



## **IFTIKHAR ENTERPRISES**

**LOCATED AT SULTAN-K, SUNDAR ROAD,  
TEHSIL RAIWIND & DISTRICT LAHORE**

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**DISCLAIMER**

The information presented herein is derived from the unique attributes of the project site as disclosed by the project proponents, stakeholders, and promoters, through provided maps, verbal communications, and all associated documentation. The veracity of the detail's rests solely with the project proponents, stakeholders, and promoters, and not with the environmental consultant. The Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) report is not subject to dispute in any court of law.

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## EXECUTIVE SUMMARY

This Executive Summary provides an overview of the critical findings from the Environmental Impact Assessment (EIA) for the proposed project of petroleum product storage godown by **M/s Iftikhar Enterprises**. The project aims to establish a storage unit, situated at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, total area of 14 Kanals. The initiative seeks the benefits that significantly enhance efficiency, productivity, making them more profitable and accessible, support local economies, and advance sustainable development goals.

In alignment with the initial environmental examination the project is classified under **Schedule II** (list of projects requiring an EIA), **Category A** (Energy) and **sub sector 5** (oil & gas extraction projects including exploration, production, gathering systems, separation & storage) as per the IEE/EIA Regulations 2022, established under Section 12 of the Punjab Environment Protection Act 1997 (Amended 2012). Consequently, conducting an Environmental Impact Assessment (EIA) is a prerequisite for obtaining Environmental Approval.

The EIA provides a comprehensive analysis of the anticipated environmental and social impacts associated with the project's extension. It includes an Environmental Impact Assessment (EIA) report to evaluate the potential impacts throughout the project's life cycle on local environmental quality and surrounding communities. The assessment has identified a series of impact mitigation strategies designed to lessen any adverse effects on the environment and nearby populations. A detailed description of the manufacturing process is outlined in **Chapter 05**, under the section titled "Process Details."

## Title and Location of The Project

The project, spearheaded by the proponent, aims to establish a petroleum product storage godown which contributes to economic development, thereby contributing to economic upliftment of the proponent.

Operating under the name “**M/s Iftikhar Enterprises.**” The facility is to be located at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, covering a total area of 14 Kanals.

## Name of the Proponent

The detail of the proponent is given below:

**Table 1 Proponent detail**

<b>Detail of the Proponent</b>	
<b>Proponent name</b>	Iftikhar Ahmad S/O Taj Din
<b>Address</b>	House No. 30-1-C1, College Road Butt chowk, Lahore.

## A brief outline of the proposal

**Table 2 Brief of Project**

<b>Title of the Project</b>	<b>M/s Iftikhar Enterprises</b>
<b>Proponent</b>	Mr. Iftikhar Ahmad S/O Taj Din
<b>Total Area</b>	14 Kanals
<b>Description of the project</b>	M/s Iftikhar Enterprises serves the purpose of storage godown for petroleum products.
<b>Location of the project</b>	Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore
<b>GPS Location</b>	31.3313761, 74.1470457 (Google map is attached A3 size with file)
<b>Cost of the project</b>	298 million

<b>Capacity and store products</b>	(MTT, K-OIL, HSD, F.OIL, LDO) with the storage capacity of 607595 GALLONS
<b>Nature of project</b>	Product storage unit
<b>Ground Water</b>	100ft – 150ft
<b>Manpower</b>	Construction: 20-25 Persons
	Operation 30-35 Persons
<b>Period of Construction</b>	Approx. 0.5 Year
<b>Assessed Environmental issues</b>	Air and liquid waste will be environmental issues. So, these wastes should be disposed of via EPA approved vendor.
<b>Solid Waste Management</b>	Will manage by EPA approved vendor.
<b>Wastewater Management</b>	Wastewater will be disposed of after the treatment in Septic Tank.
<b>Compliance</b>	Punjab Environmental Quality Standard (PEQS 2016) and time to time guidelines by EPA and other enforcement Department / Agencies.

## Legal And Administrative Framework

The project has been meticulously evaluated considering an array of national environmental guidelines and legislation. This includes the National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), and the Punjab Environmental Protection Act (PEPA 1997), alongside its subsequent amendment in 2012. Furthermore, adherence to the Punjab Environmental Quality Standards (PEQS), the Land Acquisition Act (1894), the Prohibition of Cutting of Trees Act (1975), the Punjab Wildlife Act (1974), the Punjab Plantation and Maintenance of Trees Act (1974), and the Antiquities Act (1975) has been ensured.

A thorough review of environmental documents was conducted, highlighting the compulsory submission of an environmental assessment study report as mandated by the Pakistan Environmental Protection Ordinance (PEPO), 1983,

and reinforced by the Pakistan Environmental Protection Act (1997).

Specifically, Section 12(1) of the amended PEPA (2012) mandates that any project entailing construction or modification of the physical environment is contingent upon conducting an EIA, or an IEE, and securing an approval (NOC) from the pertinent provincial environmental authority.

In the composition of this Environmental Impact Assessment (EIA) Report, comprehensive consideration has been given to the PEPA (1997), the Punjab Environmental Protection (Amendment) Act (2012), and all other pertinent legal mandates of both the Pakistan and Punjab governments, including the Land Acquisition Act (1894).

### **Assessment of Major Impacts**

The construction and operation of the proposed unit is anticipated to exert a range of influences on the environmental parameters of the project site. Notably, these impacts may include alterations to water quality, land integrity, and air composition. Furthermore, the generation of solid waste is an expected byproduct of the project's activities.

The extent of these environmental impacts is projected to be considerable unless effective mitigation strategies are systematically implemented to counterbalance the adverse effects. There are numerous environmental and social impacts foreseen throughout both the construction and operational phases of the project. The identification and management of the significant impacts are critical for the sustainable progression of this initiative. Innumerable environmental and social impacts are expected during constructing and operational phase, significant ones of which would be:

<b>Pollutant</b>	<b>Constructional Phase</b>	<b>Operational Phase</b>
Particulate matter (PM)/dust	Dust from construction activities can affect air quality and health.	Air emissions will chiefly arise from machinery along with solvent vapor, and the generators

Volatile Organic Compounds	VOCs may be released from paints, solvents, and adhesives.	Emission of VOCs from stored petroleum products can lead to air pollution.
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Noise	Noise from machinery and vehicles can disturb nearby communities.	Operational noise from equipment and transport can disturb the local community.
Solid Waste	Only a small amount of solid waste will be generated due to construction activity.	Solid waste will be generated due to domestic sources
Soil Contamination	Spills of petroleum products during construction can contaminate soil.	Leaks or spills can lead to soil and groundwater contamination.
Wastewater	Wastewater will be generated from construction and domestic sources.	Spills during handling or storage can cause severe environmental damage.
Socioeconomic	Positive impact due to the generation of employment opportunity.	Positive impact due to the generation of employment opportunity

## **Mitigation Measures**

The following outlines the proposed mitigation measures to alleviate potential environmental impacts during the construction and operational phases of the said project:

### **During Construction Phase**

- ✓ Implementation of best practices for machinery and vehicle operation, including the use of high-quality, low-sulfur fuels, routine maintenance, tuning, and servicing. Emission control devices such as mufflers and silencers will be installed.
- ✓ Use dust suppression methods like water spraying, cover materials during transport, and limit vehicle speeds.
- ✓ Adherence to municipal waste management protocols for handling waste materials.
- ✓ Implement spill containment measures, conduct regular inspections, and use impermeable liners where necessary.
- ✓ Regular water sprinkling on access roads to suppress dust emissions.
- ✓ Use of covered trucks for material transportation to prevent spillage and reduce dust.
- ✓ Development of a green zone and initiation of a tree plantation drive to mitigate the impact of fugitive dust during the operational phase.
- ✓ Enclosure of generators and ongoing maintenance to ensure emission control.
- ✓ Deployment of traffic management personnel to coordinate onsite movement.
- ✓ Utilization of low-noise machinery to minimize sound pollution.

### **During Operational Phase**

- ✓ Install vapor recovery systems, use sealed storage containers, and monitor air quality regularly.
- ✓ Adoption of effective solid waste management practices for domestic

refuse.

- ✓ Installation of a septic tank with sufficient capacity before discharging into nearby wastewater channels.
- ✓ Implement secondary containment, conduct regular leak detection, and ensure proper maintenance of storage tanks.
- ✓ Erection of safety signage to prevent traffic-related incidents on adjacent roads.
- ✓ Disposal of process-related solid waste by an EPA-certified contractor.
- ✓ Establishment of a dedicated health and safety department to foster a secure and healthy workplace, aiming to reduce accidents and improve staff morale.
- ✓ Regular Health, Safety, and Environment (HSE) training for employees.
- ✓ Mandatory use of Personal Protective Equipment (PPE), such as gloves and masks, especially while handling hazardous materials.
- ✓ Use spill containment systems, conduct regular inspections, and train staff in spill response and management.
- ✓ Direct reporting protocols for any incidents to the relevant authorities.
- ✓ Enhancement of the green zone and ongoing tree planting during the operational phase to further diminish dust emissions.
- ✓ A well-designed ventilation system and preventive maintenance schedule for generators and machinery to check air pollution levels.

### **Proposed Monitoring Framework**

Given the necessity for an Environmental Impact Assessment (EIA) due to the expected long-term, significant, or adverse impacts of the project, it is imperative to establish a robust Environmental Monitoring Program. This program is designed to oversee the environmental parameters meticulously at different phases of the project's life cycle, ensuring compliance with the Punjab Environmental Quality Standards (PEQS) and legal obligations.

The environmental management and monitoring plan serves as a strategic framework to mitigate potential environmental impacts during the construction and operational phases of the project. It aims to amplify the

project's benefits while introducing and upholding exemplary health and safety standards. This comprehensive plan is crucial for the anticipated proposed project.

The proponent is committed to the meticulous execution of the mitigation measures throughout the installation, operation, and maintenance phases, with adequate monitoring being a pivotal component of this commitment. Details of the monitoring strategy are encapsulated in **Chapter 08** of the EIA report.

### **Conclusions And Recommendations**

The project portends a multitude of positive impacts, notably the creation of job opportunities and the generation of new business ventures. These developments are forecasted to elevate income levels, bolster social infrastructure, and ameliorate socioeconomic conditions within the region. The project is poised to significantly invigorate the local economies and enhance the quality of life for residents currently experiencing lower living standards.

While negligible to low negative impacts are anticipated during the project's implementation, particularly concerning air quality, noise, biodiversity, and dust, these can be effectively mitigated through the proposed measures. The identified environmental impacts are manageable and can be mitigated cost-effectively. To ensure minimal detrimental effects, meticulous mitigation, and monitoring, along with precise selection criteria and assessment protocols for subprojects, have been established.

As a key recommendation, it is advised that the proponent secures environmental approval, specifically a No Objection Certificate (NOC), from the Punjab-EPA before initiating construction activities, in adherence to the regulatory prerequisites.

## 1 INTRODUCTION

### 1.1. General

Petroleum storage in Lahore is crucial for ensuring energy security and economic stability in the region. As a hub for agricultural and industrial activities, Lahore relies heavily on a consistent supply of petroleum products. Adequate storage facilities help maintain a steady flow of fuel, preventing disruptions that could impact agriculture, transportation, and other key sectors. By holding strategic reserves, these facilities also mitigate the effects of supply chain interruptions, such as those caused by political instability or natural disasters, ensuring that the local economy remains resilient.

Furthermore, petroleum storage plays a vital role in stabilizing fuel prices by buffering against market fluctuations. This price stability is essential for both consumers and businesses, helping to avoid sudden spikes that could disrupt economic activities. On a national level, Lahore storage capacity enhances the region's strategic importance, supporting defense operations and national security by ensuring fuel availability during emergencies. Additionally, well-managed storage facilities contribute to environmental protection by minimizing the risks of spills and leaks. Overall, petroleum storage in Iftikhar Enterprises is essential for sustaining the region's economic growth, safeguarding energy supplies, and supporting broader national interests.

### 1.1 Purpose of Report

This report has been prepared to conform to the requirements of the Punjab Environmental Protection (Amendment) Act 2012 (PEPA), which states that:

***“No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Environmental Impact Assessment or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof.”***

The EIA report is comprehensive, covering socio-economic, physical, and environmental aspects, including land use, forestry, crops, water bodies, biodiversity (flora and fauna), heritage, and other factors relevant to the project and its surrounding area. It meticulously details mitigation strategies intended to address and neutralize potential environmental impacts on human and environmental health in the vicinity of the project site. These strategies are applicable during both the construction phase and the regular operation of the project.

Moreover, the report serves as a crucial document for decision-makers, particularly the EPA of Punjab, providing all necessary information in the officially approved format. This facilitates an informed decision-making process regarding the issuance of the required environmental approval. Through this EIA report, the proponent demonstrates a commitment to adhering to the Punjab Environment Quality Standards (PEQS) and maintaining a robust environmental management order throughout the lifecycle of the project.

