Safe EnviroSolutions

150/Al-Saeed building Room #102, Main Ferozepur Road, Ichra Metro Station, Lahore.

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EXECUTIVE SUMMARY

1. Title of the Project

This report presents the findings of the Environmental Impact Assessment (EIA) study of slaughter house under name & style M/S Ejaz Qadeer & Sons.

2. Location of the Project

The said project is located at Mouza Kot Khawaja Saeed, Bhamma Road Tehsil Shalimar District Lahore.

3. Name of the Proponent

The proponent of the said project is Samina Kausar W/O Muhammad Aijaz Qadeer R/O House No: 12, Street No: 1 Muhallah Dilshad Park, Shad Bagh Lahore.

4. Name of the Organization Preparing Report

To comply with IEE/EIA regulations 2022 as per Punjab Environmental Protection (Amendment) Act (PEPA) 2012, the proponent of Ejaz qadeer & Sons has entrusted the ***Safe Enviro Solutions*.**

Company office address: *99/Burj Al-Saeed Plaza Room #110, Main Ferozepur Road Ichra, Lahore.*

Phone: *+92 336 8779107*

Email: *safe.envirosolutions@gmail.com*

5. A Brief Outline of the Proposal

The subject project is about setting up a facility where large & small animals are slaughtered and processed into meat for export. The animals that are commonly slaughtered for food are cattle (beef), sheep (lamb & mutton). The cost of the project is 50 Million PKR. The total area of the plot is 5-Kanals. The capacity of the project is 300 beef animals (cow, buffaloes) /day & 800 mutton (goats)/day. The 6 chillers rooms will be present for freezing the animals after being slaughtered.

Salient Features of the Project:

Proponent Name:	Samina Kausar
Project Title:	Ejaz Qadeer & Sons (Slaughter House)
Project Location:	Mouza Kot Khawaja Saeed , Bhamma Road Tehsil Shalimar District Lahore
Name of organization preparing report	Safe Enviro-Solutions
Total Area	5 Kanals
Raw Materials	Beef & Mutton Animals (Slaughter house)
Capacity	The capacity of the project is 200 animals per hour.
Finished Products	Frozen Meat for export
Source of Water	Groundwater ; RO is provided to ensure quality of products
Cost of Project	PKR 50 Million
Nearest Road	Bhamma-Jogian Road
Source of Power:	WAPDA (200 KVA)
Wastewater:	Wastewater from the process will be disposed off treating through treatment plant in existing ganda nullah nearby site.
Solid Waste Management:	Recyclable waste like cartons, tetra pack packaging are reused however domestic waste is collected on daily basis. Bins are kept around the project premises. Project related waste will be sale out to certified contractor.

Fire Hydrants & Fire Extinguishers will also be present to minimize the potential negative impacts in case of fire emergency. Park Area is present for recharging the ground water table. Sewerage water will be disposed of to the drain. Sanitary workers will be hired by the management for proper collection of solid waste. Final disposal of the solid waste will be done in accordance with the TMA facilities

6: Project Impacts and Recommendations for their Mitigation

Table given below shows the project impacts; related with construction and operation of the Project. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development.

Table – E.1: Project Impacts and their Mitigations Measure

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
CONSTRUCTION PHASE		
Dust emissions likely to occur during the excavation of the top soil and	Minor/Short Term	– Watering all active construction areas when necessary. – Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. – Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. – Fast growing trees will be planted around the project area to act as a wind breaker to reduce the particulate matter. – Provision of PPEs to workers
Oil spills from machines to be used on site and vehicles.	Minor/Short Term	– The contractor will control the dangers of oil spills during construction by maintaining the machinery in specific areas designed for this purpose hence will not be a serious impact as a result of the construction.
Noise pollution due to the moving machines (mixers, tippers, communicating workers) and incoming vehicles	Minor/Short Term	– Install portable barriers to shield compressors and other soffice stationary equipment where necessary. – Use quiet equipment (i.e. equipment designed with noise control elements). Install sound barriers for pile driving activity. – Limit pickup trucks and other soffice equipment, observe a common sense

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
		approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.
Workers accidents and hazards during construction.	Minor/Long Term but reversible	– Provision of appropriate and adequate Personal Protective Equipment (PPE) to employees. – Enforcement and proper use of PPE by all construction workers. – Provision of appropriate tools, equipment and machinery in sound working conditions to employees. – Proper arrangement of lighting to reduce accidents. – Development of clear policies on treatment of injured personnel.
Dust and air pollution	Minor/Short Term	– Vehicles travelling to and from the construction site must adhere to speed limits so as to avoid producing excessive speed limits – A speed limit of 30km/hr must be adhered to on all dirt roads – Access and other cleared surfaces including backfilled tranches must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust – Vehicles and machinery are to be kept in good working order and to meet manufacturers specifications for safety, fuel consumption etc
OPERATIONAL PHASE		

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
Particulate emissions and generator stack emissions	Moderate/Long Term	– Clean and maintain a sufficient level of temperature and humidity in every section. – Stacks of generators and power engines are equipped with air emission control technology. – Proper handling of raw material to minimize the likelihood of fugitive dust and emissions during storage. – Monitoring of Ambient air parameters (Particulate matter, CO SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS. – Sprinkling of water is being done for dust suppression. – Plantation of indigenous trees within the premises and along the boundary.
Water Quality	Minor/Long Term	– Wastewater generated from the process of aforesaid unit during washing of tanks and municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic Tank. The wastewater is treated in installed wastewater treatment plant.
Solid waste – Activities within the Proposed Slaughter Housemay generate	Minor/Long Term	• Solid waste generated from unit comprises of final product packaging waste like cartons, material bags, tetra pack cartons etc. Most of the generated waste is recyclable. The rejected raw material will be handed back to the supplier. The generated domestic solid waste will be handled as per area

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
significant volumes of solid wastes. Solid waste produce during the operation phase will comprise of domestic solid waste such as paper, rags & food waste		practices. – Implementation of waste management program consisting of reduce, reuse and re-cycling of materials – Systematic collection and protected storage of waste – Waste disposal at appropriate and designated site

6. Proposed monitoring

Ambient Air Monitoring

Regular Monitoring for ambient air should be conducted during construction and operation phase as per PEQS rules and report should be submitted to EPA Punjab on annually basis.

Noise

Regular Monitoring for noise level should be recorded periodically during construction and during operation phase it should be conducted on regular basis and report should be submitted to EPA Punjab.

Water Quality

Regular Monitoring for ground water should be conducted during construction and operation and report should be submitted to EPA Punjab. Record should be maintained regarding.

Sr No.	Parameters	Monitoring Schedule
1	Ambient Air Monitoring (NO_x, Co_x, So_x, VOCs, PM_{10})	Regularly
2	Noise Level	Regularly
3	Water Quality	Regularly

GLOSSARY

Words	Dictionary
Residential	For living of people
Economically viable	Suitable in monetary terms
Endangered species	Which will extinct in near future
Threatened species	Those in danger of extinction
Aesthetic beauty	Scenic beauty of the area
Ambient	Surrounding of all sides
Topography	Physical features of the site
Silence zone	Where transmission/sound cannot be received
Anticipated Impacts	Expected Impacts
Baseline	Conditions prevailing at the time of study or before initiation of any project
Environment Budget	Monetary assets reserve for Environmental activity
Evaluation	Assessment
Fauna	Variety of Animals found in an area
Flora	Variety of Plants found in an area
Million	10,00,000
Mitigation Measures	Measures aimed to curtail or entirely control an adverse impact or to compensate some loss or cause additional improvements
Orientation Session	Direction Session
Nuisance	Annoyance

pH	Negative log of hydrogen ion concentration
Potential Issue	Problems likely to arise
Proposed Project	Planned activity
Residual Impacts	Impacts left behind after implementation of the mitigation measures
Significant	Important

Table of Contents

INTRODUCTION

1.1 Scope of the Study

The scope of this EIA study aims at collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the proposed project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures are proposed in this EIA Report.

1.2 Study Objectives

The specific objective of the EIA study includes the following:

- Collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare baseline environmental profile;
- Identification, prediction and evaluation of potential environmental impacts of the proposed project;
- Suggesting mitigation measures to minimize the adverse impacts of the project; and
- Preparation of an Environmental Management Plan (EMP).

1.3 Purpose of the Report

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to proposed project construction along with environmental impact statement followed by appropriate Environmental Management Plan. EIA of this project has been carried out in order to conform to the requirements of the **Punjab Environmental Protection Act, 1997, amended in 2012 under section 12** of which no development activity can be initiated anywhere in Punjab without filing before the designated government agency an Environmental Impact Assessment, as may be required and having an NOC for construction and operation.

The purpose of this EIA is to predict all the probable adverse environmental impacts and plan adequate mitigation measures for eliminating, controlling or compensating them and drafting the complete institutional framework for their implementation.

1.4 Identification of the Proposed Project and Proponent.

The proponent of the said Slaughter House is Samina Kausar W/O Muhammad Aijaz Qadeer. According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments, the construction/development of this Slaughter House falls in the category of projects mentioned in Schedule II, category B, under the clause "16"

Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

1.5 Detail of Environmental Consultants

This EIA study has been carried out by Safe Enviro-Solutions. This company comprises environmental engineers, Senior Environmentalists, chemical engineers and botanists. The companies address and contact information is as follow:

Office: 99/Burj Al-Saeed Plaza Room #110, Main Ferozepur Road Ichra, Lahore.

Phone: 0336-8779107 ***Email: safe.envirosolutions@gmail.com***

Table 1: Detail of team conducting EIA study with qualification and position in team.

Name	Qualification	Position in the EIA/IEE Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Muhammad Shahzad	M.Phil Environmental Science GCU Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Faisal Irshad	BS (Hons) Environmental Engineering (UET Lahore)	Environmental Engineer

Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)

**Only the main roles of the team members are given. However, their role was not restricted to these, rather it also includes many other studies in their respective fields in the context of this EIA studies.*

1.6 Brief Description of Nature, Size and Location of Project

Title of the Project

This report presents the findings of the Environmental Impact Assessment study of Slaughter House facility by M/S Ejaz qadeer & Sons.

Location of the Project

The said project is located at Mouza Kot Khawaja Saeed, Bhamma Road Tehsil Shalimar District Lahore.

