EIA-2025

ENVIRONMENTAL IMPACT ASSESSMENT

ESTABLISHMENT OF M/S BASHIR SONS STEEL CASTING

LOCATED AT

15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura

PROJECT PROPONENT: MR. TALIB HUSSAIN

MR. MUHAMMAD JAMSHAID KHALID

Prepared By

ZOOM CONSULTANCY & SERVICES

LAHORE

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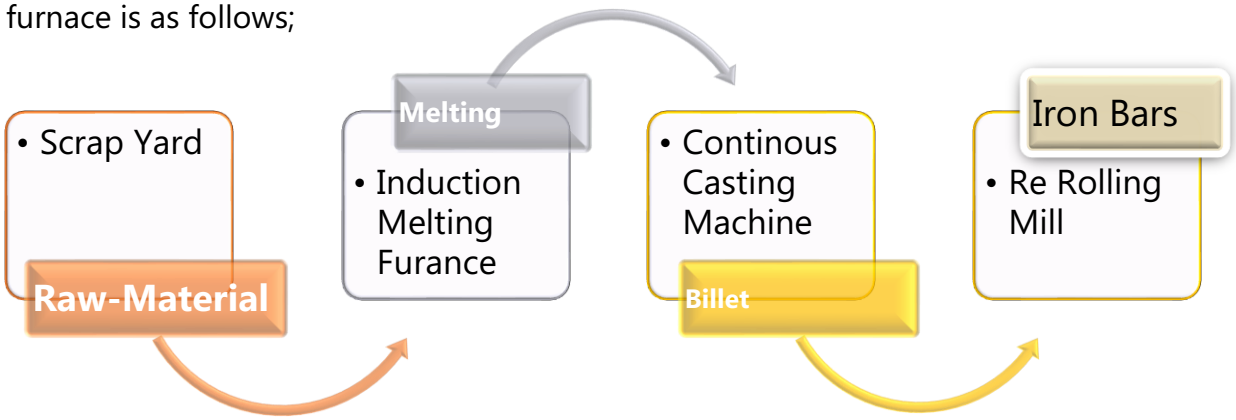
INTRODUCTION

EXECUTIVE SUMMARY

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) Report for the proposed project namely "**Induction furnace, Continuous Casting and Re-rolling mill**"of Establishment of M/S Bashir Sons Steel Casting at 15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura.

1. Project Description

The proposed project involves installation of induction furnaces with continuous casting and re-rolling mill for the manufacturing of steel billets, iron bars, T- iron and angles. The project will consist of two induction furnaces of capacity 12 MT and 8 MT for iron billets and 2 re – rolling mills of 10" and 11" for iron bars. The total area of the project is 81 Kanals and 17 Marlas. The project falls under Category **B (17)** in the Schedule-II of IEE and EIA Regulations, 2022**.** Thus, an EIA is conducted and Report is being submitted accordingly for issuance of Environmental Approval. The process of billet production in the induction furnace is as follows;



Detailed description is given in Chapter-3 of EIA report.

Salient Features of Project

Sr#	Project Salient Features	
1	Project Title	"Induction furnace, Continuous Casting and Re-rolling Mill" M/s Establishment of M/S Bashir Sons Steel Casting.
2	Purpose of Project	To produce quality steel billets from steel scrap to further produce angles, T-iron and steel bars to meet market demand

3	Proponent Details	Mr. Talib Hussain, Director, M/s Bashir Sons Steel Casting Mr. Muhammad Jamshaid Khalid Director, M/s Bashir Sons Steel Casting
4	Consultant Name	Zoom Consultancy & Services
5	Project Location	15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura. **Co-ordinates:** 31.7037962, 74.25556
6	Total Area of Project	81 Kanals and 17 Marlas
7	Cost of the Project	PKR 850 Million
8	Tree Plantation	At Designated Green Areas
9	Water Source	Groundwater
8	Source of Power	WAPDA
Plant Capacity		
9	Iron Billets	6700 MT/month accounting to 80,000 MT/ year
10	T-Iron & Steel Bars	7200 MT/ month 86,400 MT/ Year
11	Induction Furnace (02)	12 MT 8 MT
12	Re-rolling Mill (02)	10" 11"
13	Manpower/Staff	40-55 workers

Impacts and Recommended Mitigation Measures

In order to identify all the impacts associated with the project during construction and operational phase with potential to cause adverse environmental impacts, a thorough review has been conducted. Possible necessary mitigation measures will be adopted to control adverse impacts on the environment. Overall the project has positive social impacts specifically on the local population and generally contributes in Pakistan GDP. The project may have some adverse environmental impacts of minor to moderate magnitude which will be controlled through mitigation measures proposed in Environmental Management Plan (EMP). Moreover, clearing of the vegetation will be done during site clearance but restoration and rehabilitation will be carried out by the plantation of indigenous species in

specified green areas. The major impacts on physical, biological and social environments are described as under:

Impact Summary

Environmental Parameters	Impact Assessment during Different Phases	
	Construction	Operational
A: Physical		
Land Resources		
Soil Erosion and Contamination	-2p	0
Transportation	-1t	-1t
Solid Waste and By-Products	-2t	-1p
Land Use	-2p	NA
Air Resources		
Noise Pollution	-1t	-1t
Air Emission	-1t	-2t
Dust	-1t	-1t
Odor	NA	NA
Water Resources		
Ground Water	-1p	-1p
Surface Water	NA	NA
Wastewater	-1p	-1p
B : Ecological		
Flora		
Tree Cutting	-1p	+1p
Fauna		
Terrestrial Fauna	NA	NA
C: Socio-Economic		
Employment Opportunities	+1t	+2p
D: Hazards		
Biological Hazards	NA	NA
Physical Hazards	-1t	-1p
Chemical Hazards	0	0
Health and Safety	-1t	-1p

Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible

2. Environmental Management Plan

An Environmental Management Plan (EMP) along with monitoring plan has been developed for effective implementation of the recommended mitigation measures. The EMP includes check and balance to control and minimize the identified impacts and monitoring programs to oversee residual impacts, if any, during construction and operational phase. The EMP describes procedures to be followed throughout the construction and operation of the project. It also identifies the roles and responsibilities of all concerned personnel, including the persons reporting during the different project phases. Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in EMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. It will also check whether the prescribed national and provincial guidelines and plans are being followed and that the required mitigation measures and activities are being accomplished in time. Detailed EMP is given in Chapter-7 of EIA report.

3. Environmental Monitoring Plan

During construction phase, monitoring is required to be carried out once to check the ambient air quality, noise, wastewater quality, soil contamination and surface water level/condition. Moreover, quarterly monitoring is required during operational phase regarding ambient air quality, noise, dust level and worker safety. A detailed site monitoring plan has been developed and given in Chapter-7 of this EIA Report.

4. Conclusion

The findings of EIA Report showed that although the steel processing is expected to have significant minor to moderate negative impacts on the environment during the construction and operational phases but the severity of these adverse impacts can be reduced significantly by adopting EMP as proposed in the Chapter-6 of this EIA Report. The project shall be PEQS compliant. The impacts were assessed by frequent site visits, studying related projects and by reviewing the documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits

have been mentioned below which depend on the proper application of mitigation measures suggested in EMP and best engineering practices.

5. Recommendations

The intensity and severity of impacts occurred due to the steel processing varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the "no project development" scenario.

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMP with true spirit
- Proper PPEs including gloves, face masks, head gear etc shall be provided.
- No compromise on public health and environment should be allowed.
- Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long term benefits of the same in lieu of surrounding environment.
- A proper tree plantation plan should also be developed in order to make the process environment friendly.
- Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

1. INTRODUCTION

1.1 Introduction

Pakistan's steel consumption remains as low as 23kg per person compared with more than 58kg in India, the Asian average of 261kg and the global average of 217kg, which, according to Amreli Steel Chief Executive Officer Abbas Akberali, shows the "massive potential for new investments and job creation in this sector".

Domestic steel production capacity of more than 350 steel mills spread across the country is estimated to be around 6m tonnes, negligible when compared with the global capacity of 1.65bn tonnes. The manufacturers agree that the steel consumption in the country will continue to surge in the coming years owing to increased public development spending and the launch of infrastructure projects under the China Pakistan economic Corridor (CPEC). But they argue that the local industry will not be able to meet this new demand unless the government gives a clear-cut, long-term policy for protecting existing and new investments, and making the industry competitive[1].

"Unless the industry becomes competitive and quality standards are enforced across the board, you cannot expect significant new investments in steel production in the near future. The government needs to come up with a policy framework to woo investment in this industry to meet the new demand for steel being created in the country."

The proposed project for which impact assessment study is being carried out is entitled as Bashir Sons Steel Casting located at 15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura. The proponent of the proposed project is expected to provide high quality of billets and T-iron and steel bars to fulfill the development requirement of the country.

The development of any project leads to positive and negative changes in environment and social set up around the project area. The intensity and level of change, however, depends

[1] Nasir Jamal. Competition for Local Steel. (October, 2016). The News. hppt://www.dawn.com/news/ 289189

upon the nature of the project and the baseline environmental conditions of the area. The commencement of proposed project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social impact assessment study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures accordingly.

In construction and operation of subject project, no environmental disturbance will be created. For regularization of the unit and as per Environmental Law of Punjab, the proponent has decided to engage environmental consultants and labs, M/S **Zoom Consultancy & Services** to prepare EIA Report. The purpose of this study is to identify the environmental and social baseline of the project and study area i.e., physical, biological, socio-economic, cultural changes and to assess all possible impacts anticipated during the installation, construction and operation phases of the said project with the aim to find out appropriate mitigation measures to either eliminate those impacts or to bring them to acceptable level as well as to formulate Environmental Management and Monitoring Plan (EMMP) for implementation in sustainable manner. This EIA Report provides relevant information as required under the officially approved format, to help the decision makers i.e., EPA Punjab before issuing for the Environmental Approval.

Following rules, regulations and acts are considered for the commencement of the said project:

- ✓ Punjab Environmental Protection Act, 1997 (Amended 2012)
- ✓ Punjab Environmental Quality Standards (PEQS)
- ✓ Self-Monitoring and Reporting Rules (SMART)
- ✓ Environmental, Health and Safety Guidelines

1.2 Purpose of Report

The development of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change,

however, depends upon the nature of the Project and the baseline environmental conditions of the area. The development and commencement of said project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states ***"No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination (IEE) and, where the project is likely to cause an adv+erse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof.***" Later on, Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022 provided the guidelines for categorizing the Projects. The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the said Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.

➢ Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval

1.3 Identification of Project and Proponent

1.3.1 Identification of Project

The said project is entitled as "Establishment of Bashir Sons Steel Casting" located at 15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura.

1.3.2 Proponent

Proponent Details		
Name	Talib Hussain	Muhammad Jamshaid Khalid
Designation	Director	Director
Address	House No 326, Street No 10, Block A- DHA Phase 5 Lahore	House No 14-15, C Block Muhallah Darbar Mustafa Scheme No 2, Lahore Cantt

1.4 Details of Consultant

For the preparation of the Initial Environmental Examination report of the said project, the proponent has hired the services of the environmental consultants; **M/S Zoom Consultancy & Services.** Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report. Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report.

Environmental Compliance Studies

- Initial Environmental Examination
- Environmental Impact Assessment
- Socio-Environmental Impact Assessment
- Green House Gas Estimation
- Environmental Management Plan

1.5 Project Nature, Size and Location

Project Nature:

The proposed project for which impact assessment study is being carried out will be installation of induction furnace , Continuous Casting and Re-rolling Mill.

Project Size:

Plant Capacity		
1.	Iron Billets	6700 MT/month accounting to 80,000 MT/ year
2.	T-Iron & Steel Bars	7200 MT/ month 86,400 MT/ Year
3.	Induction Furnace (02)	12 MT 8 MT
4.	Re-rolling Mill (02)	10" 11"

Cost of the Project:

Cost includes land cost, infrastructure cost, machinery cost, installation and environmental enhancement measures cost. Total cost of the project is PKR 850 Million.

Total Area of the project:

Total area of the project is 81 Kanala and 16 Marlas.

Location:

The said project is located at 15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura. The selected site is located in designated industrial zone.

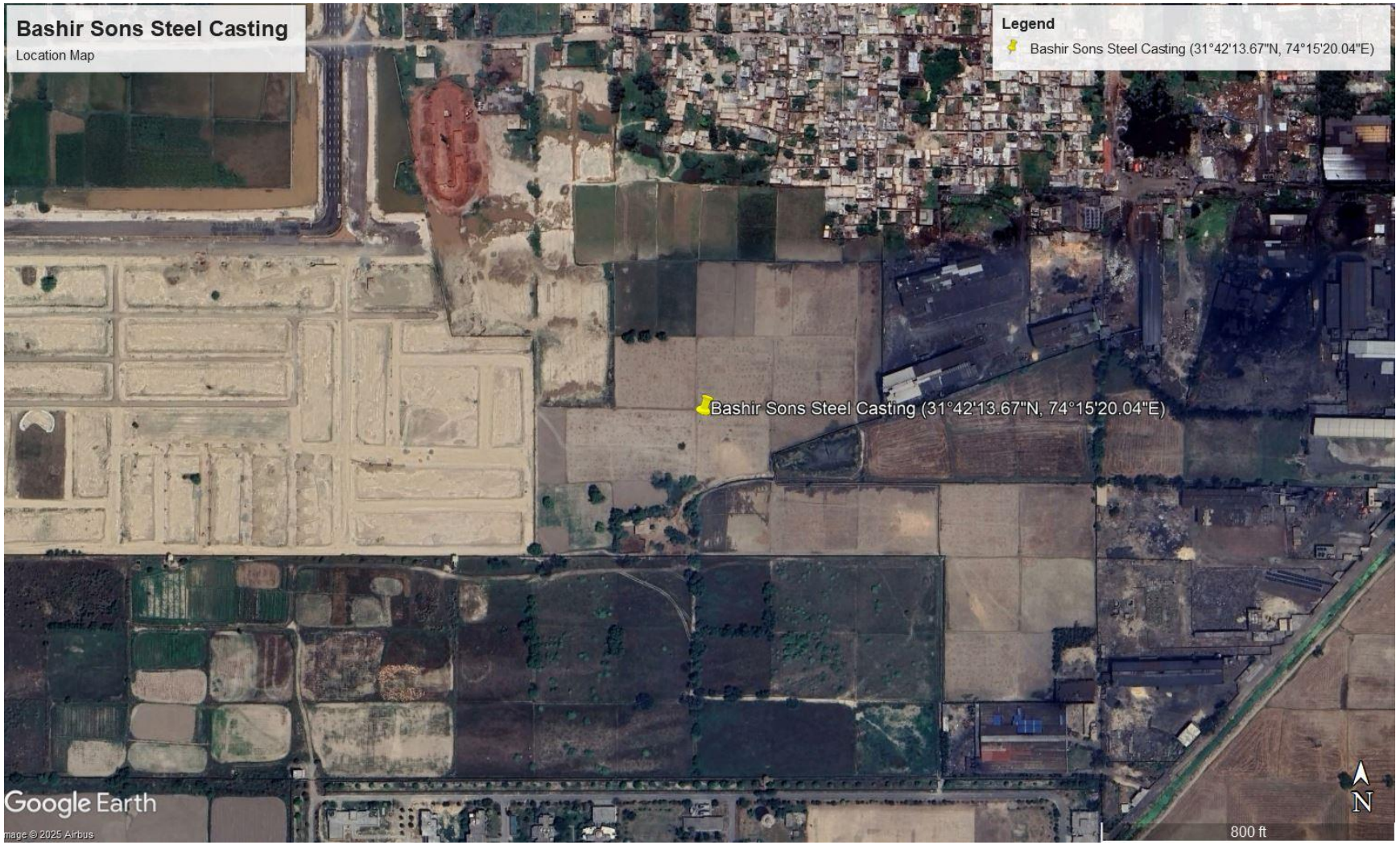


Figure 1 Location Map of the unit

1.6 Structure of Report

This EIA reviews information on existing environmental attributes of the Study Area. Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included. The report predicts the probable impacts on the environment due to the said project. This EIA also proposes various environmental management measures. Details of all background environmental quality, environmental impact/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided in this report. The structure of the assessment report will be as follow;

- Description of the Project
- Description of Environmental and Social Conditions
- Assessment of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Public Consultation
- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

CHAPTER 2

SCREENING & SCOPING

2 SCREENING AND SCOPING

2.1 General

The EIA process makes sure that environmental issues are raised when a project or plan is first discussed and that all concerns are addressed as a project gains momentum through to implementation. Recommendations made by the EIA may necessitate the redesign of some project components, require further studies, suggest changes which alter the economic viability of the project or cause a delay in project implementation. To be of most benefit it is essential that an environmental assessment is carried out to determine significant impacts early in the project cycle so that recommendations can be built into the design and cost-benefit analysis without causing major delays or increased design costs. To be effective once implementation has commenced, the EIA should lead to a mechanism whereby adequate monitoring is undertaken to realize environmental management. An important output from the EIA process should be the delineation of enabling mechanisms for such effective management.

Screening often results in a categorization of the project and from this a decision is made on whether or not a full EIA is to be carried out.

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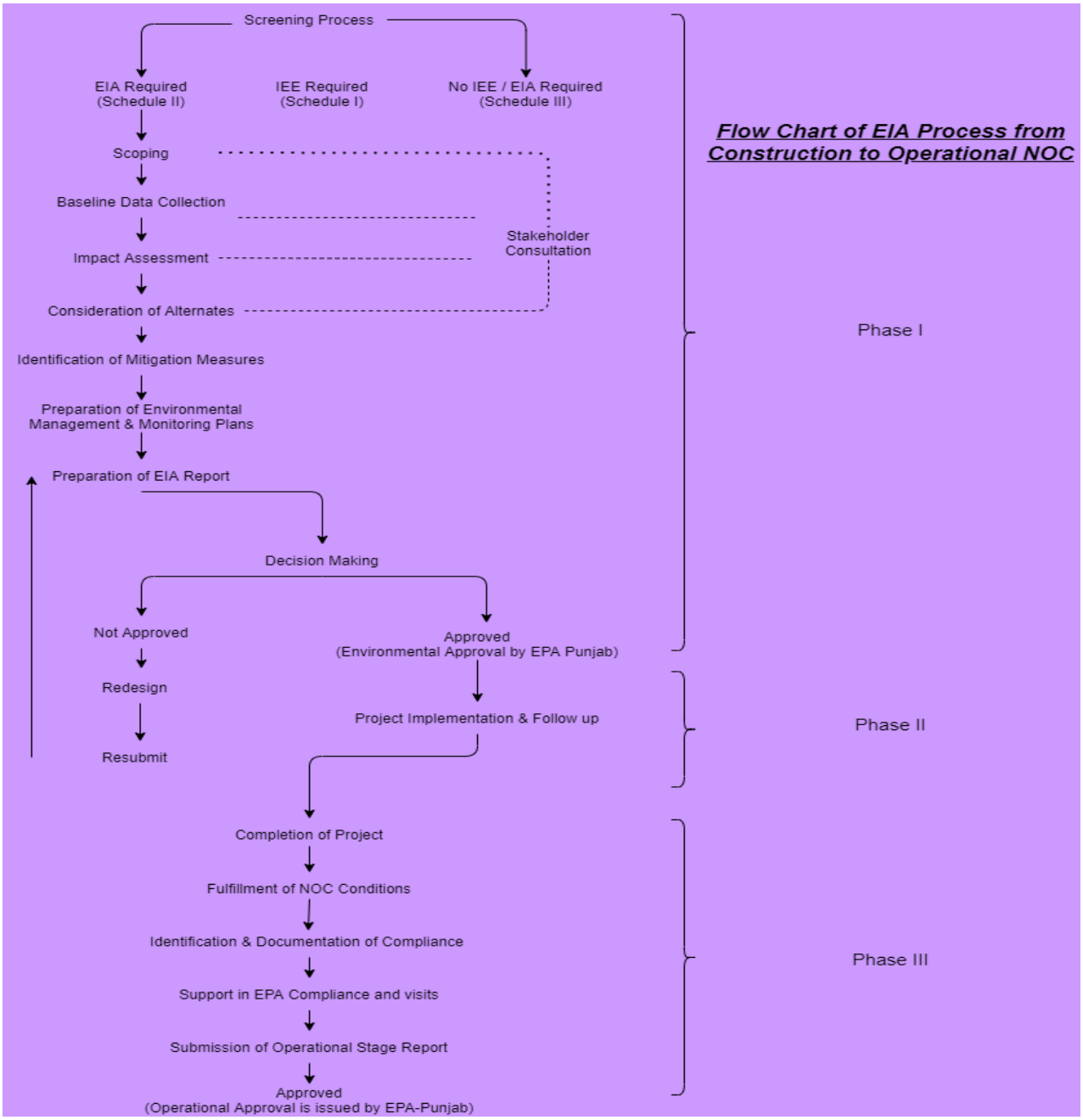


In case of screening the category of the project is selected *Section 12* of Punjab Environmental Protection Act, 1997 (amended 2012) states ***"No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof."***

Punjab Environmental Protection Act provided the guidelines for categorizing the projects. According to Schedule-II of EIA and EIA Regulations, 2022; Mining & Mineral Processing falls under **B (17)** i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for approval.