## 1.2. Identification of the project and proponent

The detail of the project and proponent is given below:

**Table 3 Detail of Proponent & Project**

<b>Details of the Project and Proponent</b>	
<b>Proponent name</b>	Mr. Iftikhar Ahmad
<b>Proponent designation</b>	CEO
<b>Address of the proponent</b>	House No. 30-1-C1, College Road Butt chowk, Lahore
<b>Project title</b>	M/s Iftikhar Enterprises
<b>Location of the project</b>	Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore

### 1.3. Nature and Size of The Project

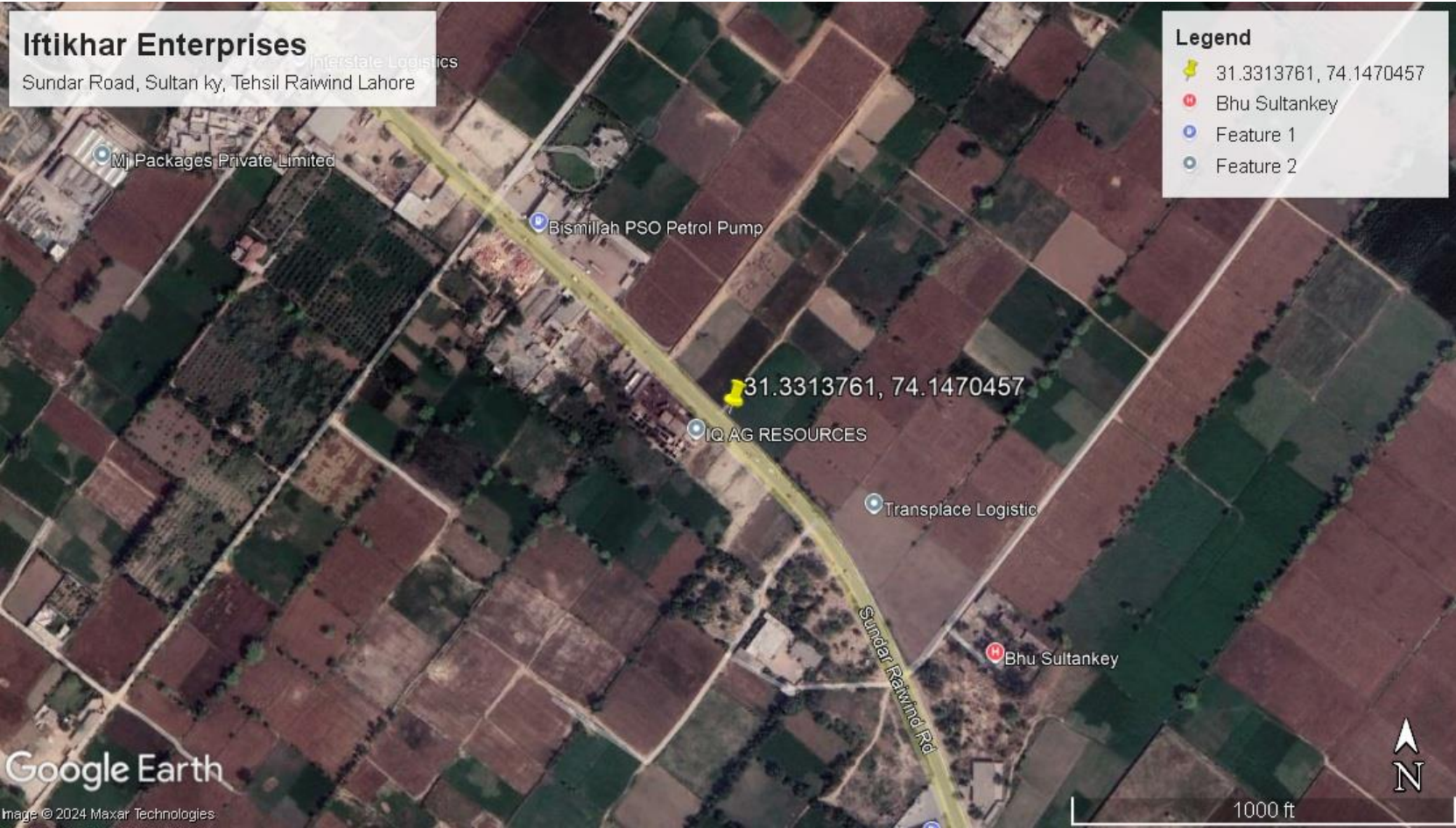
The project under consideration involves the establishment of a petroleum product storage godown, named “M/s Iftikhar Enterprises” This facility is to be situated at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, encompassing an area of 14 Kanals. The project is expected to generate employment opportunities for approximately 20-25 individuals during its construction phase. Furthermore, upon transitioning to the operational phase, it is anticipated that an additional 30-35 personnel will be employed.

Schedule of Area	
Total Area of Plot	14 Kanals
Total Covered Area	26500 SFT
Open Area of Plot	36,500 SFT

### 1.4. Layout and location of the project

The designated location for the project is situated at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore. The geographical coordinates marking the project site are 31.3313761, 74.1470457.





Map 2 Location of Project

## **1.5. SCOPE AND DEPTH OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY**

The Environmental Impact Assessment (EIA) study was conducted in strict adherence to section 2.3 of the "Guidelines for the Preparation and Review of Environmental Reports, October 1997." Following the mandates of the Pakistan Environmental Protection Act (PEPA) of 1997, as amended in 2012, an exhaustive EIA report has been meticulously prepared by a dedicated team of environmental experts. This comprehensive document encompasses an analysis of all conceivable environmental impacts attributed to the proposed project within and surrounding the project site. It includes a detailed assessment of physical, ecological, and socio-economic dimensions, in addition to pinpointing potential beneficial and adverse impacts.

Notably, the study excludes any development activities beyond the immediate vicinity of the project, such as road rehabilitation or the construction of additional factories outside the project area.

## **1.6. Extent of the EIA Study, Scope of the Study, Magnitude of the Efforts**

- Detailed scrutiny of construction-related activities, encompassing land leveling and marking operations.
- Examination of pertinent off-site construction endeavors, including the potential construction of access roads, as necessary.
- An in-depth analysis of environmental repercussions stemming from both constructional and operational phases of the project.
- Evaluation of the project's positive contributions towards elevating the local economy's level.

This EIA report thus represents a thorough investigation into the varied environmental, biological, and socio-economic impacts, ensuring a holistic understanding of the project's footprint on the local ecosystem and community welfare.

## 2 POLICY, LEGISLATION, LEGAL & ADMINISTRATIVE FRAMEWORK

### 2.1 General Overview

This section outlines the current policy framework, legal requirements, and administrative procedures relevant to conducting Environmental Impact Assessment for various projects in Pakistan. Numerous legislations encompass clauses dedicated to environmental protection. Like other initiatives, this project necessitates undergoing an Environmental Assessment to acquire a No Objection Certificate (NOC) as mandated under Section 12 of the Punjab Environmental Protection Act of 1997 (amended in 2012).

The national environmental regulations mandate that development projects undergo an EIA process to forecast and mitigate potential impacts early in the development stage.

### 2.2 Screening

Under the environmental assessment categorization, the proposed project is classified under **Schedule II** (list of projects requiring an EIA), **Category A** (Energy) and **sub sector 5** (oil & gas extraction projects including exploration, production, gathering systems, separation & storage) as per the IEE/EIA Regulations 2022. These regulations, enacted under Section 12 of the Punjab Environmental Protection Act of 1997 (amended in 2012), necessitate conducting an EIA for environmental approval. The procedural details are elaborated in Chapter 03 under "Process Description."

### 2.3 Regulatory And Framework Compliance

This EIA study complies with policy guidelines for EIA report preparation, adhering to procedures established by the Provincial Environmental Protection Agency (EPA).

#### 2.3.1 Legal and Institutional Framework

A summary of applicable laws and regulations for this project's environmental study includes:

**2.3.2 National Conservation Strategy, 1992:**

A strategy approved by the Cabinet of Pakistan focusing on natural resource conservation, sustainable development, and resource management efficiency.

**2.3.3 Environmental Legislation (PEPO 1983 and PEPA 1997, Amended 2012):**

Legislation evolving from the Environmental Protection Ordinance (EPO) of 1983 to the current Punjab Environmental Protection Act, mandating environmental approval for project construction.

**2.3.4 National Environmental Policy, 2005:**

Guidelines issued by the Government of Pakistan to manage the environmental impacts of development projects.

**2.3.5 EIA and IEE Regulations, 2022:**

Recent regulations for reviewing EIA/IEE reports.

**2.3.6 Environmental Report Guidelines, 1997:**

Framework for EIA/IEE report preparation across various sectors.

**2.3.7 Punjab Environmental Quality Standards (PEQS):**

Standards for controlling municipal and industrial effluents and emissions.

**2.3.8 Guidelines for Sensitive and Critical Areas:**

Guidance for project planning in environmentally sensitive locations.

**2.3.9 Environmental Assessment Policies and Procedures:**

Systematic examination and approval processes for new developments.

**2.3.10 Public Consultation Guidelines:**

Part of a comprehensive regulatory package including various environmental protection guidelines and standards.

**2.3.11 Punjab Wildlife Protection Act, 1974; Forest Act, 1927; Explosive Act, 1884; and other relevant laws:**

A collection of laws concerning wildlife conservation, forest management, explosive handling, and more, emphasizing environmental preservation and public health protection.

**2.3.12 Labor, Safety, and Waste Management Regulations:**

Laws and guidelines addressing labor practices, safety standards, and waste management to ensure environmental and public welfare.

This comprehensive legal and institutional framework underscores the project's commitment to abide by national environmental standards and regulations, ensuring a responsible and sustainable approach to development.

### **3 SCOPING**

Scoping is a critical phase in the Environmental Impact Assessment (EIA) process, aimed at delineating the breadth and depth of examination required for a proposed project or activity. This phase involves a meticulous evaluation of potential impacts associated with the project, encompassing direct and indirect effects, cumulative impacts, and possible long-term consequences on the environment. A multidisciplinary team of environmental and social experts undertakes this evaluation, conducting an in-depth analysis of the project or activity to identify potential environmental risks and impacts. These impacts may affect various environmental domains, including air quality, water quality, biodiversity, and cultural heritage.

A distinctive feature of this EIA process is the inclusion of public consultation. This participatory approach allows members of the public and other interested stakeholders to offer their insights, express concerns, and contribute to the discussion regarding the proposed project or activity. Through this mechanism, the EIA process ensures that a broad spectrum of perspectives is considered, thereby enhancing the assessment's comprehensiveness and accuracy. Public consultation plays a vital role in fostering transparency, accountability, and community engagement in the decision-making process, ultimately contributing to more informed and sustainable environmental outcomes.

#### **3.1 SPATIAL AND TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT**

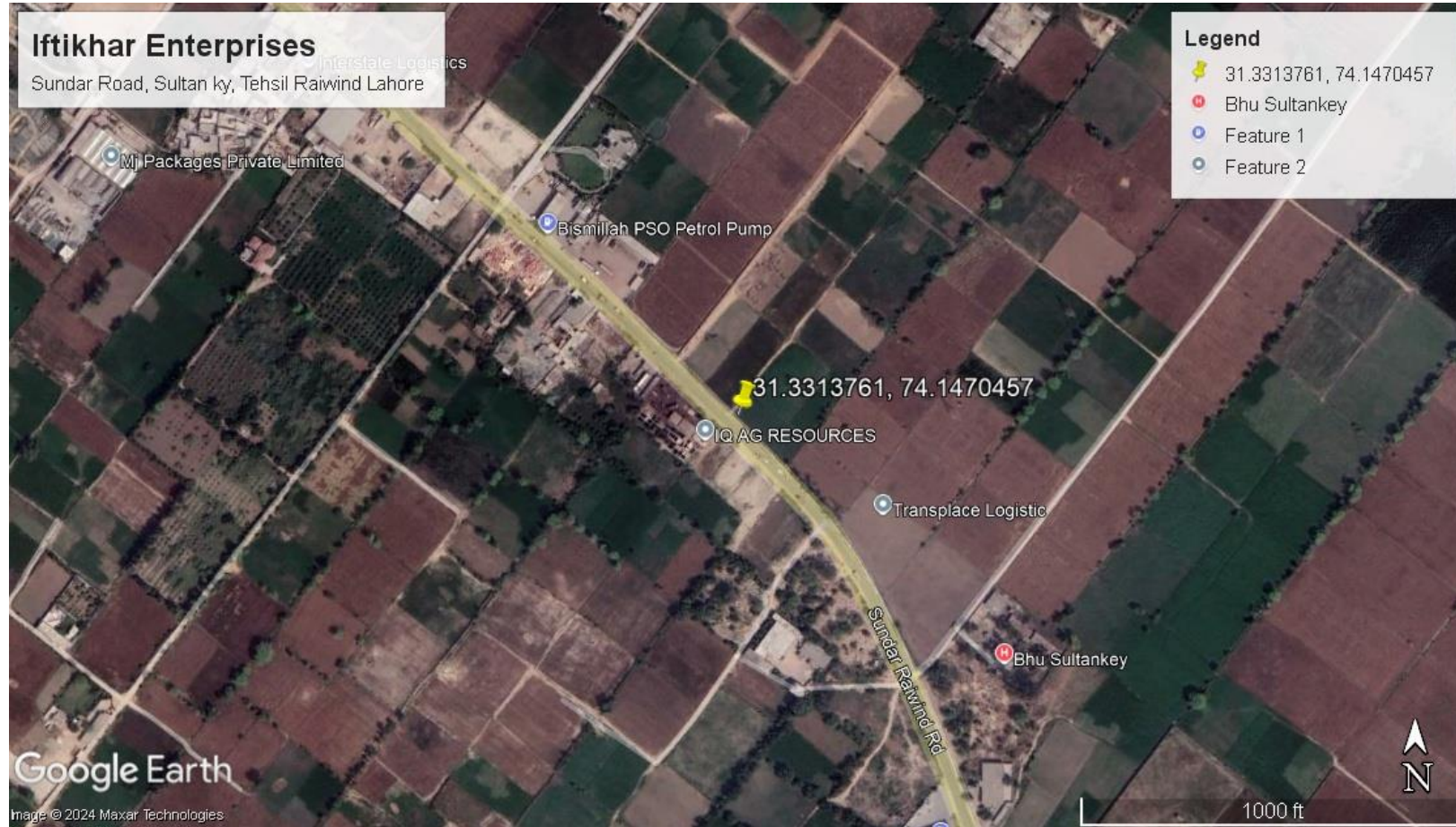
The initiation of the Said project will transition the land use from open land to a specialized storage unit. Despite the proximity of a few residences within a 2-kilometer radius, as depicted in the accompanying figure, the project's implementation strategy includes the adoption of comprehensive mitigation measures. These measures are designed to minimize any potential disturbances to the nearby areas and the local community. A notable aspect of this project is its minimal environmental footprint concerning air

emissions. The operation primarily involves storage activities, which are not expected to result in significant emissions. This aspect ensures a negligible impact on air quality in the surrounding environment, aligning with sustainable operational practices.

Moreover, the project places a strong emphasis on water quality management. Wastewater generated from the facility will undergo rigorous testing to comply with the Punjab Environmental Quality Standards (PEQS), ensuring that the water quality remains within safe and acceptable limits. This commitment to monitoring and maintaining water quality underscores the project's dedication to environmental stewardship. An additional reassurance is the absence of environmentally sensitive areas within a defined safe distance from the project site. This factor significantly reduces the risk of adverse impacts on critical habitats, biodiversity, or ecologically sensitive zones due to the project's operations. Overall, the project's approach to land use change, coupled with its proactive measures to mitigate environmental impacts, demonstrates a responsible and sustainable commitment to minimizing its ecological footprint while ensuring compliance with relevant environmental regulations and standards.

Environmental Impact Assessment (EIA)

Figure 1 Radius along Project site



## **3.2 KEY ISSUES AND CONCERNS IDENTIFIED**

During the consultation phase, a broad spectrum of stakeholders including local community members, government departments, environmental practitioners, experts, and nearby industries, expressed their views on the project. While there was a consensus in favor of the project, several important concerns were highlighted:

### **3.2.1 Employment Opportunities:**

Preference for local hiring to ensure community benefit from job opportunities.

### **3.2.2 Worker Training:**

Emphasis on providing adequate training to enhance worker skills and safety.

### **3.2.3 Noise Pollution:**

Recommendations to limit noisy activities to mitigate disturbance.

### **3.2.4 Air Pollution Control:**

The need for effective measures to manage and reduce air pollution.

### **3.2.5 Wastewater Management:**

Importance of treating wastewater before disposal and installing adequate treatment facilities.