A Brief Description of the Project

The subject project is about setting up a facility where large & small animals are slaughtered and processed into meat products. The animals that are commonly slaughtered for food are cattle (beef & veal), sheep (lamb & mutton). This slaughterhouse will be set up on modern standards and promise to provide highly hygienic meat products for export purpose. The cost of the project is 50 Million PKR. The total area of the plot is 5-Kanals. The capacity of the project is 300 beef animals (cow, buffaloes) /day & 800 mutton animals (goats)/day. The 6 chillers rooms is also present for freezing the animals after being slaughtered.

1.9) Structure of the Report

Section 1: Introduction briefly presents the project background, objectives, methodology and need of the EIA study.

Section 2: Policy, Legal and Administrative Framework comprise policy guidelines, statutory obligations and roles of institutions concerning EIA study of the Project.

Section 3: Description of the Project furnishes information about the location of the proposed Project, cost and size of the project, its major components and alternatives considered for the proposed project to select at the preferred alternative for detailed environmental assessment.

Section 4: Environmental Baseline Profile establishes baseline conditions for physical, biological and socio-economic conditions prevalent in the project area.

Section 5: Screening of Potential Environmental Impacts and Mitigation Measures identifies, predicts and evaluates impacts of the project activities during the construction and operation stages and deals with the measures proposed to mitigate potential environmental impacts of the proposed project.

Section 6: Environmental Management and Monitoring Plan outlines institutional arrangements for the implementation of the proposed mitigation measures, training needs of the staff for implementation of the mitigation measures, monitoring requirements and monitoring cost.

Section 7: Conclusions and Recommendations provide the outcome of the study and major observations of EIA and suggestions for environmental management and pollution control.

Section 8: References.

Screening:

The subject project is slaughter house.

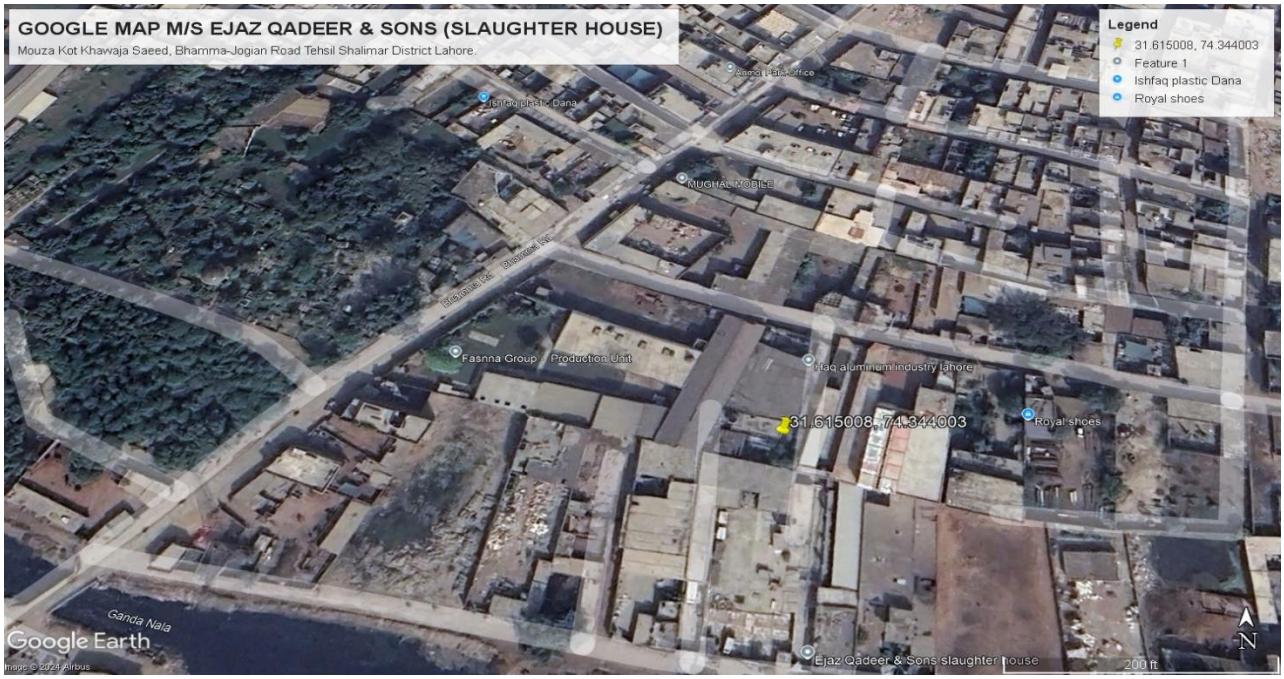
According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments, the construction of this slaughter house falls in the Schedule II-Category B (16) i.e Slaughter House, and requires to conduct Environmental Impact Assessment (EIA) study.

Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

Scoping:

Spatial and Temporal Boundaries of Environmental Assessment

Project site is located in industrial area overall. Already operation of many industries are being taking place near around. Currently there is no significant population center present in the area. The current project site is 2 kilometers from population centers. No environmental sensitive area is present that could be impacted due to the current project.



1.5.3 Important issues and concern raised during consultation

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised which have also been discussed in length in Chapter 9 Stakeholder Consultation:

- Wastewater should be treated before ultimate disposal.
- Locals should be preferred for the job opportunities.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.

- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.
- Workers should be hired from local community.
- Indigenous tress around the facility should be planted to control air pollution.

1.5.4 Significant impacts and factors to be determined

Main impacts and factors to be determined are;

- Occupational Health and safety
- Site Security
- Traffic Management
- Hygiene management
- Community impacts
- Control Air emissions
- Job opportunities for locals
- Confined noisy activities
- Resource conservation
- Avoid excessive water consumption
- Energy efficient techniques must be adopted
- Proper site restoration after construction
- Tree plantation at designated green areas
- Emergency preparedness

DESCRIPTION OF THE PROJECT

3.2 Type and Category of the Project

The proponent of the said project is Samina Kausar W/O Muhammad Aijaz Qadeer. According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments, the construction of ***Slaughter House,*** falls in the category of projects mentioned in Schedule II, category B, under the clause "16".

For EIA, of PEPA, Regulations, 2022, require Environmental Impact Assessment. Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

2.3 Objectives of the Project

- To establish the business of proponent
- To establish a slaughter house in order to export quality halal meat
- To create job opportunities for the locals
- To raise the socioeconomic status of the area

3.4 Alternatives

A land under undisputed ownership of the proponent is selected for the Establishment of Unit. Selected site is surrounded by other industries and no other alternative site is considered for Said Project. The site is well located in regard to the following:

• Plot near other industries

• Easy road access to the market

• No settlements in close vicinity

• No ecologically sensitive or declared protected area within safe radius of the selected site

3.4.1 Do Nothing Alternative

Do-nothing alternative is not feasible due to the following reasons

- The said project is going to be located on land which was already owned by the proponent.
- There is no sensitive area around the project site, the said Slaughter House is going to be located in industrial area.
- Withdraw the opportunity of employment for the locals. The said project will provide direct employment to many people.

3.4.2 Technology Alternatives

One modern and state of the art Proposed Slaughter House will be constructed. The said *unit by Ejaz qadeer & Sons* will be built according to the applicable Best Available Technologies (BAT) defined for similar industry.

The proposed site is to be located in an area which is devoid of any biodiversity including forestry, wildlife, migratory animals, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area. Agriculture and labor is the major source of income for the people of nearby villages. Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the project site.

The said location was determined to be the most convenient location in proximity to the market and domestic supply chain. The selected site has least environmental & social impacts.

3.5 Location and Site Layout of the Project

3.5.1 Location of the Project

Location of the Project

The said project is located at Mouza Kot Khawaja Saeed, Bhamma Road Tehsil Shalimar District Lahore.

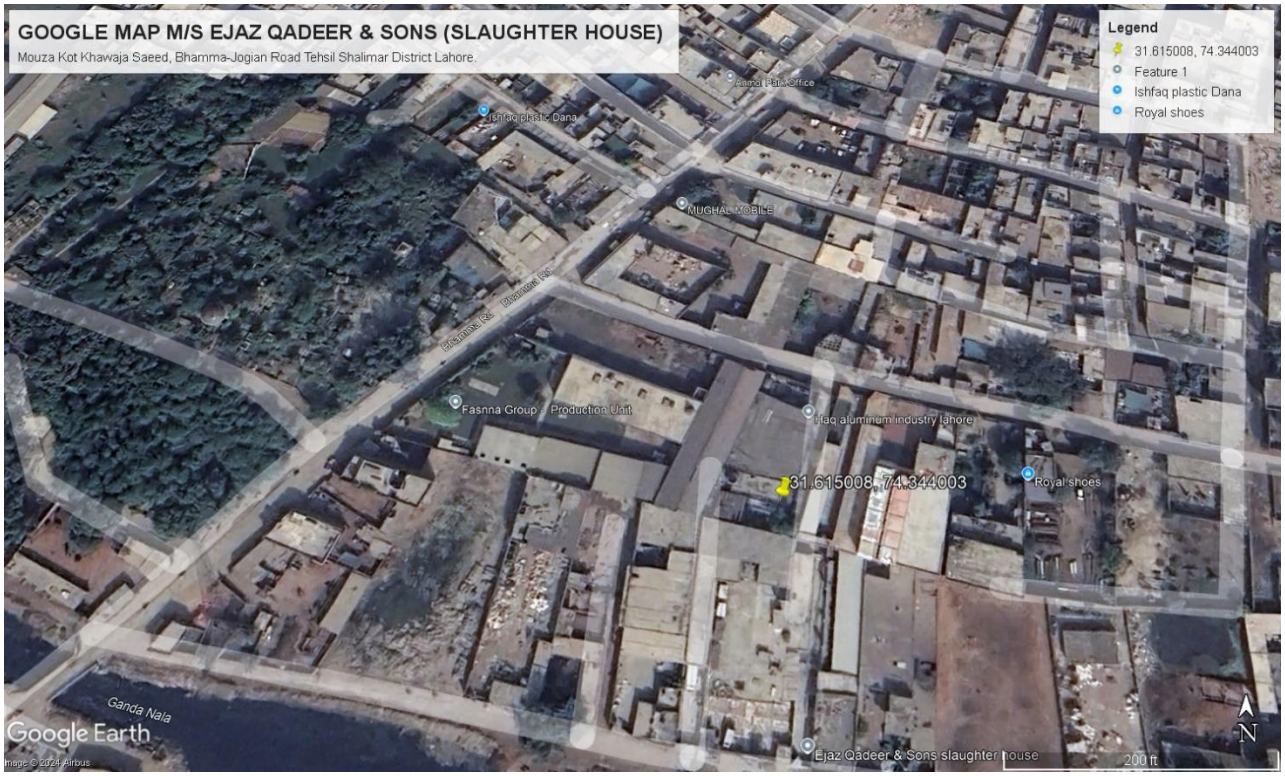
The project is surrounded by the following:

South	Bhammay Jogian Road
North	Haq Aluminum industry

East	Industry
West	Gandha Nullah

3.5.2 Layout Plan of the Project

Layout map of the project site is annexed at the end of the EIA report.



