Environmental Impact Assessment Report of

M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)

Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura

Submitted By:

Mr. Faisal Saeed

Prepared By:

Enviro Stewards Co. (Pvt) Ltd

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1st Floor Allied Bank, A Block Commercial Market, Canal View Society, Lahore

DISCLAIMER

The information presented herein is derived from the unique attributes of the project site as disclosed by the project Authorized persons, stakeholders, and promoters, through provided maps, verbal communications, and all associated documentation. The veracity of the detail's rests solely with the project Authorized persons, 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.

Representative: EIA & IEE Team

GUIDELINES FOR PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS CHECKLIST

EXECUTIVE SUMMARY

This Executive Summary provides an overview of the critical findings from the Environmental Impact Assessment (EIA) for the proposed project of industrial plant & equipment manufacturing unit by **M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)** The project aims to establish a manufacturing unit, situated at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, covering an area of 479222.275 Sq. Ft. The initiative seeks the benefits that significantly enhance efficiency, productivity, making them more profitable and accessible, support local economies, and advance sustainable development goals. Enviro Stewards Company (Pvt.) Limited has been appointed as the consulting firm for this venture.

In alignment with the environmental impact assessment the project is classified under **Schedule II (requiring an EIA), Category B (Manufacturing and Processing), sub-sector 17/18 (iron and steel rolling mill & Steel Furnaces)** 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 Authorized person, aims to establish an industrial plant & equipment manufacturing unit which contributes to

economic development, thereby contributing to economic upliftment of the Authorized person.

Operating under the name **"M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)"** The facility is to be located at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, covering a total area of 479222.275 Sq. Ft.

Name of the Authorized Person

The detail of the authorized person is given below:

Table 1 Authorized person detail

Detail of the Authorized Person	
Authorized person name	Faisal Saeed
Address	House # 675-E, Sabzazar Scheme, Multan Road, Lahore

Name of the Consultant Preparing the Report

The detail of the consultant preparing the report is given below:

Table 2 Consultants Detail

Detail of the Consultant	
Company name	Enviro Stewards Company (Private) Limited
Address	1st Floor Allied Bank A-Block Commercial Market Canal View Society, Lahore.
Contact	0301-1199600

A brief outline of the proposal

Table 3 Brief of Project

Title of the Project	M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)
Authorized Person	Faisal Saeed
Total Area	479222.275 Sq. Ft.

Description of the project	An M/s Qadbros Engineering (Pvt.) Ltd. (Unit II) serves the purpose of manufacturing the industrial plant and equipment for sugarcane, cement, paper, steel, chemical, power and mining. The process includes fabrication, foundry and machining.
Location of the project	Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura
GPS Location	31.727448 N, 74.073071 E (Google map is attached A3 size with file)
Cost of the project	1.6 billion
Capacity	250 ton per day 3000 ton per year
Nature of project	Product manufacturing unit
Raw Material	1. Forged Steel Round Bars 2. Forged Steel Hollow Drill Bars 3. Forged Alloy Steel Stepped Bars 4. Cast Parts of Iron & Steel 5. Forged Alloy Steel Round Bars 6. Cast Parts of Copper (Bronze)
Final Product	1) Industrial Plant & Equipment for sugarcane & sugar beet processing sectors 2) Industrial Plant & Equipment for cement & mining sectors 3) Industrial Plant & Equipment for steel. Paper, chemical, power sectors 4) Industrial Plant & Equipment for general industry
Ground Water	100ft – 150ft
Electricity Requirement	For Construction: 0.5 MW
	For Operation: 2-3 MW
Manpower	Construction: 30 Persons
	Operation 200 Persons
Generator	2500 KVA

	Also, intend to install 1.5 MW solar panel
Period of Construction	Approx. 0.5 Year
Assessed Environmental issues	Solid and liquid waste will be environmental issues. So, these wastes should be disposed of via EPA approved vendor. Also, air and noise pollution will be the issue there.
Solid Waste Management	By proper segregation of waste and disposal can improve the environment. The waste will manage by EPA approved vendor.
Wastewater Management	Generated domestic wastewater will be disposed of after the treatment in Septic Tank.
Air and Noise Pollution Control	Solar Pannel will be installed. New technologies will be used.
Consultants	Enviro Stewards Company (Private) Limited
Compliance	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 construction and operational phase, significant ones of which would be:

Pollutant	Constructional Phase	Operational Phase
Particulate matter (PM)/dust	Particulate matter will be generated during the construction and transportation activities at the site at a limited level	Air emissions will chiefly arise from machinery along with solvent vapor, odor, from floor cleaning and the generators
Gaseous emissions	Gases will be generated due to site generators and vehicles	Gases will be generated due to the movement of vehicles and from the machinery used
Noise	Noise will be generated due to construction machinery and vehicle transportation	Noise will be generated due to vehicles and may be from the machinery if not properly managed
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	Soil may be contaminated due to the leaching of any stored oil only during the construction phase	Soil contamination is not foreseen during the operation phase except for mismanagement of solid waste collection and disposal
Wastewater	Wastewater will be generated from construction and domestic sources	Wastewater will be generated from domestic sources and during operational/ process activities.
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.

- ✓ Establishment of temporary housing facilities featuring necessary water and sanitation amenities.
- ✓ Adherence to municipal waste management protocols for handling waste materials.
- ✓ Consistent inspection and maintenance of all machinery to minimize emissions.
- ✓ Installation of a Septic Tank for the safe disposal of wastewater.
- ✓ 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

- ✓ Adoption of effective solid waste management practices for domestic refuse.
- ✓ Installation of a septic tank with sufficient capacity before discharging into nearby wastewater channels.
- ✓ 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.
- ✓ 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 Authorized person 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 Authorized person 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

Establishing a manufacturing unit in Pakistan presents significant benefits that can drive the country's economic and social development. The creation of such a unit would generate substantial employment opportunities, contributing to poverty alleviation and enhancing the livelihoods of many Pakistanis. By providing stable jobs, particularly in regions where industrialization is still emerging, it can help curb urban migration and promote balanced regional development. Economically, the unit would contribute to the growth of local industries, fostering a network of suppliers, logistics providers, and service companies, thereby strengthening the industrial ecosystem and boosting local economies.

The need to stay competitive drives manufacturing units to invest in research and development (R&D). This fosters innovation in product design, materials, and manufacturing processes, leading to more efficient, cost-effective, and sustainable production methods. Establishing a manufacturing unit with advanced capabilities allows companies to produce high-quality products at competitive prices. This enhances their ability to compete in both domestic and international markets. The presence of in-house manufacturing capabilities allows companies to respond quickly to market demands and customize products to meet specific customer needs. This flexibility is a significant advantage in dynamic markets. Having a dedicated manufacturing unit gives companies greater control over their supply chains, reducing dependency on external suppliers, improving lead times, and enhancing overall supply chain resilience.

1.2 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 Authorized person 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 Authorized person 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.