### **3.2.6 Solid Waste Management:**

Timely collection and proper disposal of solid waste were underscored.

### **3.2.7 Environmental Mitigation and Management:**

Suggestion for a robust Environmental Management and Monitoring Plan (EMMP), tree plantation initiatives, and ensuring worker health and safety.

### **3.2.8 Resource Conservation:**

Calls for responsible use of groundwater and overall cleanliness of the area.

**3.2.9 Transportation and Community Impact:**

on covering transport vehicles during construction to reduce air pollution and efforts towards community betterment.

**3.3 SIGNIFICANT ENVIRONMENTAL IMPACTS AND MANAGEMENT FACTORS:**

The consultation process also helped in identifying critical environmental impacts and management factors necessary for sustainable project execution.

These include:

**3.3.1 Dust and Air Quality Management:**

Strategies to minimize dust and particulate emissions.

**3.3.2 Wastewater Treatment:**

Ensuring all wastewater is treated according to standards before disposal.

**3.3.3 Solid Waste Management:**

Establishing a solid waste collection and disposal mechanism.

**3.3.4 Occupational Health and Safety:**

Implementing measures to protect workers' health and safety.

**3.3.5 Site Security and Traffic Management:**

Ensuring secure and efficient site operations and traffic flow.

**3.3.6 Hygiene and Community Impact:**

Maintaining hygiene standards and assessing the project's impact on the community.

**3.3.7 Resource Conservation:**

Focusing on water conservation, energy efficiency, and other sustainable practices.

**3.3.8 Environmental Restoration and Green Initiatives:**

Commitment to site restoration post-construction and promoting green spaces through tree plantation.

These insights from the consultation phase are crucial for refining project strategies, ensuring environmental compliance, and fostering positive community relations. Implementing these considerations will not only address stakeholder concerns but also contribute to the project's sustainability and acceptance within the local context.

## 4 ALTERNATIVE CONSIDERATION

The Environmental Impact Assessment (EIA) for said project involves a comprehensive analysis of various alternatives to ensure that the project achieves its objectives with minimal environmental impacts.

Alternatives are recommended and examined to determine the best method of achieving project objectives, while minimizing environmental impacts. The discussion and analysis of alternatives in an EIA (Environmental Impact Assessment) study should consider other practicable strategies that will promote the elimination of negative environmental impacts identified.

This section covers the project alternatives which were examined for the proposed project in the said location. This analysis encompasses site selection, design and technology choices, environmental considerations, and economic strategies, aiming to identify the most suitable options based on environmental, economic, and health and safety criteria.

### 4.1 Site Alternatives

The project's location is strategically chosen within an open area, ensuring compatibility with surrounding land use and adequate space for the proposed facility and its infrastructure. The site's selection was influenced by several factors:

- **Proximity to Residential Area:** Away from the residential area, no conflict of land exists.
- **Availability of Transportation Infrastructure:** Facilitates logistical efficiency and access.
- **Ownership:** The site is owned by the proponent, simplifying legal and administrative processes.

These characteristics underscore the site's suitability for the proposed project, negating the need for consideration of alternative locations.

## 4.2 Design/Technology Alternatives

The project commits to adopting state-of-the-art technology and new machinery to minimize long-term environmental impacts. This approach prioritizes:

- **Low Emission Technologies:** Ensuring operational efficiency while minimizing air pollutants including vapors.
- **Water Mitigation Techniques:** Including wastewater treatment to manage effluents effectively.

This focus on cutting-edge technology and investment in high-quality machinery demonstrates a commitment to environmental stewardship and product quality.

## 4.3 Environmental Alternatives

The chosen site's location, away from sensitive biodiversity areas and cultural heritage sites, supports the project's environmental feasibility. Additional environmental considerations include:

- **Landscaping:** To enhance the site aesthetically post-construction.
- **Fire Safety:** Installation of advanced fire-fighting facilities.
- **Resource Conservation:** Emphasis on environmental protection through sustainable practices.

These factors collectively affirm the project's compatibility with its environmental context, ensuring minimal ecological disturbance.

## 4.4 Economic Alternatives

The project's design and operational strategies are economically viable, offering multiple benefits:

- **Tree Plantation:** To lower area temperatures and serve as a noise buffer.
- **Energy-Efficient Building Design:** Maximizing natural daylight and utilizing LED lighting to reduce electricity consumption.

- **Employment Opportunities:** Creating jobs for both local and skilled workers, contributing to the local economy.

These elements indicate a holistic approach to project design, balancing economic efficiency with environmental and social benefits. The cumulative impact of such projects is expected to contribute significantly to economic growth, affirming the chosen alternatives' appropriateness for M/s Iftikhar Enterprises.

## 5 PROJECT DESCRIPTION

The proponent is set to establish a petroleum product storage godown under the name "**M/s Iftikhar Enterprises**". This facility will be located at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, sprawling over an area of 14 Kanals. The primary aim of this project is to fulfill the growing market demand thereby contributing to economic upliftment of the proponent.

### **Financial Overview**

The estimated investment for the proposed project is approximately 298 million PKR. This budget allocation underscores the project's scale and the commitment to establishing a state-of-the-art product manufacturing facility.

### **Positive Impacts**

The initiation of M/s Iftikhar Enterprises is poised to have a significant positive impact on both the local and national economy:

- Fulfill Demand
- Employment Opportunities
- Economic Contribution

### **5.1 Type and Category of the Project**

#### **Capital Cost:**

The project entails an investment of 298 million PKR, highlighting its significant economic scale.

#### **Area Coverage:**

The project will be developed over an area of 25,600 SFT., indicating substantial physical infrastructure.

#### **Employment Generation:**

It is anticipated to create 20-25 jobs during the construction phase and 30-35 jobs during the operational phase, contributing significantly to local employment.

#### **Environmental Assessment Category:**

According to the environmental assessment categorization, this project is classified under **Schedule II (list of projects requiring an EIA), Category A (Energy) and sub sector 5 (oil & gas extraction projects including exploration, production, gathering systems, separation & storage)** as per the IEE/EIA Regulations 2022. This classification necessitates conducting an EIA for environmental approval, underlining the project's adherence to environmental governance.

### **5.2 Objective of the Project**

The project is aimed at establishing a petroleum product storage godown with the following objectives:

- 1. Economic Growth:** To contribute to economic development by providing a new source of income and employment.
- 2. Health and safety:** To enhance health and safety through the provision of quality products.
- 3. Market Demand:** To fulfill the market demand, ensuring the availability of cost-effective products.
- 4. Socio-economic Uplift:** To contribute to the socio-economic upliftment of the proponent and the local community by adding value through this project.

### **5.3 Location and Site Layout**

- **Site Location:** The facility is to be located at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, with coordinates 31.3313761, 74.1470457, strategically chosen for its suitability for industrial development.

- **Site Layout:** The detailed layout of the project is meticulously planned, considering the operational requirements and environmental considerations, with the layout provided in the attached file.

#### **5.4 Land Use of the Site**

The selected land is an open plot and surrounding also covered with greenery, ensuring that the project aligns with the existing land use policy and negates the need for land use change.

#### **5.5 Road Access**

The project site boasts paved road access via the main road facilitating named as Sundar Road, easy access for both construction and operational activities. This accessibility is crucial for the efficient transportation of materials and products, as well as for employees commuting to the site. The road access map provided offers detailed insight into the project site's connectivity.

## Environmental Impact Assessment (EIA)

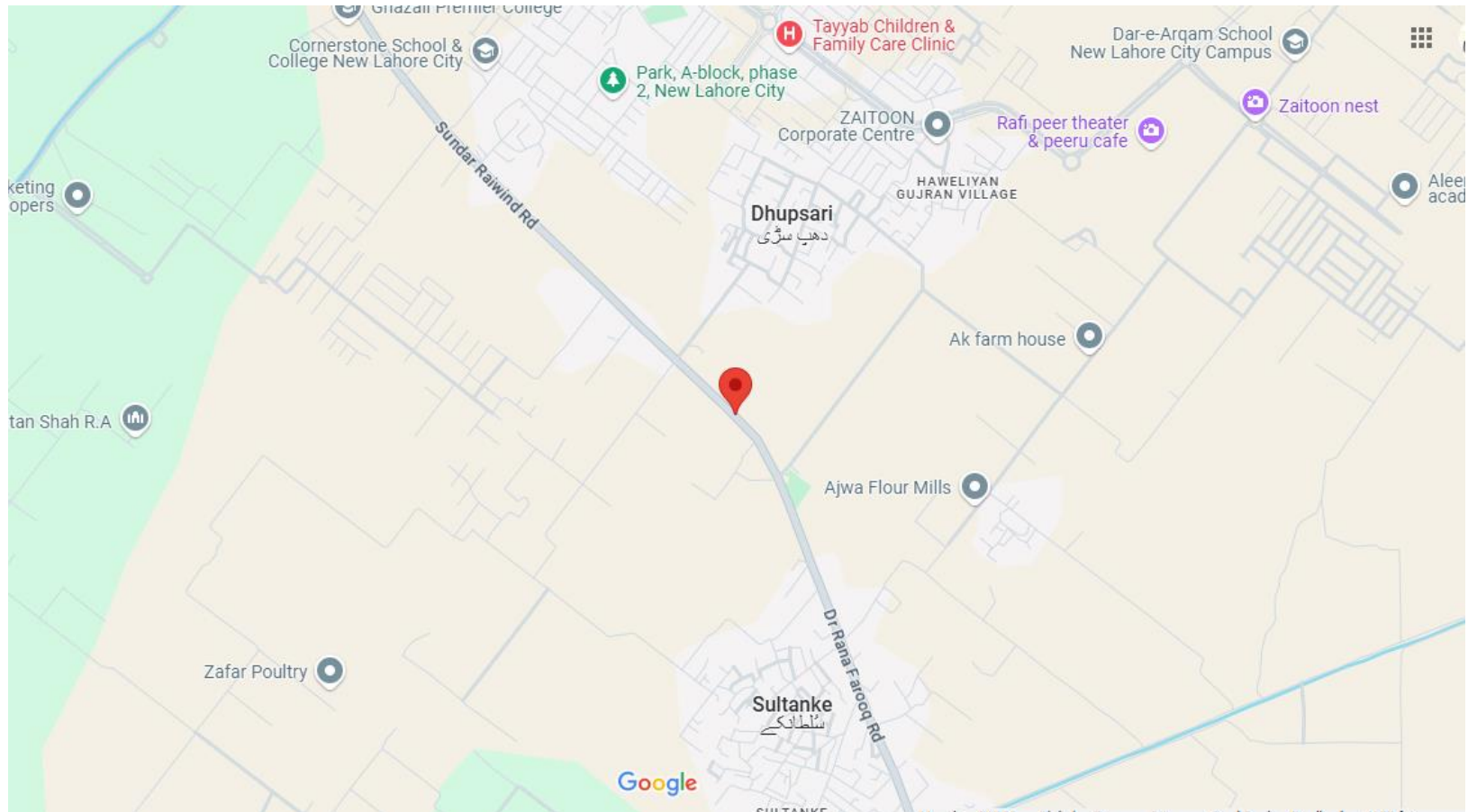


Figure 2 Road Access Map

## **5.6 Vegetative Features of the Site**

The area surrounding the proposed project site boasts a blend of agricultural characteristics, enriched with several green patches. Recognizing the importance of sustainable development, the project plans to introduce green belts around the site during its operational phase. These green belts are not only intended to augment the site's aesthetic appeal but also serve a critical environmental function. They will function as natural buffers to mitigate pollution emanating from various sources, particularly vehicular emissions, and will play a role in dampening noise pollution from within the premises. The development of a green belt is a strategic recommendation aimed at enhancing atmospheric quality and providing a serene environment around the project area.

## **5.7 Plantation Plan**

In a concerted effort to beautify the landscape and improve ambient air quality, the project envisages the plantation of 1,000 to 2,000 plants within and around its vicinity. The selection of plants will include ornamental varieties such as coreopsis and daylilies, with a focus on planting shade-providing trees. This plantation initiative is aligned with environmental sustainability goals, aiming to create a greener, more pleasant environment that benefits both the ecosystem and the local community.

## **5.8 Magnitude & Cost of the Project**

The project is poised to be a significant industrial venture with an estimated initial capital investment of around 298 million PKR. This investment will cover the costs associated with the procurement of raw materials, processing, manufacturing, and maintenance activities essential for the operation phase of the project. Emphasis will be placed on ensuring the safety of equipment and operations through diligent management practices. It is noted that no separate fund allocation is required for these operational assurances, indicating a comprehensive budget plan that encompasses all necessary safety and environmental measures. This strategic financial planning underscores the

project's commitment to both economic viability and environmental responsibility.

**Table 4 Cost Breakdown**

<b>Amenities</b>	<b>Cost in PKR</b>
Land Cost	130 million
Civil Work (Construction, Installation & erection of machinery)	100 million
Equipment/Machinery	10 million
Landscaping/Green belt	04 million
Fire-fighting arrangements	19 million
Solid Waste Management	10 million
Wastewater Treatment	05 million
Health and Safety Training/equipment	20 million
<b>Total</b>	<b>298 million</b>

## **5.9 Proposed schedule for implementation (Tentative)**

**Stage I:** The clearing of land, and preparation of land for construction activity.

**Stage II:** During this phase, machinery will be brought to the site and installed.

**Stage III:** In this phase all the outstanding activities will be completed, and construction activities will be initiated.

**Stage IV:** After completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Table 5 Schedule of Implementation

Activities	Times Frame									
	Four Week	Four Week	Four Week	Four Week	Four Week	Four Week	Four Week	Four Week	Four Week	Four Week
Preliminary Phase (Land Acquiring etc.)	■									
Design Phase		■								
Pre-Construction Activities Finalization			■							
Construction Phase			■	■	■	■	■			
Purchasing Phase							■	■		
Machinery Installation								■		
Commissioning Phase									■	
Recruiting Of Staff										■
Operation Phase										■

**5.10 Description of the project**

The proponent intends to establish the petroleum product storage godowns unit, by the title “M/s Iftikhar Enterprises, located at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, over an area of 14 Kanals. The purpose of this project is to meet the market demand, to produce high quality products and economic uplift. The estimated cost for the subject proposed project will be about 298 million PKR. The project will pose positive impacts in terms of employment opportunities, will create jobs during construction and operation, and will contribute to the country's economy by meeting the demands.

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### 5.10.1 Process Description

The proponent has planned to establish petroleum product storage unit to fulfill the need of market. The processing of oil storage involves a complete mechanism mentioned in this EIA (Environment Impact Assessment) Report.

A process description of petroleum product storage unit typically involves the following steps:

**Unloading and Inspection:** Upon arrival, the petroleum product is unloaded from the transportation vessels using pumps or gravity flow. The petroleum products are then visually inspected for any signs of contamination or damage.