Scoping is the process of determining which are the most critical issues to study and will involve community participation to some degree. It is at this early stage that EIA can most strongly influence the outline proposal.

2.2 Temporal and Spatial Boundaries

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project. These boundaries encompass time periods and areas during and within which the localities are likely to interact with or be influenced by the project. Spatial boundaries vary according to the nature of the project but generally are defined in terms of:

"A local study area (LSA), where project effects can be predicted with a reasonable degree of accuracy and confidence and impacts are likely to be most concentrated"

"A regional study area (RSA) where, depending on conditions (e.g., seasonal conditions, habitat use, more intermittent and dispersed project activities), project effects may be more wide reaching"

The definition of the RSA may take into consideration factors such as:

- Habitat for sensitive life stages;
- Wildlife migration routes and ranges;
- Areas of potential effects from dispersed or intermittent project activities, such as, air transport, and road haul; and
- Areas within which there is potential for cumulative effects with other projects
- **Temporal boundaries for project-related effects are defined in terms of the project phases:**
- **baseline** – covers ecological, physical and human-related characteristics of the environment, prior to the initiation of the construction phase;
- **construction** – includes all activities associated with project construction and before commencement of ore processing (mill start-up) such as:

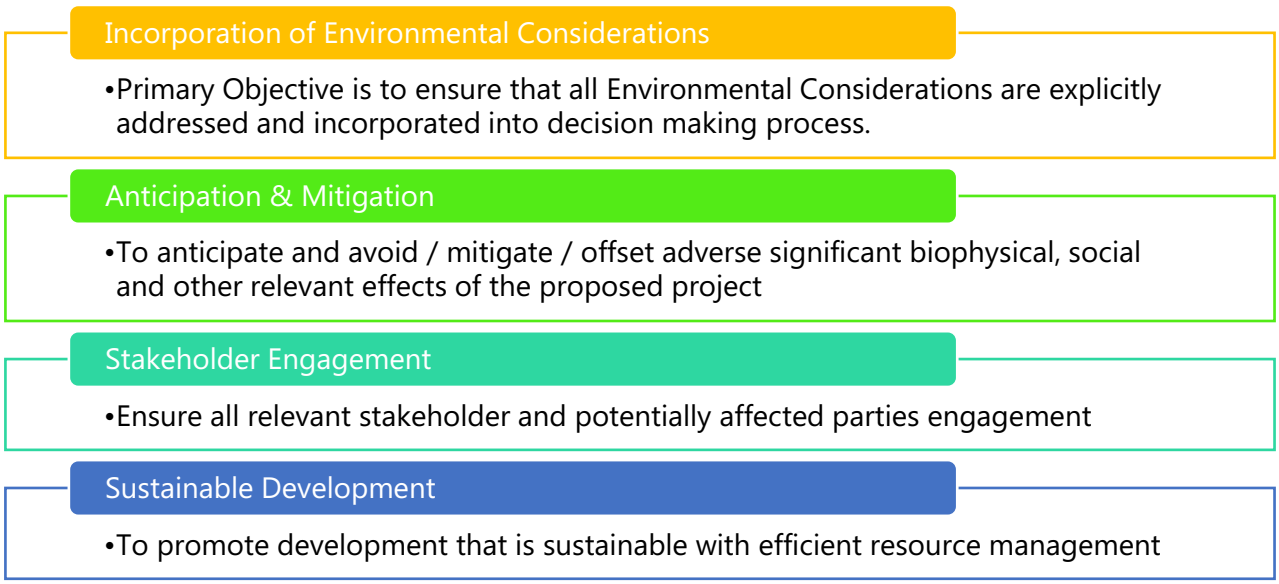
- **transportation** corridors construction;
- **mobilization** of equipment and supplies to the site by road and air;
- **construction of site facilities**, including camp, infrastructure, ore stockpile, mill, waste rock storage dump, water management facilities (diversions, settling ponds, seepage collectors etc.) and mining activities up to the commencement of ore processing;
- **camp operations** and personnel transport during construction;
- **operations** – includes ongoing processing of mortise door locks manufacturing unit, disposal, water treatment plant operations and effluent disposal, operation of water management facilities, operations, transport of final product, transport of supplies and personnel;

Temporal boundaries are also defined for the cumulative effects assessment, spanning baseline to a point in the future, within which project effects on project are predicted to overlap with effects of other projects or activities.

2.3 Important Issues and Concerns Raised during Consultation:

During consultation, various issues were raised including employment, tree plantation, wastewater, Approvals from other departments All issues were resolved and preventive measures were presented. these concerns are discussed further in this EIA report

2.4 Objectives of EIA



2.5 Significant Impacts and Factors to be Determined

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

In the first step, potential impacts of the project are identified by desktop screening exercise, using checklists during field visits for collection of baseline data, professional judgment, published literature on environmental impacts of similar projects and standard environmental guidelines. Potential impacts are also identified through discussion with project proponent, consultation with stakeholder and community to identify their concerns. Physical, Ecological and Biological impacts and their factors are being studied.,

- **Physical**
- **Land Resources**
  - Soil Erosion and Contamination
  - Transportation
  - Solid Waste and By-Products
  - Land Use
  - **Air Resources**
  - Noise Pollution
  - Air Emission
  - Dust
  - Odor
  - **Water Resources**
  - Ground Water
  - Surface Water
  - Wastewater
  - **Ecological**
  - **Flora**
  - Tree Cutting
- **Fauna**
  - Terrestrial Fauna
- **Socio-Economic**

- Employment Opportunities
- Land Value Appreciation

- **Hazards**

- Biological Hazards
- Physical Hazards
- Chemical Hazards
- Health and Safety

The main aspects associated with potential impacts are as follows:

- Water resources
- Ambient Air Quality
- Waste discharges
- Noise pollution
- Ecology of the area, including flora and fauna
- Vehicle movement
- Socio-economic conditions
- Archaeology

2.6 Alternatives

The details of the site alternatives and project alternatives are discussed below:

2.6.1 Site Alternatives

No other site alternative was available to be considered as feasible option for the installation of the plant as the land is owned by the proponent. The proposed site was selected because of the following reasons;

1. The selected site is located in the industrial area.
2. The site is well connected to the other parts of the country through national highway.
3. No human settlements displacement or relocation associated with the project development and operation
4. Operation of the aforesaid unit in the respective zone will provide job opportunities to local people and will improve their socio-economic status of the study area as 50 employees will be hired during the operational phase

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within close proximity of the selected site i.e., within 100 m which is considered to be a safe distance. In view of these facts, it can be concluded that the selected site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

2.6.2 Project Alternatives

The alternative of the proposed project is the import of billet and rollers from China and other countries. Steel industry is considered as the backbone of the country. A large portion of the revenue is generated from the steel mills and furnaces. So, the installation of the steel mills and allied industry will help in boosting the industry.

Presently Pakistan produces around six million metric tons of steel per year. This includes: raw products (iron ore and scrap); flat products (sheets and plates, used in the automotive sector); and long products (steel bars, wire rods, rails and structures used in infrastructure development, tubes and pipes). However, per capita steel consumption in Pakistan is very low at 23.5 kilograms, against 58.6 kilograms in India, as well as the Asian average of 261.3 kilograms and the global average of 216.9 kilograms. It plays a key role in development of physical infra-structure for boosting economic activities in downstream industries like construction as well as employing well over 150,000 people.

In Pakistan, the pace of industrialization, infrastructure development and urbanization has resulted in higher demand of steel. Growth in the GDP of the country contributes enormously to demand for steel and its related products. Steel products production is an important barometer of national economic activity, higher PSDP (Public Sector Development Program) spending has led to resurgence in domestic steel products demand. On-going public sector projects include new large and small dams, irrigation canals, power plants, highways, rapid transit systems, flyovers, airports, seaports, etc. In addition to public sector infrastructure projects, there is a lot of privately funded real estate development activity visible in all major cities of the country. 50% demand comes from the private housing and real estate activity, while 40% comes from government infrastructure projects.

Also, the per capita consumption in Pakistan has increased many folds in the last decade.

In addition, China is assisting Pakistan in the establishment of China – Pakistan Economic Corridor (CPEC) which will include development of energy sector, roads, railway and Special Economic Zones. Infrastructure projects worth $9.8b are planned to be undertaken under China Pakistan Economic Corridor in which huge amount of the steel and its products will be consumed.

CHAPTER 3
PROJECT DESCRIPTION

3 PROJECT DESCRIPTION

This section of the study concentrates on details of the project and its salient features; such as its location, site layout, objectives, selection of alternative sites and technology, cost and magnitude of operation at various phases and process employed for the steel mill.

3.1 Objectives of Project

The overall aim of the project is to enhance the production of local steel for the consumption at the local level for the development purposes.

3.2 Location and Layout of Project

The location for the installation of proposed project is 15 – Km GT Road, Kala Shah Kaku, Shamkay District Sheikhupura.

3.3 Road Access

The project site is linked to National Highway which is well connected with other parts of the country. However, network of minor roads is also present around project site. The site has an easy access as it is located near main road.

3.4 Vegetative Features of Site

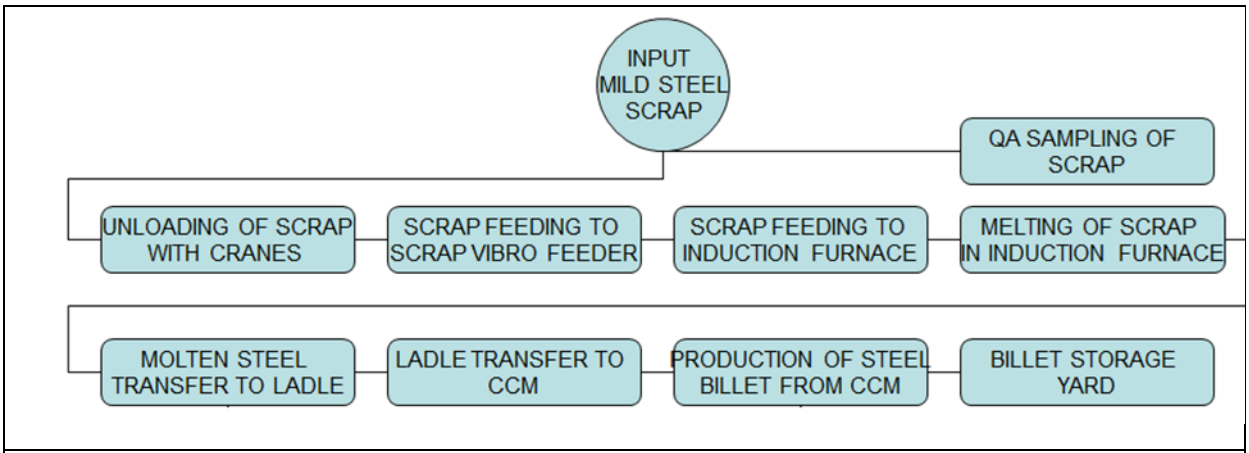
The proposed project site has vegetative cover of common grass and scattered shrubs. The pictoral representation of the vegetative features at the project siteis shown in the Figure 3.

Figure 2: Project Location

Figure 3: Vegetation Features of the Site

3.5 Project Description

The project includes the installation of Induction Melting Furnace and Continuous Casting Machine. The main products will be billets. The detail of each component is given below:



CCM= Continuous Casting Machine, QA= Quality Assurance

Figure 4: Process Flow Diagram of Steel Manufacturing Process

When the billets will be formed T-iron and steel bars will be manufactured.

2.7.1 Raw Material

For the proposed project, steel scrap and other allied items will be used as basic raw-material. Scrap will be purchased from the local market. Steel Scarp after purchase will be stored in the scrap yard.

Physical sorting of the scrap will be carried out and quality assurance report of the scrap will be generated. The area of the scrap yard will be 150' x 50' feet. The storage of the scarp will be for 28 days.

Figure 5: Steel Scrap-Raw Material

With the help of the crane scrap will be loaded into the Scrap charging Vibro Feeder from where it will be transferred into the induction furnace.

2.7.2 Induction Furnace

The induction melting furnace is a type of melting furnace that uses electric supply to melt metal. Induction furnaces are ideal for melting and alloying a wide variety of metals with minimum melt losses, however, little refining of the metal is possible.

From Scrap Vibro Feeder, the scrap will be transferred into the Induction Furnace. The scrap will be heated and converted into the molten steel. The fuel used for the melting of the steel will be electricity. When molten steel will be filled in the crucible the temperature of steel will be raised to around 1600°C which is the tapping temperature.

2.7.3 Transfer Ladle

Molten steel from induction furnace is poured into the Transfer Ladle at around 1600°C, after pouring temperature is a bit reduced. Transfer Ladle filled with molten steel is lifted with overhead crane and transferred to Continuous casting Machine (CCM).

2.7.4 Continuous Casting Machine

The CCM is the machine which converts the molten steel into square shaped billet. CCM will consist of 3 strands, each strand of the CCM can produce billet at a production rate of 12-14Mt/hr. The temperature in the CCM mold is kept at 1535°C to 1555°C. The copper mold tubes are cooled with water circulation in the mold. The billets are produced according to the required sizes and lengths. In the case of the billet as the final product, billet is kept in the air for cooling at billet cooling bed.

Raw Material Charging

Billets or ingots will be selected and charged into the reheating furnace after inspection to ensure the required quality for re-rolling operations.

Reheating Furnace Operation

The billets will be heated uniformly to a temperature of about 1100–1250°C to make them malleable for rolling. Temperature and combustion conditions will be controlled to avoid decarburization and scaling.

Primary Descaling

After reheating, the billets will pass through a high-pressure water jet descaling system which will remove oxide scales from the surface.

Roughing Mill

The hot billets will pass through the roughing stands where their cross-section will be reduced through successive passes and they will be shaped closer to the required 10-inch or 11-inch round form.

Intermediate Mill

The semi-finished sections will move through the intermediate mill stands where further rolling will take place to refine the shape, control ovality, and ensure dimensional accuracy.

Finishing Mill

The steel will be rolled through the finishing stands designed for large-diameter products to achieve the final size of 10-inch or 11-inch with precise tolerances.

Cooling Bed

The finished rolled sections will be transferred to the cooling bed where they will be cooled uniformly in ambient air.

Cutting and Shearing

After cooling, the rolled sections will be cut into the required commercial lengths using hot or cold shears.

Inspection and Straightening

The rolled products will undergo visual and dimensional inspection, and any bends will be corrected with straightening machines. Surface defects, if minor, will be removed by grinding.

Finishing and Dispatch

The finished sections will be bundled, weighed, tagged, and prepared for dispatch to customers or for further processing.

3.6 Equipment and Machinery

Following equipment/machinery will be used as and when required:

Table 1: Equipment and Machinery Details

Sr#	Equipment/Machines
1	Over Head Cranes
2	Scrap Vibro Feeders
3	Induction Melting Furnaces
4	Continuous Casting Machine
6	Hydraulic Grapples
7	Spectrophotometer
8	Air emission control system
9	High Pressure water descaling system
10	Re-rolling Mill systme

3.7 Amenities

The following social amenities are present at site and the management of the waste (construction waste, solid waste and effluents) is explained in sub-sections below:

Electricity Consumption

Electricity will be consumed as fuel for steel scrap melting processing and re rolling system.

Ground Water Resource

During construction and operational phase ground water will be consumed. The water will be pumped from ground from the depth about 250ft. RO plant will be installed for the municipal consumption.

3.8 Management Plans

Following management plans will be employed to reduce the impact of the proposed activity:

Air Emissions

Air emissions will be generated while burning the scrap to convert it into billets. The generated emissions will have high concentration of the particulate matter (PM).To deal with the pollution generated from the process activity dust collection system will be installed. Dry scrubber will be installed for air pollution control. The generated smoke will be sucked into fixed hood and with the help of duct the air will pass through ID fan and it will be passed to the bag filters. The collected dust is a saleable commodity which will be collected and sold locally.

The workers dealing with the process activities will be provided with face masks, safety shoes, rubber boots, insulating gloves and suits and all other necessary PPEs. To reduce the public nuisance indigenous trees will be planted around the boundary to reduce air pollution.

Wastewater Management and Disposal

In the proposed project the wastewater will be generated from municipal activities. Around 50 workers will be hired. The amount of the wastewater generated will be about 150 ltrs/hr. This wastewater will be treated in septic tank and after treatment it will be consumed for on-site horticultural activities at the project site. Water balance at site will be:

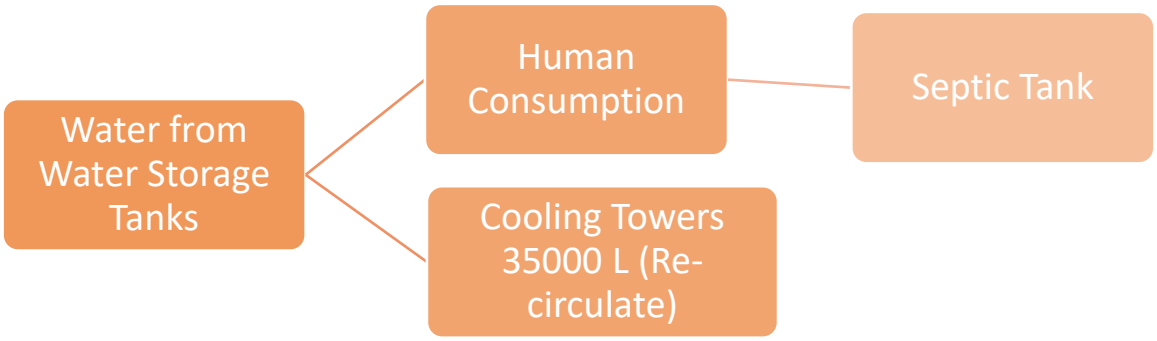


Figure 6: Wastewater Generation Rate and Disposal Mechanism

3.8.1 Waste Management

Domestic solid waste will be generated from the proposed project. The amount of the solid waste generated will be quite low. Solid waste collection receptacles will be placed as designated places. Solid waste will be collected on daily basis and be disposed off as per area's management practices.

No hazardous waste will be generated in the process activity except the dust collected through dry scrubbers. The collected dust will be sold locally. Regular training will be given to the workers dealing with the solid waste management it will include identification, segregation and management of waste.

3.9 Staff/Manpower

Around 50 workers will be required during process related activity which will include:

Table 2: Details of the Workers

Sr#	Designation	No.
1	Production Manager	1
2	Deputy Manager	1
3	Asst. Manager/Supervisor	1
4	HSE Manager/Supervisor	1
5	Electrical Manager/Supervisor	1
6	Mech./Metallurgical Supervisor	1
7	Labors	45
Total		**51**

3.10 Emergency Preparedness

Emergency response preparedness committee will be formulated consisted of heads of all departments and nominated members. Project Manager will be the head of the team who will chair the Committee. In the case of emergency, he will immediately inform the concerned authorities.

HSE Manager will be responsible for on-site HSE management. First aid facilities will be available at facility which will include; blankets, hot water bottles, sterilized dressing, snake bite kit, cotton and iodine.

3.11 Safety Trainings

Skilled, semi-skilled and un-skilled staff will be provided with proper training about the work and safety practices that need to adopt during the process activities.

3.12 Use of Drugs and Narcotics

Drugs and narcotics are strictly prohibited during working hours in working area. Smoking will be only allowed during rest timings at properly isolated places.

3.13 Personal Protective Equipment

Following Personal Protective Equipment (PPEs) will be provided to the workers:

- Safety Helmet
- Safety Shoes/Dry Shoes
- Dust Mask
- Safety Gloves
- Safety Jackets
- Ear Muffs

- Insulating Gloves and Suits

3.14 Relocation and Rehabilitation Plan

No structure of any significance stands at the site is proposed to be relocated or dismantled. The project area is owned by the proponent. So, no relocation and rehabilitation is required.

3.15 Schedule of Implementation

The schedule of implementation for the commencement of the civil work involved for the installation of scrap melting unit is approximately 1 year and the detail timeline of the construction period is given in Table 3:

Table 3: Timeline for Project Development

Sr. #	Activities	3 Months			3 Months			3 Months			3 Months		
		4W	4W	4W	4W	4W	4W	4W	4W	4W	4W	4W	4W
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Development Period												
4	Peak installation Period												
5	Plantation at Site												
6	Commissioning												*
W=Weeks													

3.16 Land Ownership

Landownership documents have been attached as Annexure-II of this EIA Report, which clearly showed that the selected area for the installation of proposed project has been owned by the proponent.

3.17 Government Approvals

Now, the proponent has applied for environmental approval from EPA Punjab.

CHAPTER 4
DESCRIPTION OF ENVIRONMENT

4 4. DESCRIPTION OF THE ENVIRONMENT

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area. The information has been compiled by using primary and secondary data resources. This chapter also refers to the theoretical analysis of the methodology adopted for collection of baseline data. The underlying principles and practices adopted in this regard are also discussed.

4.1 Methodology

The methodology employed to collect the baseline data and information regarding the social structure and various related parameters as discussed in sub-sections below:

4.2 Data Collection

The primary data was collected by visiting the project area and its communities in its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting relevant various government departments and their official websites. The biological parameters such as flora and fauna were studied by preparing a floristic list based on visual observation and fauna was studied by using opportunities approach. The species were recorded with reference to their existence in the project area. Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government and Non-Government Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

4.3 Social Survey

The purpose of social survey was to record the present condition of the people living in the project area and to assess the expected project impacts on their life, subsistence systems and socio-cultural conditions. Prior to conducting the field surveys, the following steps were taken:

- Clear boundaries of the project area were identified
- Decided the sampling procedure in order to draw a representative sample size of the target population and households
- Developed the tools for data collection i.e. questionnaires to access the socio-economic status of the area

4.4 Sampling Design

Social baseline data of the persons residing in the study area has been estimated and collected through random sampling by using pre-developed questionnaires.

