

# ENVIRONMENTAL IMPACT ASSESSMENT

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**ESTABLISHMENT OF FEDERAL MEDICAL COLLEGE LOCATED AT IBN-E-SINA ROAD, G-8/3, ISLAMABAD.**

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## GLOSSARY

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- a. **Act:** means Pakistan Environmental Protection Act, 1997 [Amendment 2012].
- b. **Dust:** are fine powdery material such as dry earth/ pollen that can be blown in the air.
- c. **Discharge:** means spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping
- d. **Environment:** means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned.
- e. **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.
- f. **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.
- g. **Hazardous Substance:** 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 any substance which may be prescribed as a hazardous substance.
- h. **Hazardous Waste:** means waste which is or which contains a hazardous substance or which may be prescribed as hazardous substance or which may be prescribed as hazardous waste, and includes hospital waste and nuclear waste.
- i. **Industrial Activity:** means any operation or process for manufacturing, making, formulating, synthesizing, 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.

- j. **Industrial Waste:** means waste resulting from industrial activity.
- k. **Incineration:** The thermal destruction of waste for the primary purpose of disposal, with or without recovery of energy.
- l. *Note: the term incineration generally means 'the act of burning to ashes'.*
- m. **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 environmental effect for requiring preparation of an environmental impact assessment.
- n. **Leachate:** A liquid that has percolated through and/or been generated by decomposition of waste material. It includes water that come in contact with waste and is potentially contaminated by nutrients, metals, salts and other soluble or suspended components and products of decomposition of waste.
- o. **Landfill:** A waste disposal site used for the controlled deposit of solid waste onto or into land.
- p. **Mitigation Measure:** means measure for control, reduce or elimination of an adverse impact of a development on environment, including a restorative measures.
- q. **Pakistan Environmental Quality Standards:** means the permissible standards for emission of air pollutants and noise and for discharge of effluent and waste.
- r. **Regulations:** means the Pakistan Environmental Protection Agency, Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.
- s. **Recycling:** Set of processes (including biological) for converting recovered materials that would otherwise be disposed of as waste into useful material and/or products
- t. **Reuse:** using a waste product again for the same or different purpose without further manufacture.
- u. **Suspended Solids:** are solid particles suspended in water or air that can be removed by filtration or settlement.
- v. **Sustainability:** means such developments that meet the needs of the present generation without compromising the ability of future generations to meet their needs.
- w. **Waste:** means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process.

## LIST OF ABBREVIATIONS

|         |                                                      |
|---------|------------------------------------------------------|
| CMR     | Federal Medical College Islamabad                    |
| BOD     | Biological Oxygen Demand                             |
| COD     | Chemical Oxygen Demand                               |
| EA      | Environmental Approval                               |
| EIA     | Environmental Impact Assessment                      |
| EMP     | Environmental Management Plan                        |
| EMtP    | Environmental Monitoring Plan                        |
| EPD     | Environmental Protection Department                  |
| EPO     | Environmental Protection Order                       |
| GOP     | Government of Pakistan                               |
| HW      | Hazardous Waste                                      |
| IEE     | Initial Environmental Examination                    |
| IMC     | Independent Monitoring Consultant                    |
| IPPs    | Independent Power Projects                           |
| IUCN    | International Union for Conservation of Nature       |
| LAA     | Land Acquisition Act                                 |
| MoE     | Ministry of Environment                              |
| MSW     | Municipal Solid Waste                                |
| NA      | Not Applicable                                       |
| NCS     | National Conservation Strategy                       |
| ND      | Not Detected                                         |
| NO      | Not Objectionable                                    |
| PEQS    | Pakistan Environment Quality Standard                |
| NGO     | Non-Government organization                          |
| NOC     | No-Objection Certificate                             |
| NOx     | Oxides of Nitrogen                                   |
| PC      | Public Consultation                                  |
| PEPA    | Pakistan Environmental Protection Act, 1997          |
| PEPC    | Pakistan Environmental Protection Council            |
| PM      | Particulate Matter                                   |
| PP      | Project Proponent                                    |
| PERSUAP | Pesticide Evaluation Report and Safe Use Action Plan |

|                 |                                                   |
|-----------------|---------------------------------------------------|
| RAP             | Resettlement Action Plan                          |
| RFP             | Request for Reports                               |
| SO <sub>x</sub> | Oxides of Sulphur                                 |
| SP              | Seismic Provisions                                |
| TES             | Threatened, Endangered and Special Status Species |
| TOC             | Total Organic Carbon                              |
| UBC             | Uniform Building Code                             |
| VOC             | Volatile organic compound                         |
| WHO             | World Health Organization                         |
| WWTP            | Waste Water Treatment Plant                       |

# EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

### 1. TITLE & LOCATION OF PROJECT:

Proposed Environmental Impact Assessment is about Establishment of Federal Medical College located at Ibn-E-Sina Road, G-8/3, Islamabad. Salient features of proposed project are elaborated as below:

| Sr.#                   | CONSTITUENT       | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Precise</b> |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1)                     | Name of project   | Federal Medical College, Islamabad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2)                     | Project Location  | Located at Ibn-E-Sina Road, G-8/3, Islamabad.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3)                     | Project Overview  | <p>Fundamentally, the project is intended to develop on land area of 2 acres. The proposed life cycle of the project is 50 years. However, this will be extended by regular maintenances and rehabilitation of building. The proposed project comprises of Academic Block having Building Covered Area of 303,223 Sft. with 2 Basements, a Ground Floor + 5, 5 Storeys building and will house the following: 5 Lecture Halls, 5 Labs, 3 Medical Museums, 9 Tutorial Rooms, Learning Resource Center, Allied Offices and Services, Multipurpose Facility Area. Further, the Girl's Hostel will have building area of 36,166 sft. with a Ground Floor + 3 Storey Building and will house 190 Students. Total cost of the project is 3637.65 Million. The proposed land is fully owned through its representative.</p> <p>The proposed project lies in a well-developed area of Islamabad with strong surrounding infrastructure. Key nearby facilities include major road networks such as the Islamabad Expressway and Murree Road, ensuring excellent connectivity. Important national landmarks like the Pakistan Monument, Shakarparian National Park, and the Pakistan Monument Museum are located close by, along with access to commercial sectors and government institutions. The building design includes the layout for fire-fighting and emergency situation. Smoke detectors and fire alarms are part of layout plan.</p> |
| 4)                     | Project Proponent | <p>Dr. Saima Mumtaz (Associate professor)</p> <p><b>Phone No:</b> 051-9107725</p> <p><b>Email:</b> <a href="mailto:drsaimamumtaz@szabmu.edu.pk">drsaimamumtaz@szabmu.edu.pk</a></p> <p><b>Address:</b> Hanna road g-8/4 Islamabad.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5)                     | Contact Person    | <p>M.asif mirza</p> <p>Accounts officer / Focal person</p> <p><b>Phone No:</b> 0331-5110166</p> <p>015-9107725</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6)                     | Land Area Covered | 2 acres                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



|                            |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7)                         | Project Cost                          | PKR 3637.65 Million                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8)                         | Project Components                    | The project is intended to develop on land area of 2 acres. The proposed project comprises of Academic Block having Building Covered Area of 303,223 Sft. with 2 Basements, a Ground Floor + 5, 5 Storeys building and will house the following: 5 Lecture Halls, 5 Labs, 3 Medical Museums, 9 Tutorial Rooms, Learning Resource Center, Allied Offices and Services, Multipurpose Facility Area. Further, the Girl's Hostel will have building area of 36,166 sft with a Ground Floor + 3 Storey Building and will house 190 Students. Total cost of the project is 3637.65 Million. The proposed land is fully owned through its representative. |
| <b>Environment Precise</b> |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.                         | Project Environment Consultants (PEC) | <b>Grand Square Consultancy (GSCON)</b><br><b>Address:</b> Suite # 12, 1 <sup>st</sup> Floor, Glamour One Plaza, Shoukat Ali Road, Township, Lahore<br><b>Tel:</b> +92-42-35213231; <b>Mobile:</b> +92-304-8144088<br><b>UAE Office:</b> Khalidiya Tower, Office No. 5, M-22, Al Khalidiya St., Abu Dhabi, UAE<br><b>Email:</b> <a href="mailto:info@gscons.com">info@gscons.com</a> ; <b>Web:</b> <a href="http://www.gscons.com">www.gscons.com</a>                                                                                                                                                                                              |
| 2.                         | Type & Category of Project            | The Proposed Project falls under Schedule II, of the IEE /EIA Regulations 2000 made under Section 12 of Pakistan Environmental Protection Act, 1997 [Amendment, 2021]. We had submitted the IEE report under said rules. However, after primary scrutiny, the Pak EPA has desired, vide their letter No. <b>F. No. 1(1)/2026-Misc-Dir(EIA/Mont.)</b> dated <b>January 2, 2026</b> to submit detailed Environmental Impact Assessment report.                                                                                                                                                                                                       |
| 3.                         | Water Requirement                     | Water requirement of proposed project during operational phase is estimated about 400 - 500 gallons per day while at construction phase, water requirement is 300 gallons per day. Water turbine will be installed for extraction of ground water.                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4.                         | Electricity Requirement               | Electricity requirement of Federal Medical College is projected to be around 200 - 300 KW.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5.                         | Solid Waste Management                | During operational phase municipal waste of about 25-30kg per day will be produced while at construction phase solid waste generated cannot be not define at this stage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 6.                         | Sewerage Management                   | Sewerage wastewater will comprise of 250 gallon per day during construction phase while during operational phase the sewerage wastewater will comprise of 350-400 gallon per day (Toilet and kitchen waste only). The wastewater will be collected and conveyed to the municipal sewerage system, rather than being treated on-site.                                                                                                                                                                                                                                                                                                               |

The impacts of the project activities on environment during construction & operational phases of proposed project have been considered. The mitigation measures have been

proposed to minimize / eliminate the negative impacts of the project on the environment. A complete Environmental Monitoring and Environment Management Plan has been recommended to regulate the requirements of Pakistan Environmental Protection Act, 1997. Annual overall environmental monitoring by a third party will also ensure environmentally sound operation of the project.

The impacts on environment which are likely to be generated during execution of construction phase are summarized in table below:

| ACTIVITY                                                                                                                                                                                                                                                                                     | ENVIRONMENTAL IMPACTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MITIGATION MEASURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>– Planning and designing</li> <li>– Construction of road;</li> <li>– Excavation;</li> <li>– Construction of Sewerage system</li> <li>– Construction of building and</li> <li>– Construction Machinery</li> <li>– Waste Generate by workers</li> </ul> | <ul style="list-style-type: none"> <li>– Cutting of trees</li> <li>– Involvement of forest and shamlati land</li> <li>– Stability issues of building</li> <li>– Improper storage or handling of hazardous/ flammable materials including paints, fuels, solvents, oil, cement etc.;</li> <li>– Dust due to construction activities like excavation, clearing, leveling, compaction etc.;</li> <li>– Noise due to use of heavy machinery;</li> <li>– Violation of applicable air pollutant emissions or ambient concentration standards;</li> <li>– Safety issues for workers; and,</li> <li>– Solid waste including food waste</li> <li>– Collision of machinery while working/ improper parking</li> </ul> | <ul style="list-style-type: none"> <li>– Trees will not be cut down.</li> <li>– No forest and shamlati land will be included and to ascertain this NEC Farad is available with the proponent.</li> <li>– The buildings are designed by certified engineers / architects based on the reliable data and ground acceleration of the area.</li> <li>– Hiring of reputable construction contractor with sound knowledge of environment and HSE.</li> <li>– Substantial training of Workers before commencement of work.</li> <li>– Implementation of formal emergency procedures as per code of work by contractor.</li> <li>– Provision of all resources and PPEs consider essential to HSE.</li> <li>– Monitor the performance of contractor/ workers.</li> <li>– Necessary measures like sprinkling of water especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials.</li> <li>– Covering or use of wind sheets around the stockpiles to avoid air pollution through dispersion</li> <li>– Contractor will prepare waste management plan related to construction activities; get its approval from proponent and ensure its full implementation.</li> <li>– Control noise through control of working hours and selection of less noisy equipment.</li> </ul> |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <ul style="list-style-type: none"> <li>– All heavy machinery should be parked at designated area.</li> <li>– PPEs will be provided to the workers and its usage will be made mandatory.</li> <li>– Implementation of measures suggested in EMP of subject study.</li> <li>– Adequate care shall be taken during this phase to avoid any kind of damage to environment as well as worker's safety.</li> </ul> |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The impacts on environment which are likely to be generated during execution of operations are summarized in table below:

| ACTIVITY                                                                                          | ENVIRONMENTAL IMPACTS                                                                                                                                                                        | MITIGATION MEASURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>– Solid Waste</li> <li>– Liquid waste discharge</li> </ul> | <ul style="list-style-type: none"> <li>– Open dumping of house waste in street or in plots;</li> <li>– Discharge of liquid waste in open area; and,</li> <li>– Epidemic diseases.</li> </ul> | <ul style="list-style-type: none"> <li>– Solid waste should be temporally dumped on designated area and picked-up by contractor on regular basis.</li> <li>– Proper drainage system should be ensured for liquid waste.</li> <li>– Perform regular inspection of facility.</li> <li>– Implementation of measures suggested in EMP of subject study.</li> <li>– Avoid storage of hazardous waste more than a day.</li> <li>– Adequate care shall be taken during this phase to avoid any kind of damage to environment as well as worker's safety.</li> <li>– Ensure proper housekeeping; and,</li> <li>– Check and review regularly all elements of control measures for their continuing effectiveness.</li> </ul> |

Proposed project is designed to appropriate standards and is fitted with adequate safety and monitoring methods and will be operated by competent person. Proposed project will be equipped with engineering controls and intended to evaluate the environmental impact of proposed operational activity to avoid damage to the environment and risks to safety. All the building by laws of Tehsil Municipal Corporation is kept into consideration in the design of buildings.

Comprehensive Environmental Monitoring and Environment Management Plans are prepared to satisfy the requirements of Pakistan Environment Protection Act, 1997 and rules and regulations made thereunder. Regular overall environmental monitoring by a third party will also ensure environmentally sound Construction and operation of the project. The proponent / contractor will hire trained staff to ensure the enforcement of Environmental Management

Plan. The equipment will be kept in proper condition to save the environment from any damage.

During construction phase; air quality, ground water quality and surface water quality will be monitored and in operational phase; solid waste and wastewater drainage will be monitored.

Environmental Committee will be formed to attend and address the issues relating to environment, cleanliness, up keeping, aesthetic beauty of the project site, general environmental enhancement, tree plantation, vegetation promotion, planting of flowers and ornamental plants on site.

The mitigation measures have been recommended in the EIA Report based on the best available techniques which will facilitate the project to operate in environmental friendly manner. Based on the findings of this EIA, it can be concluded that the project has negligible adverse impacts on the existing environment and the proposed project is suitable from environmental point of view.

# CHAPTER-1

## INTRODUCTION

### 1.1 OVERVIEW

Proposed Environmental Impact Assessment is about “**Establishment of Federal Medical College** located at **Ibn-E-Sina Road, G-8/3, Islamabad.**”

The proposed project lies in a well-developed area of Islamabad with strong surrounding infrastructure. Key nearby facilities include major road networks such as the Islamabad Expressway and Murree Road, ensuring excellent connectivity. Important national landmarks like the Pakistan Monument, Shakarparian National Park, and the Pakistan Monument Museum are located close by, along with access to commercial sectors and government institutions. The building design includes the layout for fire-fighting and emergency situation. Smoke detectors and fire alarms are part of layout plan.

Fundamentally, the project is intended to develop on land area of 2 acres. The proposed life cycle of the project is 50 years. However, this will be extended by regular maintenances and rehabilitation of building. The proposed project comprises of Academic Block having Building Covered Area of 303,223 Sft with 2 Basements, a Ground Floor + 5, 5 Storeys building and will house the following:

**Table 1.1: Detail of Building Blocks**

| Sr. No. | Departments                 |
|---------|-----------------------------|
| 1       | 5 Lecture Halls             |
| 2       | 5 Labs                      |
| 3       | 3 Medical Museums           |
| 4       | 9 Tutorial Rooms            |
| 5       | Learning Resource Center    |
| 6       | Allied Offices and Services |
| 7       | Multipurpose Facility Area  |

Further, the Girl's Hostel will have building area of 36,166 sft with a Ground Floor + 3 Storey Building and will house 190 Students. Total cost of the project is 3637.65 Million. The proposed land is fully owned through its representative.

In order to promote & safeguard the economic interest, this project has been developed in accordance with the best engineering standards and provisions of the Controlling Authority. Land for the proposed project is fully owned by **Federal Medical College** and respective land notification document is appended as **Annexure-I** of this document. Total estimated cost of the proposed project is **3637.65 Million PKR**.

As already mentioned above, the land required for the proposed project is fully owned by proponent and no land acquisition is involved in the said project. The design layout of the project is unique in nature as it has all the basic necessities. Layout of the proposed project is attached as **Annexure-II** of this EIA report.

This EIA report has been formulated for the grant of NOC from Pakistan Environmental Protection Agency, Islamabad.

## 1.2 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Pakistan, Islamabad in compliance with the legal requirement of Section, 12 of Pakistan Environmental Protection Act, 1997; “Preparation and submission of IEE / EIA” for obtaining the Environmental Approval (EA) before starting project activity. Reference to letter **F. No. 1(1)/2026-Misc-Dir(EIA/Mont.)** dated **January 2, 2026**, the Pak EPA, exercising the power conferred under IEE/EIA Regulations 2000 require the proponent to submit detailed Environmental Impact Assessment. Hence, the EIA report is prepared and submitted for issuance of Environmental Approval under Section 12 of PEPA 1997.

The other relevant regulations and guidelines considered while preparing this EIA report include:

- » Policy and procedures for filing, review, and approval of environmental assessments.
- » Guidelines for the preparation and review of environmental reports.
- » Guidelines for public participation.
- » Guidelines for sensitive and critical areas.
- » Detailed sectoral guidelines.
- » Hazardous Substance Rules, 2003.

Different environmental aspects like social, physical biological etc. and other related features of the project both during construction & operational phases are highlighted in this EIA report. Measures necessary to be adopted to mitigate any environmental impacts on any part

of the environment around are also described. All the important information is also provided as described under the format used to help decision makers, EPA Pakistan in the present case, before issuing the desired Environmental Approval.

### 1.3 IDENTIFICATION OF THE PROJECT AND THE PROPONENT

#### a. Proponent Details

Dr. Saima Mumtaz (Associate professor) of **Federal Medical College, Islamabad** is the proponent of this project. Detail of the proponent is given hereunder.

|                         |                                                           |
|-------------------------|-----------------------------------------------------------|
| <b>Name:</b>            | <b>Dr. Saima Mumtaz (Associate professor)</b>             |
| <b>Address:</b>         | Hanna road g-8/4 Islamabad.                               |
| <b>Post:</b>            | Associate professor<br>Federal Medical College, Islamabad |
| <b>Contact Details:</b> | <b>Cell:</b> 051-9107725                                  |

#### b. Consultant

##### **Grand Square Consultancy (GSCON)**

**Address:** Suite # 12, 1<sup>st</sup> Floor, Glamour-1 Plaza, Shoukat Ali Road, Township, Lahore

**UAE Office:** Khalidiya Tower, Office No. 5, M-22, Al Khalidiya St., Abu Dhabi, UAE

**Tel:** +92-42-35213231; **Email:** [info@gscons.com](mailto:info@gscons.com); **Web:** [www.gscons.com](http://www.gscons.com)

### 1.4 NATURE AND SIZE OF THE PROJECT

The proposed Federal Medical College (FMC), Islamabad is a federal government educational project aimed at strengthening medical education and healthcare human resource development under the administrative control of the Ministry of National Health Services, Regulations and Coordination. The project involves the establishment of a medical education institution integrated with existing healthcare facilities, particularly Pakistan Institute of Medical Sciences (PIMS). The nature of the project is institutional and non-industrial, comprising the construction and operation of academic blocks, teaching laboratories, administrative offices, library, faculty facilities, student support services, internal roads, parking areas, landscaping, and essential utilities such as water supply, sewerage, drainage, electricity, and solid waste management. No hazardous or high-risk industrial activities are involved.

The proposed project lies in a well-developed area of Islamabad with strong surrounding infrastructure. Key nearby facilities includes major road networks such as the Islamabad Expressway and Murree Road, ensuring excellent connectivity. Important national landmarks like the Pakistan Monument, Shakarparian National Park, and the Pakistan Monument



Museum are located close by, along with access to commercial sectors and government institutions.

In terms of size, the project is classified as a medium-scale development, consistent with projects listed under Schedule II of the Pak-EPA (Review of IEE and EIA) Regulations, 2000, requiring the preparation of an Environmental Impact Assessment (EIA). The scale of construction, anticipated student and staff strength, and associated demand for utilities fall within the capacity of existing and planned infrastructure in Islamabad. Environmental impacts are expected to be localized, temporary, and manageable, primarily during the construction phase, and can be effectively mitigated through standard environmental management and good construction practices.

The proposed project aims at construction of medical educational institute in Islamabad. The area under consideration for construction of Federal Medical College Islamabad is owned by the proponent wholly and no land acquisition is involved in this project. The proposed building plan requires total land area of 2 acres.

The existing state of area demands such development of modern and classic construction style by keeping all important environmental factors in consideration. Project proponents are environmentally conscious of such developments and they are striving hard to cater all the environment related issues at the best level in their management. This EIA report is the proof of this consciousness that the management is going for the approval of their project before its implementation. This project “**Federal Medical College**” is designed to comply with local and national standards of pollution.

## 1.5 LOCATION OF THE PROJECT

The proposed project is located at Ibn-E-Sina Road, G-8/3, Islamabad. The proposed project is located at Hanna Road. Faisal Avenue Road passes by the side of construction site. PIMS hospital is situated only 536 metres away from the project site. Centaurus Mall is at the distance of 900 metres from the location of project. Islamabad Expressway is at distance of 1.5 Km.

## 1.6 SCOPE OF STUDY

For achieving the objectives of EIA, the study is mainly divided into the following sub-tasks:

- Identification of various legal / statutory requirements as set forth by the Pakistan Environmental Protection Act, 1997 and the guidelines for preparation of EIA Reports and review of existing regulatory framework in the country with reference to the development projects;

- Collection of data related to physical, ecological, and socio-economic recourses of the project area;
- Identification and evaluation of salient environmental impacts;
- Identification of necessary mitigation measures to minimize the adverse impacts; and
- Preparation of an Environmental Management Plan (EMP).

The key steps followed while conducting EIA are briefly described below.

### **1.7 Review of Project Documents**

Previous relevant reports have been reviewed for getting insight into the project area and related issues. Some offices and organizations were also visited for acquisition of published reports and data.

#### **1.7.1 Reconnaissance Survey**

The reconnaissance survey under this study was conducted on December 2025 by an interdisciplinary team consisting of Environmentalist, Health & Safety Specialist to conceptualize the project and understand the potential environmental and social impacts associated with the proposed project and also to familiarize the environmental setting and local conditions.

#### **1.7.2 Data Collection**

Both primary and secondary data were collected to accomplish the objectives of the study. The primary data was collected by conducting field survey in December 2025 through environmental monitoring, individual interviews of local population, focus group discussions and consultations with local community, while secondary data was collected from the published government documents, i.e. Economic Survey of Pakistan, District Population Census, Multiple Indicators Clusters Survey, Weather data, Government Acts, Laws and Regulations. Based on the environmental checklist, socioeconomic questionnaires and area profile as well format for consultations, field surveys were carried out to collect data on the physical, biological and social environment aspect of the project site.

#### **i) Physical Environment**

The physical aspects of the project site covered the following:

- » Soils - type of soils, erosion, stability
- » Land use pattern of the area including agriculture crops, barren lands, industrial and residential use
- » Affected buildings - residential, industrial, commercial, and structures of buildings
- » Drainage pattern

- » Available energy source(s)
- » Other private/ public infrastructure/ utilities like pipelines, electric poles
- » Water resources available both surface and groundwater
- » Air quality and noise level in the project impact corridor

## **ii) Biological Environment**

In consideration of ecological environment, the following main aspects were studied:

- » Existing vegetation along the project impact corridor
- » Trees likely to be affected due to the project implementation (if any)
- » Endangered species both flora and fauna
- » Wildlife in the project impact corridor
- » Forests and game reserves existing along project impact corridor
- » Beneficial plants and animals in the project impact corridor
- » Aquatic life including fish resources
- » Wetlands within the vicinity of the project impact corridor

## **iii) Social Environment**

Social assessment has attempted to determine the social implications in terms of assumed positive and negative impacts as a result of the implementation of the proposed project. The socioeconomic baseline data covered the following major aspects:

- » Demographic profile
- » Population
- » Number of households
- » Literacy status
- » Nature of business/ occupations
- » Livelihood/ income
- » Living standard of the population
- » Access to credit
- » Social infrastructure available
- » Women issues
- » Community perceptions about the Project

### **1.7.3 Stakeholders/ Public Consultations**

During the detailed field survey in December 2025 consultations were made with local community/ general public as well as intent officials. The basic purpose of these consultative meetings/ focus group discussions were to i) share information with

stakeholders about the expected impacts of proposed development works on the physical, biological, and socioeconomic environment; ii) understand stakeholders' concerns regarding various aspects of the project, including the existing conditions and the potential impacts of the proposed project.

#### 1.7.4 Data Processing and Analysis

After collecting all above data from different sources including interviews from communities, consultations, physical observations, and data compiled from other documents was analyzed. Accordingly, the results were presented through tables (means, percentage, number), graphical/ pictorial illustrations.

### 1.8 PERSONS PERFORMING EIA STUDY

EIA study of the project has been conducted by GSCON Consultant-Pakistan, according to the Review of IEE/EIA Regulations 2000, Pakistan Environmental Protection Agency (Pak EPA), Pakistan Environmental Protection Act, 1997 and other relevant Regulations and completed this EIA Report. List of names, qualifications and roles of team members carrying out the EIA study is provided hereunder:

| NAME & DESIGNATION                                                | QUALIFICATION & EXPERIENCE                                                                                             |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Mr. Muhammad Mujahid</b><br>Principal Consultant (Environment) | <b>MPhil., M.Sc.</b> Environmental Sciences, University of the Punjab. Over 10 year's working experience               |
| <b>Mr. Rizwan Javed</b><br>Project Manager                        | <b>M.Sc. Environmental Sciences</b> , University of the Punjab. Over 10 year's working experience                      |
| <b>Miss Rabia Rafiq</b><br>Sr. Environmentalist                   | <b>M.S. Environmental Sciences, University of the Punjab.</b> Over 5 year's working experience                         |
| <b>Hafiz Atif Tariq</b><br>Environmentalist                       | <b>B.S. Environmental Sciences</b> , University of the Punjab. Over 6 year's working experience.                       |
| <b>Ms. Hajira Tahir</b><br>Environmentalist                       | <b>MPhil. Environmental Sciences</b> , University of Veterinary and Animal Sciences. Over 3 year's working experience. |
| <b>Mr. Mohsin</b><br>Survey Enumerator                            | <b>B.S. Environmental Sciences</b> University of Veterinary and Animal Sciences. 1 year's working experience.          |
| <b>Mr. Babar Ali</b><br>Environment Associate                     | <b>M.PHIL. Environmental Sciences</b> , University of Veterinary and Animal Sciences. Over 2 year's working experience |
| <b>Mr. Javed Iqbal Kahlon</b><br>HSE Specialist                   | <b>Master in Occupational Safety and Health, Turin, Italy.</b> Over 20 year's working experience                       |
| <b>Mr. Mudassar Adil</b><br>HSE Specialist                        | <b>BS. Environmental Sciences</b> , GC University, Faisalabad. Over 6 year's working experience                        |
| <b>Mr. Noor Khan</b><br>Sociologist                               | <b>M.Phil. International Development Studies, M.Sc. Sociology.</b> Over 7 year's working experience                    |

| NAME & DESIGNATION                          | QUALIFICATION & EXPERIENCE                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Ms. Dua Rehman</b><br>Environmentalist   | <b>BS. Environmental Sciences,</b><br>University of Veterinary and Animal Sciences. |
| <b>Mr. Moeez Shafiq</b><br>Environmentalist | <b>BS. Environmental Sciences,</b><br>University of Veterinary and Animal Sciences. |
| <b>Ms. Roha Imaan</b><br>Environmentalist   | <b>BS. Environmental Sciences,</b><br>University of Veterinary and Animal Sciences. |

## 1.9 ROLES AND RESPONSIBILITIES

Role and responsibilities have been proposed in the EIA report. Proposed mitigation measures, as defined in the EMP will be primarily implemented by the management of **Federal Medical College** with responsibilities assigned to various departments. Project Proponent will strictly adhere to implementation of all mitigation measures contained in this report in order to minimize any negative impact on any component of environment during and after execution of project. Institutional arrangements have been suggested in Chapter-7 of this document, so that proposed mechanism of environmental protection shall work in time.

## 1.10 ROLE OF ENVIRONMENTAL PROTECTION AGENCY, ISLAMABAD

The main responsibility of Environmental Protection Agency, Islamabad will be to monitor the mitigation measures, which will be taken up or implemented by **Federal Medical College**. EPA is endorsed to inspect compliance of sections 13, 14, 17, & 18 of IEE/ EIA Regulations, 2000, which enunciate the conditions for approval, confirmation of compliance, entry, inspection and monitoring of proposed project. Hence, Pak EPA is the sole entity which is responsible to issue the necessary approval by exercising powers under section 12 of Pakistan Environmental Protection Act 1997 after proper review of this EIA document.

## 1.11 ORGANIZATION OF EIA REPORT

The EIA report is divided into following chapter:

Executive Summary

Chapter 1: Introduction

Chapter 2: Legal Framework

Chapter 3: Project Description

Chapter 4: Description of Environment

Chapter 5: Stakeholder Consultation

Chapter 6: Impact Identification & Mitigation Measures

Chapter 7: Environmental Management Plan

Chapter 8: Findings and Recommendations

## Annexure

# CHAPTER-2

## **POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK**

### **2.1 GENERAL**

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment of various projects.

Like other Projects, the proposed Project, before its execution, is required to go through an Environmental Assessment, in accordance with the provisions of the Pakistan Environmental Protection Act, 1997.

### **2.2 EXISTING REGULATIONS AND LEGAL FRAMEWORK**

According to environmental laws of the country, development projects have to undergo the process of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) in order to predict and mitigate the impacts of the development at an early stage. Based on nature, size, cost and associated impacts, the proposed project has been categorized for EIA Study according to the Regulation “4” of Statutory Notification issued on June 13, 2000 (S.R.O.339 (1) /2001). The Proposed Project is establishment of **Federal Medical College, Islamabad**. Reference to letter **F. No. 1(1)/2026-Misc-Dir(EIA/Mont.)** dated **January 2, 2026**, the Pak EPA, exercising the power conferred under IEE/EIA Regulations 2000 require the proponent to submit detailed Environmental Impact Assessment. Hence, the EIA report is prepared and submitted for issuance of Environmental Approval under Section 12 of PEPA 1997. The Director General, Pak EPA is the authority to issue the requisite Environmental Approval after proper review of the project.

This EIA Study has been carried out in the light of the policy guidelines of the Government of Pakistan, under the procedures and practices formulated by the Pakistan Environmental Protection Agency (EPA).

### **2.3 RELEVANT LEGAL / INSTITUTIONAL FRAMEWORK**

The applicable laws for the environmental study of the proposed project are briefly given below. The proponent of the proposed project will abide by the applicable laws and regulations.

#### **2.3.1. NATIONAL CONSERVATION STRATEGY, 1992**

On March 1<sup>st</sup>, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country’s deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life.



The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

### **2.3.2. PEPO, 1983 AND PEPA, 1997**

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which was replaced by the Pakistan Environmental Protection Act (PEPA) 1997, through an Act of Parliament. Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

Under section 12 of the Pakistan Environmental Protection Act, 1997 it is mandatory to take an Environmental Approval Environmental Protection Agency for commencement of any construction of project.

### **2.3.3. NATIONAL ENVIRONMENTAL POLICY 2005**

The national environmental policy 2005 aims to protect, conserve and restore the environment in order to improve quality of the life of citizens through sustainable development and resource conservation. The main objectives of the policy are;

- Conservation, restoration and efficient management of the natural resources.
- Integration of the environmental considerations in policy making and planning process.
- Capacity building of government agencies and other stakeholders at all levels for the better environmental management.
- Meeting international obligations effectively in line with the national aspirations.
- Creation of a demand for environment through mass awareness and community mobilization.

### **2.3.4. NATIONAL FOREST POLICY 2001**

This policy covers the Renewable Natural Resources (RNR) of Pakistan i.e. Forests, Watersheds, Rangelands, Wildlife, Biodiversity and their habitats. The policy seeks to launch a process for eliminating the fundamental causes of the depletion of RNR through the active participation of all the concerned agencies and stakeholders, to realize the sustainable development of the resources. It is an umbrella policy providing guidelines to the Federal Government, Provincial Governments and territories for the management of their RNR. In consonance with it, the Provincial and District Governments may devise their own policies in accordance with their circumstances.

The goal of this policy is to foster the sustainable development of RNR of Pakistan, for the maintenance and rehabilitation of its environment and the enhancement of the sustainable livelihoods of its rural masses especially women, children and other deprived groups. The elements of the policy are as follow:

1. Population planning in critical eco-systems.
2. Providing substitutes to firewood in the wooded mountains.
3. Reducing the impact of socio-economic causes.
4. Reducing poverty, poverty of opportunity, and powerlessness.
5. Reducing political interference in the Forestry and Wildlife Departments.
6. Renovating and invigorating the institutions of RNR.
7. Supporting Local Governments in the sustainable development of their RNR.
8. Policies for fragile natural Eco-systems.
9. Riverain forests.
10. Irrigated Plantations.
11. Preservation of relict and unique forests.
12. Wildlife.
13. Rangelands and desert eco-systems.
14. Planting of trees and fodders on farmlands.