**Storage Tanks:** The settled petroleum product is then transferred to large storage tanks specifically designed for petroleum product storage. These tanks are typically constructed from steel and have capacities ranging from a few thousand to millions of barrels. The petroleum products carefully transferred into these tanks using pumps or gravity flow.

**Monitoring and Maintenance:** Continuous monitoring of the storage tanks is crucial to ensure their structural integrity and prevent leaks or spills. This involves using sensors, gauges, and other instruments to monitor factors such as oil levels, pressure, temperature, and potential leaks. Regular inspections, maintenance, and repairs are conducted as needed to ensure safe operation.

**Loading for Distribution:** When the stored petroleum products are needed for processing or transportation, it is withdrawn from the storage tanks. This can be achieved through pumps or by gravity flow, depending on the specific configuration of the storage unit. The products are then transported to refineries, distribution centers, or other facilities through pipelines, tankers, or other means.

**Safety and Emergency Preparedness:** Storage units adhere to strict safety regulations to prevent accidents, spills, and environmental

damage. They implement safety protocols, including fire suppression systems, containment measures, emergency response plans, and regular training for personnel.

## **5.11 Available Facilities**

### **1. Water Resources**

**Groundwater Utilization:** The project plans to utilize groundwater for its water consumption needs. The anticipated depth for groundwater extraction is between 100-150 feet.

### **2. Fire Safety Measures**

**Firefighting System:** A comprehensive firefighting system will be in place to address any emergencies, ensuring the safety of the premises, the workforce, and the environment. Automatic fire detection and alarm system provided. First aid boxes are provided on each floor and dry chemical fire extinguisher is provided.

### **3. Wastewater Management**

**Treatment Facilities:** To manage and treat wastewater effectively, a Septic Tank will be installed and maintained, demonstrating the project's commitment to environmental sustainability and compliance with regulatory standards.

### **4. Parking Facilities**

**Designated Parking Area:** The project site will include a specifically allocated area for vehicle parking, accommodating the transportation needs of employees and visitors, thus ensuring orderly and safe vehicular movement.

### **5. Water Supply for Construction and Operational Phases**

**Groundwater Source:** The primary source of water supply will be groundwater, with an expected use for various purposes, underscoring

the project's reliance on sustainable water resource management.

## **6. Policy on Substance Use**

The use of drugs and narcotics is prohibited within the working premises to ensure a safe and productive working environment. Smoking is permitted during designated rest times and in isolated areas to maintain workplace hygiene & health standards.

## **7. Workforce Requirements**

**Workforce Engagement:** The construction phase will require 20-25 workers, whereas the operational phase will see an increase to about 25-30 workers. This reflects the project's capacity to generate employment and contribute to the local economy.

### **5.11.1 Personnel Protective Equipment (PPE)**

**Safety Gear Provision:** To safeguard workers during both construction and operational phases, the following personal protective equipment will be provided, tailored to the specific activities undertaken:

- Protective goggles
- Leather or rubber safety shoes
- Gloves
- Face masks
- Helmets
- Overcoats

These measures emphasize the project's dedication to maintaining high standards of workplace safety, environmental protection, and operational efficiency, aligning with best practices and regulatory requirements.

## **5.12 Restoration and Rehabilitation Details**

Given the project's location within an undeveloped area, it stands apart from residential communities, negating concerns related to displacement or disruption to local livelihoods. The absence of significant structures requiring relocation or demolition to facilitate the project underscores the minimal impact

on existing land use. Consequently, the need for restoration, rehabilitation, or relocation does not arise, aligning with the project's commitment to sustainable development within pre-designated industrial estates. The project's estimated operational lifespan is 25 years, during which all civil structures and infrastructure will undergo extensive renovation to maintain operational efficacy and safety standards, without necessitating rehabilitation at the site.

### **5.13 Government Approvals and Leases**

Compliance with environmental regulations is paramount, necessitating approval from the Environmental Protection Agency (EPA) of Punjab, as per Section 12 of the Punjab Environmental Protection (Amendment) Act 2012. The preparation of this Initial Environmental Examination (IEE) report for submission to EPA Punjab is a critical step towards securing the necessary governmental endorsements to commence construction, underscoring the project's adherence to legal and environmental mandates.

### **5.14 Health, Safety & Hygiene**

The project prioritizes health, safety, and hygiene through the implementation of comprehensive measures:

- **First Aid Facility:**

Adequate first aid resources and training will be available on-site to address emergencies, ensuring immediate response capabilities.

- **Safety Training:**

Employees will receive training on workplace safety and operational best practices to minimize risks and enhance overall safety awareness.

- **Substance Use Policy:**

The use of drugs and narcotics is prohibited within the workplace to maintain a safe and healthy working environment, with designated smoking areas provided during breaks.

### 5.15 Safety Signs/Safety Boards

Safety signage plays a crucial role in accident prevention and risk communication at the workplace. These signs and symbols, designed to be easily understood by all employees, are essential for conveying important safety information and instructions. The project will ensure that safety signs, symbols, and boards are prominently displayed across all departments, facilitating a culture of safety and awareness among workers and staff. This approach not only helps in mitigating hazards but also reinforces the project's commitment to maintaining secure and health-conscious work.



Figure 3 Safety Signs

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## 6 DESCRIPTION OF ENVIRONMENT

An environmental baseline study is intended to establish a database against which potential impacts can be predicted and managed subsequently. The IEE of the proposed project covers a comprehensive description of the project area, including regional resources which are expected to be affected by the project, as well as those which are not expected to be directly affected by the construction and operation of the project.

A site visit was conducted to survey the field area for collection of relevant data. Interviews were conducted with the public and stakeholders of the project area to seek public opinion on the implementation of the proposed project. Various Governmental and Non-Governmental Organizations (NGOs) were also visited for the collection of relevant data and their views on the proposed project were recorded for incorporation into the EIA report. The environmental impacts of any activity or process will be assessed based on deviation from the baseline or normal situation. The following components form part of the baseline:

- Physical Environment
- Ecological Environment
- Socioeconomic Environment

### 6.1 Physical Environment

The physical environment consists of existing land form and land use at the Project site, geology, pedology, hydrology, meteorology and climatology. The Pre-Project condition (i.e. baseline) of these components of the physical environment is described in detail in this chapter. To identify the potential impacts on the physical, biological and socio-economic environment that will likely to arise from the Project activities. The physical resources included in the study comprise of:

- Geology
- Pedology
- Topography
- Climatology
- Temperature

- Altitude
- Average annual rainfall
- Hydrology testing and monitoring

### **6.1.1 Geology**

Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhpura District. The original physiographic features like channels remnants and levees have been destroyed or changed by the construction of urban infrastructure. Flood plains have been confined by construction of embankments (bunds) and spurs. Sub-recent flood plain is 4 to 8 meters higher than the recent flood plain and can be identified at number of places i.e. Shalimar Garden, Moghalpura and Multan Road.

Terrain of the proposed project site is predominantly flat. Lahore district is situated at an average elevation of 210 meters above mean sea level. The alluvial subsoil's are of late Pleistocene and were formed by the flood plains of river Ravi. These consist of clay, silt and sand. The thickness of clay increases with distance from the river bed.

Lahore lies on the alluvial plain called Bari Doab. Doab is a local word for area between rivers. Bari Doab is a part of the Indo-Gigantic alluvial plain formed by the Indus River and its tributaries. It is bounded by Ravi and Chenab rivers in the northwest and west and by Sutlej River in the southeast. Northeastern boundaries of Doab lies near the foothills of the Himalayan Ranges. The Bari Doab is covered by Quaternary alluvium which overlies semi-consolidated Tertiary rocks or Metamorphic and igneous rocks of Precambrian age. Except for a small area in the northeastern part of Doab where basement rock was encountered no information is available at present regarding the distribution of Tertiary and Precambrian rocks in the Doab.

#### **Project site:**

No freshwater body is available near site. Groundwater from depth of 70-75 ft. can be used for drinking and other purpose. Ground water quality report of area is annexed.

### 6.1.2 Seismicity

According to Seismic Zoning Map of Pakistan the proposed project area falls in Seismic Zone 2A. This map indicates zones according to the Building Code of Pakistan – 2007. Figure 6 presents the WHO Seismic Hazard Map of Pakistan clearly depicting Lahore in a category of medium intensity level.

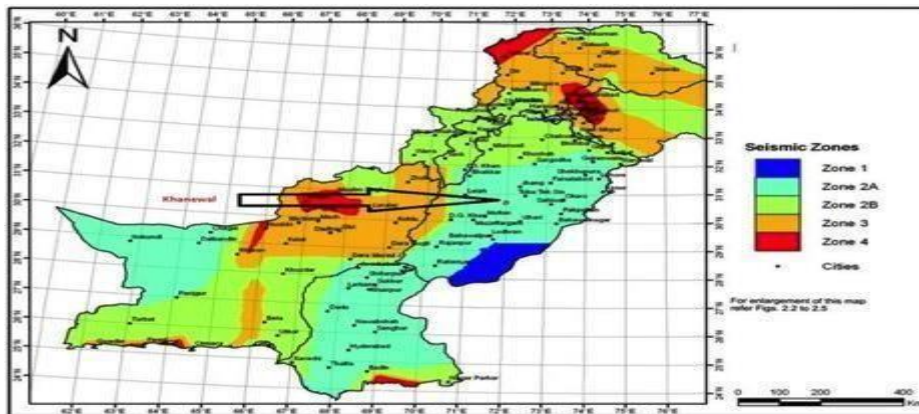


Figure 4 Seismic Zone of Pakistan

### **6.1.3 Climate**

Purposed project site is located in District Lahore and has distinct seasons marked by wide variation in temperature. The coldest month is January in which the mean maximum temperature is 19.4 °C and the mean minimum temperature is 6.6 °C. June is the hottest month with the mean maximum temperature near 39.8 °C and the mean minimum temperature as 27.4 °C. Mean temperature of the region from 2010-2018 is given in Figure.

The average annual rainfall from 2010-2018 in Lahore works out to be 126.16 mm. Nearly 70% of it received in the form of high intensity showers during the monsoon (July, August, September) and the remaining in winter. The yearly variations are considerable. The average quarterly rainfall at Lahore during the last 9 years (2010-2018) is also shown in Figure.

The most humid period is in month of February with average humidity of 53.125 % and the least humid period is in the month of May with average humidity of 18.875 %. The average monthly humidity of Lahore region form last 9 years (2010-2018) recorded is 35.25 %.

### **6.1.4 Topography**

Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhpura District.

### **6.1.5 Soils**

The dominant soil group in both areas is Calcicols, which are loamy soils with accumulation of secondary calcium carbonates.

### **6.1.6 Temperature**

The summer season is very hot and long. Average day temperature from May to September is about 40 °C. May and June are the hottest months recorded. The temperature sometimes raises up to 50 °C, dust storms are common in the

evening and bring relief for the community as the temperature falls considerably. Owing to the active radiation under clear sky, night is generally comfortable being cool and calm. The temperature falls up to 25 ° C at night. From July to September the heat is relatively less intense due to the interference of the monsoon, which tends to decrease the day temperature. The winter season spreads over December, January and half of the February, and is fairly cold. The average temperature, during day-time is only 20 ° C in January. Nights are very cold and temperature often falls down to 5 ° C.

Month	Mean temp. Max	Mean temp. min	Precipitation (%)	Humidity (%)
January	19.7	5.0	33.8	66.2
February	21.6	7.7	50.0	60.0
March	26.0	12.5	60.5	53.8
April	33.0	17.7	36.5	41.8
May	38.1	22.0	31.8	32.5
June	40.5	25.8	51.6	37.8
July	35.7	25.8	23.3	67.8
August	34.4	25.3	22.2	70.8
September	35.0	23.0	77.7	65.5
October	33.1	16.6	12.2	55.6
November	27.8	9.9	9.9	62.7
December	21.5	5.7	30.4	68.9

## **6.2 Baseline Monitoring of Environment**

### **6.2.1 Ambient Air Quality**

Atmospheric pollution means the imbalance in the normal air chemistry. It can occur due to the addition of a new chemical into the atmosphere or by the change in concentration of the chemicals already existing in the atmosphere. Atmospheric pollution particularly in urban areas has a strong impact upon daily life. The reasons for such changes can both be natural as well as anthropogenic. Ambient air quality is a key to measuring the concentration of the various chemicals in the atmosphere; especially of the chemicals which pose detrimental effects on health, safety and environment, to have a comparison with their safe concentrations, as established in WHO Standards and NAAQS.

It was observed during the visit that Petrol and Diesel operated vehicles are emitting smoke and exhaust gasses in excessive quantities which are the leading sources of environmental pollution and are responsible for the air quality worsening. In fact, exhaust emissions (including dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons, and particulates) and

Evaporative emissions (including vapors of fuel, which is released into the atmosphere, without being burnt) are the prime reasons of deterioration of air quality. The following table presents the measured parameters of the ambient air look from the center of the project area for assessment of air quality.

Table 6 air quality

Parameters	CO	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	SPM	O <sub>3</sub>
Unit	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
Proposed Site	4.17	47.86	40.05	147.54	490	41.51
PEQS	5	120	80	150	500	130

### 6.2.2 Noise Levels

Noise is described as an unwanted sound emitted from unavoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plentiful and un-avoidable. Physically, there is no distinction between sound and noise. Sound is sensory.

The perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude airplane flying etc. The noise pollution in the project area is a source of pollution and nuisance. Among eight noise measurement locations in the cities, the study says, on average, the noise level ranged from 57-60 dB (A) in and around the project site.

## 6.3 Ecological Environment

As the climatic conditions of Lahore is semi-arid and subtropical. The vegetation of the area falls under scrub, dry and tropical thorn forest. Due to rapid increase in the population of the city and to cater for its housing and commercial requirements the agricultural lands were converted into business centers, multi-story plazas and housing colonies. The Project Area was

once covered with native vegetation consisting of trees like Keekar (*Acacia Karoo*), Wan (*Salvadoraoleoides*) and Jand (*Prosopisspicigera*). This native vegetation is under threat throughout its range with the onslaught of civilization and this vegetation was cleared for agricultural purposes.

### **6.3.1 Flora**

No threatened or endangered species and medicinal plants are present in the project area. No vegetation or plants will be removed due to commencement of project. However proper tree plantation and green belts are planned by the proponent. Greenery and trees are present in surroundings of site too.

### **6.3.2 Fauna**

No threatened or endangered species found in the project site. No wildlife was present there. Only cats, dogs, sparrows and crows passed by temporarily. No permanent habitat of any fauna was found.