1.3 Identification of the project and Authorized person

The detail of the project and Authorized person is given below:

Table 4 Detail of Authorized person & Project

Details of the Project and Authorized person	
Authorized person name	Mr. Faisal Saeed
Authorized person designation	Company Secretary
Address of the Authorized person	House # 675-E, Sabzazar Scheme, Multan Road, Lahore
Project title	M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)

Location of the project	Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura

1.4 Consultant Information

The initiator has contracted with M/s Enviro Stewards Company (Private) Limited for the execution of an Environmental Impact Assessment (EIA) for the aforementioned project, in alignment with the standards and guidelines set forth by the Environmental Protection Agency (EPA) of Punjab. To fulfill this objective, M/s Enviro Stewards Company (Private) Limited has assembled a team of experts, including environmental specialists, environmental engineers, and chemical engineers. Further information on the consultancy team is provided below:

Table 5 Consultant's Detail

Detail of the Consultant	
Company name	Enviro Stewards Company (Private) Limited
Address	1st Floor Allied Bank A-Block Commercial Market Canal View Society, Lahore.
Contact No.	0301-1199600
Detail of the Team Leader	
Name	Miss Sara Fatima
Designation	Senior Environmentalist
Contact No.	0301-1198600

1.5 Nature and Size of The Project

The project under consideration involves the establishment of an industrial plant & equipment manufacturing unit, named "M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)" This facility is to be situated at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, encompassing an area of 479222.275 Sq. Ft. The project is expected to generate employment opportunities for approximately 30 individuals during its construction phase.

Furthermore, upon transitioning to the operational phase, it is anticipated that an additional 200 personnel will be employed.

Schedule of Area	
Total Area of Plot	**476112 Sq. Ft.**
Total Concrete Structure Area	41994 Sq. Ft.
Total Steel Structure Area	120980 Sq. Ft.
Open Paved Area	177264 Sq. Ft.
Total Green Area	40048 Sq. Ft.
Total Buildup Area	340218 Sq. Ft.
Open Area of Plot	135894 Sq. Ft.

1.6 Project Location

The designated location for the project is situated at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura. The geographical coordinates marking the project site are 31.727448 N, 74.073071 E.

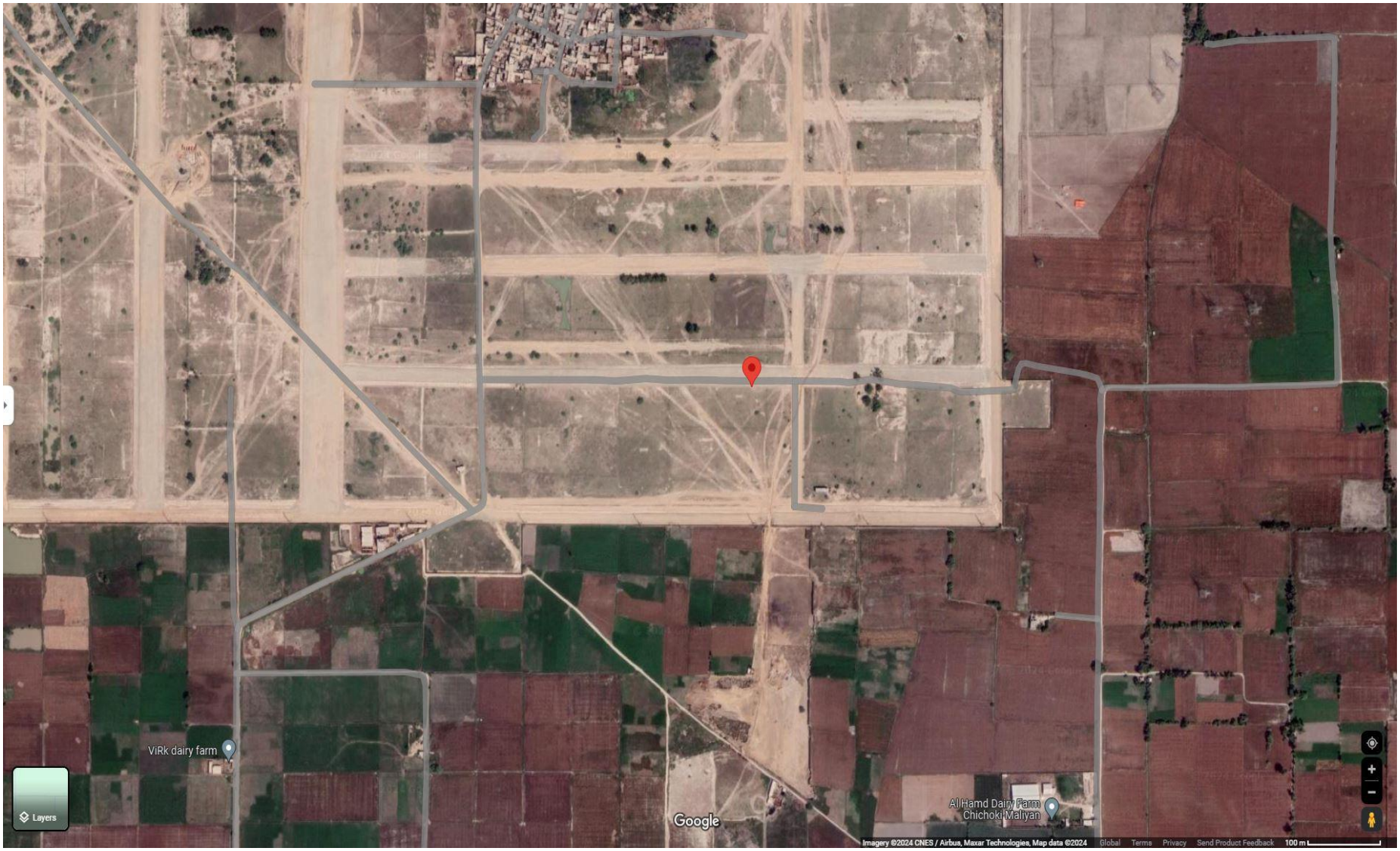


Figure 1 Location of Project

1.7 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.

1.8 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 (EIA) 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 (requiring an EIA), Category B (Manufacturing and Processing), sub-sector 17/18 (iron and steel rolling mill & Steel Furnaces)** 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 05 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 manufacturing unit. Despite the proximity of a few residences within 500-meter, 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.