#### **2.3.5. REVIEW OF IEE AND EIA REGULATIONS, 2000**

The GOP has issued Review of Initial Environmental Examination and Environmental Impact Assessment Regulations 2000, to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

#### **2.3.6. GUIDELINES FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS, 1997**

The GOP has also framed guidelines for the preparation and review of IEE/EIA of projects in various developmental sectors.

#### **2.3.7. PAKISTAN ENVIRONMENTAL QUALITY STANDARDS (PEQS)**

Powers conferred under clause (c) of sub-section (1) of section 4 of Pakistan Environmental Protection Act, 1997 has been approved the Pakistan Environmental Quality Standards (PEQS), 2016 for municipal and industrial effluents, noise, drinking water, motor vehicle exhaust, air emissions, industrial gaseous emissions and treatment of liquid & disposal of biomedical waste.

### **2.3.8. GUIDELINES FOR SENSITIVE AND CRITICAL AREAS**

GOP has issued Guidelines for Sensitive and Critical Areas in October, 1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the environmental assessment process, so that the proposed projects are planned and sited in way that protects the values of sensitive and critical areas.

### **2.3.9. POLICY & PROCEDURES FOR THE FILING, REVIEW & APPROVAL OF ENVIRONMENTAL ASSESSMENTS, NOVEMBER-1997**

Environmental Assessment is the Primary means of managing the approval of new development proposals in Islamabad. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully consider the environmental impacts of new developmental projects.

### **2.3.10. GUIDELINES FOR PUBLIC CONSULTATION, PAKISTAN ENVIRONMENTAL PROTECTION AGENCY OCTOBER, 1997**

This guideline is part of a package of regulations and guidelines which include:

- » Pakistan Environmental Protection Act, 1997
- » Policy and Procedures for filing, review and approval of environmental assessments
- » Guidelines for the preparation and review of Environmental Reports
- » Guidelines for sensitive and critical areas
- » Pakistan Environmental Quality Standards (PEQS)
- » Detailed sectoral guidelines

### **2.3.11. ISLAMABAD NATURE CONSERVATION AND WILDLIFE MANAGEMENT ACT, 1979**

This act was framed in 1979 by Islamabad and is about of protection and conservation of Wildlife.

### **2.3.12. FOREST ACT, 1927**

This act was framed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

### **2.3.13. ISLAMABAD LOCAL GOVERNMENT ORDINANCE, 2015**

Schedules 4 and 8 of this Ordinance pertain to environmental pollution. Under the Ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

### **2.3.14. PAKISTAN PENAL CODE, 1860**

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in Section 268, which defines and recognizes noise as a public nuisance. "A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right."

### **2.3.15. OCCUPATIONAL HEALTH**

Construction and operational activities could affect the occupational health of the workers. Quantitative national standards with respect to the above aspect are yet to be developed in Pakistan. However, guidance in qualitative terms can be obtained from the Pakistan Factories Rules, 1962 (based on the Factories Act, 1934) and the Labor Laws (Amended) Ordinance, 1972.

### **2.3.16. TOXIC OR HAZARDOUS WASTE**

Protection of the environment with regards to toxic and hazardous waste is covered by the Pakistan Penal Code (PPC), 1860. Environment Protection Department (EPD), Islamabad, is mandated to monitor the transportation of hazardous materials within the provincial limits.

### **2.3.17. HAZARDOUS SUBSTANCE RULES, 2003**

Rule 5 stated that project/ industrial activity must be accompanied by Environmental Impact Assessment (EIA) involving generation, collection, consignment, transport, treatment, disposal, storage, handling/ import of hazardous substance in respect of which the license is sought.

# **CHAPTER-3**

## PROJECT DESCRIPTION

### 3.1 TYPE AND CATEGORY OF PROJECT

Proposed project is about Establishment of **Federal Medical College** located at Ibn-E-Sina Road, G-8/3, Islamabad. The proposed project is located at Hanna Road. Faisal Avenue Road passes by the side of construction site. PIMS hospital is situated only 536 metres away from the project site. Centaurus Mall is at the distance of 900 metres from the location of project. Islamabad Expressway is at distance of 1.5 Km.

Environmental Impact Assessment (EIA) is prepared for submission to Pak EPA and to obtain NOC from EPA. Now getting to know about NOC from EPA, therefore, Environmental Impact Assessment (EIA) is prepared for submission to Pak EPA. Total land owned by the **Federal Medical College, Islamabad** is 2 acres. Land for the proposed project is fully owned by **Federal Medical College** and respective land notification document is appended as **Annexure-I** of this document. The land required for the project activity is owned by the proponent and no extra land acquisition involved in this project. The proposed project is located at Ibn-E-Sina Road, G-8/3, Islamabad.

Fundamentally, the project is intended to develop on land area of 2 acres. The proposed life cycle of the project is 50 years. However, this will be extended by regular maintenances and rehabilitation of building. The proposed project comprises of Academic Block having Building Covered Area of 303,223 Sft with 2 Basements, a Ground Floor + 5, 5 Storeys building and will house the following:

**Table 3.1: Detail of Building floors**

| Sr. No. | Departments                 |
|---------|-----------------------------|
| 1       | 5 Lecture Halls             |
| 2       | 5 Labs                      |
| 3       | 3 Medical Museums           |
| 4       | 9 Tutorial Rooms            |
| 5       | Learning Resource Center    |
| 6       | Allied Offices and Services |
| 7       | Multipurpose Facility Area  |

Further, the Girl's Hostel will have building area of 36,166 sft with a Ground Floor + 3 Storey Building and will house 190 Students. Total cost of the project is 3637.65 Million.

### 3.2.1 OBJECTIVES OF THE PROJECT

The establishment of proposed project is to strengthen the federal healthcare system by providing quality medical education and producing skilled medical professionals to meet national health sector needs. The project aims to support academic and clinical training through linkage with existing healthcare facilities, particularly PIMS, while contributing to improved public health services, medical research, and human resource development. The project also seeks to ensure compliance with environmental regulations and promote sustainable development through effective planning and mitigation measures. For more details, please refer to “1-Introduction-Nature and size of the project” above.

### 3.3 ALTERNATIVES CONSIDERED & THEIR REASON OF REJECTION

Establishment of **Federal Medical College** is purely for educational and healthcare purpose. To fulfill the viable aspects under reference of this EIA Report, it is to be sited at a place where there are bright prospects and need of the same. It should also meet the legal requirements of the Directorate of Municipal Administration (DMA) in the matters relating to the land use conditions of the project area.

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

1. The “No-Development Option”
2. Alternative Site Option

#### **1. No Development Option:**

No project means there would be no project at all. The no project option, if taken, would stop the community from an important and necessary project which is the need for today as per limited resources/ facilities being provided to general public. Other impacts of the ‘No project’ option would be loss in employment and social welfare in the project area, as the project is bound to create jobs and improve the lifestyle of the community of the area through different community development and social welfare

projects. From the environmental point of view, this option would result in the loss of opportunity in further improvement of the environmental management of the area, environmental baseline data, and the mitigation and compensatory programs.

## **2. Alternative Site Option- Site Selection Criteria:**

In reference to the project alternatives, 2 sites were visited but due to lack of land documents and desired kanal, those sites were rejected. Further, the proposed site is located in already developed village. The final selection of site is based on following criterion:

- **Accessibility:** The site should be accessible from a permanent road to allow ready transport.
- **Water Supply:** Availability of adequate water supply, which should also meet drinking water standards.
- **Soil Condition for civil structures:** Suitability and stability of soil conditions required for civil structures
- **Sufficient land availability:** Availability of sufficient land to design and layout plan in an appropriate manner, with consideration of future expansions.
- **Electricity:** Availability of electricity from the National Grid for an uninterrupted supply of power, required for the project.

In view of all above criteria regarding site selection, it is to be sited at a place where there are bright prospects and need of the same. It should also meet the legal requirements of the Directorate of Municipal Administration (DMA) in the matters relating to the land use conditions of the project area. The infrastructure and cable network is already present at the proposed project site. Availability of access road, communication facilities, electricity, basic infrastructure, sewerage etc. is another necessary requirement for the proposed project which is already available at the proposed site.

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area.

All the above stated qualities for an ideal site for proposed project are present in the selected project site. All the other basic infrastructural requirements are also available at the selected site. Accordingly, the selected site is best suited for Establishment of the educational center.



### 3.5 PROJECT LOCATION/ SITE LAYOUT

The proposed project is located at Ibn-E-Sina Road, G-8/3, Islamabad. The proposed project is located at Hanna Road. Faisal Avenue Road passes by the side of construction site. PIMS hospital is situated only 536 meters away from the project site. Centaurus Mall is at the distance of 900 meters from the location of project. Islamabad Expressway is at distance of 1.5 Km.

Project location map has shown in figure 3.1 below. Project layout plan is attached as **Annexure-II**, however the detailed location map is attached as **Annexure-III**. **Figure 3.1** is showing location map of the project area.

### 3.1: Location Map of Project Site

**Site Coordinates:** 33°42'01"N 73°03'19"E



### **3.6 LAND USE AT THE PROJECT SITE**

The project site is owned by the Proponent and is currently vacant. No trees will be cut down for this project. Proposed area is almost grassy. The land for proposed project is easily accessible from Faisal Avenue and Islamabad Expressway roads. The Land Notification Documents (Non Encumbrance-Fard) is appended as **Annexure-I**. The land is transferred to proponent so no litigation is involved in this project.

### **3.7 ROAD ACCESS**

In order to facilitate developments, basic infrastructure facilities like roads network, natural gas, water and power supply, means of transportation and communications etc. are being improved/ developed speedily. The proposed project is located at Hanna Road. Faisal Avenue Road passes by the side of construction site. PIMS hospital is situated only 536 metres away from the project site. Centaurus Mall is at the distance of 900 metres from the location of project. Islamabad Expressway is at distance of 1.5 Km.

### **3.8 VEGETATION FEATURES OF SITE**

The project site lies within the urbanized area of Islamabad, where natural vegetation has largely been modified due to existing development and infrastructure. The site is predominantly characterized by sparse urban vegetation, including planted and naturally occurring ornamental trees, shrubs, grasses, and seasonal weeds commonly found in Islamabad. Typical vegetation includes species such as Neem (*Azadirachta indica*), Eucalyptus, Peepal (*Ficus religiosa*), Sheesham (*Dalbergia sissoo*), grasses, and small shrubs along open spaces and road verges. No dense natural forests, protected plant species, or ecologically sensitive habitats were observed at or near the site. The vegetation present is of low ecological significance and typical of managed urban landscapes.

### **3.9 ENERGY/ POWER SOURCE**

As mentioned above in this EIA report, this energy will be supplied by Islamabad Electric Supply Company (IESCO) to the occupants of the proposed project. Electricity requirement of Federal Medical College is projected to be around 200 - 300 KW.

### **3.10 WATER REQUIREMENT**

Adequate quantity of underground water is available to meet even all the project requirements. The quality of water is also satisfactory. This factor also supports the decision regarding sitting of the project at the existing site.

Water requirement of proposed project during operational phase is estimated about 400 - 500 gallons per day while at construction phase, water requirement is 300 gallons per day. Water turbine will be installed for extraction of ground water.

### **3.11 SOLID WASTE**

During operational phase municipal waste of about 25-30kg per day will be produced while at construction phase solid waste generated cannot be not define at this stage. All type of solid waste will be segregated at the point of their generation. Recyclables including plastics, metal, paper, glass, rags will be sold in the market while the leftovers will be duly disposed of at designated site for solid waste disposal. To accomplish this all, a comprehensive system is already in place with state of the art equipment and operation system by Project Management. The waste produced by the project activities will be purely municipal waste during its regular occupancy.

### **3.12 PROJECT COST & MAGNITUDE OF OPERTAION**

The estimated capital cost of the proposed project is about PKR 3637.65 Million including land and development cost. The quantities have been worked out from the design drawings. The rates for cost estimates are based on land cost, construction work, contractor cost and cost of the equipment/ machinery with 5% escalation. At operation stage, the project proponent will be involved for operation and maintenance of the proposed facility.

The development under reference of this EIA will be spread on an area of 2 acres. Components of the proposed project are already described in the earlier part of this report. There will be no industrial process/ activities associated with the project.

### **3.13 SCHEDULE OF IMPLEMENTATION**

Proposed project is settled for Environmental Approval to start its implementation. It is planned that the following schedule of project implementation will be adhered to. This is subject to the conditions that everything goes according to planning and no serious bottlenecks are encountered.

The implementation stages of the project activity include<sup>1</sup>:

---



### **Stage I**

Boundary markings and plotting of the said land.

### **Stage II**

- i- Work on pavements, roads
- ii- Sewerage system along-with provision of other basic facilities like electricity, telephone and parking etc.
- iii- Laying of foundations excavation and commencement of erection work.

### **Stage III**

Simultaneously grey structure of proposed blocks will be started.

### **Stage IV**

Completion of Grey Structure.

It is estimated that construction of the structures of the building will take almost 1.8 years.

## **3.14 DESCRIPTION OF THE PROJECT**

The project has been duly described at: “1-Introduction- Nature and size of the Project-Purpose of the report, identification of the project and the project proponent.” Besides, a Housing Society is not just a place for residency but also facilitates its residence with state of the art parks, community center, market places etc.

## **3.15 DESCRIPTION OF THE PROCESS**

The project has been duly described at: “1-Introduction- Nature and size of the Project-Purpose of the report, identification of the project and the project proponent.”

## **3.16 DETAILS OF RESTORATION & REHABILITATION PLANS**

The proposed project is situated in an urbanized area where vegetation and land cover have already been modified. During the construction phase, any disturbance to soil, existing vegetation, or open areas will be temporary and localized. Restoration and rehabilitation measures will be implemented to return the site to a stable and environmentally acceptable condition. These measures include reinstatement of disturbed surfaces, proper compaction and leveling of soil after construction activities, and removal of construction debris and waste from the site.

Following construction, the project site will be rehabilitated through landscaping and plantation, with emphasis on planting native and climate-resilient tree and shrub species suitable for Islamabad. Green belts, lawns, and shaded areas will be developed to enhance visual aesthetics, improve microclimatic conditions, and compensate for

any loss of vegetation. Any damaged pavements, access roads, or utility corridors will be restored to their original or improved condition. The project will ensure proper drainage to prevent soil erosion and water stagnation. These restoration and rehabilitation measures will be incorporated into the Environmental Management Plan (EMP) and implemented throughout the construction and operational phases to ensure long-term environmental sustainability.

### 3.17 GOVT. APPROVALS AND LEASES REQUIRED BY THE PROJECT

Project Proponent has accorded approvals/ certifications for their project from all relevant regulatory bodies successively. The land is totally owned by **Federal Medical College** and respective Land Notification document is appended as **Annexure-I** of this document.

So far the Environmental Approval from the EPA is the major requirement for which this EIA report has been prepared and submitted.

# CHAPTER-4

## DESCRIPTION OF ENVIRONMENT

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### 4.1 GENERAL

This Section of the report covers a comprehensive description of the baseline conditions of the project and its related influence area with respect to the physical, biological, and social aspects. In addition to the secondary data, the field survey was carried out on 16-12-2025 and the environmental baseline conditions were established based on socioeconomic interviews<sup>2</sup>; impact location profiles; environmental profile questionnaires and public consultations.

### 4.2 PHYSICAL RESOURCES

Following is a brief description of various physical resources of the Project Site.

#### 4.2.1 Topography, Geology & Soil

Islamabad features a planned, gently undulating terrain with elevations ranging from 490m to 1,600m above sea level. The Margalla Hills (northern boundary) provide a scenic backdrop but pose no significant construction challenges. The city is divided into sectors with well-defined infrastructure, ensuring organized development.

The proposed Federal Medical College (FMC) will be established in Islamabad, the federal capital of Pakistan, which offers favorable topographical and geological conditions for large-scale institutional development. The terrain comprises gentle hills, plateaus, and flat plains, with elevations ranging from 490 to 1,600 meters above sea level, allowing safe and efficient construction. Located in Seismic Zone 2B, the area has moderate earthquake susceptibility and is significantly more stable than Pakistan's northern mountainous regions.

Soil conditions, predominantly loam with rocky substrata, provide strong bearing capacity, reducing risks related to subsidence or structural instability and ensuring long-term structural integrity. It has firm loam and clay in central sectors (excellent load-bearing capacity). Rocky substrata near Margalla foothills (requires minor blasting for foundations). No significant landslide or erosion risks in urban zones.

Islamabad's well-planned urban infrastructure further enhances the project's suitability. The site benefits from excellent road connectivity via



major arteries such as Srinagar Highway, Islamabad Expressway, and Murree Road, ensuring easy access for students, staff, and patients. Proximity to major tertiary healthcare facilities—including PIMS, Polyclinic, and Shifa International Hospital—supports clinical training requirements. Additionally, regulated urban development under the Capital Development Authority (CDA) guarantees reliable utilities and services, while the city's moderate climate minimizes weather-related disruptions. Collectively, these factors make Islamabad an ideal and sustainable location for the successful establishment and operation of the Federal Medical College.

#### 4.2.2 Hydrology

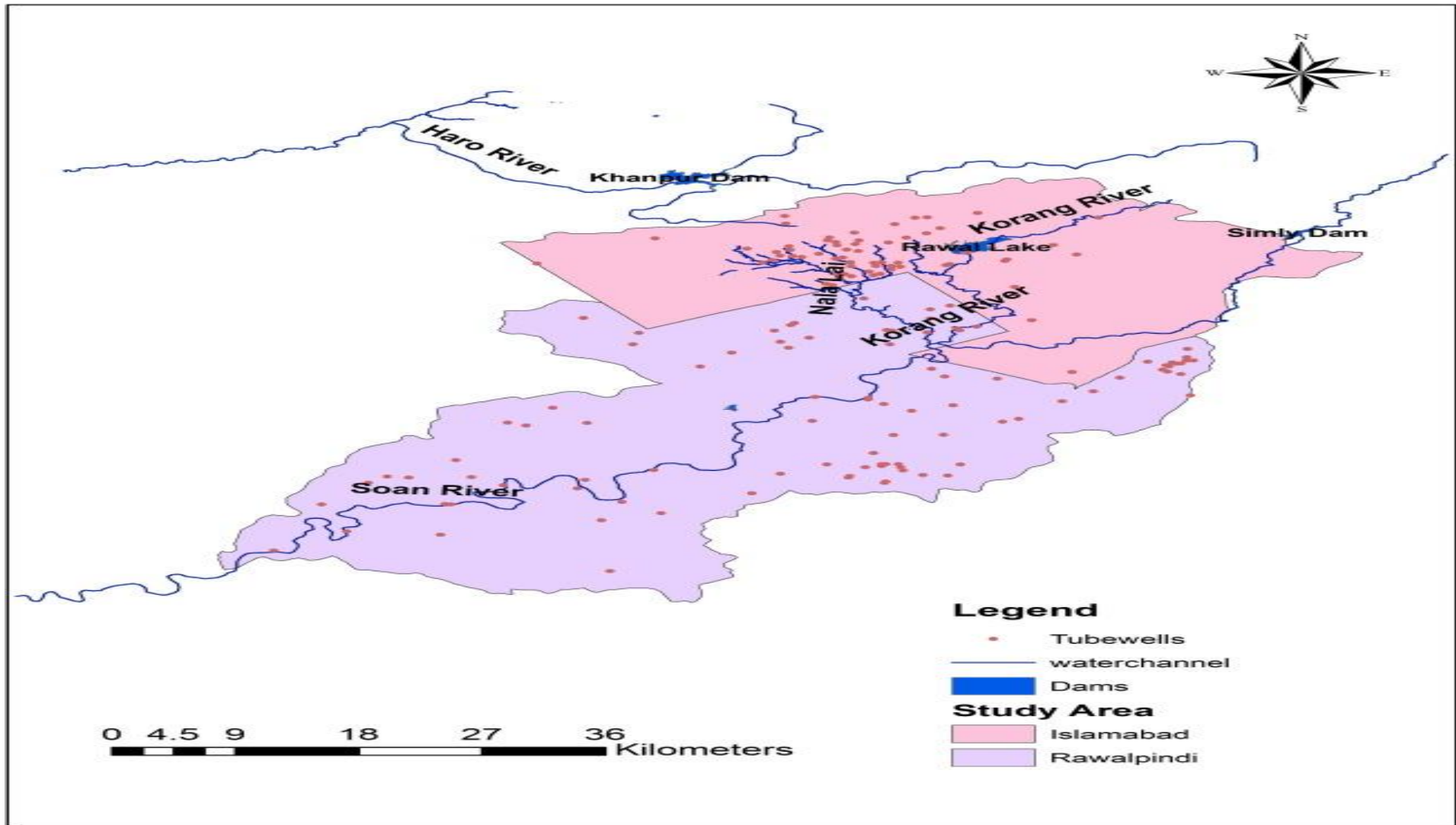
Islamabad lies within the Soan River basin, which is the principal hydrological system of the region. The city is drained by a network of natural streams (nullahs), including Nullah Lai, Korang River tributaries, and smaller seasonal streams originating from the Margalla Hills. These watercourses carry runoff during the monsoon season and remain mostly dry during prolonged dry periods. The Margalla Hills act as a natural watershed, directing surface flow southward toward the Soan River system. Due to moderate slopes and stable topography, the risk of flash flooding is relatively low in planned urban zones, though localized urban flooding can occur during intense monsoon rainfall. The groundwater regime consists of shallow to medium-depth aquifers recharged primarily through rainfall infiltration and hill runoff, making groundwater a supplementary but important hydrological resource.

##### Water Supply System

Islamabad's water supply is managed primarily by the **Capital Development Authority (CDA)** and is sourced from both **surface water and groundwater**. Major surface water sources include **Rawal Dam and Simly Dam**, which provide potable water to most urban sectors through a centralized distribution network. In addition, **tube wells** are installed across the city to supplement supply during peak demand and dry seasons. The feasibility report highlights that Islamabad enjoys relatively reliable water availability compared to other regions due to planned infrastructure, regulated extraction, and reservoir storage. However, increasing population

growth has begun to stress existing resources, necessitating water conservation measures, storage tanks, and efficient distribution planning for new institutions. For the proposed FMC, secure access to CDA-managed pipelines, backup storage reservoirs, and groundwater abstraction is considered feasible and adequate for long-term operational needs.

**Figure 4.1: Existing water supply system in Islamabad**



Source: Adapted from Urban Unit's Islamabad base map

### 4.2.3 Seismicity

The project area in Islamabad is located in a moderate seismic zone 2B according to Pakistan's National Building Code, reflecting a low to moderate earthquake risk. Islamabad lies on the Pothohar Plateau, characterized by sedimentary and alluvial deposits, and is influenced by the tectonic activity of the Indian-Eurasian plate collision, with active faults mainly in the northern regions. Historically, the area has experienced low to moderate earthquakes (magnitude 4–6), and while large events are rare, seismic effects from northern earthquakes can be felt in the city. Therefore, the PIMS project should be designed for moderate seismic loads, following NBC guidelines, with proper structural and soil considerations to ensure the safety and resilience of hospital buildings.

Figure 4.2: Seismic Zoning Map of Pakistan

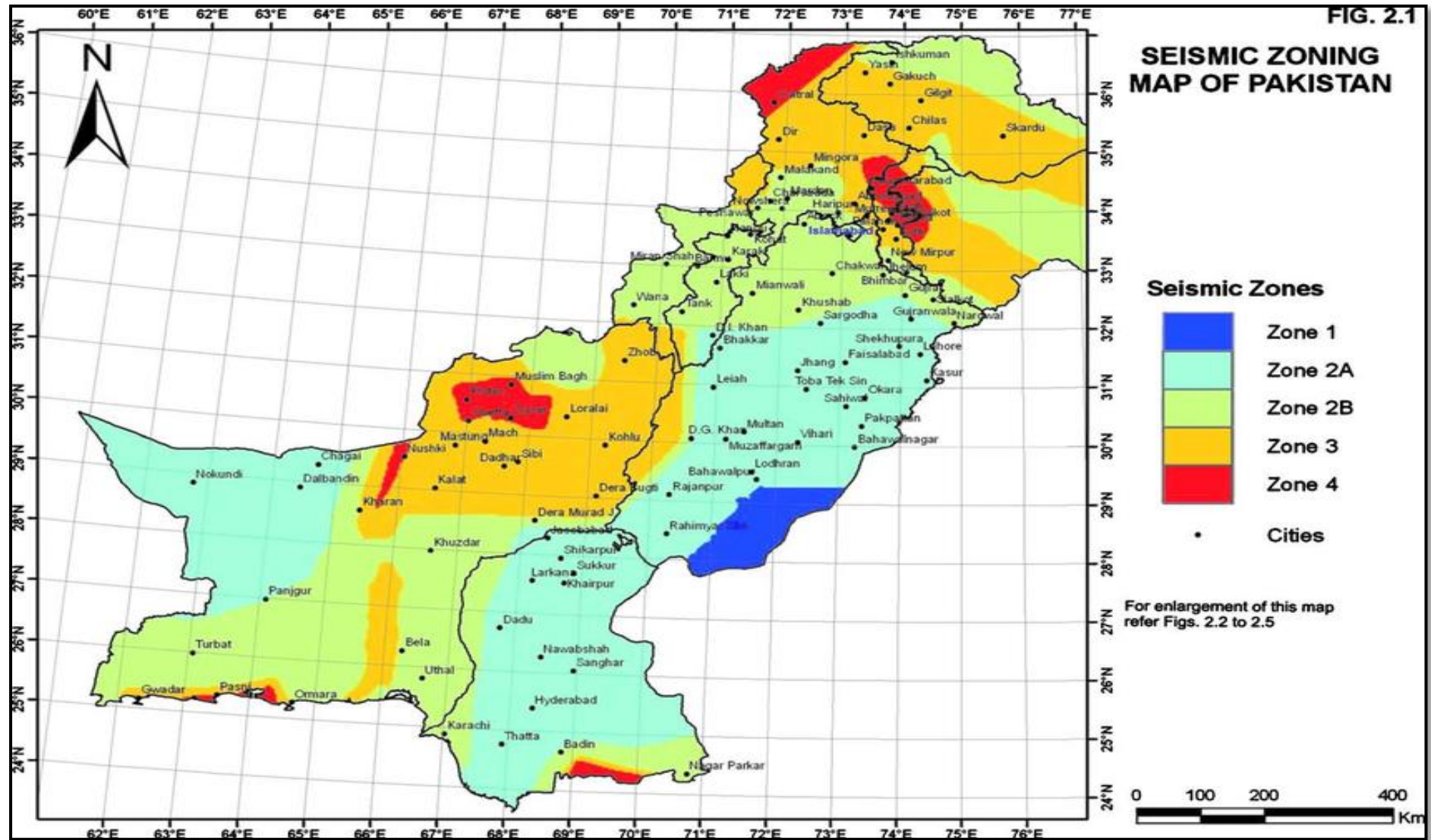
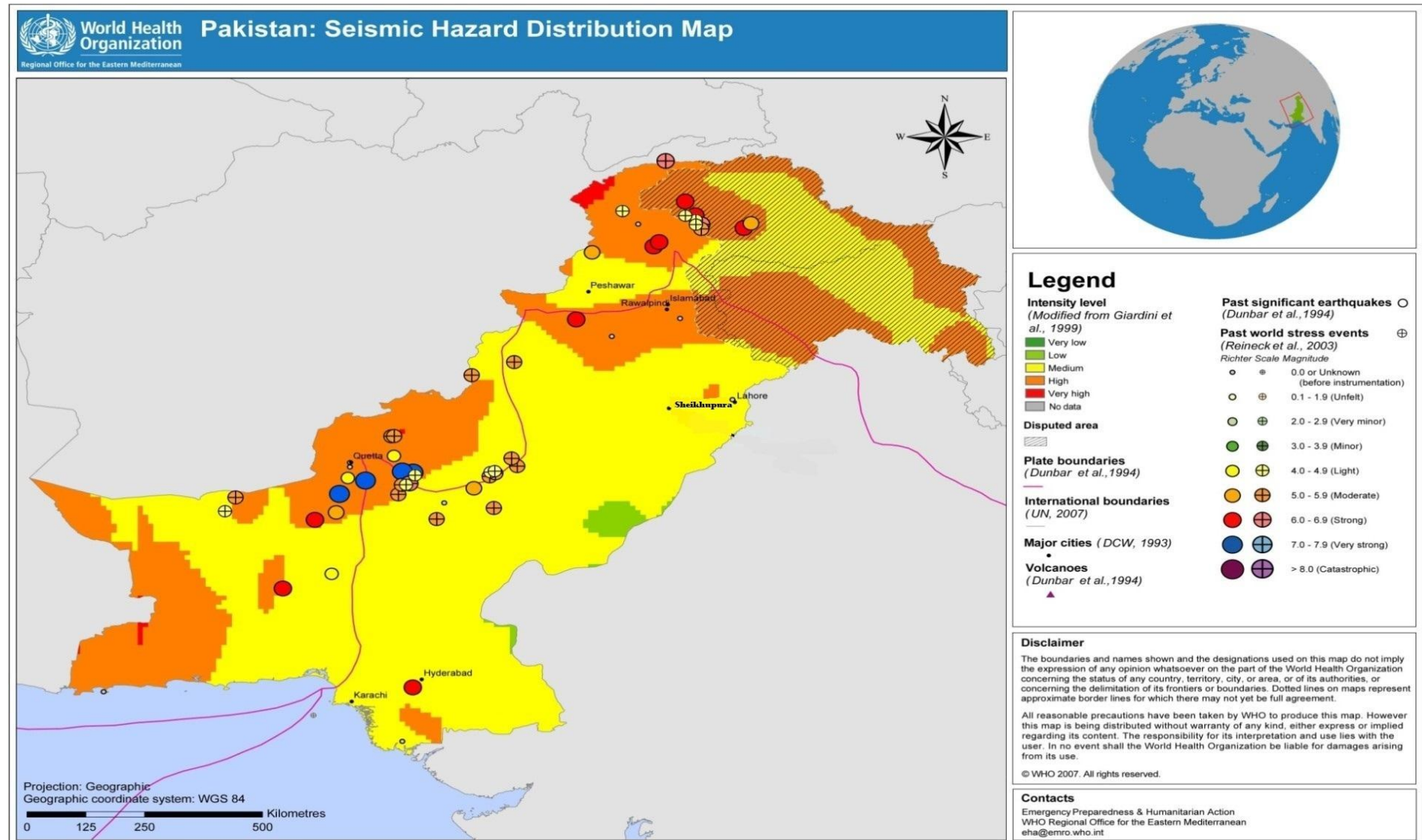




Figure 4.3: WHO Seismic hazard map of Pakistan



#### 4.2.4 Climate

Islamabad experiences a humid subtropical climate with four distinct seasons, providing favorable year-round conditions for establishing the Federal Medical College. The capital's weather patterns are characterized by:

##### Summer (May–September)

- Hot and humid with temperatures ranging from 25°C to 40°C
- Monsoon rains (July–August) bring moderate precipitation (average 1,250mm annually)
- Occasional thunderstorms, but no extreme weather disruptions

##### Winter (November–February)

- Mild to cool conditions (5°C–20°C)
- Occasional morning frost in January, but minimal snowfall
- Dry weather with limited rainfall

##### Spring (March–April) & Autumn (October)

- Pleasant temperatures (15°C–30°C)
- Minimal precipitation, ideal for academic activities
- Stable weather conditions for construction and operations

##### Climatic Data for Islamabad (2024 Updates)

The following table presents the latest meteorological data from the Pakistan Meteorological Department (PMD, 2023) and Islamabad Environmental Protection Agency (EPA, 2024):

**Table 4.1: Meteorological data from the Pakistan Meteorological Department**

| Month | Rainfall (mm) | Max Temp (°C) | Min Temp (°C) | Weather Events                 |
|-------|---------------|---------------|---------------|--------------------------------|
| Jan   | 56.2          | 18.5          | 2.7           | Cold mornings, occasional fog  |
| Feb   | 48.9          | 20.1          | 5.3           | Mild winter, rare frost        |
| Mar   | 62.4          | 25.6          | 10.2          | Spring onset, pleasant weather |
| Apr   | 41.7          | 30.8          | 15.4          | Pre-monsoon showers            |
| May   | 33.5          | 36.2          | 20.1          | Hot, dry conditions            |
| Jun   | 28.3          | 38.5          | 23.6          | Peak summer heat               |
| Jul   | 267.8         | 35.1          | 24.3          | Monsoon rains begin            |
| Aug   | 309.5         | 33.8          | 23.9          | Heavy monsoon rainfall         |
| Sep   | 98.6          | 32.4          | 21.5          | Reduced rainfall               |
| Oct   | 22.4          | 30.2          | 15.8          | Mild autumn weather            |
| Nov   | 18.3          | 25.3          | 9.6           | Cooler temperatures            |

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|                    |              |             |             |                                                 |
|--------------------|--------------|-------------|-------------|-------------------------------------------------|
| <b>Dec</b>         | 34.7         | 20.0        | 4.2         | Winter onset                                    |
| <b>Annual Mean</b> | <b>102.3</b> | <b>28.9</b> | <b>14.5</b> | <b>Risks: Monsoon flooding, urban heatwaves</b> |

(Sources: PMD Islamabad Station Data 2023, ICT EPA Climate Report 2024, World Bank Urban Climate Resilience Study 2023)

### **Temperature**

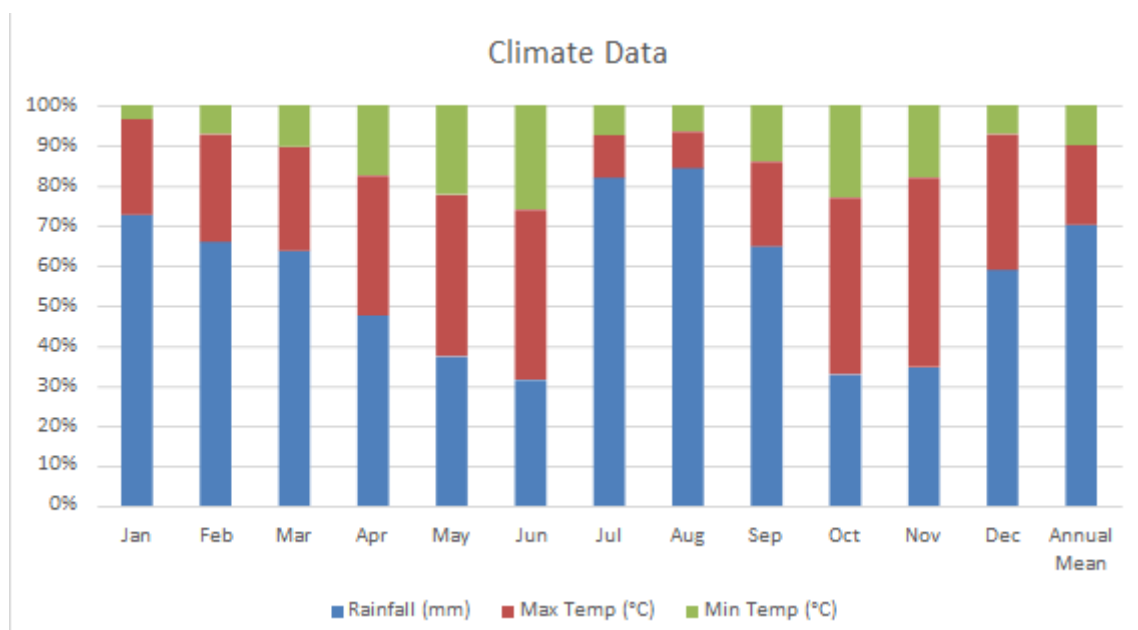
The project area experiences significant seasonal temperature variations that impact academic operations and facility planning. During summer (May–August), peak temperatures can reach up to 38°C, necessitating efficient cooling and ventilation systems in lecture halls, laboratories, and administrative offices to maintain comfort and productivity. The monsoon period (July–September) brings high humidity, which can affect sensitive laboratory and medical equipment, requiring proper dehumidification and climate control systems to prevent corrosion and ensure reliable operation. In winter (December–February), temperatures are generally mild, ranging from 5–20°C, so only basic heating systems are needed; however, occasional fog and low visibility may cause minor transportation delays for staff and students. Overall, the design and operation of the PIMS facilities must account for seasonal temperature and humidity fluctuations to ensure uninterrupted academic and clinical activities, with appropriate HVAC, insulation, and equipment protection measures.