## **6.4 Socio Economic Environment**

This section provides collective information about the existing socio-economic and environmental condition of the Project Area within the COI. The different types of socio- economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of EMMP of the poultry farm (control shed) for the proposed Project. The study also helped to assess the positive or adverse impacts on local community. Detail of crops that are being sown in the respective area, is given below

### **6.4.1 Demographic Profile**

The main crops which are being cultivated in Lahore City and its surroundings are; Sugarcane, Wheat, Sun Flower Seed, Rape/Mustard Seed, Rice, and Guavas are some of the famous fruits exported out of the country as well as fodder crops such as, Onion, Tomato, Cauliflower, Potatoes and Carrot.

### **6.4.2 Religion**

The population of Lahore is over 99% Muslim.

### **6.4.3 Languages and Major Castes**

Punjabi and Urdu are spoken in the city. Main castes are chishti, Rehmani, LAK, Chadhar, Jatt, Tagga, Ansari, Butt, Dulu, Sayal, Kamboh, Bhadru, Mughal, Dogar, Sanpal, Gujjar, Arain, Rajput, Tajra, Hiraj and Shaikh Awan.

## **6.5 Quality of Life Values**

These sections discuss the social structure of this area. The consultant carried out a detailed survey in different villages and collected the desired information. The socio-economic questionnaire and environmental checklists were used as survey tools to collect required information. The details of this survey are discussed below:

### **6.5.1 Occupation of Respondent**

The major occupation of the people residing in this area is agriculture but there is small number of people who work in private sector as labors (skilled and unskilled).

### **6.5.2 Road Access**

The Bricks Industry is connected with its surrounding city Lahore and other rural areas like Sultan-k.

### **6.5.3 Common Diseases**

In this area, common diseases are Common Cold, TB (Tuberculosis), Typhoid, Stomach Worms, Malaria, Goiter, Dysentery, Arthritis and Hepatitis.

### **6.5.4 Telephone Facilities**

Both Landline and Cellular telephone facilities are present in the project area.

## **6.6 Site Suitability**

### **6.6.1 Quality of Life**

People of the proposed area have non-nomadic life style and are living here from times of their ancestors, possess all basic needs to survive. Both Family Systems (Joint and Nuclear Family System) are sound in the proposed area. The major occupation of the people, residing in the proposed area, is agriculture, business and labor (skilled and unskilled).

### **6.6.2 Project Response**

90% of the respondents believed this project should be implemented. Construction of the project will create labor opportunities for locals, and it will help to improve the economic conditions of the area. Construction of the rice processing mill will also provide better living facilities for the people. The respondents also provided mitigation measures like certified contractors must be hired, proper plantation should be done, proper procedures should be followed etc. They said, if mitigation measures are implemented, they would have no objection.

## 7. Potential Environmental Impact Assessment

The establishment of the manufacturing facility by M/s Iftikhar Enterprises necessitates a detailed Environmental Impact Assessment (EIA) to identify, evaluate, and mitigate potential environmental and socio-economic impacts. This assessment aims to:

- Identify alternative methods to conduct project activities minimizing adverse effects.
- Enhance the project's environmental and social benefits.
- Mitigate adverse impacts to the extent possible.
- Maintain residual adverse impacts within acceptable limits.

### 7.1 Impact Assessment Method

The EIA utilizes a Checklist Method to systematically evaluate the project's potential impacts on the geomorphology, soil, water, air, biological resources, and socio-economic conditions of the area. This method facilitates the identification of the significance, magnitude, nature, reversibility, and extent of potential impacts, assessed across the project's construction and operational phases.

#### 7.1.1 Evaluation Methods Include:

##### 1. Checklists

Simplified approach for identifying potential impacts.

##### 2. Matrices:

It helps in visualizing the relationship between project actions and environmental aspects.

##### 3. Networks:

Illustrates the interconnections between different environmental factors.

##### 4. Overlays:

Utilized for spatial analysis, often in conjunction with GIS.

##### 5. GIS and Computer Expert Systems:

Advanced tools for detailed spatial and environmental analysis.

The Checklist Method has been instrumental in delineating the significant environmental aspects to be addressed through the project lifecycle. Therefore, the method used to evaluate the impacts of the said project is the Checklist Method.

## 7.2 Evaluation of the Residual Impacts

While the incorporation of mitigation measures is expected to significantly reduce the project's environmental footprint, some residual impacts may persist. This stage assesses the anticipated impacts remaining after the application of mitigation strategies, underscoring the importance of ongoing management and monitoring to ensure they remain within acceptable bounds. The conclusion drawn highlights the suitability of the selected site and adopted technologies for mitigating environmental impacts effectively, assuming proper management practices are in place.

## 7.3 Characteristics of Impact

The nature of the project's impacts is further categorized into:

- **Positive and Negative Impacts:** Evaluating both the beneficial and adverse effects of the project.
- **Long and Short-Term Impacts:** Differentiating between immediate and enduring impacts.
- **Direct and Indirect Impacts:** Identifying impacts that occur as a direct result of project activities and those that are secondary.
- **Continuous and Intermediate Impacts:** Distinguishing between ongoing and sporadic effects.
- **Wide and Local Impacts:** Assessing the geographical extent of impacts, whether widespread or confined to the local area.
- **Large, Moderate, and Minor Impacts:** Classifying the severity of impacts based on their scale.

This structured approach to impact assessment ensures a comprehensive evaluation of all potential environmental and socio-economic effects, facilitating the development of effective mitigation and management strategies to support the sustainable implementation of said project.

**DURING CONSTRUCTION PHASE**

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion		*		*		*		*			*		*
Air Quality		*	*			*		*			*		*
Ground Water Quality		*	*			*	*		*				*
Noise Level		*	*			*		*			*		*
Wastewater Generation	*		*		*		*		*				*
Solid Waste	*		*		*			*		*			*
Aesthetic		*		*		*		*			*		*
Flora		*		*		*		*			*		*
Fauna		*		*		*		*			*		*
Employment Rate		*	*			*	*			*		*	
Economic Uplift		*	*			*	*			*		*	
Health & Safety		*	*			*		*			*		*

**DURING OPERATIONAL PHASE**

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion		*		*		*		*			*		
Air Quality		*	*			*		*			*		*
Ground Water Quality	*		*			*	*		*				*
Noise Level		*	*			*		*			*		
Wastewater Generation	*		*		*		*		*				*
Solid Waste	*		*		*			*		*			*
Machine Installation	*		*		*			*		*		*	*
Production		*	*			*		*		*			
Aesthetic		*		*		*		*			*		*
Flora & Fauna		*		*		*		*			*		*
Economic Uplift	*		*		*		*		*			*	

## 7.4 Impact Analysis of Said Project

The establishment and operation of a storage unit, such as M/s Iftikhar Enterprises has significant implications for various stakeholders, ranging from the animal health sector to the broader socio-economic landscape. This analysis explores both the positive contributions and potential challenges associated with such a facility.

### 7.4.1 Positive Impacts

**Economic Contribution:** The operation of the proposed facility stimulates the driving innovation, research, and development. It also creates direct employment opportunities and supports ancillary services.

**Regulatory Compliance and Product Safety:** Adherence to stringent quality and safety standards ensures the reliability of products, enhancing public trust in this sector.

### 7.4.2 Mitigation and Management Strategies

- **Environmental Management Practices (EMP):**  
Implementing comprehensive environmental management practices to minimize the release of residues into the environment.
- **Regulatory Compliance:**  
Ensuring strict adherence to guidelines for the responsible use of product.
- **Research and Development:**  
Investing in the development of alternative and sustainable practices to mitigate environmental impacts.
- **Public and Stakeholder Engagement:**  
Collaborating with regulatory bodies, and the public to promote awareness and responsible use of medicines.
- **Personal Protective Equipment (PPE):**  
Enforcing the use of appropriate PPE among workers to ensure their safety and minimize occupational exposure to hazardous substances.

By addressing these potential challenges through proactive management and mitigation measures, the facility can significantly contribute to economic growth while maintaining a commitment to environmental sustainability and regulatory compliance. The continuous improvement in practices and adherence to an effective Environmental Management Plan (EMP) are key to mitigating the associated impacts and ensuring the long-term viability.

## **8 ANTICIPATED IMPACTS AND MITIGATION MEASURES**

This chapter provides a review of the potential impacts of the construction of a godown facility located at Sultan-K, Sundar Road, Tehsil Raiwind & District Lahore, over an area of 14 Kanals. The purpose of this project is to meet the market demand and proponent economic uplift. The estimated cost for the subject proposed project will be about 298 million PKR. These impacts could be both positive and negative and have been classified accordingly by a thorough review of the construction and operational phases of the project. This assessment numerates the magnitude of these impacts with the aid of environmental checklist and presents effective mitigation measures to counter their adverse nature.

### **8.1 Purpose of Environmental Mitigation Measures**

Environmental mitigation measures are essential for ensuring the sustainable operation of the petroleum product storage godowns, aligning with environmental compliance, and safeguarding ecological integrity. The rationale behind these measures is dissected through a series of critical inquiries:

#### **1. Identification of the Problem**

The core issue arises when environmental resources are exploited unsustainably, leading to significant degradation. Such exploitation diminishes the environment's resilience and carrying capacity, severely impeding its natural recovery processes. In the context of the proposed project, this could manifest as pollution, habitat disruption, or resource depletion, directly impacting the local ecosystem's health and functionality.

#### **2. Timing for Addressing the Problem**

The environmental impacts of the project will become apparent from the onset of construction activities and continue throughout the operational phase. These effects are not confined to the project site but may extend to

surrounding areas influenced by project activities. Early identification and timely intervention are crucial for preventing long-lasting or irreversible damage. Mitigation efforts should be initiated at the planning stage and integrated into all phases of the project lifecycle.

### **3. Location for Mitigation Efforts**

Mitigation strategies should be applied at the source of the environmental impact. This means implementing measures directly within the project site and, as necessary, in adjacent areas that might be affected by project-related activities. Focusing on the origin of potential problems ensures targeted and effective mitigation, reducing the overall environmental footprint of the project.

### **4. Approach to Addressing the Problem**

Addressing environmental issues necessitates adopting eco-friendly practices and technologies throughout the project's development and operation. Mitigation plans should include:

**Resource Efficiency:** Minimizing the use of natural resources and promoting recycling and reuse to reduce waste.

**Pollution Control:** Implementing advanced pollution control technologies and practices to minimize emissions, effluents, and waste generation.

**Habitat Protection:** Avoiding or minimizing impacts on natural habitats and biodiversity, including the development of green belts and conservation areas.

**Community Engagement:** Involving local communities and stakeholders in decision-making processes to ensure that mitigation measures address their concerns and benefit the local environment and population.

**Monitoring and Compliance:** Establishing rigorous monitoring systems to assess the effectiveness of mitigation measures and ensure compliance with environmental regulations.

## 8.2 Impact Identification Methodology

The methodology for identifying potential environmental impacts associated with the proposed facility involves a comprehensive approach. It includes:

- **Review of Project Activities:** Detailed examination of all phases of the project to understand the range of activities and their potential environmental interactions.
- **Environmental Study:** Assessment of the surrounding environment to identify sensitive areas, ecological value, and any existing vulnerabilities.
- **Literature Review:** Analysis of existing studies, reports, and publications related to similar projects to draw parallels and learn from past experiences.
- **Expert Judgment:** Utilization of insights from environmental experts to predict potential impacts based on their expertise and knowledge of similar projects.

### 8.2.1 Approaches for Mitigation Measures

Mitigation of environmental impacts involves several strategies:

- **Avoid:** Altering project plans such as route or site adjustments to protect ecological or archaeological features.
- **Replace:** Creating equivalent ecological habitats elsewhere if the original habitat is disturbed.
- **Reduce:** Implementing measures like filters, cyclones, noise barriers, and visual screening to lessen impacts.
- **Restore:** Rehabilitating the site post-operations to their original state or better.
- **Compensate:** Providing support to displaced communities or individuals through relocation, facilities, or financial means.

### **8.3 Potential Environmental Impacts and Mitigation Measures due to Project Location**

The project, situated with convenient access via the Noor Shah Road, is not expected to cause significant enduring, high, or adverse impacts. The industrial nature of the site, ownership clarity, and absence of ecologically significant species or archaeological sites within a 2km radius favor the project's location regarding environmental compatibility.

### **8.4 Potential Environmental Impacts and Mitigation Measures due to Design**

The design phase incorporates several measures to mitigate environmental impacts:

- **Technical Standards Compliance:**

Ensuring construction and operational activities meet all relevant environmental standards.

- **Waste Management:**

Implementing strategies for the proper handling and disposal of waste generated during the project lifecycle.

- **Technology and Machinery:**

Adopting advanced, eco-friendly technologies and machines that minimize emissions and environmental disturbance.

- **Fuel Choice:**

Selecting fuels for machinery that are less polluting to reduce the carbon footprint.

- **Transportation and Infrastructure:**

Planning efficient transportation routes through main roads and developing infrastructure that supports environmental sustainability.

The design unit has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental orders. Local aesthetic value is another issue to be considered during the project design.

### **ENVIRONMENTAL PROBLEMS**

Environmental problems related to location of the project are mostly in the areas of the physical setting, socioeconomic setting, ecological setting, and specific areas. Field survey revealed that the impacts of the project are mostly insignificant in nature.

The construction will sometimes go around the clock, therefore, during all the construction activities the followings will be the major pollutants or aspects are:

- Soil erosion
- Particulate matter, dust, and gaseous emissions
- Noise
- Garbage
- Dust during raw materials unloading and its use in construction.
- Sewage and solid wastes from construction camp
- Some social impacts due to accumulation of workers may arise.
- Problems due to infrastructure

Several machinery and equipment are in operation for the construction of building which include:

- Batching plants
- Excavators
- Truck
- Transport vehicles.
- Concrete mixers
- Vibrators
- Welding plants

- Generators

Most of these are using diesel engines that generate noise and exhaust emissions. The possibility of exhaust emissions increases when old vehicles plants are utilized for the execution purposes. The movement of heavy machinery and vehicles on the dirt tracks.

Due to the movement of vehicles, noise and vibrations will be increased and residents of the nearby settlements will be affected.

Sources of air pollution for this project activities are unpaved roads. Dust plumes behind vehicles. The turbulent wake continues to act on the road surface. Fugitive dust is generated from the unpaved rocks.

## **8.5 Potential Environmental Impacts and Mitigation Measures During Construction Phase**

The construction phase of the proposed unit is anticipated to have various environmental impacts. Effective management practices are proposed to mitigate these effects.

### **8.5.1 Air Quality**

#### **Potential Issues:**

Construction activities, including vehicle movements and machinery operation, are expected to release pollutants like SO<sub>x</sub>, NO<sub>x</sub>, PM, and dust into the air.

#### **Mitigation Measures:**

To minimize air pollution, measures such as regular water sprinkling to control dust, usage of low-noise and low-emission construction machinery, covering transport vehicles with tarpaulins, and regular maintenance of construction equipment will be implemented.