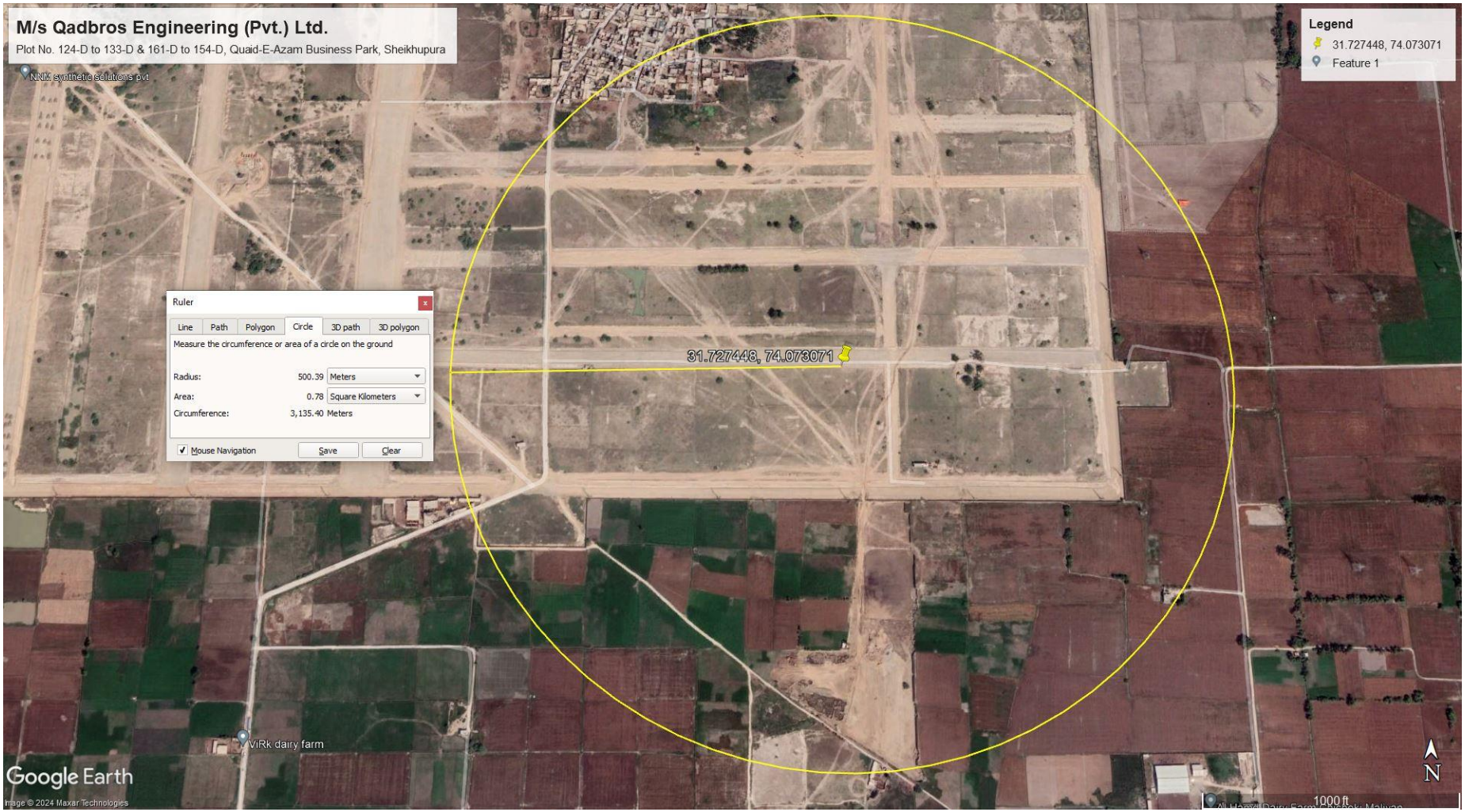


Figure 2 Radius along Project site

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 Industrial Area:** Aligns with the area's existing land use, minimizing land use conflicts.
- **Availability of Transportation Infrastructure:** Facilitates logistical efficiency and access.
- **Ownership:** The site is owned by the Authorized person, 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.
- **Water Mitigation Techniques:** Including advanced wastewater treatment plants 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 Qadbros Engineering (Pvt.) Ltd. (Unit II)

5 PROJECT DESCRIPTION

The Authorized person is set to establish an industrial plant & equipment manufacturing unit under the name "**M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)**" This facility will be located at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, sprawling over an area of 479222.275 Sq. Ft. The primary aim of this project is to fulfill the growing market demand thereby contributing to economic upliftment of the Authorized person.

Financial Overview

The estimated investment for the proposed project is approximately 1.6 billion 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 Qadbros Engineering (Pvt.) Ltd. (Unit II) is poised to have a significant positive impact on both the local and national economy:

- Provide quality products.
- Employment Opportunities
- Economic Contribution

5.1 Type and Category of the Project

Capital Cost:

The project entails an investment of 1.6 billion PKR, highlighting its significant economic scale.

Area Coverage:

The project will be developed over an area of 479222.275 Sq. Ft., indicating substantial physical infrastructure.

Employment Generation:

It is anticipated to create 30 jobs during the construction phase and 200 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 (requiring an EIA), Category B (Manufacturing and Processing), sub-sector 17/18 (iron and steel rolling mill & Steel Furnaces)** as per the IEE/EIA Regulations 2022. This classification necessitates conducting an Environmental Impact Assessment (EIA) for environmental approval, underlining the project's adherence to environmental governance.

5.2 Objective of the Project

The project is aimed at establishing an industrial plant & equipment manufacturing unit 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 Authorized person 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 Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, with coordinates 31.727448 N, 74.073071 E, 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 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.

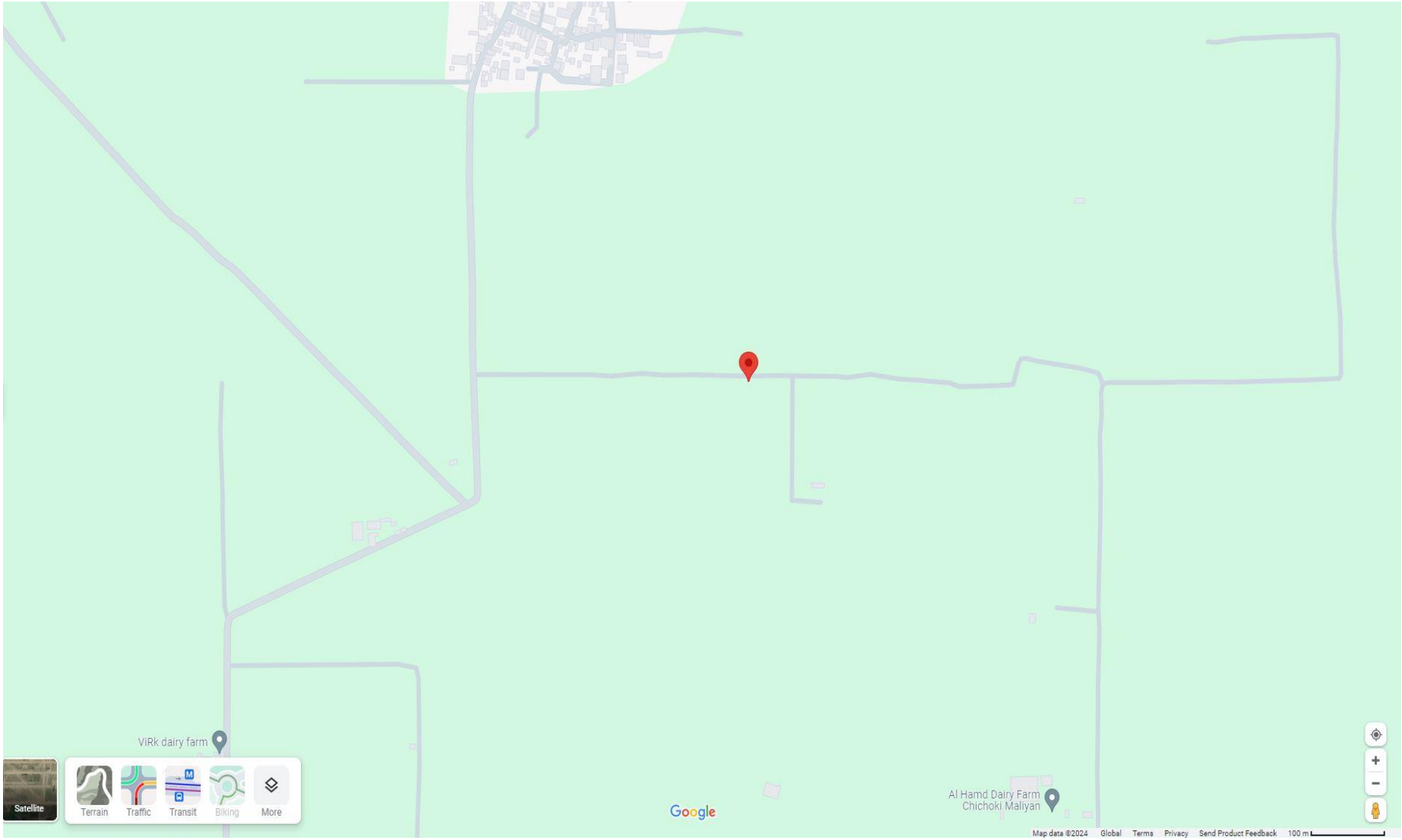


Figure 3 Road Access Map

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 1.6 billion 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 6 Cost Breakdown