### **Rainfall**

The PIMS project area in Islamabad experiences a subtropical climate with a distinct monsoon season affecting rainfall patterns. Annual precipitation ranges from 900 to 1,400 mm, with the majority falling between July and September due to the southwest monsoon. Rainfall is often intense and short-duration, leading to temporary waterlogging in low-lying areas and necessitating efficient storm-water drainage systems for the campus. Winter months (December–February) receive light, sporadic rainfall, mostly as drizzle, which generally does not disrupt operations. Proper rainwater management and drainage design are therefore essential for PIMS to prevent flooding, protect infrastructure, and ensure safe movement across the campus.



**Figure 4.4: Climate Data**



### **Humidity**

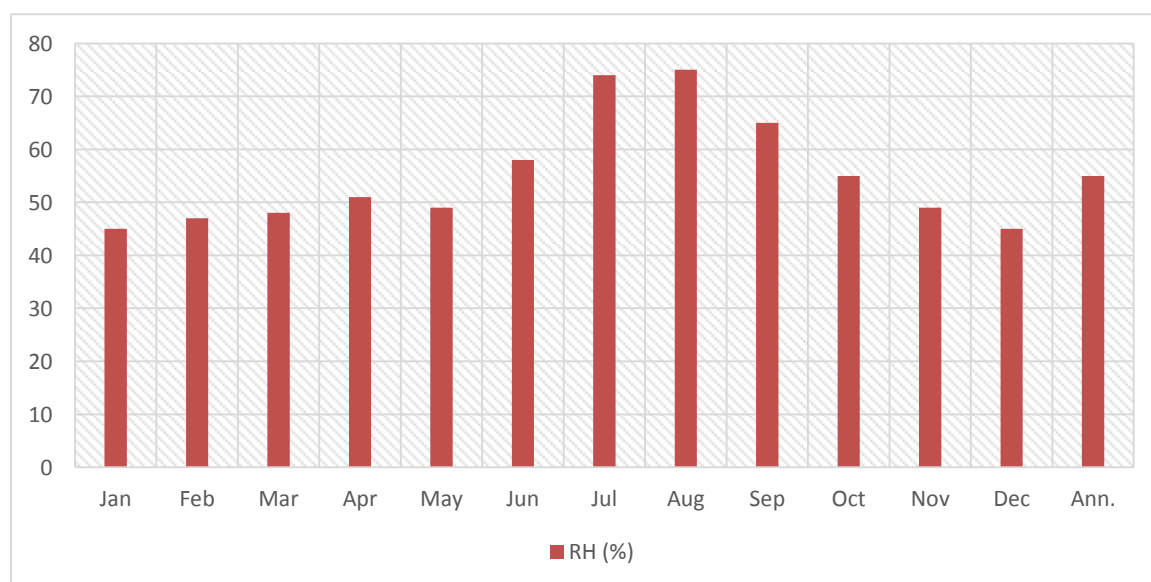
The humidity variation in the year 2019 from January to August in District Islamabad ranges from 45% to 75%. Month-wise relative humidity values are shown in Table 4.4.

**Table 4.2: Month-wise Relative Humidity (%), Islamabad**

| Months | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| RH (%) | 45  | 47  | 48  | 51  | 49  | 58  | 74  | 75  | 65  | 55  | 49  | 45  | 55   |

Source: Myweather2, 2019 (Website).

**Figure 4.5: Month-wise Relative Humidity**



### Wind Direction

The predominant wind direction is from South-West (SW) to North-East (NE) directions. The average and maximum wind speed for District Islamabad is indicated in Figure 4.6.

**Figure 4.6: Average and Maximum Wind Speed, Islamabad**

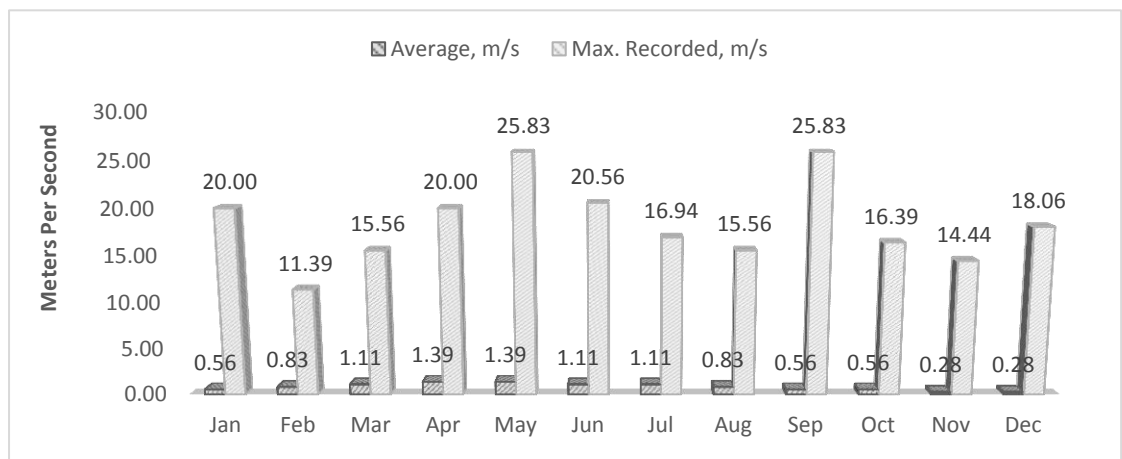
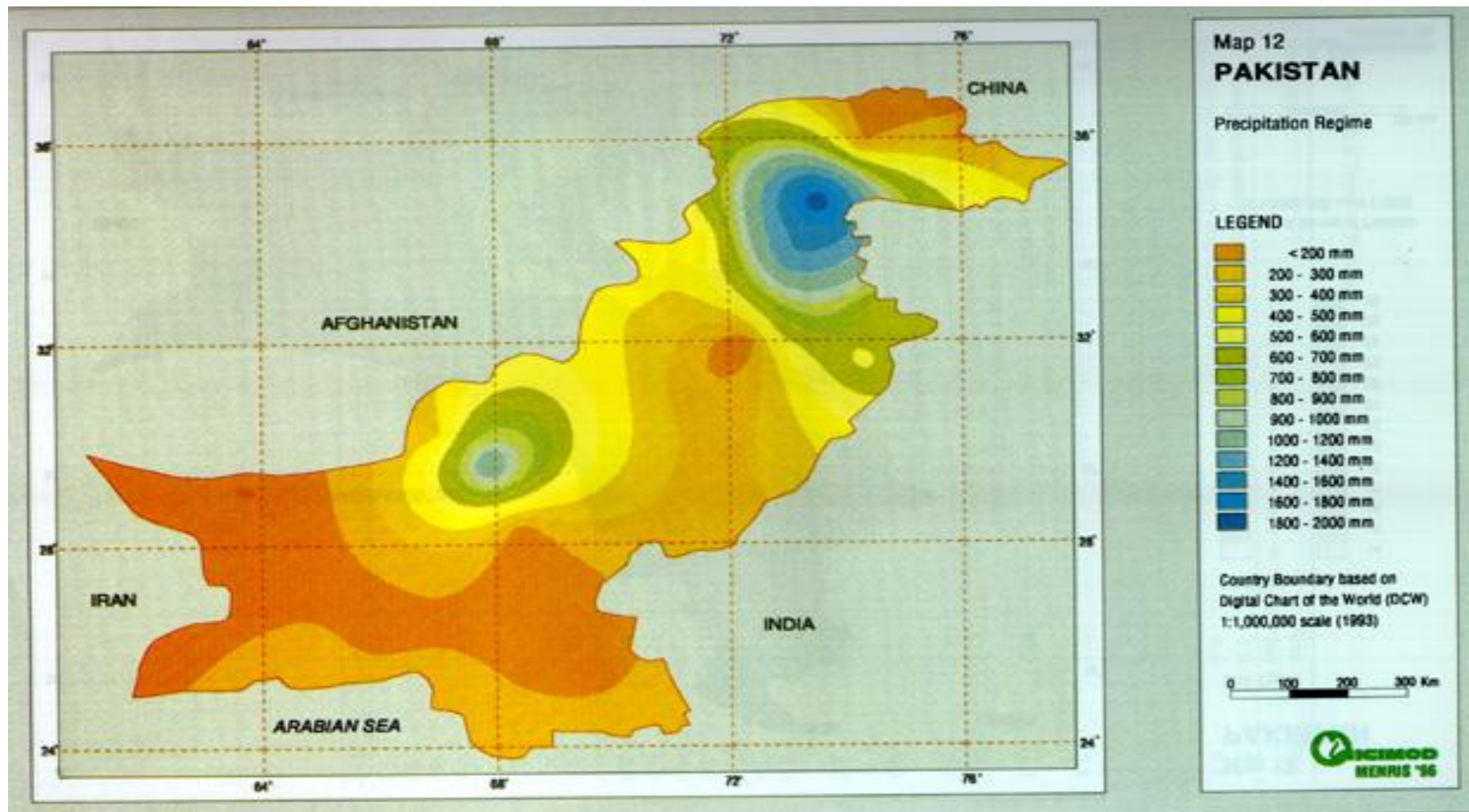


Figure 4.7: Precipitation Regime of Pakistan



Source: UNEP Environment Assessment Program for Asian and the Pacific

## 4.3 ECOLOGICAL RESOURCES

### 4.3.1 Biodiversity

The PIMS project area in Islamabad is located within a moderately biodiverse urban environment. Islamabad, known as the “Green City,” has numerous parks, green belts, and forested areas, including the Margalla Hills National Park to the north, which supports a variety of flora and fauna. The region’s vegetation includes deciduous trees, shrubs, and grasses, while wildlife commonly observed comprises birds, small mammals, reptiles, and occasional larger mammals such as jackals and monkeys in peripheral green areas. Urbanization and human activity have fragmented natural habitats, but pockets of greenery around the city and within campus areas contribute to local biodiversity. For the PIMS project, landscaping, tree preservation, and green space planning should be integrated to maintain ecological balance, support native species, and enhance the environmental quality of the campus.

### 4.3.2 Forestry (Flora)

Islamabad's extensive green spaces, including the Margalla Hills National Park and urban forested areas, play a vital role in maintaining air quality, biodiversity, and public wellbeing. However, these ecosystems also pose distinct health challenges, including air pollution-related respiratory illnesses, zoonotic disease transmission from wildlife, vector-borne diseases, and occupational hazards for forestry workers. The Federal Medical College Islamabad must incorporate specialized environmental health modules to train physicians in diagnosing and managing these ecology-linked medical conditions. By integrating One Health approaches into its curriculum and establishing dedicated research facilities, the college can address emerging threats like antimicrobial resistance from environmental sources and climate change-driven health impacts. This initiative will position the institution as a national leader in urban environmental health while serving the capital's unique healthcare needs.

### 4.3.3 Wildlife (Fauna)

The wildlife (fauna) in the PIMS project area of Islamabad reflects its urban-forest interface, particularly due to the proximity of Margalla Hills

National Park. Common fauna includes small mammals such as jackals, porcupines, and squirrels, as well as reptiles like lizards and snakes. The area is also home to a diverse bird population, including parakeets, mynas, pigeons, kingfishers, and migratory species during winter months. Larger mammals, such as leopards and wild boars, are occasionally reported in the foothills and peripheral forested zones, though they rarely enter urban areas. Urbanization has fragmented habitats, but green belts, parks, and landscaped areas within the city still provide refuge for smaller fauna. For the PIMS project, integrating green corridors, tree planting, and minimal disturbance to existing habitats will help preserve local wildlife while enhancing the ecological quality of the campus.

## 4.4 HUMAN & ECONOMIC DEVELOPMENT

### 4.4.1 Population & Communities

The project area is located in Islamabad, the federal capital of Pakistan, which has a diverse and growing population. As of recent estimates, Islamabad's population exceeds 2.4 million, with a high proportion of educated professionals, government employees, and students due to the concentration of institutions, hospitals, and universities. The local communities surrounding the PIMS site are predominantly urban, with well-established residential sectors, commercial areas, and informal settlements in some peripheral zones.

**Table 4.3: Demographic Profile of Islamabad Capital Territory (2023-24 Projections)**

| Indicator          | 2017 Census       | 2023 Projection       | Implications for Medical College            |
|--------------------|-------------------|-----------------------|---------------------------------------------|
| Total Population   | 2,006,572         | 2,412,000<br>(+20.2%) | Requires 1,200+ MBBS seats by 2030          |
| Male Population    | 1,061,478 (52.9%) | 1,275,000<br>(52.8%)  | Gender-specific surgical specialties needed |
| Female Population  | 945,094 (47.1%)   | 1,137,000<br>(47.2%)  | Expanded maternal-fetal medicine unit       |
| Gender Ratio (M:F) | 112.3             | 112.1                 | Balanced service planning                   |

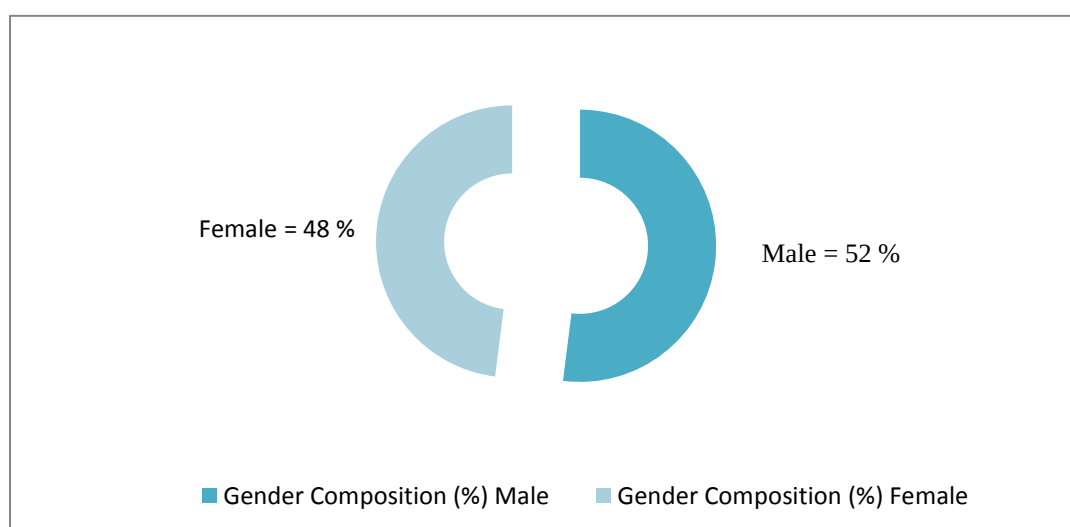
|                      |                            |                       |                                           |
|----------------------|----------------------------|-----------------------|-------------------------------------------|
| Population Density   | 1,165/km <sup>2</sup>      | 1,406/km <sup>2</sup> | Pressure on tertiary care services        |
| Urban Population     | 1,814,432 (90.4%)          | 2,201,000 (91.3%)     | Focus on urban health challenges          |
| Rural Population     | 192,140 (9.6%)             | 211,000 (8.7%)        | Mobile clinic coverage for peripheries    |
| Household Size       | 5.8                        | 5.4                   | Nuclear families → geriatric care demand  |
| Growth Rate (Annual) | 4.71% (Highest nationally) | 4.83%                 | Projected 2030 population: 3.2 million    |
| Refugee Population   | 71,200 (2017)              | 89,500 (2023)         | Specialized trauma/mental health services |

(Sources: Pakistan Bureau of Statistics 2023, NADRA Population Database 2024, UNFPA Pakistan Urbanization Report 2023)

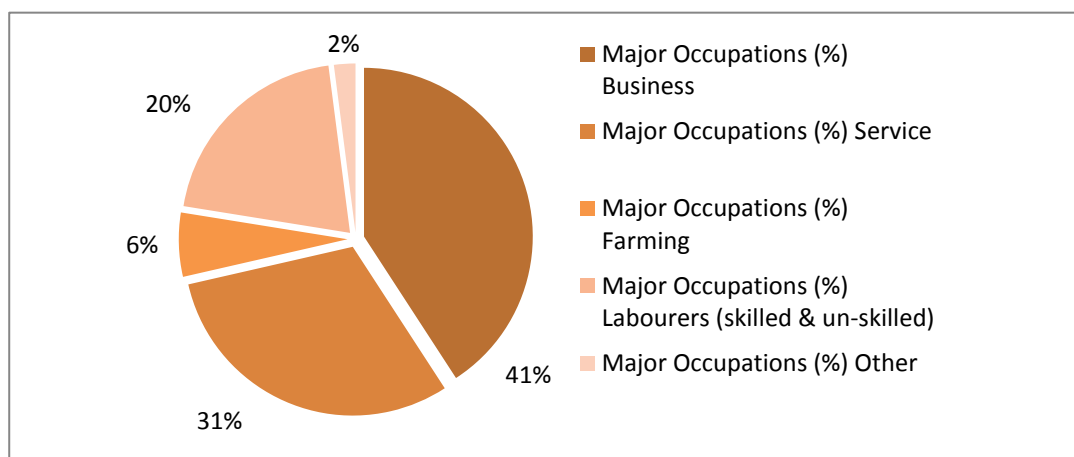
### **Family Size and Gender Composition**

Based on the field survey of local population, the average family size computed to be 6.2, out of which the proportion of male and female members is 52.0 percent and 48.0 percent respectively as shown in Table 4.9 and Figure 4.8.

**Figure 4.8: Gender Composition**



**Figure 4.9: Major Occupations of Sample Population**



**Table 4.4: Major Occupations of the Sample Population**

| Major Occupations (%) |         |         |                                  |       |
|-----------------------|---------|---------|----------------------------------|-------|
| Business              | Service | Farming | Labourers (skilled & un-skilled) | Other |
| 40.82                 | 30.60   | 6.12    | 20.41                            | 2.05  |

### **Literacy Status**

Literacy levels play a pivotal role in shaping healthcare-seeking behavior, awareness of medical services, and compliance with treatment protocols. For the proposed Federal Medical College in Islamabad, analyzing literacy rates, urban-rural disparities, and gender-based differences is essential for developing effective patient education, public health communication, and outreach strategies.

According to the Pakistan Social and Living Standards Measurement (PSLM) Survey 2019–20 and Pakistan Bureau of Statistics (2023), Islamabad exhibits a relatively high literacy rate (around 89.1%), with higher literacy levels in urban areas compared to surrounding rural and peri-urban zones. However, disparities still exist, particularly among underprivileged communities and women in rural outskirts. These gaps necessitate targeted health awareness campaigns, multilingual educational materials, and the deployment of community health workers (CHWs) to enhance health literacy and service utilization across all population segments.



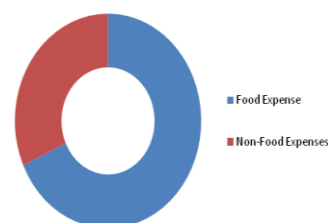
**Table 4.5: Literacy Rate and Population Distribution in Islamabad Capital Territory (ICT)**

| Category  | Total Population | Illiterate Population | Literate Population | Literacy Ratio (%) | Healthcare Implications                             | References             |
|-----------|------------------|-----------------------|---------------------|--------------------|-----------------------------------------------------|------------------------|
| Total ICT | 2,412,000        | 398,000               | 2,014,000           | 83.5%              | High health literacy allows digital health adoption | PBS (2023)             |
| Urban     | 2,201,000        | 275,000               | 1,926,000           | 87.5%              | Telemedicine, e-health records feasible             | ICT Health Dept (2024) |
| Rural     | 211,000          | 123,000               | 88,000              | 41.7%              | Requires mobile clinics, CHWs                       | PSLM (2023)            |
| Male      | 1,275,000        | 152,000               | 1,123,000           | 88.1%              | Male-targeted preventive health programs            | UNESCO (2023)          |
| Female    | 1,137,000        | 246,000               | 891,000             | 78.4%              | Women's health literacy programs needed             | PDHS (2023)            |

**Average Household Expenditure**

The annual expenditure and pattern of expenditure provides an indication for assessing standard of living of a household. The expenditure on food items include cereals, pulses, flour, sugar, cooking oil/ ghee, milk etc., while the non-food items including the expenditure on education, medical treatment, clothes, shoes, cosmetics.

The proportion of expenditure incurred on food and non-food items is 70% and 30% respectively.

**4.4.2 Industries**

Islamabad's industrial sector presents unique healthcare challenges due to its concentration of pharmaceutical, tech, and light manufacturing industries in designated zones.region.



**Table 4.6 Industrial Profile of Islamabad (2023-24)**

| Industry        | Units              | Workforce | Health Risks                            | College Service Needs                       |
|-----------------|--------------------|-----------|-----------------------------------------|---------------------------------------------|
| Pharmaceuticals | 28 factories       | 12,500    | Solvent neuropathy, chemical exposure   | Toxicology ICU (8 beds) + Neuropathy clinic |
| Electronics     | 15 assembly plants | 8,200     | Lead/cadmium exposure, ergonomic stress | Heavy metal screening lab + Physiotherapy   |
| Textiles        | 6 large units      | 18,000    | Byssinosis, noise-induced hearing loss  | Pulmonary function lab + Audiometry centre  |
| Food Processing | 22 facilities      | 5,300     | Flour dust asthma, chemical burns       | Occupational asthma clinic + Burn unit      |
| Construction    | N/A (150+ sites)   | 42,000    | Silicosis, falls, heat stress           | Radiology centre + Trauma simulation lab    |

(Sources: ICT Industrial Development Authority 2024, Pakistan Economic Survey 2023-24, Islamabad Chamber of Commerce 2024, WHO Urban Occupational Health Report 2023)

#### 4.4.3 Infrastructure

The PIMS project area benefits from well-developed urban infrastructure as it is located in Islamabad, the federal capital. The site is well-connected by major roads and highways, ensuring easy access for staff, patients, and students. The surrounding area is served by reliable electricity, gas, and water supply networks, as well as telecommunication and internet services, which are essential for hospital and academic operations. Stormwater drainage, sewage, and solid waste management systems are in place, though improvements may be required within the campus for efficient handling of hospital waste. Proximity to public transport and emergency services further enhances accessibility and operational efficiency. For the PIMS project, integrating modern utility provisions, backup power systems, and efficient service networks is critical to ensure uninterrupted medical and educational functions.

#### 4.4.4 Institutions

Islamabad, as the capital city of Pakistan, hosts a wide spectrum of educational institutions catering to primary, secondary, and higher

education. The city is home to numerous public and private schools, colleges, and universities, including prestigious institutions such as Quaid-i-Azam University, National University of Sciences and Technology (NUST), COMSATS University, Allama Iqbal Open University, and the Federal Urdu University. There are also specialized medical and health science institutions, including PIMS, Shifa College of Medicine, and the National Institute of Health (NIH) training centers, which contribute to professional education in healthcare. Islamabad's educational landscape emphasizes quality education, research, and technical training, supported by modern infrastructure, libraries, laboratories, and digital learning facilities. The city's focus on education attracts students from across the country, creating a diverse and highly literate population, which enhances the demand for advanced medical and academic services.

#### **4.4.5 Transportation: Roads, Rails, Airports, Navigable Rivers**

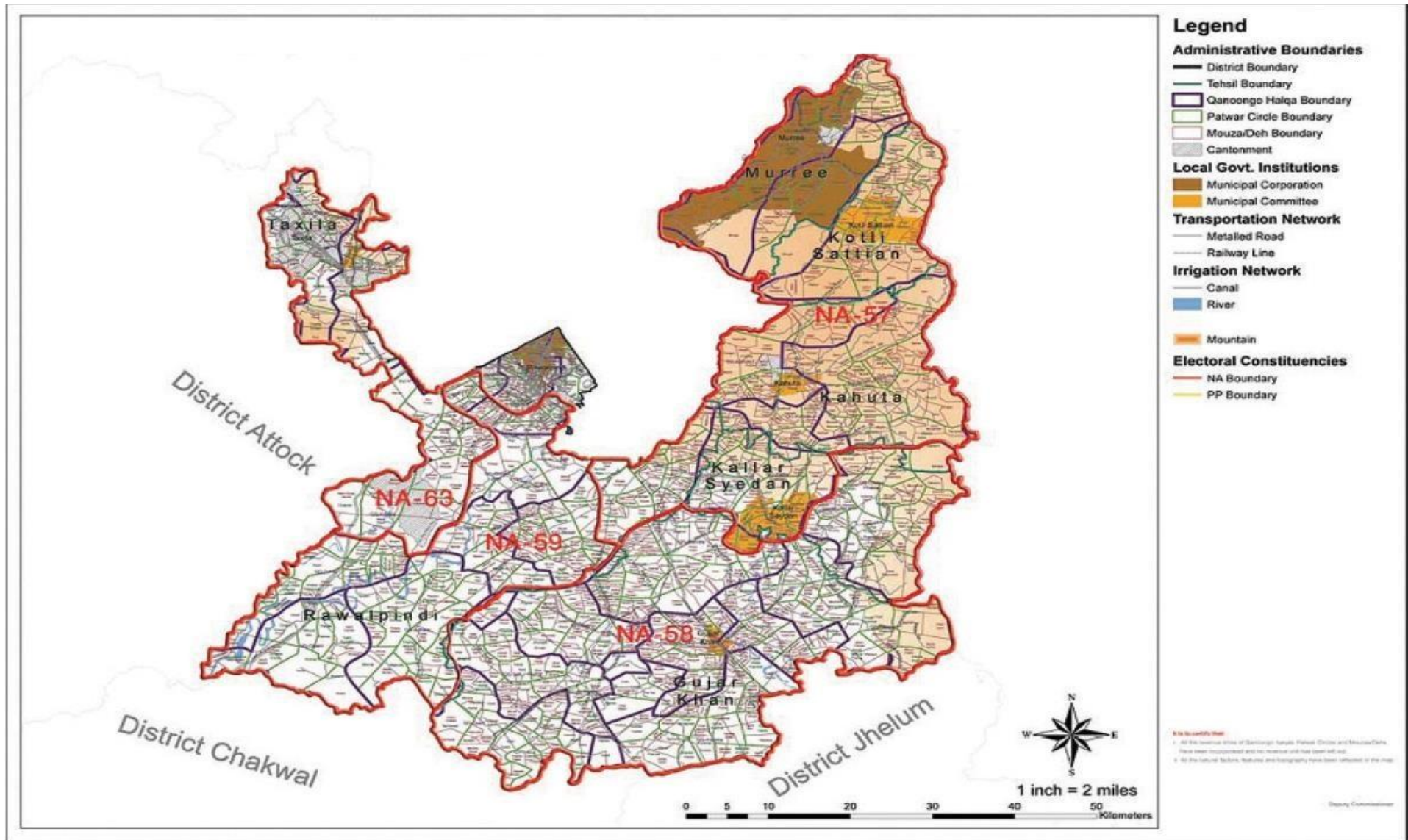
Islamabad, as the federal capital of Pakistan, has a well-developed and multi-modal transportation network that supports the movement of people and goods across the city and to other parts of the country. Roads form the backbone of transport, with a network of highways, expressways, and city roads including the Islamabad Expressway, Murree Road, Srinagar Highway, and Margalla Road, providing smooth connectivity within the city and to Rawalpindi. Rail transport is available via the Pakistan Railways network, with the main station in nearby Rawalpindi serving both passenger and freight trains to major cities across Pakistan. Air connectivity is provided by the Islamabad International Airport, which handles domestic and international flights and is situated approximately 30 km from the city center. The city does not have navigable rivers; however, seasonal streams and nullahs assist in drainage and local water management. Overall, Islamabad's transportation infrastructure ensures efficient urban mobility, access to regional and national destinations, and reliable connectivity for economic, educational, and healthcare activities, making it a suitable location for institutions.

#### **4.4.6 Land Use Planning**

The project site is owned by the Proponent and is currently vacant. No trees will be cut down for this project. Proposed area is almost grassy. The land for proposed project is easily accessible from Faisal Avenue and Islamabad Expressway roads. The Land Notification Documents (Non Encumbrance-Fard) is appended as Annexure-I. The land is transferred to proponent so no litigation is involved in this project.

The proposed project is located at Hanna Road. Faisal Avenue Road passes by the side of construction site. PIMS hospital is situated only 536 meters away from the project site. Centaurus Mall is at the distance of 900 meters from the location of project. Islamabad Expressway is at distance of 1.5 Km.

Figure 4.10: Map of Transport Network & Irrigation Channels, Islamabad



#### **4.4.7 Power Sources & Transmission**

Electricity requirement of proposed project when fully developed is projected to be around 200 - 300 KW. IESCO is the source of all power in the project area.

#### **4.4.8 Agriculture & Mineral Development**

The Islamabad Capital Territory (ICT), including the project area, has limited agricultural and mineral activities due to its predominantly urban and semi-urban nature. Agriculture in surrounding rural areas focuses on subsistence and small-scale farming, producing crops such as wheat, maize, vegetables, and some fruits, often supported by canal and tube-well irrigation. Livestock rearing, including cattle, goats, and poultry, is also present on a small scale. The region is not a major contributor to national agricultural output, and urban expansion has gradually reduced arable land. Regarding mineral resources, Islamabad and its immediate surroundings have minor deposits of limestone, stone, gravel, and sand, primarily extracted for construction purposes. There is no large-scale mining activity within the city, and extraction is limited to local quarries serving urban infrastructure needs. For the project, agriculture and mineral development considerations are minimal, but any construction should ensure sustainable use of local materials and avoid encroachment on the remaining agricultural land.

### **4.5 QUALITY OF LIFE VALUES**

#### **4.5.1 Socioeconomic values**

The Islamabad Capital Territory (ICT), including the project area, exhibits significant socioeconomic diversity and development. As the federal capital, the city hosts a large number of government institutions, corporate offices, educational and health facilities, which contribute to a higher average income and literacy level compared to many other regions of Pakistan. The local economy is primarily driven by services, education, healthcare, retail, and small-scale commerce, with limited industrial activity. Communities in Islamabad are characterized by high human development indicators, including access to education, healthcare, and civic amenities. The city also attracts a diverse population from across Pakistan, fostering cultural, linguistic, and professional diversity. For the PIMS project, understanding these

socioeconomic characteristics is essential for planning outreach, employment, patient services, and community engagement programs, ensuring that the institution aligns with the needs and values of the surrounding population.

#### **4.5.2 Public Health**

The project area in Islamabad benefits from a relatively well-developed public health infrastructure, reflective of the city's status as the federal capital. The region hosts major hospitals, clinics, and specialized healthcare facilities, including public institutions like Shifa International Hospital, and numerous private medical centers, providing primary, secondary, and tertiary care to residents. Preventive health services, immunization programs, maternal and child health initiatives, and disease surveillance are actively implemented by federal and provincial health authorities. The population enjoys high access to clean drinking water, sanitation, and waste management services, which support public health outcomes. Despite these advantages, challenges such as urban population growth, traffic-related accidents, and seasonal infectious diseases (e.g., dengue, influenza, and waterborne illnesses during monsoon) remain. For the project, planning healthcare infrastructure, emergency preparedness, and community health programs is critical to meet the demands of both the urban population and patients referred from across the country.