4.5 Questionnaires

In order to test the validity and reliability of the proposed questionnaires, they were reviewed to assess whether questions needed to be clarified, changed or re-sequenced and then a final editing of questionnaires was conducted prior to their application in the project area. The socio-economic questionnaires used for social survey are attached as Annexure-VI of this EIA Report.

4.6 Data Editing and Analysis

The filled questionnaires and recorded information were compiled by the same field investigators who were involved in the data collection. This was done immediately after completing the field investigations. Data sets were processed. Analysis of the data and preparation of conclusions in the minimum possible time was done using statistical techniques of data analysis.

4.7 Review of Legal and Administrative Framework

The objective of reviewing legal and administrative framework is to obtain information on all legislation pertaining project development. The Socio-Environment Team of Zoom Consultancy & Services. reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the development of project which helped in systematic identification of impacts.

4.8 Baseline Conditions

Baseline conditions refer to the existing physical, environmental and socio-economic status of the project area. On the basis of baseline information, the project interventions are assessed and mitigation measures are proposed. The baseline information also helps to indicate the specific issues to be monitored during construction and operational phases. The baseline data (physical, biological and socio-economic parameters) related to the project area is described below. Information provided is based on primary and secondary data collected by site visits, desk studies and consultation with locals respectively. This section gives the overview of the topology, geology, seismology and meteorological conditions of whole city whereas, it gives detailed information about the surface water, ground water and air quality of the project area. The detail of each parameter is discussed in sub-sections below:

4.9 Physical Resources

The physical environment consists of existing land form and land use at the project site including geology, pedology, hydrology, meteorology and climatology. The pre-project condition (i.e. baseline) of these components of the physical environment is described in detail. To identify the potential impacts on the physical, biological and socio-economic environment that is likely to arise from the project activities.

Geography and Geology

The Sheikhupura lies 31°42'51.16"N latitude and 73°59'3.49"E longitude. The city is well connected with its surrounding big urban centers like Lahore (35 km) Faisalabad (94 km), Sargodha (143 km) and Gujranwala (54 km). Sheikhupura is also a railway junction. District Sheikhupurais spread over an area of 3,241km^2 and comprises 5 Tehsil such as; Sheikhupura, Ferozewala, Sharaqpur Sharif, Muridke and Safdarabad.

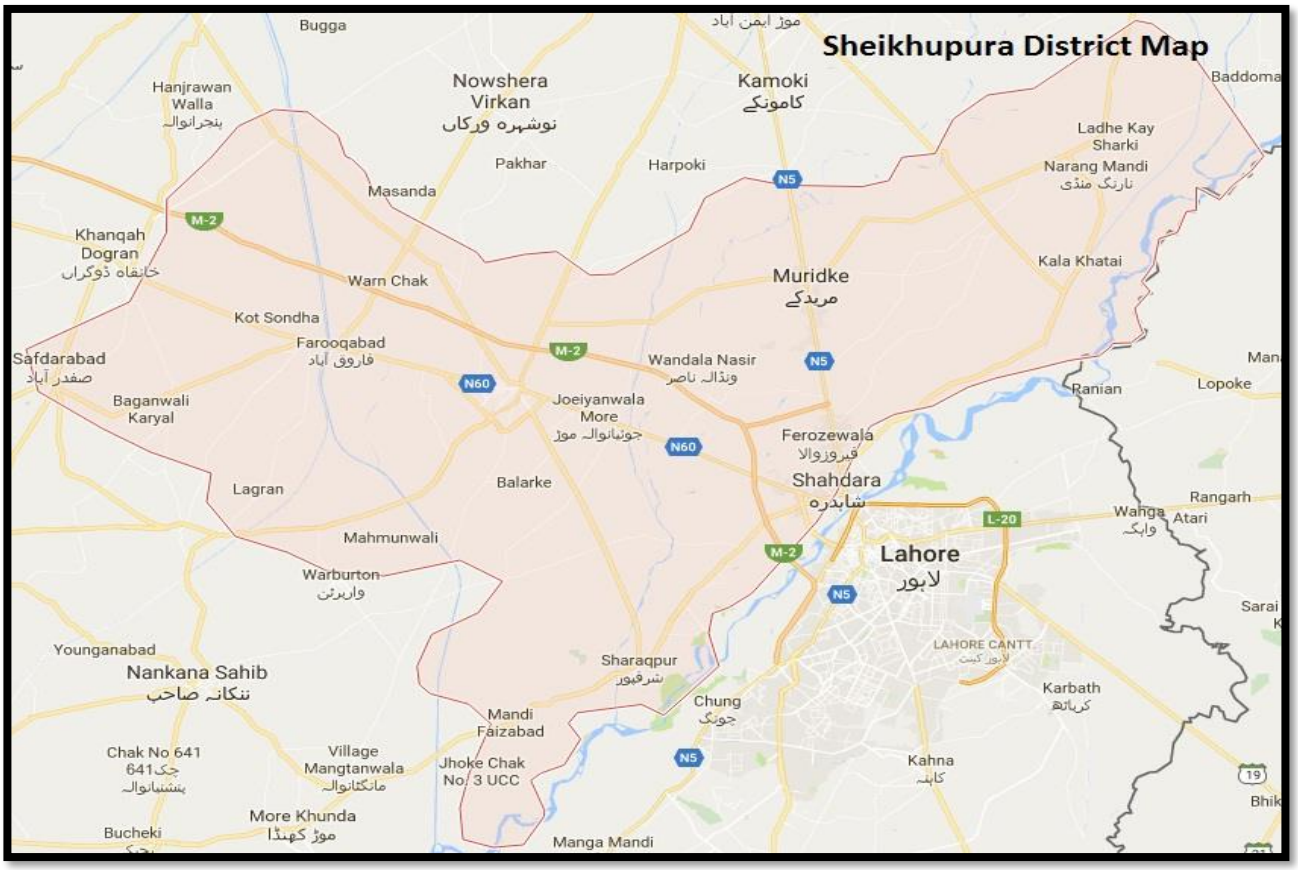


Figure 7: Location of the City

The area is a part of Rachna Doab, and consists of some recent sediment brought by spill channel from River Chenab. There are some old channel levee remnants and old basins filled up with clay materials. It is probably of late Pleistocene Age derived from mixed calcareous, sedimentary and metamorphic rocks of the lower Himalayas.

Topography

Topography of Sheikhupura City is flat. The area is a part of Rachna Doab and consists of sub-recent sediments brought by spill channel from the River Chanab. There are some old channel levees remnants and old basins filled up with clay materials. The material is probably of Late Pleistocene Age derived from mixed calcareous sedimentary and metamorphic rocks of Lower Himalayas. The area of the Sheikhupura District is comprised of the fluvial deposits of River Ravi. The topography of the project area is flat and surrounded byfertile agricultural land.

Climate

The District Sheikhupura has extreme climate conditions and summer season starts from April and continues till October. During the summer season, temperature ranges from 30°C to 48ºC. The winter season starts from November and continues till March. December and January are the coldest months with a mean minimum temperature of about 3-5ºC. The dust storms occur occasionally during the hot season, June, July and August.

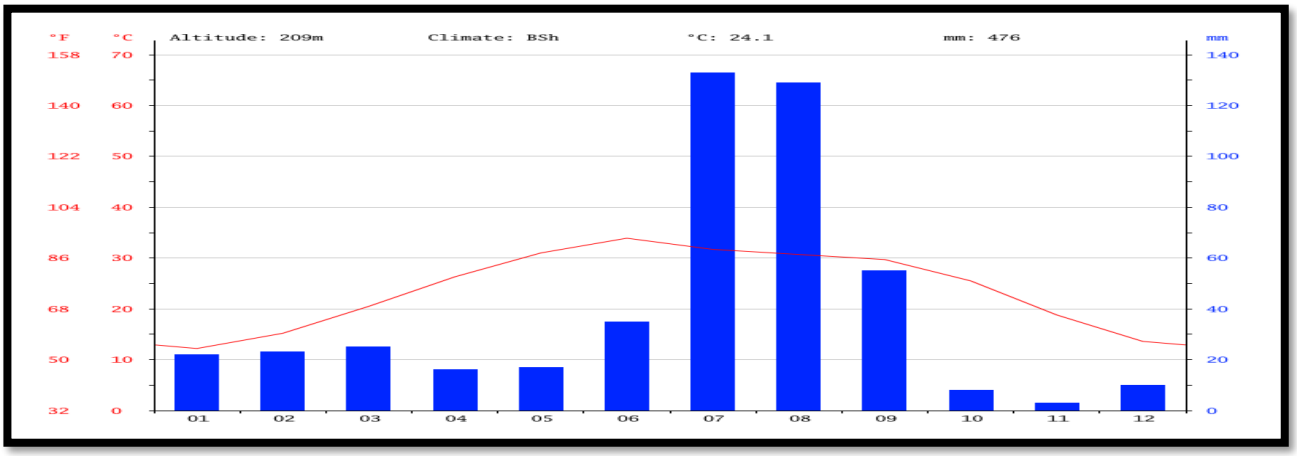


Figure 8 Annual Mean Temperature

Rainy weather alternates with oppressive weather. The rainfall is 500 mm per annum. In the recent year, the maximum average precipitation occurred in September and it was around 50-100mm.

The average daily wind speed was highest in July which was 38 km/h. In recent years, the maximum sustained wind speed has reached 38 km/h.[2]The diagram shows how many days within one month can be expected to reach certain wind speeds. Monsoons create steady strong winds on the Tibetan Plateau from December to April, but calm winds from June to October.

The wind speed directly affects the dispersion and transport of plume. So, the greater is the wind speed, the greater will be the dispersion and the distance at which plume strikes the ground and the lesser will be the pollution concentration.

[2]http://www.myweather2.com/City-Town/Pakistan/Shekhupura.aspx

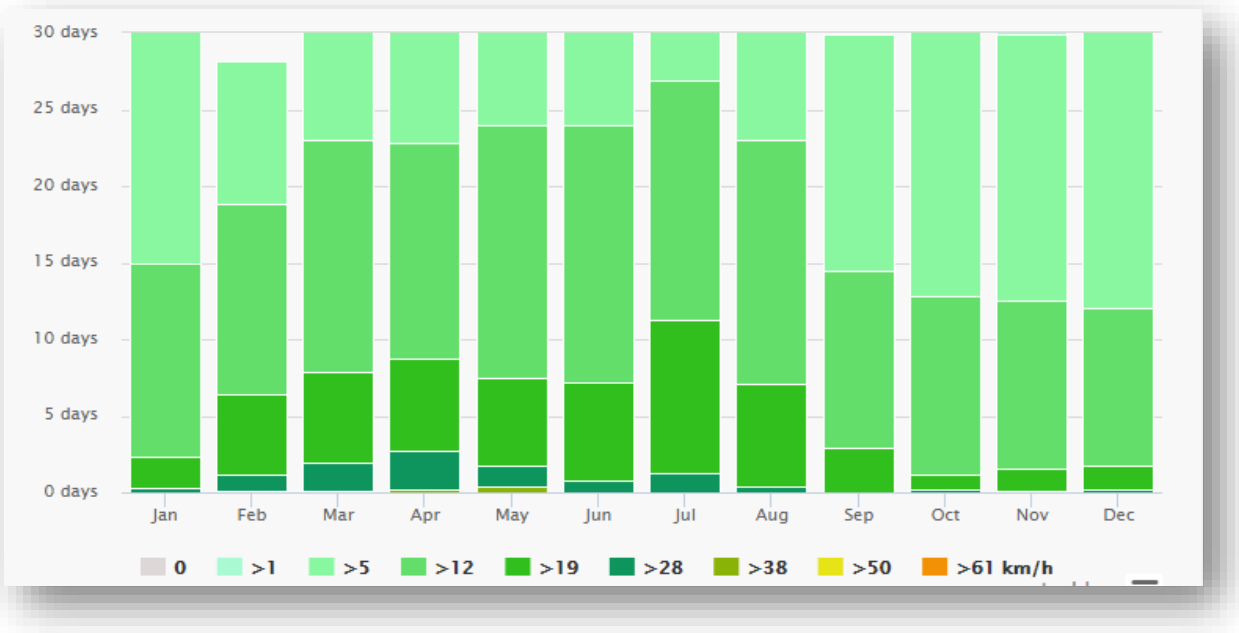


Figure 9: Average Wind Speed

Seismicity

According to Seismic Zoning of Pakistan, the project area lies in Zone 2A and represents minor to moderate damage due to earthquakes.

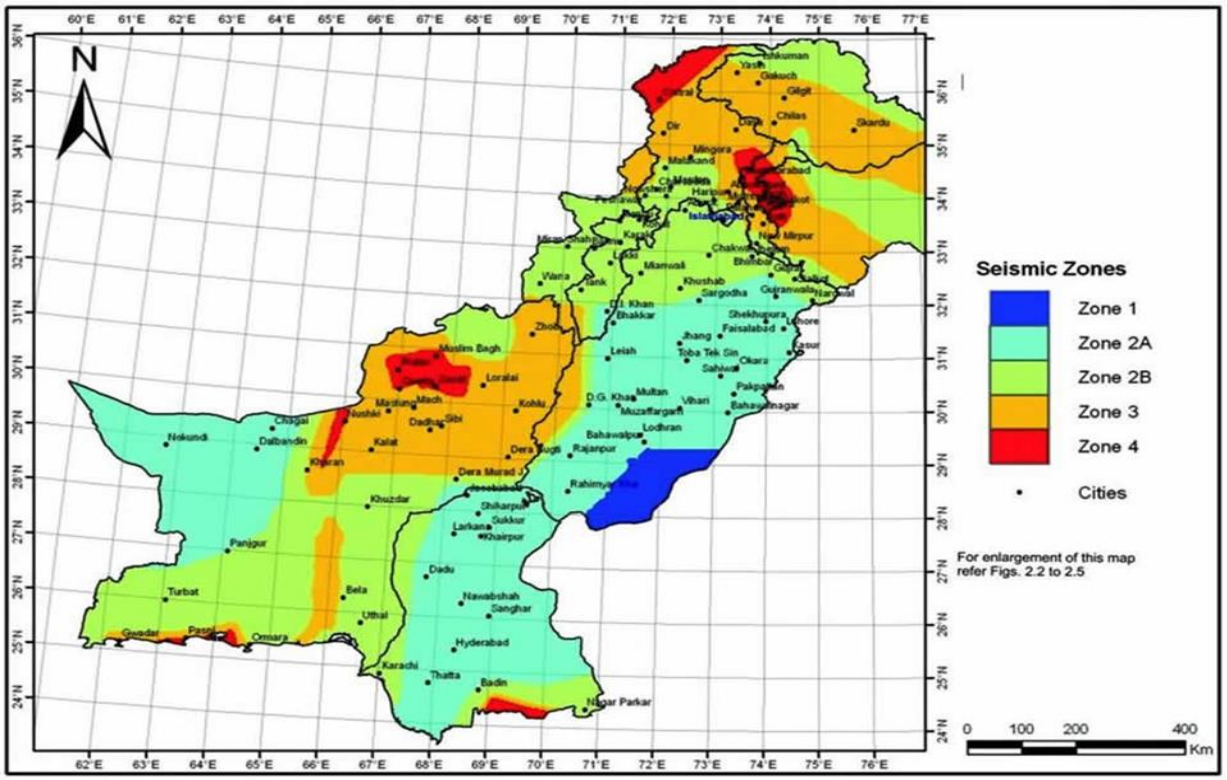


Figure 10: Seismic Zoning of Pakistan

4.10 Ecological Resources

District Sheikhupura is not rich with biological and ecological resources. However, the flora and fauna of the District includes; shrubs, herbs, mammals, birds, reptiles, amphibians and insects are found. They are discussed in detail below:

Aquatic Flora and Fauna

There is canal present in the study area which is being used for the irrigation purpose is Upper Chanab Canal. No aquatic life is reported in Upper Chanab Canal that can be at the verge of demage and disturbance. Moreover, no aquatic ecosystem (i.e., steam, river or pond) observed within or around the study area, which omits the possibility of any kind of aquatic species that may be harmed due to the establishment of steel manufacturing unit.

Flora

The project is located in sparsely populated rural area which has a variety of the trees. For the construction of this project few trees of different species will be removed. The dominant tree species on project area include; Eucalyptus, Neem, and Kikar. The nomenclature including common, English, local and botanical names of the flora found in the study area are presented in Table 4:

Table 4: Inventory of the Trees Present in Sheikhupura District

S#	Common Name	Scientific Name
1	Neem	*Azadirachtaindica*
2	Kikar	*Vachellianilotica*
3	Safeda	*Eucalyptus globulus*

Fauna

For study of fauna in the project area, field guides and books were consulted. On the other hand field observations were conducted along with the interviews of local community members about the fauna of the area.

The equipment used in field included cameras, binoculars and GPS device (wherever required). It is important to note that there is a number of factors which can change the findings of such survey. It may be pointed out that the pattern of seasonal migration of small birds varies depending upon each specie. no fresh water aquatic body is located near proposed project site. During the construction activity in project area, no important biological feature will be damaged or disturbed.

The fauna commonly found in District Sheikhupura includes; Hares, Falcon, Eagle, Quail, Starling, Jungle Pigeon, Russian Sparrow, Doves, King Fisher, Parrot, Crow and Local Sparrow.

Commonly found mammals in the area include; dogs, cats, horses, house-rats, squirrels, porcupines and bats. However, Small Indian Mongoose and Indian Palm Squirrel are also found in the District Sheikhupura.

Table 5: Mammals in the Study Area

S#	Common Name	Scientific Name
1	Rat	*Rattus*
2	Bat	*Chiroptera*
3	Small Indian Mongoose	*Herpestesjavanicus*
4	Indian Palm Squirrel	*Funambuluspalmarum*
5	Porcupines	*Erethizondorsatum*
6	Squirrels	*Sciuridae*

The commonly found birds species include; House Sparrow, Crow and some of them are mentioned below with scientific names:

Table 6: Birds in the Study Area

S#	Common Name	Scientific Name
1	House Sparrow	*Passer domesticus*
2	House Crow	*Corvus splenders*
3	Pigeon	*Columbidae*
4	Bulbul	*Pycnonotidae*
5	Teetar	*Francolinusfrancolinus*
6	Parrot	*Psittaci forms*
7	Titodi	*Vanellusindicus*

In District Sheikhupura reptiles such as Snakes (Cobra and Kraits), Spiny Tailed Lizard and Fringed Toed Lizard are common in the tract, but cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away.

Table 7: Reptiles in the Study Area

S#	Common Name	Scientific Name
1	Snake	*Serpentes*
2	Spiny Tailed Lizard	*Uromastix hardwickii*
3	Fingered Toed Lizard	*Acanthodactyluscantoris*
4	Earthworm	*Lumbricina*

The amphibians commonly seen around the project area, especially during the rainy season includes;

Table 8: Amphibians in the Study Area

S#	Common Name	Scientific Name
1	Common Frog	*Ranatemporaria*
2	Indus Valley Toad	*Bufostomaticus*

A large number of insects are present due to open fields in the project site. Few of these insects are known to cause diseases in local population. Following is a list of commonly observed insects at the site:

Table 9: Insects in Study Area

S#	Common Name	Scientific Name
1	Black Ants	*Paratracheaiognicornis*
2	Dragon Fly	*Dragon Fly*
3	House Flies	*Muscadomestica*
4	Butter Flies	*Parnassiusbalucha*
5	Honey Bees	*Apismellifera*
6	Wasps	*Anagyruspseudococci*
7	Grasshopper	*Melanoplusdifferentialis*
8	Mosquito	*Anophlese sp.*

No endangered species are found at the site. The area has not been identified as ecologically sensitive area by wildlife department.

4.11 Environmental Monitoring Through Laboratory

Laboratory analysis for environmental monitoring establishment steel processing unit is done in order to check the baseline conditions and pollution load. In this connection M/s Global Environmental Laboratory (GEL) who is EPA certified laboratory, was engaged to carry out environmental monitoring of wind speed, air quality, drinking water quality, noise level and particulate matter concentration in the project area.

Zoom Consultancy & Services has facilitated EPA certified labd to collect the ambient air samples from project site.

Detail laboratory report of ambient air quality, ambient noise and surface water analysis results is annexed at Annexure-VIII of this EIA Report and the detail information related to the testing is given below:

Sampling Sites

Following localities were identified to collect samples of water, noise and air for testing according to the testing guidelines of Punjab-EPA. It also defines number of samples as well as the number of sites from where samples were collected.