Amenities	**Cost in PKR**
Land cost	0.2 billion
Infrastructure Development	0.1 billion
Raw Material	0.6 billion
Machinery	0.6 billion
Environmental Budget	0.01 billion
Others	0.09 billion
Total Cost	**1.6 billion**

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 7 Schedule of Implementation

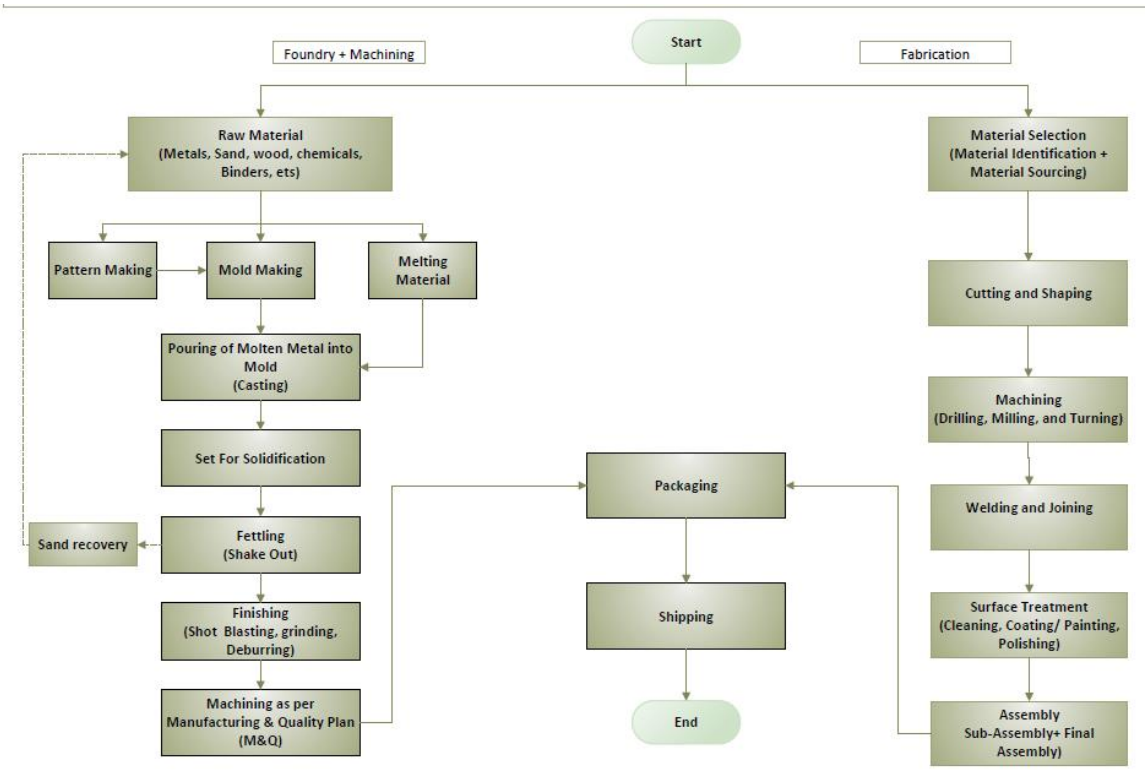
Activities	Times Frame										
	Four Week		Four Week			Four Week		Four Week		Four Week	
Preliminary Phase (Land Acquiring etc.)											
Design Phase											
Pre-Construction Activities Finalization											
Construction Phase											
Purchasing Phase											
Machinery Installation			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

5.10 Description of the project

The Authorized person intends to establish the industrial plant & equipment manufacturing unit, by the title "M/s Qadbros Engineering (Pvt.) Ltd. (Unit II), located at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, over an area of 479222.275 Sq. Ft. 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 1.6 billion 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.

5.10.1 Process Description

The process flow diagram represents the sequential stages involved in the manufacturing of metal products through foundry and machining, as well as fabrication processes. Here's a detailed description of each step:



Start

Initiation: The manufacturing process begins with the initiation of the workflow, where the necessary planning, resource allocation, and preliminary preparations are made. This step sets the foundation for either the Foundry + Machining or Fabrication processes.

1) Foundry + Machining

This section describes the traditional foundry process where raw materials, especially metals, are processed through casting and subsequent machining.

i. Raw Material Selection:

Materials: The process starts with the selection of raw materials. These materials can include metals like steel, aluminum, or cast iron, along with sand for mold-making, wood for patterns, chemicals, and binders for enhancing mold properties.

Importance: The quality and type of raw materials chosen directly impact the final product's characteristics, including strength, durability, and surface finish.

ii. Pattern Making:

Definition: Pattern making involves creating a final product in wood, plastic, or metal. This pattern is used to create the mold into which molten metal will be poured.

Precision: The accuracy of the pattern is crucial as it defines the shape and dimensions of the mold.

Mold Making:

Creation: Molds are made by packing sand around the pattern. This step forms a cavity that matches the pattern's shape. The molds are then assembled for the casting process.

Melting Material:

Process: The selected metal is melted in a furnace at high temperatures until it becomes a liquid. The type of furnace used depends on the metal and the production requirements.

Control: Careful control of temperature and alloy composition is essential to ensure the molten metal has the desired properties.

Pouring of Molten Metal into Mold (Casting):

Casting: The molten metal is carefully poured into the mold cavity. This step requires precision to avoid defects like air bubbles, incomplete filling, or cold shuts.

Setting for Solidification:

Cooling: After pouring, the molten metal is allowed to cool and solidify within the mold. The cooling rate and time vary depending on the metal and the desired properties of the final product.

Monitoring: Proper monitoring is essential to avoid defects such as shrinkage or internal stresses in the metal.

Fettling (Shake Out):

Removal: Once solidified, the casting is removed from the mold. This process, known as shakeout, involves breaking the mold and extracting the casting.

Cleaning: The casting is then cleaned to remove any remaining sand, slag, or other residues.

Sand Recovery

Recycling: The sand used in the mold is recovered, cleaned, and recycled for future use. This step is essential for cost efficiency and environmental sustainability.

Treatment: The recovered sand may undergo treatment to restore its properties before reuse.

Finishing:

Surface Treatment: The casting undergoes finishing processes such as shot blasting, grinding, and deburring. These processes remove surface imperfections, enhance the surface finish, and prepare the casting for further machining.

Dimensional Accuracy: Finishing also ensures that the casting meets the required dimensional tolerances and surface specifications.

Machining as per Manufacturing & Quality Plan (M&Q):

Precision Machining: The casting is then subjected to precision machining operations like drilling, milling, and turning to achieve the final dimensions, features, and surface finish.

Quality Control: Each machine operation is carried out according to a detailed Manufacturing & Quality plan, ensuring that the product meets all technical and quality specifications.

1. Fabrication

This section focuses on the fabrication process, which involves creating products by cutting, shaping, and assembling materials.