#### **4.5.3 Recreational Resources & Development**

The PIMS project area in Islamabad is located within a city known for its extensive recreational and green spaces, which contribute to the quality of life and environmental well-being. Islamabad features numerous public parks, sports complexes, hiking trails, and green belts, including notable areas such as Fatima Jinnah Park, Shakarparian Hills, and the Margalla Hills National Park, which provide opportunities for outdoor activities, fitness, and tourism. The city also hosts community centers, sports clubs, and playgrounds, catering to various age groups and promoting social interaction. Urban planning policies emphasize preservation of green areas, landscaping, and integration of recreational spaces within residential and institutional zones. For the PIMS project, development planning can incorporate landscaped gardens, walking paths, and outdoor seating areas to enhance campus aesthetics, provide spaces



for staff and patient recreation, and contribute to overall environmental and social sustainability.

#### **4.5.4 Cultural & Aesthetic Values**

The PIMS project area in Islamabad is situated in a city with notable cultural and aesthetic significance. Islamabad is renowned for its planned urban layout, wide tree-lined avenues, and landscaped sectors, which contribute to a visually appealing and organized urban environment. The city hosts several cultural landmarks, museums, art galleries, and historical sites, such as the Pakistan Monument, Lok Virsa Museum, and Faisal Mosque, which serve as centers for heritage and national identity. In addition, the proximity to the Margalla Hills National Park enhances the natural aesthetic value, offering scenic vistas, hiking trails, and biodiversity-rich landscapes. For the PIMS project, preserving and integrating landscaped areas, visual harmony, and cultural considerations within campus design will contribute to a positive environment for patients, staff, and visitors while respecting the broader urban and cultural context of Islamabad.

### **4.6 BASELINE ENVIRONMENTAL QUALITY**

#### **4.6.1 Ambient Air Quality**

The ambient air quality in Islamabad, including the PIMS project area, is generally moderate to good compared to other major cities of Pakistan, largely due to the city's planned layout, extensive green cover, and low industrial density. The primary sources of air pollution are vehicular emissions, construction dust, and seasonal crop burning in surrounding rural areas, which can occasionally raise concentrations of particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon monoxide (CO). During winter months, temperature inversions and fog can trap pollutants near the surface, temporarily reducing air quality. The city benefits from prevailing winds from the northwest and north, which help disperse pollutants. For the PIMS project, maintaining good air quality is essential, especially in hospital and laboratory areas, requiring proper ventilation, air filtration systems, and landscaping with dust-buffering vegetation to minimize exposure for patients, staff, and visitors. Air Quality test report has been attached as **Annexure-VII** of this report.

#### 4.6.2 Ambient Noise Levels

The ambient noise levels in Islamabad, including the PIMS project area, are generally moderate, reflecting the city's planned urban design and relatively low traffic density compared to other major cities of Pakistan. Major sources of noise include vehicular traffic on arterial roads, construction activities, commercial areas, and occasional public events. Residential sectors and institutional areas typically experience daytime noise levels ranging from 50–65 dB(A), while nighttime levels are lower, averaging 40–50 dB(A). Peak traffic hours and nearby construction can temporarily increase noise levels, potentially affecting sensitive areas such as hospital wards, laboratories, and lecture halls. For the PIMS project, noise mitigation measures—including buffer zones, sound-insulating building designs, restricted construction schedules, and green belts as noise barriers—should be integrated to ensure a quiet and conducive environment for patients, staff, and academic activities. Noise Quality test report has been attached as **Annexure-VIII** of this report.

#### 4.6.3 Water Quality

The water quality in Islamabad, including the PIMS project area, is generally suitable for domestic and institutional use, though careful management is required for sensitive healthcare operations. The city's water supply primarily comes from Simly Dam, Rawal Dam, and groundwater wells, which are treated and distributed through the Islamabad Water Supply and Sanitation Agency (IWSSA) network. Physicochemical parameters such as pH, turbidity, and total dissolved solids are generally within national drinking water standards, though seasonal variations and localized contamination may occur due to pipe leakage, sewage intrusion, or urban runoff. Microbiological contamination, particularly *E. coli* and coliforms, can occur sporadically, requiring continuous monitoring and treatment. For the PIMS project, reliable water supply, on-site treatment facilities, and regular quality monitoring are critical for hospital operations, laboratories, and patient care, ensuring compliance with WHO and Pakistan National Standards for Drinking Water Quality. The results of the water quality test reports have been attached as **Annexure-IX** of this report.



# CHAPTER-5

## PUBLIC CONSULTATION

### 5.1 GENERAL

This section deals with the public concerns about the said project. As already given in the previous sections, the said project is about Establishment of **Federal Medical College**. Consultation with stakeholders is a tool for managing two-way communication between the project sponsor and the public. Its goal is to improve decision making and build understanding by actively involving individuals, groups and organizations which have a stake in the project. This involvement increases project's long term viability and enhances its benefits to locally affected people and other stakeholders.

Consultation with the community and their active participation plays a vital role in successful implementation of the development projects. To identify the different types of stakeholders and ascertain their perception about the project, an impact assessment survey was conducted by keeping in view the requirement of '*Review of IEE/ EIA Regulations 2000*'. Stakeholders were consulted with the help of structured/ semi-structured tools. Informal group discussions were also held as an additional tool for obtaining feedback that are being discussed on the following pages.

Public consultations were carried out keeping in view the following main objectives:

- Sharing of information with stakeholders/ public on the proposed project activities and assess expected impacts.
- Understanding the stakeholder's concerns regarding the various aspects of the project, including the project technology, existing situation and the potential impacts of the project during construction and operational phase of the project.

The forums mentioned in subsequent sections were consulted. Written views and observations with particulars of people, environmental experts, and officials consulted is described comprehensively in table 5.1 and the performas filled during consultation by all stated forums is appended as **Annexure-VI** of this document.

### 5.2. PROPONENTS' ENVIRONMENT MANAGEMENT TEAM

As stated in earlier sections, project of **Establishment of Federal Medical College** is in its planning phase. Once the project comes in its construction phase, a team with representatives from key management functions will be developed to assess issues, aspects, opportunities and existing manufacturing process w.r.t environment. Therefore, it is too early to substantiate the stated inscription.

### **5.3. THE RESPONSIBLE AUTHORITY**

Proponent is responsible for the environmental impacts of this project and has taken commitment to implement the mitigation measures proposed in the Environmental Management Plan with subsequent review and approval conditions. Proponent ensured to use all practicable means consistent with other essential considerations to protect and preserve environmental quality.

### **5.4. OTHER DEPARTMENT & AGENCIES**

About 4 people from different governmental departments such as CDA, PHA and Agricultural consulted for proposed project. The environmental concerns and suggestions made by the officials were listed out, discussed and suggestions were accordingly mentioned in the table 5.1.

### **5.5. ENVIRONMENTAL PRACTITIONERS & EXPERTS**

The Environmental Experts has been informed with briefing on project interventions including its benefits. All of consulted experts asked questions to get information about different components of project. About 3 experts were consulted and their recommendations have been mentioned in table 5.1.

1. Adeel Pervaiz Sr. Manager Landfill LWMC
2. Dr. Fariha Arooj. Assistant Professor UVAS
3. Dr. Mujtaba Baqir. Lecturer GCU

### **5.6. AFFECTED & WIDER COMMUNITY**

The people of the project area are pro project installation. They are of the view that the project will enhance the economic benefits. About 20 persons were consulted during the public survey and majority of people consulted were of view that this project will provide employment opportunity to locals of the area. They focused on a point to encourage such projects in order to increase economic development as well as to improve living standards of area. At the same time, they foresee that project management will feel their social, moral and legal obligation and bring in Environment Management Order whereby environment will not be tempered as mentioned in table 5.1.

**Table 5.1: List of participants during stakeholder consultations & concerns**

| Sr.#                          | Date       | Location/ Venue/ Address                  | Particulars of Participants                | Feedback/ Concerns                                                                                                                                                                                                                                                                              |
|-------------------------------|------------|-------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Consultations</b> |            |                                           |                                            |                                                                                                                                                                                                                                                                                                 |
| 1.                            | 12-16-2025 | Capital Development Authority             | Mr. Ali Imran<br>[Director, CDA]           | <ul style="list-style-type: none"> <li>- It's a good initiative for economy empowerment of the area. This project augments jobs opportunity and security of the area.</li> <li>- Be ensuring during the development of project no harm to flora, fauna and no tree cutting involved.</li> </ul> |
| 2.                            | 12-16-2025 | Pakistan Railways, Islamabad Division     | Mr. Dr. Rehan Butt<br>[Divisional Officer] | <ul style="list-style-type: none"> <li>- Stated project shall not affect irrigation channels or stream. Agricultural land shall be protected to its intent rather using it for industrial purposes; as far as this could be considered.</li> </ul>                                              |
| 3.                            | 12-16-2025 | Parks & Horticulture Authority, Islamabad | Mr. Faisal Ahmed<br>[Assistant Director]   | <ul style="list-style-type: none"> <li>- Every new project must be planned with tasteful landscaping as living within aesthetically pleasing environment. New societies should promote tree planation as its enhanced scenery and protect from floods.</li> </ul>                               |
| <b>Environmental Experts</b>  |            |                                           |                                            |                                                                                                                                                                                                                                                                                                 |
| 4.                            | 12-16-2025 | Environmental Expert                      | Mr. Adeel Perviz                           | <ul style="list-style-type: none"> <li>- No construction, preliminary or otherwise relating to the project shall be started until and unless the Environmental Approval has been issued by EPA.</li> </ul>                                                                                      |
| 5.                            | 12-16-2025 | UVAS, Data Ganj Bakhsh Town, Lahore       | Dr. Fariha Arooj<br>[Assis. Prof UVAS]     | <ul style="list-style-type: none"> <li>- The environmental reports must be available for better understanding to comment.</li> <li>- All mitigation measures must ensure by proponent while development of this project.</li> </ul>                                                             |
| 6.                            | 12-16-2025 | Govt. College University Lahore           | Dr. Mujtaba Baqir<br>[Lecturer, GCU]       | <ul style="list-style-type: none"> <li>- Development projects must be supervised by proponent and concerned department.</li> <li>- Solid Waste should be handled properly on daily basis and proper drainage system for waste water must be designed keeping in view heavy rainfall.</li> </ul> |
| <b>Public Consultation</b>    |            |                                           |                                            |                                                                                                                                                                                                                                                                                                 |

|     |            |                        |                                              |                                                                                                                                            |
|-----|------------|------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | 12-16-2025 | PIMS Residential Flats | Mr. Muhammad Arif<br>[Shopkeeper]            | - I fully support the new medical college project.                                                                                         |
| 2.  | 12-16-2025 | PIMS Residential Flats | Dr. Ayesha Shehzad<br>[Medical Practitioner] | - This is a much-needed project. I fully support this kind of initiative.                                                                  |
| 3.  | 12-16-2025 | PIMS Residential Flats | Mr. Faisal<br>[Student]                      | - I support this initiative.                                                                                                               |
| 4.  | 12-16-2025 | PIMS Residential Flats | Mr. Ahmed Raza<br>[Shopkeeper]               | - The project is good for business activity. However, proper traffic and parking management is necessary as the area already gets crowded. |
| 5.  | 12-16-2025 | PIMS Residential Flats | Ms. Farzana<br>[Student]                     | - I support this initiative. My request is to control noise and dust during construction.                                                  |
| 6.  | 12-16-2025 | PIMS Residential Flats | Mr. Engr. Bilal Khan<br>[Civil Engineer]     | - A very promising project. Please follow CDA bylaws and seismic safety standards for all structures.                                      |
| 7.  | 12-16-2025 | Hanna Road             | Ms. Hina Gul<br>[Student]                    | - This college will help many students. I hope the government ensures safe and accessible public transport to the site.                    |
| 8.  | 12-16-2025 | Hanna Road             | Mr. Syed Kamran<br>[Taxi Driver]             | - The college will increase transport needs which benefits us. I only request proper traffic control during construction.                  |
| 9.  | 12-16-2025 | Hanna Road             | Ms. Shazia Munir<br>[Nurse (PIMS)]           | - It is requested to take care of cleanliness of area and have no issues regarding project.                                                |
| 10. | 12-16-2025 | Hanna Road             | Mr. Abdul Latif<br>[Retired Govt. Officer]   | - I support this initiative.                                                                                                               |

|     |            |                 |                                        |                                                                                                                                          |
|-----|------------|-----------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 11. | 12-16-2025 | Hanna Road      | Ms. Bushra Kausar<br>[Teacher]         | - The project is appreciated. Please ensure that healthcare services linked to the college remain accessible to poorer families as well. |
| 12. | 12-16-2025 | Hanna Road      | Mr. Faisal Javed<br>[Teacher]          | - This college should adopt digital health systems like telemedicine and EHRs to modernize healthcare.                                   |
| 13. | 12-16-2025 | Ibn-e-Sina Road | Mr. Asif Nawaz<br>[Business Owner]     | - The development will help local businesses. Please make sure construction waste and road cleanliness is properly managed.              |
| 14. | 12-16-2025 | Ibn-e-Sina Road | Ms. Sana Yousaf<br>[Student]           | - I support the project but stress the need for proper waste disposal systems, drainage, and protection of green areas.                  |
| 15. | 12-16-2025 | Ibn-e-Sina Road | Mr. Muhammad Iqbal<br>[Security Guard] | - This project will create job opportunities. I request strong safety and security arrangements on campus.                               |
| 16. | 12-16-2025 | Ibn-e-Sina Road | Mr. Naveed Akhtar<br>[Student]         | - A good initiative.                                                                                                                     |
| 17. | 12-16-2025 | Ibn-e-Sina Road | Ms. Samina Akhter<br>[Teacher]         | - The project will improve healthcare.                                                                                                   |
| 18. | 12-16-2025 | Ibn-e-Sina Road | Mr. Tahir<br>[Guard]                   | - I support the project                                                                                                                  |
| 19. | 12-16-2025 | Ibn-e-Sina Road | Mr. Saif Ali Khan<br>[Teacher]         | - Good initiative by management.                                                                                                         |
| 20. | 12-16-2025 | Ibn-e-Sina Road | Mr. Amir Sohail<br>[Labour]            | - Opportunities should be given to locals.                                                                                               |



**Figure 5.1: Pictorial evidence of stakeholder consultation**



# CHAPTER-6



## SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

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### 6.1 GENERAL

The potential environmental impacts have been studied related to design, location, construction and operational stages of the proposed project. Environmental protection measures are recommended to eliminate adverse environmental impacts or to reduce them to an acceptable level within the prevailing legislative and regulatory framework.

### 6.2 IMPACT ANALYSIS

Potential Environmental impacts associated with proposed study has been analyzed by a process wherein a group of experienced people with relevant experience were involved for identifying potential safety and operational problems associated with the design, maintenance or operation of a proposed project. They assessed different parts/ components of proposed project in critical view to environmental protection. Proposed project has been evaluated laterally and collectively about what impacts might be expected to arise with the proposed project. Impacts are evaluated on the basis of magnitude, immediacy and sustainability. Evaluation criteria are as follows:

- Magnitude
  - Type of impact (direct, indirect, cumulative)
- Immediacy
  - Temporal extent (during construction, after construction)
  - Spatial extent (local, widespread)
- Sustainability and Reversibility
  - Mitigability (fully, partially)
  - Monitoring (fully, partially)

Furthermore, **consultative meetings** were held for impact analysis with EIA team members and proponent of the project. Risk rating factors were the main agenda of these meetings for each environmental inventory element. Final outputs are presented in following sections below.

### 6.3 METHODOLOGY FOR IMPACT IDENTIFICATION

Screening of the potential impacts associated with the proposed project activities was carried out with help of Checklist and Leopold Matrix methods specifically tailored for this project.

### 6.3.1 Checklist

This lists significant environmental effects known to have occurred in past relevant development projects. This is arranged to permit (i) ready screening out of non-pertinent items by checking the column ‘No significant effects’ and (ii) ready grading of significant environmental effects by degree of effect. The checklist presented as Table 6.1 shows checklist of environmental parameters & its consequences for Establishment of **Federal Medical College, Islamabad**.

### 6.3.2 Leopold Matrix

With the help of this matrix, interaction of various project activities with various components/aspects of the environment was identified. This interaction was then categorized with respect to its severity of impacts, as follows:

- Low : L
- Medium: M
- High: H
- Positive Impact: P
- No Impact: N

With the help of the above ranking, less important/ severe impacts were screened out from the ones which were more important, needing further discussion as presented in table 6.2.

## 6.4 IMPACT CHARACTERIZATION

Subsequent to the impact screening, various characteristics of the potential impacts including spatial extent (local, regional, global), nature (direct/indirect), temporal extent (temporary, permanent), reversibility, severity, sensitivity of receptors and significance of impacts were determined.

Impacts characterization associated to project activities/ operational phase and their explanation is presented in table 6.3.

**Table 6.1: Checklist for Environmental Consequences**

| Sr. No.                                                                         | Activity / Parameter                | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|-------------------------------------|----|----|----|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1) Earth Resources</b>                                                       |                                     |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1.1                                                                             | Excavation and leveling             | ✓  |    |    |    | Minor    | Excavation of insignificant level will be carried out for the basement of proposed retail outlet.                                                                                                                                                                                                                                                                                                     |
| <b>Geological hazards</b>                                                       |                                     |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1.2                                                                             | Faults                              |    | ✓  |    |    |          | The building structure will be designed to withstand the seismic action (load) without local or general collapse.                                                                                                                                                                                                                                                                                     |
|                                                                                 | Landslides                          |    |    | ✓  |    |          | Proposed project area comprising on hard rock. There are no chances of land sliding as other societies' are also existing.                                                                                                                                                                                                                                                                            |
|                                                                                 | Un-engineered fill                  |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                 | Earthquake consideration            | ✓  |    |    |    | Minor    | The proposed structure will be designed to withstand seismic loads in accordance with the Uniform Building Code – 1997, Building Code of Pakistan Seismic Provision – 2007 to ensure the safety of the building during such an event.<br>The significance of this impact is minor as the proposed building will be constructed as per the applicable building code for Rawalpindi and adjoining areas |
| 1.3                                                                             | Contaminated soils                  |    | ✓  |    |    |          | Possibility of soil contamination due to oil spills from generators, vehicle workshops, and accidental spills. The chances of soil contamination are close to negligible.                                                                                                                                                                                                                             |
| 1.4                                                                             | Contaminated surface or groundwater |    | ✓  |    |    |          | The chances of groundwater contamination are close to negligible as the proposed site is an area where no major activity generating excessive effluent exists.                                                                                                                                                                                                                                        |
| 1.5                                                                             | Borrow pits                         |    | ✓  |    |    |          | Borrow pits (if any), will be restored after completion of the construction activities.                                                                                                                                                                                                                                                                                                               |
| 1.6                                                                             | Loss of high-quality farmlands      |    |    | ✓  |    |          | Proposed project area is declared as residential area. Half area of the proposed project is open land with tree and grass.                                                                                                                                                                                                                                                                            |
| 1.7                                                                             | Site drainage                       | ✓  |    |    |    | Minor    | A surface drainage system will be designed to cater the needs of the project site.                                                                                                                                                                                                                                                                                                                    |
| <b>2) Air Quality</b>                                                           |                                     |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Substantial increase in onsite air pollutant emission-construction phase</b> |                                     |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                 | Dust emissions during construction  | ✓  |    |    |    | Moderate | Dust emissions during construction will be mitigated by applying                                                                                                                                                                                                                                                                                                                                      |

| Sr. No.                                                                      | Activity / Parameter                                                                                                                                                                                | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                                                                                                    |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1                                                                          | activities                                                                                                                                                                                          |    |    |    |    |          | measures as per EMP.                                                                                                                                                                                                                   |
|                                                                              | Emissions from vehicles and machinery                                                                                                                                                               |    | ✓  |    |    | Minor    | Emissions from vehicles and machinery used during the construction phase will be mitigated by adoption of measures as presented in EMP.                                                                                                |
|                                                                              | Substantial increase in odor during construction                                                                                                                                                    |    | ✓  |    |    |          | Paint, polishing, pesticide spray would produce odor. Safe Use Action Plan will be implemented and further impacts will be mitigated by using proper mitigation measures as per EMP.                                                   |
| <b>Substantial increase in onsite air pollutant emission-operation phase</b> |                                                                                                                                                                                                     |    |    |    |    |          |                                                                                                                                                                                                                                        |
|                                                                              | Emissions from generators                                                                                                                                                                           |    | ✓  |    |    |          | Proposed project activity would involve use of generator of 125 kVA capacity during load-shedding hours. Therefore, proper mitigation measures for use of generator would be adopted as per EMP to avoid deterioration of air quality. |
| 2.2                                                                          | Increase in odor                                                                                                                                                                                    |    |    | ✓  |    |          |                                                                                                                                                                                                                                        |
|                                                                              | Violation of applicable air pollutant emissions or ambient concentration standards                                                                                                                  | ✓  |    |    |    |          | To limit air emissions from proposed facility, it must be properly operated and carefully maintained.                                                                                                                                  |
|                                                                              | Consideration of indoor air quality                                                                                                                                                                 | ✓  |    |    |    |          | It will be designed according to the RDA rules and regulation. There must be proper ventilation.                                                                                                                                       |
| <b>3) Water Resources and Quality</b>                                        |                                                                                                                                                                                                     |    |    |    |    |          |                                                                                                                                                                                                                                        |
| 3.1                                                                          | River, stream or lake onsite or around the project site                                                                                                                                             |    |    | ✓  |    |          |                                                                                                                                                                                                                                        |
| 3.2                                                                          | Provision of safe drinking water during operational phase                                                                                                                                           |    |    |    | ✓  |          | Water needs will be fulfilled by groundwater which is found safe for drinking after monitoring results appended as <b>Annexure-X</b> .                                                                                                 |
| 3.3                                                                          | Presence of any wetland of national importance (like game reserve, wildlife sanctuary etc.) or international significance (like Ramsar site etc) located within or around the proposed project site |    |    | ✓  |    |          |                                                                                                                                                                                                                                        |
| 3.4                                                                          | Discharges to surface or groundwater                                                                                                                                                                |    |    | ✓  |    |          |                                                                                                                                                                                                                                        |
| 3.5                                                                          | Onsite bulk storage of liquid fuels or hazardous materials.                                                                                                                                         |    | ✓  |    |    |          | Minor quantity of daily usage fuel, paints etc. may be stored on padded floor with impermeable lining or as per regulated SOPs.                                                                                                        |
| 3.6                                                                          | Site Drainage.                                                                                                                                                                                      |    |    | ✓  |    |          | The sewerage from the proposed facility will be disposed off after due treatment in proposed septic tanks. Small diameter sewer line collecting                                                                                        |

| Sr. No.                        | Activity / Parameter                                                                                                        | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                                             |    |    |    |    |          | the sewage flow from the proposed center will be combined with the external nearby sewer drain at an appropriate point keeping in view the diameter and invert level etc.                                                                                                                                                                                              |
| <b>4) Cultural resources</b>   |                                                                                                                             |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 4.1                            | Pre-hisotric, historic or paleontological resources within or around the proposed construction site.                        |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 4.2                            | Any gazetted or notified archaeological site located within or around the project site                                      |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 4.3                            | Any cultural, religious site located around the project site.                                                               |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 4.4                            | Site/ facility with unique cultural or ethnic values.                                                                       |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| <b>5) Biological resources</b> |                                                                                                                             |    |    |    |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 5.1                            | Vegetation removal                                                                                                          |    |    | ✓  |    |          | Proposed project does not involve any vegetation removal/ tree cutting.                                                                                                                                                                                                                                                                                                |
| 5.2                            | Construction in wetlands or riparian areas                                                                                  |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 5.3                            | Use of pesticide/ rodenticide/ insecticide                                                                                  | ✓  |    |    |    | Minor    | Anti-termite treatment will be used according to Regulation 22 CFR 216.3 (b) (a through l). Only registered pesticide from USEPA will be used. Proper safety measures including use of Personal Protective Equipment (PPE) will be ensured.<br>Selection, storage and application of pesticide will be recommended as per 2011 Pakistan Programmatic Umbrella PERSUAP. |
| 5.4                            | Protected areas (wildlife sanctuary, national park) or within game reserve declared by provincial wildlife Ordinances/ Laws |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 5.5                            | Any rare, threatened or vulnerable wildlife or vegetation specie observed/reported in or near project site                  |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |
| 5.6                            | Presence of core habitat for any key                                                                                        |    |    | ✓  |    |          |                                                                                                                                                                                                                                                                                                                                                                        |

| Sr. No.                                           | Activity / Parameter                                                                         | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                        |
|---------------------------------------------------|----------------------------------------------------------------------------------------------|----|----|----|----|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   | wildlife species, within or in close vicinity of project site (e.g. path of migratory birds) |    |    |    |    |          |                                                                                                                                                            |
| <b>6) Planning and Land Use</b>                   |                                                                                              |    |    |    |    |          |                                                                                                                                                            |
| 6.1                                               | Potential conflict with adjacent land uses                                                   |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.2                                               | Non-compliance with existing codes, plans, permits or design criteria                        |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.3                                               | Potential impact on adjacent buildings due to construction of existing structures            |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.4                                               | Construction in public park or designated recreational areas                                 |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.5                                               | Create substantially annoying source of light or glare                                       |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.6                                               | Relocation of > 10 individuals for +6 months                                                 |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.7                                               | Interrupt necessary utility or municipal services for more than 10 individuals for +6 months |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.8                                               | Substantial loss/ inefficient use of mineral or nonrenewable resources                       |    |    | ✓  |    |          |                                                                                                                                                            |
| 6.9                                               | Increase in existing noise levels                                                            | ✓  |    |    |    |          | Noise will be generated during construction/ operational activities. To minimize the noise impact proper mitigation measures will be adopted as per EMP.   |
| 6.10                                              | Non-compliance with building codes (structure failure)                                       |    |    | ✓  |    |          |                                                                                                                                                            |
| <b>7) Traffic, Transportation and Circulation</b> |                                                                                              |    |    |    |    |          |                                                                                                                                                            |
| 7.1                                               | Increase vehicle load or congestion on existing roads                                        |    | ✓  |    |    |          | Main Murree-Islamabad expressway Road can bear load upto double excel truck however; restoration of any damage to road shall be paid by project proponent. |
| 7.2                                               | Onsite congestion due to fuel transporting vehicles.                                         |    |    | ✓  |    |          | No.                                                                                                                                                        |
| <b>8) Hazards, Workers Safety</b>                 |                                                                                              |    |    |    |    |          |                                                                                                                                                            |

| Sr. No.                                                         | Activity / Parameter                                                                                  | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                                                |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----|----|----|----|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.1                                                             | Substantially increase risk of fire, explosion, or hazardous chemical/ fuel/ petrol spill or leakages |    | ✓  |    |    |          | Any potential increase in risk of fire, explosion, or hazardous chemical/ fuel/ petrol release will be minimized onsite for handling any emergency situations as mentioned in EMP. |
| 8.2                                                             | Accidents or human health hazard                                                                      |    | ✓  |    |    |          | Risks of accidents and human health hazards will be avoided by putting caution signs and use of PPE during work hours as mentioned in EMP.                                         |
| 8.3                                                             | Workers safety                                                                                        | ✓  |    |    |    | Minor    | Safety procedures will be ensured during construction, electrical installations and operational activities.                                                                        |
| <b>9) Hazardous waste</b>                                       |                                                                                                       |    |    |    |    |          |                                                                                                                                                                                    |
| 9.1                                                             | Increase quantity of heavy metals                                                                     |    |    | ✓  |    |          |                                                                                                                                                                                    |
| 9.2                                                             | Bulk quantities of hazardous materials or fuel storage                                                |    |    | ✓  |    |          |                                                                                                                                                                                    |
| 9.3                                                             | Increase in hazardous waste                                                                           |    | ✓  |    |    | Minor    | All hazardous waste needs to be disposed properly via suitable disposal option.                                                                                                    |
| <b>10) Non-Hazardous waste</b>                                  |                                                                                                       |    |    |    |    |          |                                                                                                                                                                                    |
| 10.1                                                            | Construction waste/ Municipal waste                                                                   | ✓  |    |    |    | Minor    | Impacts from construction/ municipal waste will be mitigated according to measures mentioned in EMP.                                                                               |
| 10.2                                                            | solid waste management                                                                                | ✓  |    |    |    | Minor    | Solid waste will be managed as per EMP.                                                                                                                                            |
| <b>11) Electrical and Mechanical Installations and Fixtures</b> |                                                                                                       |    |    |    |    |          |                                                                                                                                                                                    |
| 11.1                                                            | Presence of Halons, HCFC's in HVAC systems, refrigeration equipment and fire suppression equipment.   |    |    | ✓  |    |          |                                                                                                                                                                                    |
| 11.2                                                            | Presence of PCBs in electrical equipment.                                                             |    | ✓  |    |    |          | Electrical equipment free from PCBs must be installed.                                                                                                                             |
| 11.3                                                            | Safety issues for using low quality cables and appliances.                                            |    |    | ✓  |    |          |                                                                                                                                                                                    |
| <b>12) Paints</b>                                               |                                                                                                       |    |    |    |    |          |                                                                                                                                                                                    |
| 12.1                                                            | Presence of Lead and arsenic or any other banned chemical in the paints.                              |    | ✓  |    |    |          | Some paints may contain toxic substances such as arsenic <sup>3</sup> . Such paints will not be allowed to use.                                                                    |
| <b>13) Spills/ Leakages</b>                                     |                                                                                                       |    |    |    |    |          |                                                                                                                                                                                    |
| 13.1                                                            | Leakages from generators & boiler                                                                     |    | ✓  |    |    |          | Regular monitoring is required to prevent any leakages.                                                                                                                            |

<sup>3</sup> TECHNICAL BULLETIN HEALTH EFFECTS INFORMATION; Oregon Department of Human Services, <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Monitoring/Documents/health/arsenic.pdf>

| Sr. No.           | Activity / Parameter                          | Y* | M* | N* | B* | Impact** | Explanation of Environmental Consequences (Y, M, B)                                                                                                                                                   |
|-------------------|-----------------------------------------------|----|----|----|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13.2              | Leakages from vehicles and fuel storage tanks |    |    | ✓  |    |          |                                                                                                                                                                                                       |
| 13.3              | Petrol spills/ leakages                       |    | ✓  |    |    |          | Project management will apply strict rules on his workers and labor to ensure that no spill or leakages are caused. If spills/ leakages occur, it should be managed as per measures suggested in EMP. |
| <b>14) Result</b> |                                               |    |    |    |    |          |                                                                                                                                                                                                       |
| 14.1              | Substantial adverse impact                    |    |    | ✓  |    |          |                                                                                                                                                                                                       |
| 14.2              | Adverse impact                                |    |    | ✓  |    |          |                                                                                                                                                                                                       |
| 14.3              | Minimal impact                                | ✓  |    |    |    |          | Overall the project will have minimal impact.                                                                                                                                                         |

**Notes:**

Y\*: Yes, M\*: May be, N\*: No, B\*: Beneficial

\*\* Impacts: Minor, Moderate, Major



**Table 6.2: Leopold Matrix – Impacts for Construction Federal Medical College, Islamabad**

| <div>Environmental component</div> <div>Project Component</div> | PHYSICAL ENVIRONMENT |         |            |                     |          |               |             |             |               |       | BIOLOGICAL ENVIRONMENT |                   |       |                                       |                   |                   |        |          |                 |                        | SOICAL ENVIRONMENT   |            |                               |                         |                             |                      |                          |   |
|-----------------------------------------------------------------|----------------------|---------|------------|---------------------|----------|---------------|-------------|-------------|---------------|-------|------------------------|-------------------|-------|---------------------------------------|-------------------|-------------------|--------|----------|-----------------|------------------------|----------------------|------------|-------------------------------|-------------------------|-----------------------------|----------------------|--------------------------|---|
|                                                                 | Climate              | Geology | Seismicity | Soils contamination | Land use | Surface Water | Groundwater | Air Quality | Slope Failure | Noise | Aquatic Ecosystem      | Wetland Ecosystem | Trees | Endangered Species (Plants & animals) | Migratory Species | Birds and Animals | Plants | Wildlife | Disease Vectors | Public/ Workers Health | Flow of Road Traffic | Employment | Structures and Infrastructure | Health & Safety hazards | Cultural & Religious Values | Tourism & Recreation | Disruption of Businesses |   |
| Location of proposed project                                    | L                    | N       | H          | L                   | L        | N             | N           | N           | H             | N     | N                      | N                 | N     | N                                     | N                 | N                 | N      | N        | N               | N                      | N                    | N          | P                             | N                       | N                           | N                    | P                        | N |
| Design phase of proposed project                                | L                    | N       | H          | N                   | L        | N             | N           | N           | H             | N     | N                      | N                 | N     | N                                     | N                 | N                 | N      | N        | N               | N                      | N                    | N          | P                             | P                       | N                           | N                    | P                        | N |
| Construction phase                                              | M                    | L       | H          | M                   | L        | N             | N           | M           | H             | M     | N                      | N                 | N     | N                                     | N                 | N                 | N      | N        | N               | M                      | M                    | L          | P                             | P                       | M                           | N                    | P                        | N |
| Operational Phase of project                                    | N                    | N       | M          | N                   | L        | N             | N           | N           | M             | L     | N                      | N                 | N     | N                                     | N                 | N                 | L      | N        | N               | N                      | N                    | N          | P                             | P                       | N                           | N                    | P                        | N |

\*Key: P: Positive Impact; N: No Impact; L: Low Impact; M: Medium Impact; H: High Impact

**Table 6.3: Impact Characterization**

| Environmental Impacts →<br>Categories ↓ | Health & Safety Hazard | Soil Contamination | Water Quality | Air Quality | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|------------------------|--------------------|---------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nature</b>                           | Direct                 | Direct             | Direct        | Direct      | <b>Direct:</b> The environmental parameters are directly affected by the Project construction or operation. <b>Indirect:</b> The environmental parameter changes as a result of alteration in another parameter.                                                                                                                                                                                                                                                                                                                                             |
| <b>Duration of Impact</b>               | Long term              | Short term         | Short term    | Short term  | <b>Short-term:</b> The impacts that last only during the construction of the proposed Project e.g., noise from the construction activities.<br><b>Medium-term:</b> lasting for a period of few months to a year the project before naturally reverting to the original condition such as loss of vegetation due to clearing of campsite, contamination of soil or water by fuels or oil. <b>Long term:</b> lasting for period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to erosion. |
| <b>Geographical Extent</b>              | Local                  | Local              | Local         | Local       | The geographical extent may be local or regional (spatial dimension)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Project Phases</b>                   | On going               | On going           | On going      | On going    | Pre-construction (designing), Construction and Operational. Impacts are ongoing only during construction phase                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Reversibility of impacts</b>         | Temporary              | Temporary          | Temporary     | Temporary   | <b>Temporary:</b> The impacts that don't cross ecosystem threshold value of resilience. <b>Permanent:</b> The impacts that exceed ecosystem threshold value of resilience i.e., community that cannot come back to its original stage without external aid.                                                                                                                                                                                                                                                                                                  |
| <b>Likelihood of the Impact</b>         | Certain                | Likely             | Likely        | Likely      | <b>Certain:</b> Impact anticipated occurring under extreme circumstances.<br><b>Likely:</b> Impact will probably occur under less extreme circumstances.<br><b>Possibly:</b> Impact may possibly occur during different stages of the project.<br><b>Unlikely:</b> Impact could occur during many stages of the project. <b>Rare:</b> Impact may occur but only under exceptional circumstances.                                                                                                                                                             |
| <b>Impact Consequence Severity</b>      | Major                  | Minor              | Minor         | Minor       | <b>Major:</b> When an activity causes irreversible damage to a unique environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long-term effects (period of years) on socio-economic activities of significance or regional level. <b>Moderate:</b> When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or                               |

|                               |        |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|--------|-----|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               |        |     |     |     | <p>distribution over one generation of a population of flora or fauna; has short-term effects (period of months) on socio-economic activities of significance on regional level.</p> <p><b>Minor:</b> When an activity causes short-term (period of few months) reversible damage to an environmental feature; slight reversible damage to a few species of flora or fauna within a population over a short period; has short term (period of months) effects on socio-economic activities of local significance. <b>Negligible:</b> When no measurable damage to physical, socio-economic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirements.</p> |
| <b>Significance of Impact</b> | Medium | Low | Low | Low | <p>Impact may be categorized as high, medium, or low. Based on the consequence, likelihood, reversibility, geographical extent, duration, level of public concern; and conformance with legislative of statutory requirements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 6.5 IMPACT SIGNIFICANCE

Subsequent to screening and characterization, impacts of significant importance are described below:

- Health hazard for staff, workers, and nearby communities caused by not following PPEs, as well as improper construction activities and use of construction equipment and machineries
- Safety hazards caused by various stages of construction activities as well as natural disasters (earthquake, slope failures, landslides etc.)
- Seismic Hazards by natural cause
- Air quality deterioration by use of construction machineries/ vehicle exhaust, dust emissions, odor due to paint, polishing and pesticide spray

These impacts and their mitigation measures are discussed in detail below at each stage of proposed project activities.

