

**Environmental Impact Assessment –EIA  
Madina Steel Industry Kasur**



**MADIN STEEL INDUSTRY KASUR  
ENVIORNMENTAL IMPACT ASSESSMENT**

By



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## **1. EXECUTIVE SUMMARY**

### **1.1 Introduction**

The project is identified a Madina Steel Industry Kasur Manufacturer of hot Rolled Deformed Bar G- 40, G-60 . located at 42 Km Ferozpur Road Kasur. M/s Madina Steel Industry was established in 1980 is a progressive manufacturer of Manufacturer of hot Rolled Deformed Bar G- 40, G-60, trusted for commitment to quality standards.

Madina Steel Industry is registered with Pakistan Engineering Council & Pakistan Standards & Control Authority . Madina Steel Industry Company has supplied Products to their private customers that includes, Textile, Cement, Steel, Foundries, Paper Mills and other sectors.

Madina Steel Industry Kasur is also ISO ISO 14001:2015 Certified Company.

The objective of the project is to continue the operational phase of Madina Steel Industry. The capital cost of the Project is approximately 100 million including the land cost.

The major objectives of the project are as under:

- To identify the possible beneficial and adverse environmental impacts of the project.
- To propose the applicable mitigation measures to be implemented during the operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP).
- To obtain No Objection Certificate (NOC) from EPA-Punjab.

The Project site is geographically located at Lat 31.386979 Long 74.348527.

### **1.2 Purpose of Report**

The purpose of the EIA study is to identify the possible beneficial and adverse environmental impacts of the project as presently envisaged and propose the applicable mitigation measures to be implemented during the operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP) to obtain No Objection Certificate (NOC) from EPA-Punjab.

This EIA report has been prepared keeping in view the following regulations and guidelines:

- a. Pakistan Environmental Protection Act (PEPA), 1997 & Punjab Environmental Protection Act (PEPA), 1997 (amended 2012)

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- b. Pakistan Environmental Protection Agency Regulations, 2000 for review of IEE and EIA.
- c. Guidelines For Preparation And Review Of Environmental Reports

#### **1.2.1 Need of Environmental Assessment**

The preparation and submission of Environmental Impact Assessment report for any development project is a statutory obligation under Punjab Environmental Protection Act, 1997 (PEPA, 1997) amended in 2012 in terms of Section 12 of the Act which states as under: “No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency, an Environmental Impact Assessment or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof.”

The current Project falls under Schedule-II, Section B (Manufacturing and Process) of IEE/EIA Regulation as per section 12 of Environmental Protection Act and thus requires Environmental Impact Assessment.

#### **1.3 Identification of Project and Proponent**

The proposed Project consists of establishment and operation of Madina Steel Industry Kasur Manufacturer of hot Rolled Deformed Bar G- 40, G-60 . located at 42 Km Ferozpur Road Kasur. Proponent detail is given as under-:

1. Name of proponent	Muhammad Mahmood Ahmad
2. Name of project	Madina Steel Industry Kasur
3. Location/ Address of the site	42 Km Ferozpur Road Kasur..
4. Estimated cost of project	100 Million
5. Plot area of the project	The total project area is about 44 Kanal (Covered Area: 51485 SFT , Open Area: 149665 SFT)
6. Electricity connection capacity	Already Existing 200 KVA
7. Detail of standby generators	275 KVA
8. Project start	Construction stage is already complete
9. Project completion duration	Construction stage is already complete

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**10. Layout Map and Drawings**                      Attached as Annex I

**A) DETAILS OF CONSULTANTS**

SEAL is providing their services to conduct Initial Environmental Examination for the project. Firm has vast experience and expertise in this field. The team of experts is given as under-:

Sr. No.	Name	Position	Qualification
1	Dr. Sajid Hassan	Team Leader	PhD Combustion Engineering, Imperial College, London Diploma In “Combustion and Environment Pollution” Imperial College London BSc Chemical Engineering, UET, Lahore
2	Mr. Muhammad Tayyab Muzammal	Environmentalist	BSc Environment Sciences,
3	Mr. Arshad Ali	Chief Chemist	BSc Chemistry (Hon) University of Punjab, Lahore
4	Sheikh Obaid ur Rehman	Sr. Ecologist	MSc Forestry

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Address: Plot 12 Water Avenue Green View Society Kacha Jail Road | Lahore | Pakistan

**B) REGULATORY FRAMEWORK FOR EIA/IEE**

The project will comply with all the national legislations relating to the environment as specified in Pakistan Environmental Protection Act (PEPA), 1997. The national legislations relating to the environment in Pakistan in order to obtain the required regulatory clearances are listed below:

- The National Conservation Strategy, 1992
- Pakistan Environmental Protection Act 1997 and Punjab Environmental Protection Act 1997 Amended 2012

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- The Pakistan Environmental Protection Agency Regulations, 2000,
- The National Environment Policy, 2005
- The National Forest Policy, 2001
- National Environmental Quality Standards (NEQS) 2000
- The Forest Act of 1930
- The Provincial Wildlife Act 1975
- Lahore Development Authority Act, 1975
- LDA land use rules 2014
- LDA Building and Zoning Regulations, 2007

The other provincial and departmental applicable laws and regulations include Pakistan Explosives Act. 1884, Pakistan Penal Code, 1860, etc.

**C) PROJECT DESCRIPTION**

Madina Steel Industry Kasur is one of the leading steel bar manufacturer in Pakistan. Which exist to carry forward its family legacy by maintaining its dominant position in trade and industry by being socially competent and contributing to well being of the customers. Madina Steel Industry laid the foundation of totally self owned group with integrated setup, which keeps on developing & innovating high quality steel bars. The company combination of high – quality and unrivalled customer service has strengthened its reputation as trusted supplier to its customer.

The whole project layout is attached as Annex I.

**D) ANALYSIS OF ALTERNATIVES**

Construction stages of the project has already been completed in 1980 and now the project is in operational phase. The main purpose of the project is to take measures to regularize the violation of section-12 of PEP, Act-1997 regarding establishment and operation of Madina Steel Industry Kasur so there is no other option for the project .

**E) DESCRIPTION OF ENVIRONMENT**

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In order to work out the impacts and related mitigation measures, it is most important to prepare a data base of Study Area as well as Project Area. Detail is given as below:

**1. Physical environment**

**Topography:** Terrain of the proposed project site is predominantly flat. The soils existing at the site belong to alluvial deposits transported by rivers. The subsoils present at the site predominantly consist of Lean Clay/ Silty Clay (CL/ CL-ML) and Silty Sand (SM).

**Geology:** The project site is situated 42 Km Ferozpur Road Kasur. The project site is located in Punjab which is a vast plain of alluvial material, deposited by Indus basin and five main rivers crossing the Punjab Plain. Thickness of alluvial deposits is thought to be more than 300 m which are underlain by the basement rocks of the Indian shield.

**Seismology:** The project site falls in the Punjab plain which shows low to moderate level of seismicity. The project region has also been subjected to severe shaking in the past due to earthquakes in the Himalayas. This region falls in Zone 2A.

**Climate:** The coldest month is January in which the mean maximum temperature is 19.4 °C and the mean minimum temperature is 6.6 °C. June is the hottest month with the mean maximum temperature near 39.8 °C and the mean minimum temperature as 27.4 °C. The average annual rainfall in Lahore from (2010-2018) works out to be 126.16 mm.

**Ambient Air Quality:** At present, major sources of air pollution are mobile sources and industrial activities. There is a road around project area so the major air pollution sources are industrial area and traffic present around the study area. Air scrubber is installed, so ambient air is not effected due to operations.

**Noise Level:** Major sources of noise generation are operational activities within industrial area, vehicular traffic & generators.

**Ground water Quality:** To determine the existing quality of groundwater, one sample from site was collected for laboratory analysis. Based on the laboratory test results, it was found that the groundwater was fit for drinking purposes as all the required parameters are in compliance with the PEQs standards. This groundwater can also be used for bathing, washing, general purpose activities.

**2. Ecological**

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**Flora:** The project site is situated in an area mixed with agricultural and Industrial area at Ferzopur Road Kasur . The land is not cultivated and there are 2 Bohar trees and some ornamental plants cultivated by the client at the site.

**Fauna:** There is no diversity of fauna present in area near project site. There are only common animals and birds are found there like dogs, cats, rodents, crow, sparrows etc.

### **3. Socio-economic**

**Neighborhood:** The project area is mixed with agricultural, industrial and residential activities. In west side there is an open land and in east side there is a road. At the distance of 05 KM Police station Mustafabad is present on main Lahore Kasur Road .

**Archeologist and Historical Treasures:** The project site is situated in industrial area and there is no archeology or historical building near purposed project area.

**Quality of Life:** The project area is situated main Lahore - Kasur Road that is mixed with agricultural and barren lands, industrial and residential activities. These communities have the facilities like metaled roads, sewerage, commercial area shops, water supply, public transport but deprived of big hospitals, colleges and universities. Only is Rashid Lateef & Central Park Hospital present near the project . Mostly the people belongs to their own business, private and government jobs and farmers. There is a rising trend in the society to change their traditional socioeconomic pattern of life. Print and electronic media are playing key role in bringing tangible change in the old pattern of life.

**Education and Literacy:** Basic primary level education is available. The private education schools also exist near the project site. The project area has deprived of big colleges and universities.

**Public health:**The small dispensaries and private doctors clinics exist in the vicinity of the project site. Only hospital present around the project site is Rashid Lateef & Central Park Hospital which nearest to project site.

## **F) IMPACTS AND MITIGATION MEASURES**

### **1. Pre-construction**

As Pre-construction stage of the project is already complete so there is no need for the identification of impacts and mitigation measures.

### **2. During construction**

As construction stage of the project is already completed so there is no need for the identification of impacts and mitigation measures.

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### **3. During Operation**

#### **Impacts**

- Air Emissions
- 9 meter cube of waste water will be generated during operational phase of the project which if will not be properly managed might cause land and aesthetic pollution..
- Daily sludge generation during operational phase will be 14 kgs/day which if will not be properly managed may affect ground water quality.
- There is need for vigilant security presence in and around the industry round the clock on a permanent basis to guard against theft and terrorist activities. The security concerns will have to be addressed adequately. Any threat to the security should be dealt with as a major challenge.

#### **Mitigation**

- Generator will be maintained properly and tuned up in respect of air to fuel ratio in order to have these pollutants within the PEQS limit.
- The sludge and some solid waste will be collected and disosed by the contractors.
- The Solid waste will be collected in separate bins and then sold out as scrap materials and reused.
- A comprehensive Security Plan is already developed and in place for the industry which includes construction of a security check post on the main entrance gate consisting of security guards.

### **G) ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

A comprehensive, Environmental Management Plan (EMP) has been developed for the Project. An environmental Mitigation Management Matrix (MMM) has been prepared considering impacts on different components of physical, ecological and socio-cultural environment. In addition, a comprehensive monitoring program has been proposed. The EMP include Review of regulatory requirements and applicable standards, MMM Institutional Arrangements for Implementation of EMP, Roles and Responsibilities of different agencies, Environmental Monitoring Plan, Training Program and Environmental Management and Monitoring Cost.

### **H) CONCLUSION**

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The project aims in Madina Steel Industry Kasur. located at 42 Km Ferozpur Road. Kasur. According to the “Punjab Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000” the project falls in schedule II. Accordingly, this EIA has been prepared for issuance of NOC/EA by the EPA, Government of the Punjab, Lahore before initiation of the project on ground.

Based on the EIA report, it can be concluded that the operation of this project will not cause any adverse environmental impact. The waste water will be not produced, the water will be used for cooling proposes . There will be no effect on air because of proper tuning and maintenance of generators to control air pollution. Solid and sluge waste is also managed very efficiently so project has no adverse impact. Further, the implementation of the environmental mitigation measures, proper monitoring and compliance of the environmental standards/legislations will make the Project environmentally more sustainable.

On the basis of the facts summarized as above, the project merits for issuing Environmental Approval by the Environmental Protection Agency, Government of Punjab.

### **Proposed Monitoring**

**Table 1: Proposed Monitoring During Operational Phase**

<b>Parameters</b>	<b>Frequency</b>	<b>Remarks</b>	<b>Responsibility</b>
Air Quality	Biannually	Ambient air quality	Administration of project and Reporting to EPA
	Monthly	Stack Emissions	Administration of project and Reporting to EPA
Noise	Biannually	Noise by activities in the multi-purpose building	Administration
Surface and ground water	Annually	Monitoring of water and wastewater parameters defined by EPA	Administration and Reporting to EPA

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Solid waste	Annually	Waste generation	Administration of the project
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## **2. INTRODUCTION**

### **2.1 Introduction**

The project is identified a Madina Steel Industry Kasur Manufacturer of hot Rolled Deformed Bar G- 40, G-60 . located at 42 Km Ferozpur Road Kasur. M/s Madina Steel Industry was established in 1980 is a progressive manufacturer of Manufacturer of hot Rolled Deformed Bar G- 40, G-60, trusted for commitment to quality standards.

Madina Steel Industry is registered with Pakistan Engineering Council & Pakistan Standards & Control Authority . Madina Steel Industry Company has supplied Products to their private customers that includes, Textile, Cement, Steel, Foundries, Paper Mills and other sectors. Annual transformer capacity of the unit is 4000 transformers and annual transformer production is 3000 approximately depending upon client demand.

Hammad Engineering is also ISO ISO 14001:2015 Certified Company.

The objective of the project is to continue the operational phase of Madina Steel Industry. The capital cost of the Project is approximately 100 million including the land cost.

The major objectives of the project are as under:

- To identify the possible beneficial and adverse environmental impacts of the project.
- To propose the applicable mitigation measures to be implemented during the operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP).
- To obtain No Objection Certificate (NOC) from EPA-Punjab.

The Project site is geographically located at Lat 31.386979 Long 74.348527. The major objectives of the project are as under:

- To identify the possible beneficial and adverse environmental impacts of the project.
- To propose the applicable mitigation measures to be implemented during the operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP).
- To obtain No Objection Certificate (NOC) from EPA-Punjab.