Material Selection (Material Identification + Material Sourcing):

Identification: The necessary materials are identified based on the product design and specifications. This could include metals, alloys, plastics, or composite materials.

Sourcing: The selected materials are sourced from suppliers, ensuring they meet the required quality standards and are available in the necessary quantities.

Cutting and Shaping:

Processes: The sourced materials are cut and shaped using techniques depending on the material and required precision.

Machining (Drilling, Milling, and Turning):

Secondary Operations: After cutting and shaping, the parts undergo secondary machining operations such as drilling, milling, and turning to refine their dimensions, create holes, and add intricate details.

Precision: These operations require high precision to ensure that all parts fit together correctly in the final assembly.

Welding and Joining:

Assembly: The machined parts are then assembled by welding or joining them together. This step is critical in creating complex structures from multiple components.

Types of Welding: Various welding techniques or mechanical joining methods (e.g., riveting, bolting) may be used depending on the materials and design requirements.

Surface Treatment (Cleaning, Coating/Painting, Polishing):

Enhancement: The assembled parts undergo surface treatment processes to enhance their appearance, durability, and resistance to corrosion. This could include cleaning, applying protective coatings, painting, or polishing.

Quality: Surface treatment is also important for ensuring the product meets aesthetic and functional standards.

Assembly (Sub-Assembly + Final Assembly):

Integration: The individual parts and sub-assemblies are integrated into the final product. This step may involve fitting, aligning, and securing all components to ensure the product functions are as intended.

Inspection: The final assembly is inspected to ensure it meets all specifications and quality standards before moving to packaging.

Packaging

Protection: The completed products are packaged to protect them during transportation. Packaging may involve wrapping, boxing, or crating depending on the product size, weight, and fragility.

Labeling: Proper labeling is done to identify the product, destination, and handling instructions.

Shipping:

The packaged products are shipped to the end destination, whether it's a customer, distributor, or warehouse. Logistics planning is crucial to ensure timely and safe delivery.

List of Machinery

The complete list of machinery is attached as annexure.

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. Power Requirement

The electricity requirement for construction phase is 0.5 MW for 1st Phase of Production is 2.0 MW and for the 2nd Phase of Production is 2.9 MW.

8. Workforce Requirements

Workforce Engagement: The construction phase will require 30 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 Environmental Impact Assessment (EIA) 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 4 Safety Signs

6 DESCRIPTION OF ENVIRONMENT

Environmental baseline data study is essential while preparing EIA reports. The basic purpose is to establish a clear understanding of existing environmental conditions in the project area and to identify potential impacts of the proposed project. It refers to the collection of baseline information on biophysical, social and economic aspects of project location.

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
- Socio-economic environment

6.1 Physical Environment

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the project site but also the city to assess whether the project under assessment can or does have any impacts on any of these parameters.

Sheikhupura was established in 1607, and the district was established in 1922. It is an agricultural and industrial city in the province of Punjab. The total area of Sheikhupura is 919620.96293 acres out of which 789019 acres is agricultural land. There are more than 789 units of industries. Total population is about 3460426 approximately equals to 35 lacs.

6.1.1 Geological Formation

Sheikhupura is an industrial center, and satellite town, located about 38 km northwest of Lahore. It is also connected to District Kasur. Geographical coordinates of the city are 31°42'47" °N (latitude) and 73°58'41" °E (longitude). It is 774.27 ft. (236 m) above sea level. The city's total area is 75 km^2 (29 mi^2) and the metropolitan is 3,030 km^2 (1,170 mi^2) in length.

6.1.2 Seismicity

Pakistan lies on an active seismic belt of earth. Seismic observations indicate that hundreds of shocks originate every year. Mostly, these seismic waves are of low intensity and do not have significant effect. According to seismic zones of UN- Habitat the project area falls under Zone 2A. The seismic zoning is shown in the figure.

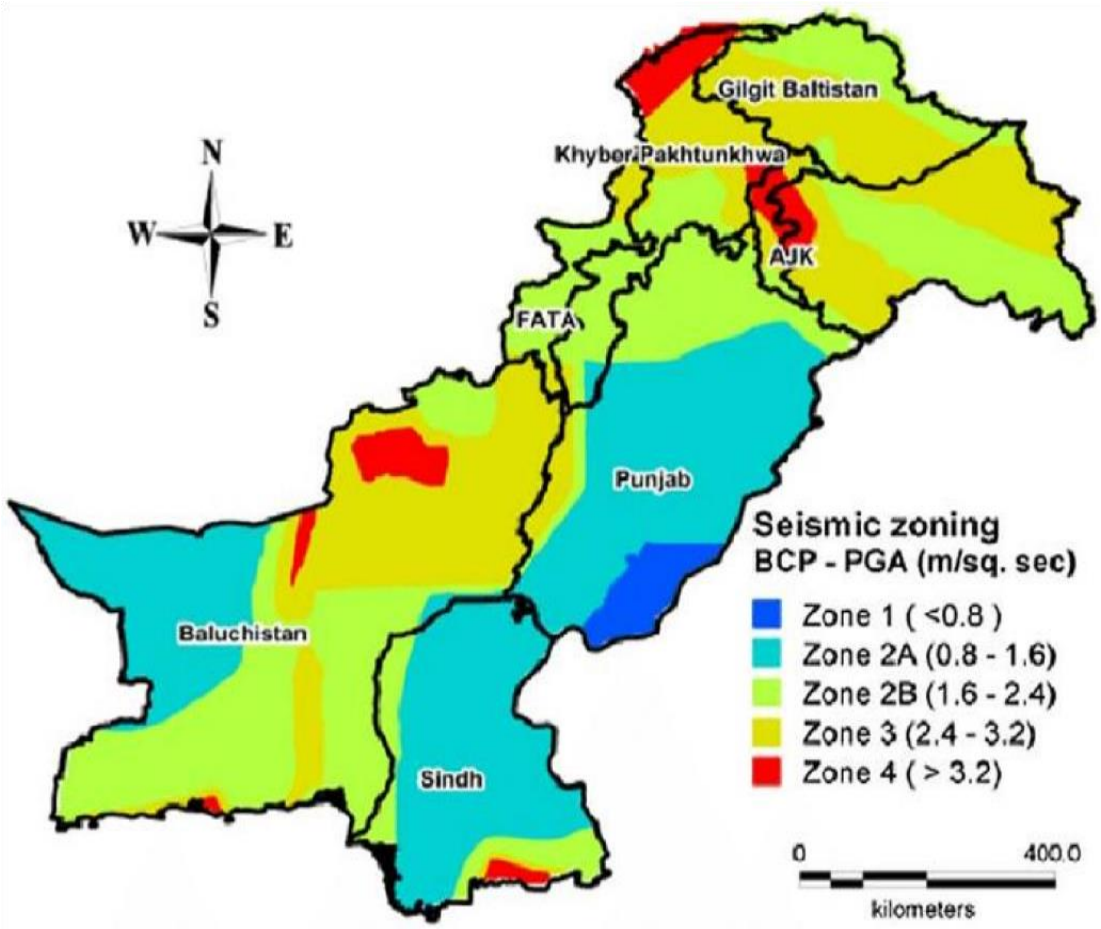


Figure 5 Seismic Zone of Pakistan

6.1.3 Climate

The district has an extreme climate, the summer season starts from April and continues till October. During the summer season, temperatures range from

30 to 45 degrees, the winter season starts from November and continues till March. December and January are the coldest months. Dust storms occur occasionally during the hot season, during June, July and August. Rainy weather alternates with oppressive weather. The rainfall is 500mm per year. The mean minimum and maximum humidity during winter is 37% and 84%.