### **8.5.2 Noise Quality**

#### **Potential Issues:**

Noise and vibrations from construction machinery and transportation

vehicles can be significant.

**Mitigation Measures:**

Noise reduction strategies include avoiding unnecessary horn use, maintaining machinery to reduce noise output, installing silencers on heavy vehicles, and creating green zones to act as sound barriers.

**8.5.3 Water Availability**

**Potential Issues:**

The use of groundwater for construction activities might impact local water resources.

**Mitigation Measures:**

Water conservation practices will be prioritized, including efficient water use and recycling where possible to minimize the impact on local water resources.

**8.5.4 Wastewater Drainage**

**Potential Issues:**

Wastewater generated during construction could affect the environment if not effectively managed.

**Mitigation Measures:**

Implementation of a robust wastewater management system, including treatment before disposal to comply with Punjab Environmental Quality Standards (PEQS).

**8.5.5 Solid Waste Management**

**Potential Issues:**

Construction debris and material waste could potentially damage the local environment and drainage systems.

**Mitigation Measures:**

Timely collection of solid waste, provision of adequate disposal bins, and careful handling of construction materials to prevent spillage and

contamination.

### **8.5.6 Ecological Impacts**

#### **Potential Issues:**

Construction activities could negatively affect local wildlife through noise, pollution, and habitat disturbance.

#### **Mitigation Measures:**

Minimizing vegetation loss, enforcing a no-hunting policy, avoiding waste discharge, and minimizing physical disturbances to areas outside the work site to protect local ecology.

### **8.5.7 Impacts Related to Health and Safety**

#### **Potential Issues:**

Construction activities pose risks to worker's health and safety, including injuries from machinery or during manual tasks.

#### **Mitigation Measures:**

Provision of first aid facilities, emergency transport, and strict adherence to safety equipment usage. Implementation of training programs to enhance worker awareness and competence in health and safety practices.

### **8.5.8 Increase in Employment Opportunities**

#### **Positive Impact:**

The construction phase is expected to create employment opportunities for 15-20 local workers, both skilled and unskilled, positively impacting the socio-economic status of the area.

## **8.6 Anticipated Impacts and Mitigation Measures During Operational Phase**

The operational phase of the petroleum product storage godowns will bring about several environmental impacts, alongside strategies to mitigate these

effects effectively.

### **8.6.1 Impact on Air Quality**

#### **Potential Issues:**

In case of leakage, it can release pollutants such as particulate matter, sulfur dioxide, nitrogen oxides, and carbon monoxide into the atmosphere. Vehicle movements related to the transport of raw materials and finished goods will generate dust, alongside suspended particulate matter and gaseous emissions from operations.

#### **Mitigation Measures:**

Installation of air pollution control devices like scrubbers can capture particulates and gases before they are released into the air. Compliance with emission standards and regular monitoring are essential. Regular water sprinkling for dust suppression, routine servicing, and maintenance of vehicles to minimize exhaust emissions and planting native trees around the project boundary to enhance air quality. A commitment to plant 3-5 trees for every tree removed will further support this effort. Regular maintenance and calibration of equipment to ensure optimal performance and minimize emissions.

### **8.6.2 Impact of Noise**

#### **Potential Issues:**

Noise generated from operational activities can adversely affect the health of workers and nearby residents, leading to issues such as hearing damage, headaches, and fatigue.

#### **Mitigation Measures:**

Developing a thick greenbelt around the plant as a noise barrier, using concrete and masonry walls, sound absorbents, and ensuring regular vehicle maintenance to reduce noise pollution.

### **8.6.3 Solid Waste Management**

#### **Potential Issues:**

Manufacturing processes generate waste materials such as dust, and scrap metal residues, which can pose disposal challenges and environmental hazards if not managed correctly. Inefficient solid waste management could lead to environmental degradation. Domestic solid waste will be disposed of as per area practice.

#### **Mitigation Measures:**

Adopting recycling and reuse practices for process waste can minimize landfill disposal. Separating and recycling scrap metal and other materials can reduce overall waste generation. Implementing a proper waste management system, including the use of separate bins for diverse types of waste, and ensuring timely waste collection from the site. Segregation, recycling, and proper disposal of waste materials in accordance with relevant regulations and best practices. Training of personnel on waste management procedures and the use of spill containment measures to prevent accidental releases of hazardous substances.

### **8.6.4 Impacts of Wastewater**

#### **Potential Issues:**

Wastewater from domestic sources and manufacturing processes for cleaning and processing could contaminate local water bodies if not effectively managed.

#### **Mitigation Measures:**

Regular monitoring of water quality in nearby surface water bodies and groundwater aquifers to detect and address contamination. Establishing a comprehensive drainage system, treating wastewater through Treatment Plant, and ensuring compliance with Punjab Environmental Quality Standards (PEQS) before discharge. Implementing closed-loop water systems

to minimize water use and recycling process fluids can reduce water contamination. Proper handling and disposal of chemicals and wastes according to environmental regulations are crucial.

### **8.6.5 Health & Safety of Workers**

#### **Potential Issues:**

The manufacturing environment can expose workers to hazards such as molten metal, heavy machinery, and chemical exposures. Exposure to raw materials may pose health risks to workers, including allergic reactions and physical or chemical hazards.

#### **Mitigation Measures:**

Regular training on personal safety, disaster management, and health and safety regulations. Provision of Personal Protective Equipment (PPE) such as helmets, masks, earplugs/muffs, and safety boots, with strict enforcement of their use. Incident reporting protocols will also be established to address any workplace accidents promptly.

### **8.6.6 Impact on Flora and Fauna**

#### **Potential Issues:**

The presence of common trees and animals in the area suggests a need to minimize ecological disturbance.

#### **Mitigation Measures:**

Post-construction tree planting and measures to avoid unnecessary habitat damage will help preserve local flora and fauna.

### **6.5.1. Emergency Response**

Emergency response preparedness committee will be formulated consisted of heads of all the departments. Emergency Response Leader will be the head of the team assisted by safety team and safety supervisors. Emergency Response Leader along with his team will ensure that in the case of emergency, team is prepared for fire-fighting

and the first aid kits will be provided which may include; blankets, hot water bottles, stretchers, benches, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

Incidents and accidents may take place unexpectedly during project operations no matter how effective, strong and efficient the mitigation measures for all adverse impacts; especially the safety issues may be adopted. These may include; accident and natural disasters.

#### **8.6.7 Nature of Impact**

The nature of impact will be direct, low, long-term and significant.

#### **8.6.8 Mitigation**

**Spill Containment and Response:** Oil spills pose a significant risk in storage units. The facility should have appropriate spill containment measures in place, including spill berms, dikes, or secondary containment systems around storage tanks. These measures help to prevent spilled oil from spreading and contaminating the environment. In the event of a spill, trained personnel should promptly respond using spill response equipment, such as absorbent materials, booms, skimmers, or vacuum trucks, to contain and recover the spilled oil.

**Fire Suppression and Control:** Fire incidents can occur in oil storage units due to various factors, including ignition sources, equipment malfunctions, or human errors. The facility should have effective fire suppression systems installed, such as fire extinguishers, fire hydrants, fire sprinklers, or foam suppression systems. Trained personnel should be equipped to respond to fire incidents promptly and follow established fire response procedures.

**Evacuation and Shelter-in-Place:** In certain emergency situations, such as large fires or toxic gas releases, it may be necessary to evacuate personnel from the storage unit or nearby areas. Evacuation routes, assembly points, and communication procedures should be established and regularly communicated to all employees. In some cases, shelter-in-place protocols may be implemented, requiring individuals to seek refuge in designated safe areas within the facility.

**Communication and Coordination:** Effective communication and coordination among personnel, emergency responders, and relevant authorities are critical during an emergency. The facility should have established communication systems, including alarms, public address systems, radios, or other means to quickly relay information and instructions. Clear lines of communication with emergency response agencies, such as fire departments or hazardous materials teams, should be established to facilitate a coordinated response.

**Post-Incident Evaluation and Reporting:** After an emergency, it is essential to conduct a thorough post-incident evaluation to identify the causes, evaluate the effectiveness of the response, and implement necessary improvements. Lessons learned from incidents should be incorporated into updated emergency response plans and training programs. Incidents should also be reported to appropriate regulatory agencies as required.

## **8.7 Environmental Enhancement Measures**

The implementation is designed with a strong emphasis on environmental stewardship and safety. To mitigate potential environmental impacts and promote a safe, healthy workplace, the project will incorporate the following enhancement measures during both the construction and operational phases:

The proposed project will be installed with all precautionary measures to enhance and save the environment. The following necessary measures will be adopted during construction and operation:

- At the workplace workers and employers have enough information, knowledge, and training regarding first aid treatment in case of any emergency. The project provides proper medical facilities to workers and staff to cope with any incidental accidents and tackle them.
- Drugs and narcotics are strictly prohibited during working hours in working areas.
- The staff/attendants of the machinery will use proper protective gear.
- Sprinkling of water will be done on dusty roads and tracks.

- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed of or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged in the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Proper SOPs will be followed with a proper schedule along with the HSE conditions.
- The area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and an agreement will be made.
- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during work.
- Safety signs will be placed at all locations where required.
- First aid facilities will be made available.
- Any possible measure will be adopted to make the project safe and environmentally friendly.
- To control any occupational health and safety impact a detailed planning for mitigation measures will be done. All employees will be trained in EHS policies and practices. The management will follow the environmental management plan to implement the mitigation measures further. Institutional measures such as occupational health & safety planning and environmental compliance monitoring for environmental parameters will be strictly followed.

## **9 ENVIRONMENTAL MANAGEMENT & MONITORING PLAN (EMMP)**

The Environmental Management and Monitoring Plan (EMMP) is a crucial component of the project's overarching strategy to ensure environmental sustainability and compliance throughout the construction and operational phases of said project. The primary aim of the EMMP is to effectively manage and mitigate adverse environmental impacts identified in the Environmental Impact Assessment (EIA) report, promoting environmental stewardship and sustainable development practices.

### **9.1 Objectives of the Environmental Management Program**

The objectives of the EMMP are multi-faceted, focusing on the comprehensive management of environmental aspects associated with the project:

- Defining Roles and Responsibilities
- Mitigation Measures
- Monitoring Mechanism
- Communication and Documentation
- Training and Capacity Building
- Management and Implementation

By addressing these objectives, the EMMP serves as a comprehensive guide for the project team to not only comply with regulatory requirements but also to adopt best practices in environmental management. This initiative-taking approach to environmental protection will help to minimize the project's ecological footprint, promote sustainability, and contribute positively to the local community and environment.

## 9.2 Environmental Budget

Table 7 Environmental Budget

<b>Environmental Component</b>	<b>Quantity</b>	<b>Amount Pak Rs.</b>	<b>Details/Basis</b>
<b>Landscaping/Plantation</b>	500-100 approx.	3 million	Cost includes plantation and maintenance up to three years
<b>Solid waste management</b>	L.S	1.5 million	Lump Sum
<b>Health &amp; Safety Measures</b>	L.S.	08 million	Lump sum
<b>Wastewater management</b>	L.S.	2 million	Lump sum
<b>Miscellaneous Cost</b>	L.S.	15 million	Lump sum
<b>Air Quality Monitoring</b>	2	12,000	2 samples @ 5000/sample
<b>Water Quality Monitoring</b>	2	15,000	2 samples @ 5000/sample
<b>Noise Level Monitoring</b>	2	10,000	2 samples @ 5000/sample
<b>Soil Tests</b>	2	10,000	2 samples @ 5000/sample
<b>Training</b>		10,000	10,000
<b>External Monitoring</b>		50,000	
<b>Total Environmental and Social Management Cost</b>		<b>17 million PKR</b>	

### 9.3 Environment Management and Monitoring Plan (EMMP)

Table 8 Environment management and monitoring plan (MMP)

ENVIRONMENT MANAGEMENT AND MONITORING PLAN				
S. #.	IMPACT	MITIGATION MEASURE	RESPONSIBILITY	
			IMPLEMENTATION	MONITORING
A	<b>CONSTRUCTION PHASE</b>			
1.	<b>AIR QUALITY</b>			
	Dust, SO <sub>2</sub> , NO <sub>x</sub> & CO emissions from trucks cause health issues to workers. There will be particulate matter during the Construction.	<ul style="list-style-type: none"> <li>• Spray by water trucks to minimize the dust.</li> <li>• Maintenance of construction machinery should be mandatory to reduce emissions.</li> <li>• Haul-trucks carrying earth, sand, aggregate and other materials will cover with tarpaulin to reduce dust pollution.</li> </ul>	Contractor	Proponent through Consultant
2.	<b>NOISE</b>			

	The impact of noise generated during construction	<ul style="list-style-type: none"> <li>Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels.</li> </ul>	Contractor	Proponent through Consultant
3.	<b>OCCUPATION, HEALTH, AND SAFETY</b>			
	There will always be the possibility of hazard to health and safety of workers to occur during construction stage, lying of piles, and machines installation.	<ul style="list-style-type: none"> <li>First aid facilities should be readily available for the workers at the site. The contractor will ensure the availability of transport and driver to manage any mishap which may occur.</li> <li>Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site.</li> <li>Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE.</li> </ul>	Contractor	Proponent through Consultant
4.	<b>DISPOSAL OF CONSTRUCTION DEBRIS</b>			

	Each phase of the development shall produce solid waste, disposal of which, if not managed properly could have negative impacts on the site and surrounding area.	<ul style="list-style-type: none"> <li>• A site waste management plan should be the responsibility of the contractor. The waste should segregate and separate to encourage recycling of some useful waste materials.</li> <li>• Train or educate the involved stakeholders on the importance and means of waste management and handling.</li> </ul>	Contractor	Proponent through Consultant
5.	<b>GROUND WATER QUALITY</b>			
	No appreciable impacts on the ground water quality occur.	<ul style="list-style-type: none"> <li>• Avoid accidental spills through decent work practice.</li> </ul>	Contractor	Proponent through Consultant
6.	<b>SOIL CONTAMINATION</b>			
	Any improper storage or handling of materials including paints, fuels, solvents, oil, cement, etc. would result in soil contamination.	<ul style="list-style-type: none"> <li>• The contractor should require imparting proper training to their workforce in the storage and handling of materials</li> </ul>	Contractor	Proponent through Consultant
7.	<b>FLORA &amp; FAUNA</b>			