Based on the above screening and evaluation process the following determination (check all that applies) is recommended. It is assessed that proposed project has minimal adverse impacts after proper implementation of mitigation measures proposed for each associated activity.

|                                     | <b>The activity contains. . .</b>                                                                                                                 | <b>(equivalent regulation)</b>            |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <input type="checkbox"/>            | Very low risk sub-activities                                                                                                                      | categorical exclusion(s)                  |
| <input type="checkbox"/>            | After environmental review, sub-activities determined to have <b>no significant adverse impacts</b>                                               | negative determination(s)                 |
| <input checked="" type="checkbox"/> | After environmental review, sub-activities determined to have <b>no significant adverse impacts, given appropriate mitigation and monitoring.</b> | negative determination(s) with conditions |
| <input type="checkbox"/>            | After environmental review, sub-activities determined to have <b>significant adverse impacts</b>                                                  | positive determination(s)                 |

## 6.6 Mitigation & Impact Assessment

Anticipated Environmental Impacts of proposed project of Establishment of **Federal Medical College, Islamabad** are determined. Upon consequent, relevant mitigatory measures have been suggested and presented in table 6.4 below.

**Table 6.4: Mitigation and Impact Assessment**

| Sr. #              | PROJECT ACTIVITY          | DESCRIPTION*                      |                        |                                                                                                                                                        | MITIGATION MEASURES**                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------|-----------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                           | When                              | Where                  | How                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1. Earth Resources |                           |                                   |                        |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1.1.               | Excavation & Leveling     | »Construction phase               | »Proposed Project site | »Excavation will be carried out for the basement of proposed building.                                                                                 | »Excavated soil should be stockpiled at appropriate locations. Adequate enclosures to be provided for such storage, to avoid blowing away by wind and run off with storm water.<br>»Use of security fences or hazard tapes to warn and control the access of unauthorized persons to the excavated site.<br>»Weekly monitoring during excavation & reporting by HSE manager of construction contractor.                     |
| 1.2.               | Earthquake consideration  | »Planning/ designing phase        | »On site               | »The building structure will be designed to withstand the seismic action (load) without local or general collapse.<br>»Significance of Impact is minor | »The design specification will be followed to withstand seismic loads in accordance with the Uniform Building Code (UBC) - 1997 and Building Code of Pakistan (BCP), Seismic Provisions - 2007, as required by local codes and standards for high degree of structural competence, reliability and ease of construction <sup>4</sup> .<br>»It will be executed and managed at planning & design phase by design contractor. |
| 1.3.               | Soil contamination        | »Construction & Operational Phase | »On site               | »Improper handling of construction material by construction workers;<br>»Inadequate handling & disposal of contaminated soil.                          | »Impart proper training to their workforce in the storage and handling of obnoxious materials that can potentially cause soil contamination by construction contractor. It must be monitored and implemented by HSE manager of construction contractor.<br>»Implement mitigation measures suggested under sub-section 6.9.2 & 6.10.3.                                                                                       |
| 1.4.               | Loss of trees/ vegetation | »Construction Phase               | »Project site          | »No tree cutting is involved in stated project.                                                                                                        | »It will be executed by project proponent.                                                                                                                                                                                                                                                                                                                                                                                  |
| 1.5.               | Land Use                  | »Planning, Construction           | »On site               | »Potential impact on adjacent buildings due to                                                                                                         | »The construction contractor must ensures that all structure, equipment, materials and facilities used or created on site                                                                                                                                                                                                                                                                                                   |

<sup>4</sup> Structural design at present in Pakistan is designed as per UBC-97 and ACI 318-02M because of the local techniques, procedures, technologies and material available for concrete and other construction material. The building Codes BCP, SP-2007, Design of Concrete Structures by Arthur H. Nilson, Design of Reinforced Concrete by M. C. Cormac, Foundation Analysis and Design by J.E. Bowles will also be followed in due course of time upon availability of advanced materials and techniques in Pakistan

|                         |                                                                                  |                                              |                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------|----------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                                                                                  | &<br>Operational<br>Phase                    |                | construction of proposed facility; it is anticipated to be minor;<br>»Aesthetic value of the area might get impaired.                         | for/ or during construction activities are removed.<br>»Tree plantation must be encouraged in and around project site for enhanced aesthetics of the area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>2. Air Quality</b>   |                                                                                  |                                              |                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2.1.                    | Dust Emissions                                                                   | »Construction phase                          | »On site       | »Due to construction activities, dust will be generated.                                                                                      | »Sprinkling of water to suppress dust emissions.<br>»Periodic Environmental monitoring in specific to air quality will be carried out by HSE manager of construction contractor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2.2.                    | Emissions from vehicles/ generator stack/ chemical fumes from fuel storage tanks | »Designing, Construction & Operational Phase | »On & Off site | »Vehicles washing, servicing and repairing works onsite<br>»Flue gas emissions from generator & fuel storage tanks if not maintained properly | »Use of properly maintained and tuned vehicles/ equipment/ generators onsite to avoid air and soil pollution.<br>»Properly designed and maintained ventilation as it is one of the more effective ways of reducing exposure to harmful chemicals in the form of fumes.<br>»Implement mitigation measures suggested under sub-section 6.9.5 & 6.10.5.<br>»Periodic Environmental monitoring in specific to air quality will be carried out by HSE manager of construction contractor.<br>»Besides, it will be taken care to operate processes and activities to minimize emission hazardous to health of proposed project by Design Contractor & Project Proponent. |
| 2.3.                    | Increase in odor                                                                 | »During operational phase                    | »On site       | »Odor from petrol storage tanks/ fueling or defueling area.                                                                                   | »Proposed facility must be properly ventilated & designed.<br>»It will be executed by construction contractor and ensure compliance to use of PPEs by workers while handling petrol.<br>»HSE manager will monitor use of PPEs by workers on daily basis.                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>3. Water Quality</b> |                                                                                  |                                              |                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 3.1.                    | Surface/ Ground water Contamination                                              | »Construction & Operational Phase            | »On & off site | »Improper sanitation system for construction as well as operational workers.                                                                  | »Proper sanitary system must be provide to construction workers on temporary bases during construction phase.<br>»The chances of water contamination are close to negligible as no major activity generating excessive effluent exists.<br>»It will be executed by construction contractor during construction phase & project management during operational                                                                                                                                                                                                                                                                                                       |

|                                                |                                 |                                   |          |                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------|---------------------------------|-----------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                |                                 |                                   |          |                                                                                                                            | phase.<br>»Implement mitigation measures suggested under sub-sections 6.9.4 & 6.10.4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>4. Traffic, Transportation, Circulation</b> |                                 |                                   |          |                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4.1.                                           | Congestion on existing road     | »Construction Phase               | »On site | »Traffic jams or congestion on road by the movement of construction/ raw material/ vehicles during the peak traffic hours. | »Traffic jams or congestion on road will be eliminated by avoiding the movement of vehicles during the peak traffic hours<br>»Allocation of proper place for vehicles will be carried out to avoid congestion and haphazard movement of vehicles onsite.<br>»Daily monitoring by HSE manager of construction contractor to ensure pedestrian/ operator's safety and their ability to complete the task without incident.                                                                                                                                                                           |
| <b>5. Solid Waste</b>                          |                                 |                                   |          |                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 5.1.                                           | Municipal waste                 | »Construction & Operational Phase | »On Site | »Garbage produced by workers;<br>»Hideous littering by workers engaged for operational activities.                         | »Measures should be adopted for safe and environment friendly disposal of all generated solid and liquid wastes. It is recommended that workers must restrict their activities within the project premises.<br>»Orientation trainings will be provided to the workers for identification, segregation & management of solid waste during construction & operational phase.<br>»Weekly monitoring and inspection of waste management related facilities and activities in order to ensure compliance as per applicable rules & regulations by project management.<br>»Maintain records of training. |
| 5.2.                                           | Hazardous waste                 | »Operational Phase                | »On site | »Regular and thorough management of hazardous waste which is absolutely essential for efficient operation.                 | »Monthly monitoring & inspection of hazardous. Waste management activities directly resulting from executing the project process by project management during operational phase.<br>»Implement mitigation measures suggested under sub-section 6.10.9.                                                                                                                                                                                                                                                                                                                                             |
| <b>6. Health &amp; Safety</b>                  |                                 |                                   |          |                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6.1.                                           | Accidents/ human health hazards | »Construction Phase               | »On site | »Construction activities will pose certain negative impacts on workers.                                                    | »Ensure safe working practices are observed at all times while carrying out work activities by construction contractor.<br>»All accidents, whether to themselves, others or property must                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                       |                               |                                |                     |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|-------------------------------|--------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |                               |                                |                     |                                                                                                                                                                                                                                                                                    | <p>immediately be reported to project management.</p> <p>» Site specific HSE Plan must be used as a guide to assist the Contractor working on this project.</p> <p>» HSE manager by Construction Contractor will be responsible for periodic site safety inspections.</p> <p>» Implement mitigation measures suggested under sub-section 6.9.10.</p>                                                                                                                                                                                                |
| 6.2.                                  | Noise/ Vibrations             | » Construction Phase           | » On site & On duty | <p>» Construction activities such excavation, use of heavy machinery etc. may generate noise;</p> <p>» Use of unnecessary horns by drivers of construction/ fuel transporting vehicles;</p> <p>» Noise will also arise from generators operational during load-shedding hours.</p> | <p>» Drivers must be aware of their code of conduct and avoid use of unnecessary horns.</p> <p>» Implement mitigation measures suggested under sub-sections 6.9.6. &amp; 6.10.6.</p> <p>» Minimum number of vehicle must be used for construction material to mitigate noise and exhaust emissions.</p> <p>» Daily monitoring by HSE manager of construction contractor to check compliance as per PEQS during construction phase.</p> <p>» Noise from generators must be curtailed within limiting values set by PEQS via engineering control.</p> |
| 6.4.                                  | Emergency Response            | » Design, & Construction Phase | » On site & On duty | <p>» There are always chances of fire risks/ another hazard of worth considering (explosion, petrol spills, earthquakes etc.)</p>                                                                                                                                                  | <p>» Operating procedures must be in place to minimize the fire danger at the site.</p> <p>» It must be executed and monitored by project proponent in close liaison with design contractor of stated facility.</p>                                                                                                                                                                                                                                                                                                                                 |
| <b>7. Material Storage and others</b> |                               |                                |                     |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7.1.                                  | Construction Material Storage | » Construction phase           | » On site           | <p>» Poor housekeeping leads to injuring of workers.</p>                                                                                                                                                                                                                           | <p>» Stockpiles shall not be situated such that they obstruct natural pathways</p> <p>» Stockpiles shall not exceed 2m in height unless permitted by Concerned Engineer on site</p> <p>» If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by the construction of low brick walls around</p>                                                                                                                                  |



|      |                                 |                     |               |                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|---------------------------------|---------------------|---------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                 |                     |               |                                                                                                          | <p>their bases</p> <ul style="list-style-type: none"> <li>» All substances required for vehicle/ machinery maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site</li> <li>» Hazardous substances / materials are to be transported in sealed containers or bags</li> <li>» Spraying of herbicides / pesticides shall not take place under windy conditions</li> </ul>                                          |
| 7.2. | Spills/ leakages                | »Construction Phase | »Project area | »Spills/ leakage may result due to improper handling of paints, fuels, solvents, cements, chemicals etc. | <ul style="list-style-type: none"> <li>» Ensure proper handling and storage of chemicals/ paints/ fuels etc. and should be marked to highlight their content.</li> <li>» Workers must be aware of their code of work.</li> <li>» Compliance to above stated as well as to use of PPEs by workers must be monitored by HSE manager of Construction Contractor during construction phase and project management during operational phase.</li> </ul>                        |
| 7.3. | Use of pesticides/ insecticides | »Construction Phase | »Project area | »Use of mosquito repellent sprays/ fumigation to disinfect and control pest/ disease vectors.            | <ul style="list-style-type: none"> <li>» Mosquito repellent sprays/ fumigation should be carried out as per project safety plan. All safety measures including use of PPE must be ensured.</li> <li>» HSE manager will monitor compliance to use of PPEs during pesticide spray.</li> </ul>                                                                                                                                                                               |
| 7.4  | Biological Hazards              | »Construction phase | »Project site | »Excavation for the foundation of college                                                                | <ul style="list-style-type: none"> <li>» Proposed project site does not involve cutting of any trees</li> <li>» Plantation of maximum number of trees.</li> <li>» Staff and workers should be instructed not to damage nearby vegetation of the surrounding area.</li> <li>» Open fires should be prohibited in the area to avoid the hazard of fire and impact on nearby flora and fauna.</li> <li>» Contractor staff should be given clear instructions that</li> </ul> |

|  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                              |
|--|--|--|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |  |  | <p>they should not hunt any birds/ animal in the project area/ site</p> <p>» Barriers/ fencing/ or boundary wall should be installed at project site to protect movement of animals at the project site during constructions.</p> <p>» Proper disposal of organic waste (if any) generated during the construction stage to avoid rodents and other insects' generation.</p> |
|--|--|--|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\* It contains when problem will occur and when, where & how it will be occur.

\*\* It suggests whys of achieving mitigation measures [changing in planning and design/ improved monitoring and management practices/ compensation in money terms/ replacement, relocation & rehabilitation

Moreover, assessed impacts and their mitigation measures are discussed in detail at each stage of proposed project activities as described below.

## **6.7 IMPACTS DUE TO PROJECT LOCATION**

The project envisages Establishment of **Federal Medical College** located at Ibn-E-Sina Road, G-8/3, Islamabad. The possible environmental impacts due to project location are described below.

### **6.7.1 Land Acquisition & Change in Land Use Pattern**

As mentioned above the proposed project site is situated in area where no worth mentioning activity with special reference to environment is involved hence no significant adverse impact will happen. The adjacent land value will be increased by this project.

#### **Mitigation**

No.

### **6.7.2 Environmental Sensitive Areas**

There is not any environmentally sensitive or critical zone in or around the project site.

#### **Mitigation**

Not required.

### **6.7.3 Historical, Archeological or Cultural Sites**

There are no cultural resources, historical place or archeological sites such as ancient monuments, forts, sculpture, etc. to be destructed.

#### **Mitigation**

Not required.

### **6.7.4 Existing Infrastructure**

Infrastructure like roads, electricity, telephone, natural gas and drainage system is already present in the area. As existing planning and design standards are suited to local conditions, hence, there will not be any unnecessarily wasteful of land.

#### **Mitigation**

Not required.

## **6.8 DESIGN RELATED IMPACTS**

The construction plan is taking all the consideration of all engineering details, their soundness and else as desired under the rules and regulations “Uniform Building Code – 1997, Building Code of Pakistan Seismic Provision – 2007” for such

constructions. This will automatically take care of the soundness of the building and its design.

The present EIA Report testifies that there will not be any environmental problems at all, due to project design.

In view of these considerations no environmental problems are foreseen in the context of design. However the possible impacts of proposed project have been considered and their mitigation measures justified in Environmental Impact Assessment.

**Mitigation**

No.

**6.8.1 Drainage Pattern**

Drainage system is available around the project site for waste water disposal. The project site is located Islamabad Expressway and there is open drain present nearby project site. All the waste water (constituting sewage only) from the proposed facility will be disposed into this drain after due treatment in septic tanks.

**Mitigation**

As there is no significant impact on drainage pattern, so, no mitigation is required.

**6.8.2 Seismic Hazard**

The proposed project is situated in Seismic Zone 2B which represents a moderate seismic risk area. In this zone intermittent earthquakes with fundamental periods greater than 1.0 second may cause damage to structures.

**Mitigation**

The structure of the proposed project has been designed in accordance with Uniform Building Code – 1997, Building Code of Pakistan Seismic Provision – 2007, so that the building may withstand moderate to large earthquakes.

**6.8.3 Water Resources**

Ground water will be extracted via installation of electric pumps. Major use of this ground water is for allied activities such as washroom/ official activities by workers.

**Mitigation**

- » Ensure that projected use of ground water is within the capacity of natural system to replenish itself.
- » Use indigenous vegetation that requires less water, drip irrigation or shaded plantings.
- » Workers should strictly be advised not to misuse or waste ground water in any way.

#### **6.8.4 Traffic Patterns**

The main entrance to the project site is from the Murree-Islamabad Expressway Road. This road passing by the project site has high carrying capacity and there will be no need to construct a separate road for this project. The existing road will be utilized for all the traffic movement involved in this project.

##### **Mitigation**

Not required.

#### **6.8.5 Emergency response**

There are always chances of earthquakes and other manmade disasters such as fires due to electrical short-circuiting, overheating, forest fire etc. Besides, proposed building layout has been designed with inception of such considerations.

##### **Mitigation**

The following mitigation measures will be adopted to minimize or eliminate the emergency situations:

- » The design of proposed project will also include emergency exits and open space for gathering which can be used during emergency situation.
- » Adequate water distribution system will be designed, which could also supply adequate quantity of water for fire-fighting during emergency.
- » Fire hydrants and firefighting extinguishers will be provided at locations where necessary.

### **6.9 IMPACTS DURING CONSTRUCTION STAGE**

The potential environmental impacts of the proposed project along with the mitigation measures during the construction stage have been described as following:

#### **6.9.1 Impacts on Topography**

Civil work will be done for the construction of proposed facility so there will not any major changes in the existing topography of the project site. The changes due to the civil work will be of localized nature. There will be no significant changes off-site the project area.

##### **Mitigation**

Not required.

#### **6.9.2 Impacts on Soils**

The overall geology and soil quality of the project site is not expected to be adversely impacted due to the execution of the proposed project during the construction period. Complete Soil investigation report will be shared on the demand of EPA.

### **Mitigation**

Vigorous plantation needs to take place at the project site so that soil becomes stabilized.

#### **6.9.3 Impacts on Groundwater**

As mentioned above very small level civil work will be undertaken for establishment of the said project so the water quality will not be disturbed too much extent.

### **Mitigation**

- » The workers will be provided with washrooms and toilets at site.
- » Proper sanitary system will be developed on temporary bases.

#### **6.9.4 Impacts on Surface Water**

Excessive runoff, especially in rainy days, due to different activities to be carried out during construction phase can result in the increase of Total Dissolved Solids (**TDS**) and Total Suspended Solids (**TSS**) in small water channels. Similarly, untreated sewage can result in high value of Chemical Oxygen Demand (**COD**) and Biochemical Oxygen Demand (**BOD**) of surface water.

### **Mitigation**

- » The workers will be provided with washrooms and toilets at site.
- » Proper sanitary system will be developed on temporary bases.
- » Wastewater effluent from construction equipment, washing-yards should be passed through the primary treatment process to remove macro contaminants before discharging it into natural streams.

#### **6.9.5 Impacts on Air Quality**

Due to the construction activities like excavation, clearing, leveling, compaction, material transportation, earthing/ grounding etc. dust will be generated which will ultimately increase the Particulate Matter (PM) value in the area. Gaseous emissions from the heavy machinery and vehicles will also come out and this will affect the quality of ambient air. This may also pose health risk to the construction workers and residents who suffer from respiratory ailments.

### **Mitigation**

- » Periodic environmental monitoring and testing of emissions from vehicles should be carried out in order to keep the concentration of various pollutants including CO, Noise & Smoke within the PEQS limiting value.
- » Ambient gaseous monitoring for various pollutants like CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub> etc. should also be carried out periodically.
- » Periodic maintenance of the machinery will be carried out to reduce the concentration of emissions.
- » Haul-trucks carrying earth, sand, aggregate etc. will be kept covered with tarpaulin to help contain construction materials and being transported within the body of each carrier between the sites.
- » Tyres of the vehicles and heavy machinery will be washed and the waste water produced as a result of this activity will be reused after due treatment. This will reduce concentration of PM in the ambient air.

#### **6.9.6 Noise**

Project activities like compaction, use of heavy machinery during the clearing of the site and trolleys and trucks used for the transportation of materials will create some noise and vibration. The noise may affect the workers and residents of the surrounding communities of the project site.

##### **Mitigation**

- » Engines of vehicles visiting the project site should be properly tuned-up.
- » Use of heavy machinery should be restricted to daylight hours in order to minimize noise pollution and vibration arising from the construction site.
- » To bring down noise levels within the PEQS limiting values, noise control measures should be taken such as provision of silencers on the heavy construction vehicles and sound insulation materials should be used as barriers.
- » Wide zone of green plants will also help decrease sound levels.
- » As the proposed project is going to be constructed in the area far away from residential communities. This will further reduce the exposure of noise to the surrounding communities.

#### **6.9.7 Water Consumption**

During the construction of project approximate quantity of water will be used and it will not exert any significant effect on water table.

##### **Mitigation**

Not required.

#### **6.9.8 Waste Generation**

During the construction of project waste will be generated such as debris waste including clay, sand, crush, stones, paper, plastic, wood pieces, iron and steel as scarp, wires, rags, ropes etc., sewage and solid wastes from construction camp.

##### **Mitigation**

- Most of construction waste will be utilized on site to fill excavated sites or recycled; remaining of it will be properly disposed-off/ landfilled.
- Septic tanks will be constructed for the treatment of sewage waste from construction camps and other construction activities. After due primary treatment of sewerage in septic tanks, it will be disposed-off in drain passing nearby the project site.

#### **6.9.9 Construction Debris**

Each phase of the development will produce solid waste, the disposal of which, if not managed properly could have negative impacts on the site and surrounding area.

##### **Mitigation**

- » A site waste management plan should be made the responsibility of the project contractor to provide for the designation of appropriate waste storage area on the site and a schedule for the timely collection and removal of construction debris to an approved dump site.
- » Only small quantity of the waste will be produced as no major excavation is involved in the project.

#### **6.9.10 Health and Safety of Workers**

The construction activities will impose certain negative impacts on health and safety of the workers, however mitigation measures will be required to minimize/ eliminate health and safety related negative impacts of the project.

##### **Mitigation**

Implementation of the following measures will ensure health and safety of the workers during the proposed construction stage:

- » The Contractor will ensure that the workers / laborers are trained in safety procedures for all relevant aspects of construction.
- » Proponent of the Project will make regular checks to ensure that the contractor is following safety working procedures/ safety measures.



- » Formal emergency procedures will be developed for proposed project site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.

#### **6.9.11 Impacts on Flora & Fauna**

No trees will be cut down in the vicinity of proposed project site which will be preserved. The establishment of the proposed project will not affect the fauna of the area.

##### **Mitigation**

Following mitigation measures will be adopted to restore the environment as much as possible.

- » Impact mitigation calls for protecting and restoring as much of the original condition on the development site as possible.
- » In an effort to preserve the existing biodiversity, naturally occurring plants such as those used primarily by the birds for food and shelter should be planted for their survival. This would ensure that primarily native plants are used in the landscape plan thus minimizing the use of imported species and eliminating the introduction of potentially invasive species.
- » Using bird feeder may encourage the displaced avifauna to remain in or return to the general vicinity, thus maintaining the existing biodiversity.
- » The project contractor should be subject to punitive penalties for removal or damage of ecologically valuable trees designated for protection or relocation (if any).

#### **6.9.12 Transportation of Construction Materials**

Transportation of heavy machinery implies heavy traffic on the roads leading to the site with possible impacts to the surrounding area (dust, spillage, emissions and noise). Use of uncovered vehicles for transportation of construction materials can lead to inadvertent dispersal of materials during heavy rains or high winds during dry periods. This could have a negative impact on the residents of the surrounding.

##### **Mitigation**

- » The construction activity will go on for a short period of time and there will be no worth mentioned impacts from this activity on the project area.
- » Arrangements should be made with contractors to ensure that the vehicles used for transporting materials and machinery to the site are appropriately sealed and covered to minimize dust.

» Dust producing materials such as sand or cement should be stockpiled in low enclosures and covered, away from drainage areas where they could easily be washed away during rainfall.

#### **6.9.13 Traffic Congestion**

During the construction of the project, movement of heavy trucks and machinery will have only a minor impact on the traffic of main Islamabad Expressway road as it is a wide road specially designed for this kind of heavy traffic.

##### **Mitigation**

No mitigation measures are required as this activity will be for a short period of time and the carrying capacity of main Islamabad Expressway road is fair enough to accommodate this traffic for that much time period.

#### **6.9.14 Employment Generation**

During construction stage of the proposed project, about 30-35 workers / laborers will be engaged. This will be positive change.

##### **Mitigation**

Not required.

### **6.10 IMPACTS DURING OPERATIONAL PHASE**

The potential environmental impacts of the proposed project along with the mitigation measures during the operational phase have been described as following:

#### **6.10.1 Impacts on Climate**

The operation of proposed project will not affect the climate of the area on overall.

##### **Mitigation**

Not required.

#### **6.10.2 Change in land use**

As mentioned earlier, the proposed project is about the Establishment of **Federal Medical College, Islamabad** and no worth mentioning activity related to environment is involved at this phase of project, hence no significant adverse impact will happen.

##### **Mitigation**

Not required.

#### **6.10.3 Impacts on Soils**

The overall geology and soil quality is not expected to be adversely impacted due to the execution of the proposed project activities.

##### **Mitigation**

Vigorous plantation needs to take place at the open vacant spots by project proponent so that soil becomes stabilized.

#### **6.10.4 Effluent Generation**

From the proposed project no process wastewater will be produced. Approximately 3000 - 3500 liters/ day of wastewater will be generated from toilets/ washrooms. This water needs to take treatment before discharging.

##### **Mitigation**

- » As there is no source of chemical contamination in the process water so the waste water to be generated will have no water contamination and the waste water quality will meet the prescribed limits of PEQS-Pakistan.
- » The sewerage water will be treated in septic tank.
- » The treated effluents will be used for sprinkling on the unpaved area, landscaped area, plants and vegetation within/ or around project site.
- » The remaining effluent of nominal quantity will be discharged into nearby drain through submerged sewerage pipes.
- » While laying sewage pipes, measures will be adopted to ensure that other pipes, wires or systems already existing in the route of the sewage pipes from the building to the main sewer line are not damaged.
- » Sewage lines, both on site and off site, shall be laid at reasonable distances away from drinking water supply lines so as to avoid contamination of the water supply by the leakages from the sewer.

#### **6.10.5 Air Quality Deterioration**

While operational stage of the proposed project there is no impact on air quality is anticipated as in its operational phase, this project is clearly of residential nature.

##### **Mitigation**

Not required.

#### **6.10.6 Noise and Vibration**

There is no such significant impact of noise and vibration associated with operational phase of this proposed project.

##### **Mitigation**

Not required.

#### **6.10.7 Water Consumption**

About 400 - 500 gallon of water per day will be used per day by the proposed project during the regular operation. This quantity of water will not exert any negative impact

on water table.

**Mitigation**

Not Required.

**6.10.8 Solid Waste Generation**

During the regular operation of the proposed project 25-30kg per day solid waste will be produced, only kitchen waste/ Municipal Solid Waste will be produced.

**Mitigation**

The solid waste above is recyclable. This solid waste will be disposed off in an environment-friendly manner in line with the local municipality and through a licensed contractor who should dispose of the solid waste at the designated site by the local municipality.

**6.10.9 Health and Safety of Workers**

The project activities will not impose certain negative impacts on health and safety of the residents. However, no mitigation measures will be required to minimize/ eliminate health and safety related negative impacts of the project.

**Mitigation**

Not required.

**6.10.10 Employment Generation**

During the regular operational stage of the proposed project approximately 15-20 workers will be engaged. This will be a major positive impact.

**Mitigation**

Not required

**6.10.11 Fire Risk**

There is always a chance of fire at any kind of premises/ buildings. If the fire-fighting arrangements may not arrange this will be a major negative impact.

**Mitigation**

The following mitigation measures will be adopted during the regular operational stage of the proposed project:

- » Emergency Exits
- » Smoke Detectors
- » Fire Extinguishers (DCP 05 cylinders, AFFF 03 cylinders, CO2 02 cylinders, DCP 02 Trolleys)
- » Emergency Signs
- » Floor Marking

» First Aid Boxes (02)

» Fire-fighting Kit

#### **6.11 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES**

Besides the concrete measures to be adopted as described above, the quality of environment will further be enhanced through the running of project in complete accordance with the 5RS Principles- Reduce, Reuse, Recycle, Refurbish and Retrofit. Good house-keeping will be the order of the day.

During construction and regular operation of the project activity, persons will be employed. Local people will be preferred for employment. People of all categories will get employment during construction as well as operational phase of the project.

# CHAPTER-7

## ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

### 7.1 ENVIRONMENTAL MANAGEMENT

To implement the recommendations and suggestions for environmental protection included in Chapter 6, a comprehensive management plan is needed.

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

The purpose of the EMP is to ensure that the activities are undertaken in a responsible non-detrimental manner with the objectives of: (i) providing a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (iv) ensuring that safety recommendations are complied with.

### 7.2 INSTITUTIONAL CAPACITY

#### 7.2.1 Environmental Committee and its Responsibilities

Project Proponent will constitute an Environmental Management Committee including at least one qualified and experienced environmental scientist / engineer who will be responsible for the environmental management and supervisory affairs during the different stages of the project. This person can be hired by the management or can be on contract basis. The responsibilities of the EMC are as follows:

- To ensure implementation of all the proposed mitigation measures during different stages of the proposed project;
- To organize routine monitoring of water, air quality, noise etc.
- To develop operational guidelines and implementation schedule.
- Receiving complaints from people in the vicinity of the project and concerned

institutions and assisting the local environmental authority including establishing liaison with EPA.

- To ensure that project is being implemented in an environmental friendly manner, causing least harm to the existing environment including flora and fauna, geology and soil, surface and ground water, air quality, existing utilities etc. as already discussed in Section 6.
- To look after the efficiency of Horticulture Committee (HC).

A team will be formed named as “Horticulture Committee” (HC) to attend the issues relating to cleanliness, up keeping, aesthetic beauty of the project site, general environment enhancement, tree plantation, vegetation’s promotion, planting of flowers and ornamental trees on site.

Project proponent will be responsible for the execution of the project with coordination of the client. The proponent will be bound to follow the provisions of the contract documents especially about the environmental protection measures and apply good management techniques and methodology without damaging the existing environment. Obligation(s) of the proponent, to safeguard and mitigate adverse impacts and rehabilitate the environment will be addressed through environmental provisions in the contract document(s) as already highlighted in Chapter 6 and through adequate implementation at site.

### 7.3 TRAINING SCHEDULES

The management staff and labor of proposed project will be trained about the requirements of Environmental Management System, including but not limited to the environmental health and safety, efficient use of resources, emergency response, fire protection and safety / security issues etc.

In order to raise the level of professional and managerial staff, they need to upgrade their knowledge in the related areas. The project management will play a key role in this context.

Environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult to implement effective environmental protection measures. Domestic training program is proposed to train the staff. Training Plan has been formulated as part of EMP which is presented as Table 7.1 below:



**Table 7.1: Staff Training Plan**

|                             |                                                                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective</b>            | Regular training & learning opportunities are an investment that helps employees to prosper their skills for their own and the organization's benefit. |
| <b>Responsible</b>          | <b>Federal Medical College, Islamabad</b>                                                                                                              |
| <b>Incharge</b>             | Project Management                                                                                                                                     |
| <b>Trainer/ Facilitator</b> | Internal and External Trainers                                                                                                                         |
| <b>[Sign here]</b>          |                                                                                                                                                        |

**Training Schedule\*:**

Following training schedule will be adhered to train the workforce of **Federal Medical College Islamabad** internally and by external trainers. Tool box talk will be the regular feature of this training plan on weekly basis.

| <b>Training Topics</b>                        | <b>Month 1-4</b> |  |  |  | <b>Month 4-8</b> |  |  |  | <b>Month 9-12</b> |  |  |  |
|-----------------------------------------------|------------------|--|--|--|------------------|--|--|--|-------------------|--|--|--|
| Environmental Compliance of applicable laws   |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Safe Use of Machinery                         |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Code of Conduct                               |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Health & Safety                               |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Emergency Drill                               |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| First Aid                                     |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Handling of hazardous material and use of PPE |                  |  |  |  |                  |  |  |  |                   |  |  |  |
| Environmental Safeguards                      |                  |  |  |  |                  |  |  |  |                   |  |  |  |

\*Please note – orientation/trainings will continue to be conducted twice a year, per the mentioned schedule.

Training will continue to be provided at 8:00 a.m. The entire training sessions will last approximately 3.5 hours, but may take as long as 4 hours, depending on the number of people in attendance.

New staff should be made aware of this training/orientation session, at the time of hire.

## **7.4 IMPACTS & MITIGATION MEASURES**

The EMP provides comprehensive mitigation and management measures for the following phases of the project:

### **7.4.1 Summary of Impact & Mitigation Measures**

This section of EMP provides summary of management principles for the construction & operational phase of the project. The impacts on environment which are likely to be generated during execution of these phases are described in table 7.2.

### **7.4.2 Mitigation Plan for Construction & Operational Phase**

This section of EMP provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required within the construction phase are specified. These specifications will form part of the contract documentation and therefore, the contractor will be required to comply with the specifications to the satisfaction of the project Manager and Environmental Control Officer, in terms of the construction contract.

This section of EMP provides management principles for the operation and maintenance phase of the project. Environmental actions, procedure and responsibilities are required from proponent within the operation and maintenance phase are satisfied.

## **7.5 Environmental Monitoring Program**

It will be in the fitness of the things to operate this project under the Environmental Management Plan. Regular monitoring of all the significant environmental issues is essential to check the compliance status of EMP. The main objective of the monitoring will be;

- To verify the results of the environmental study with respects to the proposed project.
- To estimate the trends of concentrated values of the issues, which have been identified as critical and then planning the mitigating measures.
- To assess the efficiency of pollution control mechanism.
- To ensure that any additional parameters, other than those identified in the EIA report, do not turn critical after the commissioning of proposed project.

Environmental monitoring program for proposed project is described in table 7.3.

## **7.6 ENVIRONMENTAL BUDGET**

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively. However, a lump sum amount of PKR 0.5

million will be allocated by the project proponent as cost for environmental training, monitoring and tree plantation for a period of one year during construction and operation of the project. After that, monitoring program will be revised in consultation with EPA and cost will be revised accordingly.

**Table 7.2: ENVIRONMENTAL BUDGET**

| <b>Entity: FEDERAL MEDICAL COLLEGE ISLAMABAD BY M/S SMC PVT. LTD.</b> |              |
|-----------------------------------------------------------------------|--------------|
| Year: 2023-25                                                         |              |
| <b>Total: 500,000 PKR</b>                                             |              |
| <b>Activities</b>                                                     | <b>Total</b> |
| Tree Plantation                                                       | 200,000.0    |
| Landscaping                                                           | 125,000.0    |
| Environmental Training                                                | 90,000.0     |
| Environmental Monitoring                                              | 100,000.0    |
| Fire Fighting                                                         | 85,000.0     |

**Table 7.3: Summary of Mitigation & Impact Assessment**

| Activity                  | Environmental Impacts                                                                                                                                                                                                                                                                                                                      | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Manifestation                                                                                                               | Methods of Implementation                                                                                                                                                                                                                                                                                                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction Phase</b> |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                          |
| <b>1. Air Quality</b>     | <ul style="list-style-type: none"> <li>– Dust resulting from construction work</li> <li>– Use of heavy machinery can generate exhaust and dust emissions</li> <li>– Dispersion of particles from stockpiles during high velocity wind</li> <li>– Smoke from burning of waste materials or burning of firewood in the labor camp</li> </ul> | <p>Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials.</p> <p>Covering or use of wind sheets around the stockpiles to avoid air pollution through dispersion</p> <p>Periodic maintenance and management of all the construction machinery and vehicles</p> <p>Cutting and burning trees / shrubs for fuel will be prohibited. Instead gas cylinders should be used in the labor camp for cooking purposes. Similarly waste burning will not be allowed.</p> | <ul style="list-style-type: none"> <li>– During Construction Phase by Contractor with coordination of Proponent.</li> </ul> | <ul style="list-style-type: none"> <li>– Hiring of reputable contractor with sound knowledge of environment and HSE;</li> <li>– Regular inspection of storage material by competent person</li> <li>– Substantial training of Workers before commencement of work;</li> <li>– Monitor the performance of contractor/ workers.</li> </ul> |
| <b>2. Water Quality</b>   | <ul style="list-style-type: none"> <li>– Run-off water from construction area</li> <li>– Inappropriate disposal of waste.</li> <li>– Open sewerage water disposal on land can</li> </ul>                                                                                                                                                   | <ul style="list-style-type: none"> <li>– Use of spill prevention trays and impermeable sheets to avoid.</li> <li>– contamination of the water</li> <li>– Furthermore, septic tanks will be constructed which will be cemented to prevent the domestic water contamination</li> </ul>                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>– Construction Phase by Contractor with coordination of Proponent.</li> </ul>        | <ul style="list-style-type: none"> <li>– Hiring of reputable contractor with sound knowledge of environment and HSE;</li> <li>– Regular inspection of site by competent person</li> <li>– Substantial training of Workers before commencement of work;</li> <li>– Monitor the performance of</li> </ul>                                  |

|                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                             |                                  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------|
|                       | <p>contaminate water quality and cause generation of mosquitoes and various other insects in the area.</p> <ul style="list-style-type: none"> <li>– Leakage of oil and chemical materials from construction activity</li> </ul> | <ul style="list-style-type: none"> <li>– Maximize the use of treated waste water on site (e.g. sprinkling purpose to control dust)</li> <li>– Proper disposal of waste material on dumping sites to avoid leachate generation</li> <li>– Prohibit illegal dumping of waste</li> <li>– The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s.</li> </ul>                                                                                                                                          |                                             | contractor/ workers.             |
| <b>3. Solid Waste</b> | <ul style="list-style-type: none"> <li>– Construction waste from construction activities</li> <li>– Domestic waste from workers</li> <li>– Hazardous waste such as dry batteries and chemicals etc.</li> </ul>                  | <ul style="list-style-type: none"> <li>– Ensure prevention of inappropriate disposal of waste material</li> <li>– Conduct separate collection of construction and domestic waste to promote recycling and re-use</li> <li>– Ensure maximized use of construction debris on-site to fill excavations etc.</li> <li>– Dispose non-recyclable and hazardous waste material properly according to waste management rule.</li> <li>– Proper disposal of waste on agreed site as per agreed method. The area to be leveled and contoured after disposing excess material. No</li> </ul> | – During construction and operational phase | Project proponent and Contractor |

|                               |                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |                                                                                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               |                                                                                                                                                                                              | <p>waste or debris will be thrown in the river or other water bodies</p> <ul style="list-style-type: none"> <li>– Contractor will prepare waste management plan related to construction activities; get its approval from RE and ensure its full implementation</li> </ul>                                                                                                                                                                                                                                                                                   |                                                                                                                        |                                                                                                                                                                                |
| <b>4. Noise</b>               | <ul style="list-style-type: none"> <li>- Noise caused by construction machinery and vehicles used for mobilization of construction equipment and workers</li> </ul>                          | <ul style="list-style-type: none"> <li>– The contractor will strictly follow the NEQS for ambient noise</li> <li>– Control noise through control of working hours and selection of less noisy equipment.</li> <li>– Prohibit use of pressure horns</li> <li>– Proper maintenance of vehicles and construction equipment.</li> <li>– Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery</li> </ul> <p>The personal protective equipment (PPE) will be provided to the construction workers and its usage will be made mandatory</p> | <ul style="list-style-type: none"> <li>– In Construction Phase by Contractor with coordination of Proponent</li> </ul> | <ul style="list-style-type: none"> <li>- Regular inspection of machinery by contractor.</li> <li>- Proponent ensure contractor working without harming environment.</li> </ul> |
| <b>5. Material Management</b> | <ul style="list-style-type: none"> <li>- Improper store leads to environmental pollution.</li> <li>- Harm to soil in case of chemical/oil leakage</li> <li>- Worker health injury</li> </ul> | <ul style="list-style-type: none"> <li>– Stockpiles shall not be situated such that they obstruct natural pathways</li> <li>– Stockpiles shall not exceed 2m in height unless permitted by Concerned Engineer on site</li> </ul>                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>– In Construction Phase by Contractor</li> </ul>                                | <ul style="list-style-type: none"> <li>- Regular inspection of machinery by contractor.</li> <li>- Proponent ensure contractor working without harming environment.</li> </ul> |

|                                |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                         |                                                                                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>– If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by the construction of low brick walls around their bases</li> <li>– All substances required for vehicle/ machinery maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site</li> <li>– Hazardous substances / materials are to be transported in sealed containers or bags</li> <li>– Spraying of herbicides / pesticides shall not take place under windy conditions</li> </ul> |                                                                                                                         |                                                                                                                                                                                |
| <b>6. Biological Resources</b> | <ul style="list-style-type: none"> <li>– Removal of vegetation covers by cutting of trees, crops, herbs and shrubs</li> <li>– Fauna including birds and animals will be affected during excavation,</li> </ul> | <ul style="list-style-type: none"> <li>– Proposed project site does not involve cutting of any trees</li> <li>– Plantation of maximum number of trees.</li> <li>– Staff and workers should be instructed not to damage nearby vegetation of the surrounding area.</li> <li>– Open fires should be prohibited in</li> </ul>                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>– Contractor and proponent responsibility to ensure safe environment.</li> </ul> | <ul style="list-style-type: none"> <li>- Regular inspection of machinery by contractor.</li> <li>- Proponent ensure contractor working without harming environment.</li> </ul> |

|  |                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |
|--|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  | <ul style="list-style-type: none"> <li>– movement of labor and carriage of goods and machinery</li> </ul> | <p>the area to avoid the hazard of fire and impact on nearby flora and fauna.</p> <ul style="list-style-type: none"> <li>– Contractor staff should be given clear instructions that they should not hunt any birds/ animal in the project area/ site</li> <li>– Barriers/ fencing/ or boundary wall should be installed at project site to protect movement of animals at the project site during constructions.</li> <li>– Proper disposal of organic waste (if any) generated during the construction stage to avoid rodents and other insects' generation.</li> </ul> |  |  |
|--|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|



|                                       |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                            |                                                                                                                              |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 7. <b>Seismicity</b>                  |                                                                                                                                                                      | <ul style="list-style-type: none"> <li>– The design specification will be followed to withstand seismic loads in accordance with the Uniform Building Code (UBC) - 1997 and Building Code of Pakistan (BCP), Seismic Provisions - 2007, as required by local codes and standards<sup>5</sup> for high degree of structural competence, reliability and ease of construction.(See section 6.6.2)</li> </ul>                                                                            | <ul style="list-style-type: none"> <li>– Contractor with coordination of proponent and Engineer</li> </ul> | <ul style="list-style-type: none"> <li>- Building design should be according to Building code of Pakistan 2007.</li> </ul>   |
| 8. <b>Workers Health &amp; Safety</b> | <ul style="list-style-type: none"> <li>- Poor housekeeping</li> <li>- Improper use of equipment</li> <li>- Unskilled staff</li> <li>- Lack of supervision</li> </ul> | <ul style="list-style-type: none"> <li>– Provision of Personal Protective Equipment to the workers</li> <li>– Provision of first aid box at work site to cope with emergency situation</li> <li>– Safety training to the workers</li> <li>– Safe driving training to the drivers</li> <li>– Adequate safety signs on site</li> <li>– Provide training regarding proper handling and use of chemicals/ paints</li> <li>– Install fire extinguishers at fire handling places</li> </ul> | <ul style="list-style-type: none"> <li>- Certified contractor and Proponent</li> </ul>                     | <ul style="list-style-type: none"> <li>- Proper training of workers.</li> <li>- Ensure worker have specific PPEs.</li> </ul> |

<sup>5</sup> Structural design at present in Pakistan is designed as per UBC-97 and ACI 318-02M because of the local techniques, procedures, technologies and material available for concrete and other construction material. The building Codes BCP, SP-2007, Design of Concrete Structures by Arthur H. Nilson, Design of Reinforced Concrete by M. C. Cormac, Foundation Analysis and Design by J.E. Bowles will also be followed in due course of time upon availability of advanced materials and techniques in Pakistan.

|                                  |                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                            |                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                                                                                                         | <ul style="list-style-type: none"> <li>– Any loss of public/ private property will be compensated by the contractor</li> <li>– Regular checks should be carried out to ensure a contractor's is following safe working procedures and practices.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                            |                                                                                                                                                                                                                                                                                                                                          |
| <b>9. Socio-economic Impacts</b> | <ul style="list-style-type: none"> <li>- Disturbance to local community by construction work</li> </ul> | <ul style="list-style-type: none"> <li>– Contractor's activities and movement of staff to be restricted to designated construction areas</li> <li>– The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time</li> <li>– Disruption of access for local residents, commercial establishments, institutions, etc. must be minimized</li> <li>– Provide walkways and metal sheets where required to maintain access for public or vehicle</li> <li>– The site must be kept clean to minimize the visual impact of site</li> <li>– Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbors</li> </ul> | <ul style="list-style-type: none"> <li>- Contractor with coordination of proponent and Engineer</li> </ul> | <ul style="list-style-type: none"> <li>- Hiring of reputable contractor with sound knowledge of environment and HSE;</li> <li>- Regular inspection of storage material by competent person</li> <li>- Substantial training of Workers before commencement of work;</li> <li>- Monitor the performance of contractor/ workers.</li> </ul> |

|                                                                                              |                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                            |                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>10. Clearance of site from extra / surplus material and construction equipment</b></p> | <ul style="list-style-type: none"> <li>- Tree cutting,</li> <li>- damage to land</li> <li>- soil removal</li> </ul> | <ul style="list-style-type: none"> <li>- Noisy activities must be restricted to the times given in the Project.</li> <li>- Timely removal of waste from the site to avoid congestion at work place.</li> <li>- Construction waste should be collected and disposed separately from other waste.</li> <li>- Contaminated soil (if generated) due to accidental spills will be removed and transported to suitable site for disposal.</li> <li>- Safe transportation of construction equipment from the site.</li> <li>- The contractor must ensure that all structure, equipment, materials and facilities used or created on site for/ or during construction activities are removed.</li> <li>- Empty/available space will be covered with grassy lawns in addition of parks establishment as component of this project.</li> <li>- Use of native vegetation as a part of landscape. Ornamental plant species like roses, jasmine, and seasonal flowers can be used in proposed landscaping, which is a</li> </ul> | <ul style="list-style-type: none"> <li>- Contractor with coordination of proponent and Engineer</li> </ul> | <ul style="list-style-type: none"> <li>- Hiring of reputable contractor with sound knowledge of environment and HSE;</li> <li>- Regular inspection of storage material by competent person</li> <li>- Substantial training of Workers before commencement of work;</li> <li>- Monitor the performance of contractor/ workers.</li> </ul> |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                      |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                               |
|------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------|
|                                                      |                                           | common practice in this part.                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |                               |
| <b>Operational Phase</b>                             |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                               |
| <b>1. Air Quality</b>                                | - No                                      | <ul style="list-style-type: none"> <li>- During regular occupancy of the buildings, no activity is envisaged to take place which may generate dust of any significance. Under the policy of the management all care will be taken to keep the in residential activities environmentally sound and sustainable.</li> </ul>                                                                                                                                             | - | - Ensure by proponent and EPA |
| <b>2. Water Quality</b><br>- Wastewater/<br>Sewerage | - No                                      | <ul style="list-style-type: none"> <li>- Sewerage after due treatment will be discharged to drain passing nearby site.</li> <li>- Adequate disposal system shall be made available and maintain the sewer lines both on site and off site.</li> <li>- Sewage lines, both on site and off site, shall be laid at reasonable distances away from drinking water supply lines so as to avoid contamination of the water supply by the leakages from the sewer</li> </ul> | - | - Ensure by proponent and EPA |
| <b>3. Waste</b><br>- Solid Waste/ Garbage            | - Open dumping leads to epidemic diseases | <ul style="list-style-type: none"> <li>- Implementation of waste management program consisting of reduce, reuse and re-cycling of materials</li> <li>- Systematic collection and protected storage of waste</li> <li>- All wastes to be generated during</li> </ul>                                                                                                                                                                                                   | - | - Ensure by proponent and EPA |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  |  | <p>regular operations (occupancy) of the college shall be collected daily through locally placed wastes collecting bins.</p> <ul style="list-style-type: none"> <li>– Of these, wastes like paper, plastics, wood, fused bulbs, fluorescence electric tubes, rags, plastic and metal cans, glass articles and like shall be sold in the market for reuse. Kitchen wastes including vegetables and fruits peels shall be disposed off into the wastes collection bins. Redundant electric gadgets, air coolers, electric fans, redundant furniture, house hold articles, office use equipment etc shall be sold in the markets (KABARIS).</li> <li>– The waste which is useless will be disposed of at appropriate and designated site</li> <li>– Prohibition of dumping of any contaminating material</li> </ul> |  |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|                                                                                                                                                                                                                             |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                     |                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------|
| <p><b>4. Noise &amp; Vibration</b></p> <ul style="list-style-type: none"> <li>– Noise and vibration from water pumps etc.</li> <li>– Noise from vehicles used for mobilization of equipment/ raw material/ waste</li> </ul> | <ul style="list-style-type: none"> <li>– No</li> </ul>                                                             | <ul style="list-style-type: none"> <li>– In order to avoid noise in the project area, vehicles shall be operated as avoid use of horns</li> <li>– No activity producing extra ordinary levels of noise will be allowed in the society as a policy matter.</li> <li>– Adequate basis of equipment to reduce the vibration</li> <li>– Adequate enclosure of equipment to reduce noise.</li> </ul> | <ul style="list-style-type: none"> <li>–</li> </ul> | <ul style="list-style-type: none"> <li>– Ensure by proponent and EPA</li> </ul> |
| <p><b>5. Emergency Response</b></p>                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>– In case of fire pollute environment.</li> <li>– Property loss.</li> </ul> | <ul style="list-style-type: none"> <li>– The design of building should include emergency exits and open space for gathering which can be used during emergency situation.</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>–</li> </ul> | <ul style="list-style-type: none"> <li>– Ensure by proponent and EPA</li> </ul> |

**Table 7.4: Environmental Management Plan for Federal Medical College, Islamabad**

| Sr #               | Project Component & Impact                                                                                                                                                                                                                                                                                                                                                                                                                                          | Targets to Achieve                                                                                                               | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Responsibility                                         |                |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------|
|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Implementation                                         | Monitoring     |
| Construction Phase |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                        |                |
| 1.                 | <b>Air Quality</b> <ul style="list-style-type: none"><li>– Dust resulting from construction</li><li>– Use of heavy machinery can generate exhaust and dust emissions</li><li>– Dispersion of particles from stockpiles during high velocity wind</li><li>– Smoke from burning of waste materials or burning of firewood in the labor camp</li></ul>                                                                                                                 | <ul style="list-style-type: none"><li>– Compliance with prescribed PEQS to control air pollution</li></ul>                       | <ul style="list-style-type: none"><li>– Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials.</li><li>– Covering or use of wind sheets around the stockpiles to avoid air pollution through dispersion</li><li>– Periodic maintenance and management of all the machinery and vehicles</li><li>– Cutting and burning trees / shrubs for fuel will be prohibited. Instead gas cylinders should be used in the labor camp for cooking purposes. Similarly waste burning will not be allowed.</li></ul>                                                                                                                                                                 | Construction Contractor with coordination of Proponent | Proponent/ EPA |
| 2.                 | <b>Water Quality</b> <ul style="list-style-type: none"><li>– Run-off water from construction area</li><li>– Drainage of wastewater on ground can contaminate the soil and groundwater.</li><li>– Inappropriate disposal of waste.</li><li>– Open sewerage water disposal on land can contaminate ground water and cause generation of mosquitoes and various other insects in the area.</li><li>– Leakage of oil and chemical materials from construction</li></ul> | <ul style="list-style-type: none"><li>– Control of groundwater or surface water pollution from construction activities</li></ul> | <ul style="list-style-type: none"><li>– Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater</li><li>– Maximize the use of treated waste water on site (e.g. sprinkling purpose to control dust)</li><li>– Proper disposal of waste material on dumping sites to avoid leachate generation and contamination of groundwater</li><li>– Prohibit illegal dumping of waste</li><li>– The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s.</li><li>– Regular water quality monitoring according to determined sampling schedule;</li><li>– The contractor shall ensure that construction debris do not find their way into the drainage system which can block</li></ul> | Construction Contractor with coordination of Proponent | Proponent/ EPA |

| Sr # | Project Component & Impact                                                                                           | Targets to Achieve                                                                                                                                                                                                     | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Responsibility                                         |                |
|------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------|
|      |                                                                                                                      |                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Implementation                                         | Monitoring     |
|      | activity                                                                                                             |                                                                                                                                                                                                                        | them;<br>– Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/ retention pond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                |
| 3.   | <b>Waste</b><br>– Waste from construction activities<br>– Domestic waste from workers                                | – Proper & safe handling and disposal of construction related waste<br>– Compliance with applicable waste management rules for hazardous and non-hazardous waste disposal<br>– Implementation of waste management plan | – Ensure prevention of inappropriate disposal of waste material<br>– Conduct separate collection of construction and domestic waste to promote recycling and re-use<br>– Ensure maximized use of construction debris on-site to fill excavations etc.<br>– Dispose non-recyclable and hazardous waste material properly according to waste management rules<br>– Proper disposal of waste on agreed site as per agreed method. The area to be leveled and contoured after disposing excess material. No waste or debris will be thrown in the river or other water bodies<br>– Contractor will prepare waste management plan related to construction activities; get its approval from proponent and ensure its full implementation | Construction Contractor with coordination of Proponent | Proponent/ EPA |
| 4.   | <b>Noise</b><br>– Noise caused by construction machinery and vehicles used for mobilization of equipment and workers | – Compliance with prescribed PEQS to control Noise pollution                                                                                                                                                           | – The contractor will strictly follow the PEQS for ambient noise<br>– Control noise through control of working hours and selection of less noisy equipment.<br>– Prohibit use of pressure horns<br>– Provision of acoustic enclosures (hoods and shrouds) on generator<br>– Proper maintenance of vehicles and construction equipment.<br>– Minimize unnecessary use of pneumatic drills and other                                                                                                                                                                                                                                                                                                                                  | Construction Contractor with coordination of Proponent | Proponent/ EPA |



| Sr # | Project Component & Impact                                                                                                                                                                                                                  | Targets to Achieve                                                                                                                                                          | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                              | Responsibility                                         |                |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------|
|      |                                                                                                                                                                                                                                             |                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                            | Implementation                                         | Monitoring     |
|      |                                                                                                                                                                                                                                             |                                                                                                                                                                             | noisy machinery<br>– The personal protective equipment (PPE) will be provided to the workers and its usage will be made mandatory                                                                                                                                                                                                                                                                                                          |                                                        |                |
| 5.   | <b>Biological Resources</b><br>– Removal of vegetation covers by cutting of trees, crops, herbs and shrubs<br>– Fauna including birds and animals will be affected during excavation, movement of labor and carriage of goods and machinery | – Obligation to respect wildlife, Forest and Fisheries Laws.<br>– Conserve biodiversity and its terrestrial as well as aquatic habitat                                      | – Proposed project site does not involve cutting of any trees<br>– Plantation of maximum number of trees.<br>– Staff and workers should be instructed not to damage nearby vegetation of the surrounding area.<br>– Open fires should be prohibited in the area to avoid the hazard of fire and impact on nearby flora and fauna.<br>– Proper disposal of organic waste (if any) generated to avoid rodents and other insects' generation. | Construction Contractor with coordination of proponent | Proponent/ EPA |
| 7.   | Staff Conduct                                                                                                                                                                                                                               | – Timely completion of project activities                                                                                                                                   | – The Contractor must monitor the performance of workers to ensure that point relayed during their induction have been properly understood and being followed                                                                                                                                                                                                                                                                              | Construction Contractor                                | Proponent/ EPA |
| 8.   | Leakages/ spills/ Paints/ Used oil                                                                                                                                                                                                          | – Compliance with standards set forth by “Guidelines for Oil Spill Waste Minimization and Management” issued by International Petroleum Industry Environmental Conservation | – Contractor will apply strict rules on his workers and labor to ensure that no spill or leakages are caused<br>– Chemical waste will be disposed of in approved disposal site.<br>– PPE will be enforced to use during the handling and application of chemicals<br>– The contractor will employ the general criteria for oil and leakage at construction sites, as per standards                                                         | Construction Contractor                                | Proponent/ EPA |

| Sr # | Project Component & Impact                      | Targets to Achieve                                                                                                                                                                              | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Responsibility                                         |                |
|------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------|
|      |                                                 |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Implementation                                         | Monitoring     |
| 9.   | Workers Health & Safety                         | Associate<br>– Prevention of any possibility of work site accident /impact on worker's health                                                                                                   | – Provision of Personal Protective Equipment to the workers<br>– Provision of first aid box at work site to cope with emergency situation<br>– Safety training to the workers<br>– Safe driving training to the drivers<br>– Adequate safety signs on site<br>– Install fire extinguishers at fire handling places<br>– Any loss of public/ private property will be compensated by the contractor<br>– Regular checks should be carried out to ensure a contractor is following safe working procedures and practices.                                                                                                                             | Construction Contractor                                | Proponent/ EPA |
| 10.  | Socio-economic Impacts                          | – Prevention of conflicts among locals and make the project socially acceptable<br>– Empowerment of locals to possible extent<br>– Increase in employment and business opportunities for locals | – Contractor's activities and movement of staff to be restricted to designated and within industry<br>– The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time<br>– The site must be kept clean to minimize the visual impact of site<br>– Noisy activities must be restricted to the times given in the Project Specification or General Conditions of contract<br>– The Contractor are responsible for ongoing communication with those people that are interested in / affected by the projects<br>– Employ local residents as much as possible | Construction Contractor with coordination of proponent | Proponent/ EPA |
| 11.  | Clearance of site from extra / surplus material | – Restoration of site to a similar                                                                                                                                                              | – Timely removal of waste from the site to avoid congestion at work place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Construction Contractor                                | Proponent/ EPA |

| Sr #                     | Project Component & Impact                     | Targets to Achieve                                                                                                                            | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                                                          | Responsibility  |                           |
|--------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------|
|                          |                                                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Implementation  | Monitoring                |
|                          |                                                | condition prior to the commencement of the work or to a condition agreed with the project management and landscaping of the site              | <ul style="list-style-type: none"> <li>– Care will be taken during handling and disposal of waste. .</li> <li>– Avoid mixing of hazardous waste with non-hazardous waste.</li> <li>– Safe transportation of construction equipment from the site.</li> <li>– Empty/available space will be covered with grassy lawns &amp; ornamental plant species like roses, jasmine, and seasonal flowers</li> </ul>                                                               |                 |                           |
| <b>Operational Phase</b> |                                                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                           |
| 1.                       | <b>Air Quality Deterioration</b>               | <ul style="list-style-type: none"> <li>– Compliance with Ambient air quality (PEQS) standards for control of ambient air pollution</li> </ul> | <ul style="list-style-type: none"> <li>– During regular occupancy of the buildings, no activity is envisaged to take place which may generate dust of any significance. Under the policy of the management all care will be taken to keep the in residential activities environmentally sound and sustainable.</li> </ul>                                                                                                                                              | Project Manager | Project Proponent/<br>EPA |
| 2.                       | <b>Water Quality</b><br>– Wastewater/ Sewerage | <ul style="list-style-type: none"> <li>– Compliance with Wastewater standards</li> </ul>                                                      | <ul style="list-style-type: none"> <li>– Sewerage after due treatment will be discharged to drain passing nearby site.</li> <li>– Adequate disposal system shall be made available and maintain the sewer lines both on site and off site.</li> <li>– Sewage lines, both on site and off site, shall be laid at reasonable distances away from drinking water supply lines so as to avoid contamination of the water supply by the leakages from the sewer.</li> </ul> | Project Manager | Project Proponent/<br>EPA |

| Sr # | Project Component & Impact                                                                                                             | Targets to Achieve                                                                                                                               | Mitigation/ Preventive Action                                                                                                                                                                                                                                                                                                                                                                                                                                      | Responsibility                                          |                            |
|------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------|
|      |                                                                                                                                        |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Implementation                                          | Monitoring                 |
| 3.   | <b>Waste</b><br>– Municipal Solid Waste                                                                                                | <ul style="list-style-type: none"> <li>– Compliance with waste management rules</li> <li>– Prevention of inappropriate waste disposal</li> </ul> | <ul style="list-style-type: none"> <li>– Implementation of waste management program consisting of reduce, reuse and re-cycling of materials</li> <li>– Systematic collection and protected storage of waste</li> <li>– Wastes like paper, plastics, wood, fused bulbs, fluorescence electric tubes, rags, plastic and metal cans, glass articles shall be sold in the market for reuse.</li> <li>– Prohibition of dumping of any contaminating material</li> </ul> | Project Manager                                         | Project Proponent/ Pak EPA |
| 4.   | <b>Noise &amp; Vibration</b><br>– Noise and vibration from generators & water pump                                                     | <ul style="list-style-type: none"> <li>– Compliance with prescribed PEQS to control Noise pollution</li> </ul>                                   | <ul style="list-style-type: none"> <li>– No activity producing extra ordinary levels of noise will be allowed</li> <li>– Adequate basis &amp; enclosure of generator &amp; water pumps to reduce the vibration &amp; noise</li> <li>– Standby generator shall be curtailed within the limiting values of the Pakistan Environmental Quality Standards.</li> </ul>                                                                                                  | Project Manager                                         | Project Proponent/ Pak EPA |
| 5.   | <b>Environment quality enhancement measures:</b><br>– Flowers and plants and trees<br>– Aesthetic beauty of the buildings and the area | <ul style="list-style-type: none"> <li>– Enhanced land value and scenic beauty of the area</li> </ul>                                            | <ul style="list-style-type: none"> <li>– Plantations in and around the proposed facility must be carried out.</li> <li>– Fountains or other such aesthetic measures must also be taken into consideration in order to increase the beauty of area.</li> <li>– All other necessary measures shall also be taken to maintain standards of cleanliness so that the buildings may add to the scenic/aesthetic beauty of the area around.</li> </ul>                    | Project Manager in close liaison with project proponent | Project Proponent/ Pak EPA |

**Table 7.5: Environmental Monitoring Plan for Federal Medical College Islamabad**

| Parameter/Receptor                              | Location                                                                                                                                     | Monitoring Parameter                                                                                                                         | Monitoring and Reporting Frequency                                                                                                                                                                                                                                               |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical Environment</b>                     |                                                                                                                                              |                                                                                                                                              |                                                                                                                                                                                                                                                                                  |
| Water Quality                                   | <ul style="list-style-type: none"> <li>Ground Water</li> <li>Surface Water</li> </ul>                                                        | Discrete grab sampling and laboratory testing of water samples.                                                                              | <ul style="list-style-type: none"> <li>Sampling and laboratory testing should be done quarterly during construction stage and on annual basis during the operational stage.</li> <li>Discharges from the facility should be tested for temperature, pH and turbidity.</li> </ul> |
| Air Quality<br>(Dust emissions, vent emissions) | <ul style="list-style-type: none"> <li>Tracks along road</li> <li>Indoor air quality</li> <li>Inside workplace/ Fuel Storage Area</li> </ul> | Ambient Particulate Matter, flue gas emissions, fumes Monitoring. Physical Inspection for petrol leakages or drippings.                      | Ambient Air Monitoring should be conducted quarterly during construction stage and on annual basis during the operational stage.                                                                                                                                                 |
| Noise Levels                                    | Selected locations along the access                                                                                                          | Noise in dB(A)                                                                                                                               | Quarterly during the construction & annually during operational phase.                                                                                                                                                                                                           |
| Pest Control                                    | Petrol Filling facility                                                                                                                      | Spray of pesticides and fumigation to avoid spread of vectors.                                                                               | Once in a year when needed during constructional phase of the project.                                                                                                                                                                                                           |
| <b>Ecological Environment</b>                   |                                                                                                                                              |                                                                                                                                              |                                                                                                                                                                                                                                                                                  |
| Cutting of trees<br>Tree plantation             | In all Project Area during the execution of proposed project.                                                                                | Landscaping.                                                                                                                                 | Monthly during construction phase monitoring and annually during the operational phase.                                                                                                                                                                                          |
| <b>Socio-cultural Environment</b>               |                                                                                                                                              |                                                                                                                                              |                                                                                                                                                                                                                                                                                  |
| Inconvenience to community/<br>Public Health    | All around the Project Area                                                                                                                  | Consultations with community to get feedback about inconvenience due to the constructional activities to perform their daily routine chores. | Quarterly monitoring and reporting during the constructional period.                                                                                                                                                                                                             |

# CHAPTER-8

## RECOMMENDATIONS & CONCLUSIONS

### 8.1 RECOMMENDATIONS

The Environmental Impact Assessment (EIA) Report and survey results are finally evaluated to recommend the following:

- ◆ The present Environmental Impact Assessment (EIA) Report of Establishment of **Federal Medical College, Islamabad** meets the administrative and legal framework of the Pak EPA.
- ◆ Care shall be given on the health and safety of workers during construction & operational phases of the project.
- ◆ The Proponent should assign trained staff for execution of proposed project activities.
- ◆ The Proponent should plant vigorously indigenous plants and trees in and around the project site.
- ◆ Consider Fire safety precautions to prevent or reduce the likelihood of a fire to break out.
- ◆ There should be adherence to safe working procedures to ensure health safety of workers.
- ◆ Mosquito repellent sprays/ fumigation should be carried out to keep facility disinfected and pest free and spread of disease vectors in control.