6.1.4 Temperature

In Sheikhupura, the summers are short, sweltering, humid, and clear and the winters are short, cool, dry, and mostly clear. Over the course of the year, the temperature typically varies from 7.22°C to 39.44°C and is rarely below 4.44°C or above 43.88°C. The hot season lasts for 2.9 months, from April 24 to July 21, with an average daily high temperature above 35.5°C. The hottest month of the year in Sheikhupura is June, with an average high of 38.8°C and low of 27.7°C. The cool season lasts for 2.5 months, from December 6 to February 22, with an average daily high temperature below 22.7°C. The coldest month of the year in Sheikhupura is January, with an average low of 7.2°C and high of 18.8°C.

6.2 Ecological Environment

In this the baseline environmental conditions pertaining to biological environment are described. These conditions have subsequently been used to identify the potential impacts on the biological environment that are likely to arise from the project activities. A variety of vegetables are also grown in the district.

6.2.1 Flora

The Floral species commonly found in the area are:

Table 8 list of plants

Local Name	**Scientific Name**
Sufaida	*Eucalyptus camaldulensis*
Toot	*Morus alba*
Sukh chain	*Pongamia glabra*
Pipal	*Ficus religosa*
Babul	*Acacia nilotica*

Table 9 List of Fruit Species

Local Name	Fruit Species Name
Citrus	*Citrus sps*
Mango	*Mangifera Indica*
Guava	*Psidium guajava*
Lychee	*Litchi chinensis*
Mulberry	*Morus alba*
Banana	*Musa acuminata*
Jamun	*Syzygium cumini*

Table 10 List of Vegetables

Local Name	Vegetables Species Name
Chilies	*Capsicum frutescens*
Onion	*Allium Cepa*
Potato	*Solanum tuberosum*
Tomato	*Solanum lycopersicum*
Cabbage	*Brassica oleracea*
Water chestnut	*Eleocharis dulcis*
Bottle Gourd	*Lagenaria siceraria*

6.2.2 Fauna

Owing to industrialization, there is very little wildlife in the district. Wild boar, jackals, and hare, however, are still found in the riverine tracts. Fauna of the project area consists of:

1. Mammals
2. Reptiles
3. Amphibians
4. Birds

Table 11 List of Birds

Local Birds Name	Scientific Name
Falcon	*Falconiformes*
Eagle	*Accipitridae*
Quails	*Coturnix coturnix*
Doves	*Columbidae*
Ducks	*Anas Platyrhynchos*

Table 12 List of Mammals

Local Mammals Name	Scientific Name
Jackal	*Canis aureus*

Jungle cat	*Felis chaus*
Hog deer	*Axis porcinus*
House rat	*Rattus rattus*
Indian hare	*Lepus nigricollis*

Table 13 List of Reptiles

Local Reptiles Name	**Scientific Name**
Snake	*Serpentes*
Lizards	*Lacertilia*

6.3 Socio-economic Environment

The project site is on industrial land, hence direct disturbance to communities will be minimum from the project activities. However, the physical extent of the study area extends up to 5km surrounding the proposed site (referred as project area) considering the physical, ecological, and socioeconomic boundaries beyond which the project is not likely to significantly influence local communities, and with a view of covering a substantial sample size for collection of reliable and authentic socio-economic data.

6.3.1 Study Objectives

The socio-economic study undertaken for the Environmental Impact Assessment (EIA) was designed and conducted to meet the following objectives:

- To assess the human environment of the area i.e., to determine the Quality of life of communities within the Region of Influence.
- To have an insight into the day-to-day activities of people especially focusing on their income generating activities viz., agriculture and labor.
- To access the vulnerabilities of the local communities and the effects of project activities on their Quality of Life and Consultation with communities regarding the proposed project activities and to find out their concerns and aspirations.

6.3.2 Methodology

Data was collected from census reports, previous studies, and data from government departments as well as from field surveys carried out in the surroundings of the Project area.

Our field survey methodology includes transact walks through villages, group interviews and focus group discussions with the local communities. The use of a semi-structured interview guide helped in the carrying out of the questioning process and recording of information. This activity was carried out with the objective of obtaining a clear and complete understanding of the social and economic conditions of the local communities; assessing the vulnerability of the local communities; identifying marginalized strata of the community; and gathering local concerns and inhibitions.

6.3.3 Religion, Caste and Language

Religion plays an important role in the social structure of society. Approximately 95% of Muslims live there and other are Ahmadis and Christians. The most common language used in this area is Punjabi (97.7%). Other languages like Urdu, Pushto and Seraiki are also well-known.

6.4 Quality of Life

The project area is better as compared to the other rural areas of the province. A brief account of the education, health, infrastructure, and markets of the area is as follows:

6.4.1 Education

The level of literacy is 66% in which male literacy rate is 71% while female literacy rate is 62%. Though there are higher secondary government schools, private sector schools and colleges for girls and boys are also available near the vicinity of the project area.

6.4.2 Health Facility

Basic Health Unit, Dispensaries and Private clinics exist in the surrounding of the project area. People also have access to private hospitals in the district and sometimes to nearby private dispensaries.

6.4.3 Economy of area

District Sheikhupura is an industrial and commercial city having multi-occupations. The population of the area has different occupations including government and private services as well as agriculture. The women also assist their men in the economic activity in different fields of business, service, education, and other institutions. Women mostly serve in schools, colleges, and hospitals.

Sheikhupura is generating many employment opportunities for its locals and outsiders. Industrial areas are using manpower, while nearby towns are providing business opportunities to the residents. In this semi urban area, people are involved in daily wages jobs, while some are involved in small business. They normally travel to adjacent areas for work. Some work in the industrial area and in the surrounding universities and colleges. People are also involved in agriculture. Area having access to irrigation water is another source of income. As per the 1998 Census (2017 Census data has not been made public), the industrial sector employs nearly 9.5% of the district's total population. However, agriculture with its allied livestock breeding and fishing is still the main employer, with 29.6% of the total population employed in this sector.

6.4.4 Agriculture

Agriculture is one of the most important economic activities in the project area. Agriculture and its allied livestock breeding are the main occupation of the rural areas of the district, with nearly 35.9% of just the rural population engaged in this occupation.

Sugarcane, wheat, rice, bajra, barley, gram, cotton, groundnut, and tobacco are the main crops grown in the district.

Citrus, mangos, bananas, guavas, leechee, jaamun, phalsa, mulberry, and ber are some of the fruits grown in the district.

Chilies, onions, potatoes, tomatoes, coriander, turmeric, garlic, peas, carrots, cauliflower, cabbage, turnip, okra, garlic, radish, pumpkins, sweet potatoes,

water chestnut, bitter gourd, bottle gourd, and brinjal are the vegetable crops of the district.

6.4.5 Irrigation Network

The Upper Chenab Canal (UCC) and Lower Chenab Canal (LCC) are the major perennial canals that supply irrigation water to the district. The Marala-Ravi Link Canal, Bambawali-Ravi-Bedian (BRB) Link Canal and LCC supply irrigation waters to Ferozewala tehsil. Some of the smaller canals in the district are Sikhanwala Distributary, Sheikhupura Distributary, Shahdara Distributary, Munianwala Minor, and Mohan Devi Minor.