Table 10: Sampling Sites Details

Sr#	Particulars	Details
1	Number of Samples	Three (03)
2	Kind of Monitoring	Ambient Noise, Ambient Air and Ground Water
3	Sampling Sites	One (01)

Ambient Air Quality

The primary source of air pollution at the project sites is the vehicular emissions, industries and the key pollutants likely to be found at project proposed locations are Carbon Monoxide (CO), Oxides of Nitrogen (NOx), Sulphur Dioxide (SO_x), and Particulate Matter (PM). In order to determine the air quality of the area, Laboratory had the requisite air sampling device and expertise for collection of samples. Ambient air quality of the project area was monitored within the project area and results of the monitoring are given below:

Table 11: Ambient Air Quality

Sr. No.	Sources / Units	CO	SO_2	NO_2	PM_{10}	$PM_{2.5}$	SPM	O_3
		10µg/m3	*µg/m³*	*µg/m³*	*µg/m³*	*µg/m3*	*µg/m³*	*ppm*
	PEQS	**9**	**120**	**80**	**150**	**35**	**500**	**130**
1.	Mid point of the site	0.5	5.2	45	90	22	132	6

Noise

Noise level of the project area was monitored at project site using digital sound meter and results of the same are given below:

Table 12: Noise Level Monitoring

Sr #	Source	Units	PEQS	Conc.
1	Project Site	db (A)	75	42.4

Water Resource

The main source of the water consumption is the ground water which is being pumped from 200-520 ft and its being used in the study area for domestic purposes. To check the quality of the water in the area, ground water was collected and analyzed. The ground water was collected from bore hole adjacent to the project area. The detail of the water quality of the project area is given below:

Table 13: Water Quality Results

Sr. No.	Parameters	Unit	PEQS	Concentration (GW-1)
1	pH value	...	6.5-8.5	7.38
2	Total Dissolved Solids	mg/l	1000	504

3	Taste	...	Not Objectionable	Not objectionable
4	Odor	TON	Non Objectionable	Not objectionable
5	Chloride	mg/l	250.0	39
6	Color	Ptcu	15.0	15
7	Total Hardness	mg/l	500.0	128
8	Total Alkalinity	mg/l	...	262

4.12 Socio-Economic Resources

This section provides collective information about the existing socio-economic and environmental condition of the project area within the Area of Influence (AOI). The different types of socio-economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of Environmental Management Plan (EMP). The study also helped to assess the positive or adverse impacts on local community.

This topic provides an overview of the baseline information relating to the socio-economic environment of the project area and the AOI. The socio-economic study gives information about the demographic profile, occupation, education and health facilities in the project area.

Demographic Information of Study Area

The demographic features include the information on population, family system and size, occupation, income and other social amnities available, etc. During the survey of project area, socioenvironmental team of Zoom Consultancy & Services. visited nearby residential area.

The establishment scrap melting unit will be located in the industrial zone. However, residential community is present at a safe distance from project site. The project site is 240 m away from residential community. The total population, of village is approximately 4520 having ratio of 44% males and 56% females.

Village Profile

The village profile reflects the basic socio-economic conditions of local people. These parameters indicate the needs of society while planning the the aforesaid project. The village profile has been obtained by meeting with community representatives who are well aware about their surroundings. The consultant, with his team, visited project area and study area in order to idenitfy the socio-economic and environmental aspects of project. The following information about nearest Village is obtained by surveying the community.

Table 14: Study Area

1	Language Spoken	Punjabi, Urdu
2	Distance from Project Area	240 m
3	Accessibility of Road	Kaccha Road
4	Transport	Public and Private Transport
6	Population	4520
7	Livelihood	Agricultural, Livestock and Labor
8	Houses	645
9	Educational Facilities	Primary School, Secondary School and Govt. & Private College
10	Institutional Facilities	Mosque
11	Civil Facilities Available	Electricity, Water Supply and Graveyard
12	Source of Water	Groundwater
13	Common Diseases	Fever, Hepatitis, Common Cold, TB, Typhoid, Diarrhea and Malaria
14	Historical Place	NIL
15	Grain and Livestock Markets	NIL
16	Cottage Industry	NIL
17	Types of Trees	Neem, Kikkar and Eucalyptus
18	Disaster Management	NIL
19	Major problems of the Study Area	Safe Drinking Water, Sanitation and Sewerage System, Roads Access, Educational and Medical Problems

Residential Areas

4.12.1 As the project site is located in industrial zone, however, small villages are located around project site.

4.13 Social and Public Amenities Available

The social and public amenities present in the area are given below:

a. Physical structures

The people in the study area are deprived of basic facilities like health, proper sewerage and sanitation facility, medical facilities, provision of safe drinking water, etc.

b. Religious Structure

There a mosque located at 0.9km from the project area. There is no shrine, structure or any other religious infrastructure present in the proposed project site that could be damaged and dislocated due to the proposed project establishment.

c. Protected Structures

There is no protected site, structure or any other social infrastructure present in the proposed project site.

d. Cultural Heritage and Community Structure

As stated earlier that the project area has no population and physical structure that may be damaged due to the establishment scrap melting unit. Zoom Consultancy & Services team also visited the study area but did not find any cultural heritage and community structure within the study area that could be impacted due to the proposed project.

4.14 Quality of Life Values

Socio-Economic Questionnaire and Environmental Checklist were used as survey tools by the Zoom Consultancy & Services survey team to collect desired information. Graphical representation of results of Socio-Economic Survey is given below:

Occupation of Respondents

Majority of the respondents (38%) attached with agriculture, 20% belongs to the labor class, 15% have their own business, 13% daily wagers, 7% shopkeepers and remaining 7% are private employees. During survey, efforts were made to interact with people representing all walks of life. The detailed graphic representation of occupational status is given below:

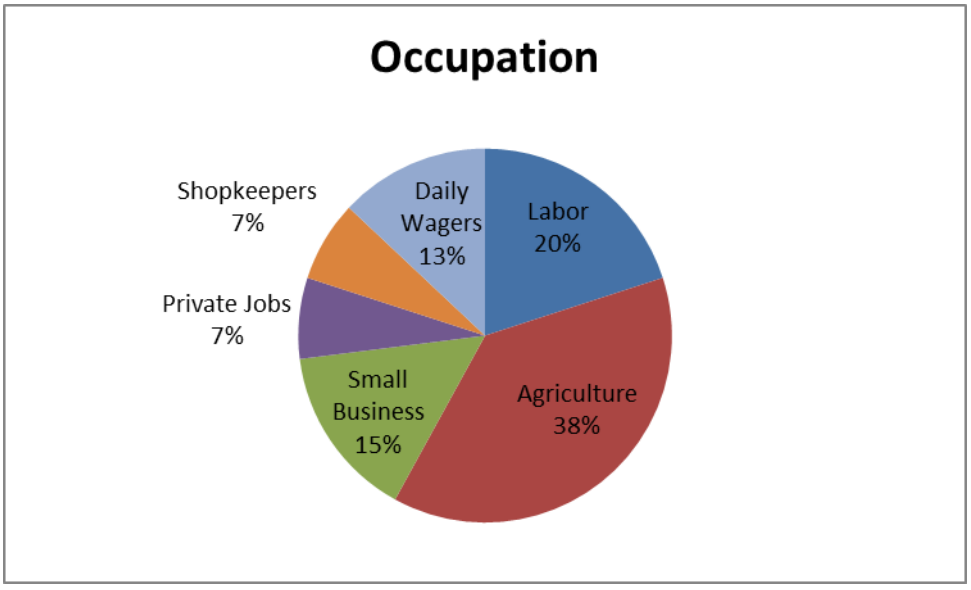


Figure 11: Occupation of Respondents

Personal Income

Based on the sample survey results, as the figure shows that nobody was earning less than 20,000 rupees, 69% of respondents fall within the income range of 20,000 – 25,000, 23% respondents earn 30,001 – 40,000 while only 8% of the respondents earn within the range of 40,001 – 45,000.

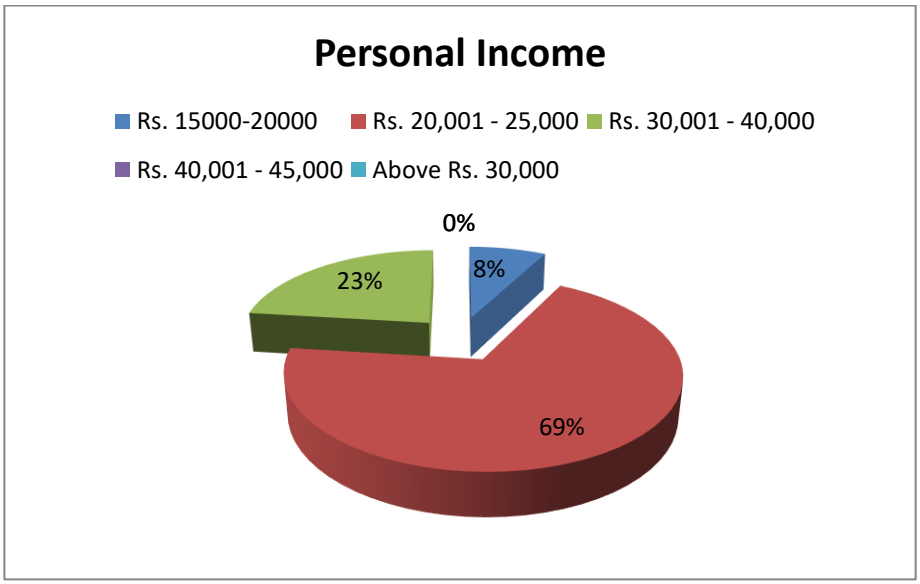


Figure 12: Personal Income

Educational Institutes

There is one government school about 350 m away from project site in Javed Nager i.e. Govt. Arif Hussain School.

Facilities Available

Facilities available at the houses, shops and factories are depicted here. It shows that electricity, water supply, telecommunication, sewerage, gas supply and every other routine facility is available in study area.

Literacy Rate

From survey results, it was found that 14% of the studied population was illiterate, 36% was up to primary level, 43% studied up to middle level and only 7% of the respondents studied up to higher secondary level.

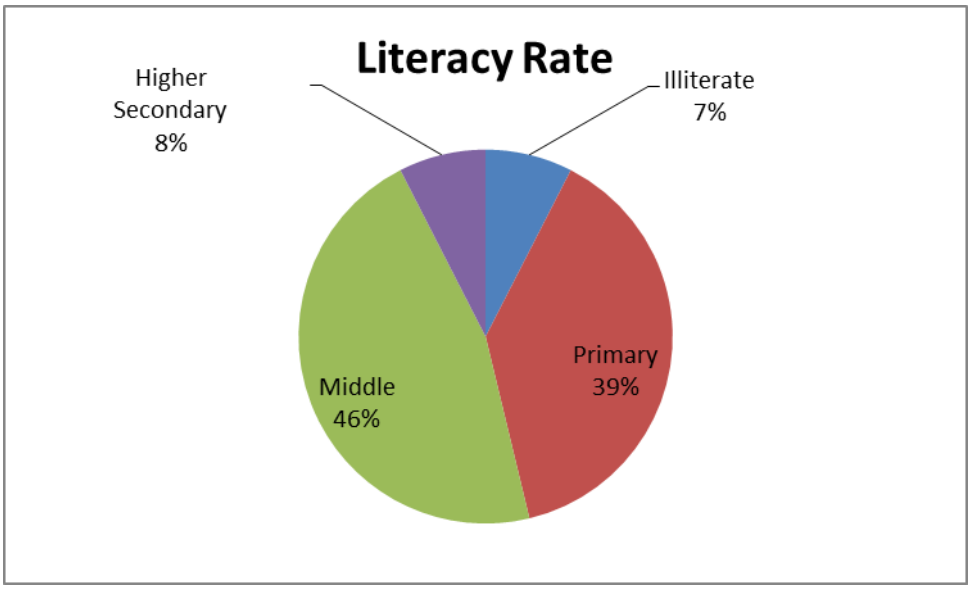


Figure 13: Literacy Rate

3.13.6. Common Diseases

According to the survey the common diseases recorded in the project area were, Diabetes, Fever, Hepatitis, Hypertension, stomach problems, Malaria, Typhoid, Nephritis and Diarrhea[3].

Cultivated Crops

The main crops that are being cultivated in the study area include; Rice, Wheat, Sugarcane, Onion, Tomato and Potatoes as well as fodder crops. The area is famous for best Basmati rice production in the world.

Livestock

People in the study area have common livestock which include; Cows, Buffalos, Sheep, Goats and Hens. However, there is no proper cattle or poultry farm observed within the study area.

4.15 Lab Reports of Environmental Analysis

Testing of different parameters was done from a certified laboratory to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is attached at Annexure-VIII of this EIA Report.

[3]Source: Climate Change Working Papers No. 9, 2015.

CHAPTER 5

STAKEHOLDER CONSULTATION

5 5. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Public consultation refers to the process by which the concerns of local affected persons and others who have a plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

5.1 General

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the proposed project commencement. The consultation process was carried out in accordance with the guidelines laid by Punjab-EPA. The objectives of this process were to:

- Share information with stakeholders on proposed project installation and operation
- Access the impacts on the physical, biological, and socioeconomic environment
- Understand stakeholder concerns regarding various aspects of the project commencement
- Find out valuable suggestions by the stakeholders to improve the proposed project design
- Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project
- Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- Disclose information about contact offices/officers for any complaints/queries

This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of steel manufacturing plant in Sheikhupura. Public consultation performas is attached as Annexure-VII of this EIA Report.

5.2 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise

and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-development phase, goes a long way in updating the knowledge and understanding.

5.3 Identification of Stakeholders

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted which enlisted below. They are the key players including; shops in the Lahore-Sheikhupura Road, public and government offices, schools, university, hospitals, hotels, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for this project:

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

Direct Stakeholders

As, no disturbance in the local community is being foreseen due to the installation of the steel manufacturing plant as the minimum distance between the community and the project area is 240m (Fazal Town). No property loss is being envisaged due to the construction of "Induction furnace , Continuous Casting and Re-rolling Mill" of M/s Bashir Sons Steel Casting.

Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of Sheikhupura will get opportunities of being employed. So, in the early development stages and during the operational phase, people will be benefited due to the "Induction furnace , Continuous Casting and Re-rolling Mill" of M/s Bashir Sons Steel Casting. Indirect respondents include;

- ✓ Government agencies responsible to deal with the project related activities
- ✓ Government Agencies directly, indirectly or widely involved in the execution and monitoring of the proposed project
- ✓ Government departments such as TMA and Planning & Development Department, working on the other development activities are considered as indirect stakeholders
- ✓ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related to the project

5.4 Public Disclosure

Public disclosure is the outcome of all such activities where the public is involved at least in the information sharing process. This is an integral part of the process. So, before the proponent applies for NOC to the Punjab-EPA, this disclosure will be distributed properly among all stakeholders. It is the responsibility of the proponent and the consultants to display a public disclosure document in prominent places where community has easy access.

5.5 Consultation Process

Information disclosure, public consultation and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socioeconomic resources falling within the immediate AOI of the project. Primary data collection included:

- Data collection regarding the socioeconomic condition of the study area
- Pre-testing of socioeconomic survey tools in the field
- To consult the locals for collection of information on biological environment

Various meetings with the stakeholders were held the following objectives:

- Share information with stakeholders on the proposed project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback
- Create a sense of ownership of the proposal in the mind of the stakeholders

5.6 Consultation with Government Officials

Following officers of government departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance, see Table 18.

Table 15: Views of Participants of Public Sector Stakeholders

S#	Participant	CNIC/Designation	Concerns/Remarks
Department of Environment, SKP			
1	Mr. Tayyab	Inspector, SKP	• Timely Implementation of the Project • Air emissions should be controlled at the source. • An effective air pollution control technology i.e. dry scrubber is recommended to control air emissions. • Wastewater should be disposed of by using standard practices employed in the area • Wastewater should not be disposed of without primary treatment • Use of substandard fuel should be avoided • Extensive tree plantation within project site should be carried out • Workers should be provided with adequate PPEs
Irrigation Department			
2	Mr. Rana Iqbal	Head Clerk/ 34603-4988869-7	• Obtain all relevant NOCs for the proposed project. • No process wastewater will be generated from proposed project except domestic wastewater • Wastewater should not be discharged without treatment.
TMA**			
3	Mr. Iftikhar Nabi Noor	Municipal Officer Services/ Municipal Committee, SKP	• Maps should be approved from Municipal Corporation for further processing • Project layout should be according to the standards • Plantation requirement of industries should be followed

Pictorial view of the consultation with the government departments is given in Figure-17.

5.7 Consultation with Local Community

In addition, to the use of direct methods to evince the response of population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires (attached in the Annexure-VII of this EIA Report). Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts, including; employment opportunities, income generation activities, change in living standards and provision of the amenity.

Personal views of the respondents on the installation of the proposed steel manufacturing unit, possible disturbance to the residents near the AOI and infringement of their privacy were also recorded on 13thJune, 2018. The various rounds of public meetings and consultations were arranged in project and study area. The objectives of consultation with the affected persons are given in the table below:

- Disclose the plan of construction of the proposed facility
- To share information on the design and specifications of proposed project works
- To analyze the expected impact on the socioeconomic environment
- To understand their concerns regarding various aspects of construction and operation

Views, Concerns and Suggestions of Consulted Locals

The major socioeconomic concerns of consultedpersons of nearby village have been given in tabulated form below (Table 19) along with their main concerns and remarks. Community showed a lot of concerns; a few are being mentioned here:

- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably
- The area will become further industrialized
- For the solid waste management and waste disposal, proper disposal techniques should be adopted
- Employment opportunities will be generated and locals should be hired on the priority basis
- The air pollution is one of the major impact of the proposed project so ambient air quality should be monitored regularly
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- Removal of shrubs and trees should be avoided to the extent possible
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.
- The contractor should prefer hiring local labor from adjacent nearby villages.

- Indigenous tress around the facility should be planted to control air pollution and as the compensation.
- Noise reducing barriers should be installed to reduce noise pollution. The views and the concerns of the local residents of Fazal Town are presented in the tabular form below:

Table 16: Views and Concerns of Local Residents

Component	Concerns	Solutions
Employment	During construction and operational phase, locals should be considered realistically	The proponent will engage locals on priority basis
Environmental Impact	• During construction phase: dust and noise • During operational phase: Air pollution and noise	• Dust issue will be managed by water sprinkling on regular basis. • Construction activities will not be carried out during night time. • Well-tuned machinery and equipment will be used • EMP will be implemented and followed • Domestic wastewater will be treated in septic tank prior to final disposal. • After treatment, treated water will be used for horticulture activities within project site. • To control the air pollution, dry scrubber will be installed • To avoid noise impact, job rotation of workers will be done • Tree plantation will be carried out in the designated green space
Social Impact	Public nuisances issues may arise due to the spread of diseases in the case of improper disposal of the solid waste and the air emission may cause issues	• Proper handling of the waste such as segregation and composting of the solid waste will be carried out to reduce the public nuisance and to improve the public health • A register will be maintained to registered the complaints of the local community

Addressing Public Concerns

The best mechanism for effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

4.7.3. Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the proposed project, if any.

5.8 Favor for the Project

Respondents were inquired about their views regarding the proposed project. Out of total respondents 70 % of the respondents knew about the project whereas, rest of the respondents doesn't have prior knowledge of the project planning and commencement. Almost 93% respondents of were in favor of the establishment of steel manufacturing plant in their vicinity as this will increase the employment opportunities and raise the overall socio-economic status of the area.

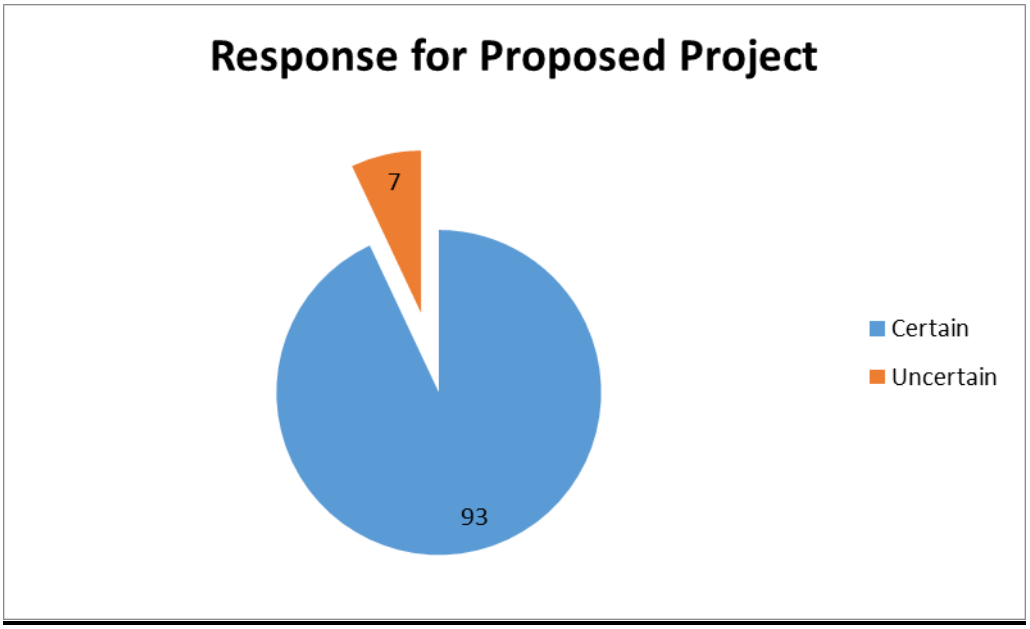


Figure 14: Project Response

6 6. IMPACT ASSESSMENT METHODOLOGY

This section discusses the potential environmental impact of establishment of steel scrap melting unit. The impacts may include the disturbance of area's geomorphology, soil, water resources, air, biological resources and socio-economic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

6.1 Objectives

The objective of screening is identification of the adverse as well as beneficial impacts and then mitigating the effect of adverse impacts up to acceptable limits or within PEQS. Following are the objectives of screening out all significant environmental and social impacts:

- To find different alternatives and ways of carrying out the project activities which may cause adverse impacts
- To enhance the Environmental and Social benefits of project
- To avoid, minimize and remediate adverse impacts
- To ensure that residual adverse impacts are kept within acceptable limits

In the sub-sections below the impacts assessment methodology for the establishment of "Induction furnace , Continuous Casting and Re-rolling Mill" of M/s Bashir Sons Steel Casting located in District Sheikhupura has been defined. It includes the magnitude, the extent of the impact and the nature of the anticipated impact.

6.2 Methodology

This section discusses the project's potential environmental impact of establishment of Induction furnace , Continuous Casting and Re-rolling Mill on area's geomorphology, soil, water resources, air resource, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated on the basis of magnitude, immediacy and sustainability. Evaluation criteria are as follows:

Magnitude

The magnitude of the impacts associated with the establishment of Induction furnace , Continuous Casting and Re-rolling Mill include the type of impact project commencement will cause to its immediate environment and social structure. It could be direct, indirect and cumulative.

Immediacy

Immediacy of the impact focus on the following parameters:

- Temporal Extent (during construction and operation)
- Spatial Extent (local or widespread)

Sustainability and Reversibility

Sustainability and reversibility of the impact focused on the following parameters:

- Mitigability (Fully/Partially)
- Monitoring (Fully/Partially)

6.3 Purpose of Mitigation Measure

The basic purpose of mitigation measures is to reduce the impacts of the proposed project on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

What is the problem?

The proposed project is the establishment of Induction furnace , Continuous Casting and Re-rolling Mill of M/s Bashir Sons Steel Casting. The land use of site will be industrial only. The project site has vegetative cover of common grass and shrubs. In addition, to the noise and fugitive dust emissions during the development phase solid waste disposal issues may arise along with wastewater disposal. The major impacts associated with the operation of scrap melting unit include domestic wastewater management and air pollution due to the emission of particulate matter from scrap melting.

When problem will occur and when it should be addressed?

The impacts from the establishment of scrap melting unit will occur during the construction and operation phase. These issues include; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

Where problem should be addressed?

The problem will be generated from site development and operation of the unit. So, it should be addressed on source i.e. at site within the same timeframe.

How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. Mitigation measures will be provided for every impact along with detailed EMP. Problems will be addressed by implementing EMP and following recommended mitigation measures.

6.4 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the scrap melting:

Changing in Planning Design

For the production of the billets and iron bars, steel scrap will be melted in the induction melting furnace. The melting efficiency of the furnace is considered to be 95%. The proposed induction melting furnace produces less noise, minimized heat production and it has a fast startup system as compared to the gas furnace and combustion. The air emissions will be controlled by installing dry scrubber.

There is no endangered and threatened species present in the project area. Moreover, there is not any human settlement or infra-structure that will be dislocated or dismantled due to the proposed project development. Hence, there is no need to change the design of project.

Improved Management and Monitoring Practices

The anticipated impacts can be reduced significantly by adopting better management activities, as it will be carried out for sustainable development and betterment of the society. While environmental monitoring will be conducted on quarterly basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

Compensation in Money Terms

Due to the installation of the induction furnace, the vegetation present on-site will be removed and the geography/landscape of the area will be changed on the permanent basis, however, there is no protected or environmentally sensitive area present within 10.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms will be required. However, for the removal of the one tree from the project area 3-5 trees will be planted as the compensation.

Replacement/Relocation/Rehabilitation

The proposed project is located in open land where there is no sensitive area, human population or preserved natural resource is present which could be impacted due to the commencement of the proposed project. No replacement, relocation and rehabilitation will required for the commencement of the aforesaid project.

6.5 Impact Assessment Methodology

The impact assessment methodology for the installation of the steel manufacturing is given below:

Screening of Potential Impacts

Based on site visit, observation, brain storming, provided information and social interviews, significant impacts were anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is to be carried out.

Identification of Mitigation Measures

After anticipation and screening of significant impacts, certain mitigation measures are to be provided in order to enhance benefits of project and reducing impacts. These measures can be classified as:

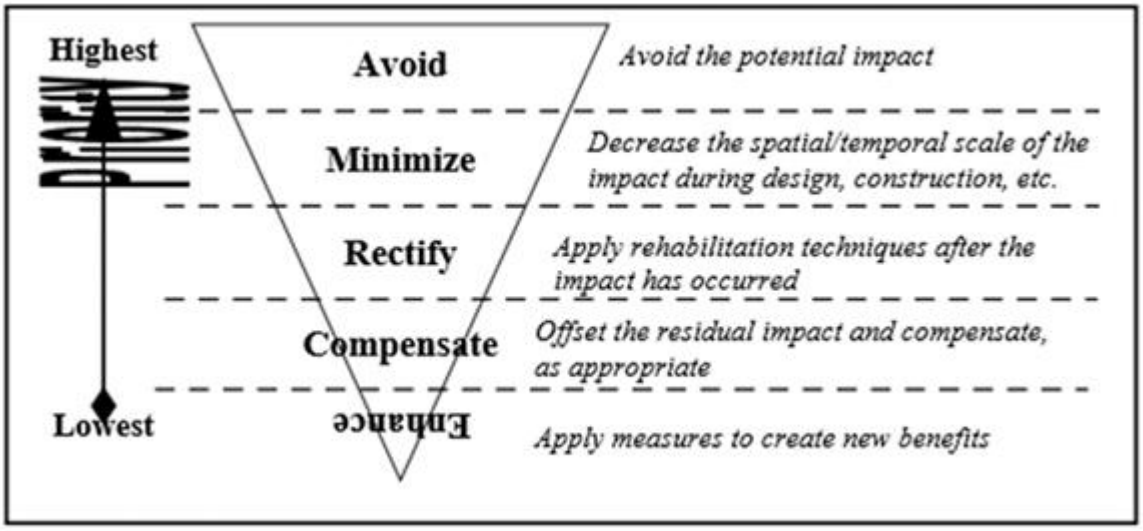


Figure 15: Hierarchy of Mitigations

Evaluation of the Residual Impacts

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of the project but sometimes, it may fail in bringing them within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

Identification of Monitoring Requirements

The last step in the assessment process is identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if acceptable limits are being breached.

CHAPTER 7

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

7 7. SCREENING OF IMPACTS AND THEIR MITIGATION MEASURE

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to the establishment of scrap melting units along with manufacturing of the billet and rollers. It also identifies measures that will help to mitigate the adverse environmental impacts and will enhance positive impacts of the project.

7.1 Impact Significance

Evaluation of impacts signifies the potential impacts in terms of its likelihood nature as per the following criteria:

- The impacts are further classified based on their spatial distribution, i.e. *local,* when impacting an area of approximately 1 km radius from the project area, *moderate spread,* when impacting an area of 1 to 2 km radius and *regional* beyond 2 km.
- The impacts are classified as *short term, moderate term* and *long term* in terms of their existence in temporal scale. Impacts less than 1 year existence as *short term,* while those with 1 to 3 years as *moderate term* and more than 3 years as *long term*.
- The negative impacts are termed as *adverse impacts* while positive impacts as *beneficial.*

The significance of environmental impacts of various involved activities has been evaluated based on the criteria outlined in Table 17.

Table 17: Impact Significance Criteria

Impact Significance	Criteria
Long term	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium duration
Moderate term	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low duration
Short term	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
Insignificant	When the impact is of low intensity, low spread and low duration
Beneficial	When the impacts are positive

Based on the above-specified criteria, Matrix method has been used to describe potential environmental impacts due to proposed project as shown in Table 21 and 22. It is important to note that one activity may have varying impacts on different receptors i.e. different components of the environment. To avoid repetitions, this section describes various activities, which may have wide impacts on many receptors. For example, waste

generation and disposal will have impacts on land, water bodies, odor nuisance etc, therefore, the impacts of waste generation and disposal have been considered as one of the key areas of impacts. Similarly, gaseous emissions may be adverse to air quality; which on exposure may impact upon health of individuals and ecology in the surroundings.

Table 18: Impact Screening Checklist (Construction Phase)

Environmental Sensitivities	Nature of Likely Impacts						Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate Spread	Regional	Beneficial	insignificant	Short Term	Moderate	Long Term
Air Quality		✓		✓							
Noise	✓			✓							
Water Quality		✓			✓						
Land Environment			✓		✓						
Flora		✓		✓							
Fauna	✓			✓							
Local Economy			✓		✓						
Social Impacts			✓	✓							
Health & Safety		✓		✓							

Table 19: Impact Screening Checklist (Operational Phase)

Environmental Sensitivities	Nature of Likely Impacts						Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate Spread	Regional	Beneficial	insignificant	Short Term	Moderate	Long Term
Air Quality			✓		✓						
Noise		✓		✓							
Water Quality			✓		✓						
Land Environment	✓										
Flora	✓			✓							
Fauna	✓			✓							
Local Economy			✓		✓						
Social Impacts			✓	✓							

Health & Safety		✓		✓							

7.2 Impacts Associated with Project Location

The development will have both socio-economic and environmental implications as discussed in the sub-sections below.

The proposed project site is not located in environmentally sensitive area. No human settlements exist on project site that would be impacted from the commencement of aforesaid project. There is no heritage building, social structure, grassland or preserved area in the project vicinity that could be damaged, dislocated or dismantled due to the project activity in the proposed area. Hence, the impact of location is considered to be in-significant as the project site is away from the residential area, Shrine (not reported in the study area) and no protected area is reported in 10 km vicinity. The project will be constructed in the industrial area.

Mitigation Measures

- It is envisaged that no mitigation measures will required as the proposed project will not have any adverse impacts on its surroundings due to significant distances from sensitive receptors.

Land Use

The land use on the site will be industrial only. The site will be used for the establishment of scrap melting unit. There is no settlement, surface water body, grassland or preserved area in the proximity of the project area that could be damaged or dismantled. Due to the establishment of this unit the open land will be converted to the built up land.

Mitigation

Following mitigations measures will be adopted to reduce the land use impact:

- Unnecessary up-rooting and disturbance to the native vegetation will be avoided up to the extent possible
- The designated green area will be vegetated and native vegetation present on-site will be preserved
- It is suggested that a green area will be defined and thick trees plantation will be carried out along the boundaries of the project area to decrease the rate of soil erosion
- Preferably trees and other vegetation will be planted extensively so that a buffer zone around project area can be created
- Vegetation will not only enhance the aesthetic outlook of the area but it will also absorb pollution from the atmosphere

Loss of Vegetation

Considering the scale of the project and commonly found flora and fauna within the project influence area, no significant adverse effects are envisaged on the ecology of the area. As

the project site has sparse vegetative cover of common grass, no major tree cutting is involved.

Mitigation

Following mitigation measures will be adopted:

- Avoid un-necessary disturbance and removal of the tree
- The designated green area will be vegetated and native vegetation present on-site will be preserved
- Biodiversity at the site will be maintained by transplanting or culturing endangered or threatened plants found in District Sheikhupura
- Native tree plantation will be promoted extensively

Shifting of Utilities

There will not be any shifting of existing utilities such as water supply pipelines, sewers, electrical lines, etc. due to the proposed project.

Impact on Archaeological/Cultural Property

Within the project influence area there are no significant archaeological properties, hence no impact in this area is anticipated.

It can be concluded in view of these reasons that the selected site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

7.3 Impacts Associated With Design Phase

Design of the proposed project can have impacts on the environment if it is not prepared accordingly. It is necessary to consider a sustainable project approach. Sustainability is an important issue to consider in design, not only due to environmental concerns but also due to economic and social matters, promoting architectural quality and economic advantages.

Mitigation Measures

- The design process should be carried out in recognition of identified hazards and risks assessment. Accepted design solutions should focus on maximum possible opportunity for risks reduction.
- Carry out engineering surveys including environmental surveys depending on the level of complexity and potential hazards of the planned facilities in the area of construction.
- Integrate within the existing environmental infrastructure at site to facilitate sharing of services and amenities (e.g. power, water, solid refuse collection and roads), safety arrangements and waste management systems among others. This has already been catered as per the designs annexed.
- Minimize risks to health and impacts to external environment. Suitable anti-pollution facilities (solid waste containment and organized removals, waste water purification) should be part of the design.

7.4 Impacts Associated with Construction Phase

Following impacts are anticipated to occur and affect the nearby communities due to the establishment of slaughterhouse and meat processing unit:

Impact of Dust and Exhaust Emissions

Air quality is expected to deteriorate locally due to mainly fugitive dust emission and exhaust emission from vehicles, which will have short-term but moderate impacts on local environment. Soil erosion may occur in small areas and they may be prone to open space for wind to pick up dust particles. Air pollutants such as; NOx, SOx and CO emissions may be generated from the working of the construction machinery on-site which includes; Hauling vehicles, loaders, trucks, mixers, etc. This machinery will generate dust, smoke and other potential pollutants in the air. This impact is considered to be negative of minor magnitude. The effect due to construction is however, of temporary nature and will have no permanent impact on environment.

Mitigation

Dust control measures are important in the project area; as the area is semi-arid having dry soil conditions and its vulnerable to spread by high winds. Following mitigation measures will be adopted to mitigate the anticipated impact:

- Ensure that the trucks carrying the raw-material should be covered by tarpaulin to reduce fugitive dust emissions
- Water spraying/sprinkling should be done on the regular basis
- Ensure that all equipment and vehicles, used during the construction phase, are properly tuned and maintained in good working condition, in order to minimize the exhaust emissions and it will be regulated by the concerned authority
- Ensure that high quality fuel having low sulphur contents will be used
- Ensure that dust emission generated due to vehicular movement is minimized by restricted speed limit and vehicular movement impacts which will be minimized through good traffic management at site
- Ensure that dust emission during the construction phase will be minimized by implementing best management practices
- In order to reduce the fugitive dust emissions, avoid excavation activities during the windy days

Soil Erosion

During the construction activities the chances of soil erosion and contamination may be increased. Soil erosion from the construction activities will deteriorate the soil quality. There are low chances of land contamination due to release/spill of lubricants, oil, and other materials during the construction period. Erosion may also result from movement of heavy vehicle such excavators, trucks and pick-ups. The impact will be short term, localized and can be controlled through immediate appropriate management and mitigation measures. This impact is considered negative of minor magnitude. Hence, the impact is in-significant.

Mitigations

Following mitigation measures will be adopted to protect the soil from erosion and contamination:

- Removal of shrubs and bushes should be avoided to the extent possible.

- In case of un-avoidable circumstances, the exposed soil will be re-vegetated quickly and compensatory plantation (five trees for each one removed) will be carried out as soon as possible
- Spill prevention and response plan for storage, usage and transfer of fuel should be prepared (if used on site) and implemented
- Workers should be trained on spill prevention and response plan
- Maintenance and washing of vehicles and equipment should be carried out at designated areas
- Any hard surface or tarpaulin should be spread on area to prevent soil contamination
- Regular inspections should be carried out to detect leakages in construction vehicles and equipment
- Machinery involved should be maintained properly to avoid leakages

Socioeconomic Impacts

In project area, no significant changes are envisaged in the traditional life style and occupation of the local people in residing in the nearby communities. The local people are rather benefited due to the provision of job opportunities. No impact is envisaged due to the influx of the workers as the local will be preferred and hired for working. Social issues may arise which will cause minor negative impact on the social life style of the people. Moreover, health and safety related issues may arise during the construction activities. These impacts are in-significant can be further reduced significantly by adopting best management practices.

Mitigation Measures

Following mitigation measures will be adopted to reduce the socio-economic impact on the community:

- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.
- In the case of not hiring the locals, Contractor will restrict his permanent staff to mix with the locals to avoid any social problems
- The contractor should prefer hiring local labor from adjacent nearby villages
- The contractor will keep the copy of National Identity Card (CNIC) of his employees and will warn the workers not to involve in any anti-social activities otherwise they may face dire consequences
- At the time of hiring the Contractor has to ensure that the workers should be of good repute.
- First aid kits having all the necessary first aid stuff will be available at the site
- Routine medical check-ups of all the field staff including unskilled labor needs to be conducted.

- Training of workers should be carried out for operating various constructional machinery, safety procedures should be adopted, environmental awareness should be carried out, equip all workers with safety boots, helmets, gloves, protective masks and monitoring of their proper and sustained usage will be carried out. In case of accidents, contractor will provide free medical treatment to the community.
- The Contractor will be responsible for the sensitivity towards the local customs and traditions.

7.5 Impacts Associated with Operational Phase

Following impacts are envisaged due to the establishment of scrap melting unit:

Gaseous Emissions

The main air pollutants associated with plant operations are particulate matter. Significant particulate matter (PM) emissions are generated by the induction furnace during melting.

Mitigations

Following mitigation measures will be adopted to control the air pollution:

- The plant will be equipped with dry scrubber to control gaseous emissions.
- Suction hood along with the bag-filters will be installed to control the air pollution significantly.
- Suction-hood system is considered to be 95% effective in controlling the air pollution
- PM will be collected in the bag-house, it will be sold to the other mills and this technology is considered to be 95% effective in controlling the PM emissions.
- Trees will be planted around the project area extensively to control air.

Waste Products

The domestic solid waste generation rate is considered to 0.25kg/person/day. So, it is considered that 12.5 kg will be produced on-site in a day. The improper disposal may impose health impacts on the workers and the nearby community because the disease vectors will be produced.

Nature of Impact

The nature of the proposed impact will be direct, medium, long-term and hence significant.

Mitigations

General waste management practices will be adopted which needs no mitigation.

Wastewater

During steel manufacturing, the wastewater generated will be typically domestic wastewater. Around 50 workers will be working on the site and the wastewater generated is estimated to be about 150 L/hr.

Nature of Impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- Freshwater conservation techniques should be adopted to ensure sustainable development.
- Monitoring of effluents shall be carried out as per requirement of Self-Monitoring and Reporting Tools (SMART) to ensure compliance with the PEQS.
- It will be ensured that no solid waste will be entered in the wastewater.
- There is no surface water body present in the project proximity that could be impacted.
- Domestic wastewater will be treated in septic tank..
- After treatment, treated water will be used for horticulture activities within project site.

Occupational Health and Safety

The health and safety impacts include:

- slips, trips and falls on the same level
- falls from height;
- unguarded machinery;
- falling objects;
- working in confined spaces;
- moving machinery, on-site transport, forklifts and cranes;
- contact with hot metal;
- fire and explosion;
- extreme temperatures;
- noise and vibration;
- electrical burns and electric shock;

Nature of Impact

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

Mitigation

The following mitigation measures are suggested that could be applied to reduce the risk of health and safety:

- Floor surfaces shall be maintained regularly, and kept clean and free of oil spills, other slippery fluids or materials and obstructions.
- Workers who may be exposed to noise levels exceeding occupational standards shall receive regular audiometric testing.

- The effective use of hearing-protection devices shall be ensured.
- Proper training will be provided to workers entering and working in the confined space of the hazards, protective measures and emergency rescue procedures;
- Only authorized persons shall be allowed near furnaces.
- People working in and around the furnace areas shall be provided with suitable PPE to protect them against molten metal burns, noise and physical hazards.
- Edged parts of rolls shall be securely guarded to prevent severe injuries.
- Transport routes shall be planned and constructed to minimize the risk of collision and with sufficient safe clearance to allow for aisles and turns, or other types of control area. Where appropriate, maps showing the proposed route should be provided.
- Transport routes shall be clear of obstructions and, where possible, without irregular surfaces.
- Loads should be lowered slowly and smoothly.

Socio-Economic Impact

It is envisaged that the local community will be disturbed due to increase in the traffic load. The intensity of the aforesaid project will be quite low. The installation of the aforesaid project will have a beneficial impact such as; increase in employment opportunity, increase of the wages in local area, increase in revenue generation, provision of social welfare funds of the employees and appreciation of land value.

Nature of Impact

The aforesaid impact is considered to be positive and will have a direct, medium, long-term and significant impact.

Mitigation Measure

No mitigation measures will be required.

7.6 Potential Environmental Enhancement Measures

Tree Plantation

Indigenous plants will be planted at designated places. Grasses, median plants and median shrubs will also be grown. Aesthetic and beauty plants including roses and jasmine will be planted. Trees height will be between 3-7 ft. Tree plantation will be done in open spaces and along boundary of project site.

Air Pollution Control Technology

Dry scrubber will be used to control gaseous emissions.

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLAN

8 ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the construction, operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this EIA Report.

Outline and key features of the EMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring.

8.1 Objectives

An Environmental Monitoring Plan is outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMP. The EMP along with monitoring plan will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the construction and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity. The key objectives of EMP are:

- To outline functions and responsibilities of persons
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the Project
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the proposed mitigation measures
- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented
- Identify the resources required to implement the EMP and outline corresponding financing arrangements

8.2 Management Approach

The organizational roles and responsibilities of the key players are summarized below:

Proponent

The project proponent will undertake overall responsibility for compliance with the EMP. The concerned departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

Contractors

The contractor will implement the majority of environmental and social mitigation measures. The contractor will carry out field activities as part of the project. The contractor is subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

8.3 Components of EMP

The EMP consists of the following:

- Institutional arrangements
- Mitigation plan to reduce the severity of associated impacts
- Monitoring plan to monitor the impacts and their severity
- Environmental and social trainings to raise awareness

Remedial and Mitigation Measures

The objective of remedial and mitigation measures in any project is to identify practices, technologies or activities that would prevent, minimize or mitigate all significant negativities that are likely to occur due to the proposed project.

Institutional Arrangements and Responsibilities

The proposed institutional arrangement for the implementation of EMP is based on the discussions held with the Forest Department, Environment Department, Food and Safety Department and Proponent. The discussion concluded that three types of institutional arrangements are essential for the effective implementation of EMP, these are follows:

- Establishment of Environment/Social Management Group with in EPA Punjab
- External Monitoring
- EMC established by proponent after consultation with consultant

a. Roles and Responsibilities

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts:

Table 20: Roles and Responsibilities

Roles and Responsibilities		
Sr#	**Concerned Persons**	**Duties**
1	The Project Manager	Following will be the responsibilities of the Project Manager • Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment • Ensure that all stipulations within the EMP are communicated and adhered to by contractor(s) • Monitor the implementation of the EMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents • Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed • Project Manager is expected to continually monitor and improve the overall performance of their operation
3	Site Engineer	Following will be the responsibilities of the Site Engineer during the construction and operational activities: • Be fully conversant with the EIA and conditions of its approval • Be fully conversant with the EMP • Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance with PEQS • Have overall responsibility for the implementation of EMP • Conduct audits to ensure compliance to the EMP • Liaise with the Project Manager or his delegate, the Environmental Officer and relevant discipline Engineers on matters concerning the environment • Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution on the site • Confirm activities to the demarcated construction site
4	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised • Identifying, assessing and managing health and safety risks • Consulting with workers (including staff, affiliates and contractors): i. Health and safety risk assessments

		ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk • Assisting with the development, implementation and maintenance of a return to work program for injured staff. • Be fully conversant with the EIA and conditions of its approval • Be fully conversant with the EMP • Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance • Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMP • Take appropriate action if the specifications contained in the EMP are not followed • Monitor and verify that environmental impacts are kept to a minimum, as far as possible • Review and approve construction methods, with input from the Site Manager, where necessary • Ensure that activities on site comply with all relevant environmental legislation • Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit • Liaise with the Site Manager regarding the monitoring of the site • Report any non-compliance or remedial measures that need to be applied • All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager
6	Contractors and Service Providers	• Environmental management is part of on-site quality management. Under the environmental management plan, the contractor • Shall propose measures to minimize environmental impacts during construction and submit them to the HSE Officer • Comply with the environmental management specifications

		• In case of having impacts on the environment, the contractor will inform them to the concerned person in time to get instructions and then take next step • Adhering to any instructions issued by the Engineer/Project Manager on the advice of the HSE Manager • Submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting • Maintaining a public complaints register • Arrange that all his employees and those of his subcontractors receive training before the commencement of construction

8.4 Environmental Management and Monitoring Plans

The following environmental issues are considered to warrant specific management actions for the implementation of project. These issues have specific regulatory requirements (contained in the development consent or Environmental Approval) and/or are considered to have the potential to result in a non-compliance with a legislative requirement or generate community complaints. To manage the adverse environmental impacts on the physical parameters of the environment following management and monitoring plans will be adopted:

Table 21: Air Quality Management and Monitoring Plan

Potential Impacts	**Construction Phase**	**Operational Phase**
	Emissions resulting from construction activities are vehicular emissions. It includes: • Carbon Monoxide • Nitrogen Oxides • Particulates • Fugitive Dust	Air emissions will be generated while burning the scrap to convert it into billets and iron bars. The generated emissions will have high concentration of the PM. These emissions generate a dense cloud of the smoke. The smoke has a large quantity of the carbon soot.
Mitigation	Regular water sprinkling, proper tuning and maintenance of equipment/vehicles used and implementation of best management practices.	Installation of air pollution control equipment i.e. Dry Scrubber to minimize the emissions during burning of scrap steel.
Plan	• Regular sprinkling of water will be done to control the suspended dust particles during the construction phase • The transporting vehicles will be maintained on the regular basis	

<table>
<tr><td></td><td colspan="3">

- Enforce speed limits to reduce airborne fugitive dust from vehicular traffic
- Re-vegetate disturbed areas as soon as possible after disturbance
- Regular water sprinkling to suppress the fugitive dust emissions
- Cover dump trucks before travelling on public roads
- Train workers to handle loose materials and debris to reduce fugitive emissions
- Water sprinkling will be done on the regular basis during the construction phase
- Good quality (low-sulphur) fuel will be used for vehicle and machinery
- Visual inspections to detect air pollution generated during the construction phase will be carried out on the regular basis
  - Indigenous trees around the facility will be planted to control the air pollution
  - Rehabilitation of areas outside of the site security fence will be undertaken by the successful implementation of the landscaping plan
  - Tree species like *Dalbergiasissoo, Cassia seamea, Acacciamangium* and *Peltaphorum*can be planted in areas as they have high growing rate as well they will help in noise, dust and pollution reductions.
  - To deal with the pollution generated from the process activity dry scrubber will be installed. It will be Fixed Hood Canopy system and it is efficiency will be 95%. The generated particles will be sucked into fixed hood and with the help of the duct the air will pass through ID Fan and it will be passed to the bag filters. The dust will be collected and will be sold to other mills.

</td></tr>
<tr><td rowspan="2">Monitoring</td><td>Responsibility</td><td>Responsible</td><td>Monitoring Duration</td></tr>
<tr><td>Preparation of required or requested information for submission to the Project Manager including air quality monitoring data
Liaising with the Project Manager with respect to all significant air quality matters</td><td>Project Manager/Contractor</td><td>Monthly</td></tr>
</table>

Table 22: Solid Waste and By-Products Management and Monitoring Plan

Potential Impacts	**Construction Phase**	**Operation Phase**
	Over burden and solid waste generated at site during the development phase may disturb the soil structure or may contaminate the soil which would affect the fertility of land in its surroundings.	No hazardous waste will be generated in the process activity except the dust collected in the dust collectors. In addition, domestic solid waste will be generated.
Mitigation	**Waste Management Plan**	
Management Plan	• Hazardous and non-hazardous waste will be separated prior to the transportation of the waste. As the aforesaid project generates no hazardous waste, no segregation is required. • Record of all waste generated during the project activity should be maintained on the regular basis. Quantity of the waste disposed, recycled or reuse will be logged on a waste tracking register • Regular training will be given to the workers dealing with the waste management it will include identification, segregation and management of waste. **General Waste** • General waste cannot be recycled or used, it will be stored in appropriate receptacles and picked up as required by a workers and will be disposed of at the designated sites/bins • The generated waste will be collected by the contractor on the regular basis and will be disposed off by using standard practices • No on-site burning of wastes will be allowed at any time • Tree species like Dalbergiasissoo, Cassia seamea, Acacciamangium and Peltaphorum are ideal for bio-reclamation of overburden dumps. **Green Waste** • It will be ensured that minimum green waste will be generated on-site • It will be generated from landscape maintenance activities. It will	

<table>
<tr><td></td><td colspan="3">be reused on-site where possible or disposed off un-contaminated by using the standard practices at the designated sites.
• Green waste can be used as the fuel wood by the nearby residents.
• No on-site burning of green wastes will be allowed at any time on-site
Solid Waste
• For the collection of the solid waste at site bins will be installed
• The installed bins will be covered in order to reduce the chances of the disease vector production
• As the amount of the solid waste generation is very low, which will be disposed off by using the standard practices</td></tr>
<tr><td rowspan="2">Monitoring</td><td>Responsibility</td><td>Responsible</td><td>Monitoring Duration</td></tr>
<tr><td>• Coordinate the training needs for all employees in environmental awareness training as a legal responsibility
• Waste collection and disposal will be monitored on a regular basis
• Solid Waste documentation will be completed and available for inspection on request
• A complaints register will be held, complaints will be investigated and, if appropriate, acted upon</td><td>Project Manager/ Contractor</td><td>Visual Monitoring on Regular basis</td></tr>
</table>

Table 23: Wastewater Management and Monitoring Plan

Potential Impacts	Construction Phase	Operation Phase
	During the site construction phase oil spills may contaminate the site and wastewater generation from on-site	During the operational phase, no process wastewater will be generated except domestic

	municipal activities which may damage the groundwater quality	wastewater. Cooling water will be re-circulated.
Mitigation	Sanitary wastewater treatment system such as septic tank will be constructed on-site for the disposal of wastewater.	
Management Plan	• Monitoring of effluents shall be carried out as per requirement of Self-Monitoring and Reporting Tools (SMART) to ensure compliance with the PEQS • It will be ensured that no solid waste will be entered in the wastewater such as fat and faecal waste • There is no surface water body present in the project proximity that could be impacted. • Domestic wastewater will be treated in septic tank prior to final disposal to the sewerage line.	
Monitoring	**Responsibility**	**Responsible**	**Monitoring Duration**
	Monitoring of the areas identified in this management plan will be undertaken as per Environmental Monitoring of this EMP	Project Manager	Quarterly

Table 24: Transport Code of Conduct

Potential Impacts	**Construction Phase**	**Operation Phase**
	During construction phase no such impact is envisaged as no sensitive receptor is present in the project vicinity.	During operational phase, vehicles carrying the steel scrap may impact the nearby community by the frequent movement. It may generate fugitive dust emissions, noise and may cause social issues.
Mitigation	**Traffic Management Plan**	

<table>
<tr><td>Management Plan</td><td colspan="3">The traffic management plan is given below:
Heavy vehicles shall only be to enter and leave the site between during day hours.
The need to ensure that noise levels are kept to a minimum especially through the site and into the relevant zone
Loads entering or leaving site will be suitably covered to ensure loads are secure
strict speed limits should be enforced
A complaints register will be kept, complaints will be investigated and, if appropriate, will be acted upon</td></tr>
<tr><td rowspan="2">Monitoring</td><td>Responsibility</td><td>Responsible</td><td>Monitoring Duration</td></tr>
<tr><td>Informal Observations
Report on Compliance</td><td>Project Manager</td><td>Daily basis
Weekly basis</td></tr>
</table>

Table 25: Health and Safety Management and Monitoring Plan

Physical Hazards	The health and safety risks to workers include but are not limited to: • Floor surfaces shall be maintained regularly, and kept clean and free of oil spills, other slippery fluids or materials and obstructions. • Workers who may be exposed to noise levels exceeding occupational standards shall receive regular audiometric testing. • The effective use of hearing-protection devices shall be ensured. • Proper training will be provided to workers entering and working in the confined space of the hazards, protective measures and emergency rescue procedures; • Only authorized persons shall be allowed near furnaces. • People working in and around the furnace areas shall be provided with suitable PPE to protect them against molten metal burns, noise and physical hazards. • Proper radiation shielding may be provided. • Edged parts of rolls shall be securely guarded to prevent severe injuries.

	• Transport routes shall be planned and constructed to minimize the risk of collision and with sufficient safe clearance to allow for aisles and turns, or other types of control area. Where appropriate, maps showing the proposed route should be provided. • Transport routes shall be clear of obstructions and, where possible, without irregular surfaces. • Loads should be lowered slowly and smoothly.
Chemical Hazards	Following mitigation measures will be adopted: • Personal Protective Equipment (PPEs) should be given to workers including protection and impermeable clothing for use during disinfection • Wearing of the PPEs should be regulated strictly by the concerned authority • Chemical spillage will be avoided by developing proper SOPs for the handling of the chemicals • Chemicals and detergents will be stored properly and all precautionary measures will be adopted
Security Risks	To eliminate the security issues following mitigation measures will be adopted: • Proper Security will be provided to the workers • Security guards will be appointed • Before hiring any worker and his criminal record may be checked • CNIC of all the workers will be kept by the Proponent • Strict law will be enforced to control the crime at site

Table 26: Biodiversity and Invasive Plants Management and Monitoring Plan

Potential Impacts	If suitable controls are not adopted invasive species could colonize the site, reducing biodiversity and threatening the ecology of the area. It would largely impact flora and fauna of the area. Although Sheikhupura District is not rich in biodiversity. The remnants of the native vegetation will be at the verge of disturbance and removal.
Management Plan	• Sowing/planting will be undertaken as soon as possible following the closure of the exhausted pit, to reduce the likelihood of the exposed

	areas being colonized by invasive and non-native species which are of lower ecological values • Reasonable precautions will be taken during operational phase to avoid the spreading of soil borne pests and diseases, animal and crop diseases and invasive species. • The ecological; verification walkover of the whole site will check the status of known stands of alien/invasive plants and record any new stands
Monitoring	Monitoring will be undertaken by HSE Manager throughout project life.
Emergency Measures	• Environmental Coordinator to be informed immediately if any new stands of alien or invasive weeds are found. • Where invasive species are found, an environmental exclusion zone will be created. This will entail a physical fence and proper signage. • A liaison with local landfills to check the specific arrangements they require for the disposal of constructional waste arising, which may be treated as hazardous waste

8.5 Training and Capacity Building

Training and capacity building trainings are conducted on the regular basis to enhance the capacity of the workers hired for the working. Following is the detailed plan along with the schedules of the training:

Table 27: Training and Capacity Building Plan

Potential Impacts	**Construction Phase**	**Operation Phase**
	Due to construction phase, following issued will occur: • Noise Pollution from Vehicles • Fugitive Dust Emissions • Solid Waste • Air Emissions • HSE • First Aid Training	During operational phase, nearby society will face problems like: • Air Pollution • Noise Pollution • Wastewater
Mitigation	**Training and Capacity Building Plan**	
Management Plan	**Training and Capacity Building Plan** Project will ensure in-house training for the project staff, labour and the	

<table>
<tr><td></td><td colspan="3">supervisory staff of the Proponent/EA through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the projects in general, and implementation requirements will emphasis on the development projects in general, and implementation requirements with emphasis on the roles and responsibilities of the staff and the labour while executing the environmental monitoring plan in particular. The training protocols will include the following aspects:
Procedures for monitoring the air quality parameters and measures to be adopted for avoiding or minimizing air pollution, particularly from the transportation of raw material.
Procedures for monitoring water quality parameters and measures to be adopted for avoiding or minimizing water pollution, particularly from the wastewater effluent generated from municipal uses and in the process activity
Safe waste disposal practices
Safety measures against hazards for workforce and the local communities arising from the construction activities
Use of safety gadgets by the workforce
Training for the use of PPEs</td></tr>
<tr><td rowspan="2">Monitoring</td><td>Responsibility</td><td>Responsible</td><td>Monitoring Duration</td></tr>
<tr><td>Training of staff, vehicle operators and labour</td><td>Project Manager / HSE Manager</td><td>1 day training once a year</td></tr>
</table>

8.6 Equipment Maintenance Details

This section highlights the importance of proper maintenance as a vital part of a safety program. In addition to ensuring that workers use the tools and equipment properly, it is vital that tools and equipment be properly inspected, maintained, and kept in good repair. This maintenance program will reduce the risk of injury, damage and lost production.

Maintenance Personnel Qualifications

The qualifications of respected personnel are key to the success of a maintenance program. All individuals who perform maintenance work will have the appropriate skills, accreditation and/or certification.

Employees Qualifications and Training

All individuals working in steel manufacturing unit will have the appropriate skills, and experience. The approval process includes the following:

1. Trained workers will be hired in respective divisions.
2. Muslim workers will be preferred for slaughtering.
3. Vision test to meet the appropriate standard. Vision tests must be conducted by competent and authorized personnel.
4. Hearing test with or without a hearing aid must be adequate for the specific operation. Hearing tests will be conducted by competent and authorized medical personnel.
5. The operator shall be trained in the following:
   - their responsibilities to operate the equipment in a safe manner;
   - familiarity and comprehension of safety requirements for the piece of mobile equipment which they intend to operate;
   - manufacturer's operating and maintenance procedures;
   - how to communicate to maintenance personnel when there is a problem with a specific piece of equipment;
   - hand signals and/or other requirements set by the company, owner, or dictated by site conditions.

Records

The maintenance program contains a recording system. Part of this system should be made up of inventories and schedules. In addition, the recording system should document what maintenance work was done, when, and by whom.

Scheduled Inspections and Maintenance

All equipments will be inspected and maintained according to the following Equipment Inspection Schedule as a minimum. Records of all inspections and maintenance are completed and maintained for review and approval.

Maintenance of equipment, release of lubrication fluids, etc., is performed only in approved areas. Spills and leaks from equipment will be cleaned up promptly.

- Only properly trained workers are to use tools, equipment and vehicles.
- Inspect all tools, equipment and vehicles before using.
- For vehicles, inspection will consist of doing a circle check.
- If applicable, maintenance schedules for all tools, equipment and vehicles are to be respected.
- Each jobsite supervisor is to conduct a bi-weekly inspection of all tools, equipment and vehicles on the site. This inspection is recorded bi-weekly using

an Inspection Checklist.

- If at any time a worker judges that a tool, equipment or vehicle is unsafe for use, they are to properly tag the item and inform the supervisor immediately.
- Tools, equipment or vehicles that are tagged unsafe shall be either repaired or replaced. Head office shall be informed.

8.7 Environmental Budget

The environmental budget for the project is estimated at PKR 7million per annum, which will be used for the operation of Dry Scrubber, environmental monitoring, tree plantation and water sprinkling etc. at various designated sites.

Table 28: Breakdown of Environmental Budget

Sr#	Component	Cost
1	Tree plantation	0.7 million
2	Operation of Dry Scrubber	6 million
3	Environmental monitoring	0.2 million
4	Water Sprinkling	0.1 million
Total Cost (PKR)		7 Million

CHAPTER 9

CONCLUSION AND RECOMMENDATIONS

9 9. CONCLUSION AND RECOMMENDATIONS

The findings of EIA Report showed that although the steel processing is expected to have significant negative impacts on the environment during the construction and operational phases but the severity of these adverse impacts can be reduced significantly by adopting EMP with true spirit. Moreover, their severity can be further reduced by adopting relative mitigation measures as proposed in the Chapter 5 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by review the documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMP and best engineering practices.

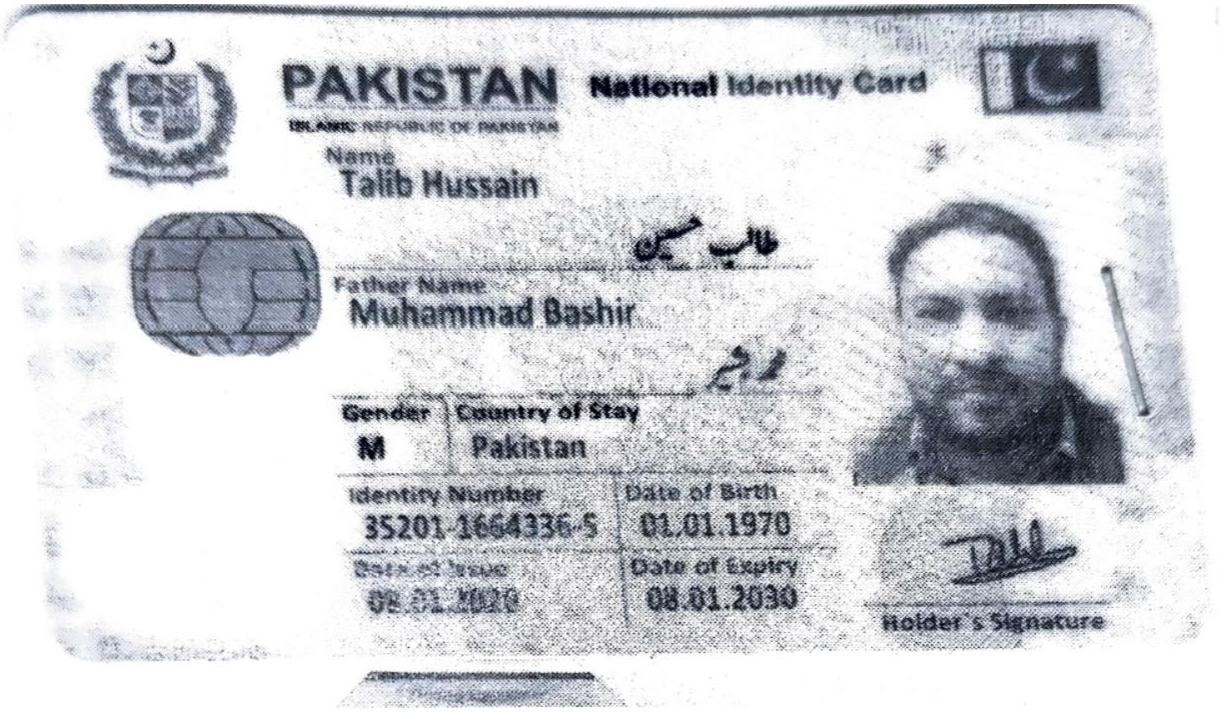
9.1 Recommendations

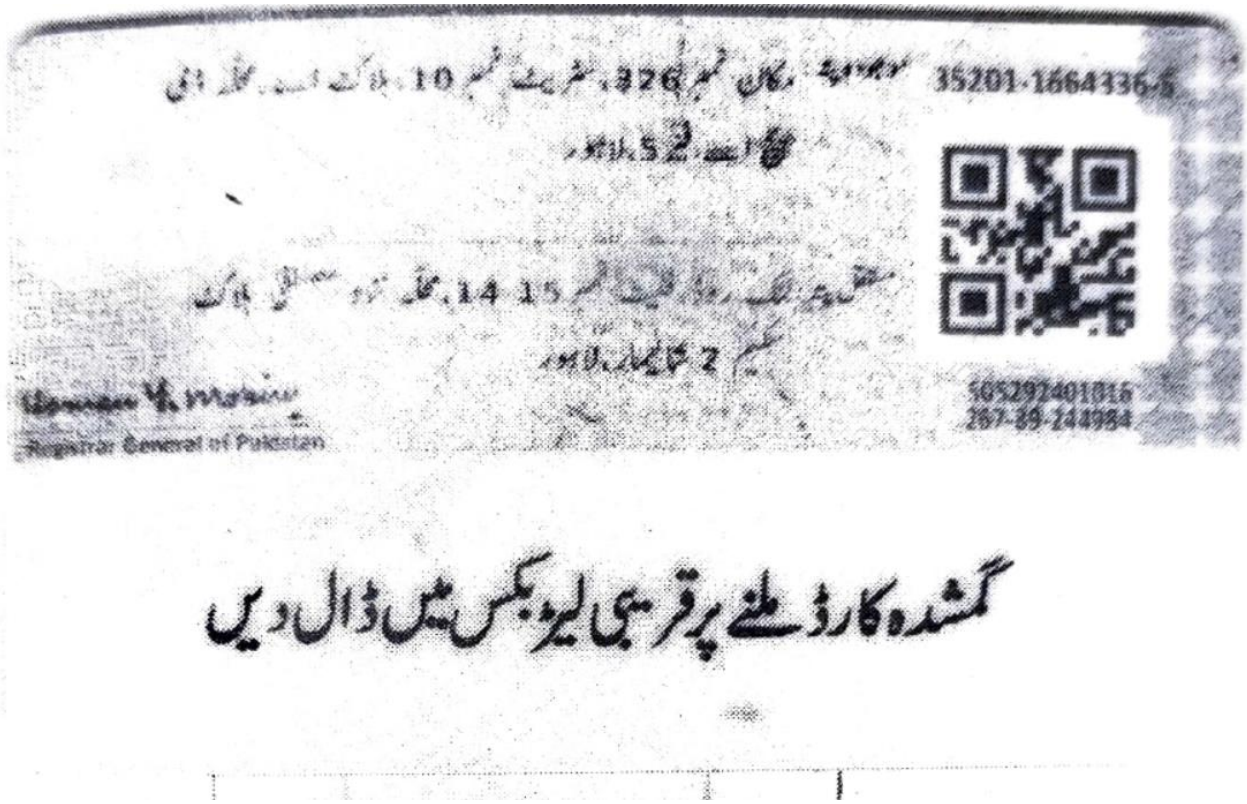
The intensity and severity of impacts occurred due to the steel processing varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the "no project development" scenario.

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMP with true spirit.
- Proper PPEs including aprons, rubber gloves and shoes should be provided to workers.
- No compromise on public health and environment should be allowed.
- Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long term benefits of the same in lieu of surrounding environment.
- A proper tree plantation plan should also be developed in order to make the process environment friendly.
- Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

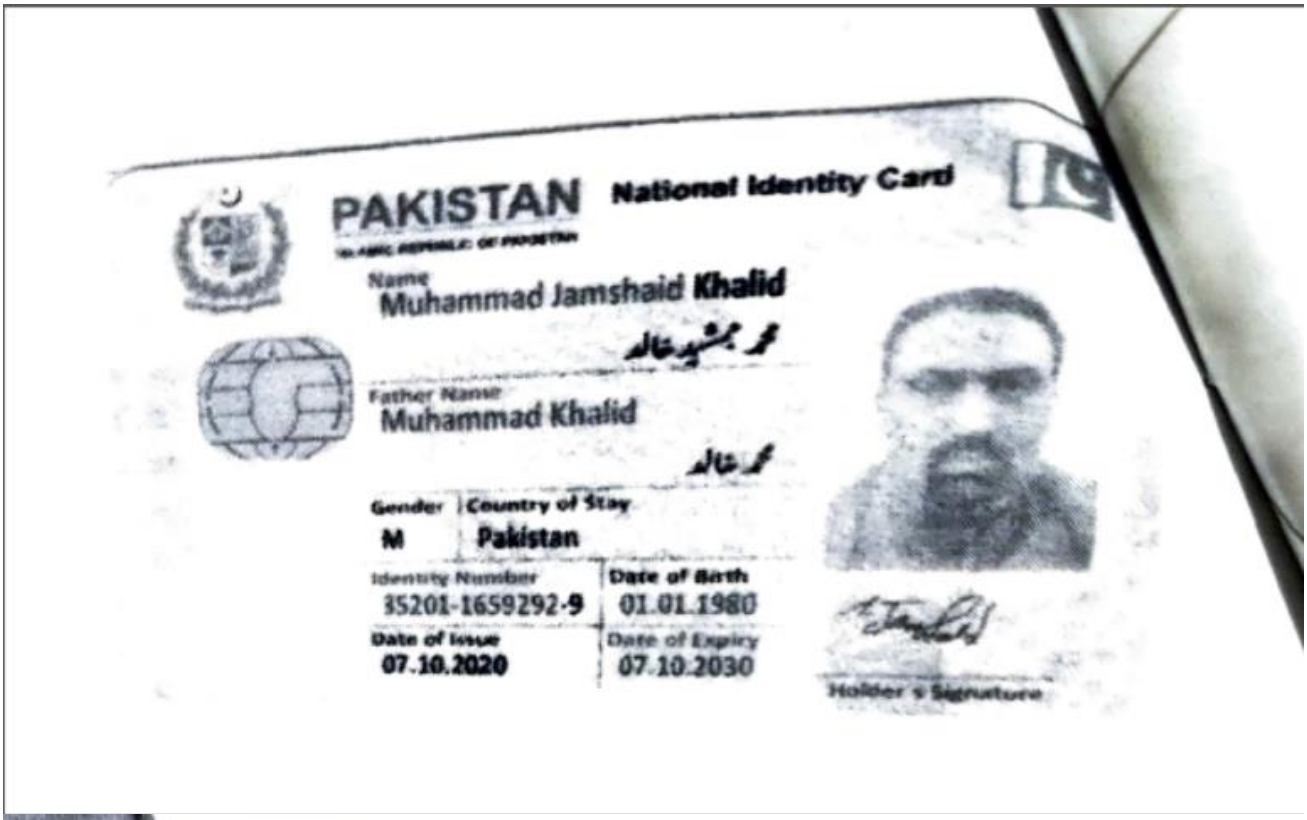
ANNEXURE I

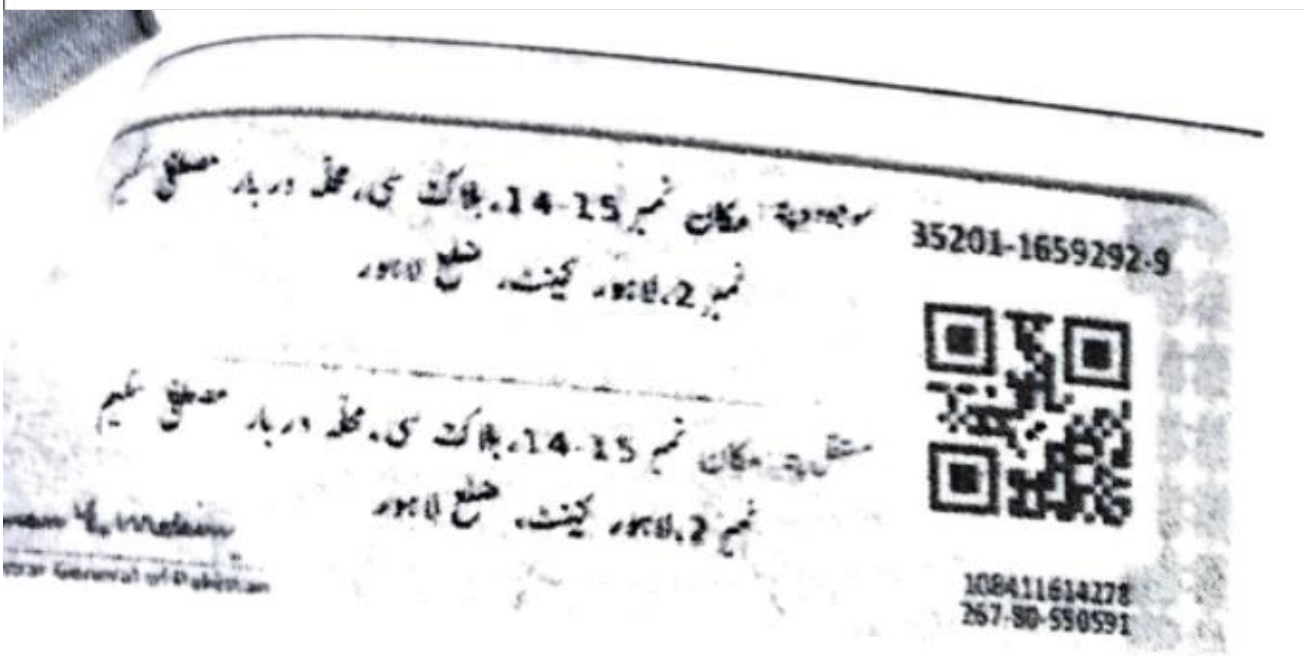
PROPONENT CNIC





Bashir Sons Steel Casting





گمشدہ کارڈ ملنے پر قریبی لیٹر بکس میں ڈال دیں

Bashir Sons Steel Casting

ANNEXURE II

PROPERTY DOCUMENTS

Bashir Sons Steel Casting

PAKISTAN

10,000 RS.

TEN THOUSAND RUPEES

دس (۱۰,۰۰۰) ہزار روپیہ

پاکستان

مدنی سٹریٹ شاہ جمال روڈ مرید کے تحصیل فیروزوالہ ضلع شیخوپورہ کا بروئے دستاویز نمبر 877 جلد

2

نمبر 198 مصدقہ مورخہ 2004-9-07 کا مختار عام ہوں مسمی مذکور زندہ حیات ہے اور مختار نامہ عام

36, 37, 33

مذکورہ ابطال نہ ہوا ہے مسمی مذکور بروئے نقل حقداران زمین سال 2000-2001 کھیوٹ

نمبر 32 کھتونی نمبران 72,73 مربع نمبر 112 کیلہ نمبر 1 رقبہ 8K-0M کیلہ نمبر 10 رقبہ

8K-0M قطعات 2 رقبہ 6K 0M کا منتقلہ 3/4 حصہ بقدر 12K-0M کھیوٹ

نمبر 33 کھتونی نمبر 74 مربع نمبر 112 کیلہ نمبر 11 قبہ 4K-0M کا منتقلہ 9/16 حصہ

بقدر 2K - 5.M کھیوٹ نمبر 29 کھتونی نمبر 69 مربع نمبر 111 کیلہ

نمبر 4/1 رقبہ 1K-11M کیلہ نمبر 5 رقبہ 8K-0M قطعہ 2 رقبہ 9K-11M کا منتقلہ 1/2 حصہ

33

بقدر $4K\text{-}15^{1}/_{2}M$ کلہم رقبہ $19K\text{-}^{1}/_{2}M$ (انیس کنال آدھا مرلہ) بحساب جریب واقع

رقبہ موضع شاہ کے تحصیل فیروزوالہ ضلع شیخوپورہ بحوالہ انتقال نمبر 1540 کا بلاشراکت غیرے مالک

وقابض ہوں۔ جس کے ابدال وفروختگی کے من مظہر مختار عام کو کلی اختیارات حاصل ہیں۔ متذکرہ

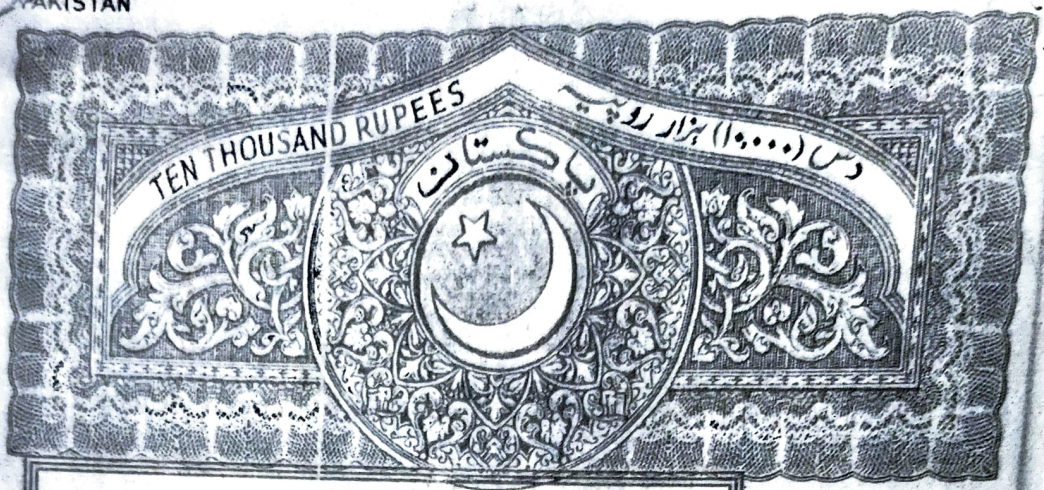
بالا رقبہ مبراء از بار کفالت ہے۔ کسی بھی بینک یا دیگر اداروں میں مکفول نہ ہے۔ متذکرہ بالا رقبہ کی بابت

العبد العبد

حسن ... مختار عام بائع محمد خالد یکے از مشتریان

PAKISTAN

10,000 RS.



3

کوئی بھی مقدمہ کسی بھی عدالت میں زیر سماعت نہ ہے۔ محکمہ مال میں جائیداد متذکرہ بالا کی نسبت کسی قسم کی کوئی بھی مقدمہ بازی نہ ہے۔ رقبہ مذکورہ کے بابت مثلی کوئی امر مانع نہ ہے۔ غرض کہ من مظہر مختار عام کو متذکرہ بالا رقبہ بیع وغیرہ کرنے کا اخلاقی وقانونی حق واختیارات حاصل ہیں۔ یہ کہ رقبہ بلا بار ہے۔ لہذا بقائمی ہوش وحواس خمسہ اثبات عقل رضامندی خود بلا جبر واکراہ من مظہر مختار عام نے رقبہ متذکرہ بالا معہ ہر قسم حق وحقوق اندرونی، بیرونی ظاہری، باطنی، داخلی، خارجی، معہ راستہ جات گزرگاہ وغیرہ معہ ذرائع آبپاشی نل چاہی نہری، ٹیوب ویل سرکاری وغیر سرکاری معہ حصہ پانی وارہ بندی معہ وٹ بناء کھال، کھدل، کھرلی وغیرہ معہ درختان، ثمر وغیر ثمر معہ حقوق تعمیر ورہائش وآسائش وغیرہ بالعوض مبلغ -/20,00,000 روپے (بیس لاکھ روپے) بابت وبحق محمد خالد وغیرہ (مشتریان) بحصہ برابر مذکوران بیع قطعی فروخت دائمی کر کے کل وتمام زر ثمن نقد وصول کر لیا ہے اور کوئی رقم بقایا بذمہ مشتریان مذکوران نہ ہے قبضہ ارانضی بحوالہ مشتریان موقع پر کروادیا گیا ہے اور اپنا قبضہ ہر قسم رقبہ مذکورہ سے اٹھالیا ہے۔ سو آج سے مشتریان مذکوران مالک کامل ہوئے نیز مشتریان مذکوران جس طرح چاہیں رقبہ مذکورہ کو اپنے تصرف واستعمال میں لاویں۔ بیع ہبہ، رہن وغیرہ کرے۔ دستاویز ہذا متعلقہ

العبد **العبد**

حسن عمران مختار عام بائع — محمد خالد یکے از مشتریان

PAKISTAN

10,000 RS

TEN THOUSAND RUPEES

دس (10,000) ہزار روپے

پاکستان

4

محکمہ جات میں پیش کر کے انتقال وغیرہ اور ہر قسم کے اندر بات اپنے نام کروائیں۔ کسی قسم کے بار کفالت برآمدگی نقص ملکیت کی صورت میں یا کسی قسم کی قانونی چارہ جوئی کی وجہ سے جائیداد مذکورہ مشتریان مذکوران کے قبضہ سے نکل جائے تو من مظہر اور من مظہر کے قائمقامان، جانشینان، من کلیمان وورثان، بازگشت کی ذات وجائیداد منقولہ وغیرہ منقولہ ہر قسم ذمہ دار ہوگی۔ رقبہ مذکورہ ہر قسم کے بار کفالت سرکاری وغیرہ سرکاری ٹیکسوں معاملات سے۔ بری الذمہ ہے اور اگر کسی قسم کے کوئی واجبات نکلے تو من مظہر بائع خود ادا کرنے کا پابند ہوگا۔ بعدم حاضری من مظہر انتقال ہو جانے پر کوئی اعتراض نہ ہوگا۔ لہذا بیع نامہ بقائمی ہوش وحواس خمسہ بلا جبر واکراہ روبرو گواہان حاشیہ تحریر کروا دیا اور پڑھ لیا ہے۔ اور دستاویز ہذا پر دستخط ونشان انگوٹھا ثبت کر دیے ہیں۔ تاکہ سند رہے اور بوقت ضرورت کام آوے۔ دستاویز ہذا تحریر کر کے حوالے فریقین کر دی گئی ہے مورخہ 13/9/01

المرقوم: ملک قاسم علی وثیقہ نویس

العبد	العبد
حسن عمران مختار عام بائع	محمد خالد یکے از مشتریان
H. I...	محمد خالد

العبد

حسن عمران مختار عام بائع

35401-5398971-3

14/9/24

8748

35201-1659290-9

العبد

محمد خالد کے از مشتریان

35401-1226891-9

گواہ

گواہ

شناخت کنندہ

PAKISTAN 3462 1978 اشٹام نمبر 68 10,000

TEN THOUSAND RUPEES دس (۱۰۰۰۰) ہزار روپیہ

پاکستان

بسم اللہ الرحمن الرحیم

1

CONTRACTOR
Tax on Immoveable Property
TEH. FEROZEWALA 2006-2007
Tax Rs. 22,835
Doc. No. 4701
Date 06-4-07

بیع نامہ

دستاویز بیع نامہ زرعی رقبہ تعدادی 5 کنال 6 مرلے
واقع رقبہ موضع شاکے تحصیل فیروزوالہ ضلع شیخوپورہ

کل زرِ ثمن مبلغ بائیس لاکھ باون ہزار پانچ صد (-/22,52,500) روپے

بحق

محمد طارق، محمد جاوید پسران محمد بشیر ساکن سکیم نمبر 2 دربار مصطفیٰ لنک روڈ شالیمار لاہور (بحصہ برابر)
محمد جمشید خالد، شاہد خالد پسران محمد خالد ساکنان محلہ انگوری باغ سکیم نمبر 2 شالیمار ٹاؤن لاہور

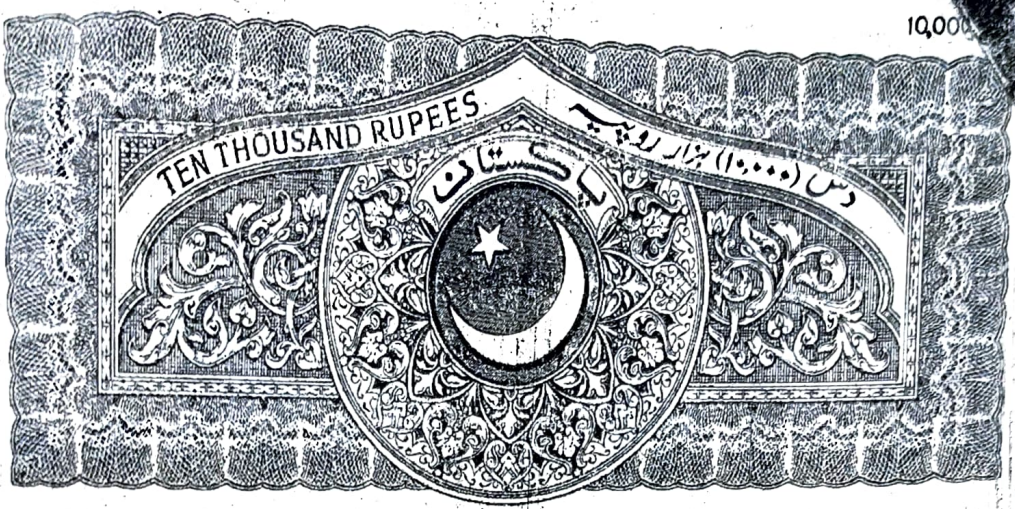
مایانکہ ثریا بی بی عرف ثریا بیگم دختر غلام حیدر قوم راجپوت ساکن

العبد
ثریا بی بی عرف ثریا بیگم بائعہ مذکور

العبد
محمد طارق یکے از مشتریان
محمد افضال ولد اصغر علی
Afzal

PAKISTAN

10,000



2

موضع شاکے تحصیل فیروزوالہ ضلع شیخوپورہ کی ہوں۔ جو کہ من مظہرہ

بروئے نقل رجسٹر حقداران زمین 01-00-2000ء از کھیوٹ

نمبر 81 من، کھتونی نمبر 173 من، مربع نمبر 111، کیلہ نمبر 6 رقبہ

تعدادی 8 کنال، کیلہ نمبر 7 رقبہ تعدادی 8 کنال، کیلہ نمبر 8 رقبہ

تعدادی 8 کنال، کیلہ نمبر 9 رقبہ تعدادی 8 کنال، کیلہ نمبر 10 رقبہ

تعدادی 8 کنال، کیلہ نمبر 13 رقبہ تعدادی 8 کنال، کیلہ نمبر 14

رقبہ تعدادی 4 کنال 16 مرلے، کیلہ نمبر 15 رقبہ تعدادی 1 کنال

11 مرلے قطعات 8 میزان رقبہ تعدادی 54 کنال 7 مرلے کا

العبد

ثریا بی بی عرف ثریا بیگم بالعہ مذکور

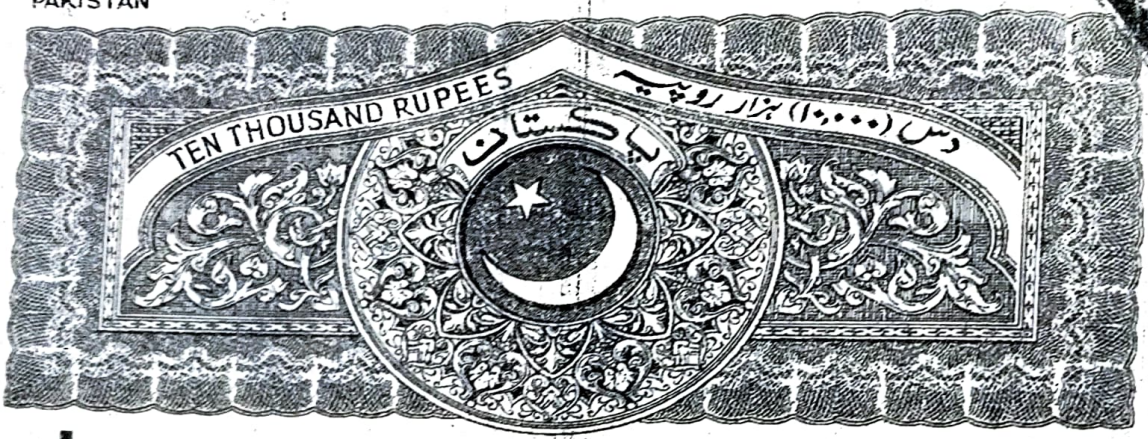
العبد

محمد طارق یکے از مشتریان

محمد افضال ولد اصغر علی

PAKISTAN

10,00



3

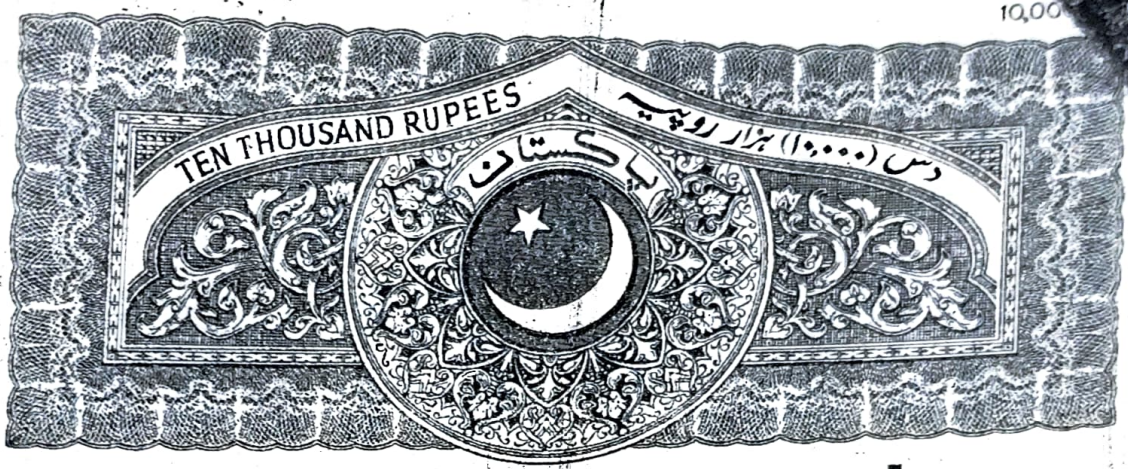
منتقلہ حصہ 7/72 رقبہ بقدر 5 کنال 6 مرلے بحساب جریب واقع رقبہ موضع شاکے تحصیل فیروزوالہ ضلع شیخوپورہ بحوالہ ریٹ نمبر 397 مورخہ 27-03-2007 مرتبہ فرد پٹواری حلقہ کی مالکہ و قابضہ بلا شرکت غیرے موجود ہوں۔ اراضی مذکورہ بالا ہر قسم کے بار کفالت و تنازعات سے پاک و صاف ہے۔ جس کے ابدال و فروختگی کے اختیارات مجھے مکمل حاصل ہیں۔ لہٰذا آج بقائمی ہوش وحواس خمسہ درستگی عقل صحت نفس بلا جبر و اکراہ بلا دھوکہ دہی و فریب کسی دیگر شخص کے خوشی و رضامندی خود سے معہ جملہ حق وحقوق متعلقہ

العبد
ثریا بی بی عرف ثریا بیگم بائعہ مذکور

العبد
محمد طارق یکے از مشتریان
محمد افضال ولد اصغر علی
افضال

PAKISTAN

10,00



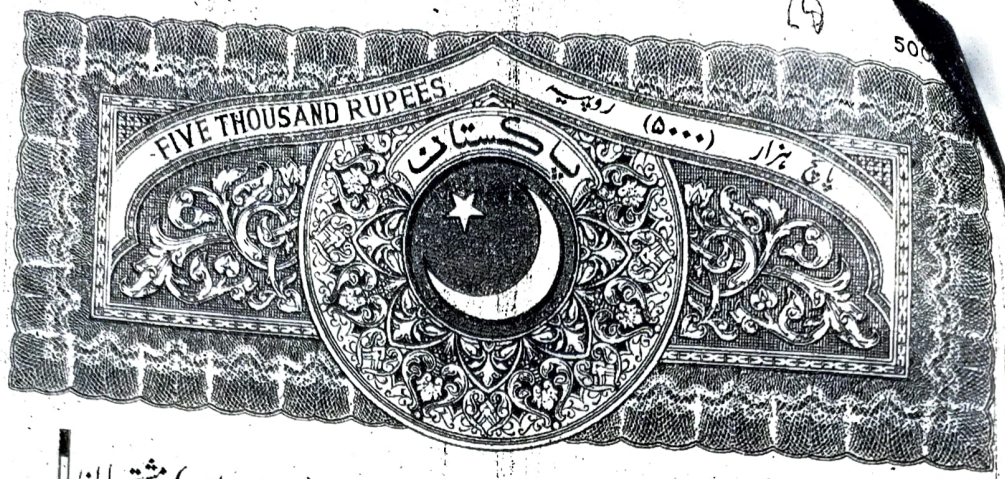
4

اَش، تمام تر اندرونی بیرونی، داخلی خارجی، ظاہری باطنی، معہ حقوق انتقال و ابدال معہ حقوق نہری چاہی، آبپاشی، درختان ایستادہ گزرگاہ، ٹوبہ، ٹبہ وغیرہ ہر قسم متعلقہ اَش اراضی مذکورہ بالا بالعوض مبلغ بائیس لاکھ باون ہزار پانچ صد (22,52,500/-) روپے نصف جن کے مبلغ گیارہ لاکھ چھبیس ہزار دو صد پچاس (11,26,250/-) روپے ہوتے ہیں میں بدست و بحق محمد طارق، محمد جاوید پسران محمد بشیر ساکن سکیم نمبر 2 دربار مصطفیٰ لنک روڈ شالیمار لاہور، محمد جمشید خالد، شاہد خالد پسران محمد خالد ساکنان محلّہ

العبد
ثریا بی بی عرف ثریا بیگم بائعہ مذکور

العبد
محمد طارق یکے از مشتریان
محمد افضال ولد اصغر علی

PAKISTAN

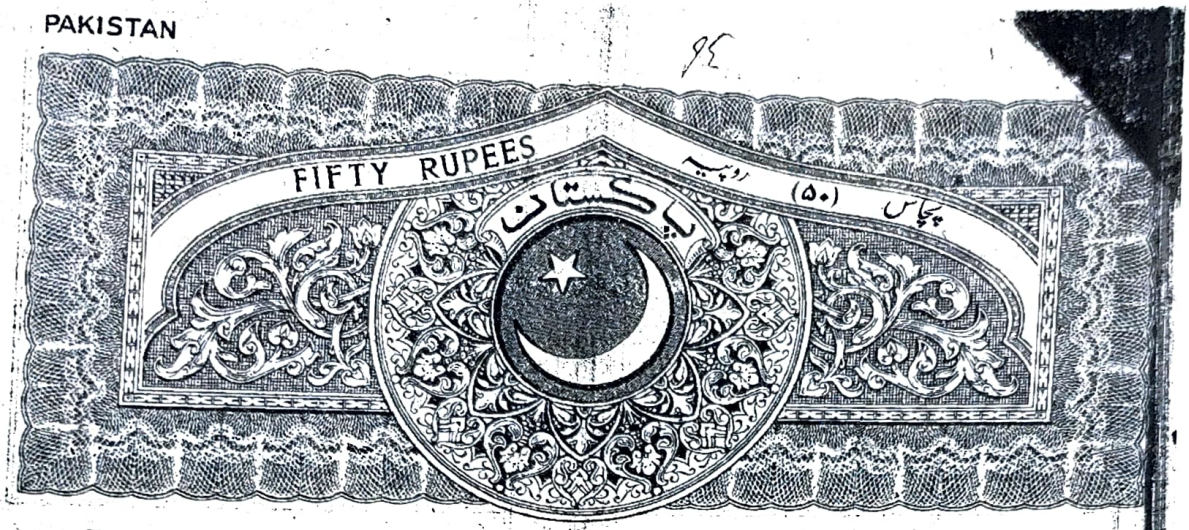


انگوری باغ سکیم نمبر 2 شاہ پمار ٹاؤن لاہور (بحصہ برابر) مشتریان مذکوران کو بیع قطعی و فروخت دائمی کر دی ہے۔ بقایا کوئی رقم بذمہ مشتریان مذکوران نہ رہی ہے اور نہ ہی آئندہ ہوگی۔ قبضہ اراضی مذکورہ بالا حوالے مشتریان مذکوران کر دیا گیا ہے۔ اپنا قبضہ و دخل ہر قسم آج سے اٹھا لیا ہے۔ من بائع یا وارثان، بازگشت، قائمقامان کا اراضی مذکورہ بالا سے کوئی تعلق واسطہ نہ رہا ہے اور نہ ہی آئندہ گر من بائع کی ملکیت میں کوئی نقص نکلا جس سے مشتریان مذکوران کے زرثمن کو کوئی نقصان پہنچا تو من منظرہ کی ذات خاص و جائیداد ہر قسم کی ذمہ

العبد
ثریا بی بی عرف ثریا بیگم بائعہ مذکور

العبد
محمد طارق یکے از مشتریان
محمد افضال ولد اصغر علی
افضال

PAKISTAN



6

دار ہوگی۔ من بائع کی عدم حاضری میں تصدیق شدہ بیع نامہ پیش کر کے کاغذات مال میں مشتریان مذکوران اپنے نام انتقال کروا سکتے ہیں۔ من بائع کو کوئی عذر و اعتراض نہ ہوگا۔ خرچہ رجسٹری ہر قسم مشتریان مذکوران نے گرہ خود سے برداشت کیا ہے۔ لہٰذا بیع نامہ اراضی زرعی بحق مشتریان مذکوران آج روبرو گواہان حاشیہ تکمیل و تصدیق کرا دیا گیا ہے تا کہ سند رہے اور بوقت ضرورت کام آوے۔

الراقم: محمد عارف ورائچ کلرک آف چوہدری عباس علی ڈھلوں

ایڈووکیٹ ہائیکورٹ مورخہ 06-04-2007

العبد
ثریا بی بی عرف ثریا بیگم بائعہ مذکور

العبد
محمد طارق یکے از مشتریان
محمد افضال ولد اصغر علی

PAKISTAN 4748 10,000 RS.

TEN THOUSAND RUPEES

دس (10000) ہزار روپیہ

پاکستان

بسم اللہ الرحمن الرحیم

1

بیعنامہ

Contract of Transfer Property Tax
FE...

Ref. No. 99145206

Date 11-8-06

Signature ...

دستاویز بیعنامہ زرعی رقبہ تعدادی 19K-1/2M (انیس کنال آدھا مرلہ) بحساب جمعبندی

واقع رقبہ موضع شاکے تحصیل فیروز والہ ضلع شیخوپورہ

بحق

محمد خالد، طالب حسین پسران محمد بشیر قوم شیخ

ساکن باغبانپورہ شالیمار لنک روڈ انگوری باغ سکیم نمبر 2 مکان نمبر 14/15 لاہور (مشتریان) بحصہ برابر

کل زرِ ثمن	پیشگی وصول شد	بذریعہ وثیقہ رجسٹرار فیروز والہ
-/20,00,000 روپے	-/20,00,000 روپے	XXXXXXX

منکہ حسن عمران ولد محمد حسین قوم جٹ ہنجرا ساکن رحمان پورہ مریدکے تحصیل فیروز والہ ضلع

شیخوپورہ کا ہوں جو کہ من مظہر منجانب مسمی خورشید احمد ولد نعمت اللہ قوم شیخ ساکن مکان نمبر 15

العبد　　　　العبد

حسن عمران مختار عام بائع　　　　محمد خالد یکے از مشتریان

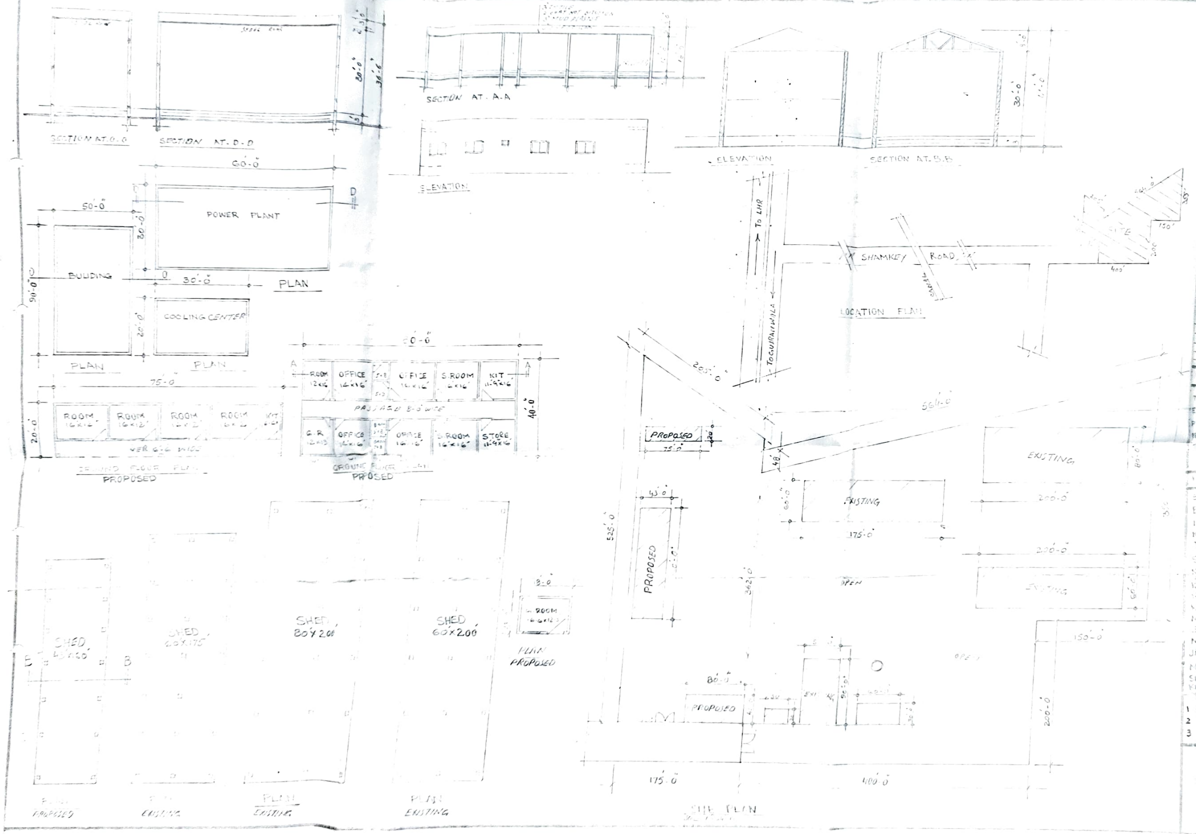
33

36

37

ANNEXURE III

LAYOUT MAP



APPROVED

Sr. No: 370 Dated: 29/11/05
(APPROVED MAP)
Without Any Project and
Encroachment

Tehsil Nazam, Teh:officer (P&C)
Tehsil Municipal Administration
Ferozwala Distt. Sheikhupura.

11-03-05

SCHEDULE DOOR & WINDOW

S NO	SIZE	QTY	DESCRIPTION
1	4-0x8-0	15	D
2	2-6x7-0	16	D
3	10-0x12-0	6	D
1	6-0x4-0	10	W
2	2-0x2-0	10	VL

STATEMENT OF AREA

TOTAL PLOT AREA [illegible]
EXIST COV AREA 46880 SFT
PROPOSED COV AREA = 10348 "
OPEN AREA OF PLOT = 394292 "
TOTAL COV AREA [illegible]

PROJECT

EXISTING & PROPOSED PLAN
BASHIR SONS STEEL CASTING
INDUSTRY 16 KM G.T ROAD
KALA SHAH KAKU SHAMKEY STOP
TEH - FEROZWALA DISTT
SHEIKHUPURA
KHEWAT NO - 61-561-29-55-40-520 + 31
KHUTNI NO - 173-862-60-74-774-777
MURABA NO - 11 - 354
KILLA NO - 6-7-8-11-15-41 [illegible]
MOHAMMAD KHALID. TALIB HUSSAIN S/O MOHAMMAD BASHEER
MOHAMMAD TARIQ. MOHAMMAD JAVED S/O MOHAMMAD BASHEER
MOHAMMAD JAMSHAID KHALID
SHAHID KHALID S/O MOHAMMAD KHALID

1 ______ 4 Jamshed
2 ______ 5 ______
3 ______ 6 ______

TAHIR ZAHEER ASSOCIATES
Architect [illegible] Planner
& Constructs Regd Member (PCATP) No.352
Flat No. 15.A, Rachna Shopping Centre
G.T. Road Rachna Town, Ferozwala

ANNEXURE IV

BASELINE MONITORING REPORTS

Bashir Sons Steel Casting

ANNEXURE V

A3 MAP


Bashir Sons Steel Casting
Location Map
Legend
Bashir Sons Steel Casting (31°42'13.67"N, 74°15'20.04"E)
Bashir Sons Steel Casting (31°42'13.67"N, 74°15'20.04"E)
Google Earth
Image © 2025 Airbus
800 ft
N

ANNEXURE VI

GLOSSARY

GLOSSARY

Alternatives	The evaluation of alternatives to project development in EIA (timing, location, technologies etc) including the no go, or no development action.
Ambient	Relating to the immediate surroundings of something
Contamination	Pollution
Conservation	The preservation of natural resources for use by future generations
Consultation	A process of communication with those potentially affected by a project, policy, plan or program.
Effluent	means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor
EMP	An EMP is a site specific or project specific plan developed to ensure that appropriate environmental management practices are followed during a project's construction and operation.
Environment budget	Monitory assets reserve for environmental activity
Environment	means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned
Environmental Audits	An environmental management tool consisting of a periodic and objective evaluation of an organization and installations to assess compliance with regulatory and other requirements, as defined by audit criteria
Environmental	means an environmental study comprising collection of

Impact Assessment	data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed
Extent/ Magnitude	The size or degree of the predicted impact
Fauna	Animal life occurring in particular region or time
Flora	plant life occurring in particular region or time
Geological	Relating to the study of the earth's physical structure and substance.
Impact	The consequence of an action or activity on the human or natural environment. Impacts may be positive, negative or neutral
Issue	A question or concern regarding an environmental impact, consequence or effect
Mitigation	Prescribed actions taken to prevent, avoid, reduce or minimize the impacts or potential adverse effects of a project
Monitoring	A combination of observation and measurement to assess the environmental and social performance of a project and its compliance with EIA/ EMP, or other approvals and regulatory conditions
Particulate Matter	A complex mixture of extremely small particles and liquid droplets that get into the air
Proponent	the person who intends to carry-out a proposed project
Sustainable development	Economic development that is conducted without depletion of natural resources.
Waste	means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process