	No negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.	<ul style="list-style-type: none"> <li>• Trees and ornamental plants shall be planted along the project boundary which will increase the aesthetic value of the site and will combat pollution.</li> <li>• Landscaping is seemed to be a powerful mitigation activity with a positive impact.</li> </ul>	Contractor	Proponent through Consultant
<b>8.</b>	<b>SOCIO-ECONOMIC ENVIRONMENT</b>			
	Several categories of employees will be required during the construction phase. This would have a positive impact on the local economy and on regional unemployment.	<ul style="list-style-type: none"> <li>• The socially responsible attitude of the project management towards local people and resources can make project people friendly.</li> <li>• Awareness and educational programs introduced by the project management or e area can reduce the fear among the people regarding non-local people.</li> </ul>	Contractor & Proponent	SIE
<b>B.</b>	<b>OPERATIONAL STAGE</b>			
<b>1.</b>	<b>AIR QUALITY</b>			
	Air pollution is due to transport and vehicles.	<ul style="list-style-type: none"> <li>• Proper maintenance and tuning of the vehicles can reduce it.</li> </ul>	Proponent	EPA

2.	<b>NOISE QUALITY</b>			
	Noise due to movement of vehicles, during transfer of materials	<ul style="list-style-type: none"> <li>Plantation along with boundary will make buffer zone to avoid noise.</li> </ul>	Proponent	EPA
3.	<b>OCCUPATION, HEALTH, AND SAFETY</b>			
	There will always be the possibility regarding hazards to health and safety of workers to occur during the operational phase of the project. In Case of any leakage/evaporation skin burn issues will be there.	<ul style="list-style-type: none"> <li>All the workers involved in the transport of the materials suggested wearing boots, gloves, and a safety cap to avoid injury.</li> <li>All workers must know the safety measures regarding handling of material.</li> </ul>	Proponent	EPA
4.	<b>SOLID WASTE</b>			
	The solid waste may negatively impact the site, the workers, the visitors, and the factory surrounding in diverse ways including aesthetically, occupationally as well as from health, safety, and environmental point of view.	<ul style="list-style-type: none"> <li>Domestic solid waste will be collected in waste bins. Hazardous waste will be collected in separate bins.</li> <li>Must use protective gloves while carrying the containers to avoid any hazardous effect</li> </ul>	Proponent	EPA

5.	<b>WASTEWATER QUALITY</b>			
	Domestic wastewater will be generated. During Process wastewater will also be generated.	<ul style="list-style-type: none"> <li>Wastewater treatment plant will be done by installing septic tanks.</li> </ul>	Proponent	EPA
6.	<b>FLORA AND FAUNA</b>			
	Excessive plantation shall be done on the walls. This will function as buffer zone and bring healthy change to the environment during operational phase of project.	<ul style="list-style-type: none"> <li>The process of plantation should be kept sustainable throughout project life.</li> </ul>	Proponent	EPA
7.	<b>SOCIO-ECONOMIC ENVIRONMENT</b>			
	A few employees will be required in the operational phase, and this would have a positive impact on the local economy and on regional unemployment.	<ul style="list-style-type: none"> <li>The management of the project can capitalize the cheerful outlook of people of the study area towards this project by offering them maximum employment opportunities.</li> <li>Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.</li> </ul>	Proponent	EPA

## 9.4 Proposed Monitoring/EMP Reporting and Reviewing Mechanism

Table 9 Proposed monitoring and reviewing mechanism.

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
<b>Construction and Operational Phase</b>					
Land Resource	Solid Waste	Implementation of Solid Waste Management system	Record keeping and timely transfer of Solid waste from bags to the disposal site for disposal	Daily	Manager HSE/Project Proponent
	Soil Contamination	Implementation of Management Plan	Visual monitoring and complete soil analysis	Daily and annually	
Ecological	Flora	Uprooting of trees	Inventory of uprooted	During Baseline	
Air Resource	Air Emission	Dust emissions during Construction and Operation	Monitoring of the emissions as per applicable standards Water sprinkling will be done regularly to avoid dust emissions	Once before the start of operation and after that as when required during the operation	
	Dust				
Noise	Noise Pollution	Development/operational material transportation	As per applicable standards	Fortnightly	
Water Quality	Wastewater generation	Domestic wastewater, due to construction activities	Water quality testing	Monthly	
Health and Safety	Health risk	During construction and operational phase due to more chemical usage	Keep record of workers as they use PPE's and follow safety signs and instructions	Daily	
Resource		During construction phase	Trees and vegetation during operation phase	Survey, once in a year and after the completion of the Project	

## 9.5 Training of Workers for Environmental Management

Training of workers plays a pivotal role in enhancing the environmental performance of the said project. By equipping project personnel and contractors with the necessary knowledge and skills, the project aims to ensure adherence to environmental policies and the successful implementation of the Environmental Management and Monitoring Plan (EMMP).

### 9.5.1 Components of the Environmental Training Program

The environmental training program is designed to be comprehensive and multifaceted, incorporating various educational tools and resources:

- **Promotional Materials:** Use of company literature, broadsheets, posters, and project updates to emphasize the importance of environmental protection measures.
- **Guidance Notes:** Provision of detailed guidance on environmental protection practices to contractors, ensuring they are well informed about their responsibilities and best practices.
- **Signage:** Installation of obvious signs at work sites to delineate prohibited activities such as waste disposal and smoking, alongside signs marking sanitary disposal areas and safe drinking water sources.

## 9.6 Training Schedule and Log

To ensure the systematic delivery and tracking of environmental training, a structured schedule will be established:

### - Training Log Maintenance:

The project management and contractors will maintain a detailed training log, documenting the topic, date, time, location, trainer, and participants for each session.

### 9.6.1 Key Training Areas

The training program will cover essential topics to ensure comprehensive understanding and capability among staff:

- **Firefighting and Safety Management:**

Educating workers on emergency response procedures, fire safety protocols, and the use of firefighting equipment to manage and mitigate fire hazards.

- **Environmental Safeguards and Compliance:**

Training on environmental regulations, the importance of safeguarding natural resources, and strategies for ensuring project compliance with environmental standards.

- **Environmental Monitoring and Reporting:**

Instruction on monitoring environmental parameters, data collection, and reporting mechanisms to track the project's environmental impact over time.

- **Occupational Health and Safety Measures:**

Guidance on health and safety practices to prevent occupational hazards, including the use of personal protective equipment (PPE), safe handling of chemicals, and ergonomics.

By implementing a robust environmental training program, the project commits to fostering a culture of environmental awareness and responsibility among all project participants. This approach not only contributes to the project's compliance with environmental regulations but also promotes the long-term sustainability of project operations and the well-being of workers and the surrounding community.

**Table 10 Training Schedule**

<b>Participants</b>	<b>Date, Time &amp; Location</b>	<b>Training Topics</b>	<b>Schedule</b>	<b>Responsible Authority</b>
Staff of proposed project and the contractor	As specified	<ul style="list-style-type: none"> <li>• Introduction to project EIA/IEE and EMMP</li> <li>• EMMP communication, documentation, monitoring, and reporting requirements</li> </ul>	Every month	Project Manager
All site personnel	As specified	<ul style="list-style-type: none"> <li>• Site induction training on HSE system and requirements at Incinerating Site</li> <li>• Environmental sensitivities of the project area</li> <li>• Communication of environmental problems to corresponding officials</li> <li>• Waste disposal</li> </ul>	After every week	Project Manager
Drivers	As specified	<ul style="list-style-type: none"> <li>• Road safety</li> <li>• Road restrictions</li> <li>• Vehicle restrictions</li> <li>• Waste disposal.</li> <li>• Defensive driving</li> </ul>	After every 3 months	Project Manager
Camp Staff	As specified	<ul style="list-style-type: none"> <li>• Camp operations.</li> <li>• Waste disposal.</li> <li>• Good housekeeping</li> </ul>	Monthly	Project Manager

## 9.7 Environmental Management Team

The successful implementation of the Environmental Management and Monitoring Plan (EMMP) for the proposed facility hinges on the coordinated efforts of a resolute environmental management team. This team comprises various functionaries, each with distinct roles and responsibilities throughout the construction and operational phases of the project.

### 9.7.1 Key Members of the Environmental Management Team:

**Proponent:** Serves as the project proponent and owner of the Environmental Management Plan, overseeing its execution during both construction and operational stages.

**Project Contractor(s):**

Function as executors of the EMMP during the construction phase, responsible for integrating environmental mitigation measures into project activities.

**Operational & Maintenance (O&M) and Health, Safety, and Environment Team:**

Execute the EMMP during the operational phase, ensuring ongoing compliance with environmental standards.

**Environmental Protection Agency (EPA), Punjab:** Functions as the regulatory body for reviewing and monitoring the project's compliance with environmental remediation and mitigation measures outlined in the EIA.

### 9.7.2 Responsibilities of Functionaries:

**1. Project Management:** Charged with overall environmental supervision, monitoring progress, overseeing mitigation measure implementation, documentation, training program development, and reporting on EMMP status.

- 2. Project Contractor:** Responsible for adhering to all EMMP provisions, and environmental codes of conduct, and ensuring workers are equipped with and trained in the use of Personal Protective Equipment (PPE).
- 3. Environmental Protection Agency (EPA):** Reviews and monitors the project's adherence to the EIA's remedial and mitigation strategies.

## **9.8 Equipment Maintenance Details**

A well-organized maintenance program is critical for ensuring the safety and efficiency of all tools, equipment, and vehicles used in the project. Regular inspections and adherence to safety regulations are mandatory to prevent accidents and injuries.

## **9.9 Proposed Environmental Monitoring**

Environmental monitoring is vital for assessing the project's compliance with environmental regulations and its effects on the environment. It is divided into:

- 1. Compliance Monitoring:** Ensures the project's adherence to EIA and EMMP requirements through routine inspections and site monitoring.
- 2. Effects Monitoring:** Identifies unanticipated impacts or those exceeding anticipated levels, allowing for the timely implementation of additional mitigation measures.

### **9.9.1 Monitoring Components:**

Comprehensive baseline monitoring will be conducted across several key environmental parameters, including:

- Noise Levels
- Ambient Particulate Matter
- Ambient Air Gases
- Ground Water Quality

- Wastewater Quality
- Soil Contamination
- Solid Waste Management
- Vehicular Traffic and Emissions
- Flora & Fauna
- Health & Safety Practices
- Machinery and Equipment Maintenance

By establishing a robust environmental management framework, the project aims to minimize its environmental footprint, ensure the safety of its workers, and contribute positively to the local ecosystem and community.

## 10 STAKEHOLDER CONSULTATION

Stakeholder consultation is a critical component in the environmental assessment process for the proposed project. It fosters communication among diverse groups, facilitating information exchange, feedback collection, and collaborative decision-making.

### 10.1 Benefits and Objectives of Stakeholder Consultation

Engaging with stakeholders offers several advantages, including improved project understanding, identification of environmental concerns, and incorporation of local insights into project planning. Key objectives include:

- **Enhancing Understanding:** Clarifying the project's aims and potential impacts to ensure stakeholders are well-informed.
- **Addressing Concerns:** Identifying and resolving stakeholder issues to prevent opposition and build consensus.
- **Building Trust:** Establishing a foundation of trust and cooperation between the project proponent and stakeholders.
- **Informed Decision-Making:** Leveraging stakeholder input to make informed decisions regarding project design and implementation.

### 10.2 Identification and Classification of Stakeholders

A comprehensive stakeholder identification process was undertaken to recognize all parties with a personal stake in the project, classified as:

- **Industries:** Businesses and institutions directly affected or influential to the project outcome.
- **Local Communities:** Residents and groups in proximity to the project site are likely to experience its direct impact.

### 10.3 Views, Concerns, and Suggestions of Various Stakeholders

Stakeholder feedback highlighted several areas of concern and interest:

- **Environmental Preservation:** Emphasis on minimizing tree removal and establishing green zones.
- **Local Employment:** Dedicated support for prioritizing local residents in hiring processes.
- **Dust and Air Pollution Control:** Recommendations for regular dust suppression measures and continuous air quality monitoring.
- **Noise Management:** Suggestion to limit noise-generating activities to daytime hours.
- **Solid Waste Management:** Advocacy for proper waste disposal techniques to mitigate environmental impacts.

#### **10.4 Methodology for Consultation**

The consultation process involved a dynamic exchange of ideas through discussions, meetings, and field visits, aimed at:

- **Scoping Sessions:** Initial meetings to define project scope and identify key stakeholder concerns.
- **Focus Group Discussions:** In-depth conversations with local communities and government representatives to gather detailed feedback.
- **Location-Based Meetings:** Engagements held at various sites to ensure broad stakeholder participation and input.

This stakeholder consultation process underscores the project's commitment to environmental stewardship, community engagement, and sustainable development. By incorporating stakeholder feedback into the EIA process, the project aims to achieve a balance between development objectives and environmental conservation, fostering positive relationships with all affected parties.

## 10.5 Proponent's Environmental Management Team and Experts

Table 11 Responsible Authority

Sr. #	Managers	Responsibilities
1.	<b>Contract Manager</b>	<ul style="list-style-type: none"> <li>• Implementation of EMP</li> <li>• Environmental issues identification during pre- construction phase.</li> <li>• Communication EMP to all employees.</li> </ul>
2.	<b>Contractor</b>	<ul style="list-style-type: none"> <li>• Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit.</li> <li>• Ensure that the project management team is notified of any non-conformance of control measures or environmental incidents where the environment has been put at risk.</li> </ul>
3.	<b>Site Manager</b>	<ul style="list-style-type: none"> <li>• Ensure site material and safe handling of hazardous waste.</li> <li>• Controlled access arrangement to avoid hazards.</li> <li>• Emergency egress arrangements to avoid any unfortunate incident.</li> <li>• First aid facilities/services should be readily available on-site.</li> </ul>
4.	<b>Site HSE Advisor</b>	<ul style="list-style-type: none"> <li>• Ensure good standards of workmanship.</li> <li>• Engaged health and safety to devise site waste management plan to be followed and implemented.</li> <li>• Daily checks &amp; weekly checks.</li> <li>• Regular consultation with workers.</li> </ul>
5.	<b>Site Environment Advisor</b>	<ul style="list-style-type: none"> <li>• According to legislation and consent develop EMP.</li> <li>• Ensure application of EMP.</li> <li>• Conduct regular site inspection.</li> </ul>
6.	<b>Public Contact Officer</b>	<ul style="list-style-type: none"> <li>• First point of contact for members of the public.</li> <li>• Arrange and manage public forums.</li> <li>• Maintain relation with stakeholder</li> </ul>

## 10.6 The Responsible Authority for EMP Implementation

The successful implementation of the Environmental Management Plan (EMP) is a pivotal aspect of ensuring the environmental integrity and sustainability of the proposed unit. The ultimate responsibility for overseeing and ensuring the effective execution of the EMP lies with the project proponent.

### Appointment of an HSE/Project Manager

To facilitate this, the project proponent will appoint a Health, Safety, and Environment (HSE)/Project Manager possessing the necessary qualifications and expertise. This individual will assume the role of Environmental Manager, tasked with the comprehensive management of all health, safety, and environmental conditions as per the Punjab Environmental Quality Standards (PEQS).