6.4.6 Archeological and Cultural Sites

The important places in the district are:

- Hiran Minar
- Sheikhupura Fort
- Shrine of Syed Waris Ali Shah
- Sheikhupura Stadium

7. Potential Environmental Impact Assessment

The establishment of the manufacturing facility by M/s Qadbros Engineering (Pvt.) Ltd. (Unit II) 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 manufacturing unit, such as M/S Qadbros Engineering (Pvt.) Ltd. (Unit II) 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 an industrial plant & equipment manufacturing unit located at Plot No. 124-D to 133-D & 154-D to 161-D, Quaid-E-Azam Business Park, Sheikhupura, over an area of 479222.275 Sq. Ft. The purpose of this project is to meet the market demand and Authorized person economic uplift. The estimated cost for the subject proposed project will be about 1.6 billion 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 industrial plant & equipment manufacturing units, 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 main 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 SOx, NOx, 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 industrial plant & equipment manufacturing units will bring about several environmental impacts, alongside strategies to mitigate these effects effectively.

8.6.1 Impact on Air Quality

Potential Issues:

Emission of pollutants such as particulate matter, VOCs, and greenhouse gases, leading to air quality degradation and health risks. 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 by machining, cutting, and shaping processes, which can affect workers' health and nearby communities. 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:

Generation of industrial waste, including slag, scrap metal, spent sand, and hazardous chemicals, which can lead to soil and water pollution. 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:

Exposure to hazardous materials, dust, fumes, noise, and the risk of accidents can affect worker health and safety. 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.

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 14 Environmental Budget

Environmental Component	Quantity	Amount Pak Rs.	Details/Basis
Landscaping/Plantation	1000-2000 approx.	01 million	Cost includes plantation and maintenance up to three years
Solid waste management	L.S	02 million	Lump Sum
Health & Safety Measures	L.S.	1.5 million	Lump sum
Wastewater management	L.S.	01 million	Lump sum
Miscellaneous Cost	L.S.	01 million	Lump sum
Air Quality Monitoring	2	10,000	2 samples @ 5000/sample
Water Quality Monitoring	2	10,000	2 samples @ 5000/sample
Noise Level Monitoring	2	10,000	2 samples @ 5000/sample
Soil Tests	2	10,000	2 samples @ 5000/sample
Training		15,000	Lump sum
External Monitoring		100,000	
Total Environmental and Social Management Cost		**10 million PKR**	

9.3 Environment Management and Monitoring Plan (EMMP)

Table 15 Environment management and monitoring plan (MMP)

ENVIRONMENT MANAGEMENT AND MONITORING PLAN				
S. #.	**IMPACT**	**MITIGATION MEASURE**	**RESPONSIBILITY**	
			IMPLEMENTATION	**MONITORING**
A	**CONSTRUCTION PHASE**			
1.	**AIR QUALITY**			
	Dust, SO_2, NO_x & CO emissions from trucks cause health issues to workers. There will be particulate natter during the Construction.	• Spray by water trucks to minimize the dust. • Maintenance of construction machinery should be mandatory to reduce emissions. • Haul-trucks carrying earth, sand, aggregate and other materials will cover with tarpaulin to reduce dust pollution.	Contractor	Authorized person through Consultant
2.	**NOISE**			
	The impact of noise generated during construction	• Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels.	Contractor	Authorized person through Consultant
3.	**OCCUPATION, HEALTH, AND SAFETY**			

	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.	• 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. • Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site. • Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE.	Contractor	Authorized person through Consultant
4.	**DISPOSAL OF CONSTRUCTION DEBRIS**			
	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.	• 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. • Train or educate the involved stakeholders on the importance and means of waste management and handling.	Contractor	Authorized person through Consultant
5.	**GROUND WATER QUALITY**			
	No appreciable impacts on the ground water quality occur.	• Avoid accidental spills through decent work practice.	Contractor	Authorized person through

				Consultant
6.	**SOIL CONTAMINATION**			
	Any improper storage or handling of materials including paints, fuels, solvents, oil, cement, etc. would result in soil contamination.	• The contractor should require imparting proper training to their workforce in the storage and handling of materials	Contractor	Authorized person through Consultant
7.	**FLORA & FAUNA**			
	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.	• Trees and ornamental plants shall be planted along the project boundary which will increase the aesthetic value of the site and will combat pollution. • Landscaping is seemed to be a powerful mitigation activity with a positive impact.	Contractor	Authorized person through Consultant
8.	**SOCIO-ECONOMIC ENVIRONMENT**			
	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.	• The socially responsible attitude of the project management towards local people and resources can make project people friendly. • Awareness and educational programs introduced by the project management or e area can reduce the fear among the people regarding non-local people.	Contractor & Authorized person	SIE

B.	OPERATIONAL STAGE			
1.	**AIR QUALITY**			
	Air pollution is due to transport and vehicles.	• Proper maintenance and tuning of the vehicles can reduce it.	Authorized person	EPA
2.	**NOISE QUALITY**			
	Noise due to movement of vehicles, during transfer of materials	• Plantation along with boundary will make buffer zone to avoid noise.	Authorized person	EPA
3.	**OCCUPATION, HEALTH, AND SAFETY**			
	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.	• All the workers involved in the transport of the materials suggested wearing boots, gloves, and a safety cap to avoid injury. • All workers must know the safety measures regarding handling of material.	Authorized person	EPA
4.	**SOLID WASTE**			
	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.	• Domestic solid waste will be collected in waste bins. Hazardous waste will be collected in separate bins. • Must use protective gloves while carrying the containers to avoid any hazardous effect	Authorized person	EPA

5.	**WASTEWATER QUALITY**			
	Domestic wastewater will be generated. During Process wastewater will also be generated.	• Wastewater treatment plant will be done by installing septic tanks.	Authorized person	EPA
6.	**FLORA AND FAUNA**			
	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.	• The process of plantation should be kept sustainable throughout project life.	Authorized person	EPA
7.	**SOCIO-ECONOMIC ENVIRONMENT**			
	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.	• 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. • Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.	Authorized person	EPA

9.4 Proposed Monitoring/EMP Reporting and Reviewing Mechanism

Table 16 Proposed monitoring and reviewing mechanism.

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Construction and Operational Phase					
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 Authorized person
	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 17 Training Schedule

Participants	Date, Time & Location	Training Topics	Schedule	Responsible Authority
Staff of proposed project and the contractor	As specified	• Introduction to project EIA/IEE and EMMP • EMMP communication, documentation, monitoring, and reporting requirements	Every month	Project Manager
All site personnel	As specified	• Site induction training on HSE system and requirements at Incinerating Site • Environmental sensitivities of the project area • Communication of environmental problems to corresponding officials • Waste disposal	After every week	Project Manager
Drivers	As specified	• Road safety • Road restrictions • Vehicle restrictions • Waste disposal. • Defensive driving	After every 3 months	Project Manager
Camp Staff	As specified	• Camp operations. • Waste disposal. • Good housekeeping	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:

Authorized person: Serves as the project Authorized person 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 Authorized person 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 Authorized person's Environmental Management Team and Experts

Table 18 Responsible Authority

Sr. #	Managers	Responsibilities
1.	**Contract Manager**	• Implementation of EMP • Environmental issues identification during pre- construction phase. • Communication EMP to all employees.
2.	**Contractor**	• Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit. • 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.
3.	**Site Manager**	• Ensure site material and safe handling of hazardous waste. • Controlled access arrangement to avoid hazards. • Emergency egress arrangements to avoid any unfortunate incident. • First aid facilities/services should be readily available on-site.
4.	**Site HSE Advisor**	• Ensure good standards of workmanship. • Engaged health and safety to devise site waste management plan to be followed and implemented. • Daily checks & weekly checks. • Regular consultation with workers.
5.	**Site Environment Advisor**	• According to legislation and consent develop EMP. • Ensure application of EMP. • Conduct regular site inspection.
6.	**Public Contact Officer**	• First point of contact for members of the public. • Arrange and manage public forums. • Maintain relation with stakeholder

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 Authorized person.