### 8.2 CONCLUSION

The EIA Report of **Federal Medical College Islamabad** located at Ibn-E-Sina Road, G-8/3, Islamabad, Pakistan is made to fulfill the legal requirement of Pakistan Environmental Protection Act, 1997. In order to address the potentially adverse impacts of the project, an EMP has been developed, which will further improve the environmental performance of the project. The EMP assigns roles and responsibilities, provide environmental guidelines and discuss the scope of Environmental Management Plan.

The EIA Report has thoroughly assessed all the potential environmental impacts associated with the project. The environmental impacts identified by the study are manageable. Project specific and practically suitable mitigation measures are recommended to mitigate the impacts. This EIA concludes that proposed project will not pose any major adverse environmental impacts on environment if the anticipated impacts are properly mitigated and the Environmental management Plan is properly implemented. It is environment friendly project as it fosters the economic, social and aesthetic values of country without any environment degradation. The project solves various environmental and social problems already raised by the poor health care system in the Pakistan.

Therefore, the project under consideration does not require any further environmental study; hence the EIA Report has been completed for the said project so the project is recommended for the Environmental Approval and issuance of NOC from the EPA, Islamabad.



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**ANNEXURE-I**  
**Land Notification Documents**

## **ANNEXURE-II**

### **Layout Plan**

**ANNEXURE-III**  
**Site Location Map**

**ANNEXURE-IV**  
**Monitoring Reports**

## **ANNEXURE-V**

### **Filled Performas of Stakeholder Consultations**



**ANNEXURE-VI**  
**Occupational Safety and Health Management Plan**

### **Occupational Health and Safety Management Plan**

It is required that all personnel working on the project attend the Health and Safety site induction briefing prior to commencing any work on the site.

The General Site Rules shall act as the main agenda and content of the induction briefing. Additionally, any information specific to the project shall be included in the induction. The induction briefing should be, as far as possible, two way communication with attendees invited to contribute, comment and ask questions regarding health and safety. Other rules are as follows:

- All attendees of the induction briefing will be recorded.
- High visibility jacket/vests, safety helmets and safety footwear (incorporating steel toe- caps and mid-sole) must be worn at all times.
- Safety goggles for protection during all cutting, grinding and drilling operations or where there is risk from impact, dust, chemicals or hot metal.
- Dust masks for protection from dust.
- Ear protection during all operations which produce noise above the level at which you need to raise your voice to be heard. Gloves during concreting work.
- On this site, formal permits must be in place before any of the following operations may be carried out: Permit to Excavate, Hot Work Permit & Confined Spaces Permit. (Where Applicable), thoroughly understand it and get permission from area supervisor (If required).
- Follow the messages and instructions displayed on HSE boards installed on site.
- Be aware of emergency muster (assembly) points and escape routes. In the event of an emergency do not panic, follow the site emergency response procedures.
- Report promptly all accidents to your supervisor and HSE officer at site. Immediately provide first aid for the injured and call for the medic.
- While working alone or in a confined space make sure that your nearby colleague and supervisor are well informed or use a banksman where appropriate.
- Ensure adequate lighting is in place for work on night shifts or for emergency response.

- All Scraps, waste materials and garbage must be disposed of in accordance with the construction waste management Strategy.
- Always clean your work site after completing the job or your shift.
- Maintain appropriate barricades as required.
- Never tamper with electric cables and appliances. Never insert direct cables into sockets, rather use proper plugs.
- Do not enter scaffold that is not tagged safe for access.
- Tools or materials must not be carried while climbing up or down scaffolding or ladders.
- Use pouches or ropes for this purpose.
- Do not smoke or produce naked flame in NO SMOKING area. Use of open fire is prohibited.
- Keep all gangways and aisles clear and clean at work sites.
- Vehicles must be driven at a safe speed, observing speed limits. Drivers must have a valid driving license for the class of vehicle they are operating.
- Vehicles shall only be parked in designated parking areas. Never travel in a vehicle unless in seating equipped with a seatbelt.

## **1. Site HSE Roles and Responsibilities**

### **1.1 Project Manager (PM)**

- i. Develop and disseminate policies for occupational health and safety management systems and environmental management systems
- ii. Provide resources for the management and implementation of occupational health and safety management systems and environmental management systems
- iii. Responsible for ensuring the implementation of occupational health, safety and environmental policies
- iv. Aware of the relevant matters of environment, health and safety.
- v. Allocate Budget and Provide resources for the implementation of HSE Plan in its true spirit.

- vi. Attend meetings regarding the Health Safety and Environment.
- vii. Report Health Safety and Environment matters to the management of the company as required.

### **1.2 Construction Manager (CM)**

- Responsibilities include, but not limited to:
- Well conversant with international & local, Health, Safety & Environmental rules, regulations and current legislation.
- Ensure that all senior site staff is also conversant with the relevant requirements of current legislations and EPC contractor HSE plan.
- Ensure that site personnel are assigned appropriate duties and responsibilities accordingly to assist in the effective implementation of this HSE Plan.
- Ensure no job is carried on without supervision.
- Approve work methods statements; ensure safety procedures are established and undertaken.
- Funds for essential HSE facilities, equipment and personnel are made available.
- His own personal behavior supports, strengthens and confirms the site's HSE management program.

### **1.3 Environmentalist/HSE Officer**

- i. Carry out safety inspection of Work Area, Work Method, Men, Machine & Material and other tools and tackles.
- ii. Facilitate inclusion of safety elements into Work Method Statement.
- iii. Highlight the requirements of safety through Tool-box/other meetings.
- iv. Conduct investigation of all incident/dangerous occurrences & recommend appropriate safety measures.
- v. Advice & co-ordinate for implementation of HSE plan in its true spirits.
- vi. Convene HSE meeting & minute the proceeding for circulation & follow-up action.

- vii. Plan procurement of PPE & Safety devices and inspect their healthiness.
- viii. Report to Project Manager (PM) and Resident Director EPC contractor on all matters pertaining to status of safety and promotional program at site level.
- ix. Facilitate administration of First Aid
- x. Facilitate screening of workmen and safety induction.
- xi. Conduct fire and other emergency Drills and facilitate emergency preparedness
- xii. Design campaigns, competitions & other special emphasis programs to promote safety in the workplace.
- xiii. Recommend to Site In charge, immediate discontinuance of work until rectification, of such situations warranting immediate action in view of imminent danger to life or property or environment.
- xiv. To decline acceptance of such PPE / safety equipment that do not conform to specified requirements.
- xv. Encourage raising Near Miss Report on safety along with, improvement initiatives on safety.
- xvi. Ensuring that all injuries, accidents, incidents/near misses and hazards are positively and timely reported.
- xvii. Assisting Engineers/Area Supervisors in accident/incident investigations, where required Attending and positively contributing in the HSE Committee Meetings.

#### **1.4 Workers**

- Use the proper tools and equipment when operating. According to the requirement of operation and different hazard sources using the PPE and protective clothing provided by company, such as, helmets, safety harness, goggles, safety vest, and other personal protective equipment
- Maintain the tool and keep the tool clean after job completion.
- Report to the site supervisor or on-site project manager for the equipment damage and hidden danger.

- Develop personal safety awareness - including workers themselves and others, especially new employees and young people.
- Avoid unnecessary risk generation.
- For known sources of danger, remind new employees to stay away from these hazards.
- It will strictly be forbidden to play in the construction area or to damage the public utilities.
- Provide advice on how to eliminate hazards.

### **1.5 Sub-Contractor HSE Management**

- i. Sub-contractor's employees shall immediately correct all unsafe conditions & acts as directed by Contractor Direct supervision. Unsafe acts by any personnel may be grounds for immediate removal and permanent banning from the project site.
- ii. Only properly trained employees shall be authorized by sub-contractor to operate equipment, machinery, vehicles & tools.
- iii. All Sub-contractors are required to follow safe work practices, and meet the requirements clearly identified in field HSE PLAN.
- iv. The Sub-contractor shall erect & maintain safeguards for the protection of workers, any other sub-contractors & the public and eliminate or mitigate HSE hazards created by or otherwise resulting from performance of the work.

## **2 Communication and HSE Meetings**

### **2.1 HSE Targets and Goals**

Pursuant to the Policy Statement, the following HSE Targets and Goals are identified in order to create a positive approach to health, safety, and protection of the environment during all activities of the project; this will be achieved by employing competent and motivated staff:

- i. To avoid all personal injuries during the execution of the Project,

- ii. To ensure that all personnel employed on the Project are competent to carry out their designated tasks safely.
- iii. To create positive health, safety and environment attitudes and perceptions at all levels of the Project organization, and to raise health safety and environmental awareness in general.
- iv. To implement a training program that supports the achievement of personnel competency in relation to Health, Safety, and the Environment.
- v. To complete the Project without incurring any significant property damage to permanent equipment, or temporary facilities.
- vi. To complete the Project with minimum avoidable impact upon the surrounding environment.
- vii. To implement a hierarchy of communication forums that ensure that HSE concerns can be raised and addressed at all levels of the organization. To continually monitor and improve HSE performance.

## **2.2 HSE Score Board**

Environmentalist/HSE Officer will arrange a HSE score board and display at the key location of the project site facilities. Information on the HSE Score Board will be updated on daily basis.

## **2.3 HSE Awareness Sign Boards**

HSE awareness signboards shall be displayed at key locations around the site to create and maintain awareness and ownership of HSE issues.

## **2.4 Internal Site HSE Committee Meeting**

Internal HSE Committee Meetings chaired by the Site Manager/Construction Manager, will be held monthly with all Area Supervisors and nominated Engineers, Supervisors and support staff. HSE committee meetings will allow communication of HSE performance and corrective actions. All-important HSE matters of the site as well as the non-compliance reported in the current month will be discussed in these meetings.

### **1.3 Performance Monitoring**

#### **1.3.1 Performance Review in Site HSE Committee Meetings**

Performance reviews shall be held on monthly basis in the Internal Site HSE Committee Meetings. The objective of the review is to gather information from monitoring, inspection and site working activities and to assess the effectiveness of the implementation of HSE procedures on site. The key performance indicators are:

- a. Compliance with Health, Safety and Environment standards
- b. Identification of areas not addressed in the HSE Plan
- c. Achievement of specified HSE objectives
- d. HSE statistics, root cause and trend analysis of the statistics

#### **1.3.2 HSE Inspections of Equipment and Tools**

- a. The Site Manager will ensure that no Civil, Electrical or Mechanical equipment will go to the working area without HSE inspection.
- b. Environmentalist/HSE Officer will co-ordinate with Equipment and Plant Department for the inspection of all Civil, Electrical and Mechanical equipment or the inspection of Civil, Electrical and mechanical equipment,
- c. If during inspection, any equipment is found sub-standard, Manager Site HSE is authorized to reject this equipment and inform the Site Manager.

### **1.4 Incident / Accident Reporting and Investigation**

#### **1.4.1 Objective**

The objective of incident reporting, investigation & analysis is to identify the cause(s) of an incident to allow for preparation of recommendations, to avoid recurrence of such incident(s) in future.

#### **1.4.2 Incident Reporting and Investigation**

Any work-related incident, accident, injury, illness, exposure, or property loss must be reported to your supervisor, the SS, and within 1 hour. Motor vehicle accidents must also be reported. A report must be filed for the following circumstances:



- a) Accident, injury, illness, or exposure of an employee;
- b) Injury of a subcontractor;
- c) Damage, loss, or theft of property; and/or
- d) Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while the employee is acting in the course of employment.
- e) HSE Officer shall brief the Management about the lost time injury/fatal cases and serious incidents/near-misses.
- f) Project Manager and Construction Manager will review the incident report and comments on the recommendations of the Site HSE Staff. They will then assign corrective actions accordingly.
- g) Occupational accidents resulting in employee injury or illness will be investigated by the SS. This investigation will focus on determining the cause of the accident and modifying future work activities to eliminate the hazard.
- h) All employees have the obligation and right to report unsafe work conditions, previously unrecognized safety hazards, or safety violations of others. If you wish to make such a report, it may be made orally to your supervisor or other member or management, or you may submit your concern in writing, either signed or anonymously.
- i) The Site HSE Staff shall carry out a follow up of the recommendations/corrective actions from time to time where he identifies ongoing non-compliance he shall inform the Project Manager Construction Manager.

## **1.5 Orientation, Site HSE Induction and Other Training Activities**

### **1.5.1 Initial HSE Orientation Program**

Each and every person will undergo a HSE orientation program. On completion of orientation he will be issued an Organizational Identity card. Contractor Site HSE Staff shall perform the initial orientation based on but not limited to the following:

- Explaining Organizational HSE Policy and Standards.
- General HSE rules and regulations for working in a Construction Site, Batching plant, Excavation Area, Mechanical and Electrical work including use of

Personal Protective Equipment, incident reporting, getting first aid, emergency response, (HSE inspection, housekeeping, etc.

- Hazards at construction site, works, offices, or any miscellaneous work.
- Specific hazards like height, open excavations, electrical, fire, Fumes (including spray painting) and vehicle safety etc.
- Environmental hazard.

### **1.5.2 Daily Tool Box Talk by Supervisors/HSE Officer**

HSE tool Box talk shall be conducted by Supervisor/HSE Officer for specific work groups prior to the start of work. The tool box is a forum for two- way communication between management and the employees. Tool box talk is focused on a specific job. The agenda shall consist of the following:

- Details of the jobs being intended for immediate execution.
- The relevant hazards and risks involved in executing the job and their control and mitigating measures.
- Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.
- Recent non-compliances observed.
- Appreciation of good work done by any person.
- Feedback from employees
- Any doubt clearing session at the end.
- Record of Tool box talk shall be maintained as per format attached.
- Incidents, which may occur in the site/works, shall also be discussed in “tool box talks”.

### **1.5.3 HSE Training During Project Execution**

HSE training shall be arranged by contractor as per the need of the project execution and recommendation of HSE committee of site.

#### **1.5.3.1 Site-Specific Training**

Prior to working at this site, an initial site-specific training session or briefing shall be conducted prior to commencement of work activities. During this initial training session, employees shall be instructed on the following topics:

- Personnel responsibilities;
- Content and implementation of the HASP;
- Description of assigned tasks/scope of work;
- Site hazards and controls;
- Site-specific hazardous procedures (e.g., lining activities, etc.);
- Coordination of Site activities;
- Training requirements;
- PPE requirements;
- Emergency information, including local emergency response team phone numbers,
- route to nearest hospital, accident reporting procedures, evacuation routes and procedures, location of assembly points, and emergency response procedures;
- Instruction in the completion of required inspections and forms; and
- Location of safety equipment (e.g., portable eyewash, first aid kit, fire extinguishers, etc.).
- The various components of the project HASP will be presented followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel will not be permitted to enter or work in potentially contaminated areas of the Site until they have completed the Site-specific training session.

#### **1.5.3.2 Safety Meeting/Health and Safety Plan Review**

"Tailgate" safety meetings will take place each day prior to beginning the day's work. All Site personnel will attend these safety meetings, which may be contracted personnel, subcontractor personnel, or personnel from contractors. The safety meetings will cover specific health and safety issues, Site activities, changes in Site conditions, and a review of topics covered in the Site-specific pre-entry briefing.

#### **1.5.3.3 Management Employees Training Program**

- The management employees training program will be conducted during the project to ensure that all management employees are trained.
- An HSE specialist from contractor head office shall conduct the meetings, during his visit to site.

**ANNEXURE-VII**  
**Emergency Response Management Plan**

## **Emergency Response Plan**

Contractors are committed and obliged to protecting the community, workers, public and concerned company's property and the surrounding environment; in the emergency situations. These situations shall be handled through the implementation of an Emergency Preparedness and Response Plan (EPRP). The construction contractors shall meet with the local emergency service institutions and law enforcement agencies i.e. Fire and rescue 1122, Police, to review and discuss the construction process, including unique construction equipment(s), the overall construction process, and schedule/phasing. This plan will be communicated to all the concerned and personnel who will be responsible for managing the emergency situations, and those who will be effected by the emergencies.

### **1. Purpose**

The purpose of the emergency response plan is to identify the actual and potential hazards and their risks, organize responsibilities, identify the resources and plan to utilize them in order to control and minimize impacts of risks in an efficient way. This plan is applicable to all construction processes and sites, machinery/ equipment and materials. It includes preparation to respond in the event of fires, incidents/ accidents involving personnel injuries, property damages etc., hazardous materials emissions, explosions, and natural disasters i.e. flood, earthquake etc. This plan also includes preparation to respond in the event of riots, arsons, terrorist attacks etc.

### **1.2 Objectives**

The objectives of this plan are;

- i. To develop, maintain, implement, check and improve procedures and practices which will ensure efficient utilization of available resources; in order to protect workers and staff from impacts of hazard's risks.
- ii. To minimize impacts of emergencies and unplanned happenings.
- iii. The plan includes preparedness and response mechanisms.

### 1.3 Scope

The emergency management program is applied to all Project elements and intended for use throughout the Project life cycle. The following are some emergencies that may require coordinated response.

- i. Construction Accident
- ii. Road & Traffic Accident
- iii. Hazardous material spills
- iv. Structure collapse or failure
- v. Trauma or serious illness
- vi. Sabotage
- vii. Fire
- viii. Environmental Pollution
- ix. Loss of person
- x. Community Accident

### 1.4 Types of Emergencies

Following is a list of the hazards and emergency situations, which need planning and proper handling to minimize their risks.

- Fire
- Road Traffic Accidents,
- Materials/ effluents spills i.e. asphalt, POL, etc.
- Natural disasters i.e. torrential rains, floods, earthquakes
- Occupational accidents i.e. fall, electrocutions, cave-ins
- Arsons, vandals
- Terrorist attacks, etc.

### 1.5 Responsibilities

#### 1.5.1 Alerting

The following procedures will be prescribed for internal reporting of emergencies:

- i. The Emergency Response Coordinator (ERC) will awaken on-site personnel, including visitors, of the nature of the emergency.
- ii. The ERC will activate and deploy the concerned ERTs, and notify and inform the project person in-charge, emergency medical assistance/ Rescue 1122, fire department, Police etc., whoever and whenever needed.
- iii. Concerned Project Manager (PM) or whosoever is in-charge of the project shall only be authorized to speak on contractors' behalf to outside agencies (police, fire department, medical services, Media etc.) during an emergency situation.
- iv. The ERC will identify any need for security measures at the Project Area during any emergency and will notify the concerned project or security person in-charge.
- v. When any person identifies an emergency situation, or the potential for an emergency situation, and reports it to the ERC, the ERC will then activate the Emergency Response Team.
- vi. The supervision consultant shall be notified in writing within 24 hours of any emergency situation.

#### **1.5.1 On Site Person In-charge**

The Contractor's on-site in-charge shall be responsible for handling emergency situations for concerned site. He will act as Emergency Response Coordinator (ERC) and shall be responsible for ensuring that all subcontractors, staff, on-site visitors and others adhere to the appropriate emergency response procedures as stated in this Plan.

#### **1.5.2 Emergency Response Team (ERT)**

Emergency Response Team shall be formed at all camps, each team comprised of 3 or 5 members including and lead by the ER Coordinator or the concerned person in-charge. All the members of the ER Team shall be trained in basic First Aid, search & rescue and firefighting; that will further provide search& rescue, first aid and arrange transportation in case of accidents and emergencies, and extinguish fires, guide workers and staff to assembly points and other safe places. The ERT shall assist the ER Coordinator in accidents investigation. The contact details of the ERTs shall be posted at prominent places so that all workers are aware of them.



|                                  |                               |
|----------------------------------|-------------------------------|
| <b>Project Manager</b>           | <b>Person In charge (ERT)</b> |
| <b>Environmental/HSE Manager</b> | <b>HSE Coordinator (ERT)</b>  |
| <b>Admin / Labour Team Lead</b>  | <b>ERT Team Member</b>        |

### 1.5.3 Safety Training

On-site induction, Tool Box Talks (TBT), trainings shall be organized by the Emergency Response Coordinator/ HSE Officer/ Engineer regarding the health & Safety measures from potential and existing hazards, environmental protection, etc. New workers and staff shall be orientated regarding their work and the potential hazards, and safety from them. All trainings shall be recorded and communicated to the Supervision Consultant.

### 1.5.4 Site Inspections

The concerned HSE Officer/Engineer shall visit and inspect all the worksites, plants, machines, workshops, laboratories, working platforms, safety equipment etc., on regular basis, record and notify findings to the concerned Project Manager/ person in- charge. In- case of any observations i.e. unsafe equipment, un-safe acts, violations, absence of safety equipment, etc. required control and mitigation measures must be communicated to the concerned person In charge and workers/staff must implement those measures immediately.

### 1.5.5 First Aid Post / Box

First aid post shall be established at all camps & plants or first aid box provided as per the requirement. The concerned ERTs shall be trained in basic first aid. The first aid post/ or the facilities where first aid box are kept shall be indicated prominently.

## 1.6 Emergency Response Procedures

### 1.6.1 Fire

Fire is a major cause of deaths, disabilities and deaths at house hold and work-places. Most of ten fires are caused by in appropriate and unsafe use of materials and equipment. All personnel at camp and plants shall be trained in fire safety and use of fire Extinguishers. Fire extinguishers, no Smoking signs etc. shall be installed at all camps, offices, plants, stores, fueling stations, workshops etc. In case of fire, areas with potential to be affected shall be

evacuated immediately and gathered at the assembly point, or any other safe zone. The ERTs shall be activated. The fire if at initial stages shall be extinguished with keeping in view personnel safety of employees/ workers at priority. The emergency services i.e. fire brigade, rescue 1122 shall be called immediately. All the fire safety equipment and signs shall be regularly inspected and maintained. The reasons for accidents shall be recorded; mitigation or control measures designed and communicated to all employees. The situation must be recorded and reported to the Supervision Consultant within 24 hours of the incident.

### **1.6.2 Road Traffic Accidents (RTA)**

All the drivers at site shall be made aware regarding safe driving practices at the active construction site borrow areas, camps to avoid accidents. All the drivers shall be trained, motivated and enforced in use of seat belt, obeying speed limit and traffic signs i.e. diversion, speed limits, U-turns, etc. which shall be installed at all required locations. In case of any RTA the concerned ERTs shall be activated; first aid shall be provided to injured person (God Forbid) if any on the spot, transported to the nearest emergency medical facility or the first aid post at the nearest concerned camp. The concerned ER Coordinator or the person in-charge shall be informed immediately. The reasons for accidents shall be investigated, recorded; mitigation or control measures designed and communicated to all employees through a series of trainings, orientations. The situation must be recorded and reported to the Assistant to Employer Representative (AER).

### **1.6.3 Materials / Effluents Spills**

Spillage of liquids hazardous to workers' health, wild life and property shall be avoided. Concerned workers shall be trained in proper and safe handling of such materials. PPEs shall be provided and their use enforced on the concerned workers. In case of liquids and effluents spills the spills must be controlled through spill control kit, collected and properly disposed which does not affect human or wild life. Spillage of significant amount shall be recorded and reported. Concerned workers shall be orientated on the findings of the reasons for spillage and control measures.

### **1.6.4 Natural Disasters**

Since the project area in view of the past weather record is not subject and vulnerable to torrential rains, floods, earthquake; however, the camps shall be established at safe places,

and in case of torrential rains, floods workers shall be alerted and mobilized to safe places prior to the impact. In case of earthquake all personnel shall evacuate settlements and gather at the assembly point or any other safe place. The ERTs shall be activated. In case of personnel injuries, first aid shall be provided on the spot and causality(s) transported to the nearest emergency medical facility/ hospital. In case of property damage, its causes shall be recorded and reported to the SC.

#### **1.6.5 Occupational Accidents**

All the workers and staff at active construction sites, camps, plants, and workshops shall be trained and orientated on occupational health and safety measures. Tool Box Talks (TBT) shall be organized by the concerned HSE Head/Manager or site in-charge prior to any new activity or activity potentially hazardous. All such activities shall be recorded and reported accordingly. PPEs shall be provided to all workers and they shall be trained in their proper use and maintenance. All measures needed for the health and safety of workers and staff shall be put in place to a safe and healthy working environment. In case of falls from heights, electrocutions, cave-ins, etc., casualty(s); the ERTs shall be activated; they shall provide first aid and transport causality(s) to the nearest emergency medical facility or the concerned nearest camp/ first aid post. Transportation arrangements must be made immediately and the concerned ER Coordinator or person in-charge must be informed immediately. The happening must be recorded and reported to the Assistant to Employer Representative (AER). The incident must be investigated, findings recorded, control measures devised; and communicated to all concerned, in order to avoid such happenings in future. Daily Tool Box Talk Format and Incident Investigation Format are also formatted for the project.

#### **1.6.6 Arsons / Vandals**

All the social disputes among the contractor and workers, subcontractors, and community shall be settled peacefully, with mutual consensus; however, in case of unpleasant situations safety of the workers and staff shall be the priority, and the nearest police station shall be informed to protect employees. Social framework agreements may be signed to sort out the community matters if any.

#### **1.6.7 Terrorist Attacks**

Contractor's own security system will be launched to provide the Security to staff workers and labors and visitors and also security for foreigners, who shall escort them at all construction sites, plants and camps or wherever they move. No foreigners shall be allowed to move outside work areas without Police escort. For security, the contractors have also arranged private security to protect worksites, stores and camps at day and night and prevent, unauthorized trespassing. In case of any terrorist attack (God forbid), safety of the workers and staff shall be the prime priority; however, they shall be trained to protect themselves and seek and move to safe places, moreover the nearest Police/ Elite Force station shall be notified immediately for additional security and further safety.

### 1.6.8 Emergency Contact Number

Emergency Response personnel/Team will be available during the whole Project and will be utilized to assist during emergency situations or provide first aid as needed.

|                            |                       |
|----------------------------|-----------------------|
| Project Manager            | Person Incharge (ERT) |
| Environmental/ HSE Manager | HSE Coordinator (ERT) |
| Admin / Labour Team Lead   | ERT Team Member       |

In case of any emergency, Safety Manager or designated person will be authorized to Contact the external public safety agencies/emergency services. Following are the contacts of emergency services.

|              |     |
|--------------|-----|
| Fire         | 16  |
| Police       | 15  |
| Edhi Rescuer | 115 |

## 1.7 Fire Prevention and Fire Fighting

### 1.7.1 Purpose

The purpose of this procedure is to highlight the fire hazards, precautions and suppression facilities required for the Projects. The responsibilities of various staff for this purpose are stated in the table below:

| Sr. No. | Staff                                     | Responsibilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Construction Manager                      | Ensures that procedure is understood and being applied appropriately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 2       | Site Health, Safety and Environment Staff | Responsible for the improvement of this procedure and monitoring compliance and introducing whatever training is required for fire teams, fire wardens and personnel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3       | HSE Supervisors                           | <p>Office and Camp “FIRE ACTION” notices are displayed at strategic locations, and that sufficient “Emergency Assembly Points” are set up, and regular practice evacuation drills are performed.</p> <p>A number of office/ camp staff are being assigned with the responsibility to act as fire wardens</p> <p>Office/camp staff (in particular new starts) has been briefed and keeps updated on fire and emergency response procedures.</p> <p>Awareness to control flammable materials being used on the premises.</p> <p>Daily checks of the office to ensure that walkways are not blocked, carpet and other fittings are properly secured, fire doors kept closed and that the means of escape are available.</p> <p>Kitchen areas are being monitored to ensure that electrical fittings have been turned off after use and do not present a fire hazard.</p> <p>Training for the use of fire extinguishers has been to staff/workers and signs have been displayed on various locations indicating the emergency procedures.</p> <p>‘No Smoking’ policy applies in the Meetings/conference rooms.</p> <p>Common social areas, mess halls and toilets, within the camp, are checked before closure of possible ignition sources following each meal time and at end of evening.</p> |
| 4       | E & M (Electrical and Mechanical) Manager | <p>E &amp; M Manager shall ensure that the following control measures are in place:</p> <ul style="list-style-type: none"> <li>• Workshops are maintained in a neat and tidy manner and that waste oil, rags and other flammable materials are removed at the end of each shift or as necessary.</li> <li>• Maintenance crews are properly trained for the use of fire extinguishers, raising the alarm and fire hazards on the work place.</li> <li>• Battery recharging will be conducted in well ventilated separate areas, with no smoking signs and fire extinguishers in place</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <ul style="list-style-type: none"><li>• Areas around pedestal grinders and other hot work type activities are kept free of combustibles.</li><li>• Welding and burning shall be screened and controlled to prevent fire risk and exposure to personnel</li><li>• That flammable liquid such as gasoline, diesel etc. are not used for cleaning purposes and their container is marked as per the containment.</li><li>• Provision of adequate storage areas that are located in places where exits, passage ways and stairways are not adversely affected</li><li>• Flammable liquids are stored safely, in a neat and tidy manner with adequate HSE signs provided</li></ul> |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 1.7.2 Cutting and Welding

Particular care will be taken while carrying out hot work operations on the locations where combustibles are available. This will include precautions such as; inspection of the surrounding area, removal of any combustible materials, protection by fire blankets and provision of fire extinguishers.

Compressed gas cylinders shall be closed when not in use, and shall be stored, properly secured and used in an upright position at all times. Protective end caps will be fitted when being moved or transported (unless by cylinder trolleys).

Compressed gas cylinders shall be kept clear of electrical equipment and cabling where they are part of an electrical circuit

### 1.8 Hazard Analysis and Risk Management

Hazard Analysis and Risk management techniques shall be adopted so that potential hazards are identified and evaluated prior to execution, thereby enabling either substitution or adoption of control techniques.

#### 1.8.1 Purpose

To ensure that all steps are taken to control hazards identified in a job and provide a safe working environment.

#### 1.8.2 Typical Hazards

Following are examples of typical hazards that can be encountered:

- Falling objects
- Welding
- Gas cutting
- Grinding
- Erection of steel work
- Installation of pipeline etc.
- Transportation / Lifting of heavy equipment
- Excavation Work

#### 1.8.3 Control Hazard

The hierarchy of Risk/Hazard Control is used to determine risk reduction measure in order of their effectiveness, as follows:

- Elimination or substitution of the task / job step or substance.
- Engineering Control Including guarding and mechanical aids such as scaffolding, extraction ventilation and alike.
- Administrative Controls Including permits, training, signage, reduction in time or personnel exposure personal Protective Equipment

## **1.9 Personal Protective Equipment**

### **1.9.1 Purpose**

This procedure has been developed to ensure that all site personnel on the project are provided with, and wear or hold, appropriate Personal Protective Equipment (PPE) to protect them against work related hazards which may endanger their health, safety and environment.

### **1.9.2 Scope**

This procedure applies to all contractor personnel employed including all of Sub- contractor's deployed at the project.

### **1.9.3 Definitions**

Personal Protective Equipment is defined as equipment designed to be worn or held by personnel to protect themselves against work related hazards which may endanger their health and safety.

### **1.9.4 Instructions**

The risks posed in any particular work activity shall be assessed, and adequate PPE selected in accordance with the following criteria:

- Gives protection against risk(s) without itself leading to any increased risk is suitable for the personnel involved in the work including correct fitting. Is compatible with the work activity.

### **1.9.5 Basic Personal Protective Equipment (PPE)**



Basic and minimum PPE requirements for the safe execution of proposed project are as:

- Safety helmet of plastic construction, manufactured in accordance with standard.
- Safety footwear with steel toe protection manufactured in accordance with standard.
- The construction and sole materials shall be chosen in accordance with the activity and adequate for the place of work.
- In addition to above, EPC contractor shall also supply coveralls to employees working in workshops.

#### **1.9.5.1 Eye and Face Protection**

Suitable protective goggles, face shield or screens shall be worn by personnel involved in, assisting with or adjacent to any activity where there may be a danger of projected debris, dust, sparks or other particles; corrosive fluids or mists; excessive heat, light or other harmful radiation.

#### **1.9.5.2 Respiratory Protection**

Respiratory Protective Equipment shall be available to all persons who are exposed to any situation in which there is a possibility of the atmosphere being or becoming deficient in oxygen or containing any harmful substance, whether particle, dust mist, vapors or gas.

#### **1.9.5.3 Hearing Protection**

Hearing protection shall be made available to all workers exposed to noise levels of 85 dB (A) or above. The selection of type of protection shall be in accordance with the type of noise hazard and the work being performed. In all work environments where the noise level is at or above 85 dB (A), prominent signs in English and in local language shall be displayed indicating the need for ear protection. A visual sign in the form of a line drawing of ear muffs shall also be displayed.