The Project site is geographically located at Lat 31.386979 Long 74.348527. The location of the project is given as under-:

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**Figure 1: Site Location Map**

## **2.2 Purpose of Report**

The purpose of the IEE study is to identify the possible beneficial and adverse environmental impacts of the project as presently envisaged and propose the applicable mitigation measures to be implemented during the operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP) to obtain No Objection Certificate (NOC) from EPA-Punjab.

This IEE report has been prepared keeping in view the following regulations and guidelines:

- a. Pakistan Environmental Protection Act (PEPA), 1997 & Punjab Environmental Protection Act (PEPA), 1997 (amended 2012)
- b. Pakistan Environmental Protection Agency Regulations, 2000 for review of IEE and EIA.
- c. Guidelines For Preparation And Review Of Environmental Reports.

### **2.2.1 Need of Environmental Assessment**

The preparation and submission of Initial Environmental Examination report for any development project is a statutory obligation under Punjab Environmental Protection Act, 1997 (PEPA, 1997) amended in 2012 in terms of Section 12 of the Act which states as under: “No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency, an initial environmental examination 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.”

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The current Project falls under Schedule-II, Section B (Manufacturing and Process) of IEE/EIA Regulation as per section 12 of Environmental Protection Act and thus requires Environmental Impact Assessment .

#### 2.2.2 Identification of Project and Proponent

The proposed Project consists of establishment and operation of Madina Steel Industry Kasur. located at 42 Km ferzopur Road Kasur .Proponent detail is given as under-:

1. Name of proponent Muhammad Mahmood Ahmad
2. Name of project Madina Steel Industry Kasur
3. Location/ Address of the site 42 Km ferzopur road Kasur .
4. Estimated cost of project 100 Million
5. Plot area of the project The total project area is about 44 Kanal  
(Covered Area: 51485 SFT , Open Area: 149665 SFT)
6. Electricity connection capacity Already Existing 200 KVA
7. Detail of standby generators 275 KVA
8. Project start Construction stage is already complete
9. Project completion duration Construction stage is already complete
10. Layout Map and Drawings Attached as Annex I.

#### 2.3 Details of Consultants

SEAL is providing their services to conduct Initial Environmental Examination for the project. Firm has vast experience and expertise in this field. The team of experts is given as under-:

Sr. No.	Name	Position	Qualification
1	Dr. Sajid Hassan	Team Leader	PhD Combustion Engineering, Imperial College, London Diploma In “Combustion and Environment Pollution” Imperial College London BSc Chemical Engineering, UET, Lahore

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2	Mr. Muhammad Tayyab Muzammal	Environmentalist	BSc Environment Sciences,
3	Mr. Arshad Ali	Chief Chemist	BSc Chemistry (Hon) University of Punjab, Lahore
4	Sheikh Obaid ur Rehman	Sr. Ecologist	MSc Forestry

The contact details of SEAL are given as under-:

Aleem Butt

Tel: +92 42 35922295 | Fax: +92 42 35922296 | Mobile: +92 300 9768799

E-mail: adnan@seal.com.pk

Address: Plot 12 Water Avenue Green View Society Kacha Jail Road | Lahore | Pakistan

## 2.4 Nature, Size and Location of The Project

Madina Steel Mill Industry is a medium size project with total cost of 100 million and the project site is located at 42 Km ferozpur Road Kasur . The total project area is about 44 Kanal (Covered Area: 51485 Kanal, Open Area: 149665 Kanal).

The site location map of the project is given as under-:



**Figure 2: Site Location Map close view**

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## **2.5 Approach adopted to conduct the study**

Following approach and methodology has been adopted for conducting the IEE studies:

### **2.5.1 Review of Available Data**

A detailed review of the following available documents of the project was conducted:

- Desk Studies
- Geotechnical Investigations and Topographic Report
- Preliminary Design Report
- Construction Drawings
- Layout Plans

The basic objective of the review was to fully understand the Project and the extent of the developmental activities. The review of studies helped to assess the nature and extent of the impacts related to the implementation and operation of the project activities.

### **2.5.2 Environmental Baseline Survey of the Project**

Prior to the start of the baseline environmental survey, a checklist was developed. The major items, which were considered for physical, ecological and social environment, are discussed in the subsequent paragraphs.

#### **Physical Environment**

For collecting information on the physical environment, the following main parameters were considered:

- a) Land Resources (including land use, soil composition, topography, geology, contamination of soil and soil erosion, etc.)
- b) Water Resources (including available surface water resources and natural streams, spring water, etc.)
- c) Climate (including temperature, rainfall, humidity, wind direction, etc.), Ambient Air and Noise Quality
- d) Existing solid waste management and effluents disposal practices and storm water drainage

#### **Ecological Environment**

Under the ecological environment, the following main parameters were covered:

- a) Flora

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- b) Fauna

### **Social and Cultural Environment**

To assess the social and cultural baseline settings of the Study Area, social survey was carried out to accomplish the following specific objectives:

- a) To establish the socio-economic conditions.
- b) To identify the potential disruption of private infrastructure.
- c) To identify poor and vulnerable groups and strategies to ensure that such groups should get benefit from the Project.
- d) To ensure adequate public/stakeholder consultations and their participation.
- e) To identify the effects on available common resources of the community due to the implementation of the Project.

### **2.5.3 Analysis of Data**

After collection of the physical, ecological, environmental and social data from both primary and secondary sources; a critical analysis was made to assess the existing baseline conditions and potential impacts.

### **2.5.4 Screening of Potential Environmental Impacts and Mitigation Measures**

- Environmental problems due to project location.
- Environmental problems related to design.
- Environmental problems resulting from project operations.
- Potential environmental enhancement measures.

### **2.5.5 Preparation of Environmental Management Plan (EMP)**

An EMP depicting the mitigation measures and monitoring plan has also been developed. Institutional capacity building of the Client has also been reviewed and enhancement was proposed for the effective implementation of the EMP.

## **2.6 Structure of the report**

This document is structured as follows:

- Chapter-1: Executive Summary  
Chapter-2: Introduction  
Chapter-3: Regulatory Framework for EIA  
Chapter-4: Project Description

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- Chapter-5: Description of Environment
- Chapter-6: Potential Environmental Impacts
- Chapter-7: Environmental Management Plan
- Chapter-8: Conclusion
- Chapter-9: Public and Stakeholders consultations
- Annexes

### **3. REGULATORY FRAMEWORK FOR EIA**

#### **3.1 Legal Status**

Notwithstanding the social and economic benefits, every development project interacts, in varying degrees, with physical, ecological and human resources of the project area and its environmental assessment studies, therefore, form an essential part of the feasibility studies of every project so as to make it environmentally acceptable besides being technically and economically feasible. In order to ensure the achievement of these objectives, laws, regulations and standards have been formulated by the relevant institutions at the respective national level by international agencies.

Following environmental laws, standards and guidelines were referred during the preparation of this EIA report:

##### **3.1.1 National Conservation Strategy**

The Pakistan National Conservation Strategy (NCS), which was approved by the federal cabinet in March 1992, is the principal policy document on environmental issues in the country (EUAD/IUCN, 1992).

The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core areas that are relevant in the context of the proposed project are pollution prevention and abatement, restoration of rangelands, increasing energy efficiency, conserving biodiversity, supporting forestry and plantations, and the preservation of the cultural heritage.

##### **3.1.2 National Environment Policy, 2005**

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

- Conservation, restoration and efficient management of the environmental resources.
- Integration of the environmental considerations in policy making and planning process.

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- Capacity building of government agencies and other stakeholders at all levels for the better environmental management.
- Meeting international obligations effectively in line with the national aspirations.
- Creation of a demand for environment through mass awareness and community mobilization.

#### **3.1.3 The National Forest Policy 2001 of Pakistan**

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

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

The elements of the policy shall be as follows:

- Reducing the impact of socio-economic causes.
- Population planning in critical eco-systems.
- Providing substitutes to firewood in the wooded mountains.
- Reducing poverty, poverty of opportunity, and powerlessness.
- Reducing political interference in the Forestry and Wildlife Departments.
- Renovating and invigorating the institutions of RNR.
- Supporting Local Governments in the sustainable development of their RNR.
- Policies for fragile Eco-systems.
- Rivers and forests.
- Irrigated Plantations.
- Preservation of relict and unique forests.
- Wildlife.
- Rangelands and desert eco-systems.
- Planting of trees and fodders on farmlands.

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**3.1.4 Punjab Environmental Protection (Amendment) Act (PEPA) 2012**

Among many other salient features of the Punjab Environmental Protection (Amendment) Act, 2012 it empowers the Pakistan EPA to:

- Delegate powers, including those of environmental assessment, to the its lower staff;
- Identify categories of projects to which the Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) provisions will apply;
- Develop guidelines for conducting IEE and/or EIA and procedures for the submission, review and approval of the same;
- Develop environmental emission standards for parameters such as air, water and noise and
- Enforce the provisions of the PEPA -2012 through environmental protection orders and environmental tribunals headed by magistrates with wide-ranging powers, including the right to fine violators of the Act.

The PEPA can frame environmental regulations tailored to the requirements of the province. They are also required to review and approve EIAs/IEEs of all the development projects undertaken in the Punjab province.

**3.1.5 Pakistan Environmental Protection Act, 1997**

The promulgation of the Environmental Protection Ordinance, 1983 was the first codifying legislation to the issue of environmental protection. Later, the Government passed the Pakistan Environmental Protection Act (PEPA), 1997, which is the basis of IEE/EIA studies carried out for the projects in Pakistan.

PEPA, 1997 is a fairly comprehensive legislation and provides protection, conservation, rehabilitation and improvement of the environment. It contains concrete action plans and programs for the prevention of pollution and promotes sustainable development. The salient features of the law are:

- It covers the air, water, soil, marine and noise pollution including pollution caused by motor vehicles.
- The Act provides National Environmental Quality Standards (NEQS) for wastewater, air emissions and noise.
- Law provides clear cut guidelines for IEE/EIA for various projects as per their magnitude and anticipated impacts.

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- Law also empowers Federal Government to issue notices and to enforce them for the protection of the environment.

For the effective implementation of the provisions of PEPA, 1997, Pakistan Environmental Protection Agency, headed by a Director General was constituted. On the same pattern, Provincial Environmental Protection Agencies (EPA's) were created in all the provinces. Environmental Tribunals were also constituted according to PEPA, 1997.

**3.1.6 Pakistan environmental protection agency regulations, 2000 for review of IEE & EIA**

Under Section 12 (and subsequent amendment) of the 1997 Act, a project falling under any category specified in Schedule I and Schedule II requires the proponent to file an IEE or EIA with the federal agency. Within ten working days of the IEE or EIA having been submitted, the federal agency will confirm that the document submitted is complete for the purpose of review. During this time, should the federal agency requires the proponent to submit any additional information; the IEE or EIA will be returned to the proponent for revision, clearly listing those aspects that need further discussion. Subsequently, the federal agency shall make every effort to complete an IEE review within 45 days and an EIA review within 90 days of filing of the complete information of report.

Pak-EPA regulations (SRO 339 (I)/2000) state that an EIA is required for federal or provincial projects falling under schedule-II. EIAs are required in cases where projects are to be implemented in environmentally sensitive areas, or are likely to cause adverse environmental effects. Construction phase of the project is already complete and IEE study is now submitted as per requirement of EPA to get Environmental approval.

**3.1.7 Pakistan environmental impact assessment procedures**

These guidelines are descriptive documents describing the format and content of IEE/EIA reports to be submitted to Federal and Provincial EPA/EPD for obtaining NOC. Following are the major areas, which are covered by these guidelines:

- The Environmental Assessment report formation (scoping, type and category of project, description of project, alternatives, site selection, baseline data).
- Assessing impacts (identification, analysis and significance).
- Mitigation and impact management and preparing an environmental management plan.
- Reporting (format, main features, shortcomings, other forms of presentation).

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- Review and decision making (role, steps, remedial options, checks and balances).
- Monitoring and auditing (systematic follow up, effective data management).
- Project Management (inter-disciplinary teams, programming and budgeting).

### **3.1.8 Guidelines for public consultation**

The Federal EPA provides these guidelines to deal with possible approaches to public consultation and techniques for designing an effective program of consultation that reaches out to all major stakeholders and ensures the incorporation of their concerns in any impact assessment study. These guidelines cover:

- Consultation, involvement and participation of stakeholders
- Effective public consultation (planning, stages of EIA where consultation is appropriate)
- Facilitation involvement (including the poor, women and Non-Governmental Organizations (NGOs))

### **3.1.9 Punjab Environmental Quality Standards (PEQS), 2000**

The PEQS 2000, specify the following standards:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers).
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources.
- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust.
- Maximum allowable noise levels from vehicles.

These standards apply to the gaseous emissions and liquid effluents. Standards for ambient air quality have not been prescribed as yet.

### **3.1.10 National resettlement policy and ordinance**

As referred above, at present the only legislation relating to land acquisition and compensation is the Land Acquisition Act (LAA) of 1894. Experience with large-scale infrastructure development projects implemented by institutions such as WAPDA has demonstrated the need for a cohesive national policy for resettlement. Following a national

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consultative process, a national resettlement policy and a related ordinance were drafted known as Draft Resettlement Policy, 2002 which still has to be approved by the government.

### **3.1.11 Other environment related statutes**

This section outlines the other statutes apart from Pakistan Environmental Protection Act, 1997, which are relevant to the project.

#### **The Land Acquisition Act, 1894**

At this point, the only legislation relating to land acquisition and compensation is the LAA of 1894. The LAA is, however, limited to a cash compensation policy for the acquisition of land and built-up property, and damage to other assets, such as crops, trees, and infrastructure. The LAA does not consider the rehabilitation and resettlement of disrupted populations and the restoration of their livelihoods.

The Project will involve acquisition of proprietary land. The land will be acquired under the LAA 1894. In the Act there are provisions for normal acquisition of land under Section 6 (4) or emergency acquisition under Section 17 (4).

#### **Pakistan Explosives Act, 1884**

Under the Explosives Act, the project contractors are bound by regulations on handling, transportation and using explosives during quarrying, blasting, and other purposes.