Appointment of an HSE/Project Manager

To facilitate this, the project Authorized person 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 Environmental Practitioners and Experts

Consultation with Environmental Practitioners and experts was done, and the following comments and suggestions were noticed.

Sr. No.	Name	Designation	Comment/ Suggestions
1.	Sara Fatima	Senior Environmentalist	• She said that the project will have a positive impact on the economy, but its construction should be done in an environmentally friendly way. • Basic facilities should be provided to local community
2.	Zia Ur Rehman Farooqi	Ph.D. Scholar Environmental Sciences	• Tree plantation in designated green zones should be conducted. • Proper disposal of the solid waste • HSE management measures should be adopted and implemented effectively

3.	Dr. Hina Ahmed Malik	Ph. D Environmental Sciences	• He said that locals should be preferred for employment. • Value addition of area. Proper mitigation measures must be adopted while construction and operation of this project
4.	Engr. Kanza Fatima	Junior Environmentalist	• Waste must be collected and disposed of properly. • Ensure the use of PPE's during the operational activities. • Wastewater should be treated. • Ensure the tree plantation
5.	Engr. Aleeza Kanwal	Junior Environmentalist	• Health and safety department and trained people should be there in case of any emergency. • Periodic monitoring of every fire extinguisher (expiry date, type)
6.	Engr. M. Bilal	Environmental Engineer	• It should be ensured that the pollution abatement technique

10.8 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 19 Department and agencies

Sr. No.	Designation	Concerns
1.	**Environment Protection Department (EPD)**	
	General Manager	• Solid waste should be managed in Environmentally friendly manner. • Wastewater should be treated effectively & approval should be acquired from concerned agency before disposing off in nearby drain. • HSE* at the site should be managed effectively.
	Environmental Inspector	

		• No impact is being foreseen due to the selected location. • Locals should be given job opportunity.
2.	**Social Welfare Department (SWD)**	
	Deputy Director Officer	• Final goods should be affordable for the locals. • The proposed product should facilitate locals and they should be economical. • Job opportunities should be given to the locals. • Wages should be given according to the work assigned to them. • Life insurance of the workers should be given as well as all the facilities should be given as per labor laws.
3.	**Irrigation Department**	
	Subdivision	Following comments were suggested: • Untreated wastewater should not be disposed of in the nearby drains without proper treatment. • Beneficial as job opportunities will be available to the residents.
	Executive Engineer	
4.	**Forest Department**	
	District Forest Officer	Following recommendation were suggested by the forest department: • Plantation and landscape activities should be conducted on a broader scale. • Proper drainage system must be available at site

10.9 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 manufacturing 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 Authorized person 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

Accommodate	(of a building or other area) provide lodging or sufficient space for. "The cottages accommodate up to six people
Assessment	The action of assessing someone or something. "The assessment of educational needs"
Aspects	A distinct feature or element in a problem
Adverse	– Preventing success or development; harmful; unfavorable. "Taxes are having an adverse effect on production"
Authorized	– having official permission or approval. "An authorized dealer"
Amendment	a minor change or addition designed to improve a text, piece of legislation, etc. "an amendment to existing bail laws
Ambient Air	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
Archaeological	the scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities
Annunciation	A formal public statement
Baseline	The existing conditions against which impacts of the proposed action and its alternatives can be compared.
Crushing	Deform, pulverize, or force inwards by compressing forcefully. "You can crush a pill between two spoons"
Containers	An object for holding or transporting something. "The cakes will keep for up to two weeks if kept in an airtight container"
Compliance	Acting according to certain accepted standards
Discrepancies	A difference between conflicting fact, claims or opinions
Disposal	the action or process of getting rid of something
Dumped	Deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way
Effluent	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
Environmental impact statement (EIS)	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.
Emission	The production and discharge of something, especially gas, or radiation.” The effects of lead emission on health”

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

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

LIST OF ABBREVIATIONS

AA	Ambient Air
APHA	American Public Health Association
AOI	Area Of Influence
BOD_5	Biological Oxygen Demand
CMS	Convention On Migratory Species
COD	Chemical Oxygen Demand
dB(A)	Decibel
EA	Environmental Assessment
EHS	Environmental Health Safety
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
PEPA	Pakistan Environmental Protection Act
EPA	Environmental Protection Agency
ESIA	Environmental And Social Impact Assessment
ESA	Environmental And Social Assessment
ESMP	Environmental/Social Management Plan
EMP	Environmental Management Plan
EC	Electrical Conductivity
GIS	Geographical Information System
GOP	Government Of Pakistan
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HSE	Health Safety & Environment
HWMS	Hazardous Waste Management System
EIA	Environmental Impact Assessment
I & D	Irrigation And Drainage
IAIA	International Association for Impact Assessment
IWM	Industrial Waste Management
IUCN	International Union for Conservation of Nature

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

LIST OF INDIVIDUALS AND THEIR FEEDBACK

Sr.#	Name	Concerns
1	Kamran Ali Khan	During the survey in the study area following concerns of the local community were noted: • Air pollution should be controlled effectively, such as emissions generated from power-generating activities. • Solid waste should be collected timely and avoid the spreading of waste. • Locals should be preferred for the job opportunities. • Wastewater should be treated prior to final disposal in a nearby drain. • Solid waste should be managed effectively by adopting the standard practices of the area. • The cleanliness of the area should be ensured. • An effective EMMP should be designed and enforced with true spirit. • The health of the workers should be ensured. • Planation should be carried out on an extensive scale. • Construction activity should be carried out during day hours. • Noisy activities should be confined.
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
- 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

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 Authorized person 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 Authorized person 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 Authorized person 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 Authorized person 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 Authorized person. It is imperative that the Authorized person 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.

In **M/s Qadbros Engineering (Pvt.) Ltd. (Unit II)**

For Enviro Stewards Co. Pvt. Ltd. Ms. Sara Fatima

Mr. Zia Ur Rehman

List Of Names, Qualifications and Roles of Team Members Carrying Out the IEE/EIA Study

Table 20 List of experts and practitioners

Sr. #	Name	Qualification
Team Leader		
1.	Miss. Sara Fatima	M.Phil. Environmental Sciences
Environmental Scientist		
2	Dr. Hina Ahmed Malik	Ph.D. Environmental Sciences
3	Mr. Zia Ur Rehman Farooqi	Ph.D. Environmental Sciences (Scholar)
4	Hafiz Zeeshan Safdar	M.Sc. Analytical Chemistry
5	Mr. Saffi Ahmed	M.Phil. Environmental Sciences
Environmental Engineers		
6	Engr. Kanza Fatima	B.Sc. Environmental Engineering
7	Engr. Aleeza Kanwal	B.Sc. Environmental Engineering
Sociologist		
8	Ahmed Raza	M. Phil Sociology