### Responsibilities of the HSE/Project Manager

As Environmental Manager, the HSE/Project Manager's responsibilities will encompass a broad spectrum of duties, designed to ensure that the project not only complies with all relevant environmental regulations but also adopts best practices in environmental stewardship.

## 10.7 Other Departments and Agencies

Following officers of government departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc, in their offices, for instance.

**Table 12 Department and agencies**

Sr. No.	Designation	Concerns
1.	Environment Protection Department (EPD)	

	General Manager	<ul style="list-style-type: none"> <li>• Solid waste should be managed in Environmentally friendly manner.</li> <li>• Wastewater should be treated effectively &amp; approval should be acquired from concerned agency before disposing off in nearby drain.</li> </ul>
	Environmental Inspector	<ul style="list-style-type: none"> <li>• HSE* at the site should be managed effectively.</li> <li>• No impact is being foreseen due to the selected location.</li> <li>• Locals should be given job opportunity.</li> </ul>
<b>2.</b>	<b>Social Welfare Department (SWD)</b>	
	Deputy Director Officer	<ul style="list-style-type: none"> <li>• Final goods should be affordable for the locals.</li> <li>• The proposed product should facilitate locals and they should be economical.</li> <li>• Job opportunities should be given to the locals.</li> <li>• Wages should be given according to the work assigned to them.</li> <li>• Life insurance of the workers should be given as well as all the facilities should be given as per labor laws.</li> </ul>
<b>3.</b>	<b>Irrigation Department</b>	
	Subdivision	<p>Following comments were suggested:</p> <ul style="list-style-type: none"> <li>• Untreated wastewater should not be disposed of in the nearby drains without proper treatment.</li> <li>• Beneficial as job opportunities will be available to the residents.</li> </ul>
	Executive Engineer	
<b>4.</b>	<b>Forest Department</b>	
	District Forest Officer	<p>Following recommendation were suggested by the forest department:</p> <ul style="list-style-type: none"> <li>• Plantation and landscape activities should be conducted on a broader scale.</li> <li>• Proper drainage system must be available at site</li> </ul>

### **10.8 Consultation with Affected and Wider Community**

In addition, the use of direct methods to evince the response of the various stakeholders in targeted population residing in study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to the creation of impacts, adverse impacts, and beneficial impacts, including employment opportunities, income generation activities, change in living standards and provision of the basic amenity.

Personal views of the respondents on the establishment of proposed project disturbance to the residents near the AOI and infringement of their privacy were also recorded. Various rounds of public meetings and consultations were arranged in the project and study area. The stakeholder category involves nearby residents, different industries, shopkeepers. The issues discussed with them are mostly related to the following:

- Activities of project.
- Impacts caused due to certain activities during construction and operational phase.
- The proposed mitigation measures.

## 11 CONCLUSION

The project aims at the construction of a storage unit. The project falls under the category of projects requiring Environmental Impact Assessment (EIA).

**At the end of this study, it has been found that:**

- There are no sensitive elements/segments of environment around the project site.
- It has also developed ways and means for environmentally sustainable disposal of solid wastes to be generated from the project operations.
- The noise levels will be kept well within the required limiting values of the NEQS Pakistan.
- This project will create job opportunities during construction and operation stages leading towards reduction of poverty.
- Sewage will be passed through Septic Tanks before final treatment and disposal.
- It will help in the improvement of the community in the local area. It will also provide such facilities for people from other places.
- Project site means the development criteria like electricity supply, gas supply, water supply and sewage system.
- EMP, as recommended in this EIA Report, is to be put in place during all operational stages of the project.
- Environmental monitoring by the project proponent and a third party also ensures that the project will run in accordance with legal requirements.

Based on these findings of the EIA Report the project merits the issuing of Environmental Approval by the Environmental Protection Agency, Government of Punjab, and Lahore.

**GLOSSARY**

<b>Accommodate</b>	(of a building or other area) provide lodging or sufficient space for. "The cottages accommodate up to six people"
<b>Assessment</b>	The action of assessing someone or something. "The assessment of educational needs"
<b>Aspects</b>	A distinct feature or element in a problem
<b>Adverse</b>	– Preventing success or development; harmful; unfavorable. "Taxes are having an adverse effect on production"
<b>Authorized</b>	– having official permission or approval. "An authorized dealer"
<b>Amendment</b>	a minor change or addition designed to improve a text, piece of legislation, etc. "an amendment to existing bail laws"
<b>Ambient Air</b>	Ambient air quality refers to the quality of outdoor air in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution
<b>Archaeological</b>	the scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities
<b>Annunciation</b>	A formal public statement
<b>Baseline</b>	The existing conditions against which impacts of the proposed action and its alternatives can be compared.
<b>Crushing</b>	Deform, pulverize, or force inwards by compressing forcefully. "You can crush a pill between two spoons"
<b>Containers</b>	An object for holding or transporting something. "The cakes will keep for up to two weeks if kept in an airtight container"
<b>Compliance</b>	Acting according to certain accepted standards
<b>Discrepancies</b>	A difference between conflicting fact, claims or opinions
<b>Disposal</b>	the action or process of getting rid of something
<b>Dumped</b>	Deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way
<b>Effluent</b>	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 vapor
<b>Environmental impact statement (EIS)</b>	A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.

<b>Evaluated</b>	Estimate or determine the nature, value, quality, ability, extent or significance
<b>Graded</b>	Arranged in a sequence of grades or ranks; "stratified areas of the distribution"
<b>Generation</b>	The production or creation of something
<b>Incinerator</b>	A furnace or a container for burning waste materials
<b>Inadequate</b>	Not capable or competent; lacking
<b>Implementation</b>	The process of putting a decision or plan into effect; execution
<b>Intends</b>	To have in mind as something to be done or brought about, plan to design or mean for a particular purpose, use, recipient, etc.
<b>Landfill site</b>	for the disposal of solid waste in which refuse is buried between layers of dirt to fill in or reclaim low-lying ground
<b>Legislation</b>	Law enacted by a legislative body
<b>Mobilization</b>	To release or make available, as cells or chemical substances
<b>Mitigation</b>	The action of lessening in severity or intensity
<b>Noise</b>	Loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities
<b>Potential</b>	Having or showing the capacity to develop into something in the future
<b>Pedestrian</b>	A person who goes or travels on foot; walker
<b>Proponent</b>	The person who proposes or intends to undertake a project
<b>Sanitary</b>	Relating to the conditions that affect hygiene and health, especially the supply of sewage facilities and clean drinking water
<b>Segregate</b>	Set apart from the rest or from each other; isolate or divide. "Disabled people should not be segregated from the rest of society"
<b>Settlement</b>	An official agreement intended to resolve a dispute or conflict. "Unions succeeded in reaching a pay settlement"
<b>Ton</b>	A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2 to 205 pounds

<b>Transportation</b>	The action of transporting someone or something or the process of being transported. "The era of global mass transportation"
<b>Ultimate</b>	Being or happening at the end of a process; final. "Their ultimate aim was to force his resignation"
<b>Violations</b>	the action of violating someone or something
<b>Working place</b>	From the out by side of the last open crosscut to the face
<b>Flora</b>	All the plant life in a particular region or period
<b>Fauna</b>	All the animal life in a particular region or period
<b>Demarcated</b>	Separately clearly, as if by boundaries
<b>Screening</b>	The display of a motion picture
<b>Substitutions</b>	An event in which one thing is substituted
<b>Smelting</b>	extract (metal) from its ore by a process involving heating and melting
<b>Regulations</b>	An authorized rule
<b>Recycling</b>	process of converting waste materials into new materials and objects
<b>Stakeholders</b>	A person or organization with an interest or concern in something
<b>Rehabilitation</b>	The conversion of waste land into land suitable for use of habitation or cultivation
<b>Emission</b>	The production and discharge of something, especially gas, or radiation." The effects of lead emission on health"

**LIST OF ABBREVIATIONS**

<b>AA</b>	Ambient Air
<b>APHA</b>	American Public Health Association
<b>AOI</b>	Area Of Influence
<b>BOD<sub>5</sub></b>	Biological Oxygen Demand
<b>CMS</b>	Convention On Migratory Species
<b>COD</b>	Chemical Oxygen Demand
<b>dB(A)</b>	Decibel
<b>EA</b>	Environmental Assessment
<b>EHS</b>	Environmental Health Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EPD</b>	Environmental Protection Department
<b>PEPA</b>	Pakistan Environmental Protection Act
<b>EPA</b>	Environmental Protection Agency
<b>ESIA</b>	Environmental And Social Impact Assessment
<b>ESA</b>	Environmental And Social Assessment
<b>ESMP</b>	Environmental/Social Management Plan
<b>EMP</b>	Environmental Management Plan
<b>EC</b>	Electrical Conductivity
<b>GIS</b>	Geographical Information System
<b>GOP</b>	Government Of Pakistan
<b>GPS</b>	Global Positioning System
<b>GRC</b>	Grievance Redress Committee
<b>GRM</b>	Grievance Redress Mechanism
<b>HSE</b>	Health Safety & Environment
<b>HWMS</b>	Hazardous Waste Management System
<b>EIA</b>	Environmental Impact Assessment
<b>I &amp; D</b>	Irrigation And Drainage
<b>IAIA</b>	International Association for Impact Assessment
<b>IWM</b>	Industrial Waste Management

<b>KM</b>	Kilometers
<b>LGO</b>	Local Government Ordinance
<b>MW</b>	Mega Watt
<b>MEAS</b>	Multilateral Environmental Agreements
<b>MSDS</b>	Material Safety Data Sheets
<b>NEQS</b>	National Environmental Quality Standards
<b>PMD</b>	Pakistan Meteorological Department
<b>PPE</b>	Personal Protective Equipment
<b>PEQS</b>	Punjab Environmental Quality Standards
<b>NEAP</b>	National Environmental Assessment Plan
<b>NWFP</b>	Northwest Frontier Province
<b>Q&amp;EHS</b>	Quality, Environment, Health & Safety
<b>O &amp; M</b>	Operation And Maintenance
<b>PKR</b>	Pak Rupees
<b>PAP</b>	Project Affected People
<b>PEPC</b>	Pakistan Environmental Protection Council/Punjab
<b>PSC</b>	Project Steering Committee
<b>QA/C</b>	Quality Assurance/Quality Control
<b>RAP</b>	Resettlement Action Plan
<b>ROG</b>	Reactive Organic Gas
<b>SWM</b>	Solid Waste Management
<b>TDS</b>	Total Dissolved Solids
<b>UNFC</b>	United Nation Framework Convention on Climate Change
<b>UNCC</b>	United Nation Convention to Combat Desertification
<b>UNEP</b>	United Nations Environmental Programs
<b>GOP</b>	Government Of Pakistan
<b>WHO</b>	World Health Organization
<b>R&amp;R</b>	Rehabilitation And Resettlement
<b>WWTP</b>	Waste Water Treatment Plant
<b>IUCN</b>	International Union for Conservation of Nature

**LIST OF INDIVIDUALS AND THEIR FEEDBACK**

Sr.#	Name	Concerns
1	Kamran Ali Khan	<p>During the survey in the study area following concerns of the local community were noted:</p> <ul style="list-style-type: none"> <li>• Air pollution should be controlled effectively, such as emissions generated from power-generating activities.</li> <li>• Solid waste should be collected timely and avoid the spreading of waste.</li> <li>• Locals should be preferred for the job opportunities.</li> <li>• Wastewater should be treated prior to final disposal in a nearby drain.</li> <li>• Solid waste should be managed effectively by adopting the standard practices of the area.</li> <li>• The cleanliness of the area should be ensured.</li> <li>• An effective EMMP should be designed and enforced with true spirit.</li> <li>• The health of the workers should be ensured.</li> <li>• Planation should be carried out on an extensive scale.</li> <li>• Construction activity should be carried out during day hours.</li> <li>• Noisy activities should be confined.</li> </ul>
2	Muhammad Waqas	
3	Qaiser Farooq	
4	Ghulam Mujtaba	
5	Mehboob Alam Shahid	
6	Muhammad Latif	
7	Mazhar Hussain	
8	Shahbaz Khan	
9	Waseem Ahmed	
10	Rab Nawaz	
11	Allah Yar	
12	Ahmed Saeed	
13	Muhammad Jabbar	
14	Muhammad Ramzan	
15	Kamran	

## **SOURCE OF DATA**

- Punjab Environmental Protection (Amendment) Act 2012 (PEPA)
- Guidelines for the preparation and review of Environmental Reports, October 1997
- Review of IEE/ EIA Regulation, 2022
- The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan
- World Weather Online.com
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- Material Safety Data Sheet (MSDS) of chemicals
- [www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA](http://www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA)
- [Water\\_Efficiency\\_on\\_the\\_Farm\\_Booklet\\_WEB.pdf](#)
- <http://www.madehow.com/Volume-2/Lead.html>
- [http://www.ijirset.com/upload/2013/november/18\\_Disposal.pdf](http://www.ijirset.com/upload/2013/november/18_Disposal.pdf)

## **TERMS OF REFERENCES**

Terms of References (Tor) for the Environmental Impact Assessment (EIA) process are designed to ensure compliance with the regulatory framework and facilitate a thorough review of the project's environmental implications. These terms are outlined as follows:

### **1. Review Fee Payment:**

As stipulated in Regulation 7 of the Review of IEE and EIA Regulations, 2022, the proponent is required to submit a nonrefundable review fee to the Environmental Protection Agency (EPA) at the time of submitting the IEE/EIA report. The specific amount of this fee is determined by the rates specified in Schedule III of the regulations.

### **2. Submission of Required Documents:**

The proponent must provide all necessary documents and details essential for the completion of the EIA/IEE report. This includes, but is not limited to, technical studies, environmental impact analyses, mitigation strategies, and any other information pertinent to assessing the project's environmental footprint.

### **3. Financial Responsibility for Fines and Penalties:**

The proponent shall bear full responsibility for any fines or penalties levied by the EPA Punjab or the Environment Tribunal. This includes violations of environmental standards, non-compliance with regulatory requirements, or any other infractions identified during the review or implementation phases of the project.

### **4. Accuracy and Validity of Information:**

The proponent is responsible for ensuring the correctness and validity of all information and documents provided to the consultant for onward submission to EPA Punjab. The consultant facilitating the EIA process will not bear any responsibility for inaccuracies or omissions in the information supplied by the proponent. It is imperative that the proponent conducts thorough due diligence to guarantee that all submitted materials accurately reflect the project's potential environmental impacts and proposed mitigation measures.

These Terms of References are critical to ensuring that the EIA process is conducted in a transparent, accurate, and regulatory-compliant manner. Adherence to these terms will facilitate a comprehensive environmental review of the project, enabling informed decision-making by the EPA Punjab and contributing to the sustainable development and environmental stewardship goals of the region.