- Use proper bedding materials for pipes, and backfill appropriately for the pipeline.
- Use riprap (cobbled stone), gravel, or concrete as needed to prevent erosion of drainage structures at the outfall of sanitation projects according to established standards.
- Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures.
- Do not use piping containing asbestos.
- Replace lead pipes and joints in drinking water delivery system.
- Provide proper wellhead protection against contaminant sources.
- Keep livestock from grazing immediately up-gradient of water supplies.

- Do not allow animals to drink directly from water sources, unless those sources are subsequently treated.
- In coastal areas, maintain withdrawals within safe yield limits to avoid salt water intrusion and well contamination.
- Ensure that spilled water and rainwater drain to a soakway or equivalent structure.
- Monitor drains and soakways and keep clear of debris.
- Collect and dispose of sludge from wastewater treatment facilities at appropriate frequencies.
- Dispose of sludge in areas designated by local authorities.
- Test sludge for metals, pathogens and other appropriate constituents prior to use as fertilizer.
- Recover and replant topsoil and plants as practicable.
- Re-vegetate areas damaged during construction. Do not remove erosion control measures until re-vegetation is completed.
- As practicable, landscape construction sites in a way that is appropriate to local conditions.

Standard Operations and Maintenance Conditions

- As a rule, financing for water and wastewater infrastructure improvements should not be provided unless appropriate operations and maintenance (O&M) provisions are in place.
- On larger projects, an O&M Manual should be prepared before water or wastewater system operations begin.
- Address financial and system power issues in O&M plans.

Additional Standard Conditions for Health Clinics and Medical Facilities

- Do not dispose of hazardous and chemical wastes to sewer systems.
- Collect and segregate waste from patients treated with cytotoxic drugs.
- Separate and disinfect stools from cholera patients prior to discharge.
- Disinfect blood before discharge to sewers unless there is an adequate wastewater treatment facility.
- Water-soluble, relatively mild pharmaceutical mixtures, such as vitamin solutions, cough syrups, intravenous solutions, eye drops, etc.—but not antibiotics—may be diluted with large amounts of water and then discharged to sewer systems that can handle them.
- Avoid burial of chemical wastes where there is potential for groundwater contamination.