Google map of project site:

3.6 Road access

Main roads and markets are in easy and close access of the project site. The said Proposed Slaughter House by Ejaz qadeer & Sons is situated on Bhammay Jogian road.

3.7 Project Administrative Jurisdiction

The proposed project lies in the city of Lahore in Punjab Province.

3.8 Vegetation Features of the Site

Land is clear and there are no plants or vegetation on site. Significant or well-shaped trees and shrubs are not present on the project site. There is neither the biologically important or endangered species of plant were present and nor the plant or vegetation of any significance stands at the site to be dismantled. However, various local plants will be grown at the project site in the open areas and grounds.

3.9 Cost and Magnitude of the Project

The total cost of the project would be around PKR 50 million. The project includes the site survey, geotechnical investigations, site clearing work, infrastructure work, structural work, electrical and mechanical works and Activities of construction includes the following:

a) Demarcation of the Area for various facilities

b) Infrastructure works (Pathways, water supply, sewerage and drainage, gas, electrical works etc.)

c) Installation of street lights

d) Plantation of plants and grass

and installation of required machinery.

3.10 Schedule of Implementation

a- Phase-I (Start-up Phase)

Phase -1 is the start-up phase, which involves construction of boundary wall around the entire site. Most of the NOC's from various departments are in approval process and this report has been prepared to obtain NOC from EPA Punjab. It will take 2-3 months.

b- Phase-II (Main implementation Phase)

In phase II, required accessories & machinery will be purchased. During this phase, will be brought on site and installed. It will take 3 months.

c- Phase-III (Wrap-up Phase)

Phase-III is the wrap-up phase. In this phase, all outstanding activities will be completed, required staff will be recruited, and contracts with suppliers and purchasers will also be signed after which the operational phase finally commenced. It will take 3 months.

3.11Description of the Project:

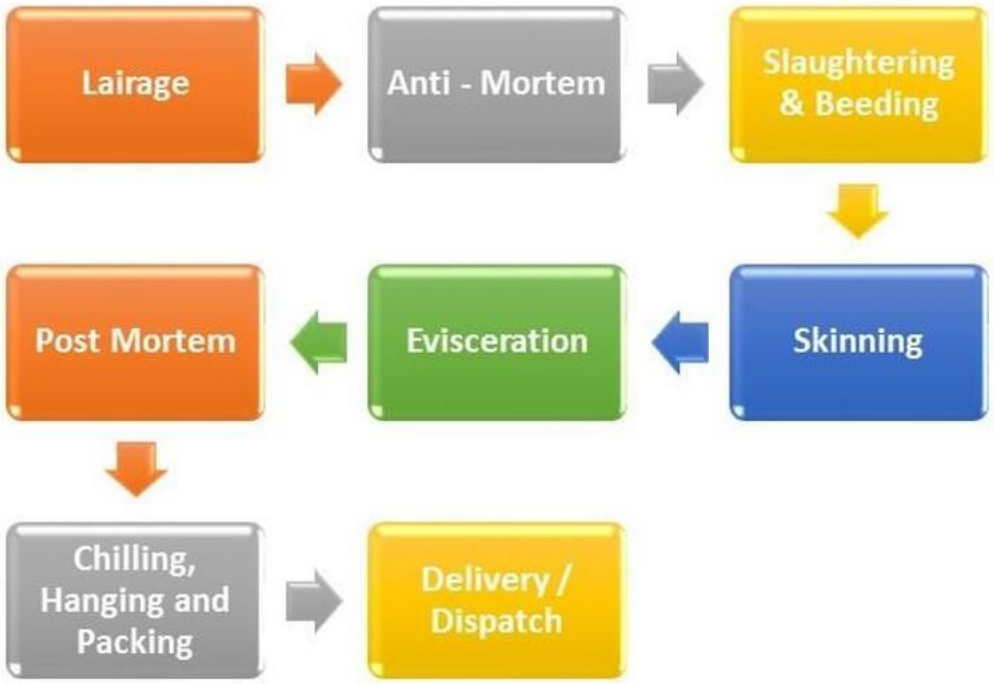
The subject project is about setting up a facility where large & small animals are slaughtered and processed into meat for export. The animals that are commonly slaughtered for food are cattle (beef), sheep (lamb & mutton). The cost of the project is 50 Million PKR. The total area of the plot is 5-Kanals. The capacity of the project is 300 beef animals (cow, buffaloes) /day & 800 mutton (goats)/day. The 6 chillers rooms will be present for freezing the animals after being slaughtered.

PROCESS details:

The production process starts with 12 to 18 hours rest of animal before slaughtering. This process is known as lairage. Animal should be served with water only in lairage. While in lairage, veterinary doctors use to conduct an anti-mortem in which animal is thoroughly checked. Once anti mortem and lairage are completed slaughtering process starts by sending animal in cattle tunnel in front of Muslim slaughtering box. Slaughterer's will slaughter animal one by one through cattle slaughtering box and helper hang the animal through chains on Bleeding Automatic Line. Once the blood is fully drained from animal, slaughterers start removing the skin of animals. This is known as skinning process. The next step is to cut open the animal body to dislodge the contents and produce the carcass. It is important that the carcass remains or is placed in the hanging position on railing. This process is known as evisceration. After evisceration, veterinary doctors and nutritionist conduct post mortem, in which meat quality and hygiene examination are conducted as per the

required standards.

After post mortem the hanged carcasses are sent to refrigeration plant for required chilling. After the required chilling process, meat is ready for dispatch. Following is the process flow diagram for proposed slaughterhouse.



3.12 Restoration and rehabilitation plans

There exists no human settlement on the selected project site to be displaced owing to the commencement of the Project. No structure of any significance stands at the site to be relocated or dismantled. Land is already under proponent's ownership, and no fresh land is to be occupied; hence, no relocation or restoration and rehabilitation is required.

3.13Features of the project

Following are the main features of the:

3.14 Supplies

a) Water supply

The underground water of this area is fit for drinking and domestic proposes. The said project intends to install tube wells for the extraction of the groundwater's.

b) Electricity

Source of power will be WAPDA mainly. For backup system proponent is intended to install his own stand by electricity generators as well.

Qty: 1

Capacity: 455 KVA

c) Manpower

On the proposed project site 20 workers will be present daily throughout the construction period of proposed project. While during operational phase 15-20 workers will be hired by the management.

d) Fire Fighting Arrangements

The fire hydrants & fire extinguishers will be used for overcoming the hazard of fire. Furthermore Smoke detector will be installed by the proponent.

3.15 Management of Wastewater

Municipal and industrial wastewater will be generated, which will be collected through sewerage system and it will be disposed of to nearby drain after treatment through septic tank. During operational stage of the project approximately 15,000 gallons of wastewater will be generated mainly from washing section and some quantity of sewerage, for which proper treatment facility will be established. For the treatment and safe/environmental friendly disposal of sewage / wastewater following measures will be implemented.

Treatment:

- Proper wastewater treatment plant / facility will be designed to construct for the treatment of wastewater ultimately to comply withPEQS.
- After proper treatment the wastewater will be disposed off into Gandah Nulah, which is located nearby from the project site.
- Concrete pipeline will be laid down for disposal of treated wastewater into Gandah Nullah.
-

3.16 Solid Waste Management

Waste generated during construction would include mostly construction material (mainly steel and wood), empty cement bags, excavated earth and general packaging waste. Waste will be stored within the site until transfer to the waste disposal site. Domestic and industrial solid waste & remaining of food waste during operation phase will be collected at solid waste collection point separately and from that point it will be disposed of at designated site of municipality.

3.17 Government Approvals

Management has applied for Environmental Approval and after getting Environmental Approval, they will apply for other required approvals.

DESCRIPTION OF THE ENVIRONMENT

4.1 General

For any development project, the prevailing environmental conditions need to be assessed prior to the preliminary stages of planning, designing and execution of the project. Identification of physical, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures which forms the basis of the Environmental Impact assessment exercise.

The existing environmental conditions of the proposed project have been considered with respect to physical, biological and socio-economic aspects. Information has been collected from variety of sources, including published literature, field observations and surveys conducted specifically for this project have been analyzed for this study.

4.2 Methodology

For baseline data collection, following sequences of various techniques has been adopted. These techniques were chosen because of their pragmatic application in very short span of time.