#### **1.9.5.4 Hand and Arm Protection**

Adequate hand and arm protection shall be available for all manual labour. The type of protection worn shall be selected according to the hazard to be protected against. These include but not limited to:

- Impacts, cuts, abrasions and infections.
- Extreme temperatures.
- Chemical, toxic, corrosive and other hazardous substances.

| <b>WORK ACTIVITIES</b>                                                                      | <b>SUITABLE PPE</b>                                                      |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Excavators, breakers, Chippers, drillers.                                                   | Protective goggles, hand gloves, Safety helmets and Safety shoes.        |
| Mixing cement, concrete, Lime mortar, asphalt material, refractory material.                | Safety goggles, gloves and protective foot wears.                        |
| Electricians                                                                                | Insulated tools, Rubber hand gloves and electrical resistant shoes, mat. |
| Grinders                                                                                    | Protective goggles and leather hand gloves                               |
| Gas cutters, welder's helper                                                                | Colored goggles, leather hand gloves.                                    |
| Welders                                                                                     | Welding screen, safety shoes with rubber sole, Leather hand gloves.      |
| Workers engaged in                                                                          | Dust mask, hand gloves                                                   |
| High noise level area i.e. D.G operator working, near piling work, compressor operator etc. | Ear plug / ear muff                                                      |
| Working in dusty                                                                            | Dust mask, Safety goggles.                                               |

#### **1.9.5.5 Harnesses**

Harnesses shall be provided, worn and properly secured in all work situations, when other safeguards such as nets, planking, or scaffolding cannot be used. Such situations include, but are not limited to:

- Working on scaffolding.
- Work on any high structure, whether in construction or batching plant site.

#### **1.9.5.6 Transportation**

Only vehicles necessary to the construction operation shall be permitted on site.

- It shall be ensured that only authorized and competent personnel are allowed to drive vehicles.
- Loads shall be within the safe weight limit for the vehicle and shall not project beyond the vehicle body in such a manner as to present a hazard to other vehicles, pedestrians or adjacent structures.
- Passengers shall not be carried unless a proper seat is provided.
- Personnel shall not get on or off any vehicle whilst it is in motion.
- All vehicles shall be parked on level ground with the hand brake applied.
- Keys shall be left in the ignition unless at an authorized car park.
- Vehicles shall not block access or emergency points.
- All drivers of vehicles shall be in possession of a valid license for the class of vehicle.
- All drivers shall go through an orientation before entering the site.

#### **1.9.5.7 Speed Limits**

During the project laid down speed limits for the vehicles will be strictly observed.

#### **1.9.5.8 Drivers' Responsibilities**

Drivers' responsibilities include:

- Take responsibility for the vehicle, the load and passengers being carried.
- Checking of the vehicle prior to the start of the journey.
- Ensuring that all personnel in the vehicle are wearing seat belts.
- Shall not pick up unauthorized persons.

**ANNEXURE-VIII**  
**Dust Management Plan**

## **Dust Management Plan**

### **General**

This plan is prepared for the project "Federal Medical College Islamabad. The purpose of this plan is to describe the measures that the project shall take to ensure that the risk of emissions from dust generated by site operations during construction is minimized and that best practice measures are implemented.

Dust emissions from construction can cause ill health effects to Contractor staff along with nuisance and annoyance to members of the local community. Dust will be controlled through:

- Elimination
- Reduction/Minimization
- Control

This dust management plan shall be implemented based on the measures already provided in the Environmental Management Plan (EMP) relating to controlling dust emissions.

### **Methodology**

The following methodology will be undertaken for each project section:

#### **Step 1 – Identify the dust generating activities**

Construction activities that are likely to produce dust will be identified. The activities that will be taken into account are:

- Haulage Routes, Vehicles and /Concrete Batching Plant
- Roads, surfaces and public highways
- Excavations for laying of new conductance and replacement of distribution pipelines
- Static and mobile combustion plant emissions
- Materials Handling, Storage, Spillage and Disposal
- Storage of material
- Stockpiles
- Spillages
- Storage of Waste
- Site Preparation and Restoration after Completion
- Earthworks, excavation and digging
- Storage of spoil and topsoil
- Demolition
- Construction and Fabrication Processes

#### **Step 2 – Identify Sensitive Receptors**

Sensitive receptors have already been identified. The nature and location of the sensitive receptors will be taken into account when implementing control measures.

### **Step 3 Implement Best Practice Measures to Control**

Based on the nature of the activity producing the dust, the likelihood of dust being produced and the possible consequence of dust based on the sensitive receptors, the most effective control measure will be identified and implemented.

### **Step 4 – Monitor effectiveness of control**

Construction Supervision Staff (CSC) will have the responsibility to ensure that dust control measures are being implemented and are effective.

### **Step 5 – Record and report result of monitoring**

All inspections, audits and results of monitoring will be recorded and kept as part of the site filing system.

### **Method Statements and Risk Assessments**

The Contractor's Risk Assessments and Method Statements will be required to be approved by the CSC prior to commencing work and will be required to contain environmental aspects of the task, including dust control measures where required.

Where dust has been identified within the risk assessment as a significant issue, the method statement will be required to cover the following:

Methods and materials that will be used to ensure that dust generation is minimized.

The use of pre-fabricated materials where possible.

### **Optimum site layout:**

Dust generating activities to be conducted away from sensitive receptors

Supply of water for damping down.

Good housekeeping and management

All employees will be briefed on the Risk Assessment and Method Statement before starting work.

### **Training**

All Contractor staff will be required to attend training seminars as already mentioned in the EMP document. A site-specific induction will also be required before being allowed to work on site. These will include site-specific sensitive receptors and details regarding dust control measures to be taken.

Toolbox talks on air pollution and minimizing dust emissions will be provided on a regular basis to Contractor staff.

### Identification of Dust Generating Sources and Control Methods

| <b>Haulage Routes, Vehicles and /Concrete Batching Plant</b>          |                                                                                                                                                                         |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dust Source</b>                                                    | <b>Dust Control Methods</b>                                                                                                                                             |
| Major haul roads and traffic routes                                   | Haul roads will be dampened down via a mobile bowser, as required.                                                                                                      |
| Public Roads                                                          | Road sweeper will be used to clean public roads as required.                                                                                                            |
| Site traffic management                                               | Site traffic will be restricted to constructed access roads as far as possible.<br>Site speed limit will be set at 10 mph as this will minimize the production of dust. |
| Road Cleaning                                                         | A mechanical road sweeper will be readily available and used.                                                                                                           |
| <b>Handling, Storage, Stockpiling and Spillage of Dusty materials</b> |                                                                                                                                                                         |
| Material handling operations                                          | The number of times a material will have to be handled will be kept to a minimum to prevent double handling and ensure dusty materials are not handled unnecessarily.   |
| Transport of fine dusty materials and aggregates.                     | Closed tankers will be used or sheeted vehicles.                                                                                                                        |
| Vehicle loading/unloading materials on to vehicles and conveyors.     | Dusty materials will be dampened down<br>Drop heights will be kept to a minimum and enclosed where possible.                                                            |
| <b>Excavation for Lying new pipelines</b>                             |                                                                                                                                                                         |
| Excavation                                                            | Excavation will be carried out by applying green sheets on the edges, especially near Environmental Sensitive Receptors, already highlighted in the EIA report.         |
| Handling of Mucking Material                                          | Mucking material will be stored in bonded area to avoid spillage and generation of fugitive dust                                                                        |
| Loading of material on dumpers                                        | Mucking material will be damped down before loading on dumpers to reduce fugitive dust emission.                                                                        |
| <b>Storage of Materials</b>                                           |                                                                                                                                                                         |
| Bulk cement, bentonite etc.                                           | Bentonite will be delivered in tankers and stored in dedicated enclosed areas. Bulk cement will be                                                                      |

|                                                                  |                                                                                                                                                                                                          |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                  | transported through tractor trollies or trailers.                                                                                                                                                        |
| Fine dry materials                                               | These will be protected from the weather and by storing in appropriate containers and indoors, where necessary.                                                                                          |
| Storage location                                                 | Material will be stored in dedicated lay-down areas.                                                                                                                                                     |
| <b>Storage of Stockpiles</b>                                     |                                                                                                                                                                                                          |
| Stockpile location                                               | Stockpiles will be placed so as to minimize double handling and facilitate the site restoration.                                                                                                         |
| Building stockpiles                                              | Stockpiles, tips and mounds will not be stored at an angle greater than an angle of repose of the material.                                                                                              |
| Small and temporary stockpiles                                   | Where possible, stockpiles will be placed under sheeting.<br>Dusty material will be damped down.<br>Wind barriers (protective fences) of a similar height to the stockpile will be erected, if required. |
| <b>Site Preparation and Restoration</b>                          |                                                                                                                                                                                                          |
| Earthworks, excavation and digging                               | These activity areas will be kept damp where required and if possible, will be avoided during dry and windy periods.                                                                                     |
| Completed earthworks                                             | Surfaces will be stabilized by re-vegetation as soon as possible, where applicable.                                                                                                                      |
| <b>Construction and Fabrication Process</b>                      |                                                                                                                                                                                                          |
| Cutting, grinding, drilling, sawing, trimming, planning, sanding | These activities will be avoided wherever possible.<br>Equipment and techniques that minimize dust will be implemented.<br>Water will be used to minimize dust.                                          |
| Cutting roadways, pavements, blocks                              | Water sprinkling to be used.                                                                                                                                                                             |
| Angle grinders and disk cutters                                  | Best practice measures will be used such as dust extraction.                                                                                                                                             |

### Monitoring Arrangements

Monitoring will be conducted at sensitive receptor locations in the project area as provided in the EMP. Furthermore, at locations where PM levels are exceeding applicable guidelines, additional stringent measures will be implemented at the respective location(s) in the project area to ensure dust levels are controlled as far as possible.



**ANNEXURE-IX**  
**Noise and Vibration Management Plan**

## **Objective**

This management plan defines the measures to control and limit noise emissions and vibration levels, at residential properties and other sensitive receptors in the vicinity of the Project.

## **General Requirements**

Best Practicable Means (BPM) of noise control will be applied during construction works to minimize noise (including vibration) at neighboring residential properties and other sensitive receptors arising from construction activities

The general principles of noise management are given below:

### **Control at source:**

Equipment – noise emissions limit for equipment brought to site.

Equipment – method of directly controlling noise e.g. by retrofitting controls to plant and machinery.

Equipment - indirect method of controlling noise e.g. acoustic screens.

Equipment - indirect method of controlling noise e.g. benefits and practicality of using alternative construction methodology to achieve the objective e.g. vibratory piling techniques or hydro- demolition as opposed to more conventional but noisier techniques; selection of quieter tools/machines; application of quieter processes.

### **Control across site by:**

- Administrative and legislative control,
- Control of working hours,
- Control of delivery areas and times,
- Careful choice of compound location,
- Physically screening site,
- Control of noise via Contract specification of limits,
- Noise Monitoring, to check compliance with noise level limits, cessation of works until alternative method is found.

- Many of the activities which generate noise can be mitigated to some degree by careful operation of machinery and use of tools. This may best be addressed by tool box talks and site inductions.

The maintenance of good community relations is vital. Experience shows that construction noise has the potential to cause disturbance but can be tolerated if prior warning and explanation has been given to residents. In particular advice regarding the nature of construction works, the duration of the works and mitigation measures to be implemented can help to reduce people's reaction to noise.

Contractors will consult local residents/communities regarding works and to give them details of a responsible appointed person on site who will be able to deal with queries.

Construction working hours should be carefully managed. All works should take place between normal working hours 07:30 and 18:30, Monday to Friday with the exception of restricted works.

### **Noise and Vibration Control Measures**

In addition to specific requirements of the Local Authority, the Contractor will be required to adopt the following more specific measures:

#### **Control measures**

Without prejudice to the other requirements of this section, the Contractor shall comply with the recommendations set out and in particular with the following requirements:

- Vehicles and mechanical plant will be maintained in a good and effective working order and operated in a manner to minimize noise emissions. The contractor will ensure that all plant complies with the relevant statutory requirements;
- Site vehicles will be equipped with broadband, non-tonal reversing alarms;
- Compressor, generator and engine compartment doors will be kept closed and plant turned off when not in use;
- All pneumatic tools will be fitted with silencers/mufflers;
- Care would be taken when unloading vehicles to avoid un-necessary noise;
- Maintenance operations will be undertaken at distance from noise-sensitive receptors;
- Reduce the speed of vehicle movements;

- Ensure that operations are designed to be undertaken with any directional noise emissions pointing away from noise-sensitive receptors;
- Vehicles should be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors;

### **Vibration Mitigation**

All vibration producing machinery will be identified by the contractor and vibration producing machinery will be operated at low frequency to reduce the vibration impacts.

- vibration monitoring will be undertaken at the nearest buildings to the construction sites during times of vibration intensive works
- Where exceedances of the criteria are recorded, corrective actions would be implemented where soils at risk of vibration induced settlement are identified.

### **Noise and vibration monitoring**

A regular programmer of noise and vibration monitoring shall be implemented as a minimum in accordance with of this document.

The Contractor will submit the proposed method, the frequency and the location of monitoring site to the Planning Authority for agreement prior to commencing works. Noise baseline levels will be agreed prior to commencement of construction.

### **Reference:**

<https://proaccionaau.blob.core.windows.net/media/4gbpg4vk/ctp-noise-and-vibration-management-plan.pdf>.

**ANNEXURE-X**  
**TRAFFIC MANAGEMENT**

## . Objectives of TMP

One of the prime objectives of this TMP is to ensure the safety of all the road users along the work sites, and to address the following issues:

- Safety of pedestrians, bicyclists, and motorists travelling through the construction sites;
- Protection of workers from hazards associated with moving traffic;
- Mitigation of the adverse impact on road capacity and delays to the road users;
- Maintenance of access to adjoining properties; and
- Addressing issues and concerns that may delay the implementation of the proposed project.

## 2. Operating Policies for TMP

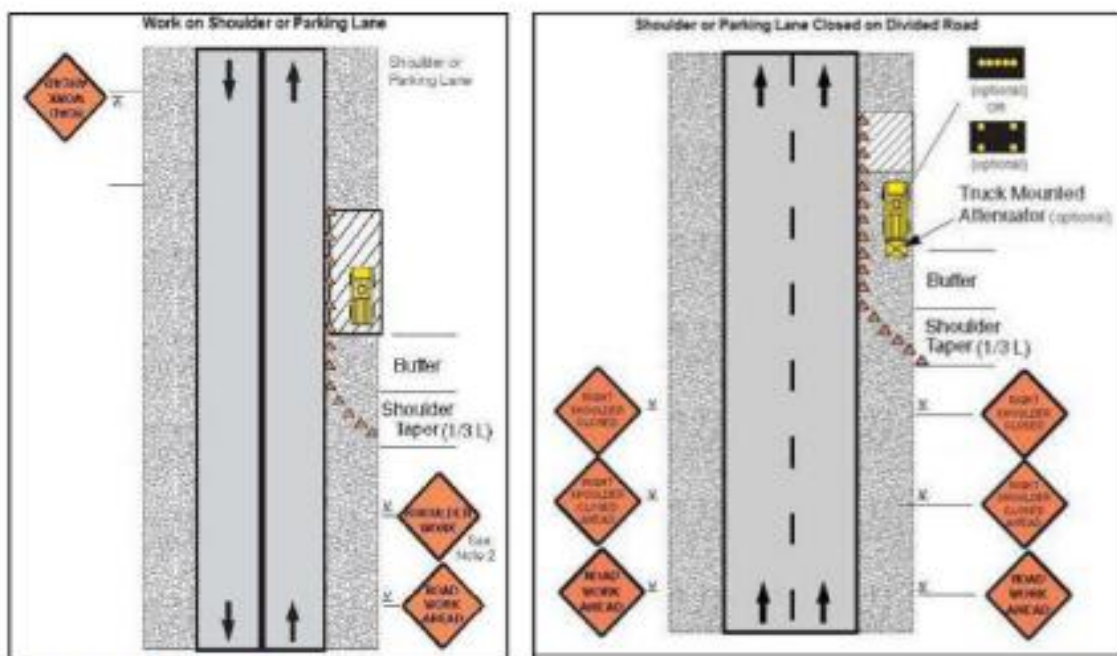
The following policies will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around project sites, while reasonably protecting workers and equipment.

- Make traffic safety and temporary traffic control an integral and high-priority element of project from planning through design, construction, and maintenance;
- Inhibit traffic movement as little as possible;
- Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic routes;
- Inspect traffic control elements routinely, both day and night, and make modifications when necessary;
- Pay increased attention to roadside safety in the vicinity of temporary traffic routes;
- Train all persons that select, place, and maintain temporary traffic control devices;
- Keep the public well informed; and
- Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

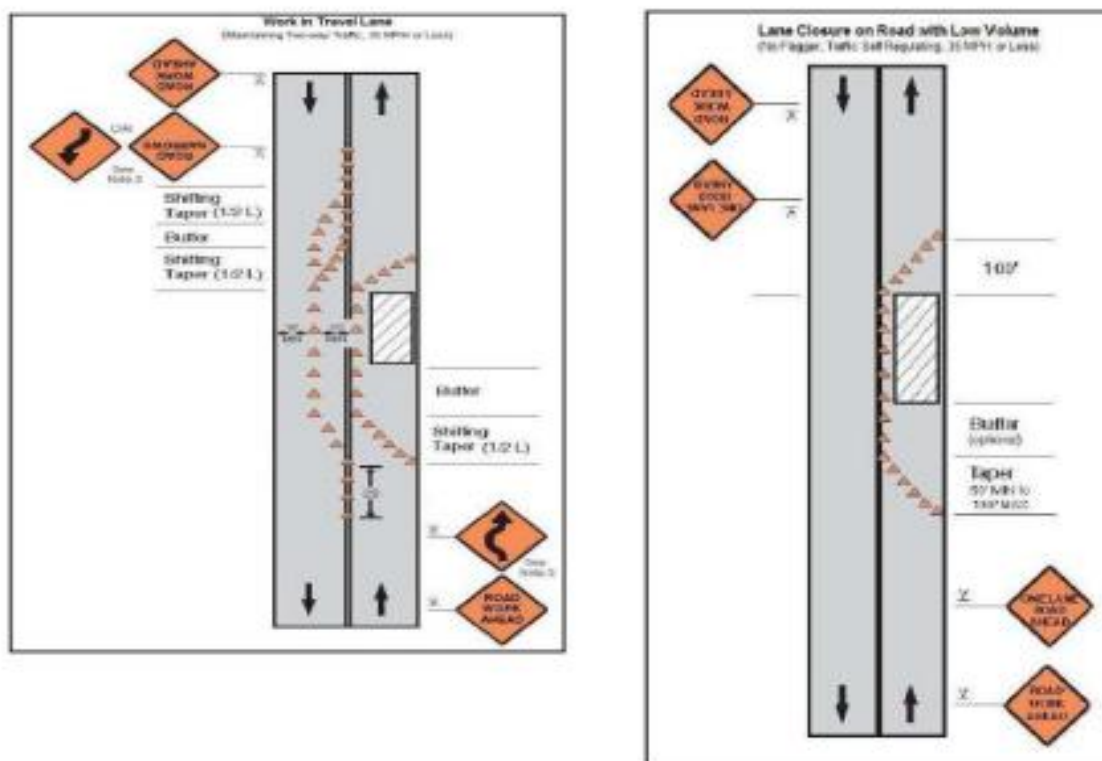
Policy steps for the TMP are shown in **Figure 1**. However, operating policy for TMP for the construction of the proposed project along various types of roads is shown in Figures 2 to 7.



Figure 1: Policy Steps for the TMP



**Figure 2: Work on Shoulder and Parking Lane and Shoulder and Parking Lane Closed Divided Road**



**Figure 3: Work in Travel lane and Lane Closure on Road with Low Volume**



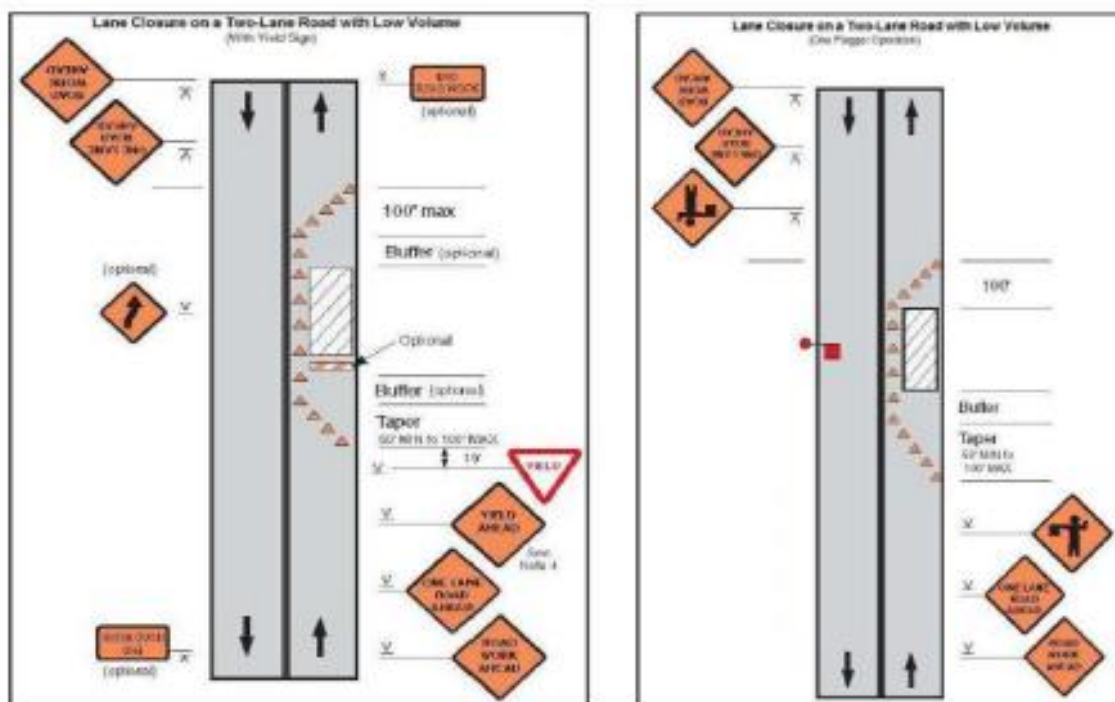


Figure 4: Lane closure on a Two-Line Road with Low Volume (with yield sign) and Lane Closure on a Two-Line Road with Low Volume (one flagger operation)

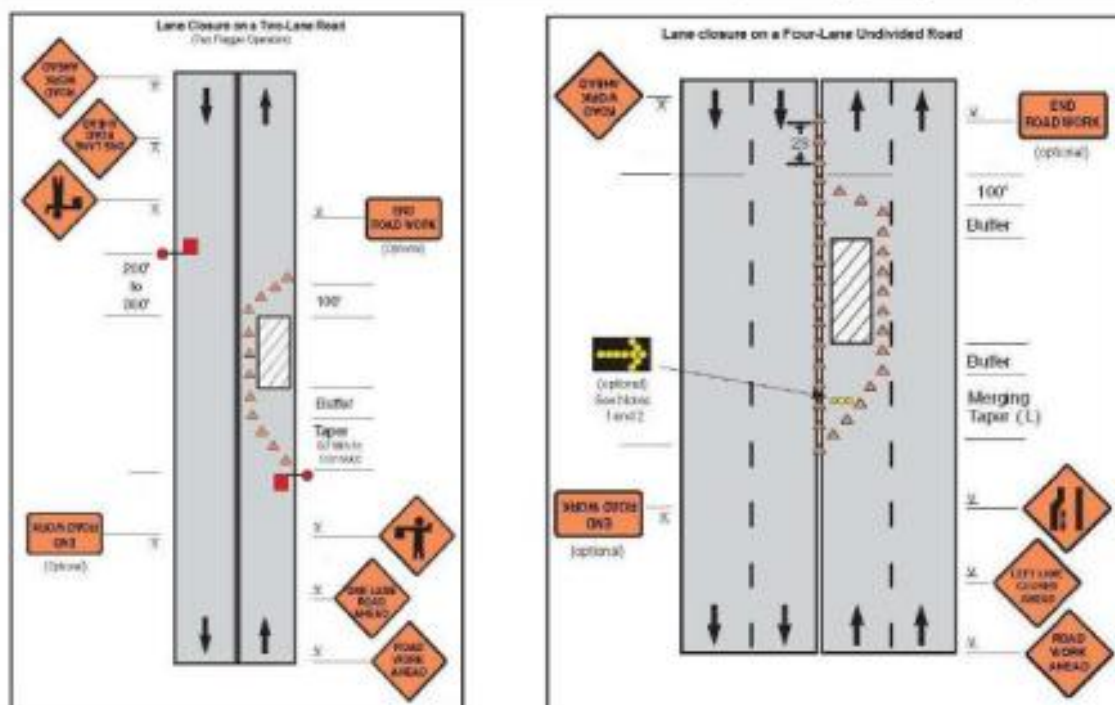
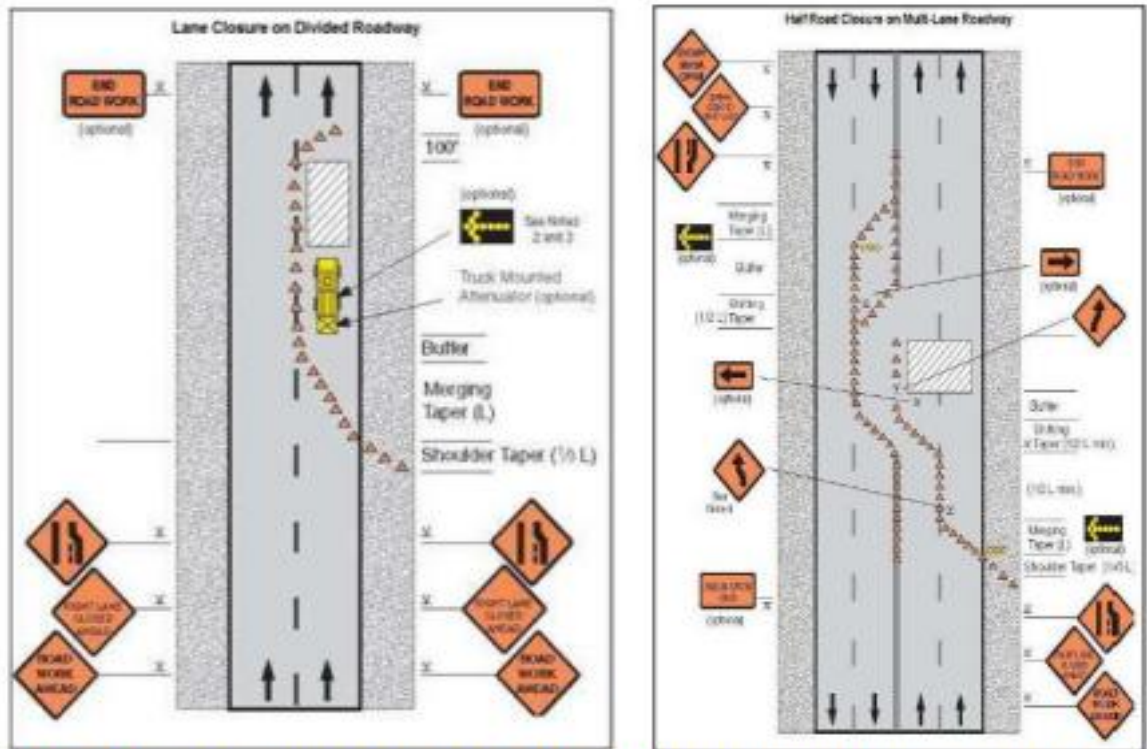
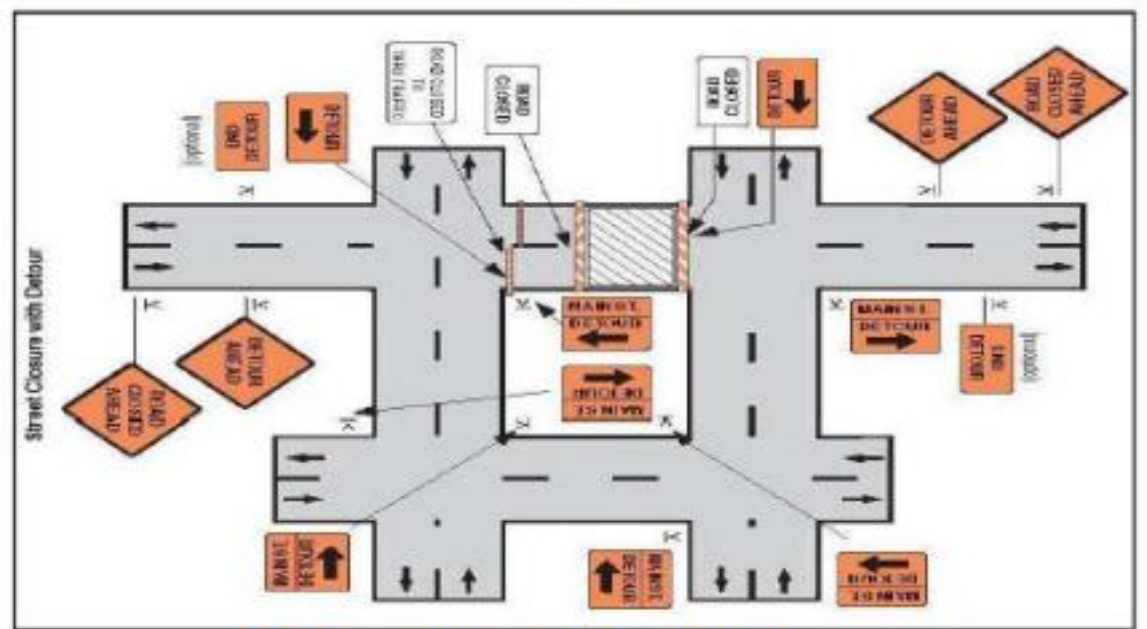


Figure 5: Lane Closure on a Two Lane Road (two flagger operation) and Lane Closure on a Four Lane Undivided Road



**Figure 6: Lane Closure on Divided Roadway and Half Road Closure on Multi-Lane Roadway**



**Figure 7: Street and Road Closure with Detour**

### 3. Analyze the Impact Due to Street and Road Closure

Apart from the capacity analysis, final decisions to temporary close a particular street and road and divert the traffic should involve the following steps:

- Approval from the Traffic Police to use the local streets and roads as detours;

- Consultation with businesses, community members, residents, road users and traffic police regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
- determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
- determining if additional traffic control or temporary improvements are needed along the detour route;
- considering how access will be provided to the worksite;
- Contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
- Publish a notice through print and electronic media about road closure to avoid hindrance to public. As part of this notice, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

If full road-closure of certain routes within the proposed project area is not feasible due to inadequate capacity of the Detour Street or public opposition, the full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning peak period.

#### **4. Public Awareness and Notifications**

As per discussions in the previous sections, there will be travel delays during the construction, as is the case with most construction projects, although on a reduced scale if utilities and traffic management are properly coordinated. There are additional grounds for travel delays in the area, as most of the streets and roads in the proposed project sites lack sufficient capacity to accommodate additional traffic from diverted traffic, as a result of street and road closure to accommodate the construction activities.

The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public claims as result of these problems. These activities will take place sufficiently in advance of the time, when the roadblocks or traffic diversions take place at the particular streets and roads. The reason for this is to allow sufficient time for the public and residents to understand the changes to their travel plans. The project

will notify the public about the roadblocks and traffic diversion through public notices, ward level meetings, and city level meeting with the elected representatives.

The Project Management Unit (PMU) comprising staff members of WASA, Supervision Consultant and Contractor will also conduct an awareness campaign to educate the public about the following issues:

- Traffic control devices in place at the construction sites (signs, traffic cones, and barriers);
- Defensive driving behavior along the construction sites; and
- Reduced speeds enforced at the construction sites and traffic diversions

It may be necessary to conduct the awareness programs and campaigns on road safety during construction.

The campaign will cater to all types of target groups i.e. children, adults, disabled and drivers.

Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the proposed project area and will also be available at the PIU, and the Contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

- Explain why the brochure was prepared, along with a brief description of the proposed project;
- Advise the public to expect the unexpected delays or roadblocks;
- Educate the public about the various traffic control devices and safety measures adopted at the construction sites;
- Educate the public about the safe road user behavior to emulate at the construction sites;
- Inform the public how to stay informed or where to inquire about road safety issues at the construction sites (name, telephone and mobile number of the contact person); and
- Indicate the office hours of authorized representatives.

## **5. Install Traffic Control Devices at the Construction Sites and Traffic Diversion Routes**

The purpose of installing traffic control devices at the construction sites is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is a key to achieve the above objective, it is important to install good traffic signs at the construction sites. The following traffic control devices are used in construction sites:

- Signs;
- Pavement Markings;
- Channelizing Devices;
- Arrow Panels; and
- Warning Lights.

Procedures for installing traffic control devices at any construction sites vary, depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. The main roads carry considerable traffic; internal the roads are narrow but carry traffic. However, regardless of where the construction takes place, all the construction sites should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary “STOP” and “GO”).

Figures 2 to 7 illustrates a typical set-up for installing traffic control devices at the construction sites of the area, depending on the location of work on the road way, and road geometrics:

- Work on shoulder or parking lane;
- Shoulder or parking lane closed on divided road;
- Work in travel lane;
- Lane closure on road with low volume;
- Lane closure on a two-line road with low volume (with yield sign);
- Lane closure on a two-line road with low volume (one flagger operation);
- Lane closure on a two lane road (two flagger operation);
- Lane closure on a four lane undivided road;
- Lane closure on divided roadway;
- Half road closure on multi-lane roadway; and
- Street closure with detour.

The construction sites should take into consideration, for the space required for a buffer zone between the workers and the traffic (lateral and longitudinal), and the transition space required for delineation, as applicable. For the construction works, a 30 centimeter clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 centimeter is necessary to install the temporary traffic signs and cones.

Traffic police should regulate traffic away from the construction sites and enforce the traffic diversion outcome from full street closure in certain areas during construction. Flaggers and personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic during night time.

In addition to the delineation devices, all the construction workers should wear fluorescent safety, vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions.

## **PHOTOLOG**