#### **The Forest Act, 1927**

The Forest Act empowers provincial governments to prohibit the clearing of forest for cultivation, grazing, hunting, removing forest produce; quarrying and felling, lopping and topping of trees, branches in reserved or protected areas.

#### **Pakistan Penal Code, 1860**

The Pakistan Penal Code deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. In the context of environment, the Penal Code empowers the local authorities to control noise, noxious emissions and disposal of effluents. The NEQS enforced by the EPAs supersede the application of this legislation on industries and municipalities.

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**Provincial Wildlife Act, 1974**

In addition to empowering the provincial wildlife departments to establish game reserves, parks, and wildlife sanctuaries, this Act regulates the hunting and disturbance of wildlife.

## **4. PROJECT DESCRIPTION**

### **4.1 Type and category of project**

Pakistan Environmental Protection Agency (PEPA), 1997 amendment in 2012 stipulates that an IEE/EIA is mandatory for Development Projects. Therefore, an IEE or EIA is required for projects for policy procedure, filing, review and approval of environmental assessments”. As this project is enlisted in Schedule- II, Section B (Manufacturing and Processing) of IEE/EIA Regulation as per section 12 of Environmental Protection Act and thus requires Initial Environmental Examination.

### **4.2 Objectives of the project**

The main objectives of the project are

- Progressive manufacturing of Power transformers trusted for commitment to quality standards
- Constant up gradation of technology to deliver the best products, adhering to approved standards of quality.
- Environment friendly process
- To meet the diverse demands of even the most discerning clientele.
- To provide employment and business opportunities for all.
- Numerous other non-quantifiable benefits.

### **4.3 Study of alternatives**

#### **4.3.1 No project option**

No project option means that the project is necessary and there is no other option. Construction stages of the project has already been completed in 1980 and now the project is in operational phase. The main purpose of the project is to take measures to regularize the violation of section-12 of PEP, Act-1997 regarding establishment and operation of Hammad Madina Steel Mill Industry Kasur so there is no other option for the project .

### **4.4 Location and site layout**

Madina Steel Industry Kasur. Located at 42 Km Ferozpur Road. Kasur

The location of the project site is given below;

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**Figure 3: Project Location Map**

The layout plan with drawings of the project is attached as Annex I.

#### 4.5 Land Use Plan

The project comprises of the following features

Total Area	:	44 Kanal.
Covered Area	:	51485 SFT .
Open Area	:	149665 SFT .

#### 4.6 Road access

Purposed project is located at the distance of approximately 280 meters from Main Kasur Road Lahore.

The Road accesses are given as under-:

## Environmental Impact Assessment –EIA

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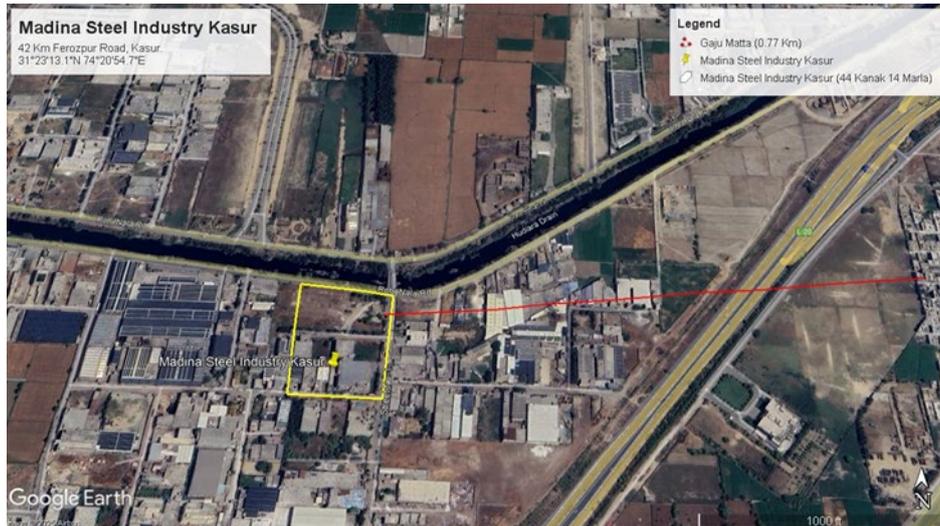


Figure 4: Road Access to the Site

#### 4.7 Vegetation feature on site

As the construction stage of the project is complete and there was no cutting of trees and vegetation at this stage. Now some ornamental plants have been planted by the client to improve environment.

#### 4.8 Water requirement and water balance

As construction stage of the project is complete so there is no need to discuss water requirement and water balance at this stage. In operational phase of the project there is no consumption and production of water from any process of Power Transformer formation. About 10 meter cube per day of ground water has been consumed in Admin block/offices, washrooms and kitchen. About 09 meter cube per day of waste water is being produced and treated through settling and septic tanks and discharged into drain passing by Hammad Engineering (Septic tank drawing attached as Annex I).

Total water extraction during operational phase = 10 m<sup>3</sup>

Waste water produce during operational phase = 09 m<sup>3</sup>

The water quality is given in section 5.3.5

#### 4.9 Waste Water Disposal

About overall waste water & ground water 9 meter cube per day of waste water is being produced from Admin block/offices, washrooms and kitchen. Waste water is which will produced that will be used again for cooling process by Madina Steel Industry .

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#### **4.10 Cost and magnitude of the project**

As the construction phase of the project is already complete. Construction phase of the project completed with total cost of PKR 100 million.

#### **4.11 Schedule of implementation**

There will be a symmetrical process. The process is divided in to 3 phases

##### **Preconstruction phase**

This phase included:

- As preconstruction phase of the project is already completed so there is no need to describe the processes of this phase.

##### **Construction phase**

This phase included:

- As construction phase of the project is already completed so there is no need to describe the processes of this phase.

##### **Operational phase**

This phase includes:

- The project is already in operational phase.

#### **4.12 Description of The Project**

Madina Steel Industry Kasur is one of the leading steel bar manufacturer in Pakistan. Which exist to carry forward its family legacy by maintaining its dominant position in trade and industry by being socially competent and contributing to well being of the customers.

Madina Steel Industry laid the foundation of totally self owned group with integrated setup, which keeps on developing & innovating high quality steel bars. The company combination of high – quality and unrivalled customer service has strengthened its reputation as trusted supplier to its customer.

#### **PRODUCTION PROCESS FLOW :**

##### **Step No 1:**

Raw material which includes quality imported scrap and ferro-alloys are pre-assessed and sorted out for the preparation of required steel composition.

##### **Step No 2:**

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A charge prepared from steel scrap of known composition is charged into high frequency induction furnace. Several sample are taken for the spector lab in order to compare the chemical composition of melt with the standard values.

#### **Step No 3 :**

Finally ferro-alloys addition is done according to the desired grade as per ASTM A 615-A and final sample is take taken to ensure the quality.

#### **Step No 4 :**

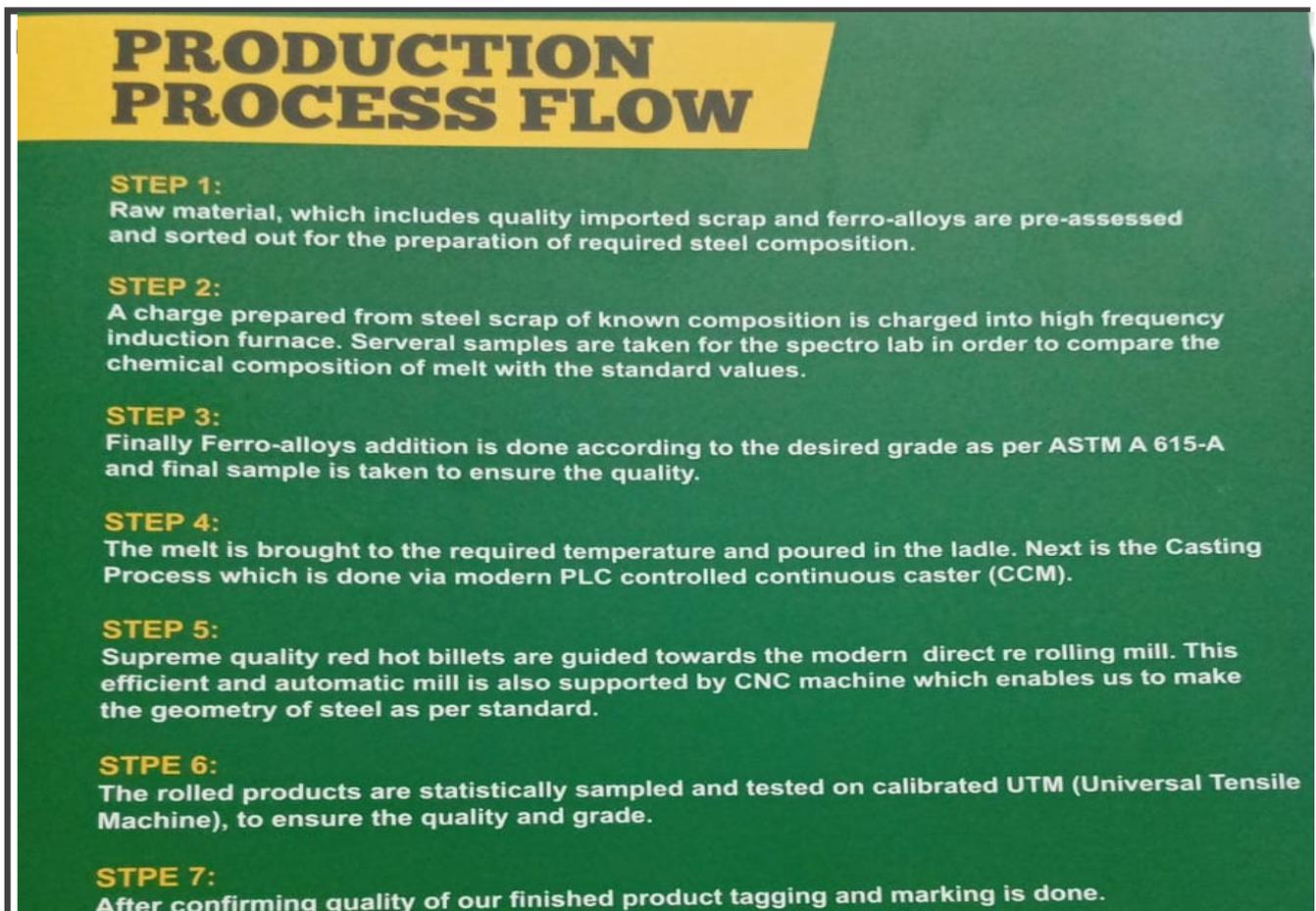
The melt is brought to the required temperature and poured in the ladle. Next is the casting process which is done via modern PLC controlled continuous caster (CCM).

#### **Step No 5:**

Supreme quality red hot billets are guided towards the modern direct re rolling mill. This efficient and automatic mill is also supported by CNC machine with enable us to make the geometry of steel as per standard.

#### **Step No 6 :**

The rolled products are statistically sampled and sampled and tested on calibrated UTM ( Universal Tensile Machine) to ensure the quality & grade.



**Figure 5: Process Flow Chart**

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**4.13 Restoration and rehabilitation plan**

As the project is in operational phase there are no main areas that are required to be considered for the site restoration. No individual will have to leave the area for this project so there will be no resettlement issues. Plants present at the site are just ornamental plants which are planted by the proponent. Trees will be grown at empty spaces outside and inside of the industry regardless there was no cutting of trees.

**4.14 Government approvals**

Madina Steel Industry Kasur already have following approvals:-

- 1) Pakistan Standards & Quality Control Authority .
- 2) Pakistan Engineering Council .
- 3) Enlistment of firm as Enlisted Manufacturer With DHA Lahore .

Madina Steel Industry Kasur is now seeking No Objection Certificate (NOC) from EPA-Punjab.

All approved certificates attached as Annex II.

## **5. DESCRIPTION OF ENVIRONMENT**

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Project Area as well as the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the Project/Study Area and information obtained through detailed consultation with the Government departments and other agencies.

### **5.1 Physical resources**

#### **5.1.1 Topography**

Terrain of the proposed project site is predominantly flat. The soils existing at the site belong to alluvial deposits transported by rivers. The subsoils present at the site predominantly consist of Lean Clay/ Silty Clay (CL/ CL-ML) and Silty Sand (SM).

#### **5.1.2 Geology**

The project site is situated at 42 Km Ferozpur Road. Kasur. The project site is located in Punjab which is a vast plain of alluvial material, deposited by Indus basin and five main rivers crossing the Punjab Plain. Thickness of alluvial deposits is thought to be more than 300 m which are underlain by the basement rocks of the Indian shield.

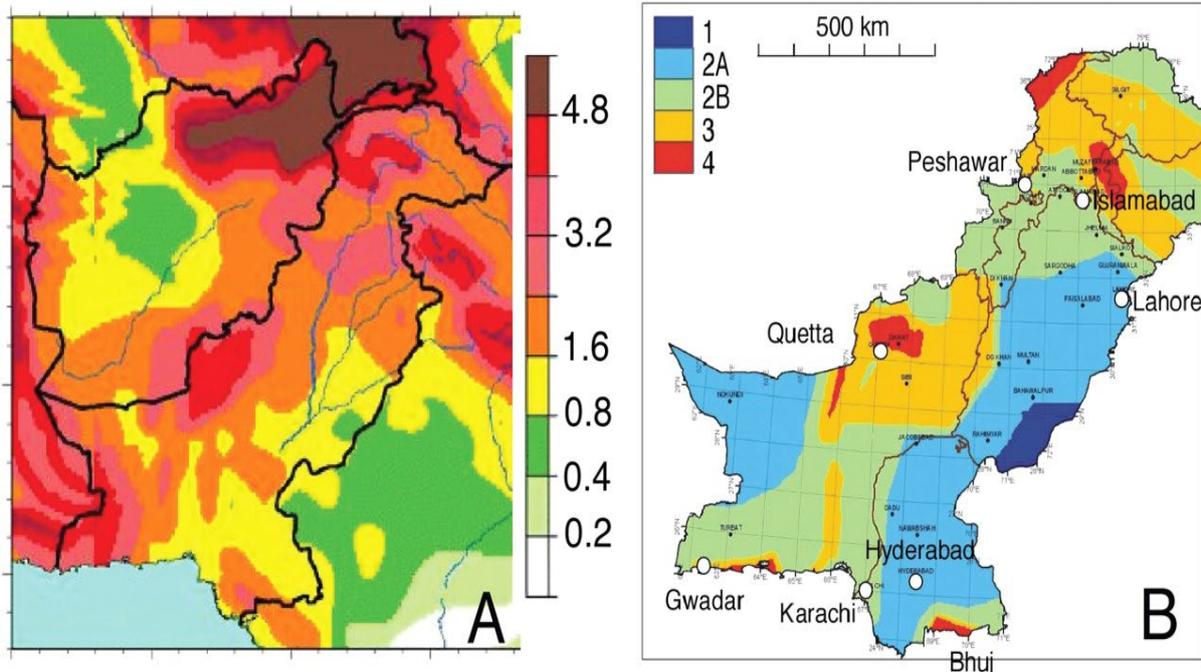
#### **5.1.3 Seismology**

The project site falls in the Punjab plain which shows low to moderate level of seismicity. The project region has also been subjected to severe shaking in the past due to earthquakes in the Himalayas. The epicenters of low to moderate magnitude earthquakes recorded in the Punjab Plain are associated with the subsurface fractures in the basement rocks which are concealed by the thick alluvial deposits. The known main active fault near Lahore is the Main Boundary Thrust (MBT) which passes at a distance of about 180 km towards northeast along the Himalayan front.

Probabilistic seismic hazard assessment recently carried out for Lahore area as part of the revision of seismic provisions of the Building Code of Pakistan shows that the project area falls in Zone 2A. Seismic zone of Pakistan is shown in figure 4.1. It is therefore recommended that the project structures should be designed to cater the requirements of Zone 2A of Building Code of Pakistan (2007). Based on the evaluation of tectonic setting and

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seismicity of the project region, the important project structures are designed to withstand a horizontal peak ground acceleration of 0.15g with 10% exceeding probability in 50 year.



**Figure 6: Seismic Zone of Pakistan (Geological Survey of Pakistan)**

#### 5.1.4 Soil

The top natural soil layer comprises fine grained soils i.e. LEAN CLAY to SANDYSILT. Thickness of this layer is approximately 6.0 to 7.0 m. SILTY SAND is present as a second natural soil layer which continues down to maximum explored depth of 60.0 m below existing ground level. 1.0 to 2.0 m thick patches of LEAN CLAY to SILT inter-bed within the layer of Silty Sand.

#### 5.1.5 Climate

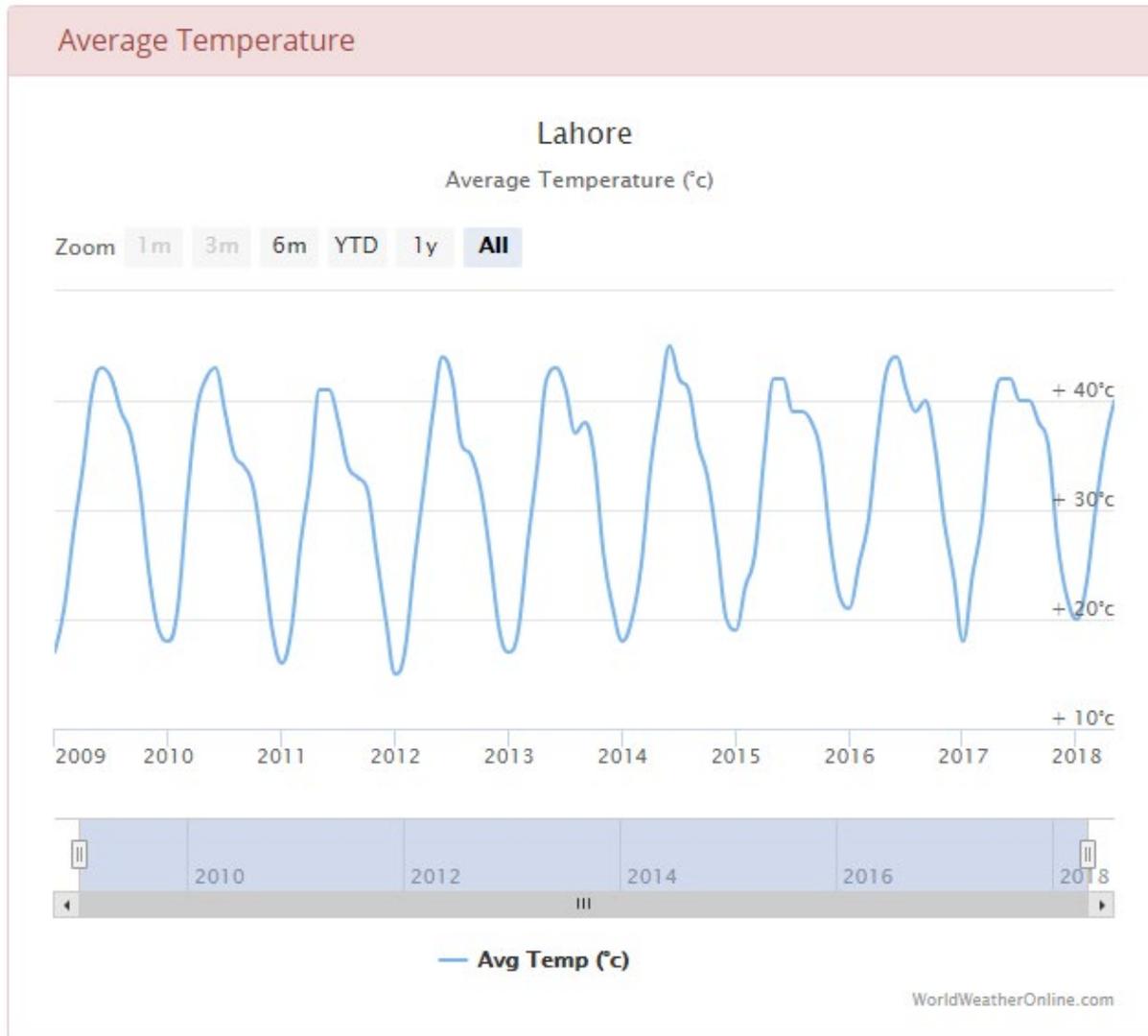
Purposed project site is located in Lahore and has distinct seasons marked by wide variation in temperature. The coldest month is January in which the mean maximum temperature is 19.4 °C and the mean minimum temperature is 6.6 °C. June is the hottest month with the mean maximum temperature near 39.8 °C and the mean minimum temperature as 27.4 °C. Mean temperature of the region from 2010-2018 is given in **Figure 4.2**.

The average annual rainfall from 2010-2018 in Lahore works out to be 126.16 mm. Nearly 70% of it received in the form of high intensity showers during the monsoon (July, August, September) and the remaining in winter. The yearly variations are considerable. The average quarterly rainfall at Lahore during the last 9 years (2010-2018) is also shown in **Figure 4.3**.

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The most humid period is in month of February with average humidity of 53.125 % and the least humid period is in the month of May with average humidity of 18.875 %. The average monthly humidity of Lahore region form last 9 years (2010-2018) recorded is 35.25 %. The average quarterly humidity of Lahore is shown in **Figure 4.4**.

During cold seasons of the year northern winds prevail and during hot seasons southern winds. Monthly mean velocity of the wind (Knots) taken for the period 2010-2018 is 5.46 and shown in **Figure 4.5**.



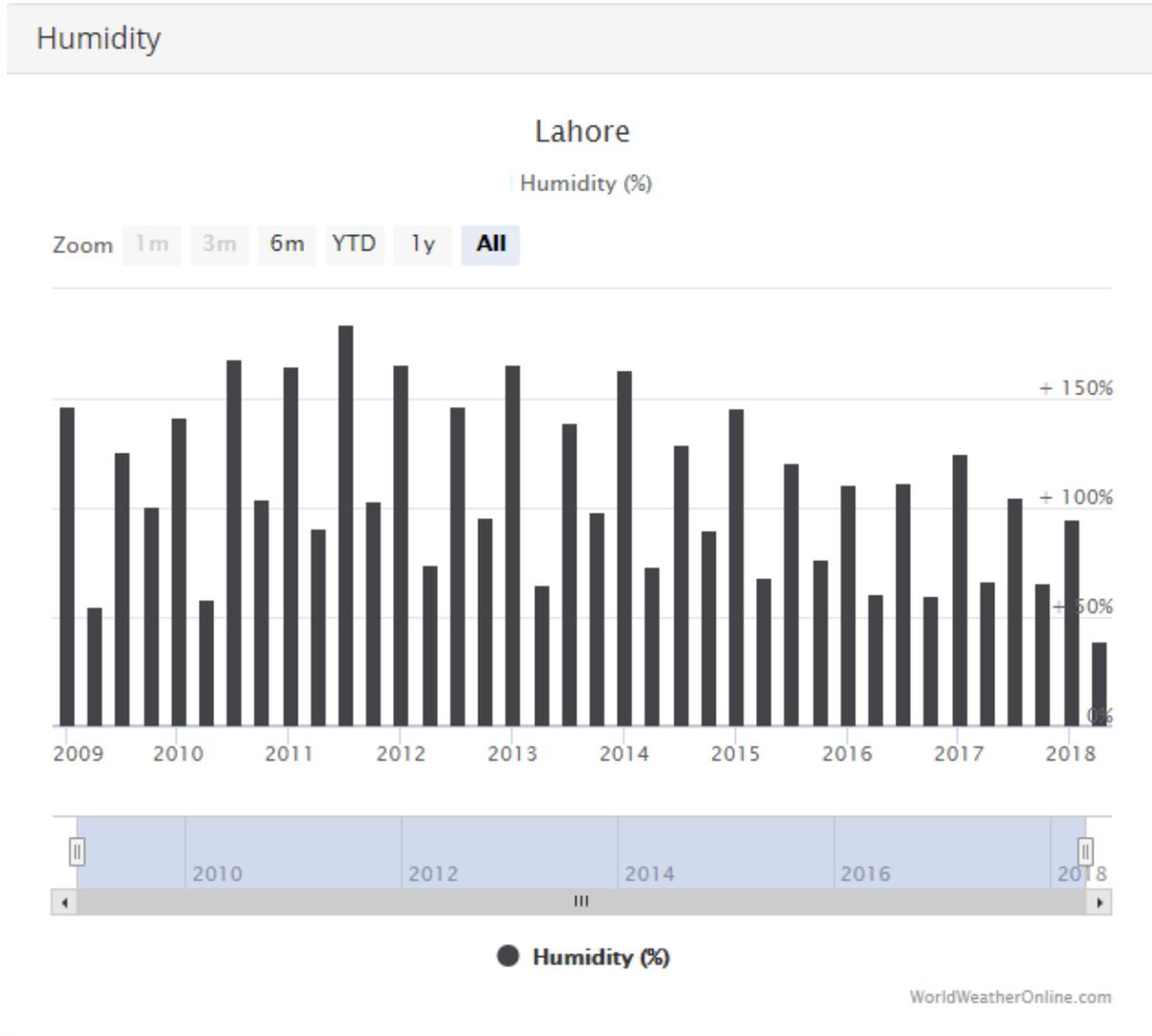
**Figure 7: Temperature Data of Lahore Region (Data Source:Worldweatheronline.com, 31-08-2018/1:40 PM)**

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**Figure 8: Average Quarterly Rainfall of Lahore Region (Data Source: Data Source:Worldweatheronline.com, 31-08-2018/2:00 PM)**

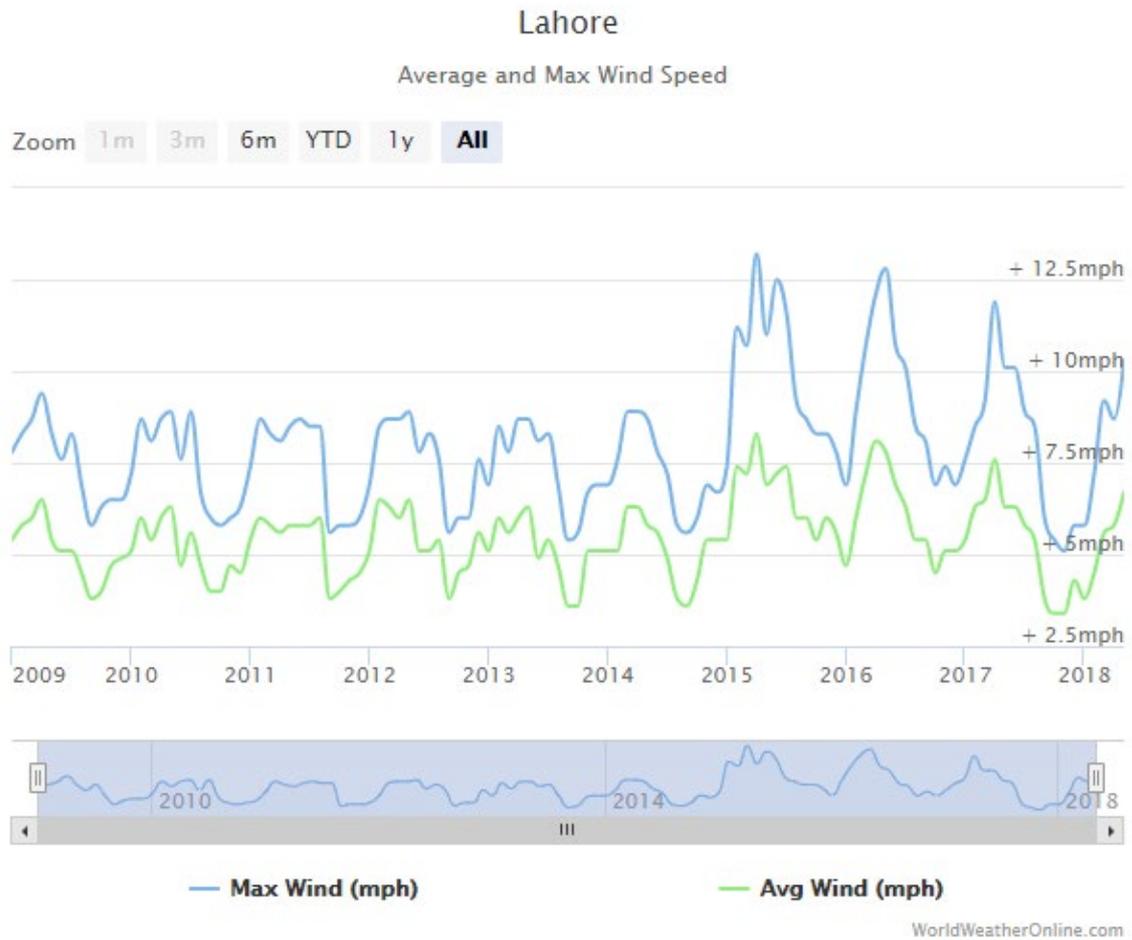
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**Figure 9: Average Humidity of Lahore Region (Data Source:Worldweatheronline.com, 31-08-2018/2:20 PM)**

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**Max and Average Wind Speed**



**Figure 10: Average and maximum Wind Speed of Lahore Region (Data Source:Worldweatheronline.com, 31-08-2018/4:00 PM)**

### 5.1.6 Water resources

#### Surface water

There is no surface water body present close to the site.

#### Ground water

Groundwater was encountered at around 200 feet depth below the site. Given a margin for seasonal fluctuations, the groundwater may be considered to rise/fall beyond this depth by about 10-15 feet.

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**5.1.7 Solid waste**

Approximately 300 KG per day Solid Waste is generated. All the solid waste are collected in separate bins and then sold out as scrap materials and reused.

**5.2 Ecological resources**

**5.2.1 Wildlife, fisheries and aquatic biology**

Only few common animals are found near the project site like dogs, cats, rodents like squirrels, rats, mice and bats. Common species of birds found include the common house sparrow, crow, pigeon, dove, yellow and white eyed mynas.

**5.2.2 Vegetation cover and trees**

The project site is situated in an area mixed with agricultural and Industrial area at Kasur. The land is not cultivated and there are 2 Bohar trees and some ornamental plants cultivated by the client at the site.

**5.2.3 Socio-economic and cultural features**

In order to assess the present socio-economic and socio-cultural conditions of the project area, a survey was conducted. For this purpose, base line data was collected from few commercial and residential areas adjoining to the purposed site. Interviews and social surveys were conducted to assess the present socio-economic and cultural feature of the area. The Performa which was used for interviews are attached in Annexure-III. The socio-economic conditions of Project Site are given as under-:

**5.2.4 Neighborhood**

The project area is mixed with agricultural, industrial and residential activities. In North side of the project site Hafiz Tendery is present. In north side there is a residential area. In west side there is an open land and in east side there is a road. At the distance of 05 KM Police station.

**5.2.5 Population Communities and Employment**

Most community around the project area is the urban. Most of them have their own business. Some of them have private jobs, agriculture and livestock profession. Only a few are government employees.

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### **5.2.6 Languages**

Punjabi is the predominant language being spoken near the proposed project site, representing 99.6 % of the population, followed by Urdu and Pashto spoken by 0.4 %.

### **5.2.7 Education and Literacy**

Basic primary level education is available. The private education schools also exist near the project site. The project area has deprived of big colleges and universities.

## **5.3 Quality of life values**

### **5.3.1 Socioeconomic value**

The project area is situated 42 Km ferozpur Road Kasur that is mixed with agricultural and barren lands, industrial and residential activities. The project area is surrounded by Hafiz Tendery which is present about 0.40 KM . At the distance of 05 KM Police station Mustafabad is present .These communities have the facilities like metaled roads, sewerage, commercial area shops, water supply, public transport but deprived of big hospitals, colleges and universities. Only hospital present near the project is Rasheed Latif Hospital & Cental Park Hospital . Mostly the people belongs to their own business, private and government jobs and farmers. There is a rising trend in the society to change their traditional socioeconomic pattern of life. Print and electronic media are playing key role in bringing tangible change in the old pattern of life.

### **5.3.2 Public Health**

The small dispensaries and private doctors clinics exist in the vicinity of the project site. Only hospital present around the project site is Rasheed Latif Hospital & Cental Park Hospital which nearest to project site.

### **5.3.3 Archeologist And Historical Treasures**

The project site is mixed with agricultural and barren lands, industrial and residential activities and there is no archeology or historical building near proposed project area

### **5.3.4 Lab Reports Of Environmental Analysis**

The environmental analysis reports are attached as Annex IV. While summary of Environmental Analysis of area is given as under-:

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**5.3.5 Water Quality**

To determine the existing quality of groundwater, one sample from the site were collected for laboratory analysis. Groundwater sample was analyzed for 29 different selected parameters as per Punjab Environmental Quality Standards (PEQS).

Based on the laboratory test results, it was found that the groundwater was fit for drinking purposes as all the required parameters are in compliance with the WHO standards. This groundwater can also be used for bathing, washing, general purpose activities.

**Table 2: Ground Water Analysis Results**

Sr. No.	Parameter	Method	Unit	Result	PEQS
1	pH	Electrometric	--	6.43	6.5-8.5
2	Total Dissolved Solids (TDS)	Gravimetric	mg/l	868	1000
3	Chloride	Argentometric	mg/l	145.3	250
4	Fluoride	SPADNS	mg/l	0.0	1.5
5	Taste	By Sensory	Object. /unobj.	Unobject.	Unobject.
6	Odour	By Sensory	Object. /unobj.	Unobject.	Unobject.
7	Colour	Visual Comparison	TCU	0	15
8	Nitrate (as NO <sub>3</sub> <sup>-</sup> )	Cadmium Reduction	mg/l	0.8	50
9	Nitrite (as NO <sub>2</sub> <sup>-</sup> )	Diazotization	mg/l	1.6	3
10	Lead	Dithizone	mg/l	BDL	0.05
11	Total Hardness as CaCO <sub>3</sub>	EDTA Titrimetric	mg/l	198	500
12	Turbidity	Nephelometric	NTU	0	5

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13	Zinc	Zincon	mg/l	0.03	3
14	Manganese	Direct Air- Acetylene flame	mg/l	BDL	0.5
15	Aluminum	Direct Nitrous Oxide/Acetylene flame	mg/l	BDL	0.2
16	Chromium	Colorimetric	mg/l	0.2	0.050
17	Cadmium	Colorimetric	mg/l	BDL	0.01
18	Copper	Direct Air- Acetylene flame	mg/l	0.01	2
19	Boron	Direct Nitrous Oxide/Acetylene flame	mg/l	0.5	0.300
20	Barium	Direct Air- Acetylene flame	mg/l	BDL	0.700
21	Antimony	Continuous Hydride Generation/Atomic Absorption Spectrometric method	mg/l	0	0.020
22	Arsenic	Continuous Hydride Generation/Atomic Absorption Spectrometric	mg/l	0.03	0.050
23	Cyanide	Titrimetric	mg/l	0	0.05
24	Mercury	Cold-Vapor Atomic Absorption	mg/l	BDL	0.001

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		Spectrophotometric			
25	Nickel	Direct Air-Acetylene flame	mg/l	0.01	0.020
26	Selenium	Continuous Hydride Generation/Atomic Absorption Spectrometric	mg/l	BDL	0.010
27	Residual Chlorine	DPD Colorimetric	mg/l	0.14	0.2 – 0.5
28	Total Coliform	Membrane Filtration Method	Number/100 ml	0	0/100 ml
29	E.Coli	Membrane Filtration Method	Number/100 ml	0	0/100 ml

**Note:**

- B.D.L= Below Detection Limit.
- In some cases consumers tolerate water hardness in excess of 500 mg/l.
- Water to qualify chemical as well as biological parameters

**5.3.6 Ambient Air Quality**

At present, major sources of air pollution are industrial plant area besides the project site, mobile sources and generators. Ambient air quality was monitored at the project site for the period of 1 hour.

The monitored parameters included Particulate Matter. The monitoring was carried out for a period of 1 hour and results are presented below in **Table 5.2**

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**Table 3: Ambient Air Quality Results of project site**

<b>Sr. No.</b>	<b>Sampling Point</b>	<b>Parameters</b>	<b>Unit</b>	<b>Results</b>	<b>PEQS</b>
1	PM <sub>10</sub>	Gravimetric method	µg/m <sup>3</sup>	87	150
2	CO	Non-Dispersive Infra-Red (NDIR) method	mg/m <sup>3</sup>	1.9	10
3	NO <sub>x</sub>	Gas Phase Chemiluminescence	(µg/m <sup>3</sup> )	16.4	80
4	SO <sub>x</sub>	Ultraviolet Fluorescence method	(µg/m <sup>3</sup> )	21.0	120

All Parameters of ambient air quality are well within PEQS.

### 5.3.7 Noise

Major sources of noise generation are machinery and generators with in the project site. Noise levels were monitored at the East, West, South and North directions of the project site and the results are presented below-:

**Table 4: Noise Levels at Project Site**

<b>Sr. No.</b>	<b>Location</b>	<b>Min. dB(A)</b>	<b>Max. dB(A)</b>	<b>Average dB(A)</b>
1.	East Site Boundary wall	62.3	63.2	62.8
2.	West Site Boundary wall	60.1	61.3	60.7
3.	North Site Boundary wall	64.0	65.1	64.6
4.	South Site Boundary wall	59.1	60.3	59.7
<b>PEQS: (Punjab Environmental Quality Standards)</b>				<b>75dB</b>

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**5.3.8 Testing Team**

Noise, Ambient air monitoring and Lab tests of ground water were carried out and analyzed by expertise of SEAL (Solution environment and analytical Labs). The team of expertise is:

1	Arshad Ali	Chief Chemist	BS (Hons), Chemisty, PU Lahore
2	Muhammad Ramzan	Lab Analyst/ Chemist	BS (Hons), Chemisty, UMT Lahore.
3	Syeda Maryam Jameel	Lab Analyst/ Chemist	BS (Hons), Chemisty, PU Lahore.

## **6. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS**

This chapter identifies the potential impacts related with Preconstruction, construction and operation phases of the Project on the physical, ecological and socio-economic domains of the environment. Accordingly, mitigation measures have been proposed to mitigate the negative impacts and to enhance the positive impacts.

### **6.1 Methodology of impact identification**

During the preparation for the project construction phase the future contractors must be notified and prepared to co-operate with the executing agency, project management, supervising consultants and local population in the mitigation of impacts. Furthermore the contractor must document to implement the EMP in full and be ready to engage trained environmental management staff to audit the effectiveness and review mitigation measures as the project proceeds. The effective implementation of the EMP will be prepared and must be audited and this will be considered as the most important part of planning. In this regard the proponent must fulfill the requirements of the law and guidance prepared by EPA on the environmental aspects of power projects and the recommendations already made for projects in this EIA and under EIA/IEE regulation and Punjab Environmental Protection Act (amended 2012).

For impact identification, various EIA methodologies are available including the checklists, interaction matrices, networks and overlays. Among these four methods, following three are used in EIA of Madina Steel Industry Kasur.

- Project Interaction Matrix
- Checklists
- Overlays

Interaction matrix is a two-dimensional matrix wherein the project actions are placed along one axis (i.e. along y-axis) and on the other axis there are different environmental parameters likely to be affected by the proposed project actions grouped into categories i.e. Physical, Ecological & Socio-economic Environment. Interaction matrix is used in this project due to the following reasons:

- It provides cause-effect relationship between the project actions and resulting consequences impacts.

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- It provides nature (+ve or –ve) and weighting of different impacts.
- It provides cumulative impacts of a project.

Matrix grouped project actions into temporal phases. For the study, project interaction matrix is used by dividing the project action into different phases (Preconstruction, construction and operation). The environmental impacts are divided into three main categories including physical, ecological and socio-economic domains. The environmental impacts of the project actions are identified and weighed into the following categories:

+3	=	Extremely Beneficial
+2	=	Potentially Positive
+1	=	Slightly Positive
0	=	Insignificant
-1	=	Slightly Negative
-2	=	Potentially Negative
-3	=	Extremely Negative

The assignment of significance is based on the previous knowledge and professional judgment of EIA team experts. The project impact matrix has been developed and attached as Annex V. It may be noted that the environmental parameters, which are not related to the implementation of the projects, have not been considered in the matrix.

### **Checklist**

The assignment of significance is based on the previous knowledge and professional judgment of EIA team experts. The project Checklist has been developed for “without” and “with mitigation” is attached as Annex VI. It may be noted that the environmental parameters, which are not related to the implementation of the projects, have not been considered in the matrix.

### **Overlays**

In order to identify spatial based impacts, overlays were used. An overlay is based on a set of transparent maps, each of which represents the spatial distribution of an environmental characteristic (for example, susceptibility to erosion). Information for an array of variables is collected for the standard geographical units within the study area, and recorded on a series of maps, typically one for each variable. These maps are overlaid to produce a composite. The resulting composite maps characterize the area’s physical, social, ecological, land use and other relevant characteristics, relative to the location of the proposed development.

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**Consultations**

Public, Stakeholders and relevant bodies consultation is a systematic process, which provides an opportunity for planners, citizens, managers and selected representatives to share their experience, knowledge and concerns and perceptions about any proposed development. The objectives of the public consultation for the proposed Project are to:

- Share information with the stakeholders' on the proposed Project works and their expected impact on the socio-economic environment of the Study Area.
- Understand the stakeholder's concerns regarding the various aspects of the Project, including the existing condition of the Study Area, upgrade requirements, and the likely impacts of the construction related activities and operation of the Project.

**6.2 Characteristics of impacts**

The predicted impacts have been characterized; various aspects of the impact characterized include:

- Nature (direct/indirect)
- Duration of impact (Short term, medium term, Long term)
- Geographical extent (local, regional)
- Timing (Project phase)
- Reversibility of impact (Reversible/Irreversible)
- Likelihood of the impact (certain, likely, unlikely, rare)
- Impact consequence severity (major, moderate, minor)
- Significance of impact (High, medium, low)

The above aspects of environmental characterization are defined in Table below:-

**Table 5: Impact Characterization**

<b>Nature</b>	<b>Direct:</b> The environmental parameter is directly changed by the project. <b>Indirect:</b> The environmental parameter changes as a result of change in another parameter
<b>Duration of Impacts</b>	<b>Short-term:</b> lasting only for the duration of the project such as noise from the construction activities.

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	<p><b>Medium-term:</b> Lasting for a period of few months to a year after a the project before naturally reverting to the original condition such as loss of vegetation due to clearing of campsite, contamination of soil or water by fuels or oil.</p> <p><b>Long-term:</b> lasting for a period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to soil erosion.</p>
<b>Geographical Extent</b>	<b>Local, regional (spatial dimension)</b>
<b>Timing</b>	<b>Construction and Operation</b>
<b>Reversibility of Impact</b>	<p><b>Reversible:</b> when a receptor resumes its pre-project condition.</p> <p><b>Irreversible:</b> when a receptor does not or cannot resume its pre-project condition.</p>
<b>Likelihood of the Impact</b>	<p><b>Almost Certain:</b> Impact expected to occur under most circumstances.</p> <p><b>Likely:</b> Impact will probably occur under most circumstances.</p> <p><b>Possibly:</b> Impact may possibly occur at some time.</p> <p><b>Unlikely:</b> Impact could occur at some time.</p> <p><b>Rare:</b> Impact may occur but only under exceptional circumstances.</p>
<b>Impact Consequences severity</b>	<p><b>Major:</b> When an activity causes irreversible damage to a unique environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora and fauna: has long term effects (period of years) on socioeconomic activities of significance on regional level.</p> <p><b>Moderate:</b> When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or distribution over one generation of a population of flora or fauna: have short-term effects (period of years) on socioeconomic activities of significance on regional level.</p>

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	<p><b>Minor:</b> When an activity causes short-term (period of a few months), reversible damage to a unique environmental feature; slight reversible damage to a few species of flora or fauna within a population over a short period; has short-term (period of months) effects on socioeconomic activities of local significance.</p> <p><b>Negligible:</b> when no measurable damage to physical, socioeconomic, or biological environment above the existing level of impact occurs.</p>
<b>Significance of Impact</b>	<p>Categorized as <b>High, Medium, Low</b></p> <p>Based on the consequence, likelihood, reversibility, geographical extent, and duration: level of public concern: and conformance with legislative of statutory requirements.</p>

The impact characterization during construction and operational phase is given as under:-

**Impact Characterization during Construction Phase**

As the construction phase of the the project is already completed so there is no need of impact characterization during construction phase.

**Table 6: Impact Characterization during Operational Phase**

<b>Impact</b>	<b>Nature</b>	<b>Duration</b>	<b>Geo Extend</b>	<b>Reversibility</b>	<b>Likelihood</b>	<b>Consequence</b>	<b>Impact Significance</b>
<b>Air Quality Deterioration</b>	Direct	Short term	Local	Reversible	Rare	Negligible	Low
<b>Surface Water Contamination</b>	Indirect	Medium Term	Regional	Reversible	Rare	Negligible	Low

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<b>Ground Water Contamination</b>	Direct	Medium Term	Regional	Irreversible	Rare	Negligible	Low
<b>Sludge Waste</b>	Direct	Medium Term	Local	Reversible	Likely	Negligible	Low
<b>Noise and Vibration</b>	Direct	Medium term	Local	Reversible	Likely	Minor	Low
<b>Public Health and Nuisance Issues</b>	Direct	Short term	Local	Reversible	Rare	Negligible	Low

### **6.3 Environmental impacts and their mitigation during pre-construction phase**

As the Preconstruction phase of the the project is already completed so there is no need of impact characterization during Preconstruction phase.

### **6.4 Environmental impact and their mitigation during construction phase**

As the construction phase of the the project is already completed so there is no need of impact characterization during construction phase.

### **6.5 Environmental impacts and mitigations measures during the project operation**

#### **6.5.1 Ground water**

There is no water consumption in any process involved in formation of Power Transformers. About 09 cubic meter per day of the waste water is being produced from Admin block/offices, washrooms and kitchen during the operational phases of the project.

#### **– Mitigation**

This waste water will be treated through settling and septic tanks of the waste water treatment plant. After that, treated water will be discharged into drain passing Madina

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Steel Industry . Employees at the plant site are also advised and instructed to use the least desirable amount of water for flushing and kitchen purposes.

#### **6.5.2 Air emissions**

During the operational phase of these expansions air emissions will cause air pollution which if not managed properly will cause air pollution. There are no air emissions from any process involved in formation of Power Transformers. Stack emissions of generator will produce gasses like NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>2</sub> and CO. These gasses will cause air pollution and will affect the ambient air if not properly managed or mitigated.

##### **– Mitigation**

- Generator will be maintained properly and tuned up in respect of air to fuel ratio in order to have these pollutants within the PEQS limit.
- Regular monitoring on all emission sources will be done and measures will be taken if found non-compliance with PEQS
- The generator will be placed in the generator room away and the stack will be higher up to 4 to 5 feet so that the air emission may dilute in upper atmosphere.
- High-roof building and proper ventilation with well-equipped exhaust will considerably maintain the indoor air quality.

#### **6.5.3 Solid Waste and Sludge waste**

Daily sludge generation during operational phase will be 14 kg/day consisted of organic dried sludge and daily solid waste generation during operational phase will be 300 kg/day comprising of copper, Electrical steel sheet and Insulation material.

##### **– Mitigation**

The organic sludge will be disposed off through contractor.

The Solid waste will be collected in separate bins and then sold out as scrap materials and reused.

#### **6.5.4 Waste water**

Overall municipal & ground water 09 cubic meter of wastewater will be produced during the operational phase.

##### **– Mitigation**

All the wastewater will be treated through settling and septic tanks and after that it will be discharged into drain passing by Madina Steel industry Kasur.

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#### **6.5.5 Security Issue**

There is need for vigilant security presence in and around the industry round the clock on a permanent basis to guard against theft and terrorist activities. The security concerns will have to be addressed adequately. Any threat to the security should be dealt with as a major challenge.

##### **- Mitigation**

A comprehensive Security Plan is already developed and in place for the industry which includes construction of a security check post on the main entrance gate consisting of security guards. The aim of the security is to check out the in and out movements of vehicles and to monitor all the security related issues. The walk through gates will also be installed for checking of the visitors. In addition to this the security guards regularly monitor in and around the whole area to ensure proper security. Moreover, the security cameras will be installed at critical places inside and outside the project area. The security cameras are operated from the common control room.

#### **6.5.6 Noise**

There will be noise of generators during the operation.

##### **- Mitigation**

To mitigate the noise impact the generator will be installed at a distance from the residential area, production unit and the office building, and it will keep in the close canopy.

#### **6.5.7 Effect on flora**

There will be no effect on flora.

##### **- Mitigation**

So there will be no mitigatory measures are required. Anyhow more native plants will be planted in insidethe project site i.e. Neem, Indian Coral tree/Flame tree, Rain Tree etc. The plantation will enhance the environmental features of the project.

#### **6.5.8 Effect on fauna**

There will be no effect on fauna.

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**- Mitigation**

So there will be no mitigatory measures are required for them. But use of native trees will welcome the local and migratory birds for nesting and shelter.

**6.5.9 Assessing impacts**

Planning for environmental assessment depends upon reliably predicting project impacts on resources and managing those impacts to achieve the greatest gain or the smallest loss. The basis of the prediction is the knowledge of the proposed project and of local resources with which it is expected to interact. Two types of information are, therefore, needed: a comprehensive description of all resources likely to be affected by each of the project components, and an understanding of the project component itself. The baseline information given in the previous section includes all resources, natural and human and all aspects of those resources that may be expected to be touched, directly or indirectly, by the project. Conversely, project information will include all aspects of construction or operation that might affect the environment.

**6.5.10 Approach to Assessment**

Various components of the project will interact with local resources in different ways. Therefore, it is useful to divide the project into units small enough that the interactions may be examined individually as well as collectively. For the project as a whole a matrix has been prepared to identify project's environment interaction. The construction phase of the project is already complete so there is no need to identify impacts at this stage. Various aspects of environment will be examined in terms of longer period of project operation.

Some component of the project have positive and some have negative impact on environment and on the different factors like socio-economy of the community.

**- Negative impact**

This construction development activities has no potential negative impacts on environment as well on the socio-economic feature of community. Anyhow it has some impacts which have discussed as well as their mitigatory measures have well defined in the previous section.

**- Positive impacts**

The positive impacts of thhe project are given as under-:

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- The project is located at main Lahore-Multan road and there will be demand for workers, both skilled and unskilled. This will include opportunities of employment for local people. So, there will be the manpower required for operational phase of the project.
- This project will provide facilities of modern life to everyone.
- This project is one of the steps toward to fulfill the growing need of the people.

#### 6.5.11 Risk assessment

Risk assessment is done which will describe the potential impacts/hazards so that the precautions/control may adopt accordingly.

Risk Magnitude/ Severity	Assigned Values	Probability/ Likelihood	Assigned Values
Low	1	Highly Unlikely	1
Medium	2	Unlikely	2
High	3	Possible	3
Extreme	4	Likely	4
Catastrophic	5	Very likely	5

**Table 7: Risk assessment during operational phase of the project**

Hazard	Source	Duration Hours/day	Severity S	Likelihood L	Risk amount S*L
Noise	Operation	8	2	4	8
Dust	transportation of raw materials, operations of project	8	1	3	3
Vibration	Operations	8	2	3	6
Ergonomics	No proper posture for Work	8	3	3	9
Work load	Continues work	8	2	3	6
Temperature	Sunlight during summer	8	3	4	12
Fire	Flammable materials,	8	3	4	12

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	electrical short circuit				
Air pollution	Vehicles and generator	During working	3	4	12

Likelihood →	1	2	3	4	5
Severity ↓					
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

*Green color boxes (1-5): Low risk and unlikely to cause health impact.*

*Yellow color boxes (6-12): Noticeable risk. It has potential to cause medium impacts.*

*Red color boxes (15-25): High risk & cause high level health impacts.*

**6.5.12 Controls**

Almost all the risks which can occur in this project during both construction and operational phase not fall in high risk area. But there is still need of controls which are given below:

- Generator will put at such place where its noise does not disturb the community as well as the workers during operation it will be placed in closed canopy.
- New technology generator will be used and its proper maintenance to avoid the air emissions.
- Regular tuning of the vehicles.
- PPE should be provided to workers.
- Job rotation to avoid work pressure.
- Proper holdings, controls and use of PPEs for safe work at height.

Standard Operating Procedures (SOPs) will be defined for the construction and operational phase.

**6.5.13 Potential Environmental Enhancement Measures**

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

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**6.5.14 Environmental Management and Monitoring Program**

In this section, the mitigation measures that are required, for operation of project, to reduce residual impact to acceptable levels and achieve the expected outcomes of the project, are discussed. The Environmental Management program is based on the type, extent and duration of the identified environmental impacts for operation of project.

It is important that the recommendations and mitigation measures are carried out according to the spirit of the environmental assessment process and in line with the guidelines. The impact prediction has played a vital role in reconfirming that typical mitigation measures and approaches will achieve the necessary environmental controls based on the feasibility and detailed design assumptions available at this stage.

**6.5.15 Environmental Management During Construction Phase**

As operational phase of the project is already complete so there is no need of environmental management during construction phase.

**6.5.16 Environmental Management During operational Phase**

In order to achieve good compliance with environmental assessment principles during operation the environmental staff must be appointed included fire fighters as well as environmental engineers to monitor the environmental aspects, to ensure compliance with the statutory obligations under the PEPA. It is recommended that the HSE unit of industry should engage directly with EPA to address all environmental aspects in the detailed design and contracting stages. The environmental staff will cover the implementation of environmental mitigation measures in the project packages.

**6.5.17 Monitoring Programs**

The monitoring program is always a basis of information in identifying environmental and socio-economic impacts for use in informed decision-making. During the study socio - environmental issues as well as mitigation measures during planning phase have been identified. Some area, however, will require monitoring during construction and operation of the project. It, therefore, becomes necessary to include a monitoring program as part of the project. The land resources would require monitoring. In particular landscaping of the area to be used for spoil disposal would require monitoring during project construction and project operation phase. Water resources monitoring will include the ground water and wastewater produced from the site. This will involve both quantitative and qualitative aspects of water resources.

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Development projects bring social change in their wake. Much of this is beneficial, particularly that which promotes economic and social development. But there is always another side to development: of wage earners, families, or skill groups left behind by new methods of production, of micro-economics destroyed by new technologies, or the disintegration of village communities by population growth and a capitalizing economy. Some of this can be foreseen in a general way. Much of it would occur, even in the project area, whether or not Project is built. It seems clear that longer a project is in place, the more difficult it becomes to separate the social effects of that project from the wider processes of social change already at work in a region. Monitoring of social impacts may therefore be of value for similar project in future.

The monitoring staff will be consisting of environmental engineers and environmental analysts. Their responsibilities will be:

- To ensure all statutory environmental submissions under PEPA and other environmentally related legislation are thoroughly implemented.
- To ensure all environmental requirements and mitigation measures from the environmental assessment of project.
- To execute any additional EIA requirements needed due to fine tuning of the projects and that environmental performance targets are included in the contracts prior to project commencement;
- To ensure all environmental requirements and mitigation measures from the EIAs and environmental performance criteria are incorporated in the project.
- Work with management (consultants), supervising consultant and contractors to manage and monitor the implementation of the project EMP.

**6.5.18 Monitoring Schedule**

The project falls in schedule-I of EIA/IEE regulation 2000. This project fall in category of industries because of this reason schedule of monitoring is self-defined.

**Monitoring Schedule of Implementation During Construction Phase**

As construction phase of the project is already complete so there is no need of monitoring schedule of implementation during construction phase.

**Table 8: Schedule of monitoring during the operational phase**

Parameters	Frequency	Remarks	Responsibility
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Air Quality	Biannually	Ambient air quality	Administration of project and Reporting to EPA
	Monthly	Stack Emissions	Administration of project and Reporting to EPA
Noise	Biannually	Noise by activities in the multi-purpose building	Administration
Surface and ground water	Annually	Monitoring of water and wastewater parameters defined by EPA	Administration and Reporting to EPA
Solid waste	Annually	Waste generation	Administration of the project

**6.5.19 Health and Safety Plan**

Will make every effort to provide a safe, healthy work environment. All employers, supervisors and workers must be dedicated to the continuing objective of reducing risk of injury. Supervisors will be held accountable for the health and safety of workers under their supervision. Supervisors are subject to various duties in the workplace, including the duty to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures. Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the employer. Workers will receive information, training and competent supervision in their specific work tasks to protect their health and safety. It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from the president to the workers.

**6.5.20 Institutional Capacity**

The main institutions involved in environmental management and monitoring program will be as follows:

- HSE department Madina Steel Industry Kasur.
- Supervisory Consultants (SC)

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- Pakistan Environmental Protection Agency (Pak-EPA)

These key organizations will have the following roles and responsibility during the operation stages:

**6.5.21 Construction Stage**

Construction stage of the project is complete

**6.5.22 Operational Stage**

During the operational stage of the project, role of SC will gradually decrease. During this phase of the project, implementation of recommendations of EMP and its supervision will be the responsibility of monitoring team coordinating with top management.

**6.5.23 Summary of Impact and Their Mitigation Measures**

Sr. No.	Anticipated Impacts	Mitigation Measure
<b>Construction phase</b>		
As the construction phase of the project is already complete so there is no need to identify impacts and mitigation measures at this stage.		
<b>Operational Phase</b>		
<b>Physical Environment</b>		
	300 kgs /day of solid waste will be produced	<ul style="list-style-type: none"> <li>▪ Solid waste generated in the form of Copper, Electrical steel sheet, Insulation material and other solid waste will be collected in separate bins and soldout as srap material or reused.</li> </ul>
	14kgs/day of sludge will be produced	<ul style="list-style-type: none"> <li>▪ Organic sludge will be collected and disposed by the contractor.</li> </ul>
	9000 Liter /day of the waste water will be produced	<ul style="list-style-type: none"> <li>▪ Waste water will be treated through septic tank.</li> <li>▪ After that, this water will be discharged in to drain.</li> </ul>
	Stack emissions	<ul style="list-style-type: none"> <li>• Proper tuning and maintainence of generator will reduce air pollution.</li> </ul>
<b>Ecology</b>		
	The operational phase of the plant will not affect any ecological life of the	<ul style="list-style-type: none"> <li>▪ Environmental Enhancement Measures</li> <li>▪ Increase overall environmental features of the area</li> </ul>

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Sr. No.	Anticipated Impacts	Mitigation Measure
	proposed area.	

**6.5.24 Equipment Maintenance Detail**

Maintenance and washing of all heavy mobile machinery & vehicles should be carried out at adequate service stations. Regular maintenance of all vehicles and machines to be used on site will be mandatory. It should be noted that the project foot print is small and therefore the number of vehicles to visit the project site will also be less in number as compared to the large scale project. Maintenance and re-fueling (if necessary) of any equipment shall be done at a decent distance from the project area and only be undertaken on sealed area. Any re-fuelling must be handled carefully taking particular attention to avoid any spilling of any fuel.

**6.5.25 Environmental Budget**

Environmental monitoring cost related to the mitigation measures of environmental parameters related to the location of construction site and activities, borrow materials, etc. will be the sole responsibility of the Contractor and he will take care of cost implications. Tentative annual monitoring cost as per environmental monitoring plan is given in Table 7.5 below.

**Table 9: Annual Monitoring Cost**

Sr. #	Phase	Item	Cost per Year (Rs.)
1	Construction	Already completed	
2	Operation	Monitoring and Laboratory Testing	12,00,000
		Salary and Direct Cost	600,000

**- Training Cost**

The Project training will be imparted at different stages of the Project at different staff levels. During the operational phase these trainings will be conducted by monitoring team like fire drills etc.

A training log will be maintained by the SC. The training log will include;

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- Topic
- Date, time and location
- Trainer
- Participants

#### **6.5.26 Site Selection**

The site is selected on the basis of prohibition area, environmental sensitivity, competent to the surrounding and suitability.

The site is not present in the prohibited area. The area is as well not situated in the environmental sensitive area as this area does not fall in the high seismic zone, not near the river as there are very low chances of flood and not extremely polluted area.

#### **6.5.27 Impact significance**

Impacts significance is defined on the basis of its acceptance ecologically, socially as well as on the basis of environmental standards that either it is according to the environmental standards or not.

#### **6.5.28 Ecological importance**

The impact of this complex has least ecological. None of the trees near site are affected due to the implementation of the project. However during the operational phase native plants will be planted in abundance which will enhance the environmental feature of the project. Moreover use of native trees will welcome the local and migratory birds for nesting and shelter.

#### **6.5.29 Social importance**

Development projects bring social change in their wake. Much of this is beneficial, particularly that which promotes economic and social development. Another side to development as it provides the opportunities for wage earners and skill groups of local community as well as for the outsiders.

It seems clear that this industry has positive impacts on the social life of the area.

During the construction stage in case of any complaint, it can be noted down by the site representative. The site representative will maintain a register of complaints received from the local communities and measures will be taken to mitigate these concerns. They will report the status of complaints in his monthly report to top management, for information and further action.

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**6.5.30 Environmental standards**

**Drinking water standards**

**Table 10: Drinking water standards**

<b>Properties /parameters</b>	<b>Standard values for Punjab</b>	<b>WHO Guidelines</b>	<b>Remarks</b>
<b>Bacterial</b>			
All water intended for drinking(e.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water entering the distribution system (E.Coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water in the distribution system (E.coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample  In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12- month period.	Must not be detectable in any 100 ml sample  In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.	Most Asian countries also follow WHO standards
<b>Physical</b>			
Colour	≤15 TCU	≤15 TCU	
Taste	Non objectionable/Acceptable	Non objectionable/Acceptable	

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**Table 11: Drinking water standards**

<b>Properties /parameters</b>	<b>Standard values for Punjab</b>	<b>WHO Guidelines</b>	<b>Remarks</b>
Odour	Non objectionable/Acceptable	Non objectionable/Acceptable	
Turbidity	< 5 NTU	< 5 NTU	
Total hardness as CaCO <sub>3</sub>	< 500 mg/l	---	
TDS	< 1000	< 1000	
pH	6.5 – 8.5	6.5 – 8.5	
<b>Chemical</b>			
<b><i>Essential Inorganic</i></b>	<b><i>mg/Litre</i></b>	<b><i>mg/Litre</i></b>	
Aluminium (Al) mg/l	≤0.2	0.2	
Antimony (Sb)	≤0.005 (P)	0.02	
Arsenic (As)	≤ 0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
Barium(Ba)	0.7	0.7	
Boron (B)	0.3	0.3	
Cadmium(Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
Chloride(Cl)	<250	250	
Chromium(Cr)	≤0.05	0.05	
Copper (Cu)	2	2	
<b><i>Toxic Inorganic</i></b>	<b><i>mg/Litre</i></b>	<b><i>mg/Litre</i></b>	
Cyanide (CN)	≤0.05	0.07	Standard for Pakistan similar to Asian developing countries

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**National environmental quality standard and Punjab Environmental Quality Standards for Ambient Air**

**Table 12: Ambient air quality standards**

Pollutants	Time-weighted average	Concentration in Ambient air		Method of measurement
		PEQS	NEQS	
Sulphur Dioxide (SO <sub>2</sub> )	Annual Average*	80µg/m <sup>3</sup>	80µg/m <sup>3</sup>	Ultraviolet fluorescent method
	24 Hours**	120µg/m <sup>3</sup>	120µg/m <sup>3</sup>	
Oxides of Nitrogen	Annual Average*	40µg/m <sup>3</sup>	40µg/m <sup>3</sup>	Gas phase chemiluminescence
	24 Hours**	80µg/m <sup>3</sup>	80µg/m <sup>3</sup>	
O <sub>3</sub>	1 Hour	130µg/m <sup>3</sup>	130µg/m <sup>3</sup>	Non dispersive UV absorption method
Suspended Particulate matter (SPM)	Annual Average*	360 µg/m <sup>3</sup>	360µg/m <sup>3</sup>	High volume Sampling, (Average flow rate not less than 11 m <sup>3</sup> /minute)
	24 Hours**	500 µg/m <sup>3</sup>	500µg/m <sup>3</sup>	
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Average*	120 µg/m <sup>3</sup>	120µg/m <sup>3</sup>	β Rays absorption method
	24 Hours**	150 µg/m <sup>3</sup>	150µg/m <sup>3</sup>	
Respirable Particulate Matter (PM <sub>2.5</sub> )	Annual Average*	15 µg/m <sup>3</sup>	15µg/m <sup>3</sup>	β Rays absorption method
	24 Hours**	35 µg/m <sup>3</sup>	35µg/m <sup>3</sup>	
	1 Hour	15 µg/m <sup>3</sup>	15µg/m <sup>3</sup>	
Lead (pb)	Annual Average*	1µg/m <sup>3</sup>	1µg/m <sup>3</sup>	ASS method after sampling 2000or equaling filter paper
	24 Hours**	1.5 µg/m <sup>3</sup>	1.5µg/m <sup>3</sup>	
Carbon Monoxide (CO)	8 Hours**	5mg/m <sup>3</sup>	5mg/m <sup>3</sup>	Non dispersion Infrared Method
	1 Hour	10mg/m <sup>3</sup>	10mg/m <sup>3</sup>	
*Annual arithmetic mean of minimum 104 measurement in a year taken twice a week 24 hourly at uniform interval				
**24 hourly/8 hourly values should be meet 98% of the in a year. 2% of the time, it may exceed about but not on two consecutive days				

## 6.6 Mitigation and impact assessment

### 6.6.1 Impact and their mitigations during construction phase

There is not need to adress impacts and their mitigations during construction phase because this phase of the project is already complete.

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**6.6.2 Impact and their mitigations during operational phase**

The major impacts of operational phase are:

- Solid Waste
- Waste water
- Stack emissions

The mitigation will be used to avoid the impacts are:

- The solid waste will be collected in separate bins and sold out as scrap material and reused.
- Waste water is treated through septic tank and then will be discharged in to drain
- Proper tuning and maintance of generatorto control the air quality.

<b>What are the hazards?</b>	<b>When will the risk occur?</b>	<b>Who might be harmed and how?</b>	<b>What will the actions do take?</b>	<b>Responsible Person</b>
Ground contamination	Operational phase	Worker working there during operational phase	Provision of good site welfare facilities, septic tank to prevent ground contamination	Supervising consultants
Water contamination	Operational phase	Worker, nearby community	Waste water is treated through septic tank and then will be discharged into drain.	Supervising consultants and Building's management team
Noise	Operational phase	Worker, nearby community	Generator will put in the close canopy, new technology will be used	Supervising consultants and Building's management team
Air contamination	Operational phase	Worker, nearby community	Prpoer tuning and maintenance of Generators	Supervising consultants and Building's management team

**6.6.3 Objective of mitigatory measures**

Mitigation is the stage of the EIA process when measures are identified to avoid, minimise or remedy impacts. These measures are implemented as part of the process of impact

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management, together with any necessary adjustments to respond to unforeseen impacts. Both elements are integral to ensuring that the EIA process leads to practical action to offset the adverse environmental impacts of proposed developments. The migratory measures are designed to minimize the environmental impacts of the project.

## **7. ENVIRONMENTAL MANAGEMENT PLAN**

### **7.1 Environmental management plan**

This Chapter provides an overall approach for managing and monitoring the environmental issues and describes the institutional framework and reporting mechanism to implement the Environmental Management Plan (EMP) Madina Steel Industry Kasur . The EMP has been prepared with the following objectives:

- Provide the details of the project impacts along with the proposed mitigation measures, and a corresponding implementation schedule.
- Define the roles and responsibilities of the project proponent, contractor, and supervisory consultants in order to effectively communicate environmental issues among them.
- Frame a monitoring mechanism, reporting frequency, auditing mechanism and identifying monitoring parameters to ensure that all the mitigation measures are completely and effectively implemented.
- Define the requirements necessary for documenting compliance with EMP and communicating it to all the concerned regulatory agencies.

### **7.2 Structure of EMP**

The EMP has been divided into the following sections:

- Review of regulatory requirements and applicable standards
- Mitigation Management Matrix (MMM)
- Institutional Arrangements for Implementing the EMP
- Roles and Responsibilities of the different agencies.
- Environmental Monitoring Plan
- Training program

### **7.3 Regulatory requirements and applicable standards**

The main law and legislation concerned with the environment is Pakistan Environmental Protection Act (PEPA) 1997, now been amended as Punjab Environmental Protection Act amended 2012 for Punjab after 18th amendment. This Act is a fairly comprehensive legislation and provides for protection, conservation, rehabilitation and improvement of the environment.

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The salient features of the law are:

- No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal EPA or Provincial EPAs an EIA, and has obtained NOC.
- Establishment and Formation of the Pakistan Environmental Protection Council (PEPC).
- Powers and Functions of the Federal and Provincial Environmental Protection Agencies.
- Prohibition of certain discharges or emissions.
- PEQS for wastewater, air emissions and noise.
- Empowers Government to issue notices and to enforce them for the protection of the environment.

The proposed project related environmental laws/guidelines are as follows:

- Pakistan Environmental Protection Agency Regulations, 2000 for Review of IEE and EIA
- Pakistan Environmental Impact Assessment Procedures
- Guidelines for Public Consultation
- PEQS
- Sectoral Guidelines for Environmental Reports, Major Roads, October 1997

#### **7.4 Mitigation management matrix (MMM)**

This matrix identifies the environmental impacts of multipurpose project during the construction and operation stages and establishes the linkages between the environmental and social impacts, mitigation strategy and the agencies responsible for execution. The MMM presented in Table 7.1 identifies the following:

- The mitigation measures recommended in EIA.
- The person/organization directly responsible for adhering to or executing the required mitigation measures.
- The person/organization responsible for ensuring and monitoring adherence to the mitigation measures.
- The parameters which will be monitored to ensure compliance with the mitigation measures.
- The timing at which the mitigation or monitoring has to be carried out.

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**Table 13: Mitigation management matrix**

Sr. no.	Anticipated impacts	Mitigation measures	Responsibility		Actions/Monitoring parameters/Monitoring methods
			Execution	Monitoring	
<b>Construction phase</b>					
As construction phase of the project is already complete, so there is no need to construct the mitigation management matrix at this stage.					
<b>Operational phase</b>					
<b>Physical Environment</b>					
	Daily sludge generation during operational phase will be 14 kg/day consisted of organic dried sludge. If not managed properly then it will create soil and water pollution.	The sludge will be collected in septic tank and will be disposed off by contractor	Madina Steel Industry Kasur	EPA	Regular Monitoring of Sludge
	Daily solid waste generation during operational phase will be 300 kgs/day which consist of copper, Electrical steel sheet and Insulation material. If not managed	Solid waste will be collected in separate bins and soldout as scrap material and reused.	Madina Steel Industry Kasur	EPA	Regular monitoring of solid waste

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Sr. no.	Anticipated impacts	Mitigation measures	Responsibility		Actions/Monitoring parameters/Monitoring methods
			Execution	Monitoring	
	properly then it will create soil and water pollution.				
	Stack emission. If not managed properly then it will create the air pollution.	Proper tuning and maintenance of generators and adjusting Air to fuel ratio control pollution.	Madina Steel Industry Kasur	EPA	Regular monitoring of air emissions
	Daily waste water generated during the operational stage is 9000 liters/ day. If not managed properly then it will create the land and water pollution.	Waste water is treated through the settling and septic tank of the waste water treatment plant. After that, this water will be discharged in to drain.	Madina Steel Industry Kasur	EPA	Regular monitoring of air ground water quality.

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## **7.5 Institutional arrangements for implementation of EMP**

The main institutions involved in the implementation and management of EMP will be as follows:

- HSE officer
- Supervisory Consultants (SC)
- Punjab Environmental Protection Agency (Punjab-EPA)

## **7.6 Roles and responsibilities**

The key organizations will have the following roles and responsibility during the construction and operation stages:

### **7.6.1 Construction stage**

Construction stage of the project is already complete.

### **7.6.2 operation stage**

During the operational stage of the project, role of SC will gradually decrease. During this phase of the project, implementation of recommendations of EMP and its supervision will be the responsibility of Madina Steel Industry Kasur Punjab-EPA as defined in mitigation management matrix.

## **7.7 Environmental monitoring plan**

### **7.7.1 Objectives**

The objectives of the environmental monitoring during the operation stages are as follows:

- To check compliance with the requirements of the EMP by monitoring activities of the project contractors. This will be called Activity Monitoring.
- To monitor actual impacts of the project activities on physical, ecological and socioeconomic receptors of the Project Area so that any impacts not anticipated in the EMP or impacts which exceed the levels anticipated in the EMP can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring.

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

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**7.7.2 Monitoring Strategy**

**- Activity Monitoring**

Activity monitoring will be carried out to ensure compliance with the requirements of the EMP. The mitigation management matrix will be used as a management and monitoring tool. Activity monitoring will be the responsibility of all organizations involved in the operation, i.e. top management of multi-purpose building, Project Consultants and the Contractors and hence it will be done at three levels:

- Activity Monitoring by HSE officer
- Activity Monitoring by Consultant's field monitors
- Activity Monitoring by the Contractor's officers

The Contractors will report compliance with the MMM to SC and Lahore Development Authority for verification.

**- Effects Monitoring**

Effects monitoring will be the responsibility of Lahore Development Authority. Monitoring requirements have been outlined in the EMP. However, a detailed monitoring program is attached as Table 6.1. The monitoring program describes in detail the resources and methodology that will be adopted for the purpose of Effects Monitoring.

Physical Environment will target at identifying project impacts on:

- Water
- Air

A monitoring protocol is provided in the matrix given in Table 7.2.

**- Ecological Environment**

Floral surveys will be conducted to determine the effects of different project activities on Flora. The recommended effects monitoring protocol for Flora is provided in Table 7.3.

**- Socio-economic Environment**

Effects on the socio-economic environment will be monitored by the consultants who will conduct survey both during construction and operation stage. The surveys will be structured to ascertain the level of impacts during the course of the project and the implementation of mitigation measures prescribed in the EMP such as health and safety of communities.

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**Table 14: Recommended Activity Monitoring Protocol for Physical, Ecological and Social Environment**

<b>Parameter/Receptor</b>	<b>Location</b>	<b>Monitoring Mechanism</b>	<b>Monitoring and Reporting Frequency</b>
Water Quality	<ul style="list-style-type: none"> <li>▪ Near the project area</li> <li>▪ Fuel (Petrol, Oil and Grease) products storages</li> </ul>	Discrete grab sampling and laboratory testing of water samples.	<ul style="list-style-type: none"> <li>▪ Sampling and laboratory testing should be done on annually during the operational stage.</li> </ul>
Noise Levels	<ul style="list-style-type: none"> <li>▪ Nearby area with generators</li> </ul>	Noise meter	<ul style="list-style-type: none"> <li>▪ Quarterly during the operational stage.</li> </ul>
Stack emissions and Ambient Air	Silencers of trucks and other vehicles. Stack monitoring of generators	Monitoring of stack and ambient air quality in ppb.	<ul style="list-style-type: none"> <li>▪ Annual monitoring of air pollution parameters including PM, NO<sub>x</sub>, SO<sub>x</sub>, CO, during the operation stage.</li> </ul>
<b>Ecological Environment</b>			
Plants and agriculture disruption	It will be monitored in and around Project Area	Plants and agriculture	<ul style="list-style-type: none"> <li>▪ Once in a year monitoring and reporting during the operation period.</li> </ul>
<b>Socio-cultural Environment</b>			
Inconvenience to community	All around the Project Area	Consultations with community to get feedback about inconvenience due to	<ul style="list-style-type: none"> <li>▪ Annually monitoring and reporting during the operations.</li> </ul>

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<b>Parameter/Receptor</b>	<b>Location</b>	<b>Monitoring Mechanism</b>	<b>Monitoring and Reporting Frequency</b>
		the operational activities to perform their daily routine chores.	

**Table 15: Recommended Effects Monitoring Protocol**

<b>Parameter/Receptor</b>	<b>Location</b>	<b>Monitoring Mechanism</b>	<b>Monitoring and Reporting Frequency</b>
Water Quality	<ul style="list-style-type: none"> <li>▪ Sampling from the points located at a greater distance from the project sites to ensure that they show the influence on a wider range of receiving body.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sampling and laboratory testing of wastewater</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sampling and laboratory testing should be done on annually during the operation stage.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>▪ Existing residential near the project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ambient air quality monitoring in ppb.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Once a year during the operation stage.</li> </ul>

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## **7.8 Traffic management plan**

No traffic diversion plan needed during the operational stage of the project as the project is in industrial premises away from road and will not disturb the road side traffic.

## **7.9 Material transportation plan (MTP)**

Material Transportation Plan will be prepared which specifies the routes for material transportation for the operational phase of the project. These routes have been established in such a way that there is minimum hindrance or disturbance to the local communities and flow of traffic. HSE arrangements and proper documentation have been planned in order to achieve the above objectives as follows:

- Material Transportation HSE Arrangements
- Transportation timings should preferably be at night time to minimize the traffic conflicts.
- Filled trucks should be covered with tarpaulin to avoid fugitive dust and should be visually inspected for proper loading, sealing and decontamination.
- Vehicles should have passed an annual inspection and carry the fitness certificate.
- The truck drivers will be strictly instructed not to play music and do not use horns at night time to minimize disturbances.
- Material Transportation Documentation

A field logbook will be maintained for the documentation. This logbook will additionally serve to document observations, personnel onsite, equipment arrival, and departure times, a truck exit inspection checklist and other project information.

Field logbooks will document where, when, how, and from whom any vital project information is obtained. Logbook entries will be completed and accurate enough to permit reconstruction of field activities. Logbooks will be bound with consecutively numbered pages. Each page will be dated and the time of entry notice. All entries will be legible, written in black ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or inappropriate terminology. If an error is made, corrections will be made by crossing a line through the error and entering the correct information. Correction will be dated and initialed. No entries will be obliterated or otherwise rendered unreadable.

Entries in the field logbook will include at a minimum the following for each field work date:

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- Site name and address
- Recorder's name
- Time of site arrival/entry on site and time of site departure
- A summary of any onsite meetings
- Description of transport vehicle(s)
- Quantity of excavated soils in truckloads (approximate percentage of full load)
- Names of waste transporters and proposed disposal facilities
- Quantity of import fill material in truckloads
- Levels of safety protection

The HSE officer of the Contractor will communicate HSE requirements and tailgate safety meetings to all drivers and on-site workers. He will provide information related to contaminant descriptions, and requirements for the containment and cleanup of an accidental release along with basic safety requirements, name of personnel in-charge, contact information and a map and directions to the nearest hospital.

### **7.10 Equipment maintenance details**

All Construction vehicles, Earth moving equipment, and Material handling equipment will be maintained in accordance with the Maintenance Scheduling for Mechanical Equipment.

The contractor will make the detail plan for maintenance schedule of their machinery during the operations. The contractor will do the continuous follow-up and regular checks will ensure on all the machinery equipment's.

### **7.11 Training programs**

Environmental training for operational period will form part of the environmental management system. The training will be directed towards all personnel for general environmental awareness.

#### **7.11.1 Objectives**

The key objective of the training program is to ensure that the requirements of the EMP are clearly understood and followed throughout the Project.

#### **7.11.2 Roles and Responsibilities**

SC will be responsible for conducting environmental training to all the Project personnel on potential environmental issues of the Project through Contractor, who will be responsible to

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arrange training and ensure the presence of targeted staff. SC will prepare a Project specific training manual for this purpose. Contractors on their part will be required to provide induction training/briefing to all their staff at the time of their recruitment and before the start of any activity in the Project Area. This will be followed by training arranged by the SC to all the targeted staff.

**7.11.3 Training Log**

A training log will be maintained by the SC. The training log will include;

- Topic
- Date, time and location
- Trainer
- Participants

## **8. CONCLUSION**

### **8.1 Conclusion**

The project aims in Madina Steel Industry Kasur . located at 42 Km Ferzopur Road, Kasur. According to the “Punjab Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000” the project falls in schedule II. Accordingly, this EIA has been prepared for issuance of NOC/EA by the EPA, Government of the Punjab, Lahore before initiation of the project on ground.

### **8.2 Construction phase**

The construction phase of the project is completed about 40 years ago so there is no need to identify the impacts and to propose mitigation measures for this stage.

### **8.3 Operation stage**

The potential impacts during operational phase and its mitigation area summarized below-:

- Daily sludge generation during operational phase will be 14 kg/day consisted of organic dried sludge. If not managed properly then it will create soil and water pollution.
- Daily solid waste generation during operational phase will be 300 kgs/day which consist of copper, Electrical steel sheet and Insulation material. If not managed properly then it will create soil and water pollution.
- Stack emission. If not managed properly then it will create the air pollution.
- Daily waste water generated during the operational stage is 9 meter cube per day. If not managed properly then it will create the land and water pollution.

Based on the EIA report, it can be concluded that the operation of this project will not cause any adverse environmental impact. No wastewater will be disposed off without passing through septic tank and all of the treated water will be discharged into drain. There will be no effect on air because of proper tuning and maintenance of generatorsto control air pollution. Solid and sludge waste is also managed very efficiently. So, project has no adverse impact. Further, the implementation of the environmental mitigation measures, proper monitoring and compliance of the environmental standards/legislations will make the Project environmentally more sustainable.

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#### **8.4 Recommendation**

On the basis of the facts summarized as above, the project merits for issuing Environmental Approval by the Environmental Protection Agency, Government of Punjab.

## **9. PUBLIC AND STAKEHOLDERS CONSULTATION**

### **9.1 GENERAL**

Public & Stakeholders consultation is a systematic process, which provides an opportunity for planners, citizens, managers and selected representatives to share their experience, knowledge and concerns and perceptions about any proposed development. The objectives of the public consultation for the proposed Project are to:

- Share information with the stakeholders' on the proposed Project works and their expected impact on the socio-economic environment of the Study Area.
- Understand the stakeholder's concerns regarding the various aspects of the Project, including the existing condition of the Study Area, upgrade requirements, and the likely impacts of the construction related activities and operation of the Project.

Public consultation plays a vital role in studying the effects of the Project on the stakeholders and in the successful implementation and execution of the proposed projects. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision-making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the operation of the Madina Steel Insutry Kasur .The important general objectives of the Consultation process are:

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

During EIA study public consultations at various locations has been carried out around the proposed Project Site. The stakeholder's consultation targeted the project area are settlements, private offices, Govt. offices, shops, stores, etc. near the Project area:

### **9.2 MAIN VIEWS AND CONCERNS OF THE STAKEHOLDERS**

During consultations, the people of the Study Area expressed their views and concerns about the Project.

Findings of the consultations and main views and concerns about the operations of Existing Hammad engineering are summarized below

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**Concerns of public and stakeholders—Muhammad Asim Ghafoor S/O Abdul Ghafoor, Muhammad Ali Saleem Arif S/O Arif Ali, Niaz Ahmed S/O Lakkha, Aqib Fareed S/O Muhammad Anwar, Usman Ali S/O Amjad Ali, Ali Raza S/O Malik Akbar:**

According to the public and stakeholders, operations of this project will pose positive impact on local community as it will provide new employment opportunities to residents of the area and will prove to reduce the growing rate of unemployment in Lahore city. It will increase there revenue of our country. This project does not seem to pose any adverse impact on our community and environment because ground water, land, ambient air of area was not polluting due to operations of this foundry (when its was in operational phase/ before seal).

**Annex I**  
**Project layout**

**Annex II**  
**Approved certificates**

**Annexure-III**  
**Socioeconomic Performa**

**Annex-IV**  
**Environmental Lab reports**

**Annex-V**

**Project impact matrix**

**Annex VI  
Project Checklist**

**Annex-VII**  
**Site Photographs**