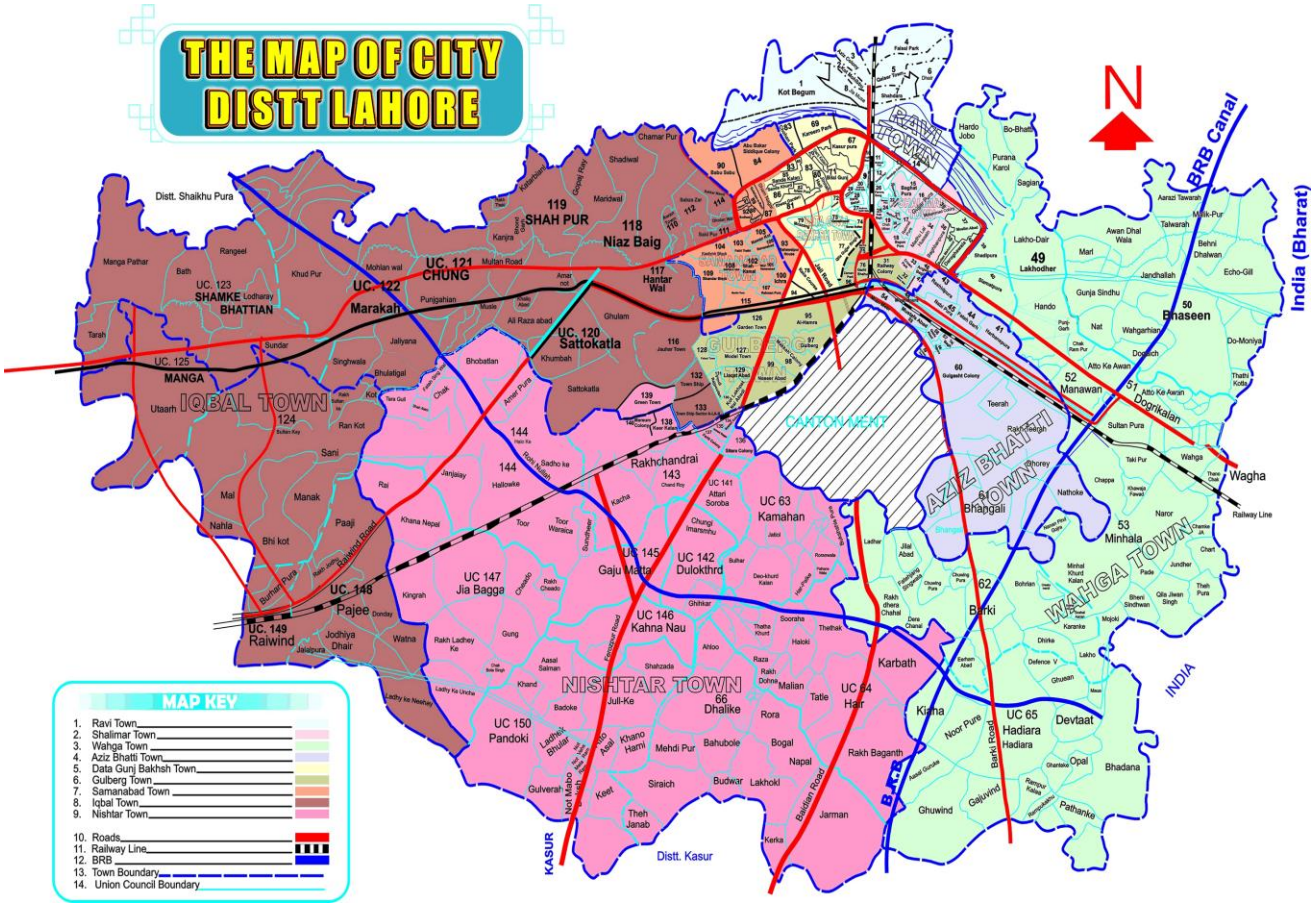
1. Reconnaissance survey;
2. Field investigations/ Surveys;
3. Meteorological analysis;
4. Environmental analysis (air, noise and water quality surveys);
5. Collection and review of secondary environmental and social data; and
6. Basic parameters collection from published sources.

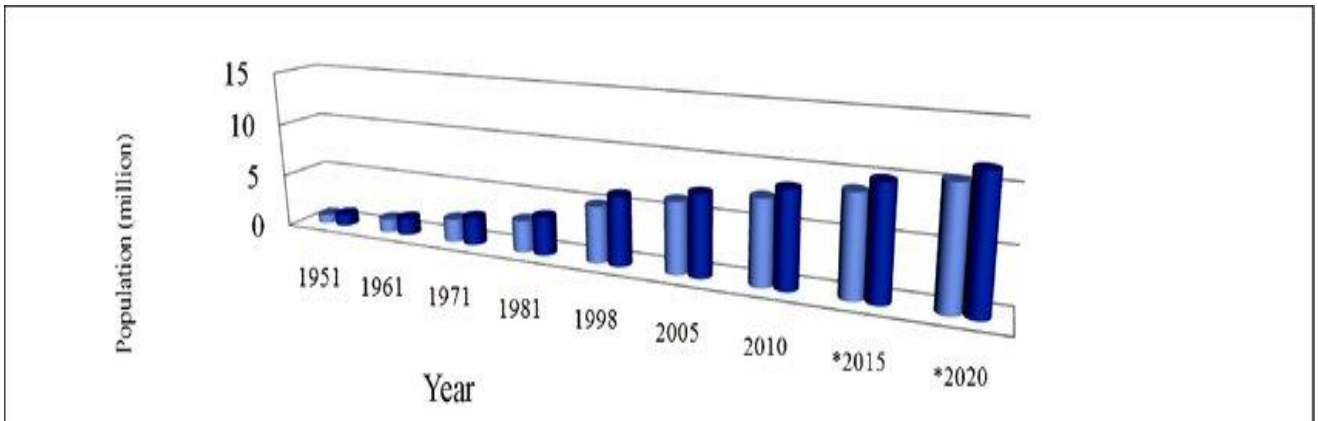
4.2.1 Reconnaissance Survey

Reconnaissance survey of the project site was conducted on SEP, 2024 for the collection of preliminary information about the flora, fauna and existing human intervention along with ecological characteristics. Reconnaissance survey helped us to delineate the ecological habitats and to explore the diversified ecological rich environment.

This information has become the baseline information for the detailed survey that specifically targets those areas which are going to be affected by the implementation of the proposed project. As a result of this survey, basic plants and animals' families were identified that actually prevailing in the associated habitats.

4.3 Physical Environment





	1951	1961	1971	1981	1998	2005	2010	*2015	*2020
Urban population (million)	0.849	1.296	2.169	2.953	5.143	6.467	7.614	8.965	10.555
District Population (million)	1.135	1.625	2.587	3.545	6.319	7.376	8.592	10.009	11.66

(* Projected population)

Projected Population of Lahore

- **Physical resources topography, soils, climate, surface water, ground water, geology;**

  This chapter contains a brief description of the prevailing environmental state of the area. The main components of the environment include physical resources, ecological resources, cultural resources and socio-economic conditions of the area. A comprehensive detail of each is given below:

1. Physical Environment

An account of different components of the physical environment of the area is given hereunder:

Topography

Lahore city is lying between 31°15′—31°45′ N and 74°01′—74°39′ E, Lahore is bounded on the north and west by the Sheikhupura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 1014 km² and is still growing. Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhupura District. The original physiographic features like channels remnants and levees have been destroyed or changed by the construction of urban infrastructure. Flood plains have been confined by construction of embankments (bunds) and spurs. Sub-recent flood plain is 4 to 8 meters higher than the recent flood plain and can be identified at number of places i.e. Shalimar Garden, Mughalpura and Multan Road. Lahore city is situated at an average elevation of 210 meters above mean sea level.

Soil

The soil is different in color and generally inclined to be dry. The alluvial complex consists principally of fine to medium sand, silt and clay. Beds of gravel or coarse sand are uncommon. However pebbles of siltstone or mudstone may be found embedded in silty or clayey sand in many places. Except for a few local lenses, few feet thick beds of hard compacted clay are rare in the area. However it is rich in potential plant nutrients. The soil is of alluvial type and deposited by Ravi River. Alluvium is soil or sediments deposited by a river or other running water. A river length. Where the river flow is fast, more particles are picked up than dropped. Where the river flow is slow, more particles are dropped than picked up. Areas where more particles are dropped are called alluvial or flood plains and the dropped particles are called alluvium.

Climate

Lahore features a five season semi-arid climate and the seasons are winter, summer, spring, autumn and monsoon. The hottest month of the year is June when temperatures routinely exceed 40 ^{0}C. The wettest month is July, with heavy rain falls and evening thunderstorms with the possibility of cloudbursts. The coolest month is January with dense fog.

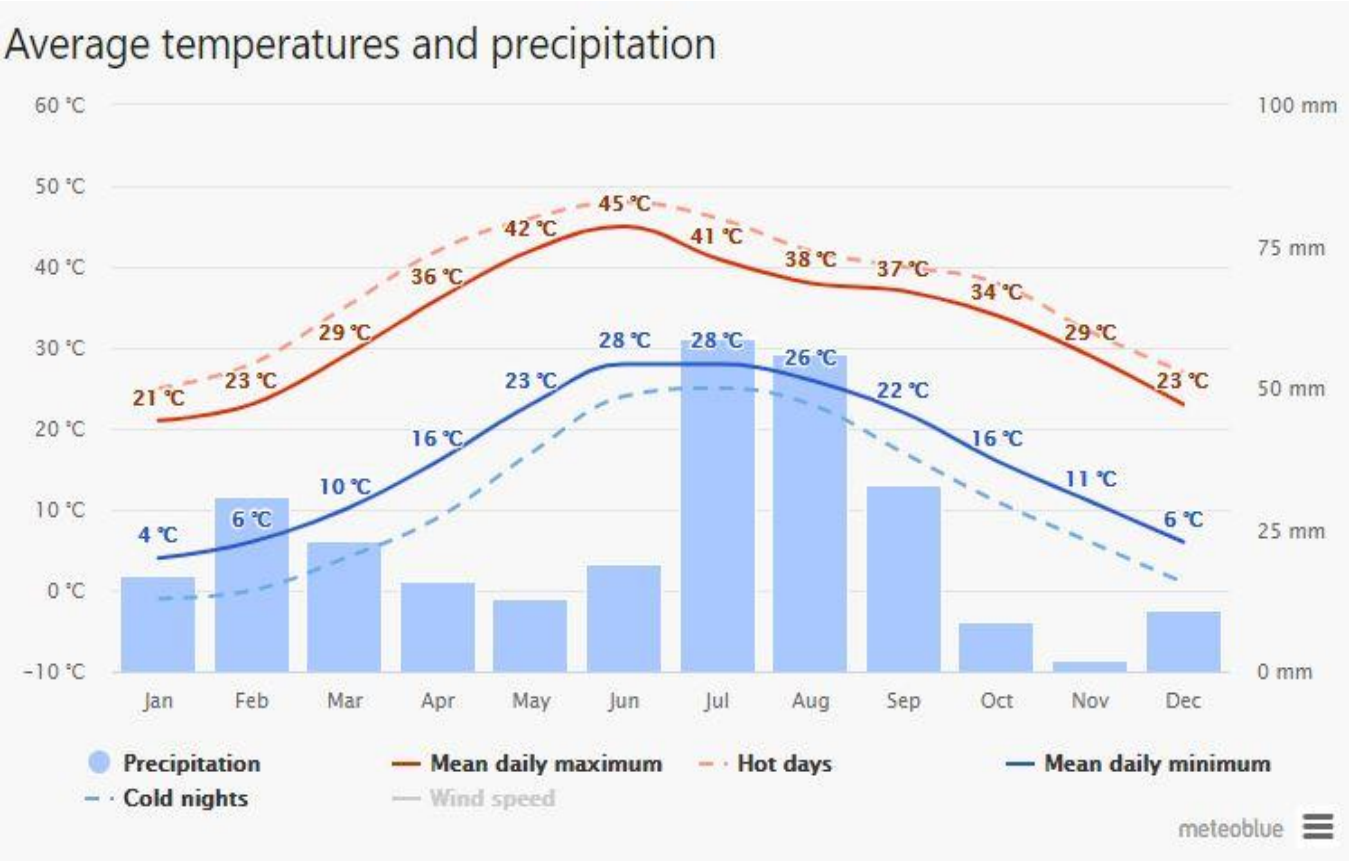
A short description is given hereunder to present the climatic conditions of the area.

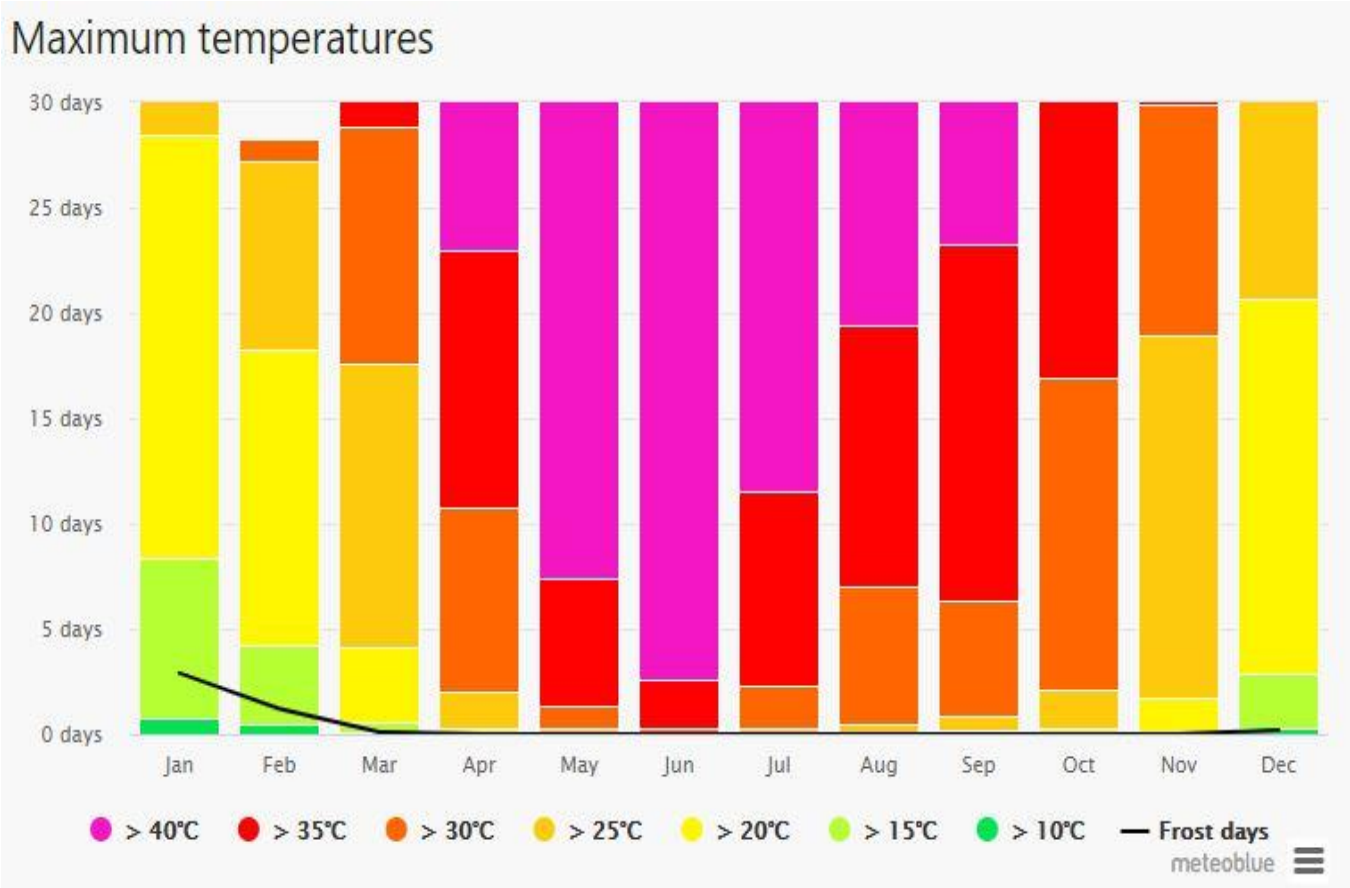
1. 2. 3. Month	4. Mean Temperature		5. 6. Precipitation (mm)	7. Relative Humidity AT 0500 8. HRS (%)	9. Relative Humidity AT 2022 10. HRS (%)
	11. 12. Maximum	13. 14. Minimum			
15. January	16. 19.8	17. 5.9	18. 28.92	19.80.4	20. 51.9
21. February	22. 22.0	23. 8.9	24. 37.14	25.79.0	26. 52.4
27. March	28. 27.1	29. 14.0	30. 34.3	31.68.6	32. 42.2
33. April	34. 33.9	35. 19.6	36. 44.32	37.50.2	38. 25.3
39. May	40. 38.6	41. 23.7	42. 24.38	43.45.7	44. 27.2
45. June	46. 40.4	47. 27.3	48. 91.62	49.59.1	50. 40.9
51. July	52. 36.1	53. 26.8	54. 150.52	55.76.7	56. 60
57. August	58. 35.0	59. 26.4	60. 161.42	61.78.8	62. 65.9

63. September	64. 35.0	65. 24.4	66. 67.28	67.74.4	68. 56.4
69. October	70. 32.9	71. 18.2	72. 71.74	73.70.6	74. 44.2
75. November	76. 27.4	77. 11.6	78. .44	79.77.1	80. 48.8
81. December	82. 21.6	83. 6.8	84. .94	85.82.9	86. 53.73
87. Annual	**88. 30.8**	**89. 17.8**	**90. 66**	**91. 70.34**	**92. 47.4**

Temperature

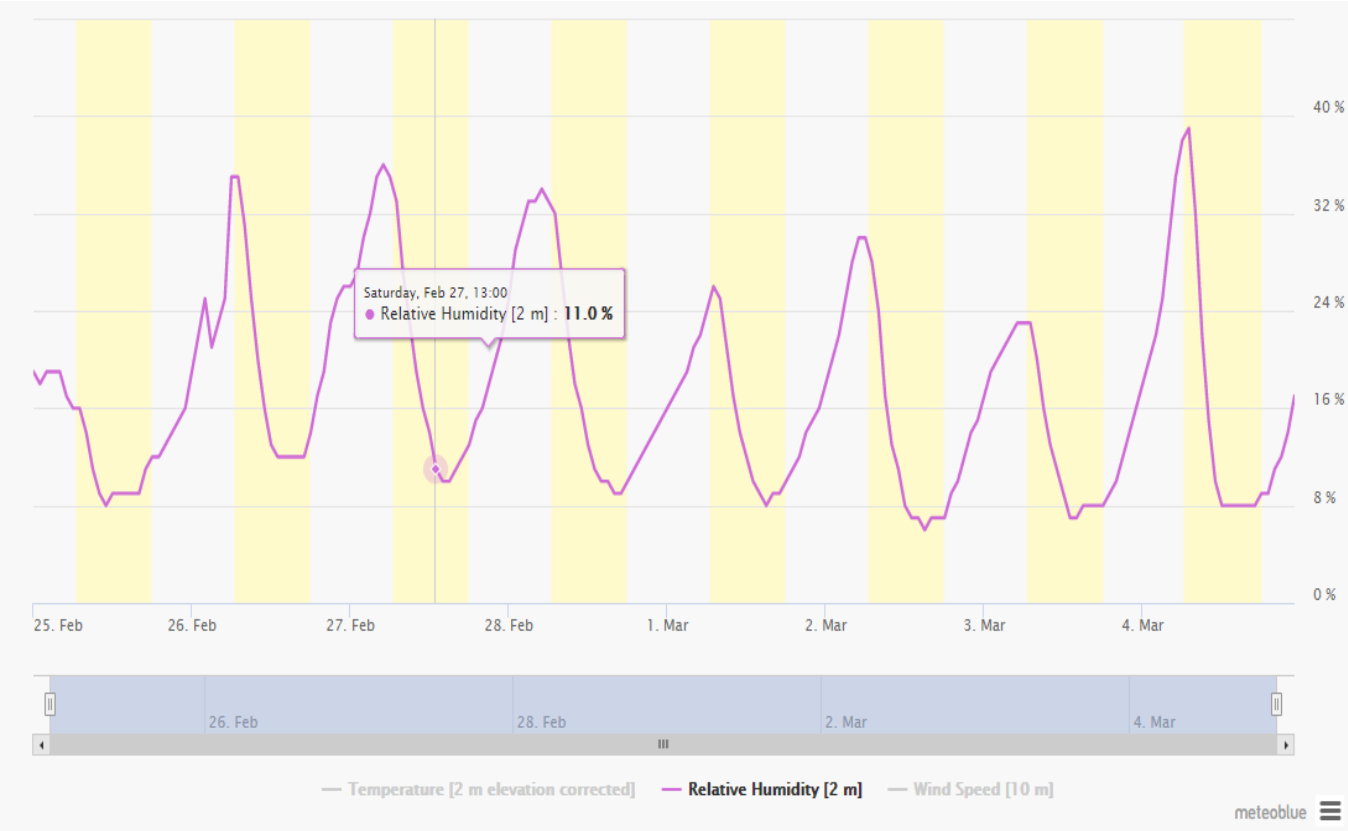
The climate of the project area is hot in summer and cold in winter. May and June are the hottest months with maximum temperature reaching 40.4°C. January is the coldest month with minimum temperature falling to 5.9°C. The summer season starts towards the end of April and continues till September. The winter begins in November and lasts till February. The spring season exists during March and April and is pleasant.





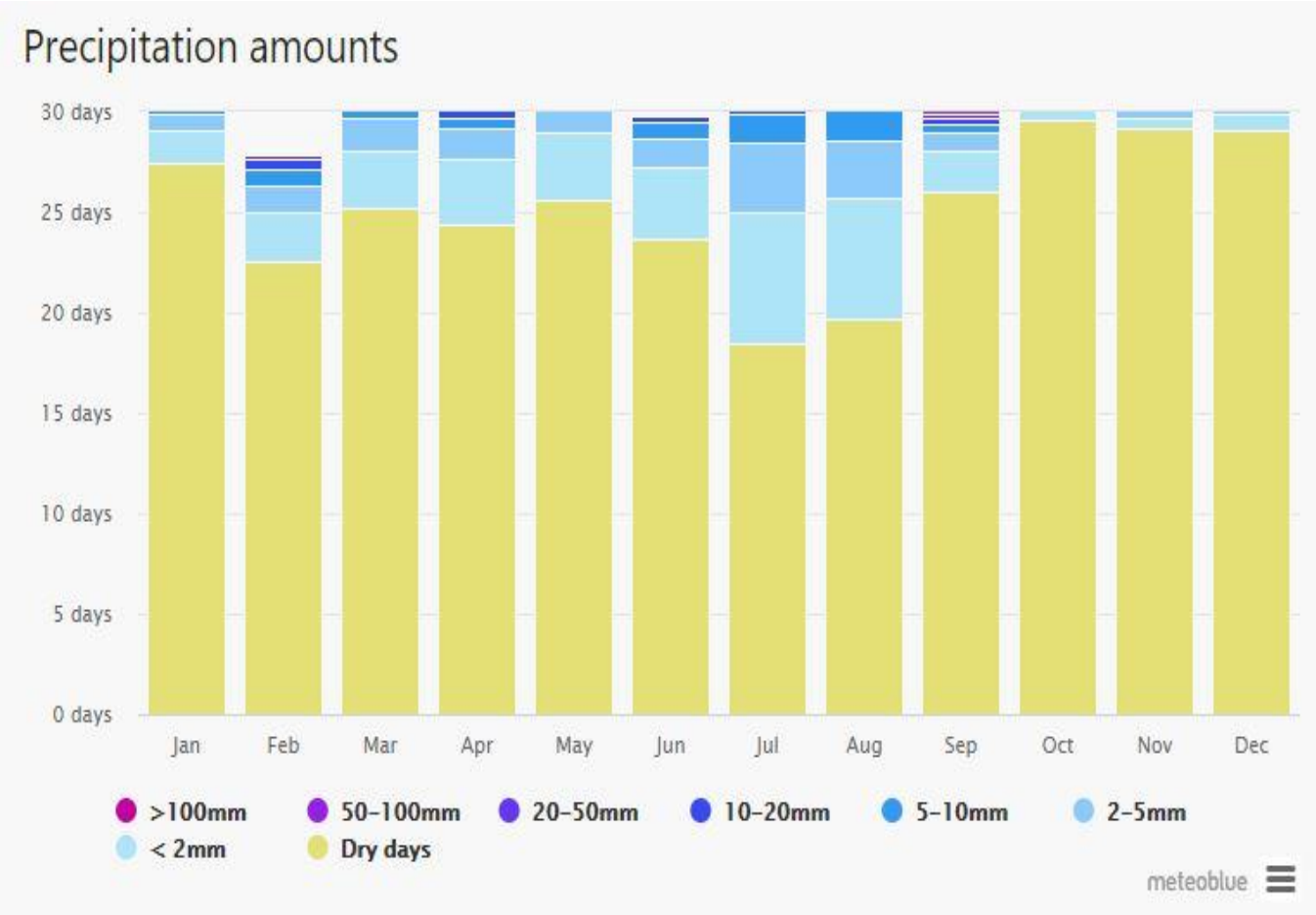
Humidity

Annually relative humidity for this area has been worked out as 70.34%. The maximum recorded humidity for the district is 82.9% in December while the minimum humidity is 45.7% in May.



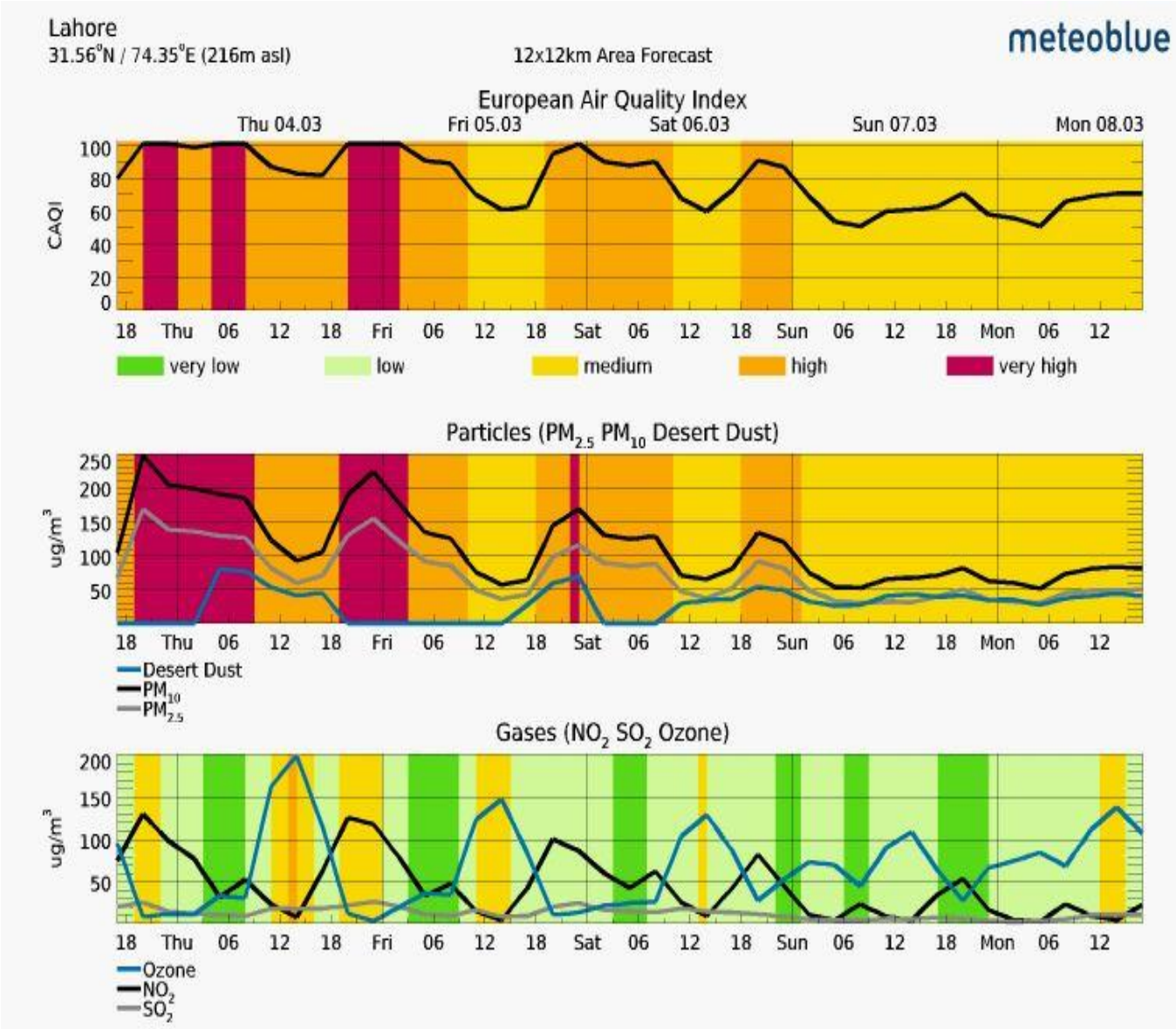
Precipitation

The average annual rainfall is 666 mm. Most of the rain occurs during monsoon in summer which often results in flooding of the nearby water drain and canal. The groundwater level is improved toward the end of the season in September and October.



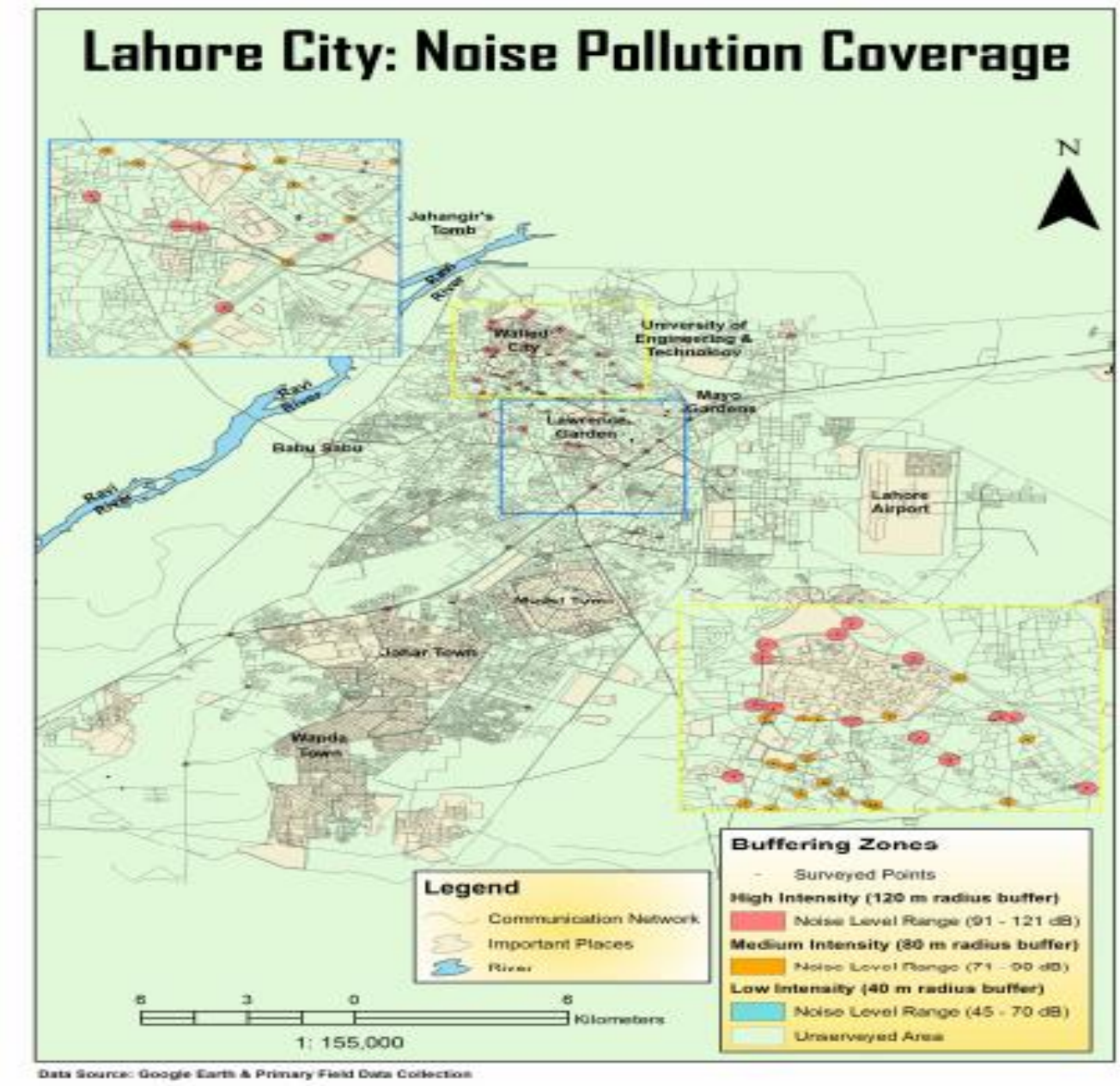
Ambient Air Quality

In the project area, Particulate Matter (SPM & PM10) and Oxides of Nitrogen (NOx), Sulphur Dioxide (SO2) and Carbon Monoxide (CO) are the major air pollutants. Traffic on road is the main source of air pollutants including NOx, SO2, CO, PM, HCs, smoke, etc. Factories and industries are also contributing to the pollution in the district



Ambient Noise

A common form of noise pollution is from transportation, principally motor vehicles. Other sources are car alarms, office equipment, factory machinery, construction work, audio entertainment systems, loudspeaker etc.



4.3.6 Ground Water

The water table depth in the central part of the city has fallen below 130 feet (40 metres) approximately and is projected to drop below 230 feet (70 metres) in most areas by 2025. The total surface water diverted to Lahore is 6.02 million cubic metre per day (MCM/day) and is mainly used for agricultural purposes. The Bambawala-Ravi-Badian-Deplapur (BRBD) Canal mainly feeds the command area of Upper Bari Doab Canal on the Pakistan side of the Pak-India border. The Upper Bari Doab Canal irrigates command areas of Lahore Branch, Khaira

distributary, Butcher Khana distributary, Main Branch Lower and other sofficeer channels. The remaining flow of the BRBD Canal supplements Depalpur Canal. The Lahore aquifer is broadly viewed as a single contiguous, unconfined aquifer. Groundwater for drinking purposes is extracted from a depth of 120-200 meters (m). It is pumped for Lahore's domestic, industrial and commercial purposes. In order to deal with the vagaries of surface water supplies, more than 10,000 tube wells have been installed for agricultural purposes. The average annual rainfall of Lahore is 715 mm. However, its recharge to groundwater in urban areas is minimal due to urbanization. In general, groundwater discharge is higher than recharge, which is the main reason for the rapid depletion of groundwater in the city.

4.3.7 Geology

Lahore city is situated at an average elevation of 210 meters above mean sea level. Lahore city lies on the alluvial plain called Bari Doab. Doab is a local word for area between rivers. Bari Doab is a part of the Indo-Gangatic alluvial plain formed by the Indus River and its tributaries. It is bounded by Ravi and Chanab rivers in the northwest and west and by Sutlej River in the southeast. North eastern boundaries of Doab lie near the foothills of the Himalayan Ranges. The Bari Doab is covered by Quaternary alluvium which overlies semi-consolidated Tertiary rocks or Metamorphic and igneous rocks of Precambrian age. Except for a soffice area in the northeastern part of Doab where basement rock was encountered no information is available at present regarding the distribution of Tertiary and Precambrian rocks in the Doab. Probabilistic seismic hazard assessment recently carried out for Lahore area as part of the revision of Seismic Provisions of the Building Code of Pakistan shows that the Project area falls in Zone 2A.

4.3.8 Land Use

Limited and its surrounding area fall in industrial area. The growth and spread of the city is seen towards south-west direction. The reason is that the availability of well-constructed and connected roads provides means to residents for having residences far away from the main city center. This condition will have adverse repercussions in the area because of the allied difficulties connected to the urban sprawling, environmental issues, and transportation problems, lack of civic amenities, crime and associated social issues.

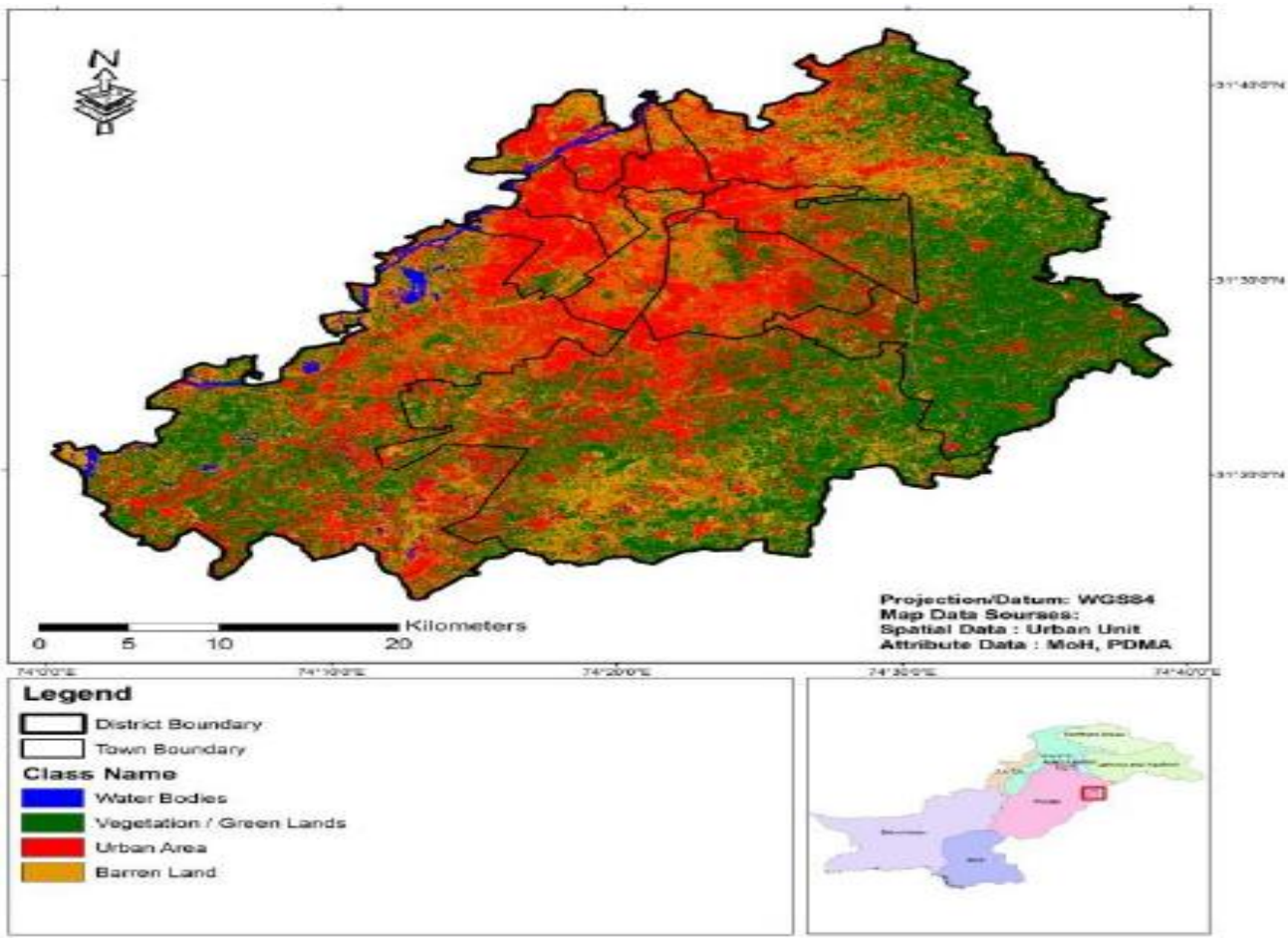


Figure 1: Land Use Map of Lahore

4.4 Ecological Environment

A detail of ecological account of the Project and Study Area is given below:

4.4.1 Flora

The area in which the project site is located was once covered with native vegetation, mostly consisting of trees like Kikar (*Acacia nilotica*) and Shisham (*Dalbergia sissoo*). With the onslaught of civilization and industrialization, this vegetation was cleared for agricultural, commercial or industrial land use purposes. The current ecological details of the area in general and study area in particular are given below:

Trees

A field study related to the identification of tree species in the study area was also conducted. A vast majority of trees were observed in the localities visited as well as open fields. These are

Tali/Sheeshum (*Dalbergia sissoo*), Kikar (*Acacia nilotica*), Safeda (*Eucalyptus cinerea*), Neem (*Azadirachta indica*), Papaya (*Carica papaya*), Bottle Brush (*Callistemone citrinus*) and Borh (*Ficus bengalensis*).

A tabular comparison is given hereunder to explicit frequency of each species in three zones of study area:

List of Trees Identified in the Project Area

Sr. No	Common Name	Scientific Name
1	Tali/Sheshum	*Dalbergia sissoo*
2	Kikar	*Acacia nilotica*
3	Safeda	*Eucalyptus cinerea*
4	Neem	*Azadirachta indica*
5	Piple	*Ficus religiosa*
6	Papaya	*Carica papaya*
7	Shree	*Acacia greggii*

Grasses

A number of grass species were identified. These are Crow Foot Grass (*Dactyloctenium aegyptium*), Dabri Grass (*Dichanthium annulatum*) and Indian Dab (*Cynadone dactylone*).

Grasses in Study Area

Different types of grass species were also identified outside the project site during our visits to the nearer localities, these species include Dabri Grass (*Dichanthium annulatum*), Lesser Bulrush (*Typha angustifolia*) and Indian Dab (*Cynadone dactylone*).

Frequency (of occurrence) of these species in different zones of the study area is as under

Sr. No	Common Name	Scientific Name
1	Indian Dab	*Cynadoned actylone*
2	Dabri Grass	*Dichanthium annulatum*
3	Lesser Bulrush	*Typha angustifolia*

List of Grasses Identified in the Project Area

Herbs and Shrubs

A large number of herbs and shrubs species were identified in the area. Among these species, the most dominant were Jangli Booti (*Parthenium hysterophorus*), Bathu (*Chenopodium album*) and Ak (*Calotropis procera*). Frequency of these species in different zones of the study area is as under:

List of Herbs and Shrubs Identified in and Around the Project Area

Sr. No	Common Name	Scientific Name
1	JangliButi	*Parthenium hysterophorus*
2	Puth canda	*Achyran thesaspera*
3	Bathu	*Chenopo diumalbum*
4	Ak	*Calotropis Procera*
5	Bhang	*Canibus sativa*

Medicinal Plants

A number of medicinal plants in the area were identified which are AK (*Calotropis procera*), Amaltas (*Cassia fistula*), Pilak, Jangli kashni and Itsit (*Boerhavia diffusa*).

List of Medicinal Plants Identified in the Project Area

Sr. No	Common Name	Scientific Name
1	Aak	*Calotropis procera*
2	Amaltas	*Cassia fistula*
3	Itsit	*Boerhavia diffusa*
5	Bhang	*Canibus sativa*

Ornamental Plants

During our ecological survey to the nearby localities, a number of ornamental plants were identified at some houses and Deras, which are listed in table below.

List of Ornamental Plants Identified in and Around the Project Area

Sr. No	Common Name	Scientific Name
1	Bottle Brush	*Callistemone citrinus*
2	Araucaria	*Araucaria heterophylla*
3	Bougainvillea	*Bougainville aspectabilis*
4	Milkwood pine	*Alostonia scholaris*

Vegetables

Vegetables in around and Project Site

No vegetables are grown in or around proposed project site.

Vegetables in Study Area

Some important of these are Phool Gobhi/cauliflower (*Brassica oleracea Ver. botrytis*), Band Gobhi (*Brassica oleracea Ver. capitate*) Turnip, Raddish (*Raphanus sativus*), Carrot (*Daucus carota*), Bhindi, Tomato (*Lycopersicum esculentum*), Vegetable Marrow (*Cucurbita pepo*), Baingan, etc.

List of vegetables Identified in and Around the Project Area

Sr. No	Common Name	Scientific Name
1	Bangun	*Solanum melongena*
2	Bhendi	*Abelmoschus esculentus*
3	Karela	*Momordica charantia*
4	Phool Gobhi	*BrassicaoleraceaVer. Botrytis*
5	Raddish	*Raphanus sativus*
6	Tomato	*Lycopersicum esculentum*
7	Marrow	*Cucurbitapepo*

4.4.1.2 Agriculture

The soil of the area is quite suitable for all kinds of vegetation including fodder, orchards, vegetables and other seasonal crops. The pattern mainly consists of wheat-rice system, while other agriculture practices include the cultivation of sugarcane, Maize, etc.

Farm Traction Power

Tractor is the sole source of farm traction power. No farmer was found using animal traction power. There was significant variation in tractor ownership across farm size groups. However, more than half of the farmers owned tractor while rest were hiring the services for land preparation.

Irrigation

The tube-wells and canal water are the main source of irrigation water for wheat, rice and other crops and fodder. Also, many farmers irrigate their fields with contaminated water of drain and also many studies have been conducted to assess the level of toxic heavy metals in the soil and vegetables irrigated by drain water and their ultimate impacts on human health. It has been highly recommended during these studies not to use the contaminated water of drains for

agricultural practices. On the other hand, plenty of ground water is easily accessible for agriculture use.

4.4.2 Fauna

The area provides healthy environment for the growth and reproduction of a diverse nature of fauna. A short description is given in the following paragraphs

4.4.2.1 Mammals

Mammals within project site

During our survey to the proposed project site, some mammals were identified evidently while some were reported by the workers like Cats (*Felis catus*), Rats (*Rattus rattus*) and Squirrel (*Sciurus carolinensis*).

Mammals in Study Area

The wild and common or domesticated mammals found in the study area are Dogs (*Canis familiaris*), Cats, House Rats (*Rattus rattus*), Bats, Horses (*Equus caballos*), Donkeys (*Equus africanus asinus),* Mules, Buffaloes, Cows (*Heracleum lanatum*), Goats (*Copra hircus*) and Sheep.

List of Mammals Present in and Around the Project Area

Project Site		**Study Area**	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Cat	*Felis catus*	Cats	*Felis catus*
Rat	*Rattus rattus*	Dogs	*Canis familiaris*
Squirrel	*Sciurus carolinensis*	Cows	*Heracleum lanatum*
-	-	Goats	*Copra hircus*
-	-	Horses	*Equus caballos*
-	-	Donkeys	*Equus africanus asinus*

-	-	Sheep	*Ovis aries*

4.4.2.2 Reptiles

Reptiles within Project Site

No reptiles were identified within the project site

Reptiles in Study Area

Above reptiles were also seen in study area in localities and field. The most common reptiles include Snakes, Pakistani Cobra (*Naja naja karachiensis*), Lizards, Varanis (Goh/large lizard), Spiders and Scorpions, etc.

List of Reptiles Present in and Around the Project Area

Common Name	Scientific Name
Lizards	*Lacertilia*
Spiders	*Araneae*
Scorpions	*Pandinus Imperator*
Pakistani cobra	*Naja naja karachiensis*
Goh/large lizard	*Varanis*

4.4.2.3 Amphibians

A number of Amphibians found in the tract include Common Frog (Rana tigrina), Common Toad (Bufo bufo) and Tortoise (Chitra indica).

List of Amphibians Present in and Around the Project Area

Project Site		Study Area	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Common Frog	*Rana tigrina*	Common Frog	*Rana tigrina*

Common Toad	*Bufo bufo*	Common Toad	*Bufo bufo*
-	-	Tortoise	*Chitra indica*

4.4.2.4 Animals

Different types of animals' species were identified within the project site. The bird's species identified in these areas include House Sparrow (*Passer domesticus*), House Crow (*Corvus splendens*), Common Mynah (*Acredotheres tristis*), Tatiri (*Vanellus indicus*), Cheel, Bagle, Bulbul (*Pycnon tus cafer*), Parrots (*Psittacula krameri*), Pigeons (*Columbia livia*), Dove (*Stigmetopelia senegalensis*), Surkhab, Ullu, etc. are also seen in the area.

List of Animals Present in and Around the Project Area

Sr No.	Project Site		Study Area	
	Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
1	House Sparrow	*Passer domesticus*	Parrots	*Psittacula krameria*
2	House Crow	*Corvus splendens*	House Sparrow	*Passer domesticus*
3	Common Mynah	*Acredotheres Tristis*	House Crow	*Corvus splendens*
4	Tatiri	*Vanellus indicus*	Common Mynah	*Acredotheres tristis*
5	Pigeons	*Columbia livia*	Tatiri	*Vanellus indicus*
6	-	-	Pigeons	*Columbia livia*
7	-	-	Dove	*Stigmetopelia Senegalensis*
8	-	-	Bulbul	*Pycnon tus cafer*

9	-	-	Cheel	*Milvus migrans*

4.4.2.5 Wildlife Sanctuaries and Game Reservoirs

The Safari Zoo Park & Wildlife Park Lahore is present in the Lahore for the conservation of endangered species. However, no wild life sanctuary or game reservoir is located in the vicinity of the project area or in the project influenced area.

4.4.2.6 Rare or Endangered Species

There are no rare or endangered species in the study area.

4.5 Socioeconomic Environment

Human settlements are symbol of typical haphazard rural growth based on ill planned developmental procedures showing common indicators of all the unorganized procedure of rural settlement of the province. These localities were developed on need oriented basis. No bye-laws, rules and obligations necessary for human settlement, construction or expansion and infrastructure development were considered. These localities are also the picture of stereotype rural residential areas which lack basic amenities, improper roads, and poor drainage system, deteriorating hygienic and sanitary conditions causing bad effects on human health.

Objectives of the Study

The main objectives of socio- economic study of the project area were:

- To furnish appropriate information about the baseline socio-economic conditions
- To identify and assess significant social impacts of the Project activities on the surrounding area and people
- To propose suitable means for probable mitigation of the significant adverse social impacts

An Overview of Socio-economic Conditions

This section describes the status of overall socio-economic baseline conditions prevailing in the study area. It deals with various socio-economic and cultural aspects of the community including income, employment, professions, basic facilities, education and health, social structure, culture, women's status, traditions, ethnics, sectarian status and residential needs of the local people.

Area represents lacking some basic amenities of an urban area. Improper social structure, deprived status of youth and aged are common social factors in the area.

4.5.1 Analysis of Socio-economic Conditions

This section presents a locality-wise analysis of existing status of various socioeconomic parameters such as income, employment, basic facilities, education, health, recreation, migration, conflicts, ethnic status, role of women, professions, residential conditions, etc.

4.5.1.1 Sources of Income

The economy of Lahore has a diversified base spanning from telecommunication, information technology, manufacturing industry, engineering, pharmaceuticals, steel, chemicals and construction material. As a major urban center, the economy of Lahore has relatively prospered. Lahore is hailed as the industrial belt of Pakistan and is home to the largest IT Park in Pakistan. It is the country's second largest economic hub and the commercial capital of Punjab. In 2008, the city was ranked with high efficiency to be classified as a gamma world city. Majority of the people are working as labors in industries, and many do their own common business (shopkeepers).

4.5.1.2 Basic Facilities

Basic facilities like electricity, roads, transport etc. are present in almost every area of the Lahore but are disorganized and mismanaged. