



FINAL REPORT

MARCH 2023

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

STEEL CASTING AND ROLLING MILL PROJECT



**EMC Pakistan
Private Limited**



ASIRANCE STEEL (PVT) LTD



ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Steel Casting and Rolling Mill Project

Final Report
March 2023
Ref: EIA/02/03/23



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Executive Summary

Risesince Steel (Private) Limited is the proponent of the proposed "Steel Casting and Rolling Mill Project" that will be located at Gharo, District Thatta, Sindh. The proponent has engaged EMC Pakistan (Pvt) Limited to conduct the Environmental Impact Assessment (EIA) of the project.

Project involves setting up steel casting and hot rolling mill of annual production capacity of up to 2,000,000 tons. In first phase, however, a 500,000 tons/annum continuous casting and rolling production line will be established. The main project production units in the first phase are four 30t Electric Arc Furnaces and one continuous casting and rolling mill. Total investment for the project is 966.5076 million Yuan.

Location of the Project is shown in the figure below;

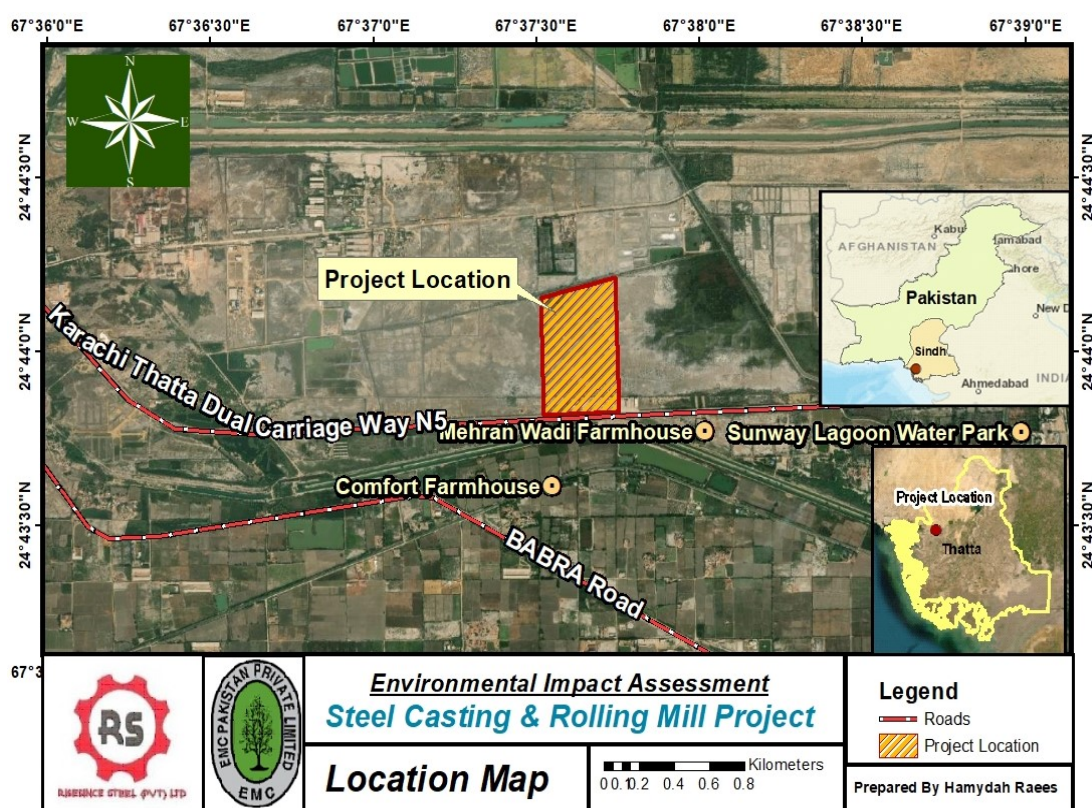


Figure Ex 1: Location Map of the Project

Being classified in Schedule II under the Sindh EPA (Environmental Assessment) Regulation 2021, an Environmental Impact Assessment (EIA) of the project has been carried out to meet the environmental assessment requirements.

The findings of impact assessment and visual inspections of existing environment of the project area in the present scenario indicates following main impacts along with simultaneous relevant and appropriate mitigation measures:

- The project will add to the overall development of the industrial area in terms of enhancement in industrial production, particularly of steel products.

- Project site has no sensitive areas such as protected sites including wildlife sanctuaries, game reserves or national parks, or any archaeological, historical or cultural heritage in its neighborhood; as such its siting would have no sensitivity in this regard.
- The waste generated during site clearance and construction will be excavated, rejected materials, surplus materials, paper bags, empty cartons, packaging waste and scrap. Construction waste will be reused, recycled or sold to potential consumers or will be disposed of through municipal administration.
- Air emissions during operations of electric arc furnaces will be routed to cyclone dust collector to remove particulates before releasing the exhaust to ambient air. Air emissions from heating furnace will be undergone wet scrubber before being released to atmosphere.
- Slag from steel making will either be recycled, sold to potential vendors or disposed in approved landfill/dumpsites.
- Wastewater from the mill is expected to be mainly domestic in nature. Wet scrubbing process will also generate wastewater. A packaged-type wastewater treatment plant is recommended, consisting at least of primary sedimentation and neutralization.
- Hazardous waste, if any, in the operational phase will be disposed of through EPA certified waste contractor for incineration.
- Prior to the commencement of construction works, the Environment, Health and Safety (EHS) specialists will develop a construction phase Occupational Health and Safety Plan (OHSP).

This EIA study was carried out to assess the environmental impacts during the siting, construction and operational phase of Steel making Project in Ghara, Sindh. The assessment was carried out according to the requirements of Sindh Environmental Protection Act, 2014 and all applicable national and international standards.

The baseline environmental and socioeconomic information was collected from a variety of sources, including reports of previous studies, published literature, and field surveys (primary information). The information collected was used to develop baseline conditions of project area with respect to the natural, socioeconomic, and cultural environments likely to be affected by the project.

The proposed project activities were reviewed, and an assessment made of the potential impact of these activities on the area's natural, socioeconomic, and cultural environments is also described in this report. Where appropriate, mitigation measures were recommended to keep the adverse environmental impact within the acceptable limits.

It is therefore concluded that if the project activities, including the implementation of all mitigation measures, are carried out in line with recommendations suggested in the report, the impacts from project's construction and operation will not be adverse so as to deteriorate the environmental quality of the project area. Additionally, careful implementation of the Environmental Management Plan (EMP) will ensure that the environmental impacts are proportionally managed and minimized and the project proponent meets all statutory requirements.



There are two essential recommendations that need to be followed to ensure that the environmental impacts of the project are successfully mitigated. The proponent shall ensure that:

- All mitigation, compensation and enhancement measures proposed in this EIA report are implemented in full, as described in the document;
- The Environmental Management Plan is implemented in letter and spirit.

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1 Introduction

1.1 General

This document presents the findings of an Environmental Impact Assessment (EIA), carried out by EMC Pakistan Pvt. Limited for the proposed Steel Casting and Rolling Mill Project being executed by Risesince Steel (Private) Limited, located at Deh Khariseer, Tappo Ghara, Taluka Mirpur Sakro, District Thatta, Sindh.

The EIA report conforms to the requirements of Section 17 of the Sindh Environmental Protection Act, 2014, which says;

"No proponent of a project shall commence construction or operation unless he has filed with the Agency an initial environmental examination or environmental impact assessment, and has obtained from the Agency approval in respect thereof."

1.2 Project Proponent

Risesince Steel (Pvt) Ltd.

President: Lin Guanru

Chief engineer: Weng Xiaoqing

Project leader: Lin Guanliang

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1.3 Project Environmental Consultant

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1.4 Risesince Steel (Pvt) Ltd – The Proponent

Risesince Steel (Pvt) Ltd. is also a well-known entrepreneur in China. He has brought many years of enterprise management experience into Pakistan, already owned Mining Business in Mansehra District of Khyber Pakhtunkhwa Pakistan, promote the continuous development of economy, fill in lack of large-scale continuous casting and rolling technology to produce construction wire rods and round steel product enterprise.



1.5 Project in Brief

The proposed Steel Mill project involves annual production of upto 2,000,000 tons of Steel. The first phase of the project includes a 500,000 tons annual continuous casting and rolling production line, the main equipment units are four 30t Electric Arc Furnaces and one continuous casting and rolling mill.

The project details are described in the table below:

Table 2.1- Salient Features of the Project	
Project Name	Steel Casting and Rolling Mill Project
Proponent	M/s Risesince Steel (Pvt) Ltd.
Project Location	Survey no. 522, 523, 561 & 562, Deh Khariseer, Tappo Ghara, Tappo Ghara, Mirpur Sakro, District Thatta
Area of Land	64 acres
Main Processes	▪ Steel-Making (Main Process) ▪ Steel Rolling (Main Process) ▪ Oxygen Making (Auxiliary Production Device) ▪ Air Compressor Station (Auxiliary Production Device) ▪ Warehouse
Environmental & Industrial Health Considerations in Project Design	▪ Environmental Protection Law of Pakistan ▪ Air Pollution Discharge Standard for Industrial Furnace Cellars GB9097-1996 ▪ Design Hygiene Standard for Industrial Enterprises GBZ1-2002 ▪ Pollutant Emission Standard for Iron and Steel Industry GB13456-92 ▪ Standard for Comprehensive Emission of Atmospheric Pollutants GB16297-1996 ▪ Environmental Air Quality Standard GB3095-1996 ▪ Urban Regional Environmental Noise Standard GB3096-93 ▪ Boiler Air Pollutant Emission Standard GB13271-91 ▪ Noise Measurement Method for Industrial Enterprises GB12349-90
Cost of the Project	966.5076 million Yuan (approx. 40billion PKR)

1.6 Location of the Project

The project is located at survey numbers 522, 523, 561, and 562, in Deh Khariseer, Tappo Ghara, Mirpur Sakro, and District Thatta. Thatta is only 100 kilometres from Karachi and approximately 100 kilometres from Hyderabad. It is also near Port Qasim, which is a very convenient place for road and rail transportation.

Detailed project location map is shown in Fig 1.1.



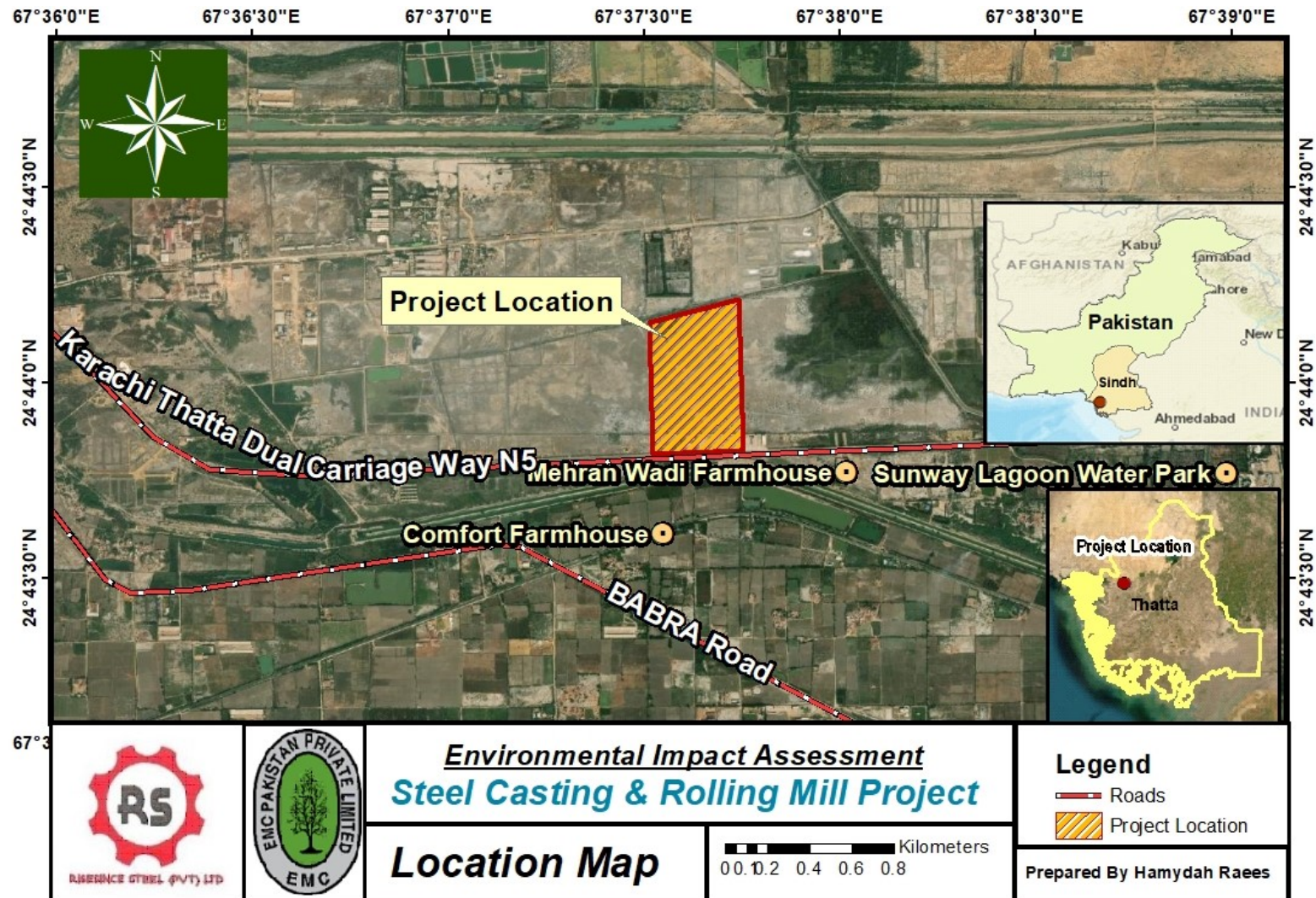


Fig 1.1: Project Location Map

1.7 Project Need and Background

In recent years, Pakistan's economic development had been growing, but its industrial level is low. In 2016, the apparent per capita steel consumption is only 39.5kg, which is 19% of the world average. It is far lower than that of many developing countries. The growth potential of medium and long-term steel consumption demand is huge. At present, the problems of Pakistan's iron and steel industry exist in lacking outside investment, the aging equipment, backward technology, insufficient production capacity, low product quality and few varieties. About 70% of steel products need to be imported. The Pakistani government encourages the development of iron and steel industry and actively introduces foreign capital. Risesince Steel (Pvt) Ltd. uses advanced technology and equipment to produce wire rods and round steels for construction, which provides a better product for Pakistan's construction and achieves obvious economic benefits.

1.8 Justification and Categorization of Project

Environmental Impact Assessment (EIA) of the proposed Project, has been carried out in compliance with the mandatory requirement of Section 17 of Sindh Environmental Protection Act (SEPA), 2014 which requires that:

“No Project shall commence construction or operation unless it has filed with the Agency an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) and has obtained from Agency approval in respect thereof. SEPA shall review the IEE & EIA and accord approval subject to such terms and conditions as it may prescribe or require.”

SEPA Regulations 2021 categorize projects into three separate schedules depending on whether a project requires an Environmental Checklist (Schedule-I) or an IEE (Schedule-II) or EIA (Schedule III). The Regulations also require that all projects located in environmentally sensitive areas need submission of an EIA.

On the basis of the nature and scope of project, it has been accordingly categorized into Schedule-III;

C. Manufacturing and processing

4. Steel Mills

Therefore, the EIA has been carried out to evaluate the environmental impact of proposed Project.

Figure 1.2 shows the EIA/IEE process in Pakistan.



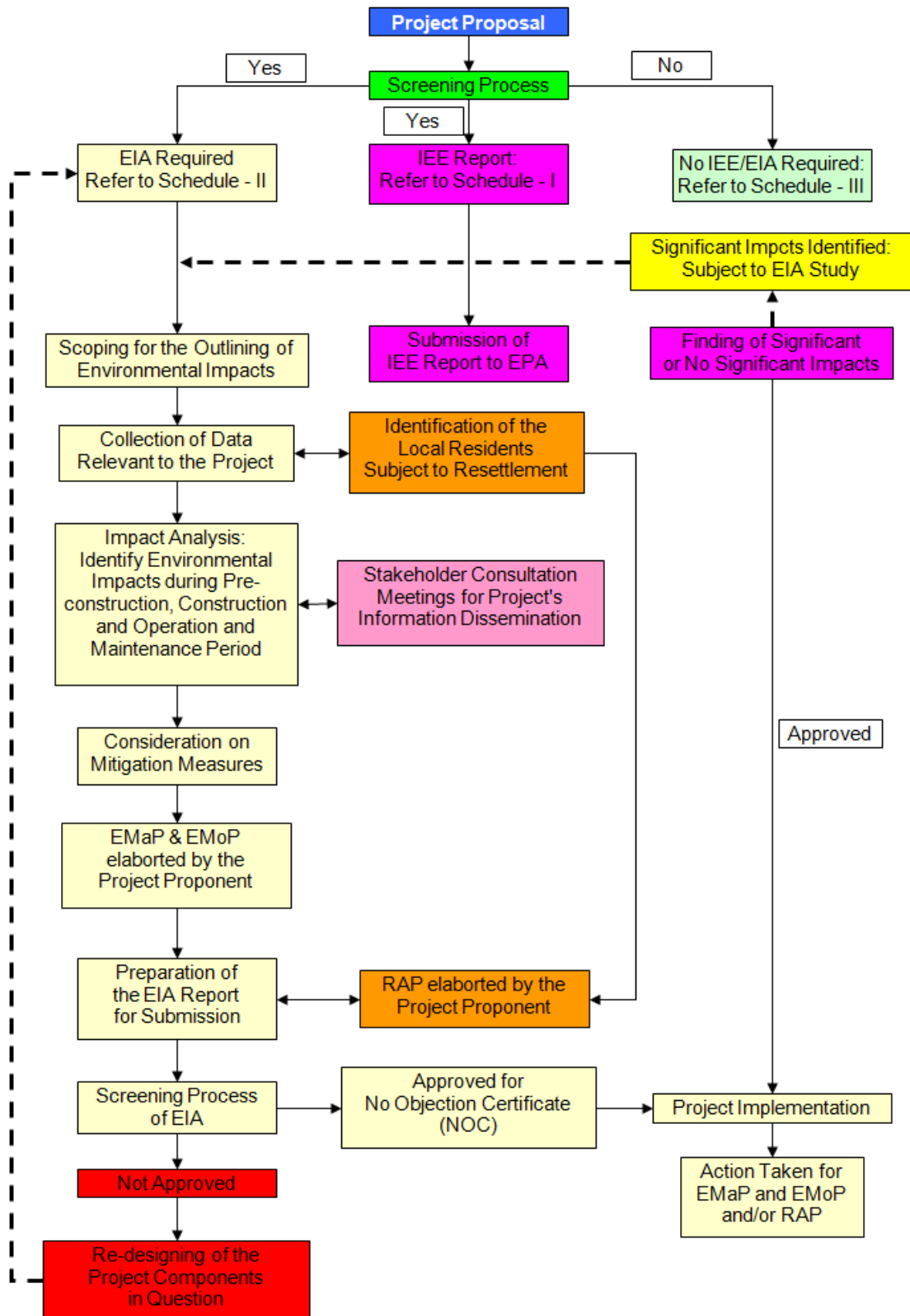


Figure 1.2: EIA/IEE Process in Pakistan

1.9 Scope of EIA Study

This EIA study aims to provide the environmental report of the proposed project to assess the impacts of its sitting on the existing physical, ecological and socioeconomic environment. The main rationale of the EIA study is to make sure that:

- Any major undesirable impact on the environment (physical, ecological and socioeconomic) during different phases i.e., construction, operation and decommissioning are identified,
- Harmful impacts, if any are correctly addressed and satisfactory mitigation measures are suggested for inclusion in the design, construction procedures and operations of the project,
- Severity of socioeconomic aspects is recognized,
- Environmental Management Plan (EMP) for sustainable development and operation of the project is provided.

This EIA report has appropriately recognized the environmental aspects and screened the potential impacts to make certain that the effects of proposed activities pertaining to construction and operation of the proposed project have been carefully assessed and mitigation measures are properly planned & implemented to keep environmental impacts under tolerable limits.

1.10 Methodology Adopted for EIA

The Environmental Impact Assessment is based on simple comparative evaluation approach. Initially, the baseline or the profile of the project area was developed by gathering data, records and information on existing physical, ecological as well as socioeconomic environment. The same data was then projected or modelled for different phases of project, i.e., Construction, and Operation stages. The changes expected in the critical environmental aspects e.g., in the ambient environmental parameters that may be significant, were also identified. This led to the identification and evaluation of major impacts, for which corresponding effective mitigation measures are projected. Then the Environmental Management Plan (EMP) & Environmental Monitoring Plan, which will be implemented during the construction and operation phases, are framed.

This EIA study has adopted the following methodology for preparing this work:

1.10.1 Scoping

A scoping exercise was undertaken to identify the potential issues that are to be considered in the environmental impact assessment. The scoping exercise included the following indispensable tasks:

- Data Compilation: A generic description of the activities relevant to this environmental assessment was compiled with the help of the Project proponent.
- Review of Published literature: All available published and unpublished information pertaining to the micro and macro environment of the study area was obtained and reviewed. It included the earlier studies conducted in the study area, environmental and social baseline and impact assessment studies conducted by



different consultants in past. Secondary data was very helpful in understanding the issues that were identified by other consultants.

- Review of applicable Legislation: Information on relevant legislation, regulations, guidelines, and standards was reviewed and compiled.
- Identification of potential impacts: The information collected in the above procedures was reviewed and potential environmental issues identified.
- Reconnaissance survey: An initial site visit was conducted to get an overview of site conditions and the surrounding areas.
- Stakeholder consultation: A stakeholder consultation was undertaken to document the concerns of the local community and other stakeholders, and to identify issues that may require additional assessment in order to address these concerns. Stakeholder consultation was conducted during the survey with following objectives:
 - To inform the Stakeholders, Communities about the project
 - To gather feedback from stakeholders of project
 - To identify relevant potential issues, including the socioeconomic impact of the project, and corresponding mitigation measures.

1.10.2 Review of Legislation and Guidelines

National legislations, international agreements, environmental guidelines, and best industry practices were reviewed to set environmental standards that the proponent will be required to follow during different stages of the project.

Review of legislations included but not limited to the following:

- Policies and Legislation relevant to the project.
- Complementary legislation applicable to project for sustainable management of the environment covering land, water resources and water quality, atmospheric emissions.
- Administration: identification of relevant organization with its role and responsibility and make clear the approval process with its average time schedule though visit to relevant organization and reviewing documents.

1.10.3 Baseline Data Collection

Detailed environmental baseline surveys were conducted to collect primary data on the Project Area to help identify physical, biological and socioeconomic characteristics of project area. The primary data were examined and compared with secondary data available from earlier environmental studies in the region.

1.10.4 Identification of Aspects

Identification of environmental aspects and their significance is fundamentally important for determination of severity of incidence of impacts at different stages of the project. This step is aimed at obtaining an inventory of the aspects. The aspects identified during this step cover all activities in order to determine those which have or can have significant impact on the environment.



1.10.5 Impact Assessment & EMP

Environmental experts at EMC analyzed and assessed the anticipated impacts that are likely to arise due to the identified aspects. Each of the potential impacts identified during the scoping session was evaluated using the environmental, socioeconomic, and project information collected. In general, the impact assessment discussion covers the following aspects:

- Present baseline conditions
- Potential change in environmental parameters due to project
- Prediction of potential impacts
- Defining of mitigation measures to reduce impacts to as low as practicable
- Monitoring of residual impacts.

An environmental management & monitoring plan (EMP) was developed to oversee the environmental performance of the project and adoption of proposed mitigation measures. A monitoring plan has also been incorporated in the EMP to monitor impact of all activities and performance of mitigation measures and to identify the residual impact if any, and also the positive/negative changes in the physical, and socioeconomic environment.

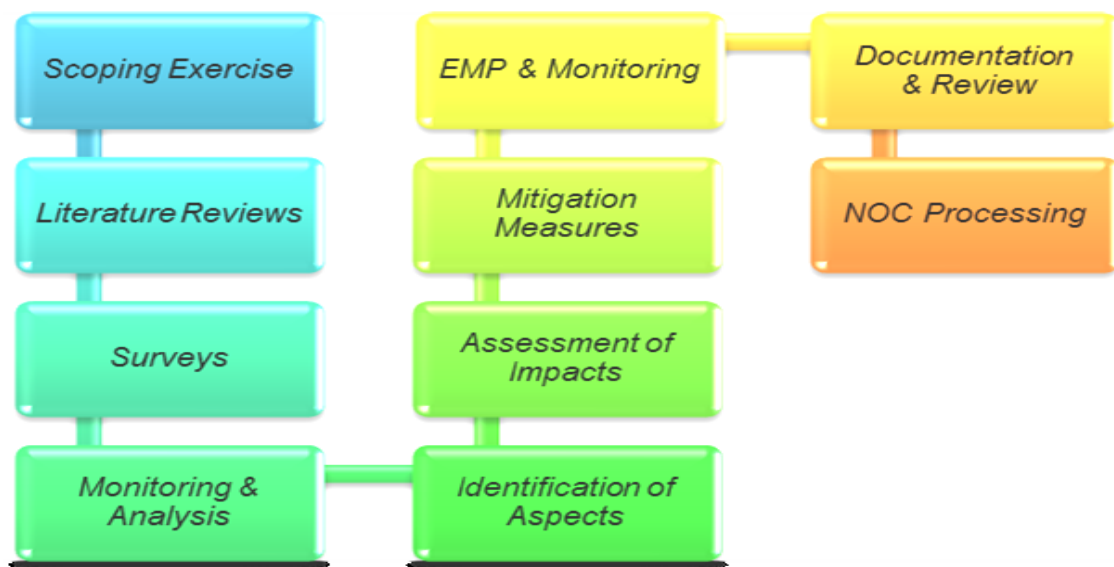


Figure 1.5: EIA Methodology

1.10.6 Documentation & Review

This is the final step of the EIA study. The data generated during and for the study are compiled and examined by experts of the respective field. Sections of this report were prepared as the study progressed, by EMC team in consultation with experts. The report was finally reviewed by Team Leader, who analyzed the information, assessed the potential environmental impacts in the light of national and international guidelines, examined the alternatives in the light of observations on the field as well as meetings with the stakeholders, before organizing the Report in the present form.

1.11 Organization of the EIA Report

Section 2 (Project Description) describes the Project activities including the project alternatives that were considered, and the reasons for their selection or rejection highlighted.

Section 3 (Policy, Legal & Administrative Framework) briefly discusses existing national policy and resulting legislation for sustainable development and environmental protection, and then presents the legislative requirements that need to be followed while conducting the EIA.

Section 4 (Environmental and Social Baseline) documents in detail the existing physical, environmental, biological, and socioeconomic conditions at the microenvironment and macroenvironment of the Project.

Section 5 (Stakeholders Consultation) discusses in detail the methodology, procedure and outcome of consultation with potential stakeholders of the Project.

Section 6 (Environmental Impacts and Mitigation Measures). It presents the project alternatives that were considered and the reasons for their selection or rejection are highlighted. It also presents an assessment of the Potential Environmental Impacts on the physical, biological, and socioeconomic environment, besides the measures required to mitigate the negative impacts.

Section 7 (Environmental Management Plan) presents the measures proposed for implementation of the environmental mitigation measures, and their monitoring.

Section 8 (Conclusion and Recommendations) presents the overall findings, conclusions and recommendations of this EIA Study.

1.12 EIA Study Team

EMC organized the following team to carry out the EIA study:

Table 1.2: List of EIA Team Members

S. No.	Name	Position in the Team
1	Mr. Syed Nadeem Arif	Director/Team Lead
2	Mr. Tanvir Arif	Social Expert
3	Mr. Sohaib Tariq	Environmental Engineer
4	Ms. Saira Tariq	Environmental Scientist
5	Mr. Imran Khan	Environmentalist
6	Mr. Zain Rafi	CAD/Mapping
7	Mr. Ather Adil	Field Sampling Officer
8	Mr. Ehtisham	Field Social Officer

2 Description of Project

2.1 The Project

Risesince Steel (Pvt) Ltd. intends to build a 2-million-ton annual metal products factory in Thatta, Pakistan. The first phase of the project includes a 500,000-ton annual continuous casting and rolling production line.

2.2 Project Location

The project is located at survey numbers 522, 523, 561, and 562, in Deh Khariseer, Tappo Ghara, Mirpur Sakro, and District Thatta. Thatta is only 100 kilometres from Karachi and approximately 100 kilometres from Hyderabad. It is also near Port Qasim, Karachi, which is a very convenient place for road and rail transportation.

Location map of the project is presented in **Figure 2.1**.

2.3 Project Overview

The proposed Steel Mill project involves annual production of upto 2,000,000 tons of Steel. The first phase of the project includes a 500,000 tons annual continuous casting and rolling production line, the main equipment units are four 30t Electric Arc Furnaces and one continuous casting and rolling mill.

The project details are described in the table below:

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Environmental & Industrial Health Considerations in Project Design	▪ Environmental Protection Law of Pakistan ▪ Air Pollution Discharge Standard for Industrial Furnace Cellars GB9097-1996 ▪ Design Hygiene Standard for Industrial Enterprises GBZ1-2002

	▪ Pollutant Emission Standard for Iron and Steel Industry GB13456-92 ▪ Standard for Comprehensive Emission of Atmospheric Pollutants GB16297-1996 ▪ Environmental Air Quality Standard GB3095-1996 ▪ Urban Regional Environmental Noise Standard GB3096-93 ▪ Boiler Air Pollutant Emission Standard GB13271-91 ▪ Noise Measurement Method for Industrial Enterprises GB12349-90
Total investment for project	966.5076 million Yuan

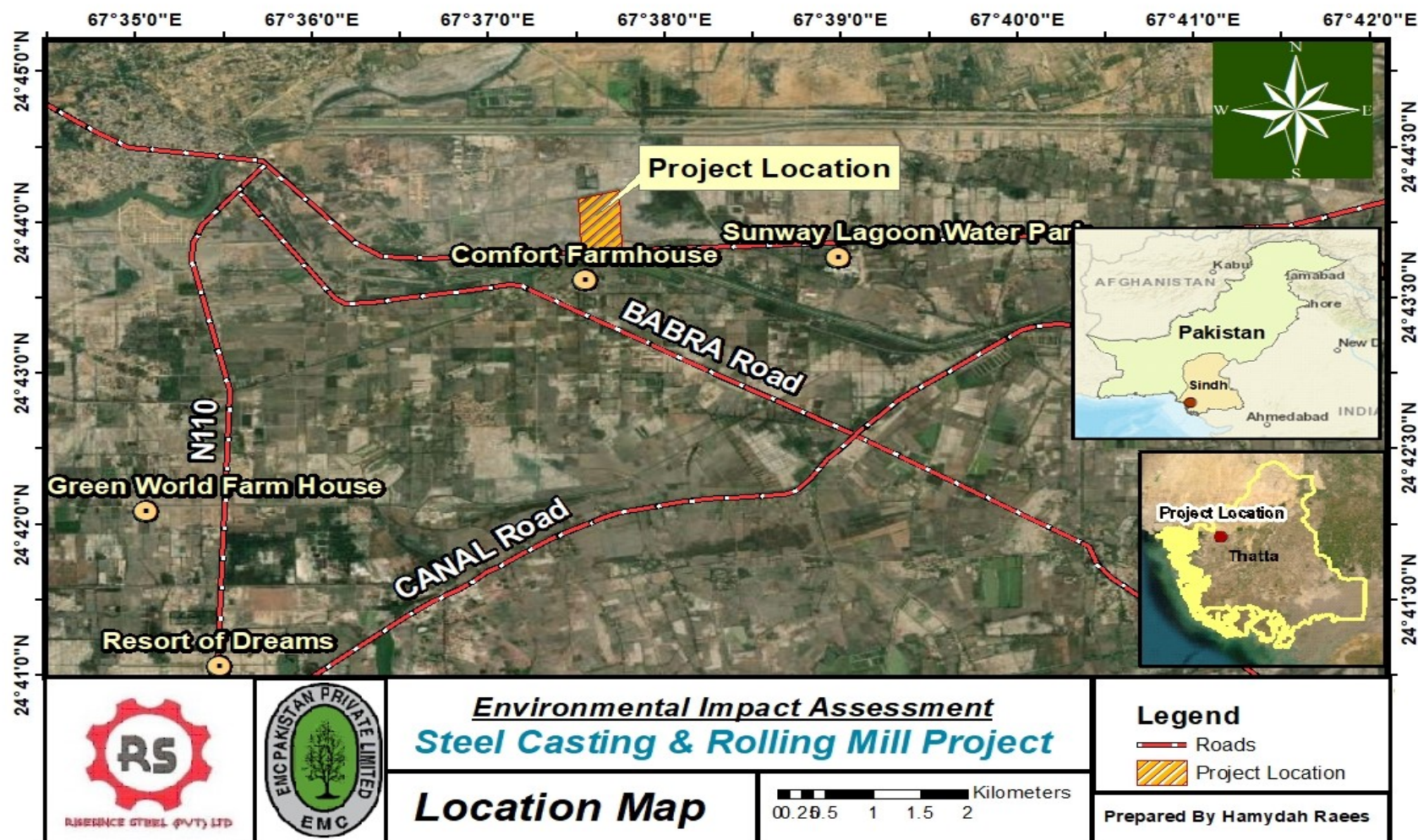


Figure 2.1: Project Location Map

2.4 Process and Technology Scheme

2.4.1 Steel-Making Workshop

The production scale of the steel-making workshop will be 500,000 t/y. Four HX2-30EBT electric arc furnaces will be used, arranged in tandem. The steel grades will be mainly common carbon steel. The production structure can be adjusted according to market demand to produce low-alloy steel or other high-quality steel.

Smelting, pouring, and ingot-making will be done in the same workshop, which consists of four 80-ton/15-ton bridge double hook cranes and one 5.25-m-long second-class continuous casting equipment.

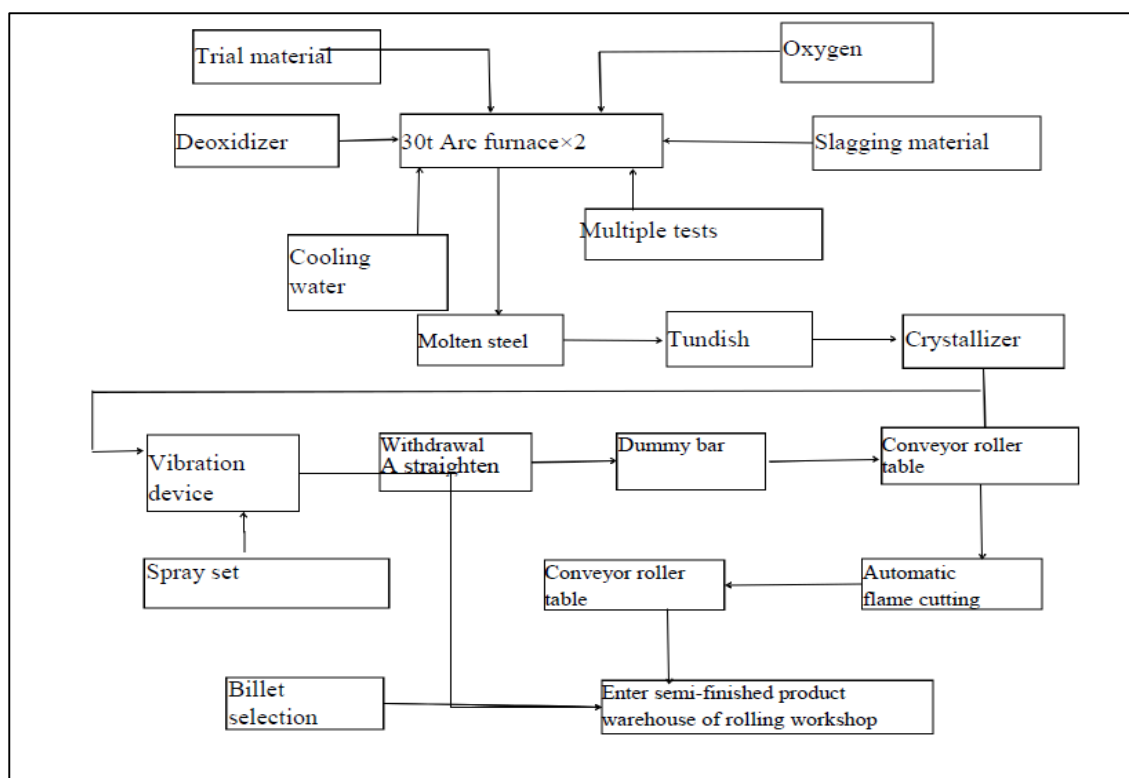


Figure 2.2: Process Flow Chart of Steel Making

Table 2.2: HX2—30 Main Process Parameters of Steel-Making Arc Furnace

S No.	Name	Unit	Numerical Value
1	Rated Capacity	T	30
2	Inner Diameter of Furnace Shell	Mm	4600
3	Electrode Distribution Circle Diameter	Mm	1250±50

4	Electrode Diameter	Mm	400
5	Maximum Travel of Electrode Lifting	Mm	3600
6	Consumption Of Cooling-Water	T/H	80
7	Rated Capacity of Transformer	Kva	20000
8	Transformer Primary Voltage Measurement	V	10000
9	Transformer Secondary Voltage Measurement	V	340-140 (Level 13)
10	Weight Of Furnace Body Hoisting	T	85

Product scale

Four 30t EAFs have an annual design production capacity of 500,000 tons. The steel grades will be ordinary carbon steel. Main chemical constituents:

Steel	C	Mn	Si	S	P
Q235A	0.14-0.22	0.35-0.65	0.12-0.3	≤0.050	≤0.045

Raw Material

The consumption of the main raw materials is described in the table below.

Table 2.3: Main Raw Materials for Steel Making				
S No.	Name	Unit	Quantity	Remark
1	Iron and steel material			
(1)	Steel scrap	Kg/t s	1200	
2	Ferroalloy material			
(1)	Ferrosilicon	Kg/t s	8	
(2)	Ferromanganese	Kg/t s	10	
(3)	Lead powder	Kg/t s	10	
(4)	Aluminum scrap	Kg/t s	1	
3	Refractory material			
(1)	Aluminum brick	Kg/t s	6	



(2)	Magnesia brick	Kg/t s	4	
(3)	Clay brick	Kg/t s	45	
(4)	Magnesite clinker	Kg/t s	20	
4	Auxiliary material			
(1)	Electrode	Kg/t s	7	
(2)	Quartz sand	Kg/t s	20	
5	Fuel and power			
(1)	Comprehensive power	Kg/t s	710	
(2)	Cooling water	t/h.pf	80×4	Closed-circuit circulating water is added 16 t/h of fresh water according to 10% loss

2.4.2 Steel Rolling Workshop

Semi-finished steel ingots selected by the steel-making workshop will be hoisted by a 30 t/5 t bridge double hook crane and put on a pusher to be heated in a 32-inch energy-saving heating furnace. The heat source for the heating furnace will be provided by two environmentally friendly gas producers. The flue gas will be dedusted by a wet dust collector and discharged by a 60-meter chimney. When the ingot is heated to 1200 C, the discharger automatically feeds the ingot into the rolling mill for rolling.

After rough rolling, medium rolling, and finishing rolling of the ingot, the wires and profiles with a set diameter are rolled out. The 300-ton hydraulic shear set after the rolling mill cuts the steel to the rectifier according to the specified size. In the production process, because of uneven heating temperatures, improper roll adjustment, an improper guide device, improper cooling after rolling, and the influence of shearing and the transportation process, late deformations often occur, so it is necessary to rectify to eliminate the deformation and bending of the rolled piece. After the steel temperature is still high, it needs to be cooled on the cooling bed to reduce its temperature to 100–200 degrees, followed by shaping, inspection, and bundling by machine, all from the 5T crane to the finished product warehouse.

- Production scale: daily steel rolling: 1700 tons
- Annual steel rolling: 500,000 tons

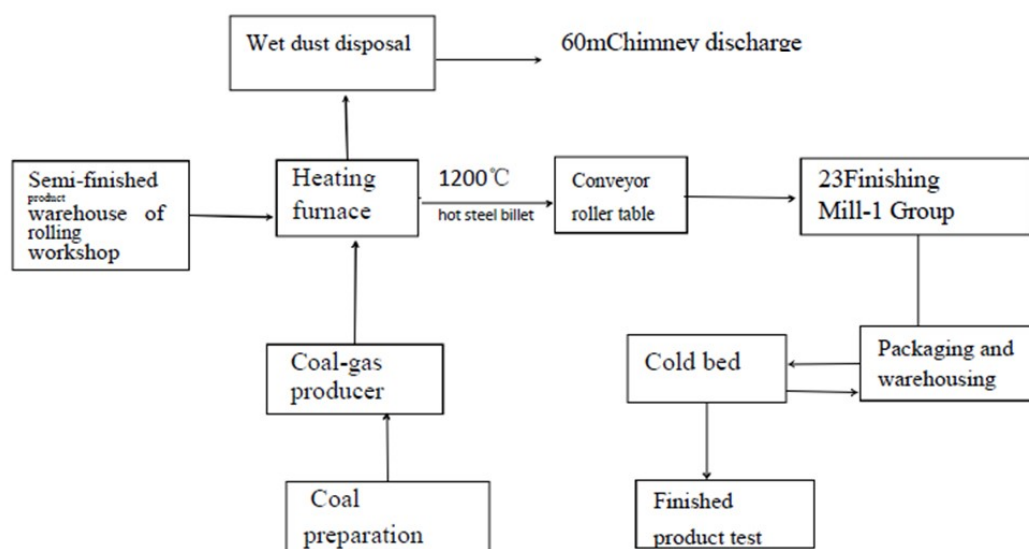


Figure 2.3: Process Flow Chart of Steel Rolling

Main Equipment

A set of vertical automatic continuous casting and rolling mills, which consists of 23 groups, including types 520, 400, 365, 300, etc., will be selected. In addition, a 60 m * 7 m group of fully automatic cooling plateaus, a 30 t/5 t bridge double hook crane, a 32 m² heating furnace, a 60 m high chimney, two HGF environment-friendly gas producers, a 300-ton hydraulic shearing machine, a 150-ton hydraulic packer, and a 16m * 4 m, 120 t SCS-120 electronic floor scale will be selected.

Raw Material

The consumption of the main raw materials for steel rolling is described in the table below.

Table 2.4: Main raw materials for steel rolling		
Name	Unit	Index
Daily steel rolling quantity	T	1700
Annual steel rolling	10KT	50
Heating furnace daily gas consumption	m ³	480-5400
Process cooling water consumption	T / h	140
Site water consumption	T / h	5
Power consumption	KW/T S	220-300
Daily Power consumption	KW	450,000
Roll	KG/T S	3.5
<i>Note: Closed-circuit circulating water is calculated by 10% loss to supplement fresh water.</i>		

2.4.3 Oxygen Making Works

Raw material air will be filtered through filters to remove mechanical impurities, such as dust, and then enter the air compressor, be compressed to 0.55 MPa (G), cooled to - 10 °C in the Freon evaporator, and then enter the molecular sieve purifier to remove hydrocarbons such as hydrogen peroxide, carbon dioxide, and C₂H₄, and become clean, dry air, most of which enters the cold box of the fractionator and will be cooled to saturation state in the main heat exchanger. The bottom of the lower tower participates in distillation; the other small part enters the supercharger of the supercharger expander and enters the main heat exchanger after cooling, and a certain temperature enters the expander to expand. After expansion, air enters the middle of the upper tower to participate in distillation.

The pure nitrogen obtained from the top of the lower tower condenses into liquid nitrogen in the condenser evaporator. Some of the nitrogen is returned to the lower tower for distillation. The other part will be cooled and throttled, then enter the middle of the upper tower for distillation.

99.6% of the oxygen will be obtained at the bottom of the upper tower. Oxygen entered the main heat exchanger and was reheated out of the cold box. Nitrogen gas will be obtained at the top of the upper tower, and dirty nitrogen gas is obtained at the top of the upper tower. Nitrogen and dirty nitrogen gas will be reheated through the condenser and the main heat exchanger to return to the cold box. One part of the polluted nitrogen will be used as regeneration gas for the purifier, and the other part will be emptied.

2.4.4 Gas General Production Process

Raw coal will be added to the upper section of the furnace (the starting section) by a hydraulic coal feeder, and air will be fed to the furnace from the bottom by a blower. The produced gas will be discharged from the upper and lower outlets, respectively. The upper outlet will be through a cyclone dust collector, the lower outlet is through a tar collector, the upper and lower pipelines converge, and then, through a gravity dust collector, the safe water seal will be sent to all users.

2.5 Plant Layout

The factory gate faces west, and on the north side of the gate is the living area. Office buildings and bathrooms will be set up. 60 tons of weighing houses will be arranged on the south side of the factory gate.

The steel-making workshop and rolling workshop will be arranged in the "L" shape. The semi-finished product warehouse will be located in the East and south of the factory area. The steel workshop, oxygen station, gas station and air compressor station will be located in the north side of the steel-making workshop according to the technological requirements.

The steel-making workshop and rolling workshop are arranged in "L" shape. Because the elevation of 30 t/h electric arc furnace operation platform will be 3.5-5 meters, there



are distribution room and operation room on the platform, slag discharging facilities under the platform, the body of electric arc furnace is high and heavy, and the crane lifting weight will be 80t/15t bridge double hook crane and 50t/10t bridge double hook crane, the standard height of crane rail top will be 14 meters, and the beam bottom standard height of workshop will be 17.28 meters, with ventilation windows on top. The steel-making workshop will be 210x18m, H-shaped row beam structure, colored wave tiles on the top, with skylights.

The rolling workshop is 330x18m with H-type bent structure, color wave tiles on top of each layer and skylights. The main equipment units are a 32 m² heating furnace, a 60-meter-high brick chimney, a continuous casting and rolling mill, a 30t/5t bridge double-hook crane and a 14.00-meter rail top elevation.

The scrap workshop and semi-finished product warehouse will be 210x16m with bent structure.

The oxygen station has a bent structure of 60x40m, a 10t single girder crane, a rail top elevation of 8m and a roof truss bottom chord of 1.0m. The main workshop of the gas station is 7.2x14.4 three-storey frame structure, and the auxiliary building will be brick-concrete structure. The air compressor station is in the auxiliary room of the gas station. Other ancillary facilities are brick-concrete structure. Lifting includes substation, deep well pump house, circulating water pump house, finished product storehouse, office building, bathroom, staff dormitory, etc. Circulating water pool and fresh water pool will be reinforced concrete structures.

2.6 Water Supply and Drainage

Because of the location of the factory, two new deep wells need to be built, and the size of the water output will be determined after the completion of the wells according to the report of the pumping experiment.

Water consumption of the whole plant

Water consumption for the production of the whole plant	63m ³ /h(maximum)
Water consumption for the circulating use of the whole plant	419 m ³ /h (maximum)
Water consumption for the resident of the whole plant	3.3m ³ /h(maximum)

Water Source

Two new deep wells will be built, with 10LT-300x4, Q=100m/h, H=60MN=30KW deep well pumps. The surface S65(-) 4.0m*4.5m will be used in deep well pumping room. Another 500m³ fresh pool will be built to provide water for production and domestic use.

Plant Water Supply

1. Production, domestic and fire water supply

The water supply network of the whole plant will be branched and buried.



2. Circulating cooling water supply system

The circulating water in steel-making workshop, rolling workshop, oxygen plant and air compressor station will be recirculated into the circulating hot water pool. The circulating water pool consists of 500m³ circulating hot water pool and 500m³ circulating cold water pool.

The circulating water returns to the circulating hot water pool, and will be pumped into the FRP cooling tower by the circulating hot water pump. After cooling, the water flows into the circulating cold-water pool, and then the circulating cold-water pump is pumped into the workshop for equipment cooling.

There will be two hot water pumps and two cold water pumps in the circulating water pumping room. KQSN3200-N9 vertical pumps will be selected. The flow rate is $Q=500\text{m}^3/\text{h}$, $H=39\text{ MN2O}$, $N=90\text{ KW}$. Two 10BNG-250 FRP cooling towers.

Production and production drainage of the whole plant

Maximum time drainage: 2.6m³/h, mainly for laboratory water and domestic sewage, without any harmful substances, through the plant branch drainage network discharged into the plant.

2.7 Fire Protection

The fire hazard of steel-making workshop and rolling workshop will be Grade D, the fire resistance of building will be Grade II, and there is no fire hydrant in the room. The outdoor fire control adopts low pressure system with 15L/s water consumption. Four hydrants will be installed in the outdoor water supply pipe.

2.8 Heating

Two 0.2MW tea baths with calorific value will be selected, one for heating Office buildings, the other for bathing and drinking boiled water for workers. Because of the small heat load, it is suggested to use low sulfur coal or anthracite to reduce air pollution.

2.9 Electricity

The total installed capacity of the plant will be 65610.7KW, the active load is 51927.49KW, the natural power factor will be 0.75, and the reactive power will be 28157.4 KVAR. After the power factor will be compensated to 0.94, the apparent power will be 33964.9KVA.

Power supply

A 35KV power supply with a main supply capacity of 46300 KVA will be introduced from Karachi I and II buses. Normally, each power supply provides a 23150 KVA load.

Substation in Plant Center

35KV is a two-way route. The main connection mode is a single bus with a connecting cabinet (inner bridge) in the middle of each section.



2.10 Electricity saving

Steel-making and steel rolling enterprises are high energy-consuming enterprises. The power consumption per ton of steel will be 850-900KWH. Therefore, it is very important to select excellent and advanced energy-saving electric arc furnace and rolling mill. It can save 5 kilowatt-hour electricity per ton of steel and 100,000 kilowatt-hour electricity per year.

2.11 Water saving

The cooling water of steelmaking, steel rolling, the oxygen station, the air compressor station, and equipment will be recycled, and the utilization rate of circulating water will be over 90%.

2.12 Employment

Factory-level and workshop-level management will be implemented. There will be four groups and three shifts of workshop workers, and 1,000 employees will be assigned to the whole plant.

Table 2.5: Employment		
Managers at the Factory Level	60	Persons
Steel – Making Workshop	530	Persons
	24	of whom are workshop managers
Rolling Workshop	183	Persons
	24	of whom are workshop managers
Oxygen Plant	70	Persons
	6	of whom are workshop managers
Gas Station	69	Persons
	9	of whom are workshop managers
Air compressor station	12	Persons
Water Supply and Drainage	46	Persons
Boiler Room	30	Persons

3 Policy, Legal and Regulatory Framework

This chapter highlights the applicable laws, regulations and guidelines with regard to the environmental and social considerations in connection to proposed project. Provisions of many of the guidelines have been incorporated in the mitigation measures and the Environmental Management Plan (EMP) which have been formulated for the better management of environmental and social impacts.

Key legislations governing the environmental legal and regulatory framework include the Sindh Environmental Protection Act, 2014 that was enacted with the objective of "protection, conservation, rehabilitation and improvement of environment for the prevention and control of pollution, and promotion of sustainable development", Sindh Environmental Protection Agency (Environmental Assessment) Regulations 2021, Sindh Environmental Quality Standards, SEQS, and policies and laws on conservation of nature as outlined below.

- National Conservation Strategy, 1992
- Biodiversity Action Plan, 2000
- National Environment Policy, 2005

3.1 National Environmental Policies and Laws

3.1.1 National Conservation Strategy, 1992

The National Conservation Strategy (NCS) is the primary policy document of the Government of Pakistan (GoP) on national environmental issues. The policy was approved by the Federal Cabinet in March 1992. The Strategy also attained recognition by the international donor agencies, principally the World Bank. The NCS identifies 14 core areas including conservation of biodiversity, pollution prevention and abatement, soil and water conservation and preservation of cultural heritage and recommends immediate attention to these core areas in order to preserve the country's environment.

A mid-term review of the achievements of the NCS in 2000 concluded that achievements under the NCS have been primarily awareness raising and institutional building rather than actual improvement to environment and natural resources and that the NCS was not designed and is not adequately focused as a national sustainable strategy (GoP, November 2000). The need therefore arose for a more focused National Environmental Action Plan (NEAP) required to bring about actual improvements in the state of the national environment with greater emphasis on poverty reduction and economic development in addition to environmental sustainability.

The National Environmental Action Plan was approved by the Pakistan Environmental Protection Council under the chairmanship of the President/ Chief Executive of Pakistan in February 2001. NEAP also constitutes the national environmental agenda and its

core objective is to initiate actions that safeguard public health, promote sustainable livelihoods, and enhance the quality of life of the people of Pakistan.

The Government of Pakistan and United Nations Development Program (UNDP) have jointly initiated an umbrella support program called the National Environmental Action Plan-Support Program signed in October 2001 and implemented in 2002. The development objective supported by NEAP-SP is environmental sustainability and poverty reduction in the context of economic growth. The objective of new policy has total 171 guidelines on sectoral and cross sectoral issues. The objectives of new policy include assurance of sustainable development and safeguard of natural wealth of country. The following are the approved Sectoral Guidelines:

- Water Supply and Management.
- Air Quality and Noise.
- Waste Management.
- Forestry.
- Biodiversity and Protected Areas.
- Climate Change and Ozone Depletion.
- Energy Efficiency and Renewable.
- Agriculture and Livestock.
- Multilateral Environmental Agreements.

3.1.2 National Biodiversity Strategy and Action Plan, 2017 - 2030

Pakistan was among 150 countries that signed the Convention on Biological Diversity (CBD) at the 1992 Rio Earth Summit, and ratified it in 1994. A Biodiversity Action Plan (BAP) of Pakistan was approved by the Pakistan Environment Protection Council in 2000 as a principal instrument for implementing the Convention at the national level (CBD, Article 6) and mainstream the protection of biodiversity in policies and planning of the country.

The monitoring will not only measure progress towards the achievement of NBSAPs and national targets, but also help in identification of implementation issues, and in adaptive management for its effective implementation. Subject to availability of funds, an independent mid-term evaluation shall be commissioned in 2020, to review the implementation of NBSAP and make recommendations for achieving national targets by 2030 in an effective and timely manner. Final evaluation of NBSAP will be undertaken in 2030. The monitoring and evaluation reports will be presented to the National Steering Committee and Provincial Coordination Committees for their help in overcoming the obstacles in successful achievement of the targets.¹

3.1.3 National Environmental Policy, 2005

The National Environmental Policy provides an overarching framework for addressing the environmental issues facing Pakistan, particularly pollution of fresh water bodies and coastal waters, air pollution of fresh water bodies and coastal waters, air pollution,

¹ <https://www.cbd.int/doc/world/pk/pk-nbsap-v2-en.pdf>

lack of proper waste management, deforestation, and loss of biodiversity, desertification, natural disasters and climatic change.

It also gives direction for addressing the cross-sectional issues as well as the underlying causes of environmental degradation and meeting international obligations.

The National Environmental Policy, while recognizing the goals and objectives of the National Conservation Strategy, National Environmental Action Plan and other existing environment related national policies, strategies and action plans, provide broad guidelines to the Federal Government, Provincial Governments, Federally Administrated, Territories and Local Governments for addressing environmental concerns and ensuring effective management for their environmental resources.

The National Environmental Policy aims to protect, conserve and restore Pakistan's environment in order to improve the quality of life of the citizens through sustainable development.

3.2 National and Provincial Legislation

Prior to the 18th Amendment to the Constitution of Pakistan in 2010, the legislative powers were distributed between the federal and provincial governments through two 'lists' attached to the Constitution as Schedules. The 'Federal list' covered the subjects over which the federal government had exclusive legislative power, while the 'Concurrent List' contained subjects regarding which both the federal and provincial governments could enact laws. The subject of 'environmental pollution and ecology' was included in the Concurrent List and hence allowed both the national and provincial governments to enact laws on the subject. However, as a result of the 18th Amendment this subject is now in the exclusive domain of the provincial government. As a result, the Ministry of Environment at the federal level has been abolished. Its functions related to the national environmental management have been transferred to the provinces and the respective provincial environmental ministries and agencies. The international obligations in the context of environment will be managed by the ministry of climate change.

As a result, the Pakistan Environmental Protection Act, 1997 is no longer applicable to provinces and provinces have enacted their own environmental protection acts at provincial level.

3.2.1 Sindh Environmental Protection Act, 2014

In March, 2014, the Government of Sindh passed the Sindh Environmental Protection Act (Annex I) having 37 sections. The applicable sections of this act to this project are:

Section 11(1): Subject to the provisions of this Act and the rules and regulations, no person shall discharge or emit or allow the discharge or emission of any effluent, waste, pollutant, noise or any other matter that may cause or likely to cause pollution or adverse environmental effects, as defined in section 2 of this Act, in an amount, concentration or level which is in excess to that specified in Sindh Environmental Quality Standards; or, where applicable, the standards established under Section

6(1)(g)(i); or direction issued under Section 17, 19, 20 and 21 of this Act; or any other direction issued, in general or particular, by the agency.

Section 11(2): All persons, in industrial or commercial or other operations, shall ensure compliance with the Environmental Quality Standards for ambient air, drinking water, noise or any other Standards established under section 6(1)(g)(i); shall maintain monitoring records for such compliances; shall make available these records to the authorized person for inspection; and shall report or communicate the record to the Agency as required under any directions issued, notified or required under any rules and regulations.

Section 11(3): Monitoring and analysis under sub-section (1) and (2), shall be acceptable only when carried out by the Environmental Laboratory certified by the Agency as prescribed in the rules.

Section 12: No person shall import hazardous waste into Sindh province or its coastal, internal, territorial or historical waters, except acquiring prior approval of the Agency.

Section 13: Subject to the provisions of this Act, no person shall import, generate, collect, consign, transport, treat, dispose of, store, handle or otherwise use or deal with any hazardous substance except- Handling of hazardous substances. (a) under a license issued by the Agency; or (b) in accordance with the provisions of any other law, rule, regulation or notification for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Government is a party.

Section 14: No person shall undertake any action which adversely affects environment or which lead to pollute or impairment of or damage to biodiversity, ecosystem, aesthetics or any damage to environment etc.

Section 15: This section deals with regulation of motor vehicles banning emission of air or noise pollutants being emitted from them in excess of allowable standards.

Section 17(1): No proponent of a project shall commence construction or operation unless he has filed with the Agency an initial environmental examination or environmental impact assessment, and has obtained from the Agency approval in respect thereof.

This report of the proposed Project will be submitted to the Sindh Environmental Protection Agency (EPA) for approval and only after the issuance of NOC will the construction activity be commenced.

Section 21: Where agency is satisfied that the discharge or emission has occurred in violation of any provision of this act or rules etc. then it may, after giving an opportunity to person responsible, by order direct such person to take such measures within specified period. The agency under this section has been empowered to immediately stop, prevent or minimize emission, disposal etc. for remedying adverse environmental effects.

Section 22: The person who fails to comply with section 11, 17, 18 and 21 shall be punishable with a fine which may extend to five million rupees, to the damage caused



to environment and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues. And, where a person convicted under sub-sections 1 & 2 had been previously convicted for any contravention of this Act, the Environmental Protection Tribunal (EPT) may, in addition to punishment, award imprisonment for a term that may extend up to three years, or order confiscation or closure of facility etc.

Section 23: Where any violation of this Act has been committed by any of employee of any corporate body, then, that employee shall be considered to be guilty of environmental pollution.

3.2.2 Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021

The Regulation classifies projects on the basis of expected degree of adverse environmental impacts and lists them in three separate schedules. Schedule I lists projects that may not have significant environmental impacts and therefore require an Environmental Checklist. Schedule II lists projects of considerable environmental impacts requiring preparation of an IEE report. Schedule III lists projects of potentially adverse environmental impacts requiring preparation of an EIA report. The regulation also requires that all projects located in environmentally sensitive areas require preparation of an EIA.

3.2.3 Sindh Environmental Quality Standards (SEQS)

In exercise of the powers conferred under clause (g) of sub-section (1) of section 6 of the Sindh Environmental Protection Act, 2014, the Sindh Environmental Protection Agency, with the approval of the Sindh Environmental Protection Council, has established the standards for Industrial waste water, Effluent, Domestic Sewerage, Industrial air emissions and Ambient air, Noise for vehicles, Air emissions for vehicles and Drinking water quality standards. Ambient Air standards are given in the table below.

Table 3.1: Sindh Environmental Quality Standards for Ambient Air

Pollutant	Time-weighted average	Concentration in Ambient Air	Method of measurement
Sulfur Dioxide (SO ₂)	Annual Average*	80µg/m ₃	Ultraviolet Fluorescence Method
	24 hours**	120µg/m ₃	
Oxides of Nitrogen as (NO)	Annual Average*	40µg/m ₃	Gas Phase Chemiluminescence
	24 hours**	40µg/m ₃	
Oxides of Nitrogen as (NO ₂)	Annual Average*	40µg/m ₃	Gas Phase Chemiluminescence
	24 hours**	80µg/m ₃	
O ₃	1 hour	130µg/m ₃	Non dispersive UV absorption method

Suspended Particulate Matter (SPM)	Annual Average*	360µg/m ³	High volume Sampling, (Average flow rate not less than 1.1m ³ /minute)
	24 hours**	500µg/m ³	
Respirable Particulate Matter (PM10)	Annual Average*	120µg/m ³	Â Ray absorption method
	24 hours**	150µg/m ³	
Respirable Particulate Matter (PM2.5)	Annual Average*	40µg/m ³	Â Ray absorption method
	24 hours**	75µg/m ³	
	1 hour	15µg/m ³	
Lead (Pb)	Annual Average*	1µg/m ³	ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	1.5µg/m ³	
Carbon Monoxide (CO)	8 hours**	5mg/m ³	Non Dispersive Infra-Red (NDIR) method
	1 hour	10mg/m ³	
*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval. **24 hourly / 8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive			

Table 3.2 shows the standards for motor vehicle noise.

Table 3.2: SEQS for motor vehicle noise		
Parameter	Standards (maximum permissible limit)	Measuring method
Noise	85dB(A)	Sound-meter at 7.5meter from the source

Standards for noise are given below;

Table 3.3: SEQS for Noise			
S. No	Category of Area/Zone	Limit in dB(A) Leq*	
		Day Time	Night Time
1	Residential Area (A)	55	45
2	Commercial Area (B)	65	55
3	Industrial (C)	75	65
4	Silence Zone (D)	50	45
Note: 1	Day time hours: 6.00 a. m to 10.00 p. m		
2	Night time hours: 10.00 p. m to 6.00 a. m		
3	Silence zone; Zone which are declared as such by competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.		
4	Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.		
*dB(A) Leq	Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.		



The SEQs for effluents are shown in table 3.4;

Table 3.4: SEQs for Municipal and Liquid Industrial Effluents					
S. No	Parameter	Into Inland Waters	Into Sewage Treatment	Into Sea	Unit
1	Temperature or Temp. increase	≤ 3	≤ 3	≤ 3	°C
2	pH value (H+)	6-9	6-9	6-9	
3	Biological Oxygen Demand (BOD) ₅ at 20°C	80	250	80	mg/l
4	Chemical Oxygen Demand (COD)	150	400	400	mg/l
5	Total Suspended Solids (TSS)	200	400	200	mg/l
6	Total Dissolved Solids (TDS)	3500	3500	3500	mg/l
7	Oil and Grease	10	10	10	mg/l
8	Phenolic Compounds (as Phenol)	0.1	0.3	0.3	mg/l
9	Chloride (as Cl ⁻)	1000	1000	SC	mg/l
10	Fluoride (as F ⁻)	10	10	10	mg/l
11	Cyanide (as CN ⁻)total	1	1	1	mg/l
12	An-ionic detergents (as MBAS)	20	20	20	mg/l
13	Sulphate(SO ₄ 2 ⁻)	600	1000	SC	mg/l
14	Sulphide (S ₂ ⁻)	1	1	1	mg/l
15	Ammonia (NH ₃)	40	40	40	mg/l
16	Pesticides	0.15	0.15	0.15	mg/l
17	Cadmium	0.1	0.1	0.1	mg/l
18	Chromium (trivalent and hexavalent)	1	1	1	mg/l
19	Copper	1	1	1	mg/l
20	Lead	0.5	0.5	0.5	mg/l
21	Mercury	0.01	0.01	0.01	mg/l
22	Selenium	0.5	0.5	0.5	mg/l
23	Nickel	1	1	1	mg/l
24	Silver	1	1	1	mg/l
25	Total toxic metals	2	2	2	mg/l
26	Zinc	5	5	5	mg/l
27	Arsenic	1	1	1	mg/l
29	Iron	8	8	8	mg/l

30	Manganese	1.5	1.5	1.5	mg/l
31	Boron	6	6	6	mg/l
32	Chlorine	1	1	1	mg/l

Standards for drinking water are shown in table below;

Table 3.5: SEQS for drinking water

S.#	Properties/ Parameters	Standard Values for Pakistan	S.#	Properties / Parameters	Standard Values for Pakistan
	<i>Bacterial</i>			<i>Chemical</i>	
				<i>Essential Inorganics (mg/liter)</i>	
1	All water intended for drinking (E.Coli or Thermo tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	3	Aluminum (Al) mg/l	≤ 0.2
			4	Antimony (Sb)	≤ 0.005
2	<i>Treated water entering the distribution system (E.Coli or thermo tolerant coliform and total coliform bacteria)</i>	Must not be detectable in any 100 ml sample	5	Arsenic (As)	≤ 0.05
			6	Barium (Ba)	≤ 0.7
			7	Boron (B)	0.3
3	<i>Treated water in the distribution system (E.coli or thermo tolerant coliform and total coliform bacteria)</i>	<i>Must not be Detectable in any 100 ml sample. In case of large supplies, where sufficient samples are examined, must not be resent in 95% of the samples taken throughout any 12 month period.</i>	8	Cadmium (Cd)	0.01
			9	Chloride (Cl-)	< 250
			10	Chromium (Cr)	≤ 0.05
			11	Copper (Cu)	2
			<i>Organic (mg/l)</i>		
			12	Phenolic Compounds	< 0.0002
			<i>Toxic Inorganics (mg/l)</i>		
			13	Cyanide (CN)-	≤ 0.05
			14	Fluoride (F)	≤ 1.5
			15	Lead (Pb)	≤ 0.05
4	<i>Physical</i>	< 15 TCU	16	Manganese (Mn)	≤ 0.5
			17	Mercury (Hg)	≤ 0.001
4	Color	< 15 TCU	18	Nickel (Ni)	≤ 0.02

5	Taste	Non-objectionable/Acceptable	19	Nitrate (NO ₃) ⁻	≤ 50
6	Odor	Non-objectionable/Acceptable	20	Nitrite (NO ₂) ⁻	≤ 3
7	Turbidity	< 5 NTU	21	Selenium (Se)	≤ 0.01
8	Total Hardness as CaCO ₃	< 500 mg/l	22	Residual Chlorine	0.2-0.5 At consumer end 0.5-1.5 at source
9	TDS	< 1000			
10	pH	6.5-8.5			
Radioactive			23	Zinc (Zn)	5.0
11	Alpha Emitters bq/L	0.1			
12	Beta Emitters	1			

3.2.4 Hazardous Substance Rule, 2014

These Rules were notified to stream line procedures for issuance of licenses to industries / businesses that generate hazardous waste, safety precautions for workers and devices them methods for the removal of hazardous wastes in an environmentally friendly manner. The rules also specify procedures to be adopted for import, transport and disposal of hazardous waste; and identify two hundred and forty-three hazardous substances and synthetic chemicals.

3.2.5 Sindh Wildlife Protection, Preservation, Conservation and Management Act, 2020

The Sindh Wildlife Protection, Preservation, Conservation and Management Act, 2020 aims to enhance protection for wildlife. Its passing marked the repealing of a weaker law, hardly providing any protection to wild animals, for the first time since 1972.

The new legislation has wider coverage, protecting even those wild animals that enter Sindh via trans-boundary migration or as a result of human activity.

3.2.6 Factories Act, 2015

The Sindh Factories Act, 2015, deals with any premises which falls in the category of a Factory i.e. where any manufacturing work is carried out employing ten or more persons. Inspectors, appointed under this act, are empowered to enforce the provisions of this Act.

Section 11(1) of the Act "Registration and Deregistration of Factory" states that:

'Provided also that the registration documents be supported by No Objection Certificates from Industries Department, approval of Sindh Environmental Protection Agency (SEPA) and any other document or forms in the prescribed manner.'

Chapter III of this Act titled "Health & Safety" comprising of Section 15-53, describes various Occupational Health and Safety measures that any Factory has to follow. The provisions of this chapter include clean working environment, arrangements for



disposal of wastes and effluents on regular basis, provision of adequate ventilation, prevention from accumulation of dust and fumes generated during manufacturing process, avoidance of overcrowding and ensuring of sufficient lighting arrangements. This chapter also requires availability of amenities such as drinking water, canteen, safety against fire hazards and appointment of welfare officer and measures for prevention from diseases. This Act also prescribes penalties for violation of provisions of the Act.

Sindh Factories Rules were issued in 2021.

3.2.7 The Sindh Occupational Safety and Health Act, 2017

An Act to make provision for occupational safety and health conditions at all workplaces for the protection of persons at work against risk of injury arising out of the activities at work places and for the promotion of safe, healthy and decent working environment adapted to the physical, physiological and psychological needs of all persons at work.

The Sindh OSH Rules were issued in 2019 under this act.

3.2.8 Land Acquisition Act, 1894

This act is generally used to establish the rights on the land being acquisitioned for public purposes. The LAA describes the detailed procedures for acquisition of private properties, but does not appropriately cover resettlement and rehabilitation. Additionally, LAA 1984 treats land acquisition as a provincial subject, and allows each province to use it in different ways based on their own interpretation. Federal EPA prepared the National Resettlement Policy 2002, which described the ways relating to calculation of compensation, public participation and consultation, formulation of resettlement action plan, and provisions for transparency and accountability.

3.2.9 The Antiquities Act, 1975

The protection of cultural resources in Pakistan is ensured by the Antiquities Act of 1975. Section 22 specifically prohibits the execution of development schemes and new constructions in proximity to immovable antiquity. Notwithstanding anything contained in any other law for the time being in force, no development plan or scheme or new construction on, or within a distance of two hundred feet of, a protected immovable antiquity shall be undertaken or executed except with the approval of the Director.

The Act is designed to protect the antiquities from destruction, theft, negligence, unlawful excavation, trade, and export. The law prohibits new construction in the proximity of a protected antiquity and empowers the GOP to prohibit excavation in any area that may contain articles of archaeological significance. The project site does not have any cultural sensitivity in the vicinity to require protection.

3.2.10 Pakistan Penal Code, 1860

The Pakistan Penal Code (1860) authorizes fines, imprisonment or both for voluntary corruption or fouling of public springs or reservoirs so as to make them less fit for ordinary use.



3.2.11 Self-Monitoring and Reporting by Industry Rules, 2014

These rules classify the industrial units for monitoring and reporting their liquid effluent and gaseous emissions into three and two categories respectively. According to each category they define the priority parameters to be monitored and reported to SEPA according to a specific frequency based on working conditions. This monitoring and reporting is in addition to the monitoring conditions as required by the conditions of approval of EIA. The sampling for testing must be carried out according to Environmental Samples Rules, 2014 and be sent to SEPA certified environmental testing laboratories.

3.2.12 Pakistan Environmental Assessment Procedures, 1997

The Pakistan Environmental Protection Agency prepared the Pakistan Environmental Assessment Procedures in 1997. They are based on much of the existing work done by international donor agencies and Non-Governmental Organizations (NGOs). The package of regulations prepared by PEPA includes:

- Policy and Procedures for Filing, Review and Approval of Environmental Assessments;
- Guidelines for the Preparation and Review of Environmental Reports;
- Guidelines for Public Consultation
- Guidelines for Sensitive and Critical Areas; and
- Sectorial Guidelines

3.3 International Conventions and Guidelines

3.3.1 IUCN Red List

The Red List is published by IUCN and includes those species that are under potential threat of extinction. These species have been categorized as:

- Extinct (EX): Species in which the last individual has died or where systematic and time-appropriate surveys have been unable to log even a single individual
- Extinct in the Wild (EW): Species whose members survive only in captivity or as artificially supported populations far outside their historical geographic range
- Critically Endangered (CR): Species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), a current population size of fewer than 50 individuals, or other factors (such as severely fragmented populations, long generation times, or isolated habitats)
- Endangered (EN): Species that possess a very high risk of extinction as a result of rapid population declines of 50 to more than 70 percent over the previous 10 years (or three generations), a current population size of fewer than 250 individuals, or other factors
- Vulnerable (VU): Species that possess a very high risk of extinction as a result of rapid population declines of 30 to more than 50 percent over the previous 10 years (or three generations), a current population size of fewer than 1,000 individuals, or other factors

- Near Threatened (NT): Species that are close to becoming threatened or may meet the criteria for threatened status in the near future
- Least Concern (LC): A category containing species that are pervasive and abundant after careful assessment
- Data Deficient (DD): A condition applied to species in which the amount of available data related to its risk of extinction is lacking in some way. Consequently, a complete assessment cannot be performed. Thus, unlike the other categories in this list, this category does not describe the conservation status of a species.
- Not Evaluated (NE): A category used to include any of the nearly 1.9 million species described by science but not yet assessed by the IUCN.

3.3.2 The Convention of Conservation of Migratory Species of Wild Animals, 1979

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), 1979, requires countries to take action to avoid endangering migratory species. The term “migratory species” refer to the species of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries. These parties are also required to promote or co-operate with other countries in matters of research on migratory species.

The Convention contains two appendices. Appendix I contain the list of migratory species that are endangered according to the best scientific evidence available. For these species, the member states to the Convention are required endeavor to:

- Conserve and restore their habitats.
- Prohibit their hunting, fishing, and capturing, harassing and deliberate killing.
- Remove obstacles and minimize activities that seriously hinder their migration.
- Control other factors that might endanger them, including control of introduced exotic species.

3.4 Institutional Setup for Environmental Management in Pakistan

The highest environmental body in the country is the Pakistan Environmental Protection Council (PEPC), which is presided over by the Chief Executive of the country. Other bodies include the Pakistan Environmental Protection Agency (Pak-EPA), provincial EPAs (for four provinces, AJK and Northern Areas), and Environmental Tribunals. The Federal government has also formed the Federal EPA, which is headed by a Director General and has wide-ranging functions given in PEPA 1997. These include the preparation and coordination of national environmental policy for approval by the PEPC, administering and implementing the PEPA 1997 and preparation, revision or establishment of NEQS. The Provincial Environmental Protection Agencies are formed by the respective Provincial Governments. A Director General who exercises powers delegated to him by the Provincial Government heads each Provincial EPA. IEEs and EIAs are submitted to provincial EPAs for approval.



4 Environmental and Social Baseline

This section details the physical and ecological environmental conditions of the microenvironment and macro environment of the proposed project area. Discussion on the natural environment covers the area's physical and meteorological features, including geology, water resources, climate, and air quality. Overview of vegetation, wildlife and natural habitats are included in the Ecological section. Overview of traffic conditions in the macro environment is also included. The proposed plot is falls in the district Thatta in Sindh.

4.1 The Microenvironment of the Project in District Thatta

The proposed project site is located at Survey numbers 522, 523, 561, and 562, in Deh Khariseer, Tappo Ghara, Mirpur Sakro, and District Thatta. The project site comprises 64 acres of land.

Project site photographs	
	
	

Project location map is shown in the Figure 4.1.

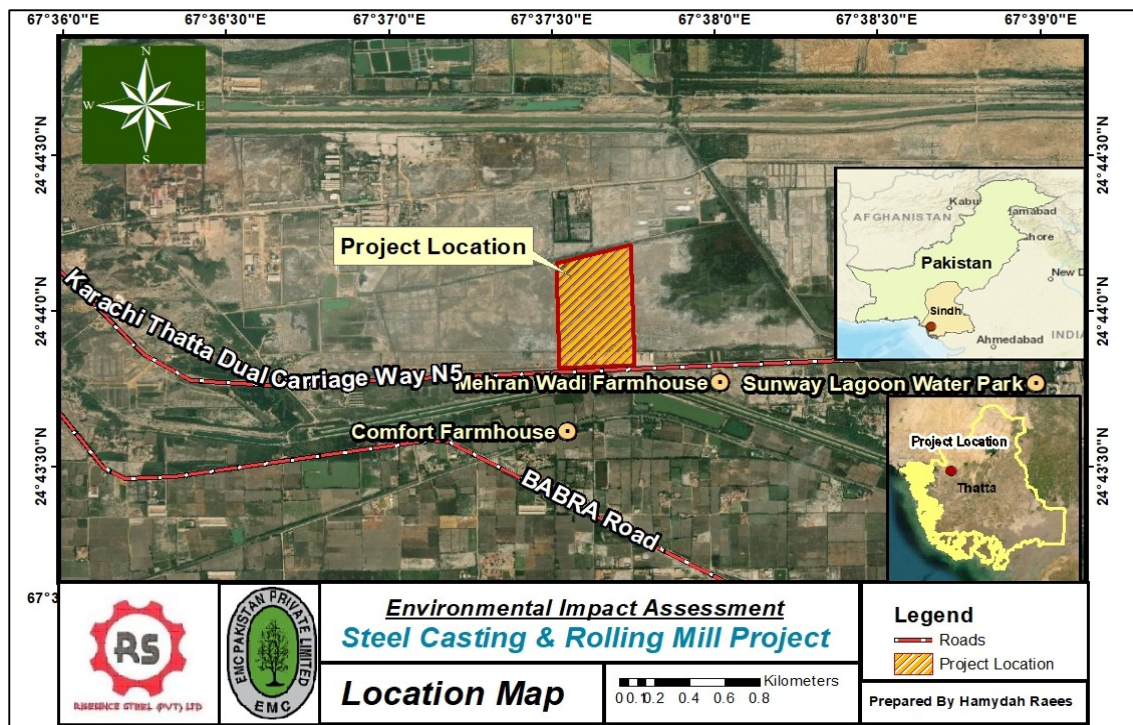


Figure 4.1: Location Map of Proposed Project area

This Environmental baseline section of this Report presents a broad picture of the existing environmental and social conditions of District Thatta. Available secondary data from published literature and previous studies conducted by the Consultant in the area, case studies, district census reports, and other documents was used to develop the baseline profile, along with rigorous interviews and environmental monitoring as a form of primary data.

A map of District Thatta with its surroundings is shown below:

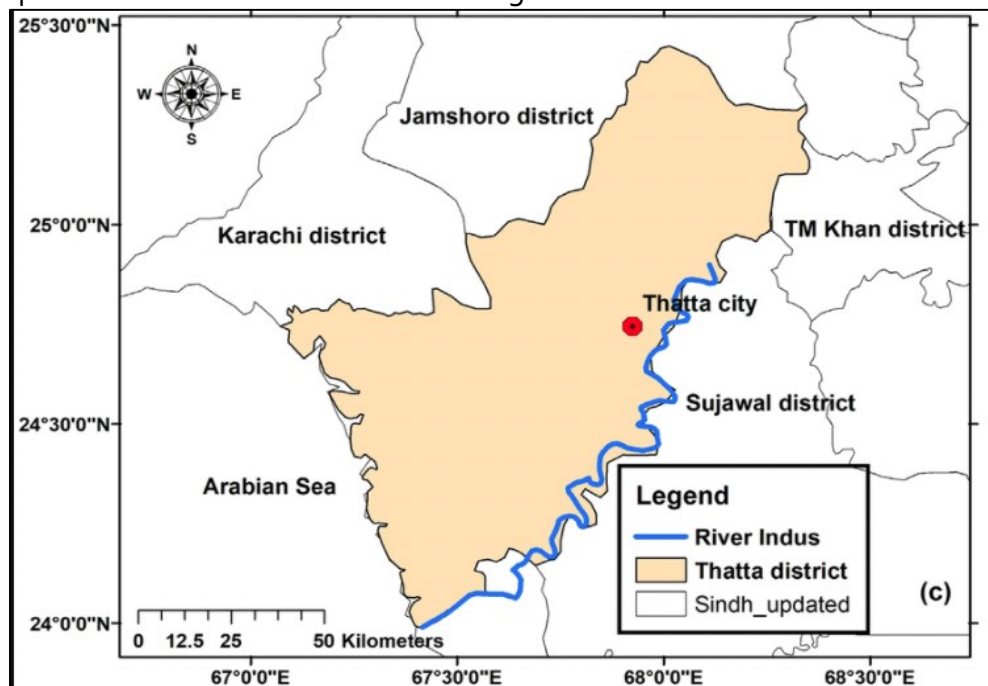


Figure 4.2: Map of District Thatta

4.1.1 Physical Environment

4.1.1.1 Meteorology and Climate

The climate of the project area broadly classified as arid, moderate, humid and hot. The mild winter is restricted to the November-February period. The summer extends from May to September, which overlaps the short spells of the main rainy season during July- August. The weather tends to be very humid during June, July and September and is pleasant during March April. There exist several meteorological stations in Sindh; data recorded at some of these stations is provided in the table below;

Table 4-1: Meteorological Parameters for Thatta District, Sindh				
Month	Temperature °C		Rainfall (mm)	Relative Humidity %
	Maximum	Minimum		
January	25.78	8.73	0.96	50.38
February	28.59	11.60	3.60	48.81
March	34.02	16.80	2.30	48.36
April	38.40	21.80	2.49	48.67
May	39.85	25.47	0.69	53.10
June	38.02	27.46	10.76	60.70
July	35.11	27.04	70.49	69.61
August	33.61	26.06	89.88	72.55
September	34.36	24.87	34.43	68.78
October	35.80	21.70	3.72	58.15
November	31.87	15.86	1.67	53.88
December	26.68	10.10	1.11	52.46
Annual Average	33.48	19.76	221.64	57.56
<i>Source: Pakistan Meteorological Department (PMD)</i>				

Temperature

Atmospheric temperature is generally moderate through the year in Thatta due to the presence of sea. The mean yearly temperature reached maximum 40°C and minimum around 8°C. The above table indicate that the mean monthly maximum temperature in Thatta ranged between 25°C and 39°C, while the mean monthly minimum temperature ranged between 8°C and 27.6°C. The Temperatures start falling from October each year to January and dry and hot weather prevails from April to September as mentioned in Table 4.1.

Precipitation

The southwest monsoon brings in humid air from the sea, but the precipitation is generally very low with nearly 80% of the 70 to 83 mm rain falling from July to August according to the table 4.1. Rainfall, when it does come, it is often torrential causing problems of drainage and erosion of the light and sparsely vegetated land of Jhimpir.

The winters are short and mild from late November to early February with the prevailing wind coming from the North East with very little rainfall. The most important characteristics of the prevailing meteorological conditions are the generally high dust conditions as a result of the aridity of the surrounding area; dust storms occur especially before the onset of monsoon. The higher winds during the southwest monsoon tend to carry air-borne dust inland during the summer months, while in winter they tend to be light to moderate in intensity and carry air borne particulate matter seaward.

In General, Monsoon in the arid area of Kohistan is characterized by low and high variable rainfall both in time and space. The rainfall has a specific trend and pattern that is below medium rainfall, which may come once in three years, whereas drought once in 8- 10 years. Annual rainfall increases from less than 100 mm in the north to 350 mm in the southeast. During some years the persistent wind with high velocity the monsoon winds do not reach the region and no rain occurs during such periods. The desertified area is subject to heavy soil erosion. The rainy season is spread over the June-September period, with maximum rainfall occurring in September, and average rate of evapotranspiration 218.2mm.

Humidity

Humidity depends on temperature and the pressure. The same amount of water vapor results in higher humidity in cool air than warm air. A related parameter is the [dew point](#). The amount of water vapor needed to achieve saturation increases as the temperature increases. As the temperature of a parcel of air decreases it will eventually reach the saturation point without adding or losing water mass.

In Jhimpir region, July, August and September are the most humid months whereas May and June are the least humid months. Average monthly relative humidity (RH) values at whole Thatta District are provided in table 4.1

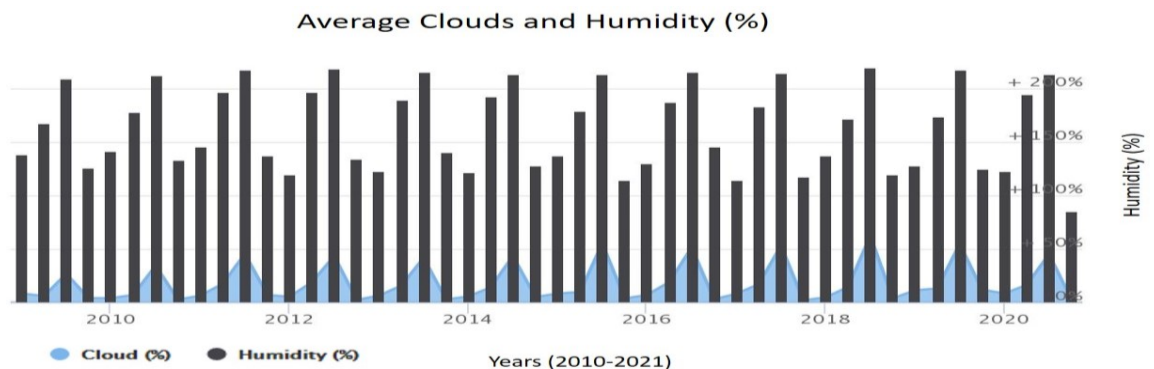


Figure 4-1: Average humidity of Thatta, District Sindh since 2009 to 2020

Source: worldweatheronline

Wind Speed & Direction

The wind direction in Jhimpir region is generally west-northwesterly during the summer monsoon and east-northeasterly during the short winter monsoon season. The wind speed at ground level varies between 0 and 2 m/s during the calm months to 4 and 8m/s during the pre-monsoon season.

Pakistan Meteorological Department has conducted a detailed Wind Power Potential Survey of Coastal Areas of Pakistan including district Thatta. The list of stations located along Sindh is shown in the Figure 4.3.



Figure 4-2: Wind Mapping Stations installed by Pakistan Meteorological Department (PMD)

[Source: PMD: <http://www.pmd.org.pk>]

The wind speeds for the Jhimpir region, as presented in Table 4.2.

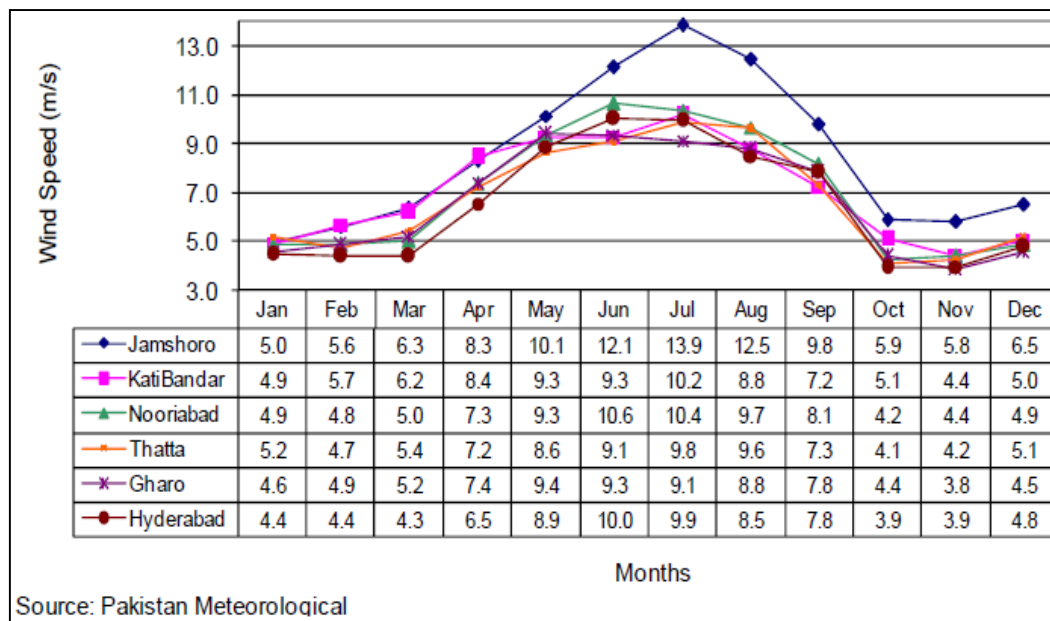
Table 4-2: Monthly Benchmark Wind Speeds for Jhimpir					
Month	Monthly Mean Wind Speeds (m/s)				
	30m	50m	60m	67m	80m
January	4.25	4.70	4.90	5.02	5.24
February	4.50	4.98	5.18	5.32	5.55
March	4.77	5.28	5.50	5.64	5.89
April	6.39	7.03	7.29	7.46	7.75
May	8.29	9.05	9.36	9.56	9.90
June	8.79	9.50	9.78	9.96	10.25
July	8.83	9.59	9.89	10.08	10.40

Table 4-2: Monthly Benchmark Wind Speeds for Jhimphir

Month	Monthly Mean Wind Speeds (m/s)				
	30m	50m	60m	67m	80m
August	8.20	8.89	9.16	9.34	9.63
September	6.63	7.28	7.54	7.72	8.01
October	4.22	4.68	4.87	5.0	5.22
November	3.59	3.98	4.14	4.24	4.43
December	3.96	4.38	4.56	4.67	4.88
Annual Average	6.0	6.6	6.8	7.0	7.3

Source: Mirza, I. A. (2013). Wind data reliability in Pakistan for wind power generation. *Eng Aeronaut*.

The annual average wind speed for the Jhimphir regions is calculated as 7.3 m/s at 80-meter height. However, the monthly average wind speeds are different in the region compare to the other region of Thatta District.


Figure 4-3: Monthly Average Wind Speed at 50m in Sindh districts

Source: Pakistan Meteorological Department (PMD)

4.1.1.1. Impact of Climate Change

Pakistan's latitudinal and longitudinal extents and its northern rim of lofty mountains, are the two factors, which have a great bearing not only on the temperature and rainfall patterns, but also on the general circulation of the atmosphere on the southern Asia.

Tropical Cyclone

Coastal districts of Sindh including Thatta, Sujawal and Badin are vulnerable to cyclone hazard. Due to its geographical setting, District Thatta is among district badly affected by the surge of cyclone on several occasions. Tropical cyclones not only wipe out the human settlements and huge losses of human and animal lives, but it also destroys and badly damaging the fishing boats and fish harbors, thus resulting badly affect the livelihood of the majority of fisher communities of the district. Historically, the tropical cyclones formed over the Arabian Sea and making landfall at the coastal areas of Sindh and Baluchistan including District Thatta. Details of tropical cyclone events on district are mentioned in table 4.3.

Extreme Precipitation Events

Occasionally, a few heavy precipitation events in active monsoon period brings lot of rainfall which results in devastation instead of casting benefits.

The change in tendency of extreme precipitation events is shown in Figure 4-4. The intervals from 2010-2020 and last two years 2019 and 2020. Keeping in view the amount of rain over certain period of time it turns to a disaster from blessing as endurance differs case to case, it is recorded that in 2020 it was heavy rain caused flood situation.

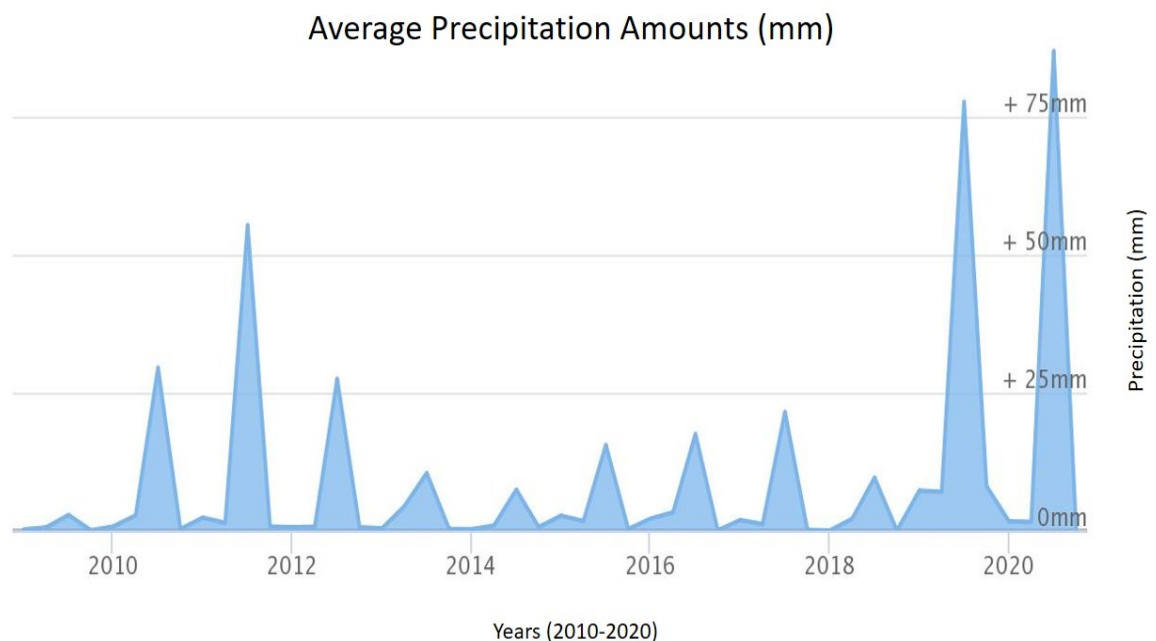


Figure 4-4: Inter-annual variability of precipitation (mm) over Thatta District, Sindh about the long-term average showing predominant drought as well as some flood years

Source: world weather online

Flooding

Like other part of the country, the monsoon season which brings major proportion of rainfall, starts from June and lasts till September in the district. During the recent years, the behaviours and distribution of rainfall has been observed very abnormal mainly due to the impacts of climatic changes where the district receives heavy rainfall in the form of erratic and cloud burst especially during different time period of the monsoon season. These types of rainfall generate flash floods and witnesses of heavy loss of life and property in the district. Historically, District Thatta has been hit by various episodes of flooding during the recent past. Table 4.3 shows that the district was badly hit by certain flood events and their potential effect on life.

Table 4-3: Disaster Risk Assessment Matrix of District Thatta

Disaster	Events	Potential Scale	Immediate Effects
Floods	1840, 1856, 1874, 1942, 1946, 1948, 1956, 1973, 1974, 1976, 1978, 1978, 1988, 1989, 1992, 1994, 1995, 1996, 1999, 2003, 2006, 2007, 2010 & 2011	It is during the monsoon season that Floods occur (June to September) and in case of canal breaches which is a usual phenomenon. Impacts are often local but can be devastating in the case of breaches in Flood protection bond, Drains or river Indus and strong effect if combined with a cyclone.	Life and livestock loss, IDPs, WASH systems collapse, livelihood resources either damaged or destroyed, infrastructure damaged or destroyed, stress among women, children, old and disable persons increases, permanent land degradation and erosion possible, permanent loss of shelter/houses, eruption of human and livestock epidemics, school drop outs
Cyclone	1964, 1993, 1999, 2003, 2004, 2007 & 2014	The impact may be higher, but restricted to low-lying areas The areas with dense population will be the worst affected	In case of no or late early warning, there may be a great loss of life, fear, epidemics, IDPs, WASH systems collapse, livelihood resources either damaged or destroyed, infrastructure damaged or destroyed, stress among women, children, old and disable persons increases, land may be permanently or temporarily degraded, permanent or temporary loss of shelter/houses, depletion and/or changing of quality of underground water aquifers, no place for shelter -

Table 4-3: Disaster Risk Assessment Matrix of District Thatta

Disaster	Events	Potential Scale	Immediate Effects
			every place is wet. Major breaches occur in irrigation system (kilometers of canals gone), sea-intrusion, school drop out
Sea Intrusion	1992 onward	Large scale area affected, occurs continuously	1.22 million acres land either eroded or subsequently submerged under the sea, livelihood options of thousands of people destroyed, mass displacement, structural damages, and vast area under desertification
Tsunami	1945	Small to large scale tsunami affecting the larger coastal area	Being a coastal district, threat of tsunami has been always present as major a fault line crossing from Makran coast of Bay of Bengal poses threat to Thatta coast too

Source: District Disaster Management Authority, District Administration Thatta.

4.1.1.2 Geology

Geologically, District Thatta comprises of volcanic and sedimentary rocks of quaternary and tertiary and has the same composition as that of the Indus plain and the eastern desert zone of Pakistan containing the deserts of Cholistan, Nara and Thar. The soils are silt, clayey wet and saline. The natural vegetation found in the district can be divided into two categories-mangroves in the coastal or delta zone, and tropical thorns in the rest of the district. In terms of use, the lands in the district can be divided into five major categories; lands not available or fit for agriculture, those under arable agriculture, forests, rough grazing lands and areas under human settlements. River Indus bisecting the district from north to southwest, Kohistan or hill zone in the north and North West, areas put under year-round cultivation along river Indus through canals and tube wells, and coastal belt and delta area, are four broader topographical divisions of Thatta. Keenjhar Lake is another important physical feature and surface water resource of the district. District Thatta possesses a diversity of environmental features and resources since it carries all the environmental features of the province. The district has desert, hills/gravel rocks, rangelands, water bodies, delta, tidal flats, creeks, lakes, mangrove and riverine forests and irrigated agricultural lands.

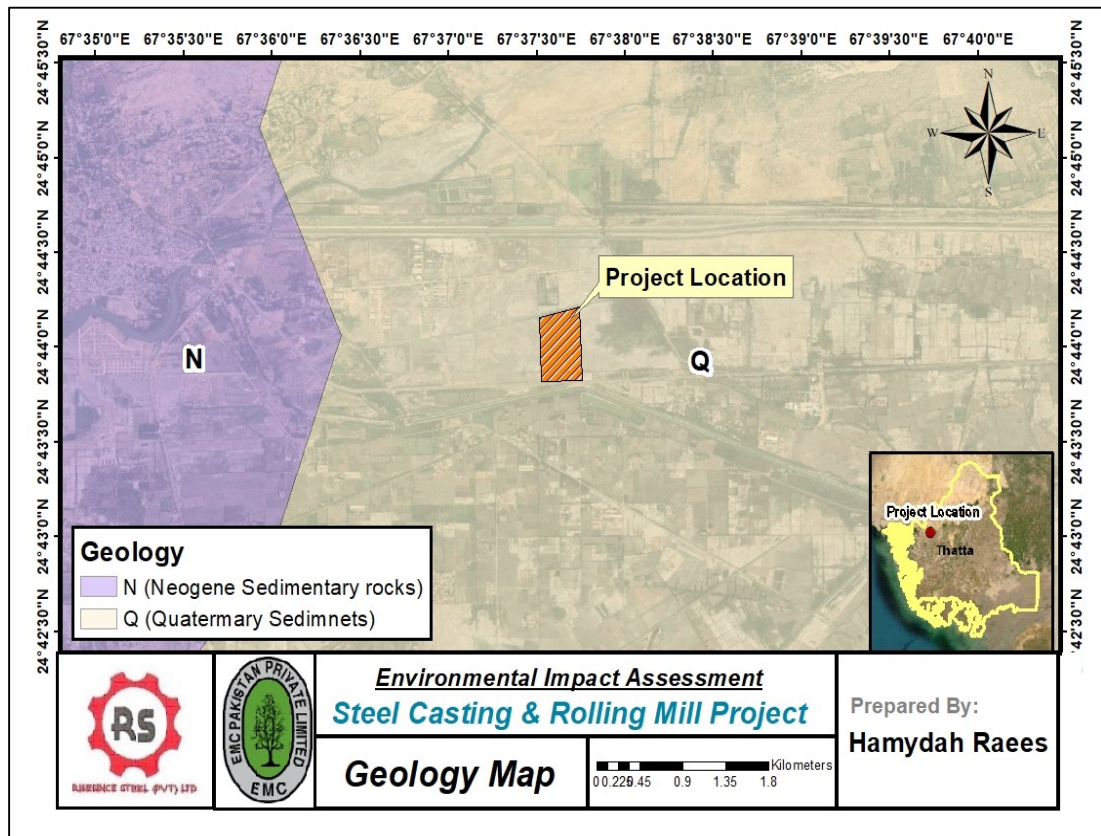


Figure 4.3: Geological map of project area

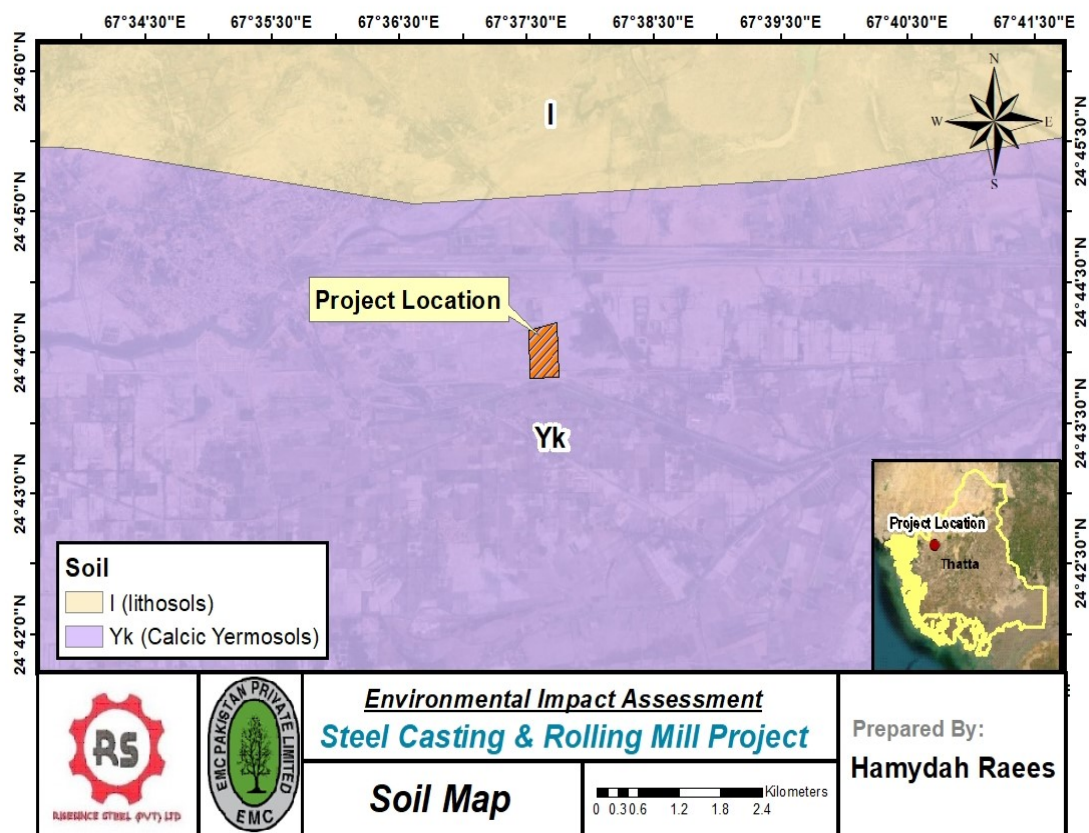


Figure 4.4: Soil map of project area

4.1.1.3 Seismicity

According to a map created by the Pakistan Meteorological Department, the country is divided into 4 zones based on expected ground acceleration. The areas surrounding Quetta, those along the Makran coast and parts of the KPK, and also along the Afghan border fall in Zone 4. The rest of the NWFP lies in Zone 3, with the exception of southern parts of this province, which lie in Zone 2. The remaining parts of the country lie in Zone 2. According to this classification the district area falls in Zone 2A.

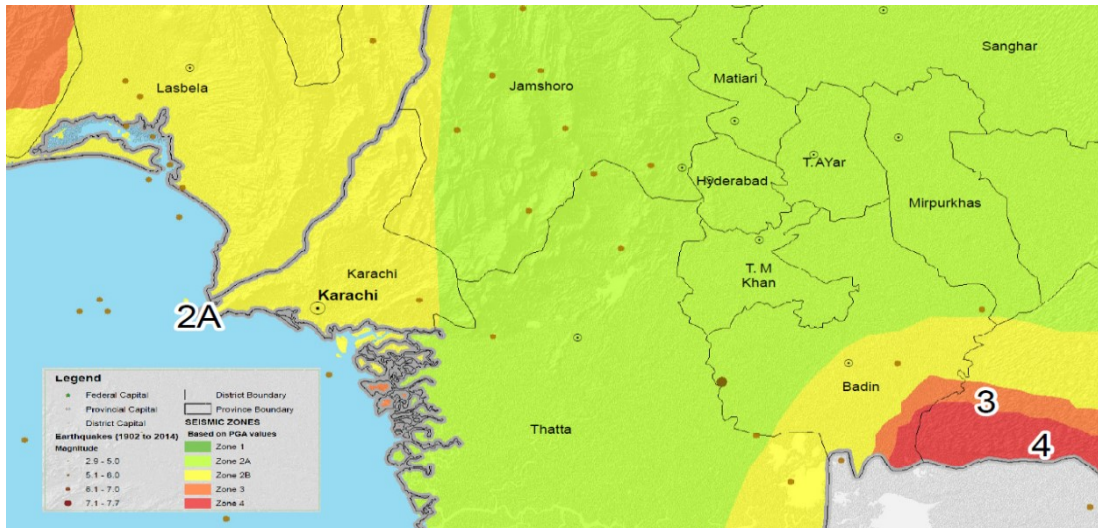


Figure 4.5: Seismic Zones of Thatta

4.1.1.4 Hydrology

Groundwater Hydrology

The southern Sindh province of Pakistan adjoins the Arabian Sea coast where drinking water quality is deteriorating due to the dumping of industrial and urban waste and use of agrochemicals and yet has limited freshwater resources. The groundwater quality is badly affected by salinity, arsenic, fluoride and microbial pollution, which further deteriorates in low-lying, deltaic and floodplains of Sindh. In these areas, people mostly depend on the groundwater for drinking and irrigation purpose because of low precipitation and reduced flow of Indus River. In the coastal areas, seawater intrusion further degrades the quality of groundwater. The contamination in groundwater in most of the areas of the Thatta district is due to seawater intrusion, as seawater contains many trace metals.

Locals supplement their water supplies by extracting groundwater through wells and tube wells. The quality of groundwater varies from sweet to brackish in the area.

4.1.1.5 Solid Waste Management

Updated and proper data is not found on the current situation of Solid waste management system in district Thatta. Like some other major districts of Sindh, District Thatta also has no proper solid waste management system, while indiscriminate dumping and open burning of waste is a common practice. It is responsibility of the municipal authorities to collect and dispose of solid waste but they had failed to

perform their job because of the lack of the required machinery, capacity, expertise and mismanagement².

4.1.2 Biological Environment

4.1.2.1 Flora

The vegetation mostly comprises of various species of grass, bushes, shrubs and few specie of cactus and other thorny plant. Some species of trees are present in the district, that include *Conocarpus erectus* etc. these trees are in very small number and widely spaced. The native/indigenous flora of the site is given in below list, however, few species such as *Capparis aphylla*, *Euphorbia caducifolia*,

Calotropis procera, *Prosopis juliflora* and *Salvadora oleoides* are predominantly found.

Table 4.7: List of Floral species

S. No	Botanical Name	Local Name
Trees and Shrubs		
1.	<i>Capparis aphylla</i>	Kirir
2.	<i>Salvadora oleoides</i>	Khabar
3.	<i>Acacia Senegal</i>	Kunbhat
4.	<i>Prosopis cineraria</i>	Kandi
5.	<i>Prosopis juliflora</i>	Mesquit, devi
6.	<i>Tecoma undulata</i>	Lohiro
7.	<i>Euphorbia caudicifolia</i>	Thuar
8.	<i>Tamarix aphylla</i>	Lai
9.	<i>Ziziphus nummularia</i>	Ber
10.	<i>Acacia nilotica</i>	Babur
Grass		
1.	<i>Aristida adscenciones</i>	Lumb
2.	<i>Aristida funiculate</i>	Lumb
3.	<i>Cenchrus biflorus</i>	Bhurt
4.	<i>Cenchrus ciliaris</i>	Dhaman
5.	<i>Chrysopogon aucheri</i>	Putar
6.	<i>Cymbopogon jawarncusa</i>	Poi
7.	<i>Desmostachya bipinnata</i>	Dubh
8.	<i>Dicanthium annulatum</i>	
9.	<i>Lasiurus indicus</i>	Sain
10.	<i>Lasiurus hirsutus</i>	
11.	<i>Leersia spp.</i>	

² <https://reliefweb.int/sites/reliefweb.int/files/resources/PESA-DP-Thatta-Sindh.pdf>

4.1.2.2 Fauna

Due to sparse vegetation and increased interventions of human the abode and population of the wild species have shrunk considerably. Wild animal of various family which were once commonly seen, have moved to areas where the human interventions are minimum.

Below is the list of faunal specie native to the district:

Table 4.8: List of Mammals

S No.	Scientific name	Common name
Large Mammal		
1.	<i>Canis aureus</i>	Asiatic Jackal
2.	<i>Sus Scrofa</i>	Indian Wild Boar
3.	<i>Felis chaus</i>	Jungle Cat
4.	<i>Manis crassicaudata</i>	Indian Pangolin
5.	<i>Herpestes Javanica</i>	Small Indian Mongoose
Small Mammals		
1.	<i>Funambulus pennant</i>	Palm Squirrel
2.	<i>Ratus norvegicus</i>	Screw Rat
3.	<i>Mus musculus</i>	House Mouse
4.	<i>Tetra Indica</i>	Indian Gebril
5.	<i>Meriones hurrianae</i>	Indian Desert Jird
6.	<i>Gerbillus nanus</i>	Balochistan Gerbil

Table 4.9: List of birds

S. No.	Scientific name	Common name
1.	<i>Milvus migrans</i>	Common Kite
2.	<i>Francolinus francolinus</i>	Black Partridge
3.	<i>Ardeola grayii</i>	Indian Pond Heron
4.	<i>Bubulcus ibis</i>	Cattle Egret
5.	<i>Egretta garzetta</i>	Little Egret
6.	<i>Egretta gularis</i>	Reef Heron
7.	<i>Centropus sinensis</i>	Crow Pheasant
8.	<i>Psittacula krameri</i>	Rose Ringed Parakeet
9.	<i>Galerida cristata</i>	Crested lark
10.	<i>Acridotheres tristis</i>	Indian Myna

4.1.3 Environmental Monitoring, Sampling, & Testing

4.1.3.1 Ambient Air Quality

The Air Quality of the proposed project area found without major air pollutants as the area is far from the potential major sources of pollution. The surrounding environment of the proposed area is mainly barren and a potential industrial land, however, the dominant source of air pollution is transportation of dual carriage way National



Highway from Karachi to Interior Sindh. Operation of defective vehicles, use of low-quality fuel, and increase in the number of vehicles beyond the capacity of roads are the main reasons for deterioration of ambient air quality.

The ambient air quality of the microenvironment was conducted in March 2023 and the results have been detailed in the table below. The ambient air quality was found to be within SEQS limits in the project area.

Parameter	Unit	Monitoring Duration	Average Obtained Concentration	SEQS	LDL-Limits	Methodology/Instrument
Carbon Monoxide (CO)	mg/m ³	08 Hours	0.08	5.0	0.0	Non-Dispersive Intra Red (NDIR)
Nitrogen oxide (NO)	µg/m ³	24 Hours	18.4	40.0	0.0	Chemiluminescence
Nitrogen Dioxide (NO₂)	µg/m ³	24 Hours	29.9	80.0	0.0	
Sulphur Dioxide (SO₂)	µg/m ³	24 Hours	12.7	120.0	0.0	Ultraviolet Fluorescence Method
Ozone (O₃)	µg/m ³	01 Hour	17.2	130.0	0.0	Non-Dispersive UV Absorption Method
Particulate Matter (PM₁₀)	µg/m ³	24 Hours	134.8	150.0	10.0	β Ray Absorption Method
Particulate Matter (PM_{2.5})	µg/m ³	24 Hours	63.6	75.0	2.5	
Suspended Particulate Matter (SPM)	µg/m ³	24 Hours	383.8	500.0	1.0	
Lead (Pb)	µg/m ³	24 Hours	ND	1.5	-	ASS Method
Wind Speed (m/s)	(Km/h)	24 Hours	16.3	*N/A	1.0	(Haz-Scanner) EPAS
Wind Direction (Deg)	Degree	24 Hours	101.1	N/A	1.0	(Haz-Scanner) EPAS

Air Temperature (°C)	(°C)	24 Hours	27.5	N/A	-	Thermometer
Humidity (%)	(%)	24 Hours	43.3	N/A	1.0	(Haz-Scanner) EPAS

Additional ambient air Quality monitoring data is provided in below table which was acquired by EMC in the microenvironment of the proposed project area.

Table 4.11: Ambient Air Monitoring Results			
Coordinate: 24° 43.600'N 67° 36.752'E			
Parameters		SEQS	Result
1	CO	5 mg/m ³	1.03
2	NO	40 ug/m ³	21.5
3	NO ₂	40 ug/m ³	25.2
4	SO ₂	80 ug/m ³	14.5
5	O ₃	130 ug/m ³	15.3
6	PM ₁₀	120 ug/m ³	105.4
7	PM _{2.5}	15 ug/m ³	67.2
8	TSP	360 ug/m ³	270.6
9	Pb	1 ug/m ³	BDL

4.1.3.2 Water Quality Testing Results

A bore water sample was collected from the project site. This sample of water was tested in a SEPA-approved laboratory. This water was not used for drinking purposes.

Table 4.12: Water testing Report			
S.NO.	PARAMETERS TO BE ANALYZED	UNITS	RESULTS
1	pH value	-	7.91
2	Chemical Oxygen Demand (COD)	mg/L	BDL
3	Biochemical Oxygen Demand (BOD) ₅ at 20°C	mg/L	BDL
4	Total Suspended Solids (TSS)	mg/L	06
5	Total Dissolved Solids (TDS)	mg/L	2876



6	Nitrate (NO ₃)	mg/L	0.20
7	Nitrite (NO ₂)	mg/L	0.013
8	Fluoride (as F ⁻)	mg/L	0.08
9	Chloride (as Cl ⁻)	mg/L	935
10	Total Hardness (as CaCO ₃)	mg/L	855
11	Turbidity	NTU	0.021

A surface water monitoring study was also conducted in the microenvironment of the proposed project site. The results of water quality testing are presented below.

Table 4.13: Water Quality Testing Results
Coordinate: 24° 43.600'N 67° 36.752'E

Parameters		Unit	SEQS	Result
1	pH	pH unit	6.5-8.5	8.59
2	Odor	-	Non-Objectionable / Acceptable	acceptable
3	Taste	-	Non-Objectionable / Acceptable	acceptable
4	Color	Pt-Co	≤15TCU	2
5	Turbidity	NTU	<5	BDL
6	Total Dissolved Solid (TDS)	mg/L	<1000.00	350
7	Total Hardness	mg/L	<500.00	84
8	Fluoride F ⁻	mg/L	<1.50	0.54
9	Chloride(Cl ⁻)	mg/L	<250.00	115
10	Nitrate (NO ₃) ⁻	mg/L	<50.00	0.21
11	Nitrite (NO ₂)	mg/L	<3	0.003
12	Cyanide (CN)	mg/L	<0.05	0.001
13	Phenolic Compounds (As Phenols)	mg/L	-	BDL
14	Aluminum	mg/L	< 0.2	BDL
15	Antimony	mg/L	<0.005	BDL
16	Arsenic (As)	mg/L	< 0.05	BDL



17	Cadmium	mg/L	0.01	BDL
18	Total Chromium	mg/L	<0.05	BDL
19	Copper	mg/L	2	0.01
20	Lead	mg/L	<0.05	BDL
21	Mercury	mg/L	<0.001	BDL
22	Selenium	mg/L	0.01	BDL
23	Nickel	mg/L	<0.02	BDL
24	Boron	mg/L	<0.3	BDL
25	Zinc (Zn ²⁺)	mg/L	5	0.01
26	Manganese	mg/L	<0.5	0.02
27	Barium	mg/L	0.7	BDL
28	Escherichia Coli (E-Coli)	cfu/100ml	0/100 ml	positive

4.1.3.3 Ambient Noise Quality

The Ambient noise quality was tested at five locations in the proposed project area.

Table 4.14: NOISE LEVEL TEST REPORT				
S. No.	LOCATION/SOURCE	SEQS Limits : 75dB(A)		
		Noise Level Readings		
		Minimum	Maximum	Average
1	N-1, Front side Left corner boundary	60.2	61.6	60.9
2	N-2, Front side Right corner boundary	61.4	63.3	62.3
3	N-3, Back side Left corner boundary	59.8	62.1	60.9
4	N-4, Back side Right corner boundary	61.3	62.7	62.0
5	N-5, Near Road side NH-5 Karachi Thatta Dual Carriage Way	64.4	66.8	65.6
SEQS =Sindh Environmental Quality Standard. dB (A) Leq=Time weighted average of the level of sound in decibel on scale which is relatable to human hearing				



The noise levels were found to be within SEQS limit of the project area.

Environmental monitoring and sampling photographs	
	
	
	

4.1.2.1. Land Use

The present site is a vacant land with boundary wall, flat tract with sparse xerophytes having tamarix and small bushes. The vegetative growth in this area is limited to short grasses, shrubs and scrubs along with a few droughts' resistant vegetation.

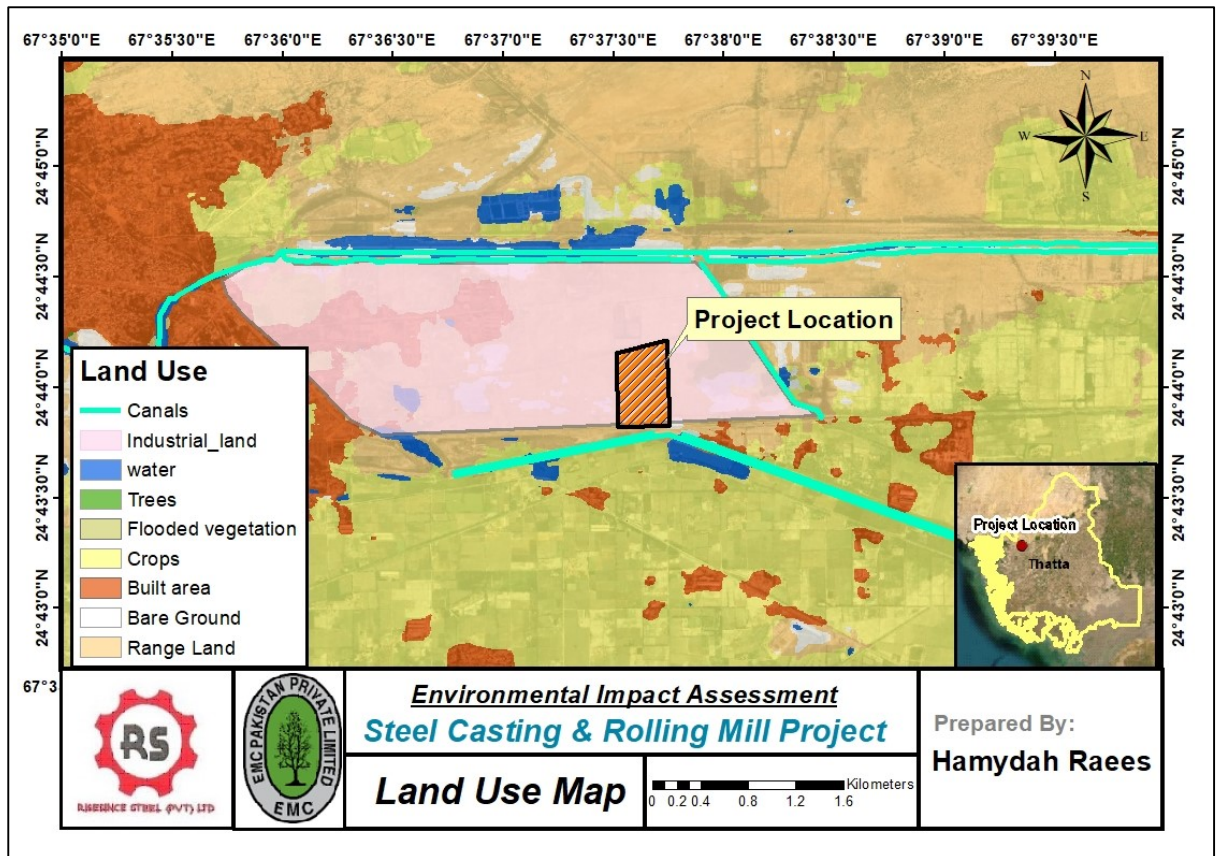


Figure 4.6: Land Use map of project area

4.1.2.2. Traffic Conditions

The principal road they will be using in the first place will be the dual carriage National Highway (N5).

The National Highway starting from the Karachi Port area passes through the Central Business District and the airport and crosses the Malir River at Quaidabad, Gulshan headed toward Thatta. The proposed plot is located adjacent to the National Highway (N5).

4.2 Socio-Economic Baseline of Project Area

The social baseline chapter provides a comprehensive review of the socio-economic conditions of the project area. This socio-economic profile is based on a literature review and several primary data gathering activities including site visits, sample socio-economic survey of stakeholders in the area and consultations with primary and secondary stakeholders. This social baseline provides an overview of the socio-economic conditions of the people who reside and work in the project vicinity. It also includes an assessment of public utilities and social services (education and health facilities) in the area concerning the proposed construction and operation of Steel Casting & Rolling Mill Project.

International best practice for EIA studies demands an alignment of the proposed project components with the applicable Sustainable Development Goals (SDGs) adopted by all UN Member States in 2015. The SDGs provide broad universal targets for reducing poverty,

environmental degradation, injustice and important pillars of social upheaval that must be achieved by 2030. In March 2017, the global indicator framework was developed and agreed upon by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) to monitor progress towards the achievement of these indicators. Moreover, all member states, including Pakistan have developed national indicators linked to the global targets that provide the basis for a national effort of monitoring progress towards fulfilment of the indicators. The proposed project should be aligned with Goal 11 of the SDGs that requires all essential steps be taken to ensure development that is socially acceptable and environmentally sound.

The socio-economic baseline data in this chapter identifies the existing socio-economic trends in the area and the potential impacts of the project providing the basis for the development of a Social Management Plan. The social baseline is divided into macro and microenvironment of the project area. The macro-environment encompasses District Thatta of Sindh. The discussion on macro environment covers the administrative setup, demography, education and health profile of the area. The immediate neighborhood of the project area is considered to be the micro-environment of the project and covers land use, education, health and utilities profile of the area.

4.2.1 Macro-Environment: District Thatta

Administrative Context

District Thatta is situated at a distance of 98 Kilometers in the east of Karachi Division on the National Highway. The district is surrounded in the north and northwest by Jamshoro district, and on the east by Hyderabad, Tando Muhammad Khan and Sujawal districts. The total area of Thatta district is 8,570sq km. The northern part of the district is locally known as "Kohistan" connected with a Keerthar Range of hillocks. Thatta District is comprised of four main talukas including Ghorabari, Ketu Bunder, Mirpursakro and Thatta. The proposed project is located in Ghara, Mirpursakro Taluka of District Thatta.

Demography

According to the latest national census of 2017, there are a total of 982,138 people in District Thatta. The district experienced an average annual growth of 2.63% between the 1998 and 2017 census. As far as the gender balance in District Thatta is concerned, 52% are males and 48% are females, with an insignificant number of transgenders. The following table shows the demographic details of Thatta according to the 2017 census. Moreover, the dominant rural lifestyle is evident from the fact that nearly 82% of the population resides in rural areas.

Table-4.15: Population Census Results 2017 – Thatta

Administrative Units	Population 2017				Population 1998	Sex Ratio 2017	1998-2017 Average Annual Growth
	Male	Female	Trans-gender	All Sexes			



								Rate
Thatta	Total	510,143	471,958	37	982,138	599,492	108.68	2.63
	Rural	419,243	386,402	17	805,662	535,788	108.90	2.17
	Urban	90,900	85,556	20	176,476	63,704	106.25	5.5
Source: PBS- 2017 Census Final Results								

Ethnicity and Religion

Sindhi is the major spoken language of the district, although Urdu is also spoken and understood. Islam is the major religion of this district representing 96.2% of the population followed by Hinduism (2.89%) and Christianity (0.18%). Caste system is very strong in this region. Majority of the population of Thatta district belongs to indigenous Sindhi clans including Jokhio, Palijo, Sheerazi, Soomro, Sammo, Syed, Memon, Khoja and Mirbahar are the main tribes of Thatta district.

This district has a rich heritage of ancient Sindhi and Arabian culture. Both can be seen in the architect and culture of this district. Thatta's Jamia Masjid known as Shah Jehan Masjid is a masterpiece. It was built on the orders of the Mughal Emperor, Shah Jehan, who gifted it to the people of Thatta. Its construction started in 1644 and was completed in 1647. Makli hills, also known as Makli Graveyard, are one of the largest necropolises in the world, with a diameter of approximately 8 kilometers. These hills are supposed to be the burial place of some 125,000 sufi saints. The graveyard is located on the outskirts of Thatta city.

The following table show the gender wise population of Gharo Tapedar Circle according to the 2017 census conducted by Pakistan Bureau of Statistics.

Table-4.16-: Gender wise Population Gharo TC – 2017					
Taluka	Gharo TC	Total	Male	Female	Transgender
Mirpur Sakro	Urban	36,799	19,109	17,688	2
	Rural	58,994	30,739	28,254	1
	Total	95,793	49,848	45,942	3
Source: PBS- 2017 Census (TC = Tapedar Circle)					

Livelihood

Agriculture and fisheries are the two major sources of employment for the people of district Thatta. In addition to that, there is a substantial number of landless people who



own and manage livestock or are engaged in the non-farm sectors. According to a study conducted by Asian Development Bank, 79% of the population of district Thatta is poor. The incidence of poverty is negatively correlated with land ownership. Landowners are usually non-poor.

There are about 30 industrial units established in the district. Apart from the sugar mills, all the larger industrial units are located in Dhabeji and Gharo mouzas adjacent to Karachi. Most of the labour force working in these units is non-local and generally belongs to Karachi. The industrial units of the district include sugar mills (5), textile mills (9), paper mills (2), flour mill (3) salt works, ice factory (2), etc. In addition, crushed stones from the Makli Hills and Kohistan are supplied to the Pakistan Steel Mill and the Thatta Cement Factory. There are also large coal deposits in Thatta Taluka. Recent addition to the industrial units is the car manufacturing plant near Budho Talpur, belonging to the Deewan Group, adjacent to the Deewan Sugar Mills.

The Government of Sindh has allocated 1530 acres of land to establish Dhabeji Special Economic Zone (DSEZ) in Thatta near Dhabeji. Dhabeji has certain locational advantages including easy access to Port Qasim enabling raw material import and finished goods export without incurring major inland transportation costs and saving time. Dhabeji SEZ would open new vistas of development and prosperity in Sindh by starting economic activities and creating a large number of employment opportunities for the local people. The project will generate over 50,000 job opportunities for the skilled and unskilled youth. After the establishment of Dhabeji Special Economic Zone in near future District Thatta will become an important district with regards to industrial development.

EDUCATION

District of Thatta has a total of 1,607 schools out of a total of 49,103 schools in the province of Sindh. Out of 1,607 schools, there are 552 schools for boys, 182 schools for girls, and 873 mixed schools.

Table-4.17: Numbers of Government Schools in district Thatta

Location	Total	Boys	Girls	Mixed
Sindh	49,103	8,617	6,685	33,801
Thatta	1,607	552	182	873

Source: Sindh District Profile-2021

1,607 schools in District Thatta have a total enrollment of 78,434 with 50,854 boys (64.8%) and 27,580 girls (35.2%). There are 1,727 male teachers and 663 female teachers in the schools in Thatta. Total number of rooms in 1,607 schools in Thatta amount to 3,476 out of which 2,501 are classrooms. There are 908 functional schools in Thatta while 699 schools are dysfunctional, non-functional, non-viable or closed.



Table-4.18 Enrollments of Students in district Thatta

Location	Boys	Girls
Sindh	2,812,000	1,749,140
Thatta	50,854	27,580

Source: Sindh District Profile-2021

Male literacy rate (15-49 years) in Thatta is 26.5% compared to 59.0% in Sindh while the female literacy rate is 14.3% compared to 40.9% in Sindh.

Table-4.19: Male and Female literacy rate of district Thatta

Location	Boys	Girls
Sindh	59%	40.9%
Thatta	26.5%	14.3%

Source: Sindh District Profile-2021

Health

District Thatta has a total of 8 Government, Departmental, Private and Local Bodies Hospitals with a capacity of 300 beds compared to 648 Hospitals in Sindh with a capacity of 30,126 beds. Thatta has a total of 22 Basic Health Units (BHUs) with a capacity of 44 beds compared to 800 BHUs in Sindh with a capacity of 1,615 beds. Thatta has a total of 6 Rural Health Centers (RHCs) with a capacity of 80 beds compared to 133 RHCs in Sindh with a capacity of 1,703 beds in Sindh. Thatta has a total of 91 Dispensaries with a capacity of 10 beds compared to 2,996 Dispensaries with a capacity of 715 beds in Sindh. District Thatta has a total of 8 TB Clinics with no beds compared to 228 TB Clinics with total capacity of 42 beds in Sindh. Thatta has 6 Mother & Child Health Centers (MCHCs) with a total of 4 beds compared to 227 MCHCs with a total of 181 beds. Similarly, Thatta has 1 Maternity Home out of 42 Maternity Homes in the province

Table-4.20: Health Facility Name of district Thatta

Health facility name	Medical Centers	Beds
Basic Health Units (BHUs)	22	44
Rural Health Centres (RHCs)	6	80
Dispensaries	91	10
Government	10	0
Semi Government	3	0
Local Bodies	50	0

Table-4.20: Health Facility Name of district Thatta

Health facility name	Medical Centers	Beds
Private	28	10
TB Clinics	8	0
Government	8	0
Private	0	0
Mother and Child Health Centres (MCHC)	6	4
Government	0	0
Semi Government	1	4
Local Bodies	0	0
Private	5	0
Maternity Homes (Government)	1	NA
<i>Source: Sindh District Profile-2021</i>		

Number of indoor patients served in District Thatta are 28,923 out of 744,618 indoor patients in the province. Similarly, number of outdoor patients served in District Thatta are 1,111,130 out of 43,718,506 outdoor patients in Sindh

Table-4.21: Patients Record of district Thatta

Description	Male	Female	Total
Indore Patients	13,521(43%)	15,402 (57%)	28,923
Outdoor Patients	515,414 (47%)	595,986 (53%)	1,111,130
<i>Source: Sindh District Profile-2021</i>			

The patients per bed in District Thatta are 3,799 compared to 1,455 patients per bed in Sindh. The patients per doctor in Thatta are 5,859 compared to 3,159 patients per doctor in Sindh. Patients per nurse in Thatta are 52,000 compared to 12,411 patients per nurse in Sindh. Total Number of Government Medical, Nursing & Para-Medical Staff is 508 in District Thatta out of 18,429 Government Staff in Sindh. The total number of Semi-Government Medical, Nursing & Para-Medical Staff is 11 out of 2,985 Semi-Government Staff in Sindh. The total number of Local Bodies and Private Medical, Nursing & Para-Medical Staff is 158.

Table-4.22: Population served by Doctor/Nurse of district Thatta

Description	Patients Per Bed	Patients Per Doctor	Patients Per Nurse
Population	3,799	5,859	52,000

Source: Sindh District Profile-2021

MPI (Multi-Dimensional Poverty Index)

Multi-Dimensional Poverty Index measures the number of people/households that are 'multidimensionally' poor. Essentially, it means the number of people (or HHs) deprived in at least one third of the weighted indicators (H) along with the weighted average number of deprivations poor people experience at the same time (A). The weighted indicators are along three broad dimensions: Education, Health, and Living Standards.

In District Thatta, the MPI value is 0.60 which is higher than the average MPI Value of 0.25 in Sindh.

Table-4.23: MPI Head Count of district Thatta

Location	M-Poverty Headcount (H)	MPI 2018	% Vulnerable to Poverty	% Severe Poverty
Sindh	0.47	0.25	12.5	28.3
Thatta	0.86	0.60	4.00	69.00

Source: Sindh District Profile-2021

Utilities

Access to basic facilities like clean drinking water, toilets and sanitation services provide a holistic supply-side service provision coverage in a district.

In District Thatta, 82.0% of households have improved sources of drinking water compared to 96.0% households in Sindh having improved sources of drinking water. In terms of access to sanitation services, 24.4% of households in Thatta have access to improved sanitation services compared to 65.9% of households in Sindh with access to improved sanitation services. The prevalence of open defecation in Thatta is 58.4% compared to 24.0% in Sindh.

To ascertain whether environment-friendly practices are adopted at household level for cooking, heating and lighting, it is essential to gauge the prevalence of reliance on clean fuels. In District Thatta, only 21.6% of the households rely primarily on clean fuels for cooking compared to 50.2% of households relying on clean fuel for cooking in Sindh. Similarly, only 15.5% of households in District Thatta rely primarily on clean fuels for coking compared to 30.2% of households in Sindh.



Table-4.24: Source of Drinking Water of district Thatta

Location	Basic Service %	Limited Service %	Unimproved %	Surface water %
Sindh	90.3	5.7	2.1	1.9
Thatta	72.8	9.1	2.4	15.8
<i>Source: Sindh District Profile-2021</i>				

Table-4.25: Access to Sanitation district Thatta

Location	Basic Service %	Limited Service %	Unimproved %	Surface water %
Sindh	58.8	7.1	11.1	24
Thatta	20.6	3.8	17.1	58.4
<i>Source: Sindh District Profile-2021</i>				

4.2.2 Micro Environment

According to the description of micro-environment of the proposed project, it is located in Gharo, Mirpursakro Taluka of District Thatta. The project site is located nearby Fast Fuel station and few makeshift huts of Nomads (who migrated from Badin in torrential rain) and many industries are located around 2 kilometers radius from project site. Pakistan PVC Limited, LKFB, Petroleum Drilling Company Warehouse, Mustafa Steel Pvt. LTD, Kissan Ghee and Oil Mill, Garibson Pvt Ltd. are also located in the area. A nearby goth (village), Muhajid Colony and Shafiabad are present for last 50 years.

Main Source of Livelihood/Income

The people in the area can be put in the category of poor. Daily wages earning and private jobs are the two main sources of earning for the villagers. The people in the nearby villages are also employed in the surrounding industries of Dhabeji. Average monthly income of household in village is Rs. 13,000 to 18,000.

Education

During the field survey the field team observed that there is only government school present nearby which is closed since many years, therefore children have to go to Gharo city to acquire education. Status of girls' education is unsatisfactory in the area due to unavailability of girl's schools in the area. Girls are not allowed by their parent to go to schools in neighboring areas for getting primary education.

Health situation

There are no health facilities in the project area. People of these areas suffer with huge difficulties when someone gets sick so the people have to go to RHC Gharo Hospital for

treatments which is approximately 3 kilometers away from the project site. Major health problems of the area include fever, cough and flu which are reported by the residents as common diseases. People use private transport to go to travel to the health care facility.

Utilities

The available water, which is used for drinking purpose, is not potable, therefore people have to go to nearby Hilal Nutrition Farm house, which provides potable water to the villagers, who get water through pipelines.

The villages do not have proper sewerage system for the disposal of domestic toilet waste. The toilets systems in these villages are pit-hole latrine type.

There is no proper mechanism of solid waste disposal and people throw their waste in the open lands or in streets.

Electricity is not available in the village, but Hilal Nutrition (Poultry Farm) Pvt LTD provides electricity line for villagers, for lightening purpose during night time. There is no gas connection in the village so people use firewood for cooking purpose.

Transportation

There is no public transportation available in the area except bus/coaches/vans service from Ghara to Karachi as reported by the villagers. The most commonly used transportation mode is motorbike and majority of the population rely on it. The villagers cannot afford private vehicles or motorcars due to their lack of earnings thus they prefer to walk on foot.

5. Chapter Public Consultation

The participation of project stakeholders in project planning, design and implementation is now universally recognized as an integral part of environmental & social impact assessment. Local communities, their representatives, government departments, national and international NGOs and the civil society at large may all be able to contribute to and benefit from, the dialogue directed at identifying and resolving key project-related issues. Stakeholder consultation has become an important requirement of the EIA study after the enactment of the guidelines for public consultation under the Pakistan Environmental Protection Act (PEPA) 1997. After the 18th Amendment to the Constitution, the Government of Sindh passed the Sindh Environmental Protection Act 2014, which also stresses the importance of engaging with the concerned primary and secondary stakeholders during the EIA study.

The proposed project “Steel Casting & Rolling Mill” is planned to be constructed on a land measuring approximately 64 Acres situated on Karachi Thatta Dual Carriageway (N5), at Deh Khariseer, Tappo Ghara, Taluka Mirpur Sakro, which falls under the jurisdiction of District Thatta, Sindh. The project activities involve the construction and production of a steel manufacturing unit. Various other industrial projects are under development in this area.

While considering the short-term impacts, there are some impacts which might be felt only in the microenvironment of the project, and in the long-term, the impacts may also spread to other nearby neighborhoods. The project may affect traffic management, the swift passageway for fire tenders and ambulance and cause stress on existing utilities.

In view of these perceived impacts, meaningful engagement with the project stakeholders has been carried out to identify the potential positive and negative impacts, assess the magnitude of these impacts from a social perspective and prescribe solutions for the construction and operations phase of the proposed project.

5.1. Stakeholder Mapping

To better understand the different stakeholder groups for this project, a stakeholder mapping exercise has been carried out whereby the different stakeholder groups and their interests in the project are discussed in this section:

Local People/Neighborhood: Individuals or groups in the vicinity of the project site are informed regarding the project background and context. Due to their proximity to the project site, they are often the most vulnerable stakeholders and therefore, consultation with these stakeholders is carried out throughout the project life. The consultation exercise provides an opportunity to appraise the stakeholders regarding the consultation process, identify likely project impacts, and record concerns of local communities. Moreover, intensive stakeholder engagement during the planning stage of the project provides a basis for reducing the trust deficit and encourages confidence-building.



Proponents: The main aim of the project, proposed by the proponent “Risesince Steel (PVT) LTD” is to accomplish the objectives of cost-effective and sustainable production activities. To this end, the project proponent has to recognize that strong associations and responsive relations with stakeholders would go a long way to achieve the project objectives. Therefore, the proponent has to strive to engage stakeholders at all levels from the outset; inform them regarding project goals, design and alternatives. Moreover, they have to keep trying to create public understanding and acceptance of the proposal through a commitment to implement the promised objectives. They have to accomplish the project through general acceptance of the design and keep improving through the use of public inputs on alternatives and mitigation measures.

Government Agencies: The government agencies involved in the EIA process is mandated to have their policy and regulatory responsibilities addressed in impact analysis and mitigation consideration. For the competent authority, an effective public involvement program will ensure a project proposal that effectively incorporates environmental and social concerns. During the EIA review, the most important concern for SEPA is a transparent public consultation process and a strong stakeholder engagement plan that can address the concerns and suggestions of all stakeholders.

5.2. Primary and Secondary Stakeholders

Primary stakeholders are those who have a direct interest in the project, or which can be affected by the project in positive or negative way, which includes residents, commercial entities and institutions falling in the immediate environs of the project area. Secondary stakeholders include the relevant government agencies and public interest groups which may indirectly influence or be influenced by the project. The concerns and input from both primary and secondary stakeholders are important to identify the issues arising from the construction and/or operation phase of the project and propose mitigation measures that minimize the negative project impacts and enhance the positive ones.

Within the project vicinity, the primary stakeholders are the residential, commercial and institutional entities in the immediate vicinity that include Mujahid Colony, Shaifiabad, LKFB Industries Pvt Ltd, Petroleum Drilling Company Warehouse, Syed Farm House, M/S PSRM (Pvt) Ltd, Mustafa Steel Manufacturer, Pakistan PVC Limited, Hilal Nutrition Pvt. Ltd. and FAST Petroleum Fueling Station. The secondary stakeholders for this project include the utility companies that operate in the area including K.E, HESCO, SSGC, as well as the regulatory authorities, mandated to ensure environmental protection in the city, which falls under the remit of SEPA. The primary and secondary stakeholders for the “Steel Casting & Rolling Mill” have been identified in the table below.



Table 5.2: Stakeholders for Steel Casting & Rolling Mill

Neighborhood	<i>Residential Interests</i> • Mujahid Colony, Shafiabad • Nomad Houses (Temporarily settled) <i>Commercial/ Industrial Interests</i> • LKFB Industries Pvt Ltd • Petroleum Drilling Company Warehouse • Syed Farm House • M/S PSRM (Pvt) Ltd • M/S Kissan Ghee and Oil Mill • Mustafa Steel Manufacturer • Pakistan PVC Limited • Hilal Nutrition Pvt. Ltd. • FAST Petroleum Fueling Station
Government Agencies & Other Service Providers	Sindh Environmental Protection Agency (SEPA) DC Thatta HESCO K-Electric Sui Sothern Gas Company (SSGC)
NGOs/Interest groups	Shehri-CBE National Forum for Environment & Health (NFEH) Citizens for Environment (NGO)

5.3. Consultation Approach & Methodology

5.3.1. Consultation with Primary Stakeholders

A survey was conducted to identify the residential and commercial interests in the area that may face direct impacts from the proposed development. The survey was conducted in two stages. In the first stage, several site visits were carried out to identify all stakeholders that either reside or work in the project vicinity and conduct an initial identification of potential positive and negative impacts. Relevant public service institutions directly involved in service provision in the areas were also identified.

During the second stage, a social survey was conducted by the field team, by using a pre-designed semi-structured template to engage the area residents, commercial interests and public service institutions. Those stakeholders, who were not available at

the first attempt, were re-visited on the same day or followed-up for their comments during the next few days. During each meeting, the project team introduced the project to the stakeholders, recorded their concerns, suggestions and provided contact details to enable stakeholders to share further comments over email or in writing. A ‘Project Brief’ providing the salient features of the project were also handed over to the available stakeholders as part of the information disclosure process.

Moreover, the team inquired about the current situation of the area such as the status of utilities, security and law and order situation in the project area from the residents near the project site. Several open-ended questions were also included in the questionnaire to ensure that the respondents could openly share their opinions and suggestions relevant to the study. The following table shows the stakeholders that were approached during the survey.

Table 5.3: Consultation with Primary Stakeholders

S. No	Respondents	Stakeholders	Stakeholder Type	Date
1	Mr. Gulam Murtuza (Construction Supervisor)	LKFB Industries Pvt Ltd	Commercial/ Industrial	01-03-2023
2	Mr. Nadeem Akhtar (Assistant Manager)	Petroleum Drilling Company Warehouse		
3	Mr. Sohbat Ali (Security Incharge)	Pakistan PVC Limited		
	Mr. Talat Jamshed (Security Guard)			
4	Mr. Haroon (Deputy Manager)	Hilal Nutrition Pvt. Ltd.		
5	Mr. Waseem Rhyme (Manager)	FAST Petroleum Fueling Station		
6	Mr. Mokesh (Site Engineer)	Mustafa Steel Manufacturer		
7	Mr. Pyaro Mohammad (Resident)	Mujahid Colony, Shafiabad	Residential	
8	Mr. Irshad Ali (Resident)	Mujahid Colony, Shafiabad		
9	Mr. Kamu (Resident)	Nomads, living adjacent to project site		
	Mr. Majeed (Resident)			

5.3.2. Consultation Feedback

The social team from EMC carried out consultations in the project area during the first week of March, 2023. Consultations were conducted with the residential and commercial stakeholders in the vicinity of project site. The following major issues and concerns were raised by the primary stakeholders:

Concerns & Suggestions

- The residents of Mujahid Colony-Shafiabad were happy to see the new development in the area. They explained that such development projects would increase the property value of their land.
- The Deputy Manager of Hilal Nutrition Pvt. Ltd., happily provided positive comments that the new steel mill will provide employment opportunity to locals and ensure corporate social responsibility (CSR) in the area.
- The people of the area showed concerns that the steel mill may cause air pollution in the environment, therefore scrubber system should be used in-order to remove some particulates and gases from industrial exhaust streams.
- The nomads living close to the project site complained about the lack of public transportation facilities in the locality.
- The manager of FAST Petroleum Fueling Station said that the private sector can play a vital role in the development of the area by providing job opportunities and trigger economic development activities in the area. He said that the businesses will grow with the development of more projects like this steel rolling mill..
- The assistant manager, Mr. Nadeem Akhtar Mughal, from a petroleum drilling company suggested that local labor (skilled or unskilled) should be hired from the nearby area and provided with the necessary training to enhance their skills and knowledge.

The employees of Pakistan PVC Limited showed concerns about their closed factory; however, he seems hopeful with the fact that new projects are coming up, such as the proposed project and other industries in the area, which will bring hopes for a bright future.

Stakeholders Consultation Pictures



Consultation with Manager, FAST Fueling Station



Consultation with Admin Manager, Hilal Nutrition Pvt. Ltd.



Consultation with Security Guards, Pakistan PVC Limited , Gharo



Consultation with Residents, Mujahid Colony Shafiabad. Gharo



Consultation with Construction Supervisor,
LKFB Industries Pvt Ltd

Consultation with Assistant Manager,
Petroleum Drilling Company Warehouse



Consultation with Site Engineer,
Mustafa Steel Pvt. Ltd

Consultation with Chowkidar,
Warehouse



Consultation with Nomad Residents, Infront of Project Site

6. Potential Environmental Impacts and Mitigation Measures

This section presents the screening of potential environmental, social and economic impacts and assessment of their severity in the proposed area. The screening process has through review of literature, primary as well as secondary baseline data, and expert judgment made assessment of the potential impacts of proposed project extensions on the physical, biological, and socioeconomic environment.

The sources of pollution are first identified and then their impacts are noticed at each stage of the proposed project i.e., site clearance, construction and operation phase. Impacts of the project can be of short or long-term, temporary or permanent, positive or negative in nature.

Guidelines were used for the verification of permissible levels of environmental parameters during project operation and classification of the site with respect to its pollution status, soil, and ecology including fauna, flora and wildlife, historical and archaeological sites. The environmental aspects of the project were identified by situation analysis related to present land use, damage to vegetation, noise and other forms of nuisance during construction at site, air pollution due to fugitive dust emission and operation of equipment. Assessment of impact of different activities, and of the resulting in noise and gaseous emissions, and wastewater discharges during construction and operation phases of the Project. The entire screening procedure was designed in such a way so as to provide a complete assessment of the impacts on the micro and macroenvironment of proposed extension.

The review / screening provides the assessment of impacts of different activities before starting the construction, during the construction and as well as the installation work during the extension of proposed projects area.

Mitigation measures have been proposed to reduce, minimize or compensate for the identified potential negative impacts and their adoption has been recommended.

6.1. Impact Assessment Methodology

The screening process proceeds by identifying the potential environmental aspects of siting the project, identifying the potential environmental impacts at site preparedness, construction and operational stages of the project and identifying the residual impacts after adoption of mitigation measures that may be needed at the outset of activities. The impacts on environmental resources from the proposed project will be short-term and temporary in nature.

A systematic strategy was developed to provide an assessment of the likely impacts on the micro- and macro environment of the Project site. The strategy included:

- Review of general guidelines;
- Identification of potential environmental impacts by conducting survey, consultation and using checklists;



- Assessment of the intensity and significance of potential impacts by obtaining expert opinion and carrying out environment analysis;
- Defining mitigation measures to reduce impacts to as low as practicable (ALARP);
- Predicting any residual impacts, including all long-term and short-term, direct and indirect, and beneficial and adverse impacts;
- Monitoring of residual impacts.

Guidelines and checklists were used for the verification of permissible levels of environmental parameters during project construction and classification of the site with respect to its pollution status, soil, and ecology including fauna, flora.

The screening of the likely environmental issues/ impacts due to the proposed development works was carried out. The entire screening procedure was designed in such a way so as to provide a complete assessment of the impacts on the macro and micro-environment of the project.

6.2. Impact Assessment Methodology

The strategy adopted for screening of potential impacts due to siting includes the Checklist in Table 6.1 that was adopted to provide an assessment of impact on the macroenvironment and microenvironment of the Project site.

Identification of potential environmental aspects:

The environmental aspects of the project identified by situational analysis relate to:

- Present Land use
- Seismicity
- Vulnerability to soil erosion
- Effect on Flora and Fauna
- Noise and other forms of nuisance during construction and operations
- Air pollution due to fugitive dust emission and operation of equipment during construction and operations

6.3. Screening of Potential Environmental Impacts for Siting of Project

The following Checklist provides the screening of potential environmental impact on different components of ecosystem of the proposed project.

Table 6.1: Checklist provides the screening of potential environmental impacts

Screening Questions	Yes	No	Remarks
A. Project Siting			
Is the project area.			
Densely populated?		X	The microenvironment comprises of vacant land with sparse Xerophytic vegetation

Table 6.1: Checklist provides the screening of potential environmental impacts			
Screening Questions	Yes	No	Remarks
Heavy with development activities?		X	Area is not heavy with development activities
Adjacent to or within any environmentally sensitive areas?		X	No environmentally sensitive areas are located in the microenvironment
Cultural heritage site		X	There are no cultural heritage sites nearby
Protected area		X	There is no protected area in the microenvironment
Wetland		X	No wetland in the microenvironment
Mangrove		X	No mangrove forests are in the microenvironment. They are located several kilometers away southwards from the project site.
Estuarine		X	Not Applicable
Buffer zone of protected area		X	No such buffer zone exists in the microenvironment
Bay		X	Not Applicable
B. Potential environmental impacts			
Will the project cause...			
Dislocation or involuntary resettlement of people?		X	The project land has been leased and no dislocation or involuntary resettlement of people involved.
Deterioration of environmental conditions of surrounding of project site.		X	During construction phase, related environmental impacts may be envisaged however they will be curtailed by mitigation measures. During operation phase, mitigation measures will be implemented to minimize the environmental footprint of the plant
Degradation of land and ecosystems (e.g., loss of wetlands and wild lands, coastal zones, watersheds and forests)?		X	No envisaged
Degradation of cultural property, and loss of cultural heritage?		X	Not envisaged. No such sites are found in the microenvironment.
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	No such impacts are expected as the industrial land is deprived of any such groups.

Table 6.1: Checklist provides the screening of potential environmental impacts

Screening Questions	Yes	No	Remarks
Water resource problems (e.g. depletion / degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters?		X	Requirement of water for construction of the site and for human consumption during operation will be in significant quantity and will be met from through available water supply system and groundwater. Better management & conservation practices have been proposed. Water degradation not expected.
Air pollution due to emissions?	X		New development may impact local airshed due to vehicle movement but severity is likely to be low.
Social conflicts between construction workers from other areas and local workers?		X	Not expected.
Noise and dust from construction activities?	X		Likely but will be minimized through better management practices.
Traffic disturbances due to construction material transport?		X	Traffic may increase temporarily due to the transportation of Construction material and workforce to the site. It will be managed through the adoption of good management practices.
Temporary silt runoff due to construction?	X		If such situation emerges, it will be mitigated through better management practices and installation of silt traps.
Contamination of surface and ground waters due to improper waste disposal?		X	Solid and Liquid Waste Disposal system will be in place to prevent possible contamination of water resources.
Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?		X	The project area is not vulnerable with respect to any demographic or socioeconomic aspects.

6.4. Screening of Impacts during the Construction Phase

The activities during construction phase generally comprise site preparedness, civil works, mechanical installations, electrical work etc.

6.4.1. Impacts on Air Quality

Construction activities such as foundations, flooring and grinding of the project may generate emission of fugitive dust caused by movement of earth materials, contact of construction machinery with ground.

The fugitive dust emissions are cause for annoyance, but can easily be controlled through appropriate measures including water sprinkling on eroded surfaces to reduce the impact to a level of minor significance. The site of excavation is expected to be restored by appropriate landscaping and signage.

The impact of such activities would be temporary and will be largely confined within the project microenvironment. It would be considered significant if there is an increase in suspended particulate matter within and beyond the boundary of site, due to activities at the site.

A secondary source of emissions may include diesel operated equipment during construction phase is likely to contribute to the higher concentration of gaseous pollutants like oxides of Nitrogen (NO_x), Oxides of Sulfur (SO_x), Carbon Monoxide (CO) and Hydrocarbons.

A marginal increase in the levels of oxides of nitrogen, carbon monoxide and hydrocarbons are envisaged due to the movement of vehicles for transportation of construction material and diesel generators required during construction phase. However, this increase in concentration would be temporary in nature and localized. The access to the site is over an existing paved road. The movement of trucks bringing in construction materials is therefore not expected to create significant dust nuisance.

The predominant wind direction in the area is from the south west that is from the sea to the land. As the site is located away from urban areas and major human settlements, these will not create major negative impacts on the populace.

Site preparation activities would include clearing, excavation, earth & fill movement, and transportation of machinery and associated equipment to the site. Since heavy machinery will be involved during the entire construction period the said activities may lead to extensive soil erosion, or alteration of soil quality or removal of topsoil at the site. Impact due to wind erosion of exposed surfaces and uncovered stock piles, dust emission from movement of dump trucks, construction equipment and other vehicles on unpaved roads, and mixing and batching of aggregate for concrete preparation (if done on site) will be of moderate order.

Suspended particulate matter (SPM) is likely to be a major problem because of the arid and dusty environment all around. Mitigation measures needed under the circumstances would aim at protection of the personnel. Combustion of fuel for running the generators and construction equipment will have negative impact on the



ambient air quality of the microenvironment of construction site if the operation of the equipment is not environment friendly in the sense that their engines are not appropriately tuned and their exhaust fumes are not suitably discharged.

Mitigation Measures

The emissions from operation of construction equipment and machinery as well as generators are not expected to have been significant as to affect the ambient air quality of the area.

Adoption of following mitigation measures to mitigate dust emissions will result in further reduction / prevention:

- The Contractor will be required to have a dust abatement program that includes installing enclosures and covers around the boundary walls, spraying water on sand piles.
- PPE, such as dusk masks, will be used where dust generation occurred.
- Avoiding open burning of solid.
- Care will be taken to keep all material storages adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions.
- Regular and periodic sprinkling of water on all exposed surfaces to suppress emission of dust.
- Locating stockpiles away from the wind direction and covering it with tarpaulin or thick plastic sheets, to prevent dust emissions.
- Construction vehicles/traffic will maintain a maximum speed limit of 20km/hr within the proposed site.
- Construction materials that are vulnerable to dust formation or those that comprise loose materials will be transported only in securely covered trucks to prevent dust emission during transportation.
- The exposure of construction workers to dust will be minimized by providing dust masks.
- All vehicles, generators and other equipment used during the construction will be appropriately tuned and maintained in good working condition in order to minimize exhaust emissions.
- The stacks of the generators while in operation will be vented through vertical stacks to safe heights in order to minimize dispersions at ground level.

6.4.2. Noise Impact

Noise can be significant during construction. Sources of noise include construction equipment, machinery, loading & unloading, welding & cutting, frame installations etc. The operation of these equipment will likely generate noise ranging between 70-80 dB (A). All the machinery will comply with the relevant local and international noise protection standards. As far as necessary, times and conditions of operation will be fixed in detail in co-operation with the competent authorities. The noise and vibration during the construction phase will be of short span of time.



Table 7.2: Construction Equipment Noise Ranges dB (Average)

Equipment	Peak Noise Range at 15.2 m	Typical Peak Sound level in a Work Cycle	Typical 'Quieted Equipment' Sound Level	Equivalent Noise Level in an 8-hr Shift at Receptor 150m from Source.
Batching plant	82-86	84	81	62.9
Concrete mixers	76-86	85	82	63.9
Excavators	74-92	85	82	59.5
Tractors and trolleys	77-94	88	85	62.1
Graders	72-92	85	82	59.5
Pumps	68-72	76	75	54.9
Diesel generators	72-82	78	75	58.1
Vibrators	68-82	76	75	50.5
Drilling Machines	82-98	90	87	61.5
Dumpers	77-96	88	83	59.5
Road Rollers	73-77	75	72	49.5

Mitigation Measures

- Noise control devices will be used such as temporary noise barriers and deflectors for impact activities.
- Construction machinery will be kept in good condition to reduce noise generation.
- The Contractor will need to ensure that machinery is adequately silenced.
- Use of adequate ear protection by workers especially those working in high noise areas

6.4.3. Soil Contamination

Soil contamination is likely to be occurred diesel equipment activities. The leaked fuel or oil or chemicals may degrade soil quality and leaching into depth of soil.

Mitigation Measures

- Construction machinery will be kept in good condition in order to prevent the soil contamination.
- Spill kit should be available at site and drip trays are to be provided.

6.4.4. Waste Management

Different types of solid waste will be generated including construction waste including effluent containing sand, cement, silt or any other suspended or dissolved material, chemical waste (lubricants, oils etc.) or any waste matter or refuse to be deposited anywhere within the site or onto any adjoining land.

Mitigation Measures

All waste materials will be managed in accordance with the project environmental management plan in a manner that will promote waste avoidance and minimization. Waste materials will be disposed of in accordance with the relevant laws, guidelines and best practices.



Waste management options can be categorized in terms of preference from an environmental viewpoint whereby the more preferable options have the least impacts and provide for enhanced sustainability.

Avoidance and minimization, for example by:

- Reuse of materials, thus avoiding disposal; and
- Special controls will be imposed to regulate storage, labeling, transport and disposal of lubricants and other oily wastes (chemical wastes).
- All construction waste shall be sorted on site into recyclable, non-hazardous and hazardous waste.
- All vehicles carrying waste shall have properly fitted side- and tailboards, and the materials being transported shall be securely covered.
- All works areas shall be cleaned of general litter and refuse daily.
- General refuse and litter shall be stored in enclosed bins or compaction units separate from construction or chemical wastes.
- Refuse shall not be burned at any Construction Area.
- General refuse may be generated by food service activities on site, so reusable rather than disposable dishware shall be used if feasible.
- Hazardous waste should be disposed through EPA certified waste contractor.

6.4.5. Impact on Water Resources

Plant construction necessitates the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater. Accidental spills or leaks of hazardous materials associated with vehicle fueling, vehicle maintenance, and construction materials storage would present the greatest potential contamination threat to groundwater resources. Soil contamination resulting from these spills or leaks could continue to add pollutants to the groundwater long after a spill had occurred. However, the good construction & management practices will reduce such incidence making this insignificant.

Uncontrolled discharges of untreated or poorly treated liquid effluents from construction camps, potentially responsible for pollution of soil, groundwater and surface water.

Mitigation measures

- Septic tanks and soak pits with appropriate design and capacity will be constructed at each work and campsite for the disposal of domestic liquid waste.
- Untreated effluent from any works will not be released into the environment.
- Maintenance of vehicles and other equipment will be allowed only in designated areas underlain with concrete slabs and a system to catch runoff. Washing of vehicles will be restricted to few in number.

6.4.6. Occupational Health and Safety

Site-specific occupational health and safety hazards are critical to identify based on job safety analysis or comprehensive hazard or risk assessment. Health and safety management planning should include the adoption of a systematic and structured



approach for prevention and control of physical, chemical, and biological health and safety hazards. Contractor shall ensure that Job Hazard Analysis (JHA) is performed prior to commencing jobs. It shall also be ensured that the JHA is reviewed after the following,

- Whenever work is stopped.
- Every time work conditions or the job scope changes.
- Persons working or visiting the job shall review and acknowledge the JHA by their signature.

A. Hazardous Substance Handling and Storage

Contractor should ensure that chemicals are handled and stored in accordance with the manufacturer recommendations found in the MSDS. Chemicals should be stored in a manner which will minimize releases to soil, groundwater or the atmosphere.

Containers and tanks which are used to store hazardous substances shall be,

- In good conditions
- Compatible with the material stored inside
- Closed when material is not being transferred into or withdrawn from them
- Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for safe passages.
- No more than 25 gallons of flammable liquids shall be stored in a room outside of an approved storage cabinet. Flammable chemicals shall be stored in flammable storage cabinets, room or building when the volume stored exceeds 25 gallons (95 liters), as defined in the OSHA Regulations (Standard – 29 CFR); standard number: 1926.152.

Electrical pumps shall not be used to transfer flammable or combustible liquids. Toxic chemicals shall be stored and handled as defined in the chemical MSDS. Explosive products should be handled and stored according to applicable regulations. Explosive storage shall be located away from corrosives, flammable, oxidizers, or acids.

B. Slips and Falls

Slips and falls on the same elevation associated with poor housekeeping, such as excessive waste debris, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground, are also among the most frequent cause of lost time accidents at construction site.

Mitigation Measures

Recommended methods for the prevention of slips and falls from, or on, the same elevation include:

- Good housekeeping practices, such as the sorting and placing loose construction materials in established areas, would be implemented.
- Excessive waste debris and liquid spills will be cleaned up regularly.
- Electrical cords and ropes will be located in common areas.
- Slip retardant footwear will be used.



C. Struck By Objects

Construction activities of the project may pose significant hazards related to the ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities.

Mitigation Measures

Techniques for the prevention and control of these hazards include:

- Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap.
- Appropriate PPE such as safety glasses with side shields, face shields, hard hats, and safety shoes, would be wore.

D. Moving Machinery

Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site may pose temporary hazards, such as physical contact, spills, dust, emissions, and noise.

Heavy equipment operators have limited fields of view close to their equipment and may not see pedestrians close to the vehicle. Center-articulated vehicles create a significant impact or crush hazard zone on the outboard side of a turn while moving.

Mitigation Measures

Techniques for the prevention and control of these impacts include:

- The location of vehicle traffic, machine operation, walking areas, and controlling vehicle traffic will be planned and segregated through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic.
- The visibility of personnel will be ensured by high visibility vests when working in or walking through heavy equipment operating areas as well as training of workers to verify eye contact with equipment operators before approaching the operating vehicle.
- Inspected and well-maintained lifting devices will be used that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations.

E. Other Site Hazards

Construction of site may pose a risk of exposure to dust, chemicals, hazardous or flammable materials, and wastes in a combination of liquid, solid, or gaseous forms. Centralized residence of construction staff will lead to the easily spread of infectious diseases.

Mitigation Measures

It can be prevented through the implementation of project specific plans and other applicable management practices, including:



- Use of waste-specific PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection.
- Comprehensive disinfection in the construction area should be conducted before construction.
- Staff who will enter the area should be conducted a comprehensive physical examination; people who are suffering from infectious diseases is prohibited to enter the construction site.
- When infectious diseases and food poisoning occurs on the site, the project manager should report it to higher-level authorities and local health and epidemic prevention agencies as soon as possible; actively cooperate with the sanitation and epidemic prevention departments to investigate and disinfect, to protect the health and safety of construction personnel.

6.5. Impacts on Biological Environment

Potential impacts of proposed construction of plant in the microenvironment area include:

- Disturbance to sensitive bird, mammal and reptile species during construction.
- Construction-related impacts on existing wildlife and their habitats due to vegetation clearing in the microenvironment. Most of the animals in the region are common to the area. Birds are least susceptible to the long-term impact of temporary activities, as they are highly mobile and tend to avoid areas of project activity. Therefore, it is prognosed that the wildlife would not be affected as the plant site does not provide undisturbed habitat for wildlife. The effect on biological life is therefore non-significant and reversible in nature.

Mitigation Measures

The following measures will nevertheless be implemented during the construction phase of the project:

- General awareness of construction crew will be increased regarding the biological resources.
- A ‘no-hunting, no-trapping, no-harassment’ policy will be strictly enforced at the project site.
- Firewood, woody plants and shrubs will not be used as fuel during construction.
- Personnel and vehicle movements will be restricted to the construction site, camps and approved roads/routes.
- Trees are widely planted on both sides of roads, living and office areas in the plant area, which not only prevents and controls pollution, but also beautifies the environment of the plant area.

6.6. Screening of Potential Impacts during Operation Phase

During operational phase of the project, various activities associated with the production of casted steel, steel ingots and hot rolled steel products will have some impacts on environment.



6.6.1 General Indoor Air Quality

A lack of ventilation indoors concentrates air pollution where people often spend the majority of their time. Carbon monoxide poisoning and fatalities are often caused by faulty vents and chimneys. Though its use has now been banned in many countries, the extensive use of asbestos in industrial and domestic environments in the past has left a potentially very dangerous material in many localities. Asbestosis is a chronic inflammatory medical condition affecting the tissue of the lungs. Indoors, the lack of air circulation allows these airborne pollutants to accumulate more than they would otherwise occur in nature.

Mitigation Measures

- Adequate ventilation will be provided to the occupants of the facility.
- Indoor air quality will periodically be checked to ensure it meets international standards for safe and healthy indoor air quality such as of OSHA and US EPA.

6.6.2 Air Emissions

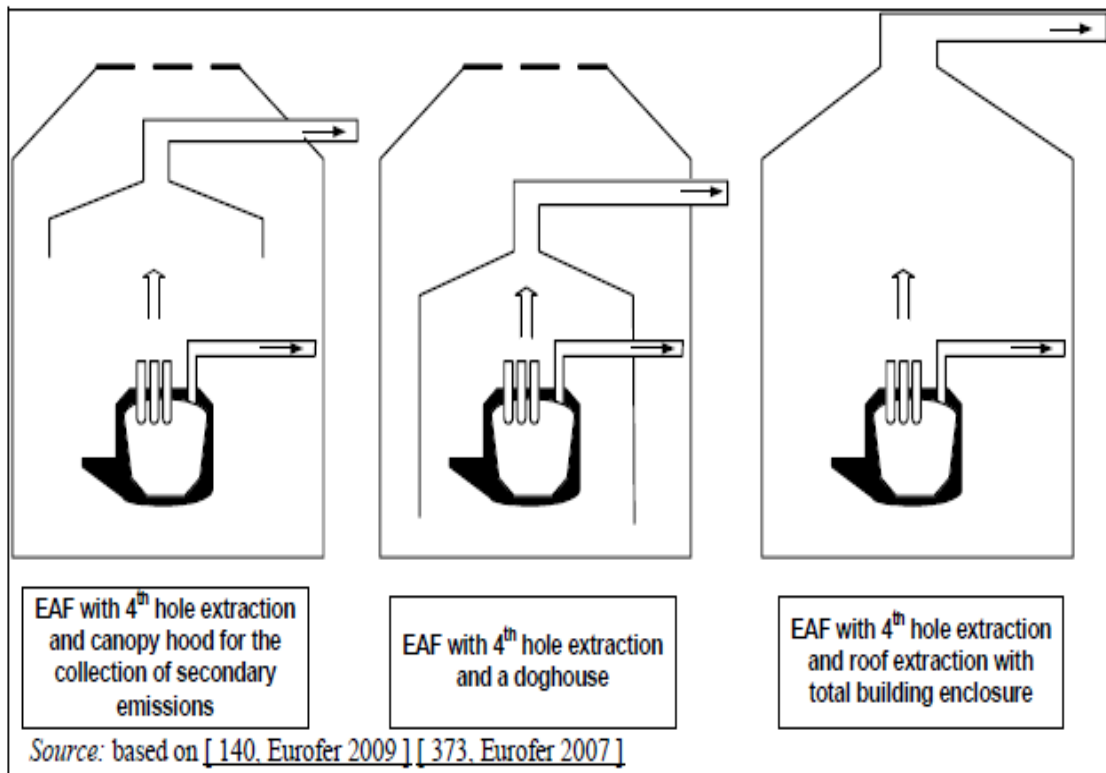
Air emissions are expected to be released from two major sources during plant operations.

- From electric arc furnace (EAF)
- From reheating furnace

During EAF smelting, especially during oxidation period, smoke and flue gases are released. The main factors affecting the flue gas volume are raw materials, smelting process, operation resistance, etc. Therefore, the flue gas volume is constantly changing throughout the smelting cycle.

The main component of EAF steel-making is iron oxide, with an average initial concentration of 9000 mg/m³ and a maximum of 18000 mg/m³. The particle size of dust <3µm accounts for 48% and that of dust 3-5 µm accounts for 28%. The flue gas volume of each 30t EAF is about 1740m³/h, so the four EAFs produce about 450 tons of iron oxide annually. Due to the fine particle size of iron oxide powder, its use needs to be explored, so it must be stored in bags, otherwise it will cause secondary pollution. To be shipped when there is a market.

In this design, a low hood with a high flue gas capture rate is used to collect flue gas at 450°C, which is piped into the air cooler. After cooling by the air cooler, the temperature drops to 200-250°C. The flue gas enters the first stage of the cyclone dust collector, and then is pressed into the bag dust collector by the induced draft fan for purification.



Hood design options for EAF

Effectiveness of various hood design for reducing various emissions from EAF are as follows;

Sources of emissions	Charging	Melting (in EAF)	Tapping	Continuous casting ¹
4 th hole	No	Yes	No	NA
Canopy hood	Yes, partly	Yes	Yes, partly	Yes, if also equipped
Doghouse	Only if closed ²	Yes	Yes	NA
Total building evacuation	Yes	Yes	Yes	Yes

1: if located in same building

2: Usually the doghouses are not closed during charging as they obstruct the access to the EAF.

Source: EC EAF study 1994, Eurofer Study 2007

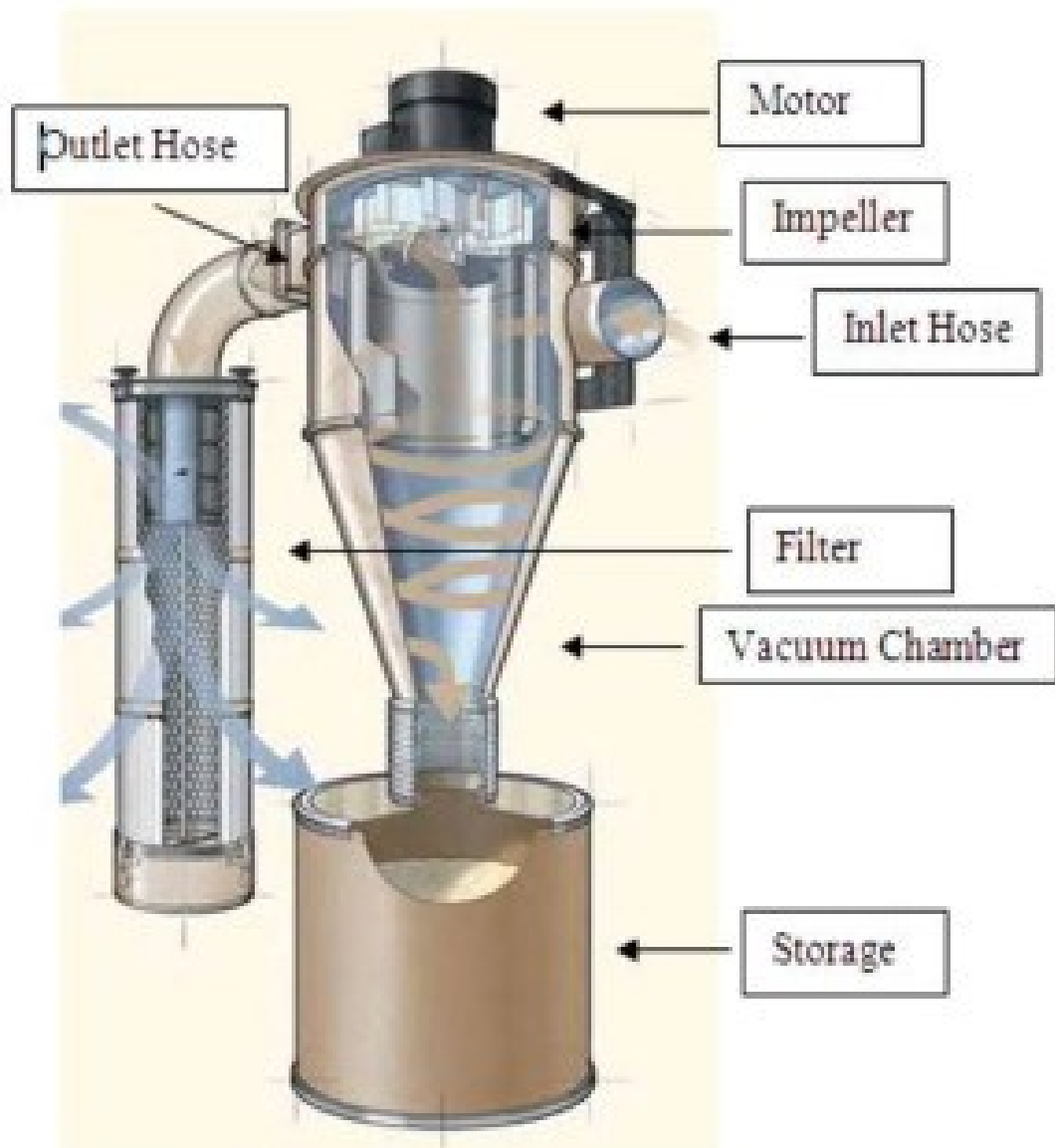


Fig 6.2: Indicative figure of cyclone dust collector

Other than cyclone dust collectors, bag filters or Electrostatic Precipitator can also be used to remove dust from flue gases.

Other than dust, number of gases may also be released by the process such as SO₂, NO_x, CO, CO₂, HCl, HF, etc. Other elements such as Hg, Cr, Ni, Pb, Benzene, etc. may also be released in traces, depending on the constituents of scrap. Therefore, it is recommended that after the dust has been removed through cyclone dust collector, the flue gas should be undergone wet scrubber, which would be already been operated for heating furnace, to dilute and remove the gases from the final exhaust.

For Heating Furnace, Two HGF environmentally friendly coal-based gas producers are selected. The gas is fed into a 32m heating furnace for combustion. The flue gas is discharged from a 60m high chimney after wet dust removal.

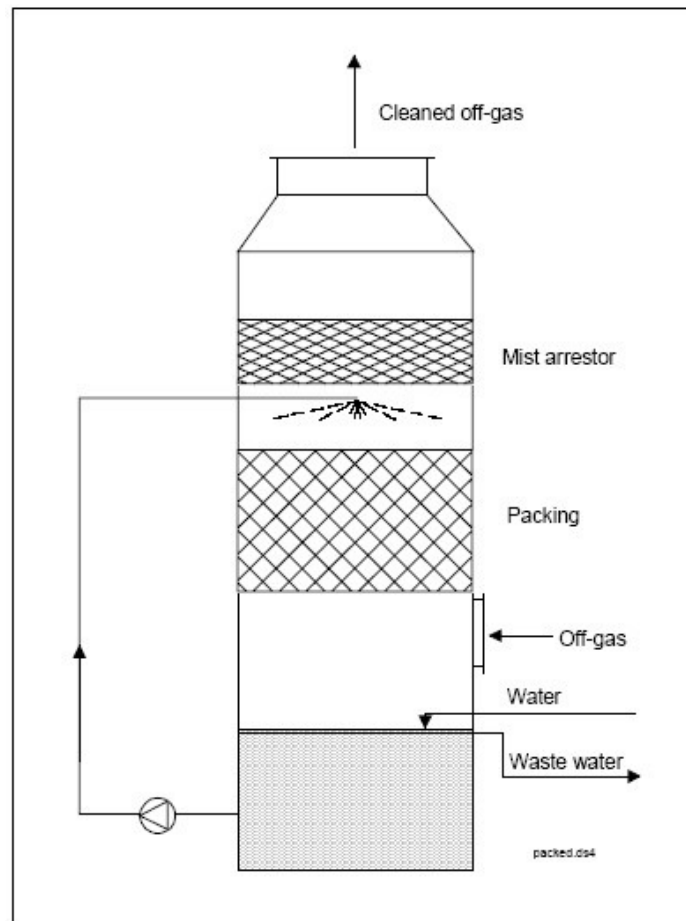


Fig 7.2: Indicative wet Scrubber schematic for absorptive gas cleaning

6.6.3 Noise Impact

In the initial stage of electric furnace cold charge transmission and the rolling mill and shearing process of ingot rolling, noise is relatively high. Therefore, sound insulation measures should be taken in each operation plant to make the noise of operator's worksite not more than 90 dB (A).

6.6.4 Water Requirements

Cooling water for electric furnaces, rolling mills, oxygen making and air compressors is all closed-circuit circulation, which does not pollute the environment. Individual water for testing belongs to general sewage containing organic polarity and can be discharged directly.

The cooling water of steel-making, steel rolling, oxygen station, air compressor station and equipment are all recycled, and the utilization rate of circulating water is over 90%.

6.6.5 Slag collection and disposal

After crushing and picking out scrap steel, the slag of electric furnace is transported out by automobile and used as ground filling plant. Furnace slags were also collected and shipped out. Constituents are slag are typically CaO, Al₂O₃, FeO, SiO₂, MgO, etc.

Slag can either be recycled, sold to construction industry or disposed in approved landfill/dumpsite.

6.6.6 Process Safety

Following process safety measures are proposed during operations;

- 1) The scrap steel Burden used in electric furnace should be selected strictly to prevent shells, explosives and sealed containers from being loaded into the furnace to prevent the occurrence of explosion accidents.
- 2) Electric furnace water cooling system requires double power supply to prevent explosion accident caused by sudden power cut.
- 3) Protective covers shall be installed on machinery and equipment, and protective railings shall be installed on platforms and escalators.
- 4) Dry fire extinguishers should be provided in distribution room, operation room, crane operation room and transformer room, and safety fire prevention and fire protection channels should be set up.
- 5) Ventilation windows and cooling fans are installed in all high temperature operation posts to ensure the health of high temperature workers.
- 6) Water spraying should be carried out at all operation points and sprinkler sites in order to reduce dust pollution to all processes that cannot spray water. Dust exhaust fans should be set up to reduce dust concentration in the operating environment.
- 7) All operating rooms are equipped with adequate lighting devices.

6.6.7 Energy Consumption

Steel-making. Steel rolling enterprises are high energy-consuming enterprises. The power consumption per ton of steel is 850-900kWh. Therefore, it is very important to select excellent and advanced energy-saving electric arc furnace and rolling mill. It can save 5 kilowatt-hour electricity per ton of steel and 100,000 kilowatt-hour electricity per year.

6.6.8 Fire Protection

The fire hazard of steel-making workshop and rolling workshop is Grade D, the fire resistance of building is Grade II, and there is no fire hydrant in the room. The outdoor fire control adopts low pressure system with 15L/s water consumption. Four hydrants are installed in the outdoor water supply pipe.

6.6.9 Coal storage, handling and usage

Coal is proposed to be used to fire the heating furnace for hot rolling mill. Following mitigation measures have been proposed to limit the environmental impacts of coal storage, handling and consumption;

- Good quality coal such as anthracite is recommended to be used which has lower sulfur and volatile contents and produces lower ash. Due to its proximity and abundance, option of using Thar Coal may also be explored. It is mainly



lignite, which potentially has higher sulfur and volatile contents and produces more ash.

- Coal storage area should preferably be covered (fully or partially) and lined.
- If the area cannot be covered, windshields/wind breaks of suitable height to be erected around the periphery of coal storage area.
- Adequate wide green belt space shall be reserved around the coal storage area. Water sprinkling should be regularly done at the coal yard to control dust/pollution.
- Sprinkling cycle and water quantity should be timely sprinkled according to season and weather to avoid dust rising due to wind.
- Provision of necessary PPE to the workers and staff will be make sure.
- Temperature of the coal piles should be checked periodically.
- Coal ash should be reused or disposed in approved landfill/dumpsites.

6.6.10 Wastewater

Water will mainly be consumed for the cooling purposes in the plant operations, other than being consumed for domestic purposes. Therefore, process effluent is not envisaged. Wastewater will mainly be of domestic nature and will be disposed through Septic tank and soakage pit or connected to the drain when allocated by the municipal authority. For the wastewater from wet dedusting, primary treatment and recycling is recommended. A packaged-type wastewater treatment plant is also recommended with the provision of primary sedimentation and the neutralization, at the least. Stormwater will be disposed to the allocated drain.

6.6.11 Occupational Health and Safety

Occupational health and safety during plant operations is significant keeping in view the involvement of high temperatures, molten materials, heavy equipment, fumes and air emissions, pressurized equipment, use of alloying chemicals, etc. Provision and use of appropriate personal protective equipment should therefore be mandatory;

- Head Protection Purpose: To protect the head from injury due to falling or moving objects, impact on stationary objects and from impact due to falls.
- Eye Protection Purpose: To protect eyes from damage due to impact, penetration, burns, splashes and flying particles and ultra violet radiation.
- Hearing Protection Purpose: To conserve the hearing of personnel by use of hearing protection appropriate for reducing the received sound energy levels of noisy equipment and processes to acceptable levels.
- Hand protection: To protect the hand from injuries such as cuts, grazes, burns, ingress of chemicals & electric shock.
- Foot Protection Purpose: To protect the feet from risks ranging from crush and impact injuries to slips, cuts, penetration wounds, electric shock and splashes with liquids and molten metal.
- Respiratory Protection Purpose: To protect all employees (of the company as well as of the contractors) against respiratory hazards through the use of respiratory protective equipment.

- **Body Protection Purpose:** To protect the body from injuries such as cuts, grazes, burns and the effects of exposure to heat, cold and ultra violet radiation & collision from moving machines.
- **Electric Arc Flash Protection:** Flash suit and their closure design shall permit easy and rapid removal. The entire flash suit, including the window, shall have energy absorbing characteristics that are suitable for arc flash exposure.

6.7 Transportation of Products

Finished hot rolled products will be shipped to regional distribution units, spread across the country, mainly through N5 National Highway and may also be through M9 and other motorways, in heavy duty trucks or trailers. There would be likelihood of traffic related incidents.

Mitigation Measures

- Vehicle road worthiness certification and vehicle fitness certificate will be ensured.

6.8 Socioeconomic Impacts

The Proposed Project would result in new jobs during the construction and when the plant is fully operational. It is assumed that the majority of the workforce would be drawn from the District Thatta and Karachi.

Under the Proposed Project, relevant taxes would continue to be paid by the proponent. Increased sales transactions for the purchase of materials and supplies would generate some additional revenues for provincial and national government, which would have a minor positive impact on taxes and revenue.

Secondary jobs may result from the increased economic activity stimulated by the Proposed Project. Additional retail services and business employment may result from the Proposed Project through a multiplier effect, yielding additional sales and income tax revenues for local and provincial governments. Risesince plant will have a real impact on employment opportunities and will generate direct employment as well as will create multiple indirect jobs in downstream industries.

7 Environmental Management Plan (EMP)

This Chapter presents an environmental management plan (EMP) as the implementation mechanism to manage environmental and social issues and mitigation measures identified in Chapter 6 on screening potential environmental impacts and mitigation measures.

7.1 Objectives of Environmental Management Plan

The EMP shall help Risesince Steel (Pvt) Ltd, the Proponent, in addressing the adverse environmental impacts due to the project, enhance project benefits, and introduce standards of good environmental practice. The primary objectives of the EMP are to:

- Outline functions and responsibilities of responsible persons.
- State and implement standards and guidelines which are required under environmental legislations particular in context to the project.
- Facilitates the implementation of the mitigation measures by providing the technical details of each project 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 training requirements at various levels and provide a plan for the implementation of training sessions.

7.2 Purpose of EMP

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

7.3 EMP Process

The EMP describes the methods and procedures for implementation of following areas:

- Organizational structure and roles and responsibilities of the project of project personnel.
- Specific requirements for the implementation of the EMP
- Mitigation or impact management matrix
- Monitoring plan with the emphasis on specific parameters to monitor

In general, monitoring is a part of EMP, however, it may be described or taken as separately to make it essential part of work.



7.4 Management Approach

Management will undertake overall responsibility for compliance with the EMP. It will ensure that all the activities that the management executes comply with positive environmental sensitivities as well as it will cooperate with the concerned regulatory agencies such as Sindh Environmental Protection Agency (SEPA).

The dynamic approaches that are followed towards successful implementation of the environmental management plan listed below:

- Compliance with the relevant legislative and regulatory requirements of the project.
- Developing appropriate monitoring indicators in order to assess the performance as well as magnitude of impact on the environment.
- Regular review of the project activities and assessing their impacts on the environment.
- Setting project’s key environmental concerns and addressing issues through public support, awareness and publicly reporting its progress.
- Communicating broadly with internal and external stakeholder on issue of environmental concerns.

7.5 Maintenance of EMP

EMP needs to be revised on periodic basis to maintain up-to-date environmental management requirements with the changing physical and regulatory constraints. Therefore, outlining and defining the responsibilities of personnel and activities under the project’s operation execution, implementation, operation & monitoring and decommissioning phase are integral part of maintenance of the EMP. Dissemination of reviewed and revised EMP need to be notified to all stakeholders particularly, relevant government and municipal agencies so that their modified role is also redefined and re-established in the overall environmental management process.

7.6 Organizational Structure for Health, Safety and Environmental Management

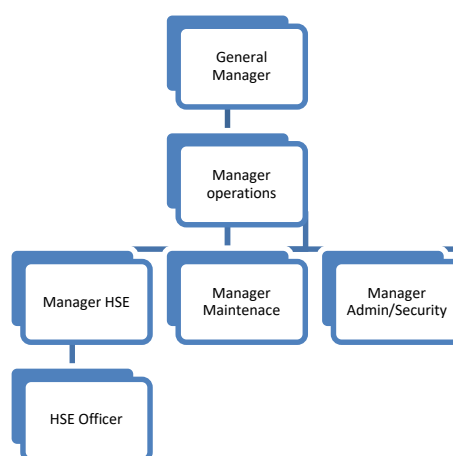


Fig 7.1: General Organizational Structure for Environmental Management

7.7 Roles and Responsibilities

Environmental management is an integral part of the Company's Integrated Management System Policy which reflects that Company's commitment to reduce the environmental impacts to ensure good environmental performance of the automotive facility. The responsibility for environmental performance lies with the General Manager and Manager Operations of Risesince Steel while daily management will be supervised under the direction of HSE Manager. It is recommended that at least one HSE Officer shall be working under the head of the HSE Manager during operation phases. A brief structure of roles and responsibilities is given below:

7.7.1 Manager Operations

Environmental management plan will be regulated by Manager Operations. He will be responsible to report to the General Manager, who will be the decision-making authority. Some of the important roles to be provided by Manager Operations are given below:

- To consider and react to issues and solutions by the HSE department.
- To cooperate and consult with the environmental agency in order to perform in better way.
- To evaluate the progress of development and implementation of the management plan.
- To approve any change in decision making system in consultation with Manager HSE, if appropriate.

7.7.2 HSE Manager

The role of HSE manager is vital for the reason that the success of the Environmental Management Plan (EMP) always depends on the performance of the HSE Manager. Following are some of the roles and responsibilities that should be designated to the HSE Manager.

- To identify issues and where possible propose solutions for inclusion in the management plan review process.
- To ensure that the points and views of staff and HSE Officer are considered and appropriately incorporated in the EMP accordingly.
- To improve coordination and exchange of information between top management, employees, contractors etc.
- To contribute towards the actions to deliver the management plan and ensure its continued development.
- To review EMP every year, taking issues and change the EMP accordingly with the solutions and suggestions.
- To monitor the progress and development and implementation of the management plan.

7.7.3 HSE Officer

The role of HSE officer will be authorized by the HSE Manager. The key responsibilities of the HSE Officer include:



- To integrate, as far as possible, the aims and objectives of different users within an agreed plan.
- To maintain balanced, holistic approach to the solution of concerned issues in accordance with the compliance to the legislative requirements.
- To provide professional guidance on questions relating to the environment management and issues raised by contractors/ relevant personals.
- To progress the EMP process through development towards implementation.

7.8 Environmentally Sound & Safe Working Procedures

Contractors, sub-contractors and contract workers will be made aware of environmental aspects and Emergency Response Plan prior to commencing the work. Prior to leaving the site contractors, sub-contractors and contract workers will ensure that their work area is in safe position. On emergency call they will report in assembly area. Written procedures or standards will be prepared for all activities, where the absence of such procedures and standards could result in not following HSE policy, the law or the contract.

Safe Working Procedures will be based on the following four aspects of job safety:

- **Safe Place:** Work site will be designed and controls set up to ensure that working environment provides no significant risk to personnel, property and the environment.
- **Safe Equipment:** All equipment for any job, including tools, machinery and protective equipment will be specified and/or designed to ensure that it poses no significant risk to personnel, property or the environment. All equipment will comply with legislative standards for conformity and test.
- **Safe Procedure: Procedures** will be designed for all aspects of the job to facilitate safe use of equipment at the work site to complete tasks with no significant risk to personnel, property or the environment. Design of procedure will be based on step-by-step analysis of the tasks involved (Job Safety Analysis), identification of associated hazards and elimination of control of those hazards. Procedures should allow for work in ideal conditions as well as under aggravating conditions e.g. adverse weather.
- **Trained Personnel:** Suitable job-specific, safety skills and supervision training will be provided to personnel involved in construction and operation activities so that they are able to use the procedure and equipment at the worksite with no significant risk to personnel, property and environment.

Safe Working Procedures will be available to contractors and sub-contractors, who will adopt the relevant labor laws of the country.

7.9 Identification of Safe Environmental Aspects

EMP will identify Environmental aspects at the initiation of activities at the site with regard to:

- Disposal of excavated material and solid waste to land, water and air



- Noise levels
- Emissions of steelmaking dust and flues gases from plant operations,
- Consumption of water resource and energy

7.10 Environmental Management

Environmental management will be the key priority of the administration of Risesince Steel. Commitment to execute all project activities with an attempt to keep intact the environmental integrity of the project area will be the core objective of the implementation of the EMP. The duties regarding environmental responsibilities on various activities will be clearly assigned to the appropriate individuals.

During the construction phase of the proposed project, responsibility to implement the EMP as per environmental requirement would be that of the Contractor who would ensure that none of the activities during expansion project would impact the environmental quality. When the project will enter its operational phase, it will be the responsibility of the project manager or admin to confirm that performance is being monitored regularly.

Surveillance and monitoring of the expansion project and its status to be carried out on periodic basis in order to identify any process or activity which is creating occupational risk or degrading the environment in any way. On the basis of the findings of the above surveillance and monitoring, EMP will be revised and modified as deemed necessary by the surveillance and monitoring team.

7.11 Emergency Response Plan

Proponent would implement the Emergency Response Plan during the construction and operation stages. The Emergency Response Plan during the construction and operation periods will be managed and monitored by the Management. The Response team will ensure that the operations are carried out in time avoiding any fire, safety and security hazard and those affecting the environment. The team will be in readiness to adopt the following procedure:

- Evaluation of the situation to identify the most important steps, which must be taken first and can have an important bearing on the overall action to be taken.
- Deployment of required manpower and equipment.
- Organizing required logistical support so that there are no bottlenecks hampering the construction work.
- See to it that injured persons are cared for.
- Respond to calls for ambulances for shifting the injured persons to neighborhood hospitals/healthcare units.
- Isolate all sources of ignition and environmental hazard.
- Evacuation of people who are in immediate or imminent danger. Response Team and/or in-charge of the Campsite will exert positive leadership and give instructions calmly, firmly, explicitly, and courteously and obtain help of law enforcement agencies, if necessary.
- Block approach roads if necessary for safety of operations.



- Surveillance and monitoring operations.
- Retrieval and disposal of earth/debris and resources affected by the hazard at appropriate site.
- Termination of clean-up operation.

7.12 Environmental Mitigation Matrix

The following environmental aspects would require planned intervention by EMP for the proposed project being executed by Risesince Steel Private Limited.

Table 7.1: Mitigation Matrix for the Siting Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
Site Selection	Land acquisition	No mitigation measures is required as land has been leased	Proponent
	Site Ecology	-Any nesting grounds of wildlife and birds should be relocated -Steady vegetation, greening and ecological restoration shall be undertaken at the site -Effective measures shall be taken to protect the environment and control pollution so that restoration of regional ecology is ensured	Proponent
	Seismic Activity	-Construction of the project shall be undertaken keeping the seismic categorization in accordance the relevant zoning. -Construction material shall be used which could add to the bearing capacity of underneath soil.	Proponent / Design Consultant
	Ventilation System	Designing of the ventilation system should be based on following key criteria and data; -Meteorological data such as outdoor air temperature, humidity and wind is required for the design conditions for the system for two main seasons and respective system design requirement. -Indoor air temperature and velocity -Supply and exhausted air rates -Indoor Air Quality -Air Distribution Method Selection -HVAC equipment selection	Proponent / Design Consultant

Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
	Air Quality	The emissions from operation of construction equipment and machinery as well as generators are not expected to have been significant as to affect the ambient air quality of the area. The small amount of exhaust emissions from the operation of equipment's are expected to have any significant impact on the local air quality. Adoption of following mitigation measures to mitigate dust emissions will result in further reduction / prevention: -The Contractor will be required to have a dust abatement program that includes installing enclosures and covers around the boundary walls, spraying water on sand piles. -PPE, such as dusk masks, will be used where dust generation occurred. -Avoiding open burning of solid. -Care will be taken to keep all material storages adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions. -Fabrics and plastics for covering piles of soils and debris is an effective means to reduce fugitive dust. • Regular and periodic sprinkling of water on all exposed surfaces to suppress emission of dust. • Frequency of sprinkling may be increased to keep dust emissions under control, particularly during the mid-April to mid-June when wind is blowing at high speed and varying direction. • Keeping the construction material in moist condition (if possible) at site. • Locating stockpiles away from the wind direction and covering it with tarpaulin or thick plastic sheets, to prevent dust emissions. • All routes within the project construction site facility will be paved providing hardened surface as early as possible upon the commencement of	Proponent and <i>Construction Contractor</i>

Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
		construction work. Other temporary tracks within the site boundary will be compacted and sprinkled with water during the construction works. • Construction traffic will maintain a maximum speed limit of 20km/hr on all unpaved roads within the proposed site. • Construction materials that are vulnerable to dust formation or those that comprise loose materials will be transported only in securely covered trucks to prevent dust emission during transportation. • The exposure of construction workers to dust will be minimized by providing dust masks. • All vehicles, generators and other equipment used during the construction will be appropriately tuned and maintained in good working condition in order to minimize exhaust emissions. • The stacks of the generators while in operation will be vented through vertical stacks to safe heights in order to minimize dispersions at ground level. • Diesel and other petroleum products used for the operation of construction machinery and transportation equipment would cause air pollution besides causing soil pollution through oil spills. The impact from such activity would be of minor significance and would be controlled by good housekeeping practices.	
	Noise Quality	-Noise control devices will be used such as temporary noise barriers and deflectors for impact activities. -Construction machinery will be kept in good condition to reduce noise generation. The Contractor will need to ensure that machinery is adequately silenced	Proponent and <i>Construction Contractor</i>
	Soil Quality	Construction machinery will be kept in good condition in order to prevent the soil contamination. Spill kit should be available at site and drip trays are to be provided.	Proponent and Construction Contractor

Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
	Waste Management	- Selecting products that will cause no or minimal environmental impacts - Not generating waste, which would be achieved by changing or improving practices and design; - Reuse of materials, thus avoiding disposal; and - Special controls will be imposed to regulate storage, labeling, transport and disposal of lubricants and other oily wastes (chemical wastes). - All construction waste shall be sorted on site into inert and non-inert materials. Non-inert materials such as wood and other materials including glass, plastics, steel and metals shall be disposed of to landfill. Inert materials like soil, sand, rubble shall be separated from non-inert material and disposed. - All vehicles carrying waste shall have properly fitted side- and tailboards, and the materials being transported shall be securely covered. - All works areas shall be cleaned of general litter and refuse daily. - General refuse and litter shall be stored in enclosed bins or compaction units separate from construction or chemical wastes. - Refuse shall not be burned at any Construction Area. - General refuse may be generated by food service activities on site, so reusable rather than disposable dishware shall be used if feasible.	Proponent and Construction Contractor
	Geophysical Impacts	- Change in topography will occur but at project site - Visual changes to the landscape will require mitigation measures and adoption of conservation practices by designing the Project to address the aesthetic concerns and sanctity of sensitive structures.	Construction Contractor and Proponent
	Water Resources	- Septic tanks and soak pits with appropriate design and capacity shall be constructed at each work and campsite for the disposal of domestic liquid waste - Untreated effluent from any works will not be released into the environment	Construction Contractor and Proponent



Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
		Maintenance of vehicles and other equipment will be allowed only in designated areas underlain with concrete slabs and a system to catch runoff. Washing of vehicles will be restricted to few in number.	
	Occupational Health and Safety	A. Hazardous Substance Handling and Storage Containers and tanks which are used to store hazardous substances shall be, - In good conditions - Compatible with the material stored inside - Closed when material is not being transferred into or withdrawn from them - Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for safe passages. - Flammable chemicals shall be stored in flammable storage cabinets, room or building when the volume stored exceeds 25 gallons (95 liters). B. Slips and Falls - Good housekeeping practices, such as the sorting and placing loose construction materials in established areas, would be implemented. - Excessive waste debris and liquid spills will be cleaned up regularly. - Electrical cords and ropes will be located in common areas. - Slip retardant footwear will be used. A. Struck By Objects - Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap. - Appropriate PPE such as safety glasses with side shields, face shields, hard hats, and safety shoes, would be wore. B. Moving Machinery - The location of vehicle traffic, machine operation, walking areas, and controlling vehicle traffic will be planned and segregated through the use of one-way	Construction Contractor and Proponent



Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
		traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. - The visibility of personnel will be ensured by high visibility vests when working in or walking through heavy equipment operating areas as well as training of workers to verify eye contact with equipment operators before approaching the operating vehicle. - Inspected and well-maintained lifting devices will be used that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations. C. Other Site Hazards - Use of waste-specific PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection. - Comprehensive disinfection in the construction area should be conducted before construction. - Staff who will enter the area should be conducted a comprehensive physical examination; people who are suffering from infectious diseases is prohibited to enter the construction site. - When infectious diseases and food poisoning occurs on the site, the project manager should report it to higher-level authorities and local health and epidemic prevention agencies as soon as possible; actively cooperate with the sanitation and epidemic prevention departments to investigate and disinfect, to protect the health and safety of construction personnel.	
	Community Health and Safety	Risk management strategies may include: Access to the site will be restricted through a combination of institutional and administrative controls.	Construction Contractor/Proponent



Table 7.2: Mitigation Matrix for the Construction Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
		- Removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials. A. Disease Prevention - The mobility of the community living in the area will be restricted from the project site in order to prevent from catching any type of communicable diseases. - Any labor found to catch any type of disease will leave the site immediately; and would be given proper medical facilities. B. Traffic Safety The incidence of road accidents involving project vehicles during construction will be minimized through a combination of education and awareness raising, and the adoption of procedures.	
	Biological Environment	- General awareness of construction crew will be increased regarding the biological resources. - A ‘no-hunting, no-trapping, no-harassment’ policy will be strictly enforced at the project sites. - Firewood, woody plants and shrubs will not be used as fuel during construction. - Personnel and vehicle movements will be restricted to the construction site, camp (if any) and approved roads/routes.	Construction Contractor and Proponent

Table 7.3: Mitigation Matrix for the Operational Phase of the Proposed Project

Project Activity	Environmental Impacts	Proposed Mitigation Measures	Responsibilities
	General Indoor Air Quality	-Adequate ventilation will be provided to the occupants of the facility. -Indoor air quality will periodically be checked to ensure it meets international standards for safe and healthy indoor air quality such as of OSHA, WTO and US EPA.	Proponent
Plant Operations	Indoor Air Quality	• Adequate ventilation will be provided to the occupants of the facility. • Indoor air quality will periodically be checked to ensure it meets international standards for safe and healthy indoor air quality such as of OSHA and US EPA.	Proponent
	Air Emissions	• In this design, a low hood with a high flue gas capture rate is used to collect flue gas at 450°C, which is piped into the air cooler. After cooling by the air cooler, the temperature drops to 200-250°C. The flue gas enters the first stage of the cyclone dust collector, and then is pressed into the bag dust collector by the induced draft fan for purification. • For reheating Furnace, Two HGF environmentally friendly coal-based gas producers are selected. The gas is fed into a 32m heating furnace for combustion. The flue gas is discharged from a 60m high chimney after wet dust removal.	
	Noise	• Sound insulation measures should be taken in each operation plant to make the noise of operator's worksite not more than 90 dB (A).	
	Water requirements	• The cooling water of steel-making, steel rolling, oxygen station, air compressor station and equipment are all recycled, and the utilization rate of circulating water is over 90%.	
	Slag collection and disposal	Slag from EAF and heating furnace can either be sold to construction industry or disposed in approved landfill/dumpsite.	



	Process Safety	1) The scrap steel Burden used in electric furnace should be selected strictly to prevent shells, explosives and sealed containers from being loaded into the furnace to prevent the occurrence of explosion accidents. 2) Electric furnace water cooling system requires double power supply to prevent explosion accident caused by sudden power cut. 3) Protective covers shall be installed on machinery and equipment, and protective railings shall be installed on platforms and escalators. 4) Dry fire extinguishers should be provided in distribution room, operation room, crane operation room and transformer room, and safety fire prevention and fire protection channels should be set up. 5) Ventilation windows and cooling fans are installed in all high temperature operation posts to ensure the health of high temperature workers. 6) Water spraying should be carried out at all operation points and sprinkler sites in order to reduce dust pollution to all processes that cannot spray water. Dust exhaust fans should be set up to reduce dust concentration in the operating environment. 7) All operating rooms are equipped with adequate lighting devices.	
	Fire protection	The outdoor fire control adopts low pressure system with 15L/s water consumption. Four hydrants are installed in the outdoor water supply pipe.	
	Coal storage, handling and usage	- Good quality coal such as anthracite is recommended to be used which has lower sulfur and volatile contents and produces lower ash. Due to its proximity and abundance, option of using Thar Coal may also be explored. It is mainly lignite, which potentially has higher sulfur and volatile contents and produces more ash. - Coal storage area should preferably be covered (fully or partially) and lined. - If the area cannot be covered, windshields/wind breaks of suitable height to be erected around the periphery of coal storage area.	

		• Adequate wide green belt space shall be reserved around the coal storage area. Water sprinkling should be regularly done at the coal yard to control dust/pollution. • Sprinkling cycle and water quantity should be timely sprinkled according to season and weather to avoid dust rising due to wind. • Provision of necessary PPE to the workers and staff will be make sure. • Temperature of the coal piles should be checked periodically. • Coal ash should be reused or disposed in approved landfill/dumpsites.	
	Wastewater	• Wastewater will mainly be of domestic nature and will be disposed through Septic tank and soakage pit or connected to the drain when allocated by the municipal authority. • For the wastewater from wet dedusting, primary treatment and recycling is recommended. • A packaged-type wastewater treatment plant is also recommended.	
	Occupational health and safety	Use of PPE including; • Head Protection Purpose: To protect the head from injury due to falling or moving objects, impact on stationary objects and from impact due to falls. • Eye Protection Purpose: To protect eyes from damage due to impact, penetration, burns, splashes and flying particles and ultra violet radiation. • Hearing Protection Purpose: To conserve the hearing of personnel by use of hearing protection appropriate for reducing the received sound energy levels of noisy equipment and processes to acceptable levels. • Hand protection: To protect the hand from injuries such as cuts, grazes, burns, ingress of chemicals & electric shock. • Foot Protection Purpose: To protect the feet from risks ranging from crush and impact injuries to slips, cuts, penetration wounds, electric shock and splashes with liquids and molten metal.	

		• Respiratory Protection Purpose: To protect all employees (of the company as well as of the contractors) against respiratory hazards through the use of respiratory protective equipment. • Body Protection Purpose: To protect the body from injuries such as cuts, grazes, burns and the effects of exposure to heat, cold and ultra violet radiation & collision from moving machines. • Electric Arc Flash Protection: Flash suit and their closure design shall permit easy and rapid removal. The entire flash suit, including the window, shall have energy absorbing characteristics that are suitable for arcflash exposure.	
	Transportation of products	• Vehicle road worthiness certification and vehicle fitness certificate will be ensured.	

7.13 Environmental Monitoring Plan

Monitoring of different activities will be required to assess the impacts of activities on the environment during construction and operations. For this purpose, Risesince Steel will have to carrying out environmental monitoring in accordance with the Environmental Monitoring Plan given in table 7.4;

Table 7.4: Monitoring Plan				
Stage	Monitoring areas	Location of monitoring	Parameters to monitor	Monitoring Frequency
Construction	Ambient Air quality	15 meters distance from activity area	All 9 parameters as per SEQS	Quarterly
Construction	Exhaust emissions	Construction equipment, vehicles	Parameters as per SEQS	Quarterly
Construction	Noise	Construction Activity areas And 7.5meters away from construction equipment, vehicles	Noise intensity measurement in dBA	Quarterly
Construction	Wastewater	Outlet of septic tank	Priority parameters as per SEQS	Quarterly
Construction	Drinking water	Water cooler/dispenser	Priority parameters as per SEQS	Quarterly

Construction	Solid Waste	Collection, handling and disposal	Observations on solid waste type, quantity and disposal arrangement	Periodically
Construction	Occupational Safety	Construction activities	Visual observations and Recording hazard/accidents	Periodically
Operation	Indoor Air Quality	Inside EAF and rolling workfloors	Parameters as per OSHA	Monthly
Operation	Air Emissions (Stack / Exhaust)	- EAF exhaust - Heating furnace exhaust - Generators (when in use)	Parameters to monitor include: - Particulates - Fluorides - CO, NO_x, SO_x	Monthly
Operations	Noise	Operations area	Noise intensity measurement in dBA	Monthly
Operation	Wastewater	Final outfall after treatment	Wastewater analysis for the following parameters: - Effluent flow - Temperature - pH - COD, TSS - Chromium - Iron - Oil and grease - Cadmium, copper	Monthly
Operation	Drinking water	Water cooler/dispenser	Priority parameters as per SEQS	Monthly

Operation	Solid Waste	Inside facility	Observations on solid waste type, quantity and disposal arrangement	Monthly
Operation	Occupational Safety	Facility operations	Visual observations and Recording hazard/accident	Monthly

Table 7.5: EMP Implementation Cost

Activity	Cost (Rupees PKR)	Remarks
Training Program	300, 000	Refer training section
Environmental Monitoring		
Air Emissions (Stack / Exhaust) (Construction)	$(1,500 * 2 * 6 * 4) = 72,000$	Cost for 1-year monitoring at 1 location for 06 parameters @Rs.1,500/parameter
Air Emissions (Stack / Exhaust) (Operation)	$(1,500 * 2 * 6 * 12) = 216,000$	Cost for 1-year monitoring at 1 locations for 06 parameters @Rs.1,500/parameter
Drinking Water Quality (Construction)	$(20,000 * 4) = 80,000$	Cost for 1-year monitoring at 1 sample @Rs.20,000 for all primary parameters
Drinking Water Quality (Operation)	$(20,000 * 4) = 80,000$	Cost for 1-year monitoring at 1 sample @Rs.20,000 for all primary parameters
Wastewater (Construction)	$(50,000 * 4) = 200,000$	Cost for 1-year monitoring at 1 location @Rs.50,000/location
Wastewater (Operation)	$(50,000 * 12) = 600,000$	Cost for 1-year monitoring at 1 location @Rs.50,000/location
Noise Levels (Construction)	$(1,000 * 4 * 4) = 16,000/-$	Cost for 1-year monitoring at 04 locations @Rs.1,000/location
Noise Levels (Operation)	$(1,000 * 4 * 4) = 16,000/-$	Cost for 1-year monitoring at 04 location @Rs.1,000/location
Solid Waste (Construction /Operation)	100,000	Estimated cost for 1 year
Mitigation Measures (Construction)	500,000	Initial estimates
Mitigation Measures (Operation)	1,000,000	Initial estimates
Reporting	500,000	Initial estimates
Contingencies (5%)	500,000	-
Grand Total	<u>4,000,000.00</u>	-
Grand Total (in words)	PKR Four Million	-

8 CONCLUSION

On the basis of the findings of the EIA Study, it is possible to conclude that:

- Construction and Operation of Steel Casting and Rolling Mill Project at Gharo, District Thatta, will on adoption of the mitigation measures, have no significant impact on the physical as well as socio-economic composition of the microenvironment and macro environment of the project area.
- The likely impact of construction and operation of the Project will be appropriately mitigated through proven technologies, careful planning and tailored measures.

Mitigation will be assured by a program of environmental monitoring conducted to ensure that all measures are provided as intended, and to determine whether the environment is protected as envisaged.

This will include observations on and off site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported to the EPA Sindh.

There are two essential recommendations that need to be followed to ensure that the environmental impacts of the project are successfully mitigated. Risesince Steel Private Limited shall ensure that:

- All mitigation, compensation and enhancement measures proposed in this EIA report are implemented in full, as described in the document;
- The Environmental Management and Monitoring Plan is implemented in letter and spirit.

This EIA Study finds that the proposed Project would fulfil the requirements of sustainable development by being socially equitable, and economically viable in improving the quality of life in general, without altering the balance in the resources of the ecosystem of the region.

The Study therefore recommends that the EIA should be approved with the condition that all mitigation measures recommended in EIA report, suggestions of stakeholders and recommendations of experts committee will be adhered to by Risesince Steel Private Limited and the legal requirements as well as the Environmental Management Plan (EMP) shall be implemented in Letter & Spirit.

ANNEXURES

ANNEX – I
Land documents and Approvals

2022

تپو۔

تعلقو

ضلعو

سماں

[illegible]

The Ministry of Foreign Affairs of the People's Republic of China requests all civil and military authorities of foreign countries to allow the bearer of this passport to pass freely and afford assistance in case of need.

中华人民共和国 经济建设和环境保护法

P

CHN

E89643271

5.2. 2000

林官亮
LIN, GUANLIANG

1776 50: 25.8.1840

男/M 中國/CHINESE

24 AUG 1985

512517-112-124

2025-11-16 14:12:12

福建 / FUJIAN

14 11月/NOV 2016

長生堂、馬六甲、檳榔嶼

1. 3. 2. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839

福建/FUJIAN

13 11 PM NOV 2026

電話：(02) 2311-1111

DSI 52. BOMB 4-25-17

公安部出入境管理局

林宮亮

MP's Ext & Entry Administration

[illegible]

E896432714CHN8508247M2611136MBNGLJNJMBMBA956

ATTESTED NOTARIZED
S. FAIQ RAZA
NOTARY IN THE CITY OF KARACHI
PRESENTED FOR ATTESTATION

CITY OF
IN THE
NOTARY
KARACHI

28 DEC 2022

PROPOSED LAYOUT BOUNDRY
PLAN OF RISENSE STEEL (PVT)
LIMITED AND CONVERSION OF
LAND USE FROM AGRICULTURE
INTO NON AGRICULTURE SIKNY
FARM 2 BOUNDRY OVER R.S NO
522-523-561-562 TOTAL AREA 64
ACRES FROM AREA 311,065 SQ
YARDS Entry No 376 Dated
21/07/2022 SITUATED AT DEH
KHARISEER TAPO GHARO TAHSEL
MIRPUR SAKRO DISTRICT THATTA

DETAILS OF LAND AREA

| | |
|-----------------|------------|
| 01- LAND - AREA | 61.8 ACRES |
|-----------------|------------|

TOTAL AREA 64 ACRES

11,065 SQ YARDS
64-00 Acres

FOR M/S RISENSE STEEL (PVT) LIMITED

[Signature]

DIRECTOR

Risense Steel PVT LTD

[Signature]
ATIF UR-REHMAN
R.C.R.P (Town Planning)
Member of PCATP Reg No 20721
S.O.C.A. License TP 07-01

TOWN PLANNER



APPROVED
Video reference to *[Signature]* 21-07-2022
Dated: 21/07/2022

[Signature]
District Planning Authority
Mirpur Sakro Region



PAKISTAN National Identity Card
ISLAMIC REPUBLIC OF PAKISTAN
MAJORS
Yariq Mehmood



Family Name
Khayal Mast

Gender M **Country of Stay** Pakistan

Identity Number 22401-5192304-3

Date of Birth 01.01.1972

Date of Issue 02.11.2017

Date of Expiry 02.11.2027

Holder's Signature




قومی شناختی کارڈ
قومی شناختی کارڈ
قومی شناختی کارڈ

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گندہ کارڈ ملے پڑے ہی لہو کے میل ڈال دیں

786

بسم الله الرحمن الرحيم

HABIBULLAH SHORO STAMP VENDOR

& BOND WRITER

MIRPUR SAKRO

DOCUMENT TYPE: SALE DEED OF AGRICULTURAL LAND

VENDOR:- Mr. Sajid Raza Son of Fazal Hussain (& Others)

VENDEE: RISESINCE STEEL (PRIVATE) LIMITED

PROPERTY TYPE: AGRICULTURAL LAND

SITUATED AT DEH KHARISEER, TAPO GHARO, TALUKA MIRPUR SAKRO,
DISTRICT THATTA

We Deals: Drafting, Composing, Black & color Printing, Electronic Typing, Sale Agreement,
Rent Agreement, & Registration of Sale Deeds, General Power of Attorney, Different Types of
Affidavit Undertaking, Declaration, Mutation Deeds Etc.

Phone: 0321-2858780

Phone: 0300-2162461



PAKISTAN National Identity Card
ISLAMIC REPUBLIC OF PAKISTAN

Name: Sajid Raza
Father Name: Fazal Hussain

Gender: M Country of Stay: Pakistan

Identity Number: 42101-1749787-7 Date of Birth: 31.10.1968
Date of Issue: 16.10.2020 Date of Expiry: 16.10.2030

Holder's Signature

42101-1749787-7

سید ساجد رضا
سید فاضل حسین

501911228983
501-92-576036

گمشدہ کارڈ ملنے پر قریبی لیڈیکس میں ڈال دیں

حکومت پاکستان
قومی شناختی کارڈ
42101-3487262-7

نام: سید ساجد رضا
پیدائش: 31/10/1968
تاریخ: 15/09/1971

JT8G8R 42101-3467262-7

سید ساجد رضا
سید فاضل حسین

27/12/2022 27/12/2012

PAKISTAN National Identity Card
ISLAMIC REPUBLIC OF PAKISTAN

Name: Naushin Fazal
Husband Name: Raja Aqeel Haider

Gender: F Country of Stay: Pakistan

Identity Number: 42101-2901247-8 Date of Birth: 22.12.1973
Date of Issue: 04.08.2015 Date of Expiry: 04.08.2025

Holder's Signature

42101-2901247-8

ناوشین فاضل
راجہ آقیل حیدر

503831032536
501-92-576038

گمشدہ کارڈ ملنے پر قریبی لیڈیکس میں ڈال دیں

PAKISTAN National Identity Card
ISLAMIC REPUBLIC OF PAKISTAN

Name: Syed Mohsin Hasan
Father Name: Syed Khalique Hasan

Gender: M Country of Stay: Pakistan

Identity Number: 54400-3601118-1 Date of Birth: 15.05.1970
Date of Issue: 03.04.2019 Date of Expiry: 03.04.2029

Holder's Signature

54400-3601118-1

سید محسن حسن
سید خلیق حسن

103751116750
601-70-043031

گمشدہ کارڈ ملنے پر قریبی لیڈیکس میں ڈال دیں

PAKISTAN National Identity Card

ISLAMIC REPUBLIC OF PAKISTAN

Name: **Muhammad Imran**

Father Name: **Muhammad Haroon**

Gender: **M** Country of Stay: **Pakistan**

Identity Number: **42301-4149904-3** Date of Birth: **07.01.1983**

Date of Issue: **05.03.2022** Date of Expiry: **05.03.2032**

Holder's Signature

42301-4149904-3

شاہ ولی اللہ راولہ کراچی جنوبی

42301-4149904-3

103751150400
508-43-450823

گمشدہ کارڈ ملنے پر قریبی ایئر کس میں ڈال دیں

حکومت پاکستان

قومی شناختی کارڈ

42301-0377206-7

نام: **علی رضا**

پیشہ: **سول**

رہائشی پتہ: **قصبہ سان**

شناختی نمبر: **کرنی سنٹر**

08/08/1988

عثمان یوسف بھٹو

دستور مشورہ منتقل

K80N12

42301-0377206-7

03/06/2025

03/06/2015

گمشدہ کارڈ ملنے پر قریبی ایئر کس میں ڈال دیں



E-STAMP
CONTINUATION SHEET
Government of Sindh



634
At No
Registrar Mirpur S.

BETWEEN

1. Mr. Sajid Raza Son of Fazal Hussain Muslim, adult, holding CNIC No. 42101-1749787-7, Resident of P/o Arrah, Jasmarotah, Chak Latifullah, Taluka Dina, District Jhelum.
2. Mr. Tanveer Raza Son of Fazal Hussain Muslim, adult, holding CNIC No. 42101-3467262-7, Resident of House No. R-72, Block-05, Federal B Area Karachi P/o Federal B Area Taluka and District Karachi Central.
3. Mrs. Naushin Fazal D/o Fazal Hussain W/o Raja Aqeel Haider Muslim, adult, holding CNIC No. 42101-2901247-8, Resident of P/o Arrah, Jasmarotah, Chak Latifullah, Taluka Dina, District Jhelum.

(Hereinafter referred to as the "Vendors" or "Sellers" which expression, wherever to context so permits, shall mean and include their legal heirs, successors in interest, administrators, executors, and permitted assigns)

Sajid Raza

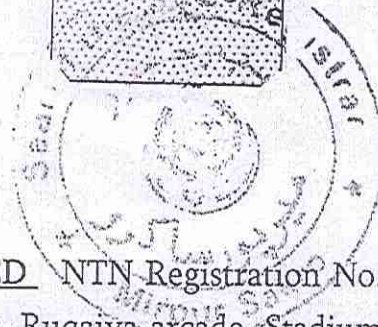
[Signature]

Naushin

[Signature]



634
Registered At No
Sub-Registrar Mirpur Sakro



AND

RISESINCE STEEL (PRIVATE) LIMITED NTN Registration No. 06577120, Address Suite No. 06, 2nd Floor, Ruqaiya arcade, Stadium Commercial lane -01, Street 10, DHA, Phase 06, Karachi.

Through its Director Mr. Syed Mohsin Hasan Son of Syed Khalique Hasan Muslim, adult, holding CNIC No. 54400-3601118-1, Resident of North Circular Avenue, DHA Phase-02, House No. 13-B, Karachi South.

(Hereinafter referred to as the "Vendee" or "Buyer" which expression, wherever the context so permits shall mean and include their successors-in-interest, legal representatives, assignees, and administrators)

WHEREAS The Vendor own and possesses Agricultural land Measuring 64-00 Acres, Situated at Deh Khariseer, Tapo Gharo, Taluka Mirpur Sakro, District Thatta, which the vendor has agreed to sale with the vendee of the second part. (Details of Sold Land more described in the below Schedule).

SALE CERTIFICATE of Land issued by Mukhtiarkar (Revenue) Taluka Mirpur Sakro No: Mukht : /SC/ 1684 Dated 19-10-2022

and Attested by Assistant Commissioner Mirpur sakro. No: AC /SC/ 1607 Dated 19-10-2022

Syid Raza

[Signature]

Naushin *[Signature]*

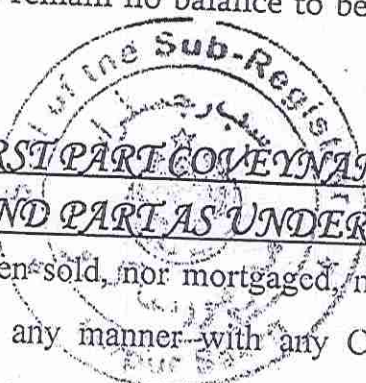


Registered At No. 634
Registrar Mirpur Sakro

FURTHER WHEREAS The Vendors hereby sale transfer with all easements titles, interests, liens and mortgaged rights etc, the above land to the vendee of the Second part in the total Sum of RS. 50,000,000/= (Rupees Fifty Millions Only) the entire consideration of RS. 50,000,000/= has already been received by the Vendor of the first part and now there remain no balance to be paid hereinafter.

NOW THE VENDOR OF THE FIRST PART COVENANT
TO THE VENDEE OF THE SECOND PART AS UNDER.

- (1). That the land under sale has not been sold, nor mortgaged, nor gifted, nor transferred, nor alienated in any manner with any Co-operative Society or Co-operative Bank etc.
- (2). That there are no dues or arrears of any kind outstanding against the land under sale.
- (3). That all sorts of land Revenue charges etc, prior the execution of this Sale-Deed if any shall be paid by the Vendor of the first part.
- (4). That the sale-Deed is made with free will in proper senses without any force, compulsion coercion and without any state of intoxication of mind etc.

Sayed Raiza *Naushin* *Mahmud*


Registered At No. 634
Sub-Registrar Mirpur Sakro

- (5). That the Vendor of the first part has already delivered the possession of the land under sale to the Vendee of the second part.
- (6). That the land under sale shall here by be entered in to or upon in favour of Vendee of the Second part who shall hereinafter enjoy all the benefits out of it without any interruption or disturbance by the vendor of the first part or any other person through or under him.
- (7). That the land under sale is free from all disputes suit cases and litigation etc also there is no case pending in any court of law.
- (8). The Parties do hereby declare that they signed this deed after compliance of section 54 and 55 of the transfer of property act 1882 read with section 86 of the registration act 1908. The parties with the assistance of their advocate have satisfied themselves and found that ownership/title and capacity of the executants (s) of this deed are valid. The deed is accepted /registered entirely on the risk of parties in view of rule 135 of the W.P. registration rules 1929.

Sajid Raza

Naushin



Registered At No. 634
Sub-Registrar Mirpur Sakro

SCHEDULE
OF AGRICULTURAL LAND UNDER SALE

DEH KHARISEER, TAPO GHARO, TALUKA MIRPUR SAKRO, DISTRICT
THATTA, SUB-REGISTRATION OFFICE MIRPUR SAKRO DISTRICT
REGISTRATION OFFICE THATTA.

| Name of Vendor | Name of Vendee | Survey No. | Area | Sold Area |
|---|---|-----------------------|-------------------------|-------------------------|
| (1) Mr. Sajid Raza
S/o Fazal Hussain
<u>Share: 00-40 Paisa</u> | <u>RISESINCE STEEL</u>
<u>(PRVATE) LIMITED</u>

<u>Share: Full (01-00)</u> | 522
523
561 | 16-00
16-00
16-00 | 16-00
16-00
16-00 |
| (2) Mr. Tanveer Raza
S/o Fazal Hussain
<u>Share: 00-40 Paisa</u> | Through its Director
Mr. Syed Mohsin Hasan
S/o Syed Khalique Hasan | 562 | 16-00 | 16-00 |
| (3) Mrs. Naushin Fazal
D/o Fazal Hussain
W/o Raja Aqeel Haider
<u>Share: 00-20 Paisa</u> | | | | |
| | | Total
Area | 64-00
Acres | 64-00
Acres |

TOTAL AREA OF AGRICULTURAL LAND UNDER SALE IS 64-00 ACRES

Sajid Raza *Tanveer Raza* *Naushin* *Mohsin Hasan*

Seal of the Sub-Registrar

RISESINCE STEEL PRIVATE LIMITED
(Karachi)

Page 6/7

Registered At No. 634
Sub-Registrar Mirpur Sakro

IN WITNESS WHEREOF Vendors of the first part have put signature on this Sale-Deed in the presence of witness on the date and year first above mentioned.

EXECUTANT

Sign: Sajid Raza
(1) Mr. Sajid Raza
S/o Fazal Hussain
CNIC No. 42101-1749787-7
Cell No: 0300 89 21855

Sign: Tanveer Raza
(2) Mr. Tanveer Raza
S/o Fazal Hussain
CNIC No. 42101-3467262-7
Cell No: 0301 8221955

Sign: Naushin
(3) Mrs. Naushin Fazal
D/o Fazal Hussain
W/o Raja Aqeel Haider
CNIC No. 42101-2901247-8
Cell No: _____



Sign: Mohsin Hasan
Mr. Syed Mohsin Hasan
S/o Syed Khalique Hasan
CNIC No. 54400-3601118-1
Director of RISESINCE STEEL
(PRIVATE) LIMITED 0321 2008213



WITNESSES

01. Ali Raza
Name: Ali Raza
S/o: Khalid Raza
CNIC No: 42301-0397206-7

02. Mahmud Hassan
Name: Mahmud Hassan
S/o: Mahmud Hassan
CNIC No: 42301-4148904-3

S.No-732
Dt 21/10/2022

Habibullah S/O
M. A. S. S/O
S.V. MP Sakro
Note that as above
accutants and submitted him / them
who is personally known to the under
Signed Registering Officer
Dated: 21-10-2022

Note : Deed Kept Adjourned for certification of SVO MP Sakro
to A.C. MP Sakro Dt. 21-10-2022

SUB-REGISTRAR
MIRPURSAKRO

Registered At No 634
Book No I
Date 24-10-2022
Sub-Registrar Mirpur Sakro



Note : Deed admitted to Registration
Received for verification of Date Certificate
Grd. S. MP Sakro
Dated: 24-10-2022

SUB-REGISTRAR
MIRPURSAKRO



27-Nov-2022

RD:634/SRO:8043/
DocType:35



S.No-732
Dt:- 21/10/2022



CHALLAN FORM NO. 32-A (E-STAMPING)

Customer Copy

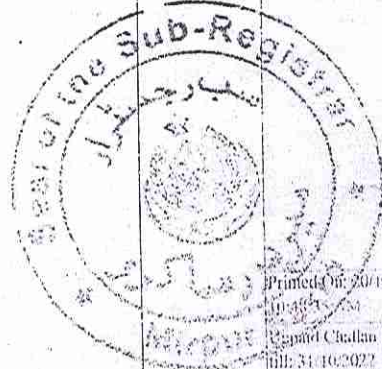
CHALLAN OF CASH/TRANSFER/CLEARING PAID INTO THE
Mirpur Sakro, Thatta

634



20220B1CDAF9D091

| To be filled by the Remitter | | | To be filled in by the Departmental Officer or the Treasurer | | |
|--|---|--|--|-----------------|-------------------|
| Conveyance Information | Name, designation and address of the person on whose behalf money is paid | Full particulars of the remittance and the authority (if any) | Amount (In Rupees) | Head of Account | Order of the Bank |
| Conveyance No: 20220B1CDAF9D091
CN: 20220B1CDAF9D091
5001118-1 | Purchaser/Vendor
Name: RISESINCE STEEL (PRIVATE) LIMITED
NTN: 06577120
Address: 2nd Floor, Ruqaiya Arcade, Stadium Commercial lane-1, Street 10, DHA Phase 06, Karachi | Conveyance - 16(A)(ii)
Property Value (Rs.): 50,000,000
Property Address: Deh Kharisar, Tapo Ghara, Taluka Mirpur Sakro, District Thatta
Seller/Vendor
Name: Sajid Raza S/O Fazal Hussain and Others
CNIC: 42101-1749787-7
Address: Chak Latifullah Taluka Deend District Jehlam | 500,000/- | B-02701 (N.J.) | |
| Amount in Words: Five Lacs Rupees Only | | | 500,000/- | | |

Printed On: 20/10/2022
Mirpur Sakro, Thatta
Challan is valid till: 31/10/2022

Amount in Words: Five Lacs Rupees Only

Disclaimer: Created on the basis of information provided by applicant. Only one set of copies is acceptable for depositing the Challan. No photocopy or other copy will be acceptable. Payments submitted against multiple copies will be responsibility of depositor and will have no liability on any Government Department or other agency.



INCOME TAX DEPARTMENT

COMPUTERIZED PAYMENT RECEIPT (CPR - IT)



NATIONAL BANK OF PAKISTAN

MAIN BRANCH THATTA, THATTA (0070)

CPR No : IT-20221024-0070-2060576

Payment Date : 24-Oct-2022

Payment Section : 236K - Purchase / Transfer of Immovable
Property u/s 236K (ATL @ 2% / Non-ATL
@ 7%) - 64151101

RTO/LTO : RTO HYDERABAD

Nature of Payment : Withheld Income Tax (Adjustable)

Tax Period : 10/2022

Account Head(NAM) : B01105

Particulars of Withholding Agent

Registration / Inc No. : FTN100000010667587

Name : SUB REGISTRAR, MIRPUR SAKRO

No. of Tax Payers : 1

Registered At No 634
Sub-Registrar Mirpur Sakro

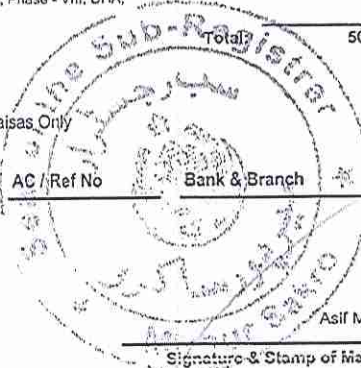
Details of Tax Payers

| Sr. | NTN / CNIC | Tax Office | Status | Taxpayer's/Business Name &
Address | Payment
Section
/ NAM Code | Amount against which
tax is being withheld | Tax Amount |
|-------|------------|----------------|--------|--|----------------------------------|---|------------|
| 1 | 6577120-1 | CTO
KARACHI | CO | RISESINCE STEEL (PRIVATE)
LIMITED
Bungalow No. 307, Street No. 32,
Khayaban-e-Khalid, Phase - VIII, DHA,
Karachi South | 236K / B01105 | 50,000,000 | 1,000,000 |
| Total | | | | | | 50,000,000 | 1,000,000 |

Amount of Tax : 1,000,000

Amount of Tax in Words : One Million Rupees And No Paisas Only

| Payment Mode | Amount | Date | AC / Ref No | Bank & Branch |
|--------------|-----------|-------------|-------------|---------------|
| Cash | 1,000,000 | 24-Oct-2022 | | |



Asif Masood

Signature & Stamp of Manager / Authorized officer



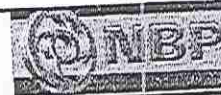
IT-20221024-0070-2060576

Document ID: 60557623 - Generation Date : 24-Oct-2022 11:49 AM - User: GU

Page 1 of 1



INCOME TAX DEPARTMENT
COMPUTERIZED PAYMENT RECEIPT (CPR-IT)



NATIONAL BANK OF PAKISTAN

MAIN BRANCH THATTA, THATTA (0070)

CPR No : IT-20221021-0070-1947777
Payment Section : 236C - Sale / Transfer of Immovable
Property u/s 236C (ATL @ 2% / Non-ATL
@ 4%) - 64150301
Nature of Payment : Withheld Income Tax (Adjustable)
Account Head(NAM) : B01131

Payment Date : 21-Oct-2022
RTO/LTO : RTO HYDERABAD
Tax Period : 10/2022

Particulars of Withholding Agent

Registration / Inc No. : FTN100000010667587
Name : SUB REGISTRAR, MIRPUR SAKRO
No. of Tax Payers : 1

Registered At No. 634
Sub Registrar Mirpur Sakro

Details of Tax Payers

| Sr | NTN / CNIC | Tax Office | Status | Taxpayer's/Business Name & Address | Payment Section / NAM Code | Amount against which tax is being withheld | Tax Amount |
|-------|-----------------|------------|--------|---|----------------------------|--|------------|
| 1 | 42101-1749787-7 | Unknown | OT | SAJID RAZA
Taluka Dina District Jhelum | 236C / B01131 | 50,000,000 | 2,000,000 |
| Total | | | | | | 50,000,000 | 2,000,000 |

Amount of Tax : 2,000,000
Amount of Tax in Words : Two Million Rupees And No Paisas Only

Payment Mode : Amount : 2,000,000 Date : 21-Oct-2022

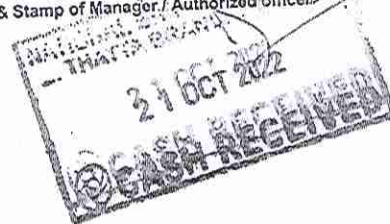
Cash

AC / Ref No

Bank & Branch

Asif Masood

Signature & Stamp of Manager / Authorized officer



IT-20221021-0070-1947777

Document ID 60561495 - Generation Date : 21-Oct-2022 11:17 AM - User: GU



Active Taxpayer List (Income Tax)

Printed On: 20/10/2022 10:12:37

Registration No: 6577120

Name: RISESINCE STEEL (PRIVATE) LIMITED

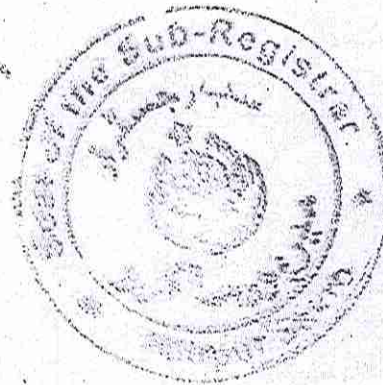
Business Name: RISESINCE STEEL (PRIVATE) LIMITED

Filing Status: Active

Filing Status Checking Date: 20-Oct-2022

Registered At No 634
Registrar - Mirpur Sahib

You can also check your Active Taxpayer Status (ATL status) by sending SMS, type ATL <space> Registration Number (e.g. ATL 1234567890123) and send SMS to 9966.





Risesince Steel (Pvt) Ltd

634
Sub-Registrar Mirpur Sakro
RiseSince Steel (Pvt) Ltd
Phone : 0300-0136666
Email : info@risesincesteel.com
Web : www.risesince.com

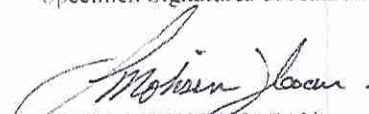
October 20, 2022

BOARD RESOLUTION

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF M/s. RISESINCE STEEL (PVT.) LTD. HELD ON 18TH, OCTOBER 2022 IN THE OFFICE OF RISESINCE STEEL (PVT.) LTD.

RESOLVED THAT the company has decided to authorized Syed Mohsin Hasan S/O. Syed Khalique Hasan CNIC 54400-360118-1 is hereby authorized to sign and submit all the necessary papers, letters, forms and sale deed etc. in respect of Agriculture land bearing survey No. 522, measuring 16-00 Acres, 523 measuring 16-00 Acres, 561 measuring 16-00 Acres and 562 measuring 16-00 Acres total measuring 64-00 Acres, Situated at Deh Khariseer, Tappo Ghara, Taluka Mirpur Sakro, District Thatta to be submitted by the company in connection with "authorizing any of the personnel of the company applicant to procure Digital Certificate". The acts done and documents shall be binding on the company until the same is withdrawn by giving written notice thereof.

Specimen Signatures of Authorised Signatory:


(SYED MOHSIN HASAN)
CNIC 54400-360118-1

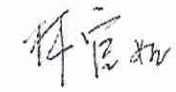


RESOLVED FURTHER THAT, a copy of the above resolution duly certified as true by designated director / authorized signatory of the company be furnished to Risesince Steel (Pvt.) Ltd. And such other parties as may be required from time to time in connection with the above matter.

For the Organization

(Tariq Mehmood)
Director
Risesince Steel (Pvt.) Ltd.




(LIN GUAN RU)
Director
Risesince Steel (Pvt.) Ltd.

Bungalow No. 307, Street No. 32, Khayaban-E-Khalid, DHA Phase 8, Karachi South.

RiseSince Steel (Pvt) Ltd.



Registered At No. 634

Registrar Mirpur Sakre

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
Company Registration Office
KARACHI

ACKNOWLEDGEMENT OF FILING
[Sec-regulation-13 (1)]

No. ADR-I/0142071

Dated: 11/11/2019

In the matter of

RISESINCE STEEL (PRIVATE) LIMITED

Suite No. 6, 2nd floor, Ruqaiya arcade, Stadium Commercial lane-1, Street 10,
DHA, Phase 6, Karachi

The receipt of the under mentioned document(s) filed, registered and recorded pursuant to the provisions of the Companies Act, 2017 (XIX of 2017), is hereby acknowledged.

1. Application for Company Incorporation
2. Memorandum of Association (Since Incorporation)
3. Articles of Association (Since Incorporation)


(Muhammad Naeem Khan)
Additional Registrar/Incharge CRO
4th Floor, SLIC Building No. 2,
Karachi

Fee. Rs. 400 /-

Process ID: 3147787

THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 197 and Regulations 4 and 20]
PARTICULARS OF DIRECTORS AND OFFICERS, INCLUDING THE CHIEF EXECUTIVE,
SECRETARY, CHIEF FINANCIAL OFFICER, AUDITORS AND LEGAL ADVISER OR OF
ANY CHANGE THEREIN

FORM 29

Registered At No. **634**
Sub-Registrar Mirpur Sakro

PART-I

1.1 CUIN (Incorporation Number) **0142071**
1.2 Name of Company **RISCEING STEEL (PRIVATE) LIMITED**
1.3 Fee Payment Details
1.3.1 Chalan Number **E-2021-806621** 1.3.2 Amount **1320.0**

PART-II

2. Particulars:

2.1. New Appointment/Election

| Present Name in Full
(a) | NIC No. or
Passport No. in
case of Foreign
National
(b) | Father /
Husband Name
(c) | Usual Residential
Address
(d) | Designation
(e) | Nationality**
(f) | Business
Occupation**
* (if any)
(g) | Date of
Present
Appointment
or Change
(h) | Mode of
Appointment /
change / any
other remarks
(i) | Nature of
directorship
(nominee/indepen-
dent/additional/
other)
(j) |
|-----------------------------|---|---------------------------------|--|--------------------|----------------------|---|---|--|---|
| Sajid And Co. | | | Suit No 204, 2nd
Floor Amber Estate
Extension, Opposite
HBL, MCB Kariwach
Court branch and | Auditor | Pakistan | | 30/10/2021 | Appointed / | |
| Tariq Mehmood | 2240151923042 | Khayal Maat | Qaum Tor Chapar,
Dakhana Derra
Adamkhel, Kohiwal
District, Tribal Area,
Kohat. | Secretary | Pakistan | | 30/10/2021 | Appointed / | |
| Tariq Mehmood | 2240151923042 | Khayal Maat | Qaum Tor Chapar,
Dakhana Derra
Adamkhel, Kohiwal
District, Tribal Area,
Kohat. | Director | Pakistan | | 30/10/2021 | Appointed / | |

2.2. Cessing of Officer/Retirement/Resignation

| Present Name in Full
(a) | NIC No. or
Passport No. in
case of Foreign
National
(b) | Father /
Husband Name
(c) | Usual Residential
Address
(d) | Designation
(e) | Nationality**
(f) | Business
Occupation**
* (if any)
(g) | Date of
Present
Appointment
or Change
(h) | Mode of
Appointment /
change / any
other remarks
(i) | Nature of
directorship
(nominee/indepen-
dent/additional/
other)
(j) |
|-----------------------------|---|---------------------------------|--|--------------------|----------------------|---|---|--|---|
| Sajid And Co. | | | Suit No 204, 2nd
Floor Amber Estate
Extension, Opposite
HBL, MCB Kariwach
Court branch and | Auditor | Pakistan | | 30/10/2021 | Retired / | |
| Waqas Ali Khan | 4130364505001 | Asif Ali Khan | Flat No 11, Mohalla
Saira Plaza, Goods
Naka, Block B,
Hyderabad | Director | Pakistan | Business | 30/10/2021 | Resigned / | |
| Waqas Ali Khan | 4130364505001 | Asif Ali Khan | Flat No 11, Mohalla
Saira Plaza, Goods
Naka, Block B,
Hyderabad | Secretary | Pakistan | | 30/10/2021 | Resigned / | |

2.3. Any other change in particulars relating to columns (a) to (j) above

| Present Name in Full
(a) | NIC No. or
Passport No. in
case of Foreign
National
(b) | Father /
Husband Name
(c) | Usual Residential
Address
(d) | Designation
(e) | Nationality**
(f) | Business
Occupation**
* (if any)
(g) | Date of
Present
Appointment
or Change
(h) | Mode of
Appointment /
change / any
other remarks
(i) | Nature of
directorship
(nominee/indepen-
dent/additional/
other)
(j) |
|-----------------------------|---|---------------------------------|-------------------------------------|--------------------|----------------------|---|---|--|---|
|-----------------------------|---|---------------------------------|-------------------------------------|--------------------|----------------------|---|---|--|---|

Certified to be True Copy

Additional Joint Registrar of Companies

| 177 | | | | | | 178 | | 179 | | 180 | |
|-----|--|--|--|--|--|-----|--|-----|--|-----|--|
| | | | | | | | | | | | |

* In the case of a fire, the full name, address and telephone number of the person to be contacted should be given.

* In the case of a firm, the full name, address and above mentioned particulars of each partner, and the date on which each became a partner.

** In case the nationality is not the nationality of origin, provide the nationality of origin as well.

*** Also provide particulars of other directorships or offices held, if any.*

***** In case of a director nominated by a member or members, the resignation letter and in case of removal of a director, member's resolution be attached

***** In case of a director nominated by a member or creditor the name of such nominating or appointing body shall also be mentioned in column (j), and a copy of resolution from the nominating or appointing body be attached.

3.1 Declaration:

PART-III.

I do hereby solemnly, and sincerely declare that the information provided in the form is:
(1) true and correct to the best of my knowledge.

(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed and

(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2 Name of Authorized Officer with designation/ Authorized Intermediary

Lin, Guotiang

Chief Executive

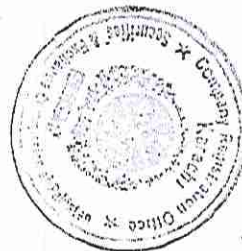
3.3 Signature

Electronically signed by Lin, Guanliang

3.4 Date (DD/MM/YYYY)

21/12/2021

3.5 Registration No of Authorized Intermediary, if applicable



Registered At No. 634
 of Registrar Mirpur Sakro

Form A
THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 120(1) and Regulation 4]
ANNUAL RETURN OF COMPANY HAVING SHARE CAPITAL

PART-I

(Please complete in typescript or in bold block capitals)

1.1 CUIN (Registration Number) 0142071

1.2 Name of the Company RISENCE STEEL (PRIVATE) LIMITED

1.3 Fee payment details
1.3.1 Chafen No E-2021-803021 1.3.2 Amount 1320.0

1.4 Form A made upto 30/10/2021

1.5 Date of AGM 30/10/2021

PART-II

Section A

2.1 Registered Office Address 04/111, Street-32, Khayaban-e-Hind, DHA, Karachi Karachi esuh Sindh

2.2 Email Address corporate pbck@gmail.com

2.3 Office Tel. No.

2.4 Office Fax No.

2.5 Principle line of business -STEEL AND ALLIED

2.6 Mobile No. of Authorized officer (Chief Executive/Director/ Company Secretary/ Chief Financial Officer) 03016770711

2.7 Authorized Share Capital

| Classes and kinds of Shares | No. of Shares | Amount | Face Value |
|-----------------------------|---------------|----------------|------------|
| Ordinary Shares | | 300,000,000.00 | |
| | | | |
| | | | |

2.8 Paid up Share Capital

| Classes and kinds of Shares | No. of Shares | Amount | Face Value |
|-----------------------------|---------------|----------------|------------|
| Ordinary Shares | | 300,000,000.00 | |
| | | | |
| | | | |

2.9 Particulars of the holding / subsidiary company, if any

| Name of Company | Holding/Subsidiary | % Shares Held |
|-----------------|--------------------|---------------|
| | | |

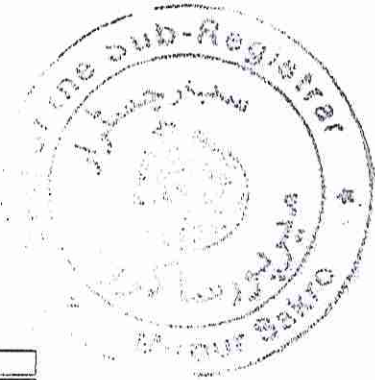
2.10 Chief Executive

Name Lin, Guandong

Address Sult No. 6, 2nd Floor, Rugalya Arcade, Stadium Commercial Lane-1, Street 16, DHA, Phase

NIC No EC0945271

Registered At No 634
Sub-Registrar Nirpur S-Kro



Next Page

Certified to be True Copy
Additional Joint Registrar of Companies

2.11 Chief Financial Officer

Name

Address

NIC No

2.12 Secretary

Name

Address

NIC No

2.13 Legal Advisor

Name

Address

NIC No

2.14 Particulars of Auditors

Name

Address

2.15 Particulars of Shares Registrar (if applicable)

Name

Address

Email

Section-B**2.16 List of Directors on the date Annual return is made**

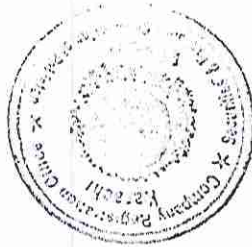
| S# | Name of Director | Residential Address | Nationality | NIC (Passport No. if foreigner) | Date of appointment / election | Name of Member/Creditors nominating/appointing |
|----|------------------|--|-------------|---------------------------------|--------------------------------|--|
| 1 | Lin Guanru | Suit No. 6, 2nd Floor, Ruqaiya Arcade, Stadium Commercial Lane-1, Street 10, DHA-Phase-5, Karachi-Karachi-Sindh Pakistan | China | 6500397750 | 15/12/2020 | |
| 2 | Tariq Mehmood | Qaum Tor Chapar, Dakhana Darra Adamkhel, Kohiwal District, Tribal Area, Kohat. | Pakistan | 2240151923043 | 30/10/2021 | |

Sub-Registrar Mirpur Sakro

2.17 List of members & debenture holders on the date upto which this Form is made

| S# | Police | Name * | Address | Nationality | No of shares | Percentage | NIC No(Passport if foreigner) |
|-------------------|--------|---------------------------------|--|-------------|--------------|------------|-------------------------------|
| Members | | | | | | | |
| 1 | | Molz All Trade Private Limited | Suit No. 6, 2nd Floor, Plot 19-C Ruzaiya Aro | Pakistan | 3000000 | | 0144999 |
| 2 | | Fujian Rensin Industry Co. Ltd. | Room C9-C10, #3 Pangyu Road, Gangshan C | China | 27000000 | | 100MA33NCTC6J |
| Debenture Holders | | | | | | | |
| | | | | | | | |

* In case the member or debenture holder is holding shares or debentures on behalf of other person(s), the name of such other person(s) shall be mentioned in parentheses alongwith the name of the member or debenture holder



2.18 Transfer of shares (debentures) since last Form A was made

Mirpur Sakco

| S# | Name of Transferor | Name of Transferee | No of Shares Transferred | Date of Registration of transfer |
|-------------------|--------------------|--------------------|--------------------------|----------------------------------|
| Members | | | | |
| | | | | |
| Debenture Holders | | | | |
| | | | | |

PART-3

3.1 Declaration:

I do hereby solemnly, and sincerely declare that the information provided in the form is:

(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed; and
 (ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2 Name of Authorized Officer with designation/ Authorized Intermediary

Lin, Guanliang

Chief Executive

3.3 Signatures

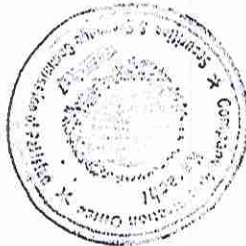
Electronically signed by Lin, Guanliang

3.4 Registration No of Authorized Intermediary, if applicable

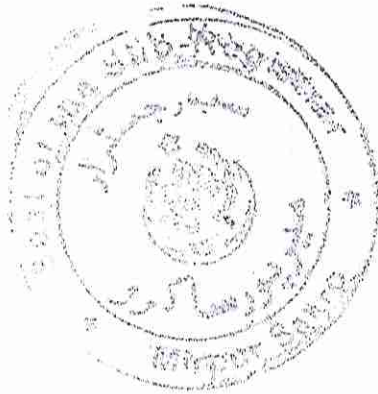
3.5 Date

Day / Month / Year

21/12/2021

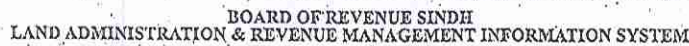


Registration At No. 634
Sub. Mirpur Sakro



Previous Page







DISTRICT COUNCIL THATTA

A/C#-1797-1

Date: 21/10/2022

S. No. _____

Nature of Property: _____

Name of Purchaser: _____

RISESINCE STEEL (PRIVATE) LIMITED

Name of Seller: _____

Mr. Sajid Raza (and others)

Value of Property : RS= _____

50,000,000/-

1% Property Tax of: RS= RS= _____

500,000/-

Dated: _____

Signature

Of Recovery Office

| | | |
|-----|-------------------|-----------------------|
| 678 | Officer | Op. Manager / Manager |
| | Authorize Sig No. | Authorize Sig No. |

NOC DIRECTOR TOWN PLANNING

(Sindh Building Control Authority Hyderabad)
Room # 303, Block-A, Shahbaz Building, Hyderabad.

Not Valid after: 15-Days

Owner/Sponsor Copy

Revenues Survey No: 522, 523, & others

Housing Scheme: Boundary Layout (Aerial)

4977

Area: 64 Acre: — Ghunta

Challan No:

Dated: 25-10-2022

Owner/Sponsor: Mr. Tanq

Account No: 1407-8

Mehmood & O Khayal
Mast

(National Bank of Pakistan)
Shahbaz Building Branch, Hyd.)

DETAILS OF RECEIPT

- ☐ Scrutiny
- ☒ N.O.C
- ☐ Commercial
- ☐ Amalgamation
- ☐ Sub Division
- ☐ Demarcation
- ☐ Attested Copy
- ☐ Other

Rs. 17500 X 64
4 C.Yes. NOC Fees
Boundary
Layout Plan
Deh Khawar
Tapa Ghano
Tal & Dast
Rate

AMOUNT

Rs. 1120000/-
Rs.
Rs.
Rs.
Rs.
Rs.
Rs.
Rs.
Rs.
Rs.
= 1120000/-

Amount in words: Rupees

Eleven Lac, twenty thousand

Rupees

Only

Prepared by

Checked by

For DIRECTOR TOWN PLANING
(Sindh Building Control Authority Hyd)

Bank Acknowledgment No:

Dated

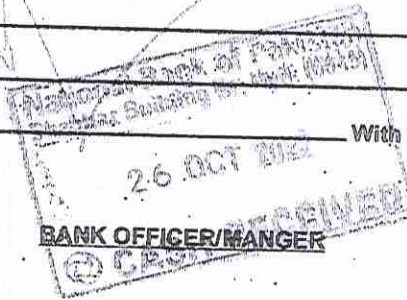
Received Rupees (In words)

For Credit to the above Account No:

With us.

CASHIER

BANK OFFICER/MANGER





Room No.303 Shahbaz Building
2nd Floor Block-A Thandi Sarak
Hyderabad Phone # 022-9200330
Fax#022-9200880

TOWN PLANNING DEPARTMENT
SINDH MASTER PLAN AUTHORITY
HYDERABAD

No. DTP/Thatta-B/62/- 807
Hyderabad dated: 11/10/ 2022

The Deputy General Manager,
Sui Sothern Gas Company (SSGC),
Hyderabad.

**Subject: NO OBJECTION CERTIFICATE (NOC) FOR SUI GAS
(CERTIFICATION) IN RESPECT OF FOR APPROVAL OF
BOUNDARY LAYOUT PLAN OF OVER R. S. NOS. 522, 523, 561, 562,
ADMEASURING AREA 64 ACRES, SITUATED AT DEH KHARISER,
TALUKA MIRPUR SAKRO, DISTRICT THATTA.**

Whereas **Mr. Tariq Mehmood S/o Khayal Mast**, owner has submitted an application for approval of boundary layout plan of over R. S. Nos. 522, 523, 561, 562, admeasuring area 64 Acres, situated at Deh Khariser, Taluka Mirpur Sakro, District Thatta.

In compliance of the orders dated: 16.03.2017 of Honourable Supreme Court of Pakistan in C.P. No. 38/2016 and Judicial Commission Dated: 05.03.2018 & 17.04.2018 (Water Commission), NOC in respect of water, Sewerage, Electricity & Gas availability (certification) for approval of proposed layout plan is required.

Dr. Asif
Assistant Director

Town Planning
Sindh Master Plan Authority
Hyderabad

C.C. to:-

1. The Director, Town Planning, Sindh Master Plan Authority, Hyderabad.
2. Applicant.
3. Master File.



Room No.303 Shahbaz Building
2nd Floor Block-A Thandi Sarak
Hyderabad Phone # 022-9200330
Fax#022-9200880

TOWN PLANNING DEPARTMENT
SINDH MASTER PLAN AUTHORITY
HYDERABAD

No. DTP/Thatta-B/62/- 807
Hyderabad dated: 11/10/ 2022

The Deputy General Manager,
Sui Sothern Gas Company (SSGC),
Hyderabad.

**Subject: NO OBJECTION CERTIFICATE (NOC) FOR SUI GAS
(CERTIFICATION) IN RESPECT OF FOR APPROVAL OF
BOUNDARY LAYOUT PLAN OF OVER R. S. NOS. 522, 523, 561, 562,
ADMEASURING AREA 64 ACRES, SITUATED AT DEH KHARISER,
TALUKA MIRPUR SAKRO, DISTRICT THATTA.**

Whereas **Mr. Tariq Mehmood S/o Khayal Mast**, owner has submitted an application for approval of boundary layout plan of over R. S. Nos. 522, 523, 561, 562, admeasuring area 64 Acres, situated at Deh Khariser, Taluka Mirpur Sakro, District Thatta.

In compliance of the orders dated: 16.03.2017 of Honourable Supreme Court of Pakistan in C.P. No. 38/2016 and Judicial Commission Dated: 05.03.2018 & 17.04.2018 (Water Commission), NOC in respect of water, Sewerage, Electricity & Gas availability (certification) for approval of proposed layout plan is required.

Dr. Asif Ali 11/10/2022
Assistant Director
Town Planning
Sindh Master Plan Authority
Hyderabad

C.C. to:-

1. The Director, Town Planning, Sindh Master Plan Authority, Hyderabad.
2. Applicant.
3. Master File.



Room No.303 Shahbaz Building
2nd Floor Block-A Thandi Sarak
Hyderabad Phone # 022-9200330
Fax#022-9200880

TOWN PLANNING DEPARTMENT
SINDH MASTER PLAN AUTHORITY
HYDERABAD

No. DTP/Thatta-B/62/- 807
Hyderabad dated: 11/10/ 2022

The Deputy General Manager,
Sui Sothern Gas Company (SSGC),
Hyderabad.

**Subject: NO OBJECTION CERTIFICATE (NOC) FOR SUI GAS
(CERTIFICATION) IN RESPECT OF FOR APPROVAL OF
BOUNDARY LAYOUT PLAN OF OVER R. S. NOS. 522, 523, 561, 562,
ADMEASURING AREA 64 ACRES, SITUATED AT DEH KHARISER,
TALUKA MIRPUR SAKRO, DISTRICT THATTA.**

Whereas **Mr. Tariq Mehmood S/o Khayal Mast**, owner has submitted an application for approval of boundary layout plan of over R. S. Nos. 522, 523, 561, 562, admeasuring area 64 Acres, situated at Deh Khariser, Taluka Mirpur Sakro, District Thatta.

In compliance of the orders dated: 16.03.2017 of Honourable Supreme Court of Pakistan in C.P. No. 38/2016 and Judicial Commission Dated: 05.03.2018 & 17.04.2018 (Water Commission), NOC in respect of water, Sewerage, Electricity & Gas availability (certification) for approval of proposed layout plan is required.

Dr. Asif Ali 11/10/2022
Assistant Director
Town Planning
Sindh Master Plan Authority
Hyderabad

C.C. to:-

1. The Director, Town Planning, Sindh Master Plan Authority, Hyderabad.
2. Applicant.
3. Master File.



Room No.303 Shahbaz Building
2nd Floor Block-A Thandi Sarak
Hyderabad Phone # 022-9200330
Fax#022-9200880

TOWN PLANNING DEPARTMENT
SINDH MASTER PLAN AUTHORITY
HYDERABAD

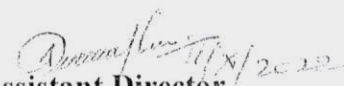
No. DTP/Thatta-B-62/- 806
Hyderabad dated: 11/10/ 2022

The Manager (P&E),
HESCO, Hyderabad.

**Subject: NO OBJECTION CERTIFICATE (NOC) FOR ELECTRIFICATION \
(CERTIFICATION) IN RESPECT OF FOR APPROVAL OF BOUNDARY
LAYOUT PLAN OF OVER R. S. NOS. 522, 523, 561, 562,
ADMEASURING AREA 64 ACRES, SITUATED AT DEH KHARISER,
TALUKA MIRPUR SAKRO, DISTRICT THATTA.**

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Assistant Director

Town Planning
Sindh Master Plan Authority
Hyderabad

C.C. to:-

1. The Director, Town Planning, Sindh Master Plan Authority, Hyderabad.
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Room No.303 Shahbaz Building 2nd
Floor Block-A Thandi Sarak Hyderabad
Phone # 022-9200330 Fax#022-9200880

**TOWN PLANNING DEPARTMENT
SINDH MASTER PLAN AUTHORITY
HYDERABAD**

No. DTP/Thatta-B-62/-
Hyderabad dated:

11/10/2022

The Chief Municipal Officer / T.M.O,
Taluka Mirpur Sakro, District Thatta.

Subject: NO OBJECTION CERTIFICATE (NOC) FOR WATER SUPPLY & SEWERAGE \ (CERTIFICATION) IN RESPECT OF APPROVAL OF BOUNDARY LAYOUT PLAN OF OVER R. S. NOS. 522, 523, 561, 562, ADMEASURING AREA 64 ACRES, SITUATED AT DEH KHARISER, TALUKA MIRPUR SAKRO, DISTRICT THATTA.

Whereas **Mr. Tariq Mehmood S/o Khayal Mast**, owner has submitted an application for approval of boundary layout plan of over R. S. Nos. 522, 523, 561, 562, admeasuring area 64 Acres, situated at Deh Khariser, Taluka Mirpur Sakro, District Thatta.

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11/10/2022
Assistant Director
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TOWN PLANNING DEPARTMENT
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HYDERABAD

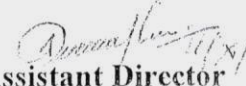
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ANNEX – II
Feasibility Study

RISESINCE STEEL (PVT) LIMITED

Annual production of 2,000,000 tons of metal products

(500,000 tons in the Phase-I)

FEASIBILITY STUDY REPORT



DESIGNERS

NINGXIA INDUSTRIAL DESIGN INSTITUTE CO., LTD.

JANUARY 2020

Main authorized personnel

| | | |
|-----------------------------------|---|--------------|
| Process equipment | : | Fu Zhou |
| Building structure | : | Xiaosui Xing |
| Electrical | : | Huirong Nan |
| Heating HVAC | : | Jing Zhang |
| General layout and transportation | : | Xiaosui Xing |
| Fire control | : | Fu Zhou |
| Investment estimation | : | Jing Zhang |
| Technical economy | : | Jing Zhang |

RISESINCE STEEL (PVT) LTD

CATALOG

| | | |
|---------|------|---|
| Chapter | I | General Introduction |
| Chapter | II | Technology program |
| Chapter | III | Auxiliary production units |
| Chapter | IV | Utilities |
| Chapter | V | Environmental Protection and Safety, Industrial Hygiene |
| Chapter | VI | Energy saving |
| Chapter | VII | Factory Organizations and Labor Quota |
| Chapter | VIII | Project Implementation Plan |
| Chapter | IX | Investment estimate |
| Chapter | X | Technical economy |
| Chapter | XI | Problems and suggestions |
| Chapter | XII | Project Layout Plan |

RISESINCE STEEL (PVT) LTD

CHAPTER

GENERAL

INTRODUCTION

R5 INSTITUTE (PVT) LTD

PROJECT NAME
 RISESINCE STEEL (PVT) LTD.
 Annual production of 2,000,000 tons of metal products
 (500,000 tons in Phase-I)
 Project Address:
 Deh Gujjo, District Thatta. Pakistan.
 Construction Unit: Risesince Steel (Pvt) Ltd.

1.1 OVERVIEW

- 1.1.1 Thatta is an historic town in the south east, Sindh province of Pakistan. It is only 100 Kilometers from Karachi and approximately 100 Kilometers from Hyderabad. It is also Near Port Qasim very convenient place from road and rail transportation.
- 1.1.2 According to the advantages of convenient transportation and complete infrastructure in the region, the Government vigorously develops regional economy, opens investment fields, encourages foreign investment, and creates a good investment environment for investors.
- 1.1.3 Risesince Steel (Pvt) Ltd. intends to build a 2 million tons annual metal products factory in Thatta, Pakistan. The first phase of the project includes a 500,000 tons annual continuous casting and rolling production line, the main equipment units are four 30t Electric Arc Furnaces and one continuous casting and rolling mill.

1.2 SIGNIFICANCE AND BACKGROUND OF PROJECT

Pakistan is the world's 25th largest economy and the 6th largest population. In recent years, its economic development has been growing rapidly, but its industrial level is low. In 2016, the apparent per capita steel consumption is only 39.5kg, which is 19% of the world average. It is far lower than that of many developing countries. The growth potential of medium and long-term steel consumption demand is huge. At present, the problems of Pakistan's iron and steel industry exist in lacking outside investment, the aging equipment, backward technology, insufficient production capacity, low product quality and few varieties. About 70% of steel products need to be imported. The Pakistani government

encourages the development of iron and steel industry and actively introduces foreign capital. Risesince Steel (Pvt) Ltd. uses advanced technology and equipment to produce wire rods and round steels for construction, which provides a better product for Pakistan's construction and achieves obvious economic benefits.

The background of the project is as follows:

- 1- Honorable President of Peoples Republic of China H.E Xi Jinping advocated the "One Belt and One Road" to encourage private enterprises to "Go Out" and actively participate in overseas investment.
- 2- Pakistan enjoys friendly relations with China and the construction of the "China-Pakistan Economic Corridor" is progressing smoothly.
- 3- Pakistani domestic iron and steel production capacity is insufficient, a large number of imports are needed.
- 4- The builder has accumulated many years of production experience.

Based on the above points, with the strong support of the relevant departments of China and Pakistan, Risesince Steel (Pvt) Ltd. has built a metal products factory with an annual output of 2,000,000 tons (500,000 tons in Phase-I) in Thatta, Pakistan, to contribute to the development of Pakistan's economy.

1.3 ECONOMIC AND SOCIAL BENEFITS

China and Pakistan are traditional friendly countries. In recent years, Chinese entrepreneurs have invested in various fields of Pakistan and made a lot of contributions to local economic development. The main investor of Risesince Steel (Pvt) Ltd. is also a well-known entrepreneur in China. He has brought many years of enterprise management experience into Pakistan, already owned Mining Business in Mansehra District of Khyber Pakhtunkhwa Pakistan, promote the continuous development of economy, fill in lack of large-scale continuous casting and rolling technology to produce construction wire rods and round steel product enterprise.

1.4 COMPILATION BASIS

1.4.1 Risesince Steel (Pvt) Ltd. authorized our institute to prepare feasibility study report.

1.4.2 Process information provided by Risesince Steel (Pvt) Ltd.

1.5 SCOPE OF PREPARATION

According to the Commission of Risesince Steel (Pvt) Ltd., the design scale of this project is 2 million tons per year, of which the first phase project is 500,000 tons per year. It carries out engineering design, including steel-making, rolling, oxygen making, air compressor station, warehouse, etc. The main production process is provided by the commissioning party.

1.6 CITY SUMMARY

Karachi, the largest city in Pakistan, is located on the southern coast of Pakistan, northwest of the Indus River Delta and bordering the Arabian Sea in the south. The plain between the Julaili River and the Maril River has a population of about 20 million and an area of 3,527 square kilometers, of which the urban area is 1,821 square kilometers.

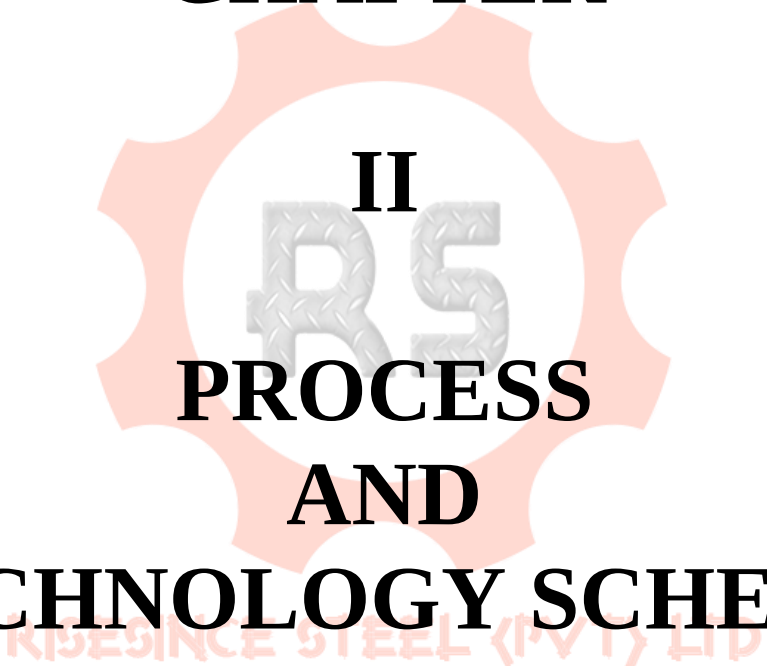
1.7 Natural Conditions

Karachi has a high temperature and little rain for most of the year. The average minimum temperature in winter (January and February) is 13 °C, and the average maximum temperature in summer (May and June) is 34 °C. Rainfall is scarce, with an average annual precipitation of only 200 mm.

1.8 Major technical and economic indicators (see table below)

| S/N | Project name | Unit | Quantity | Remark |
|-----|----------------------------|-------------------------|----------|--------|
| I | Production Scale (Phase I) | 10kt/y | 50 | |
| II | Annual operation day | Day | 300 | |
| III | | | | |
| 1 | Raw material & steel scrap | 10kt/y | 60 | |
| IV | Utility power consumption | | | |
| 1 | Water supply and drainage | | | |
| | Maximum water consumption | m ³ /H
HR | | |

| | | | | |
|------|---|-------------------------|--------|--|
| | Maximum drainage | m ³ /H
HR | | |
| 2 | Power supply | | | |
| | Apparatus capacity | KW | 65000 | |
| V | Whole factory quota | The number
of people | 957 | |
| 1 | Among them: production workers | The number
of people | 941 | |
| VI | Total floor area | Mu | 6400 | |
| VII | Building area of the whole factory | m ² | 400000 | |
| VIII | Total Project Investment | 10k | 100000 | |
| 1 | Investment in Fixed Assets | 10k | 65000 | |
| 2 | Initial working capital | 10k | 35000 | |
| IX | Annual sales revenue | 10k | 200000 | |
| X | Annual total cost | 10k | | |
| XI | Total annual profit | 10k | | |
| XII | Annual sales tax | 10k | | |
| XIII | Financial evaluation index | | | |
| 1 | Earnings power of real assets | % | | |
| 2 | Investment-profit and tax ratio | % | | |
| 3 | Capital pay-off time (After tax) | YR | | |
| 4 | Financial Internal Return Rate (After
tax) | % | | |
| 5 | Finance net present value (After tax) | 10k | | |



CHAPTER

II

PROCESS

AND

TECHNOLOGY SCHEME

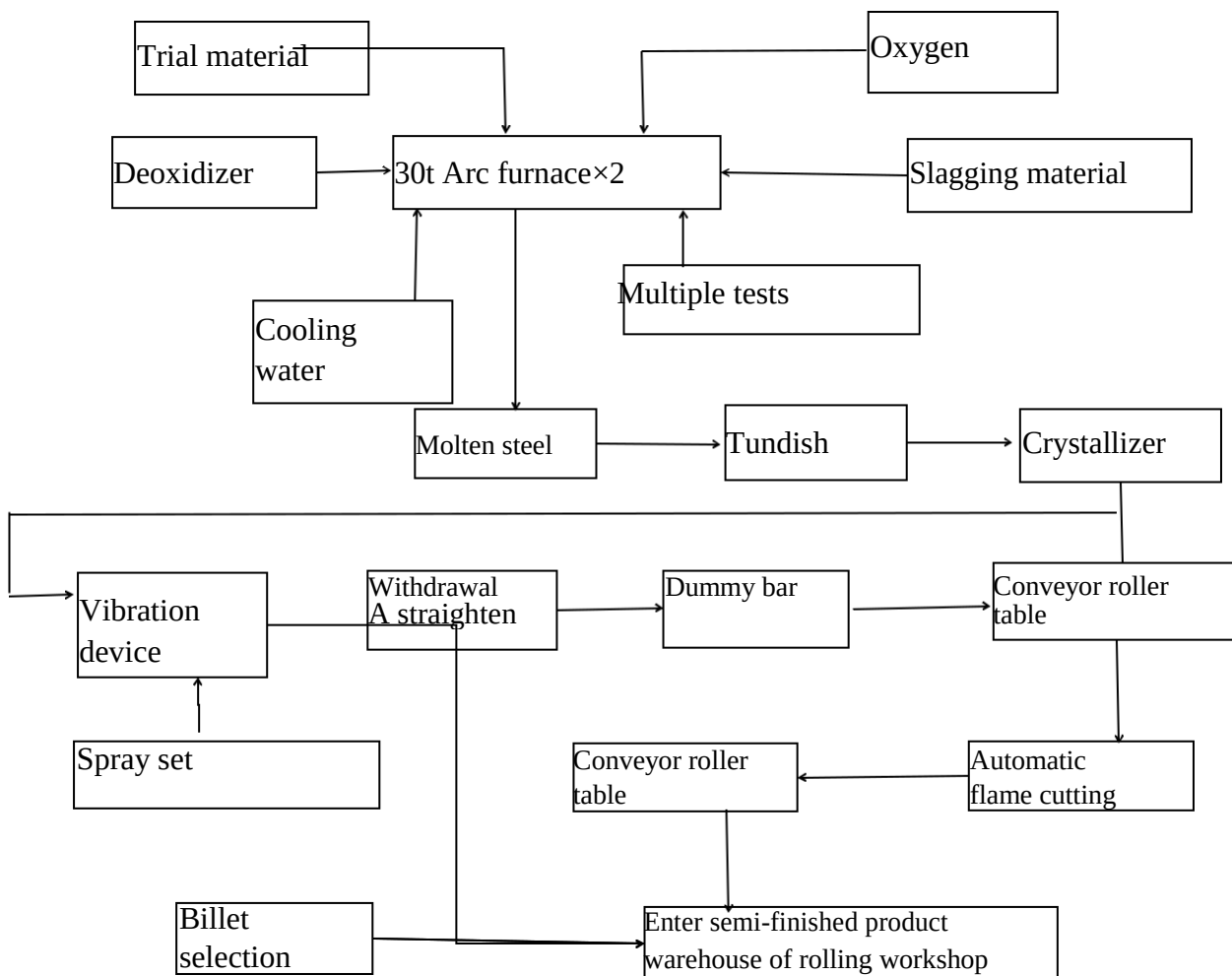
2.1 Steel-making Workshop

2.1.1 OVERVIEW

The production scale of the steel-making workshop is 500,000 t/y. Four HX2-30EBT electric arc furnaces are used, arranged in tandem. The steel grades are mainly common carbon steel. The production structure can be adjusted according to the market demand to produce low-alloy steel or other high-quality steel.

Smelting, pouring and ingot-making are placed in the same workshop, which consists of four 80t/15t bridge double hook cranes and one R5.25m second-class continuous casting equipment.

2.1.2 Process Flow Chart



2.1.3 Main technical parameters and tabulation

2.1.3.1 HX₂—30 Main Process Parameters OF Steel-making Arc Furnace

| S/N | NAME | UNIT | NUMERICAL VALUE |
|-----|---|------|-----------------------|
| 1 | Rated capacity | t | 30 |
| 2 | Inner diameter of furnace shell | mm | 4600 |
| 3 | Electrode Distribution Circle Diameter | mm | 1250±50 |
| 4 | Electrode diameter | mm | 400 |
| 5 | Maximum Travel of Electrode Lifting | mm | 3600 |
| 6 | Consumption of cooling-water | t/h | 80 |
| 7 | Rated capacity of transformer | KVA | 20000 |
| 8 | Transformer Primary Voltage Measurement | v | 10000 |
| 9 | Transformer Secondary Voltage Measurement | v | 340-140
(Level 13) |
| 10 | Weight of furnace body hoisting | t | 85 |

2.1.3.3 Product scale

Four 30t EAFs have an annual design production capacity of 500,000 tons.

The steel grades are ordinary carbon steel. Main chemical constituents:

| Steel number | C | Mn | Si | S | P |
|--------------|-----------|-----------|----------|--------|--------|
| Q235A | 0.14-0.22 | 0.35-0.65 | 0.12-0.3 | ≤0.050 | ≤0.045 |

2.1.3.4 Production calculation

2.1.3.4.1 Steel production calculation

$$Q = \frac{T \times n \times 24}{d \times r \times y}$$

Among which: Q: Annual steel production per furnace: t

n: Electric Furnace Operation Rate: n=0.94

r: Smelting cycle: r=3.42 h

d: Furnace output: d=56t

y: Yield of good ingot: y=0.97

T: Days of annual production: T=300 days

$$Q = \frac{300 \times 0.94 \times 24}{0.97} \times 56 \times 3.42$$

=107496t Integer 100000t i.e. 100 thousand tons

2.1.3.4.2 Utilization factor

$$\text{Utilization factor} = \frac{\text{Qualified steel ingot production}}{\text{Transformer capacity} \times 10^{-3} \times \text{Days of production}} \times 100$$

$$= \frac{12500 \times 10^{-3} \times 300}{100000} \times 100$$

$$= 26.67\%$$

2.1.3.4.3 Consumption of main raw materials

Comprehensive consumption of raw materials

| S/N | Name | Unit | Quantity | Remark |
|-----|-------------------------|--------|----------|--------|
| 1 | Iron and steel material | | | |
| (1) | Steel scrap | Kg/t s | 1200 | |
| 2 | Ferroalloy material | | | |
| (1) | Ferrosilicon | Kg/t s | 8 | |
| (2) | Ferromanganese | Kg/t s | 10 | |
| (3) | Lead powder | Kg/t s | 10 | |
| (4) | Aluminium scrap | Kg/t s | 1 | |
| 3 | Refractory material | | | |
| (1) | Aluminum brick | Kg/t s | 6 | |
| (2) | Magnesia brick | Kg/t s | 4 | |
| (3) | Clay brick | Kg/t s | 45 | |
| (4) | Magnesite clinker | Kg/t s | 20 | |
| 4 | Auxiliary material | | | |
| (1) | Electrode | Kg/t s | 7 | |
| (2) | Quartz sand | Kg/t s | 20 | |
| 5 | Fuel and power | Kg/t s | | |

| | | | | |
|-----|---------------------------------|--------|------|---|
| (1) | Comprehensive power consumption | Kg/t s | 710 | |
| (2) | Cooling water | t/h.pf | 80×4 | Closed-circuit circulating water is added 16 t/h of fresh water according to 10% loss |

2.1.3.5 Quota of staff

| S/N | Name | Number of people per shift | | | Take over another's shift | Total |
|-----|--|----------------------------|----|----|---------------------------|-------|
| | | 1 | 2 | 3 | | |
| 1 | Blast furnace operator | 30 | 30 | 30 | 30 | 120 |
| 2 | Electrician in front of the furnace | 12 | 12 | 12 | 12 | 48 |
| 3 | Pouring worker | 18 | 18 | 18 | 18 | 72 |
| 4 | Furnace repair worker、kit-repairer | | | | | 30 |
| 5 | Transport worker、Feeder | 24 | 24 | 24 | 24 | 96 |
| 6 | Chemical laboratory | | | | | 28 |
| 7 | Hydraulic Operator、Stoker | 9 | 9 | 9 | 9 | 36 |
| 8 | Crane-man | | | | | |
| 9 | Watchman, Inspector, Electrician、Benchwork | 12 | 12 | 12 | 12 | 48 |
| 10 | Electric welder | | | | | 14 |
| 11 | Finished product management | | | | | 14 |
| 12 | Workshop management | | | | | 24 |
| | Total | | | | | 530 |

2.2 Steel Rolling Workshop

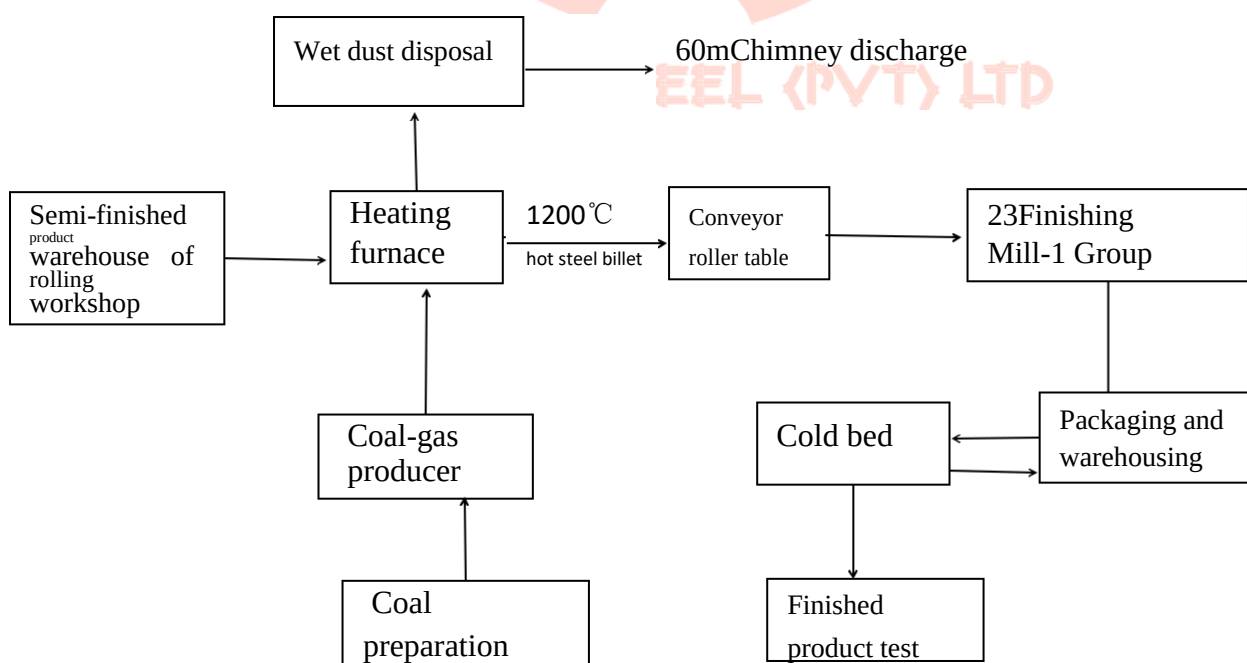
2.2.1 Process Flow

Semi-finished steel ingots selected by steel-making workshop are hoisted by 30t/5t bridge double hook crane and put on pusher to be heated in 32-inch energy-saving heating furnace. The heat source of the heating furnace is provided by two IIGF environment-friendly gas producers. The flue gas is dedusted by wet dust collector and discharged by 60 m chimney. When the ingot is heated to 1200 C, the discharger automatically feeds the ingot into the rolling mill for rolling. After rough rolling, medium rolling and finishing rolling of the ingot, the wires and profiles with a set diameter are rolled out. The 300-ton hydraulic shear set after the rolling mill cuts the steel to the rectifier according to the specified size. In the production process, because of uneven heating temperature, improper roll adjustment, improper guide device, improper cooling after rolling, and the influence of shearing and transportation process, late deformations often occur, so it is necessary to rectify to eliminate the deformation and bending of the rolled piece. After the steel temperature is still high, it needs to be cooled on the cooling bed to reduce its temperature to 100-200 degrees, and then shaping, inspection, bundling machine bundling, from the 5T crane to the finished product warehouse.

Production scale: daily steel rolling: 1700 tons

Annual steel rolling: 500,000 tons

2.2.2 Process flow chart



2.2.3 Product Specification and Output

Φ6.5 and Φ8 wire rods of 150,000 tons per year

Φ10, Φ12, Φ14 round steel 200,000 tons per year

2.2.4 Selection of Main Equipment

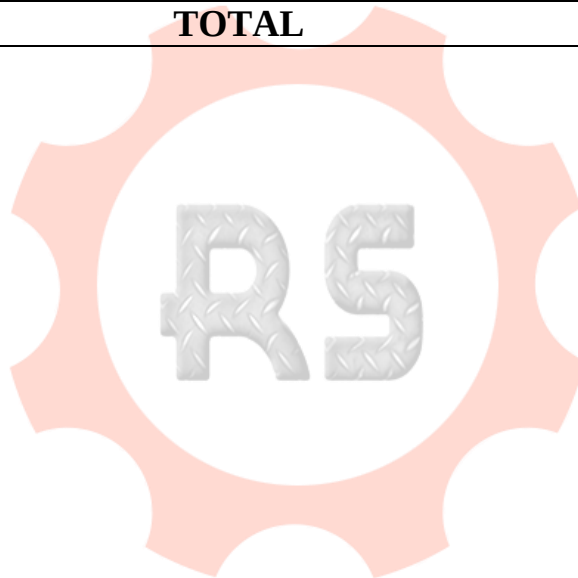
A set of vertical automatic continuous casting and rolling mill is selected, which consists of 23 groups, including type 520, 400, 365, 300, etc. In addition, 60 m * 7ml group of fully automatic cooling plateau, a 30 t/5 t bridge double hook crane, a 32 m² heating furnace, a 60 m high chimney, 2 HGF environment-friendly gas producers, a 300 ton hydraulic shearing machine, a 150 ton hydraulic packer, a 16m * 4 m, 120 t SCS-120 electronic floor scale are selected.

2.2.5 Consumption of Major Raw Materials and Economic and Technical Indicators

| Name | Unit | Index |
|---|----------------|----------|
| Daily steel rolling quantity | T | 1700 |
| Annual steel rolling quantity | 10KT | 50 |
| Heating furnace daily gas consumption | m ³ | 480-5400 |
| Process cooling water consumption | T / h | 140 |
| Site water consumption | T / h | 5 |
| Power consumption | KW/T S | 220-300 |
| Daily Power consumption | KW | 450,000 |
| Roll | KG/T S | 3.5 |
| Note: Closed-circuit circulating water is calculated by 10% loss to supplement fresh water. | | |

2.2.6 Workshop labor quota

| S/N | Name | No of People
Per Shift | | | Takeover
another's
shift | Total |
|--------------|--------------------------------------|---------------------------|----|----|--------------------------------|------------|
| 1 | Burner | 12 | 12 | 12 | 6 | 42 |
| 2 | Crane-man | | | | | 18 |
| 3 | Steel Rolling Worker | 12 | 12 | 12 | 9 | 45 |
| 4 | Shearing and
Straightening Worker | 6 | 6 | 6 | 3 | 21 |
| 5 | Cold Bed Worker | 3 | 3 | 3 | 3 | 12 |
| 6 | Finished Product
Management | 6 | 6 | 6 | 3 | 21 |
| 7 | Workshop
Management | | | | | 24 |
| TOTAL | | | | | | 183 |



RISESINCE STEEL (PVT) LTD

CHAPTER

III

AUXILIARY

PRODUCTION DEVICES

RISESINCE STEEL (PVT) LTD

3.1 Oxygen making works

3.1.1 Calculation of oxygen requirement

Condition table of electric furnace technology

| S/N | Name | Quantity |
|-----|---|----------|
| 1 | Nominal capacity of electric furnace (t) | 30 |
| 2 | Actual furnace output (t) | 45-56 |
| 3 | Smelting time (h:min) | 3-3.5 |
| 4 | Oxygen blow duration (h) | About 2 |
| 5 | Annual output of single furnace
(10kt/ Furnace year) | 10 |
| 6 | Hourly average yield (t/h) | 16 |
| 7 | Oxygen consumption of structural steel
(Standard m ³ /ts) | 10-15 |
| 8 | Oxygen Consumption of High Alloy Steel
(Standard m ³ /ts) | 20-30 |
| 9 | Oxygen purity (%) | ≧98 |

| Total Oxygen Demand of Electric Furnace | |
|--|--|
| Oxygen Consumption of Structural Steel (Standard m ³): | $15 \times 16 \times 2 + 15 \times 11 = 645$ standard m ³ |

Therefore, use KOON-1000/1000 oxygen – making plant

3.1.2 Oxygen – making Plant

3.1.2.1 Condition of device design technology

| | |
|----------------------------|----------------|
| Atmospheric Pressure | 98KPa (A) |
| Free air Temperature | 30℃ |
| Relative humidity | 75% |
| Pressure of Cooling Water | 0.3-0.4MPa (G) |
| Cooling Water Temperature | 30℃ |
| Power Supply: High Voltage | 6000 V.50Hz |
| Low Voltage | 380/220 V.50Hz |

3.1.2.2 Technical Performance Parameters of Device Design

| | |
|---|--------------------------|
| Oxygen Production | 1000 Nm ³ /h |
| Nitrogen Production | 1000 Nm ³ /h |
| Oxygen purity | 99.6% O ₂ |
| Nitrogen Purity | ≤10PPM N |
| Pressure of Oxygen Outlet Cooler | 0.04MPa (G) |
| Pressure of Nitrogen outlet Cooler | 0.01MPa(G) |
| Pressure of Liquid Oxygen Outlet Device | 0.06MPa(G) |
| Unit Electricity consumption | 0.592KWH/Nm ³ |
| Start-up time of Device | About 36h |
| Heating Thawing Time | About 36h |
| Operation Cycle | ≥1 year |

3.1.2.3 Brief Introduction of Process Flow

Raw material air is filtered through filters to remove mechanical impurities, such as dust, and then enters the air compressor, compressed to 0.55 MPa (G), cooled to - 10 °C in the Freon evaporator, and then enters the molecular sieve purifier to remove hydrocarbons such as hydrogen peroxide, carbon dioxide and C₂H₄, and becomes clean dry air, most of which enters the cold box of the fractionator and is cooled to saturation state in the main heat exchanger. The bottom of the lower tower participates in distillation; the other small part enters the supercharger of the supercharger expander and enters the main heat exchanger after cooling, and a certain temperature enters the expander to expand. After expansion, air enters the middle of the upper tower to participate in distillation.

The pure nitrogen obtained from the top of the lower tower condenses into liquid nitrogen in the condenser evaporator. Some of the nitrogen is returned to the lower tower for distillation. The other part is cooled and throttled and then enters the middle of the upper tower for distillation.

99.6% oxygen was obtained at the bottom of the upper tower. Oxygen entered the main heat exchanger and reheated out of the cold box. Nitrogen gas is obtained at the top of the upper tower and dirty nitrogen gas is obtained at the top of the upper tower. Nitrogen and dirty nitrogen gas are reheated through the condenser and the main heat exchanger to return to the cold box. One part of the polluted nitrogen is used as regeneration gas for purifier, the other part is emptied.

3.1.2.4 Air Separation Equipment

(1) Air filter 1 set

Model: MDLX-80, Pulse Bag Filter

Gas handling capacity: 8000Nm³/h

(2) One air compressor

Model: 2D type, no lubricant, two-stage piston type

Gas volume: 6000Nm³/h

Exhaust pressure: 0.55 MPa (G)

Exhaust temperature: ≤40℃

Axis power: about 560 KW

Motor power: 630KW (6000V.50Hz)

Cooling water consumption: about 560T/h

(3) Air pre-activation system (including 1 refrigerator and 1 Freon evaporator)

Gas handling capacity: 6000Nm³/h

Output system temperature: - 10 ℃

Refrigerator shaft power: about 22KW

Refrigerator motor power: 30KW (380V.50Hz)

(4) A set of air purification system

Type: Vertical single-bed Molecular Sieve Purifier

Air handling capacity: 6000Nm³/h

Treatment air pressure: 0.55 MPa (G)

Air temperature after treatment: ≤-65℃

Exhaust CO₂ content: ≤2PPM

Molecular sieve type: 13 *14 *8 mesh special molecular sieve for air separation

Molecular sieve dosage: about 2 x 4T

Regeneration temperature: 200℃

Regenerated Gas Volume (Contaminated Nitrogen): About 1800Nm³/h

Electric heater power: 120KW

(Including: adsorption cylinder, molecular sieve, electric heater, water separator, powder filter, switching valve and internal pipeline, etc.)

(5) Turbocharger Expander: 2 sets

(Including 2 main engines of turbo-expander, 1 cooler after turbo-expander and 2 sets of random spare parts)

Type: Gas Bearing Turbocharger Type

Supercharging side: flow rate $1300\text{Nm}^3/\text{h}$

Import pressure 0.53 MPa (G)

Export pressure 0.71 MPa (G)

Expansion side: flow rate $1300\text{Nm}^3/\text{h}$

Import pressure 0.69MPa(G)

Export pressure 0.048 MPa (G)

The inlet temperature is about 150 K

Efficiency $\geq 78\%$

The rotational speed is about 43000 rpm

(6) Fractionator 1set

(Including: main heat exchanger, supercooler, lower tower, upper tower, cold box)

Outward Size: About $45\text{ m} \times 3.6\text{ m} \times 22\text{m}$ (L x W x H)

(7)Oxygen Compressors 3sets

(Including: 3 mainframes, 3 motors, 3 first, second and third cooling units, 3 control cabinets)

Model: 3Z2-5.5/30 vertical, three-row, three-stage double-acting, cylinder without lubricant

Gas delivery capacity: $330\text{Nm}^3/\text{h}$ (0°C , 760 mm mercury column)

Final pressure: 2.9 MPa (31kgf/cm^2) gauge pressure

Speed: 500r/min

Motor: Y315S-6

Power: 75KW ($380\text{V}.50\text{Hz}$)

Cooling water volume: 8t/h

(8)10 tons electric single hook bridge crane 1set

3.1.3 Labor Assignment (Four Groups and Three shifts)

(1) 12 air compressors

(2) Pre-cooling and purifying 12 people

(3) 12 fractionators and turbines

(4) 12 persons of oxygen compressor

(5) Analyzing 12 persons

(6) 15 persons for management, maintenance, replacement, etc.

Total: $12 * 5 + 15 = 75$ persons

3.2 Gas Station

3.2.1 Estimation of Heat Requirement for Steel Processing

Calorific Estimation of 1200MJ/h per Hour for Processing Steel

Annual output of 500,000 tons of steel, the average hourly output is about 69.5 t/h

The average hourly heat demand should be:

$$1200\text{MJ/h} \times 69.5 = 83400\text{MJ/h}$$

And $\Phi 2.0$ two-stage gas producer

Gas production is about 2400-2700 m³/h

The calorific value of per standard m³ is 6.0 MJ/standard m³.

The calorific value of hourly gas is $6.0 \times 2700 = 16200 \text{ MJ/h}$.

Choose two meters, the total hourly amount should be:

$$16200 \text{ MJ/h} \times 2 = 32400 \text{ MJ/h}$$

It is equivalent to the estimated total amount of 33360 MJ/h.

Because hot gas should be supplied by steel works, the sensible heat brought by the upper outlet temperature of gas producer 120-150°C and the lower outlet gas temperature 500-600°C has not yet been calculated.

Therefore, two $\Phi 2.0$ two-stage gas producers can be selected.

3.2.2 Technical parameters of $\Phi 2.0$ two-stage gas generator

Furnace bore (m) 2.0

Heating area (m²) of water jacket 13.0

Design Pressure of Water Jacket (MPa)

0.29 Section area (m²) of retorting section

1.6 Distillation height (m) 6.0

Maximum blast pressure (Pa) at furnace bottom 2940 Gray disc speed (R/h)

2.97 Gas Seal Pressure (MPa) 0.2

Raw coal particle size (mm) 20-50

Raw material consumption (kg/h) is about 800-900

Gas output (standard m³/h) is about 2400-2700

Gas Low Calorific Value (Standard KJ/Nm³) Upper Segment

7000 Lower Segment 5600, Mixed 6000

Conveyor and Slag Removal Motor (KW) 3.0

Hydraulic Pump Motor (KW) 2.2 of Coal Feeder

Gas Pressure and Temperature (Pa. °C) at Furnace Exit

Upper Stage 1500, 120-150

Lower Stage 2000, 500-600

The total weight of the equipment is 55T (of which 36t is refractory)

3.2.3 Gas General Production Process

Raw coal is added to the upper section of the furnace (starting section) by a hydraulic coal feeder, and air is fed to the furnace from the bottom by a blower. The produced gas is discharged from the upper and lower outlets respectively. The upper outlet is through cyclone dust collector, the lower outlet is through tar collector, the upper and lower pipelines converge, and then through gravity dust collector, the safe water seal is sent to all users.

3.2.4 Major Equipment

(1) $\Phi 2.0$ Two-stage Gas Generator 2sets

Motor power: 5.35KW*2

(2) Blower NO9-19 2sets

Motor power: 18.5KW*2

(3) $\Phi 600$ tar removers 2sets

(4) $\Phi 1620$ cyclone precipitator 2sets

(5) $\Phi 1200$ gravity precipitator 2sets

(6) IS50-32-200 softening pumps 2sets

Motor power: 5.5KW*2

(7) Steam drum $\Phi 1016$ 2 sets

3.2.5 Labor Assignment (Four Groups and Three shifts)

(1) 24 stokers

(2) 24 coal and ash workers.

(3) Water Division and Analysis of 12 Persons

(4) Replacement and Management of 9 Persons

Total: 69 persons

3.3 Air Compressor Station

Total air consumption 20Nm³/min

Selection of two L-10/7-I water-cooled air

compressors 20m³ Load Storage Tank 1sets L-10/7-I

Air Compressor Parameters

Exhaust capacity: 10Nm³/min

Exhaust pressure: 0.7 MPa

Cooling mode: water cooling

Speed: 980r/min

Host weight: 1.8T

Motor model: YKY-55-6

Power: 55KW (380V.50Hz)

Labor Reserve: 12 persons

CHAPTER

IV

PUBLIC WORKS

RISESINCE STEEL (PVT) LTD

4.1 General layout

Risesince Steel (Pvt) Ltd. has an annual output of 2 million tons of metal products (phase I 500,000 tons). The proposed construction site of the project is located in Thatta, Pakistan. The factory gate faces west and the north side of the gate is the living area. Office buildings and bathrooms are set up. 60 tons of weighing houses are arranged in the south side of the factory gate. The steel-making workshop and rolling workshop are arranged in the "L" shape. The semi-finished product warehouse is located in the East and south of the factory area. The steel workshop, oxygen station, gas station and air compressor station are located in the north side of the steel-making workshop according to the technological requirements.

4.2 Architectural Structure

The steel-making workshop and rolling workshop are arranged in "L" shape. Because the elevation of 30 t/h electric arc furnace operation platform is 3.5-5 meters, there are distribution room and operation room on the platform, slag discharging facilities under the platform, the body of electric arc furnace is high and heavy, and the crane lifting weight is 80t/15t bridge double hook crane and 50t/10t bridge double hook crane, the standard height of crane rail top is 14 meters, and the beam bottom standard height of workshop is 17.28 meters, with ventilation windows on top. The steel-making workshop is 210x18m, H-shaped row beam structure, colored wave tiles on the top, with skylights.

The rolling workshop is 330x18m with H-type bent structure, color wave tiles on top of each layer and skylights. The main equipment units are a 32 m² heating furnace, a 60-meter high brick chimney, a continuous casting and rolling mill, a 30t/5t bridge double-hook crane and a 14.00-meter rail top elevation.

The scrap workshop and semi-finished product warehouse are 210x16m with bent structure.

The oxygen station has a bent structure of 60x40m, a 10t single girder crane, a rail top elevation of 8m and a roof truss bottom chord of 1.0m. The main workshop of the gas station is 7.2x14.4 three-storey frame structure, and the auxiliary building is brick-concrete structure. The air compressor station is in the auxiliary room of the gas station. Other ancillary facilities are brick-concrete structure. Lifting includes substation, deep well pump house, circulating water pump house, finished product storehouse, office building, bathroom, staff

dormitory, etc. Circulating water pool and fresh water pool are reinforced concrete structures.

4.3 Water supply and drainage

4.3.1 Because of the location of our factory, two new deep wells need to be built, and the size of the water output will be determined after the completion of the wells according to the report of the pumping experiment.

4.3.2 Water consumption of the whole plant

| | |
|--|---------------------------------|
| Water consumption for the production of the whole plant | 63m ³ /h(maximum) |
| Water consumption for the circulating use of the whole plant | 419 m ³ /h (maximum) |
| Water consumption for the resident of the whole plant | 3.3m ³ /h(maximum) |

Statistical Table of Water Consumption for Whole Plant

4.3.3 Water quality and water pressure

| Serial No. | Types of Water Use | Water Use Sector | Water Consumption | | | Remarks |
|------------|------------------------------|-----------------------|-----------------------|---------------------------|---------------------------|---|
| | | | Max m ³ /h | Average m ³ /h | All-day m ³ /h | |
| | Production water consumption | | | | | |
| 1 | Circulating cooling water | Steel-making workshop | 80x2 | 80x2 | 1920x2 | Calculated in 24 hours |
| 1.1 | Supplementary Water | Steel-making Workshop | 8x2 | 8x2 | 192x2 | Closed-circuit circulating water is measured by 10% loss to replenish fresh water |
| 2 | Spraying water | Steel-making Workshop | 2 | 2 | 32 | Calculated in 16 hours |
| 3 | Laboratory water | Steel-making Workshop | 3 | 3 | 48 | Calculated in 16 hours |
| 4 | Circulating cooling water | Steel-making Workshop | 140 | 140 | 3360 | Calculated in 24 hours |

Water quality suspended matter content < 200 mg/L Water temperature < 30℃ Water pressure 0.3 MPa

4.3.4 Water Supply

4.3.4.1 Water Source

Two new deep wells are built, with 10LT-300x4, Q=100m/h, H=60MN=30KW deep well pumps. The surface S65(-) 4.0m*4.5m is used in

deep well pumping room. Another 500m³ fresh pool was built to provide water for production and domestic use.

4.3.4.2 Plant Water Supply

1) Production, domestic and fire water supply

The water supply network of the whole plant is branched and buried.

2) Circulating cooling water supply system

The circulating water in steel-making workshop, rolling workshop, oxygen plant and air compressor station is recirculated into the circulating hot water pool. The circulating water pool consists of 500m³ circulating hot water pool and 500m³ circulating cold water pool. The circulating water returns to the circulating hot water pool, and is pumped into the FRP cooling tower by the circulating hot water pump. After cooling, the water flows into the circulating cold-water pool, and then the circulating cold water pump is pumped into the workshop for equipment cooling.

There are two hot water pumps and two cold water pumps in the circulating water pumping room. KQSN3200-N9 vertical pumps are selected. The flow rate is $Q=500\text{m}^3/\text{h}$, $H=39\text{ MN2O}$, $N=90\text{ KW}$. Two 10BNG-250 FRP cooling towers

4.3.5 Production and production drainage of the whole plant

Maximum time drainage: 2.6m³/h, mainly for laboratory water and domestic sewage, without any harmful substances, through the plant branch drainage network discharged into the plant.

4.3.6 Fire Protection

The fire hazard of steel-making workshop and rolling workshop is Grade D, the fire resistance of building is Grade II, and there is no fire hydrant in the room. The outdoor fire control adopts low pressure system with 15L/s water consumption. Four hydrants are installed in the outdoor water supply pipe.

4.4 heating

Two 0.2MW tea baths with calorific value were selected, one for heating Office buildings, the other for bathing and drinking boiled water for workers. Because of the small heat load, it is suggested to use low sulfur coal or anthracite to reduce air pollution.

4.5 Electricity and Weak Electricity

4.5.1 Design Basis

- (1) Regulations, norms and Pakistan's current technical policies.
- (2) Electricity requirements for equipment provided by the specialty of technology, water and heating.
- (3) The design conditions of buildings and structures provided by architectural specialty.
- (4) The mode of power supply agreed between the builder and the power supply department.
- (5) Telephone and network setup requirements provided by the builder.

4.5.2 Design Scope

- 1- Distribution design and power external network design of production workshops and auxiliary rooms in the plant area.
- 2- Design of lightning protection and grounding system in factory area.
- 3- Design of network and telephone system for the whole plant.
- 4- Design of transformer and distribution room.

4.5.3 Power Supply Design

(1) Load Class

The steel-making workshop, rolling workshop and pumping station are secondary loads, the rest are tertiary loads.

(2) Load calculation of the whole plant

The total installed capacity of the plant is 65610.7KW, the active load is 51927.49KW, the natural power factor is 0.75, and the reactive power is 28157.4KVAR. After the power factor is compensated to 0.94, the apparent power is 33964.9KVA.

(3) Power supply

A 35KV power supply with a main supply capacity of 46300 KVA is introduced from Karachi I and II buses. Normally, each power supply provides 23150 KVA load.

(4) Substation in Plant Center

1) 35KV is a two-way route. The main connection mode is a single bus with a connecting cabinet (inner bridge) in the middle of each section. The two power sources work at the same time. They are backup for each other and backup for bus connection.

2) Four EAF transformers are supplied with 35 KVI and II sections respectively. The capacity of EAF transformers is $2 \times 20000\text{KVA}$ and the low voltage side is 140-340V.

3) Two 3150/35/6 transformers are selected for the remaining electrical equipment, which are supplied by 35KVI and II buses respectively.

4) The 35KV substation in the factory is transformed into an indoor substation, which consists of a 35KV distribution room (with 16 sides of 35V high voltage switchgear) occupying an area of $9 \times 30\text{m} = 270 \text{ m}^2$, a 35KV capacitor compensation room occupying an area of $9 \times 10\text{m} = 90 \text{ m}^2$, a 35/6KV transformer room $2 \times 9 \times 5.7\text{m} = 102.6 \text{ m}^2$, a 6KV distribution room, $9 \times 12 = 108 \text{ m}^2$, and an area of 60 m^2 . For the transformer and distribution room of the whole plant, except for the electric arc furnace, the power supply of other transformer and distribution rooms in the plant area is allocated by the 6KV bus of the substation.

5) There are two main substations, S9-3150/35.35/6KV transformers.

6) workshop substation

- A. Four 6KV power supply lines are introduced into a rolling workshop, which are divided into main mill and auxiliary mill, distribution voltage 6KV, load $2 \times 1250\text{KVA}$ and $2 \times 800\text{KVA}$.
- B. Oxygen station introduces a 6KV power supply for air separation unit (630KW).
- C. Two 6KV power sources are introduced into the feed water pump room for deep wells and water pumps. There are 6/0.4KVA and 400KVA transformers. The main wiring of 0.4/0.23KV side is divided into single bus segments and a connecting cabinet is set in the middle.
- D. In the low-voltage load center of the plant area, there is a 6/0.4/0.23KV transformer and 800KVA transformer and a low-voltage distribution room, which can be used for power supply in the production workshop, office, living and ancillary rooms of the plant area.

(5) Relay protection and measurement

1) 35KV and 6KV main switch adopt longitudinal and transverse differential protection, 6KV outgoing line has overcurrent and fast break protection, and 0.4/0.23KV side has low voltage circuit breaker for overcurrent and short circuit protection.

2) measurement

Our factory belongs to large industrial power consumption. The total charging point is located on the outlet side of 35KV special line, the standby measuring point is located on the 35KV inlet side of 35KV total transformer of the factory. According to the configuration of type I measuring device, the smelting measurement is located on the transformer outlet cabinet of 35KV main transformer of the factory. The rest of the electricity consumption measurement is located on the 35KV Main Transformer Outlet cabinet of the factory, and on the 35KV metering PT CE. Configuration of metering devices according to Class I. Office lighting in the plant 0.6/0.4/0.23KV substation low-voltage side set up a special metering meter, according to IV coal metering device configuration.

3) Protection Settings of Electric Furnace Transformers

- A. Set up unlimited over-current protection for multi-phase short circuit inside transformer and its primary line.
- B. Because of the short circuit of the electrodes used when the burden of the electric furnace is unreasonable and overload protection with time limit, the operation time of the relay should be no more than 7 seconds when the overload current of the transformer is 3-5 times the rated current. Gas and temperature protection for transformer internal faults are set up. Electric furnace transformer and distribution cabinet is the main protective cabinet, and 35KV electric furnace transformer cabinet is the backup protective cabinet.

4) Protection Settings of Main Rolling Machine and Other 6KV Electric Equipment

- A. The protection of overcurrent and fast break of main motor and primary part of multiphase line is provided with longitudinal differential protection when the current fast break cannot meet the requirements.
- B. Main motor overload protection with time limit overload.

When the single-phase grounding current is greater than 5A, the single-phase grounding protection is applied to trip when $I=10A$ and signal when $I=5-10A$.

D The 6KV distribution cabinet of each 6KV electric equipment field is the main protection, and the 6KV distribution cabinet of the 6KV distribution room of the plant is the backup protection.

5) Protection settings of the remaining 6/0.45/0.23KV substations

Each 6/0.4/0.23KV transformer is equipped with load switch fuses on the high-voltage side of the main transformer for overload and quick-break protection.

The 6KV distribution room in the plant is backup protection. The 6/0.4KV transformer is equipped with gas and temperature protection according to its capacity selection.

(6) Power Factor and Compensation Method

1) The 35KV side is equipped with a dense reactive power compensation device with a compensation capacity of 9000KVA.

2) No reactive power compensation device is installed on the 6KV side.

3) Each 6/0.4/0.23KV substation is equipped with low-voltage reactive power compensation devices with compensation capacity of about 702KVAR. The specific amount of compensation is determined at the initial setting.

(7) Power distribution design

1- The distribution of 0.4/0.23KV power equipment in the factory shall be set up locally according to the requirements of each power equipment group.

2- 6KV power supply equipment is equipped with 6KV power supply cabinet and step-down or frequency conversion start-up equipment in the equipment distribution room.

3- Electric furnace transformer is equipped with 35KV distribution equipment in electric furnace transformer and distribution room.

(8) Lighting distribution design

1- General office and household power consumption is designed according to the current standard.

2- Lighting design of steel-making and rolling workshops should be carried out according to large workshops.

(9) Lightning protection and grounding design

1- Take corresponding lightning protection measures for the second and third types of lightning protection buildings in the factory.

2- The grounding resistance of the electrical protection of the main transformer and the distribution stations in each section is not more than 4.

3- Weak current grounding resistance of network equipment is not greater than 1_.

(10) The 35KV and 6KV transformer and distribution equipments in the whole plant are equipped with computer integrated protection devices and backup machines. The three-remote control system is adopted for the incoming and

outgoing lines of 35KV, 6KV and 0.4/0.23KV distribution cabinets. To achieve the purpose of unattended.

(11) Network and Telecommunications Design

1- Design computer local area network (LAN) mainly in the office area to facilitate the automation of office and communication in factories, and connect with the existing telecommunication operation network by broadband mode.

2- Telephone Network

In the factory, there is a digital programmable control host with 200 extensions. 16 pairs of one-way trunks are connected to the Karachi telecommunication network. Most of the extensions are used for in-plant production dispatch and 10 external telephones are set up.

Weakness Equipment Table

| S/N | Name | Type specification | Unit | Quantity | Remarks |
|-----|------------------|--------------------|------|----------|---------|
| 1 | Network system | | Set | 1 | |
| 2 | Telephone system | | Set | 1 | |

Material Table of Major Electrical Equipment

| S/N | Name | Type specification | Unit | Quantity | Remarks |
|-----|------------------------------|--------------------|------|----------|---------|
| 1 | Power transformer | S9-3150/35/6 | Set | 2 | |
| 2 | Power transformer | S9-800/6 | Set | 4 | |
| 3 | Power transformer | S9-400/6 | Set | 2 | |
| 4 | 35KV Switchgear | | Set | 16 | |
| 5 | 6KV Switchgear | | Set | 19 | |
| 6 | Low-tension distribution box | GGD ₂ | Set | 36 | |
| 7 | Power distributing cabinet | XL-21 | Set | 54 | |
| 8 | Light distribution box | PZ30 | Set | 30 | |
| 9 | 35KV High Voltage Cable | YJV22-35KV-3×240 | M. | 5000 | |
| 10 | 6KV High Voltage Cable | YJV22-6KV-3×70 | M. | 1500 | |
| 11 | Low Voltage Power Cable | YJV22-1KV-3×240 | M. | | |
| 12 | Other | | | | |
| 13 | Integrated protection device | | Set | 1 | |
| 14 | 35KV Special Interval | | Pc. | 2 | |
| 15 | 35KV private line | | KM | 15 | |

CHAPTER

V

ENVIRONMENTAL

PROTECTION

AND

INDUSTRIAL HEALTH

RISE SINCE STEEL (PVT) LTD

5.1 Environmental Protection

5.1.1 Environmental Quality Standard

- 1- Environmental Protection Law of Pakistan
- 2- Air Pollution Discharge Standard for Industrial Furnace Cellars GB9097-1996
- 3- Design Hygiene Standard for Industrial Enterprises GBZ1-2002
- 4- Pollutant Emission Standard for Iron and Steel Industry GB13456-92
- 5- Standard for Comprehensive Emission of Atmospheric Pollutants GB16297-1996
- 6- Environmental Air Quality Standard GB3095-1996
- 7- Urban Regional Environmental Noise Standard GB3096-93
- 8- Boiler Air Pollutant Emission Standard GB13271-91
- 9- Noise Measurement Method for Industrial Enterprises GB12349-90

5.1.2 Pollution Sources and Prevention

(1) Source and prevention of smoke and dust

During EAF smelting, especially during oxidation period, the smoke is larger. The main factors affecting the smoke volume are raw materials, smelting process, operation resistance and so on. Therefore, the flue gas volume is constantly changing throughout the smelting cycle.

The main component of EAF steel-making is iron oxide, with an average initial concentration of 9000 mg/m³ and a maximum of 18 000 mg/m³. The particle size of dust <3μm accounts for 48% and that of dust 3-5 μm accounts for 28%. The flue gas volume of each 30t EAF is about 1740m³/h, so the four EAFs produce about 450 tons of iron oxide annually. Due to the fine particle size of iron oxide powder, its use needs to be investigated and understood at present, so it must be stored in bags, otherwise it will cause secondary pollution. To be shipped when there is a market.

In this design, a low hood with a high flue gas capture rate is used to collect flue gas at 450°C, which is piped into the air cooler. After cooling by the air cooler, the temperature drops to 200-250°C. The flue gas enters the first stage of the cyclone dust collector, and then is pressed into the bag dust collector by the induced draft fan for purification. The purified flue gas concentration meets the emission standard and is discharged through the top of the dust collector. .

Two HGF environmentally friendly gas producers are selected. The gas is fed into a 32m heating furnace for combustion. The flue gas is discharged from a 60m high chimney after wet dust removal.

(2) Noise and its prevention

In the initial stage of electric furnace cold charge transmission and the rolling mill and shearing process of ingot rolling, noise is relatively high. Therefore, sound insulation measures should be taken in each operation plant to make the noise of operator's worksite not more than 90 dB (A).

(3) Water and its control

Cooling water for electric furnaces, rolling mills, oxygen making and air compressors is all closed-circuit circulation, which does not pollute the environment. Individual water for testing belongs to general sewage containing organic polarity and can be discharged directly.

(4) Slag and its prevention and control

After crushing and picking out scrap steel, the slag of electric furnace is transported out by automobile and used as ground filling plant.

Two tea furnace slags were also collected and shipped out.

(5) Greening

Trees are widely planted on both sides of roads, living and office areas in the plant area, which not only prevents and controls pollution, but also beautifies the environment of the plant area.

5.2 Safety and Industrial Hygiene

5.2.1 Safety Production

1) According to the national safety production laws and regulations, all posts must formulate safety production regulations, clarify safety production responsibilities, conscientiously conduct pre-job training, so as to ensure safety in production with certificates.

2) The scrap steel Burden used in electric furnace should be selected strictly to prevent shells, explosives and sealed containers from being loaded into the furnace to prevent the occurrence of explosion accidents.

3) Electric furnace water cooling system requires double power supply to prevent explosion accident caused by sudden power cut.

4) Protective covers shall be installed on machinery and equipment, and protective railings shall be installed on platforms and escalators.

5) Dry fire extinguishers should be provided in distribution room, operation room, crane operation room and transformer room, and safety fire prevention and fire protection channels should be set up.

5.2.2 Industrial Hygiene

1) Ventilation windows and cooling fans are installed in all high temperature operation posts to ensure the health of high temperature workers.

2) Water spraying should be carried out at all operation points and sprinkler sites in order to reduce dust pollution to all processes that cannot spray water. Dust exhaust fans should be set up to reduce dust concentration in the operating environment.

3) All operating rooms are equipped with adequate lighting devices.



CHAPTER

VI

ENERGY SAVING

RISESINCE STEEL (PVT) LTD

6.1 Electricity saving

Steel-making. Steel rolling enterprises are high energy-consuming enterprises. The power consumption per ton of steel is 850-900KWH. Therefore, it is very important to select excellent and advanced energy-saving electric arc furnace and rolling mill. It can save 5 kilowatt-hour electricity per ton of steel and 100,000 kilowatt-hour electricity per year.

6.2 Water saving

The cooling water of steel-making, steel rolling, oxygen station, air compressor station and equipment are all recycled, and the utilization rate of circulating water is over 90%.



CHAPTER

VII

FACTORY ORGANIZATION

AND

LABOR APPOINTMENT

Factory level and workshop level management are implemented. There are four groups and three shifts of workshop workers, and 1000 employees are assigned to the whole plant.

| | | |
|-------------------------------|-----|-------------------------------|
| Managers at the Factory Level | 60 | Persons |
| Steel – Making Workshop | 530 | Persons |
| | 24 | of whom are workshop managers |
| Rolling Workshop | 183 | Persons |
| | 24 | of whom are workshop managers |
| Oxygen Plant | 70 | Persons |
| | 6 | of whom are workshop managers |
| Gas Station | 69 | Persons |
| | 9 | of whom are workshop managers |
| Air compressor station | 12 | Persons |
| Water Supply and Drainage | 46 | Persons |
| Boiler Room | 30 | Persons |

RISESINCE STEEL (PVT) LTD

CHAPTER

VIII

PROJECT

IMPLEMENTATION NORMS

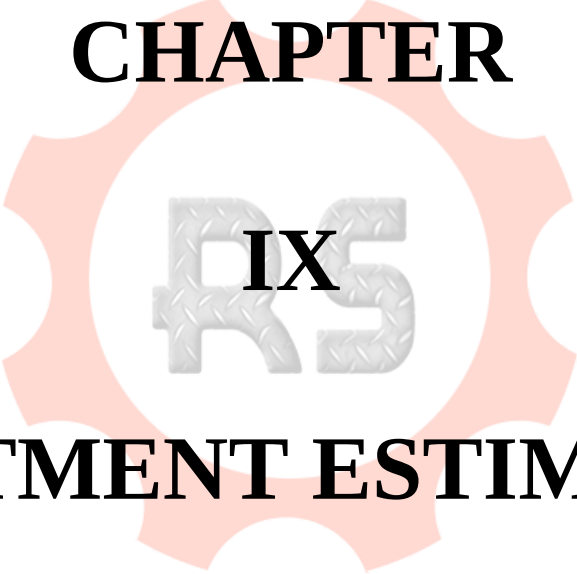


RISESINCE STEEL (PVT) LTD

The construction period of this project is two years, one design and two construction. In the first year, two 30t electric arc furnaces and their associated rolling equipment are installed. In the second year, two other electric arc furnaces are added according to market conditions. The implementation progress is as follows:

Preparation and approval of November 2018 feasibility report
Preliminary Design Compilation and Approval in December
2018 January 2019 Construction Drawing Design March-May
2019 Construction Period
Trial run in June 2019





CHAPTER IX INVESTMENT ESTIMATION

RISESINCE STEEL (PVT) LTD

9.1 Total Investment Estimation

9.1.1 Principles and Basis for Estimating Investment

- a) Establishment of Investment Estimation Method for Feasibility Study of Construction Projects.
- b) Regulations on the Compilation of Other Costs for Construction Project.
- c) Professional estimating indicators, referring to other similar projects, and adjusting them in light of the actual situation of the project.
- d) Investment estimates are based on prices in the first half of 2018

9.1.2 Estimation of Construction Investment

- 1) Total investment in construction projects is 966.5067 million yuan (see investment estimate)

Among them: equipment purchases fee 529.8095-million-yuan

Installation cost of 61.5093-million-yuan

Construction project cost 239.909 million yuan

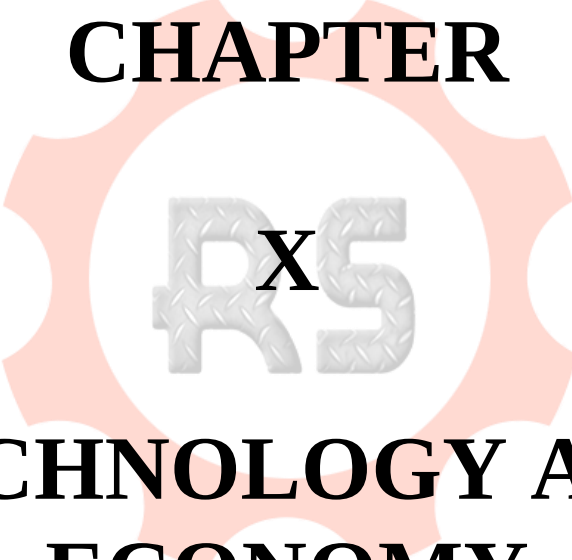
Estimate of bottom-laying liquidity of 135 million yuan

9.1.3 Total Project Investment

The total investment of the project is 966.5076 million Yuan, of which 135 million Yuan is the base liquidity. See the investment estimate table for details.

9.2 Funding

Investment in fixed assets is all SELF-FINANCING.



CHAPTER X TECHNOLOGY AND ECONOMY

RISESINCE STEEL (PVT) LTD

10.1 Basic Data

The construction period of the project is one year and the evaluation life span is 10 years.

10.2 Sensitivity Analysis

After calculating the risk factors that may occasionally be out of line during the production and operation of the project, in order to observe the impact on various economic indicators, it is considered that the change of sales revenue and operation cost has the most obvious impact on the indicators. Therefore, it is suggested that under mature conditions, the second phase construction should be carried out to increase more varieties of metal products and extend them to deeper products. To win more social and economic benefits in a better and more efficient way.



CHAPTER

XI

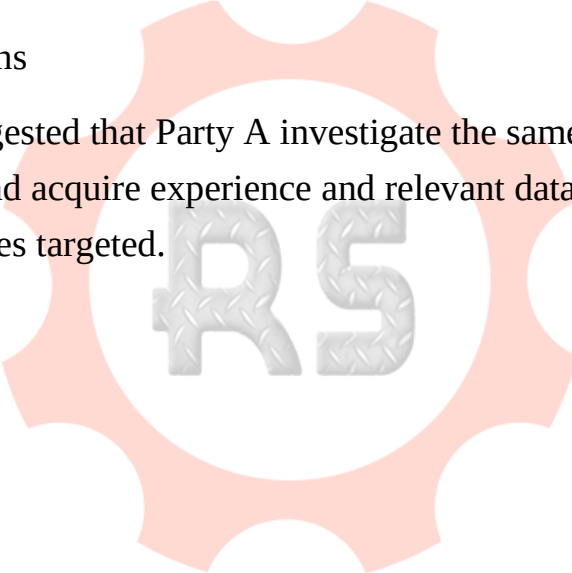
**PROBLEMS AND
SUGGESTIONS**

11.1 Problems

- 1- The dust collection system of electric arc furnace adopts air cooling, cyclone and cloth bag two-stage dust removal. Because the iron oxide particles are finer, accounting for 76% below 5 μ m, the specific gravity and use of the dust particles are not clear for the time being. Therefore, it can be developed for dust bag storage to prevent secondary pollution.
- 2- At the stage of project proposal, the estimated total power consumption capacity is less than the current estimate due to the uncertainties of the process plan, so the power department is hereby requested to reconfirm and approve it.

11.2 Recommendations

It is suggested that Party A investigate the same type of manufacturer as soon as possible and acquire experience and relevant data so as to make storage, transportation and sales targeted.



RISEINCE STEEL (PVT) LTD

ANNEX – III
Environmental Monitoring Reports

Ambient Air Quality Test Report

| | | | |
|----------------------|--|---------------------------|--------------------------------|
| Project Name: | EIA-Project Risesince Steel Mills
Gharo,Sindh | Test Report No | QTS/Rise-
St/23/6073 |
| | | Sampling Duration | 24'hrs. |
| | | Sampling Date: | 03/03/2023 |
| Sampling Description | Ambient Air, Sampling | Site ID =
Project Area | 24°43'57.96"N
67°37'38.02"E |

| S. No | Time | SO ₂ (µg/m ³) | NO (µg/m ³) | NO ₂ (µg/m ³) | *O ₃ (µg/m ³) | *PM _{2.5} (µg/m ³) | *PM ₁₀ (µg/m ³) | *SPM (µg/m ³) | Lead (µg/m ³) | Wind Speed (Km/h) | Wind Direction (Deg) | Air Temperature (°C) | Humidity (%) |
|---------|-------|--------------------------------------|-------------------------|--------------------------------------|--------------------------------------|---|--|---------------------------|---------------------------|-------------------|----------------------|----------------------|--------------|
| 1 | 10:00 | 11.1 | 16.6 | 26.6 | | | | | | 19.4 | 82 | 27 | 45 |
| 2 | 11:00 | 11.6 | 16.9 | 26.7 | | | | | | 17.3 | 91 | 28 | 47 |
| 3 | 12:00 | 12.2 | 17.0 | 27.0 | | | | | | 18.2 | 98 | 29 | 46 |
| 4 | 01:00 | 12.8 | 17.3 | 27.5 | | | | | | 18.8 | 103 | 30 | 45 |
| 5 | 02:00 | 13.0 | 17.5 | 27.9 | | | | | | 19.9 | 115 | 31 | 44 |
| 6 | 03:00 | 13.1 | 17.7 | 28.0 | | | | | | 17.3 | 117 | 32 | 43 |
| 7 | 04:00 | 13.3 | 17.9 | 28.4 | | | | | | 16.6 | 119 | 33 | 42 |
| 8 | 05:00 | 13.6 | 18.0 | 28.8 | | | | | | 16.3 | 123 | 33 | 41 |
| 9 | 06:00 | 13.7 | 18.3 | 29.0 | | | | | | 16.1 | 126 | 32 | 40 |
| 10 | 07:00 | 13.9 | 18.8 | 29.6 | | | | | | 15.9 | 124 | 30 | 39 |
| 11 | 08:00 | 14.1 | 19.1 | 30.1 | | | | | | 15.3 | 118 | 29 | 38 |
| 12 | 09:00 | 13.9 | 19.5 | 30.3 | | | | | | 15.2 | 114 | 28 | 39 |
| 13 | 10:00 | 13.6 | 19.7 | 30.6 | 17.2 | 63.6 | 134.8 | 383.8 | ND | 14.8 | 109 | 27 | 40 |
| 14 | 11:00 | 13.4 | 19.9 | 30.8 | | | | | | 14.4 | 112 | 27 | 41 |
| 15 | 00:00 | 13.2 | 20.0 | 31.1 | | | | | | 13.9 | 107 | 26 | 42 |
| 16 | 01:00 | 12.8 | 20.2 | 32.4 | | | | | | 13.5 | 103 | 25 | 43 |
| 17 | 02:00 | 12.6 | 20.1 | 32.6 | | | | | | 13.3 | 99 | 24 | 44 |
| 18 | 03:00 | 12.5 | 19.8 | 32.9 | | | | | | 15.2 | 87 | 23 | 45 |
| 19 | 04:00 | 12.4 | 19.3 | 32.7 | | | | | | 15.8 | 80 | 22 | 46 |
| 20 | 05:00 | 12.2 | 18.8 | 32.2 | | | | | | 16.0 | 86 | 23 | 47 |
| 21 | 06:00 | 12.0 | 18.3 | 31.9 | | | | | | 16.6 | 79 | 24 | 48 |
| 22 | 07:00 | 11.8 | 17.7 | 31.7 | | | | | | 16.9 | 73 | 25 | 46 |
| 23 | 08:00 | 11.5 | 17.2 | 30.6 | | | | | | 17.1 | 78 | 26 | 45 |
| 24 | 09:00 | 11.3 | 16.9 | 30.1 | | | | | | 16.8 | 87 | 28 | 44 |
| Minimum | | 11.1 | 16.6 | 26.6 | | | | | | 13.3 | 73 | 22 | 38 |
| Maximum | | 14.1 | 20.2 | 32.9 | 17.2 | 63.6 | 134.8 | 383.8 | ND | 19.9 | 126 | 33 | 48 |
| Average | | 12.7 | 18.4 | 29.9 | | | | | | 16.3 | 101.1 | 27.5 | 43.3 |
| SEQS* | | 120 | 40 | 80 | 130 | 75 | 150 | 500 | 1.5 | - | - | - | - |

SEQS= Sindh Environmental Quality Standards (The Gazette of Pakistan) Registered No. EPA/TECH/739/2014

*= The Average Calculation of 24'hr. , ND = Not Detected

Term & Condition:

- This report is not valid for any negotiations
- Report is valid for current batch(sample)
- This report is intended only for your guidance & not for legal purpose or for advertisement.

Remarks: The average concentration calculated for the 24 hours are well within guideline values set by SEQs.

| | |
|---------------------------------------|---|
| Sample Analyzed By: <u>Ather Adil</u> | Signature of Laboratory Incharge: _____
Name : Haseeb Arshad |
|---------------------------------------|---|

Ambient Air Quality Test Report

| | | | |
|----------------------|---|---------------------------|--------------------------------|
| Project Name: | EIA-Project Risesince Steel Mills
Gharo, Sindh | Test Report No | QTS/Rise-St/23/6073 |
| | | Sampling Duration | 24'hrs. |
| | | Sampling Date: | 03/03/2023 |
| Sampling Description | Ambient Air, Sampling | Site ID =
Project Area | 24°43'57.96"N
67°37'38.02"E |

| Parameter | Unit | Monitoring Duration | Average Obtained Concentration | SEQS | LDL-Limits | Methodology/Instrument |
|---|-------------------|---------------------|--------------------------------|-------|------------|-------------------------------------|
| Carbon Monoxide (CO) | mg/m ³ | 08 Hours | 0.08 | 5.0 | 0.0 | Non-Dispersive Intra Red (NDIR) |
| Nitrogen oxide (NO) | µg/m ³ | 24 Hours | 18.4 | 40.0 | 0.0 | Chemiluminescence |
| Nitrogen Dioxide (NO ₂) | µg/m ³ | 24 Hours | 29.9 | 80.0 | 0.0 | |
| Sulphur Dioxide (SO ₂) | µg/m ³ | 24 Hours | 12.7 | 120.0 | 0.0 | Ultraviolet Fluorescence Method |
| Ozone (O ₃) | µg/m ³ | 01 Hour | 17.2 | 130.0 | 0.0 | Non-Dispersive UV Absorption Method |
| Particulate Matter (PM ₁₀) | µg/m ³ | 24 Hours | 134.8 | 150.0 | 10.0 | β Ray Absorption Method |
| Particulate Matter (PM _{2.5}) | µg/m ³ | 24 Hours | 63.6 | 75.0 | 2.5 | |
| Suspended Particulate Matter (SPM) | µg/m ³ | 24 Hours | 383.8 | 500.0 | 1.0 | |
| Lead (Pb) | µg/m ³ | 24 Hours | ND | 1.5 | - | ASS Method |
| Wind Speed (m/s) | (Km/h) | 24 Hours | 16.3 | *N/A | 1.0 | (Haz-Scanner) EPAS |
| Wind Direction (Deg) | Degree | 24 Hours | 101.1 | N/A | 1.0 | (Haz-Scanner) EPAS |
| Air Temperature (°C) | (°C) | 24 Hours | 27.5 | N/A | - | Thermometer |
| Humidity (%) | (%) | 24 Hours | 43.3 | N/A | 1.0 | (Haz-Scanner) EPAS |

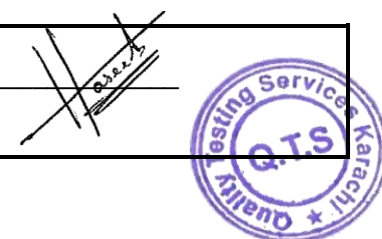
*SEQS= Sindh Environmental Quality Standards.
(24 Hours Standard for all the parameters Except O₃ and CO),
µg/m³= Micrograms per Cubic Meter
mg/m³= Milligrams per Cubic Meter
ND= Not Detected
LDL=Least Detection Limit
N/A= Not Available

Remarks:

The average concentration calculated for the 24 hours are well within guideline values set by SEQs.

Sample Analyzed By: Ather Adil

Signature of Laboratory Incharge: _____
Name : Haseeb Arshad



Report Ref. No.: QTS/ Rise-St/23/6074

Reporting Date: 09/03/2023

Project: **EIA-Project Risesince Steel Mills-Gharo, Sindh**

SAMPLE DESCRIPTION

Sample ID: Noise Level Test
Sample Description: Ambient Noise
No. of samples: 05
Sample Collected/Submitted by: QTS representative
Sampling Date 03/03/2023

NOISE TEST REPORT

| S.NO. | LOCATION/SOURCE | SEQS Limits :
75 dB(A) *Leq | | | |
|-------|--|--------------------------------|---------|---------|---------|
| | | Noise Level Readings | | | |
| | | Coordinates | Minimum | Maximum | Average |
| 1 | N-1, Front side Left corner boundary | 24 43 49.04-N
67 37 31.50-E | 60.2 | 61.6 | 60.9 |
| 2 | N-2, Front side Right corner boundary | 24 43 49.69-N
67 37 45.37-E | 61.4 | 63.3 | 62.3 |
| 3 | N-3, Back side Left corner boundary | 24 44 09.01-N
67 37 31.09-E | 59.8 | 62.1 | 60.9 |
| 4 | N-4, Back side Right corner boundary | 24 44 12.15-N
67 37 44.44-E | 61.3 | 62.7 | 62.0 |
| 5 | N-5, Near Road side NH-5 Karachi
Thatta Dual Carriage Way | 24 43 49.31-N
67 37 44.91-E | 64.4 | 66.8 | 65.6 |

SEQS= Sindh Environmental Quality Standard

*dB (A) Leq:= Time weighted average of the level of sound in decibel on scale which is relatable to human hearing.

Terms & Conditions:

- This report is not valid for any negotiations
- Report is valid for current batch(sample)
- This report is intended only for your guidance & not for legal purpose or for advertisement.

Comments:

The Noise level from the source is within acceptable level as describe in SEQs.

Sample Analyzed by: Ather Adil

Signature of Laboratory In charge:
Name: Haseeb Arshad



Lab Report Ref. No.: QTS/Rise-St/23/6075

Reporting Date: 09/03/2023

Report to: **EIA-Project Risesince Steel Mills-Gharo, Sindh**

SAMPLE DESCRIPTION

Sample ID: Bore Water
Sample Type: Grab Sample
Sample Collected/Submitted by: QTS representative
Sampling Date: 03/03/2023

ANALYTICAL TEST REPORT

| S.NO. | PARAMETERS TO BE ANALYZED | UNITS | RESULTS | TEST METHOD |
|-------|--|-------|---------|-----------------|
| 1 | pH value | - | 7.91 | USEPA 150.1 |
| 2 | Chemical Oxygen Demand (COD) | mg/L | BDL | Hach 8000 |
| 3 | Biochemical Oxygen Demand (BOD) ₅ at 20°C | mg/L | BDL | Hach 8043 |
| 4 | Total Suspended Solids (TSS) | mg/L | 06 | Hach 8006 |
| 5 | Total Dissolved Solids (TDS) | mg/L | 2876 | Hach 8160 |
| 6 | Nitrate (NO ₃) | mg/L | 0.20 | Hach 8206 |
| 7 | Nitrite (NO ₂) | mg/L | 0.013 | Hach 8206 |
| 8 | Fluoride (as F ⁻) | mg/L | 0.08 | USEPA 340.1 |
| 9 | Chloride (as Cl ⁻) | mg/L | 935 | Hach 8206 |
| 10 | Total Hardness (as CaCO ₃) | mg/L | 855 | Hach 8213 |
| 11 | Turbidity | NTU | 0.021 | Turbidity meter |

USEPA=United State Environmental Protection Agency method

Hach USA, method

BDL=Below Detection Limit

APHA-SM = American Public Health Association- Standard Methods for Water & Waste water Examination

- This report is not valid for any negotiations
- Report is valid for current batch(sample)
- The remaining portion of the sample will be discarded after 07 days unless otherwise instructed

Sample Analyzed by: **Hareem Zehra**

Signature of Laboratory In charge: _____
Name : **Haseeb Arshad**





AIR DISPERSION MODELING

Air Dispersion Modeling – Risesince Steel Mills Pvt. Ltd.

In order to comply, the Sindh Environmental Protection Act 2014, the quantitative analysis (simulation) of impact of the expected demission on air quality of the surrounding of the project site has been carried out using the United States Environmental Protection Agency (USEPA) approved regulatory air quality model i.e., AERMOD.

The objective of the current study of air dispersion modeling of emission from Electric Arc Furnaces and Heating Furnace proposed by M/s Risesince Steel Mills is to;

- Predict the impact (quantitatively) of the proposed Project on the air quality of the surrounding area
- Determine the compliance status to SEQS guidelines for ambient air when proposed plant would be operational.

“AERMOD” (American Meteorological Society/Environmental Protection Agency Regulatory Model) is a steady state regulatory air dispersion plume model developed by USEPA. It assumes the concentrations at all distances during a modeled hour which are governed by the temporally averaged meteorology of the hour. The AERMOD modeling system consists of two pre-processors and the dispersion model (i) AERMET-meteorological preprocessor and (ii) AERMAP for characterizing the terrain and generates receptor grids for the dispersion model. Figure 1 shows the GUI of Web Lakes Environmental 's AERMOD, USA.

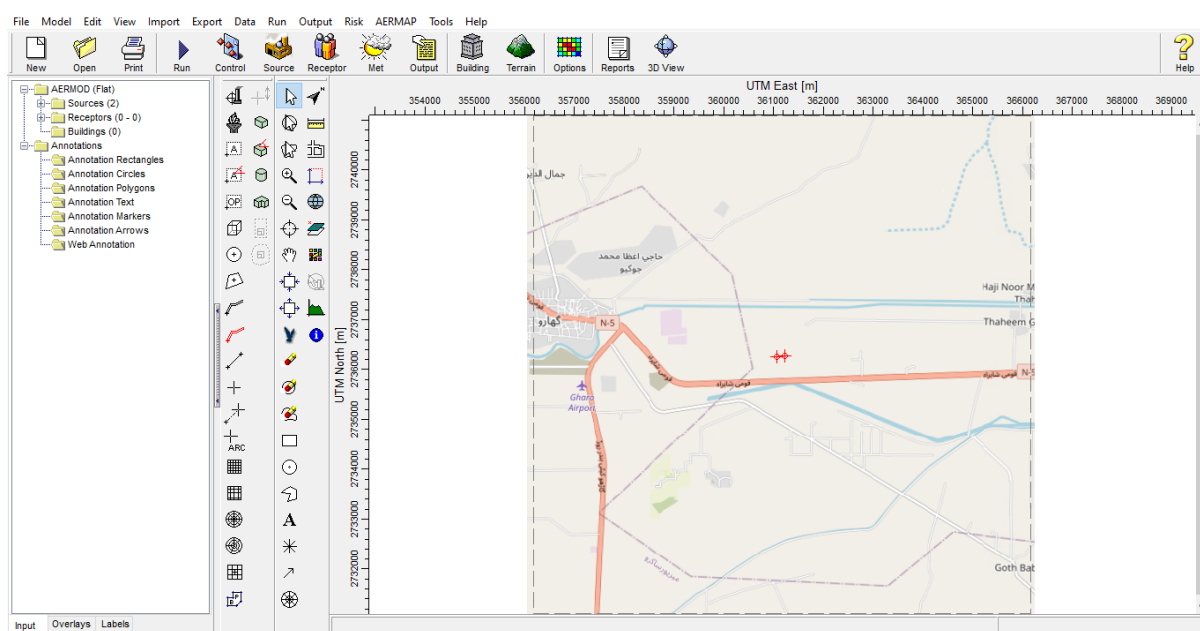


Figure 1: A GUI of AERMOD Modeling Tool

Stack and Emission Data

The stack design (stack diameter, exit temperature, exit velocity, stack height) and emission data (for CO, NO_x, SO₂ and SPM) used is given in Table-1 as provided by client.

Table-1 Stack and Emission Input Data (Controlled Conditions)

| Parameter | Unit | Values |
|--|-------------------|---------|
| <i>Electric Arc Furnace</i> | | |
| Temperature | °C | 3000 |
| Diameter | m | 1.5 |
| Stack height | m | 13.5 |
| Flow Rate | m ³ /s | 0.483 |
| CO Emission Rate | g/s | 0.85 |
| NOx Emission Rate | g/s | 0.72 |
| SO2 Emission Rate | g/s | 0.53 |
| <i>Heating furnace fueled by coal gas</i> | | |
| Temperature | °C | 200 |
| Diameter | m | 1.42 |
| Stack height | m | 60 |
| Flow Rate | m ³ /s | 11.5786 |
| NOx Emission Rate | g/s | 9.504 |
| SO2 Emission Rate | g/s | 0.0667 |
| SPM Emission Rate | g/s | 0.1207 |
| Source: Client Data | | |

Meteorological Input Data

The hourly surface meteorological data (in SAMSON format) and Upper Air Met Profiling data (in .fsl format) of Gharao acquired during 2020 was used in the present study. The met analysis indicate that the prevailing dominant wind is blowing from W-SW direction on annual basis.

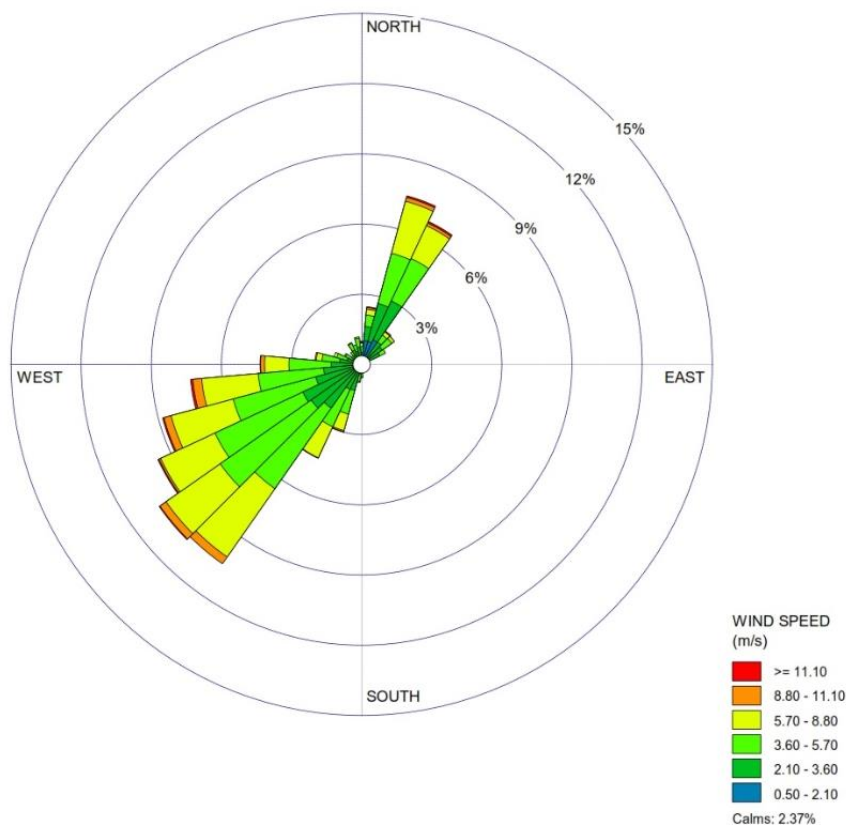


Figure 2: Wind Plot showing annual wind speed and direction in Y 2020

Baseline Air Quality Data

Baseline ambient air quality data collected by EPA certified lab in the project area is used as input in modeling the study.

Other Modeling Assumption

In order to predict dispersion modeling results over the entire modeling area 5 km radius from the project site. The study area was divided into a Uniform Polar Grid Network with total 180 grids and 36 radial directions. The terrain elevation (i.e., DEM) effect in the dispersion was incorporated using AERMAP tool (built in tool of AERMOD suit).

Following are model inputs in each of the assumed scenario;

- i. Universal Transverse Mercator (UTM) as projection for zone class of 42 in datum of World Geodetic System 1984 (WGS 84) was used to define the modeling domain
- ii. The model output was selected as 1st Highest Ranke values are plotted in form of counters in selected modeling domain (10 km radius from the project site)
- iii. Output emissions concentrations are modeled for 24-hrs and annual averaged period for NO_x, SO₂ and SPM while 1-hr and 8-hrs averaged for CO.
- iv. The Ground Level Concentrations (GLCs) of each pollutant was compared with SEQs for compliance status of the projected emissions in project surroundings localities.

The terrain data of Global SRTM30 with resolution of 900 m was used in this study to incorporate the local terrain effect in the dispersion.

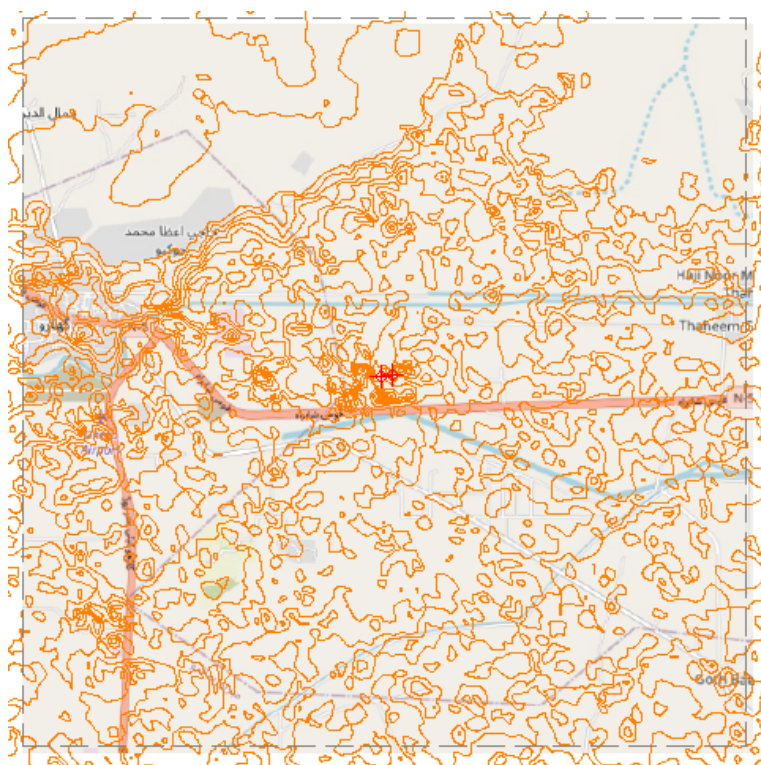


Figure 3: Digital Elevation Model for Terrain Effect

Modeling Output Data

The output data of model is present in two forms;

- i. In Contour plots of each pollutants showing the Ground Level Concentrations (GLCs) determining the impact area of emissions for 1-hr average, 8-hrs (for CO), 24 hrs and annual average for NO_x, SO₂ and SPM whichever is applicable in compliance with SEQS.
- ii. Tabular form showing the source contribution, magnitude of impact and compliance level of SEQS for each pollutant.

Results And Discussion

In present study, the model predicted the ground level concentrations of CO NO_x, SO₂ and SPM as using designed emission, meteorological and baseline ambient quality datasets. The predicted ambient air quality concentrations of these pollutants in/around the proposed project area were determined by sum of concentrations of emissions of these pollutants predicted by model and baseline ambient quality concentrations collected through field survey at the project site.

In next sections, the results were discussed pollutant wise showing the compliance status of predicted ambient ground level concentrations of each of pollutants due proposed project with SEQS in/around the project site. This discussion covers the results of emissions projected to be released into atmosphere from the incinerator with the assumption that emissions are only released from the stacks of the incinerator in the project area. Although model predicted the emission with 24-hrs and annual averaged concentrations of the pollutants, however, the concentrations of 24- averaged are compared with SEQS ambient limits as the baseline data is available for 24 hrly averaged basis in/around the proposed project area. The model depicts that impact (quantitatively) of emissions on ambient air quality from the proposed project when incinerator would be operational with the assumption that it would be operational for 24-hours throughout the year. The predicted concentrations of the pollutants were determined by summing up the (a) incremental concentrations predicted by model using hourly meteorological data of 2020 and (b) measured ambient air baseline data around the plant within radius of 5.0 km.

The model estimated incremental concentrations of emissions of CO, NO_x, SO₂ and PM₁₀ from the incinerator unit are 0.026 mg/m³ (8-hr averaged), 17.7 µg/m³ (24-hr averaged), 9.89 µg/m³ (24-hr averaged) and 0.0081 µg/m³ (24-hr averaged) respectively. This study predicted the ambient concentrations of CO, NO_x, SO₂ and SPM when incinerator would be operational are 0.106 mg/m³ (8-Hrs averaged), 41.4 µg/m³ (24-hr averaged), 22.59 µg/m³ (24-hr averaged) and 383.8 µg/m³ respectively. The other details are given in Table 3. The spatial distributions of incremental GLCs of CO, NO_x, SO₂ and SPM emissions from the project site are shown in below figures.

Conclusion

The AERMOD depicted that the predicted ground levels ambient air concentrations of CO, NO_x, SO₂, PM₁₀ and SPM would be within the SEQS limits of ambient air in the study area which is

characterized due to the dilution because of prevailing meteorological conditions and control measure built in the selected incinerator technology by the proponent.

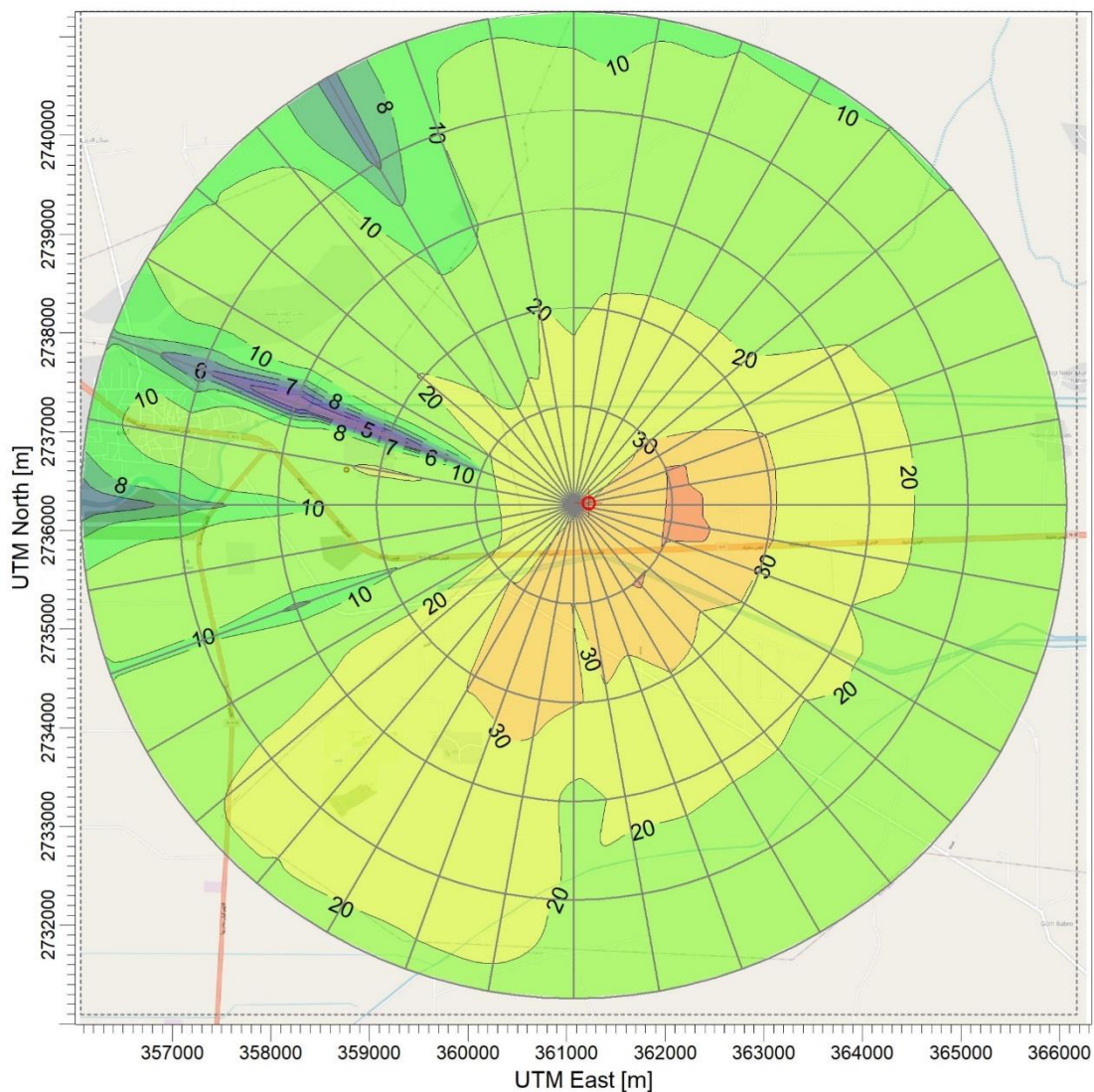
It is concluded that the impact of emission from proposed project to ambient air within domain of 5 km radius is predicted as insignificant with the given prevailing meteorological conditions within modeling domain and comply with SEQS limits for ambient air from the proposed furnaces and will not be impacting residents of Ghara Town.

Table 3: Process Contribution and Predicted Ambient Air Concentrations of Selected Criteria Pollutants in/around Proposed Steel Mill

| Pollutants | Averaging Time | Unit | Model Predicted Concentrations (a) | SEQS | Baseline Concentrations (b) | Predicted Ambient Concentrations (c=a+b) |
|-----------------|----------------|-------------------|------------------------------------|------|-----------------------------|--|
| CO | 8-hrs | mg/m ³ | 0.026 | 5 | 0.08 | 0.106 |
| | 1-hrs | | 0.0467 | 10 | - | - |
| NO _x | 24-hrs | µg/m ³ | 17.7 | 80 | 23.7 | 41.4 |
| | Annual | | 4.3 | 40 | - | - |
| SO ₂ | 24-hrs | µg/m ³ | 9.89 | 120 | 12.7 | 22.59 |
| | Annual | | 1.97 | 80 | - | - |
| SPM | 24-hrs | µg/m ³ | 0.0081 | 500 | 383.8 | 383.8 |
| | Annual | | 0.0021 | 360 | - | - |

PROJECT TITLE:

Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of CO 1-Hrly Averaged



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 46.7 [ug/m³] at (362056.09, 2736082.95)



COMMENTS:

SOURCES:

1

COMPANY NAME:

EMC Pakistan Pvt. Ltd.

RECEPTORS:

180

MODELER:

Muhammad Haseeb

OUTPUT TYPE:

Concentration

SCALE:

1:66,585

0

2 km

MAX:

46.7 ug/m³

PROJECT Name:

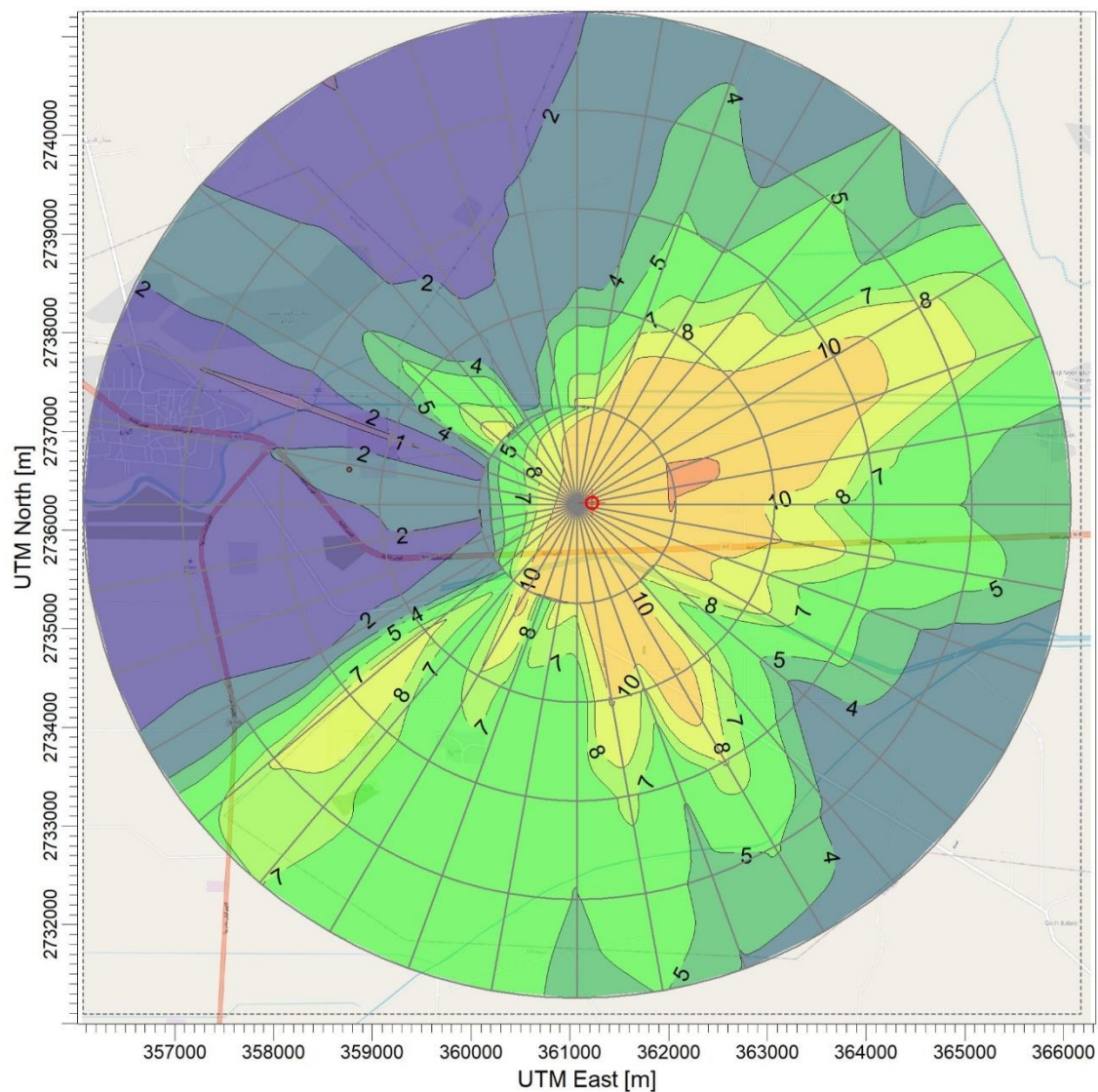


AERMOD View - Lakes Environmental Software

Figure 4: Spatial Dispersion of GLCs (incremental) of CO for 1-Hrly Averaged

PROJECT TITLE:

Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of CO 8-Hrly Averaged



PLOT FILE OF HIGH 1ST HIGH 8-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 26.2 [ug/m³] at (362056.09, 2736430.25)



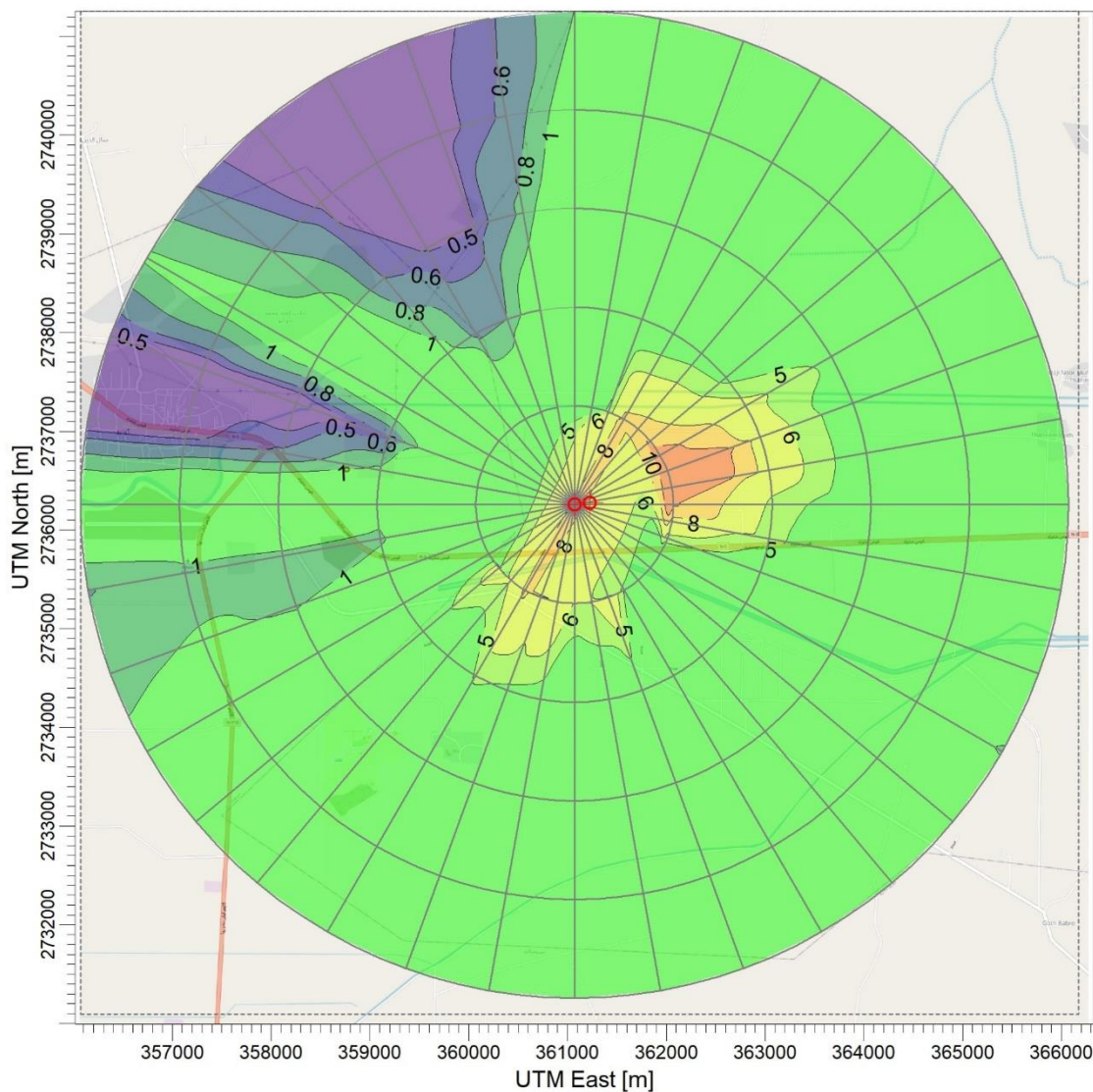
| | | | |
|-----------|------------------------------|--|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 1 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | 1:66,585 |
| | Concentration | 0  2 km | |
| | MAX: | | PROJECT Name: |
| | 26.2 ug/m³ | | |

AERMOD View - Lakes Environmental Software

Figure 5: Spatial Dispersion of GLCs of CO for 8-Hrly Averaged

PROJECT TITLE:

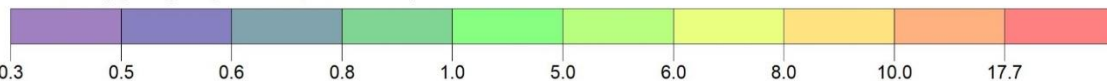
Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of NO_x for 24-Hr Averaged



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 17.7 [ug/m³] at (362010.97, 2736598.62)



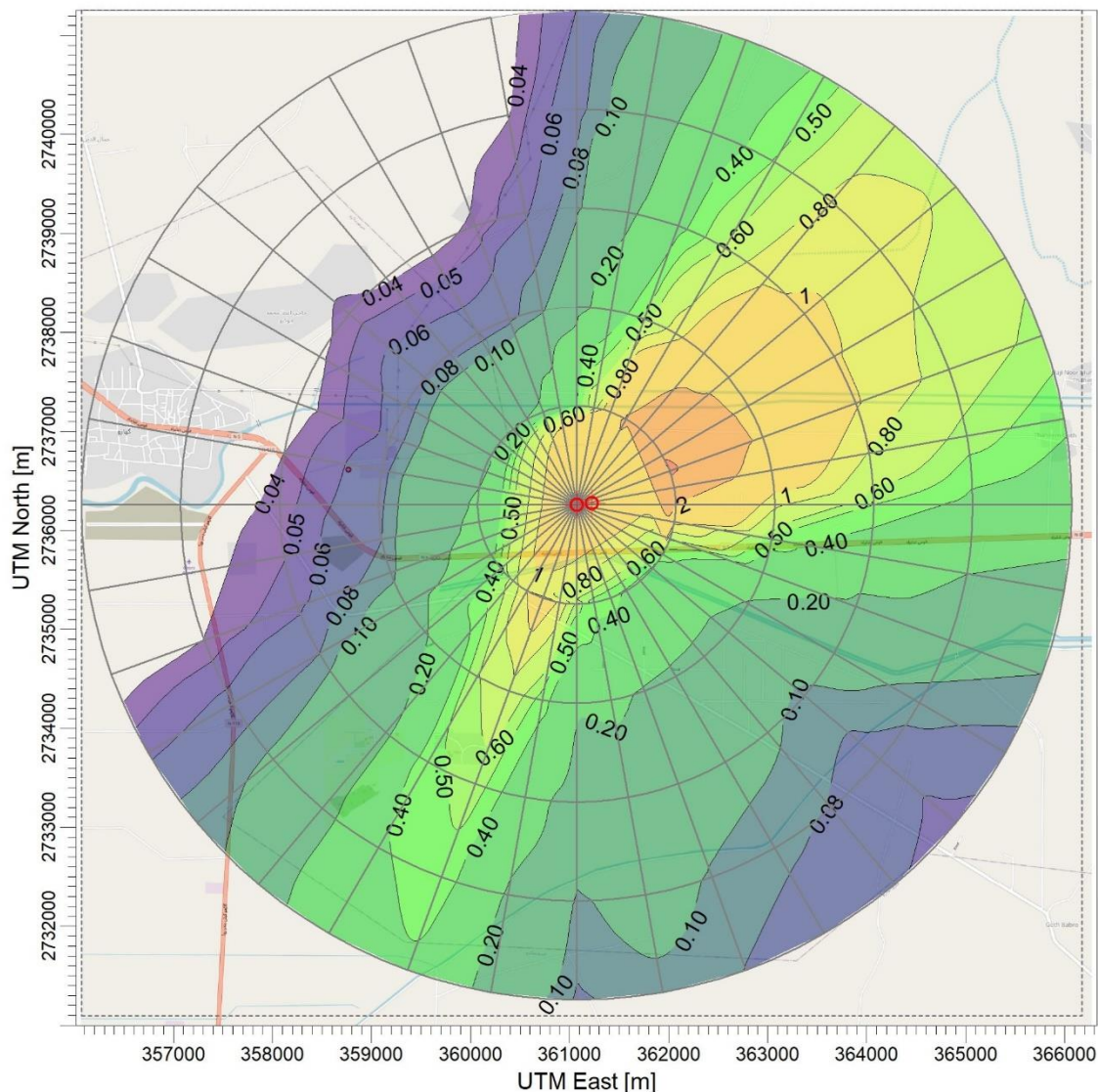
| | | | |
|------------------------------|----------------------|--|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 2 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | 1:66,585 |
| | Concentration |  | |
| MAX: | | PROJECT Name: | |
| 17.7 ug/m³ | | | |

AERMOD View - Lakes Environmental Software

Figure 6: Spatial Dispersion of GLCs of NO_x for 24-Hrly Averaged

PROJECT TITLE:

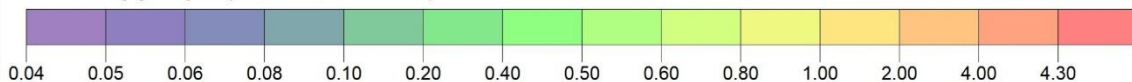
Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of NO_x for Annual Averaged



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 4.30 [ug/m³] at (362010.97, 2736598.62)

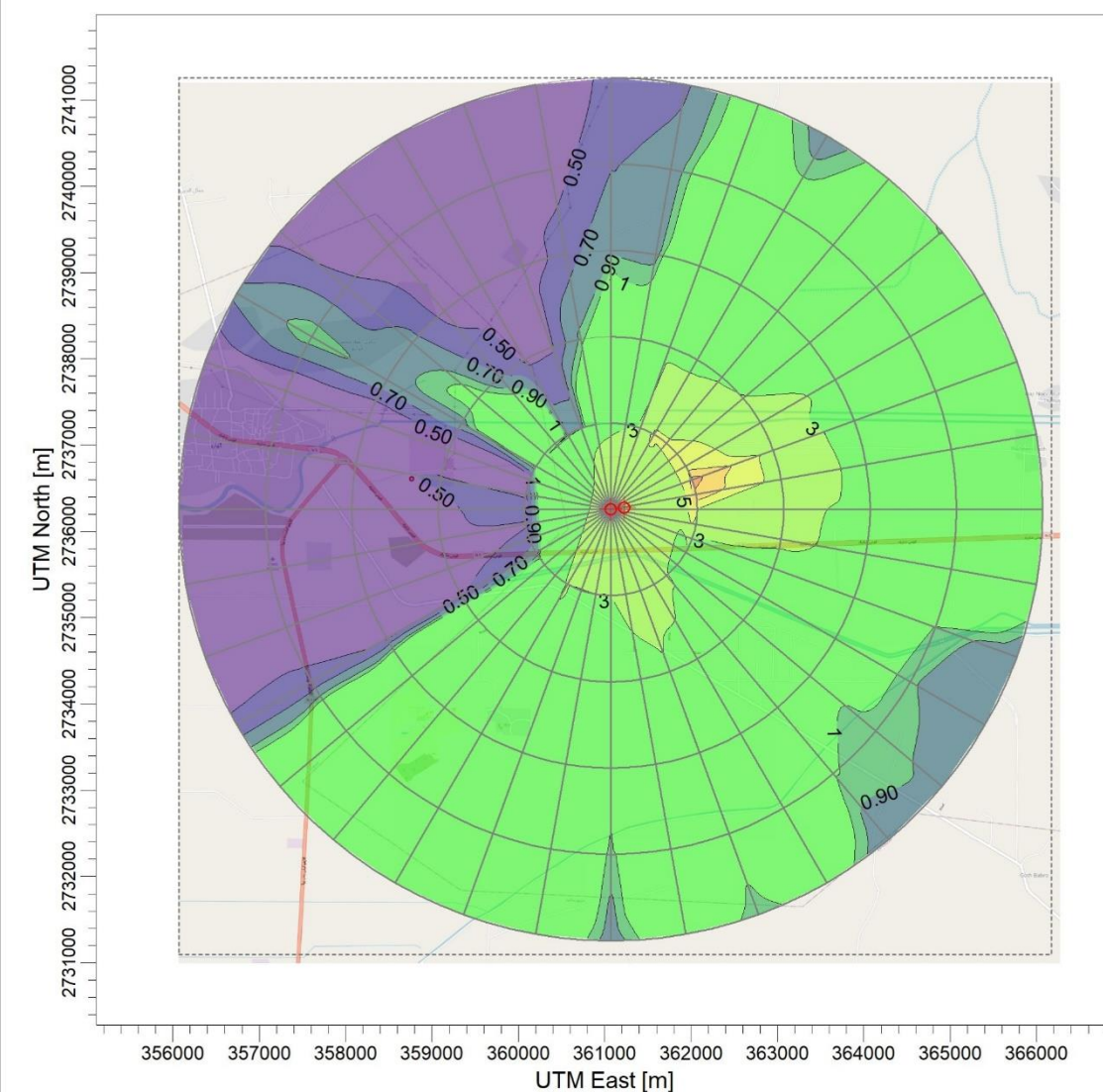


| | | | |
|---------------|---|------------------------|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 2 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| OUTPUT TYPE: | SCALE: | 1:66,585 | |
| Concentration | 0  2 km | | |
| MAX: | | PROJECT Name: | |
| 4.30 ug/m^3 | | | |

AERMOD View - Lakes Environmental Software

Figure 7: Spatial Dispersion of GLCs of NO_x for Annul Averaged

PROJECT TITLE:
Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of SO₂ for 24-Hrly Averaged



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 9.89 [ug/m³] at (362010.97, 2736598.62)



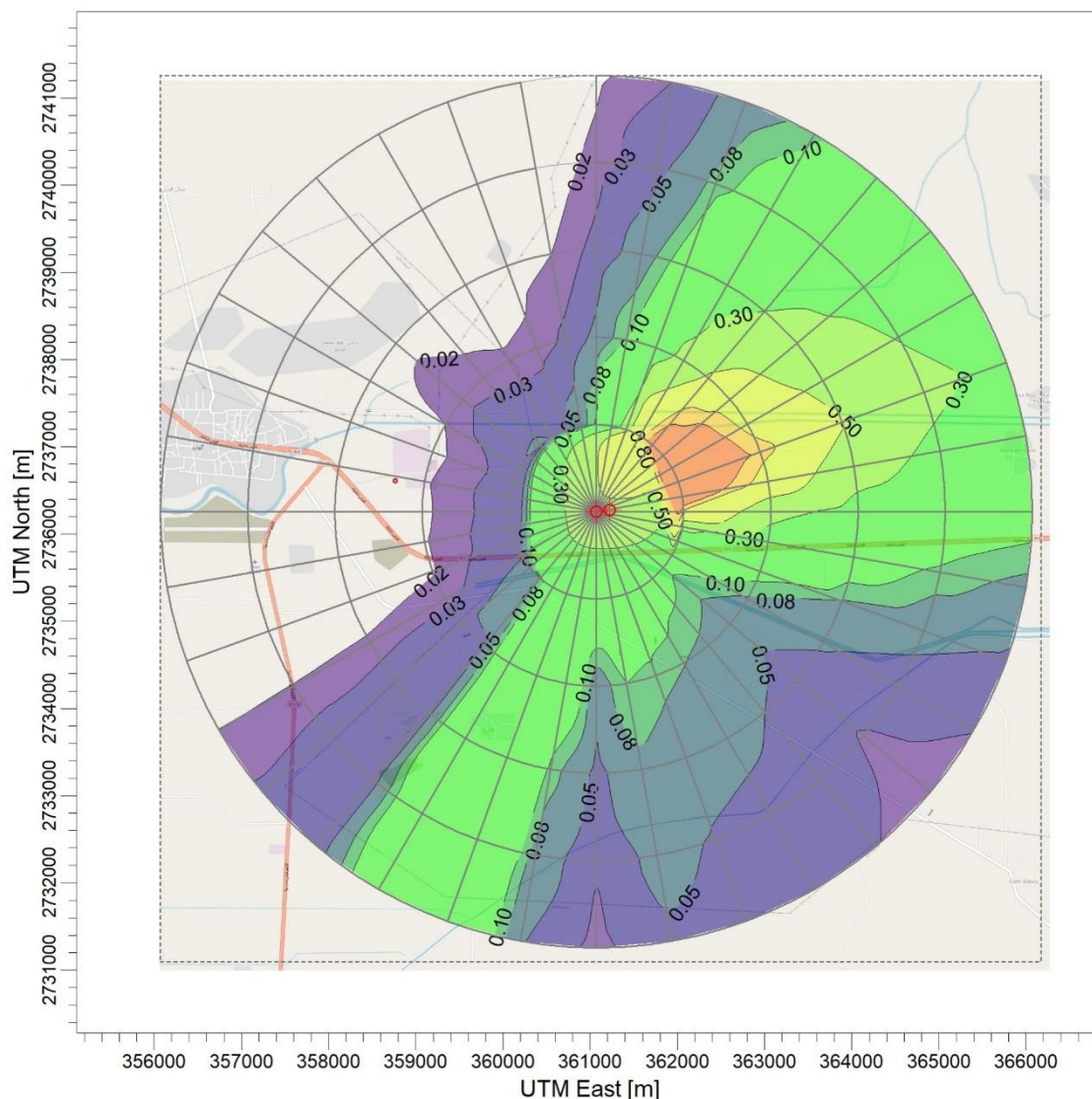
| | | | |
|-----------|------------------------------|---|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 2 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | |
| | Concentration | 1:76,000 | |
| | | 0  3 km | |
| | MAX: | | PROJECT Name: |
| | 9.89 ug/m³ | | |

AERMOD View - Lakes Environmental Software

Figure 8: Spatial Dispersion of GLCs of SO₂ for 24-Hrly Averaged

PROJECT TITLE:

Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of SO₂ for Annual Averaged



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 1.97 [ug/m³] at (362010.97, 2736598.62)



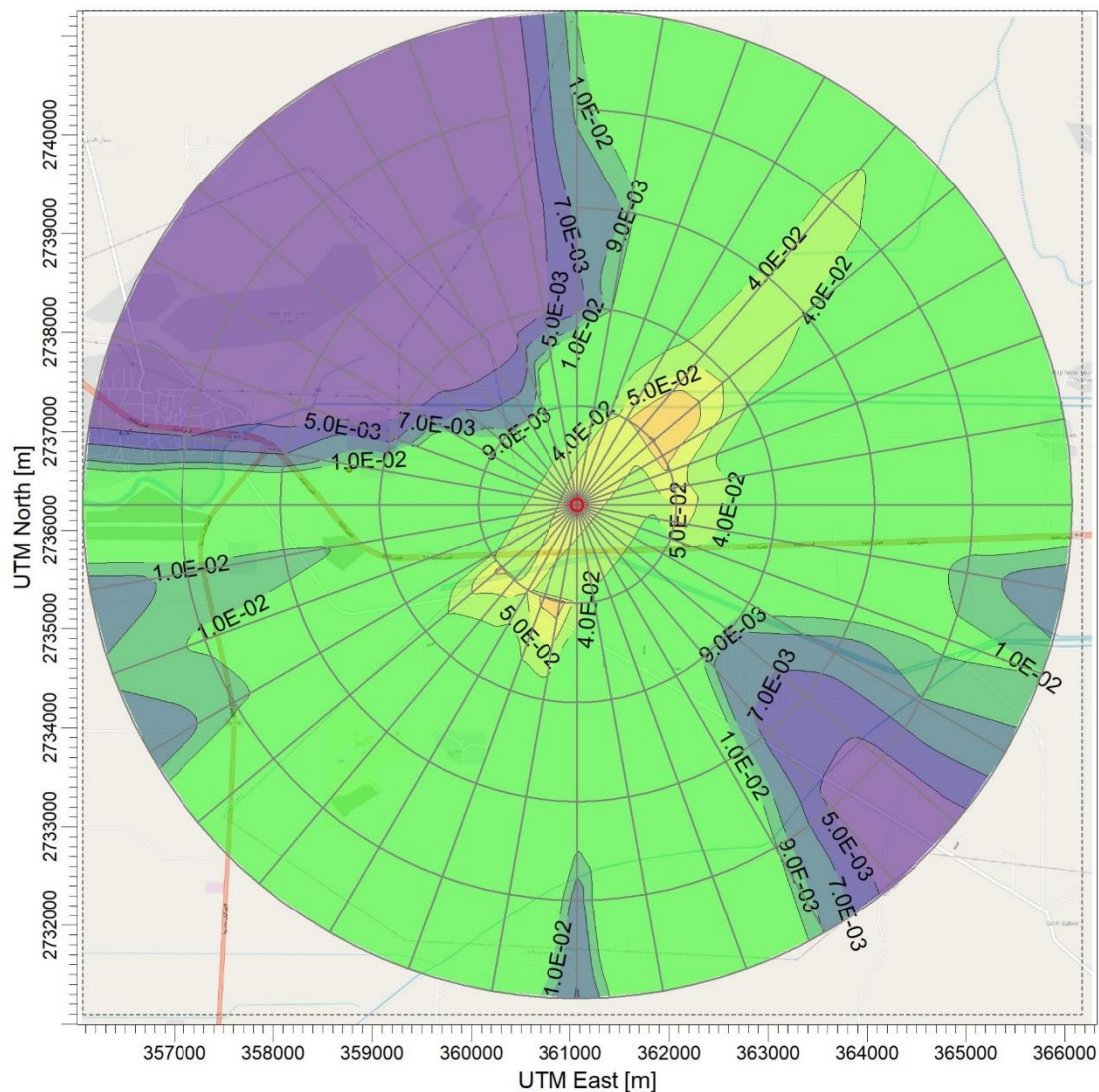
| | | | |
|-----------|------------------------------|--|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 2 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | |
| | Concentration | 1:76,000 | |
| | | 0  3 km | |
| | MAX: | | PROJECT Name: |
| | 1.97 ug/m³ | | |

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Figure 9: Spatial Dispersion of GLCs of SO₂ for Annul Averaged

PROJECT TITLE:

Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of PM for 24-Hr Averaged



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 8.1E-02 [ug/m³] at (361837.32, 2736899.39)

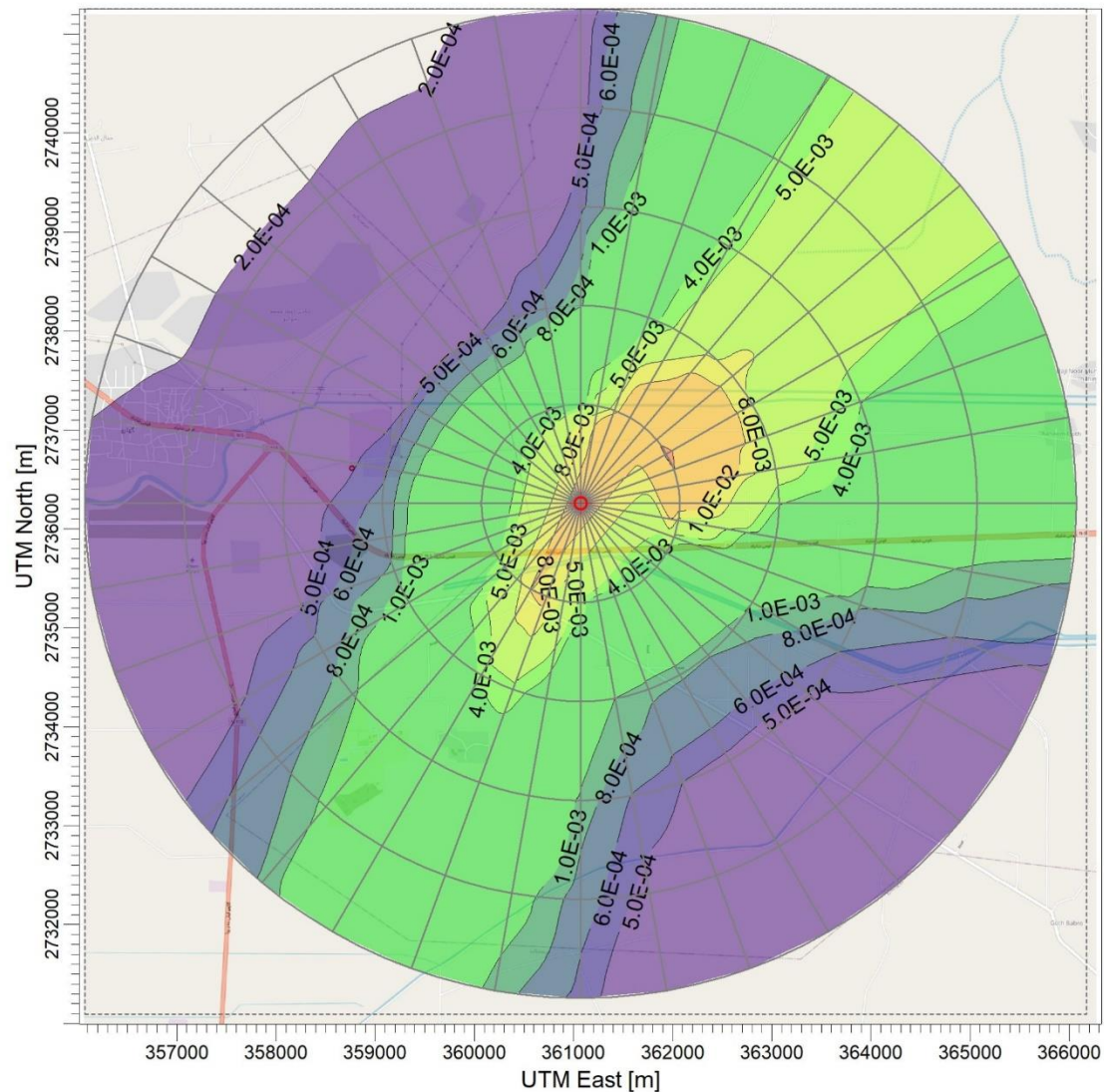


| | | | |
|---------------|----------------|--|---|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 1 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: |  |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | |
| Concentration | 1:66,585 | | |
| | |  | |
| | MAX: | PROJECT Name: | |
| | 8.1E-02 ug/m^3 | | |

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Figure 10: Spatial Dispersion of GLCs of SPM for 24-Hrly Averaged

PROJECT TITLE:
Air Dispersion Modeling – Risesince Steel Mill
Spatial Dispersion of GLC (incremental) of PM for Annual Averaged



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 2.1E-02 [ug/m³] at (361937.31, 2736756.60)



| | | | |
|-----------|---------------------------------|--|----------|
| COMMENTS: | SOURCES: | COMPANY NAME: | |
| | 1 | EMC Pakistan Pvt. Ltd. | |
| | RECEPTORS: | MODELER: | |
| | 180 | Muhammad Haseeb | |
| | OUTPUT TYPE: | SCALE: | 1:66,585 |
| | Concentration | 0  2 km | |
| | MAX: | PROJECT Name: | |
| | 2.1E-02 ug/m³ | | |



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Figure 11: Spatial Dispersion of GLCs of SPM for Annual Averaged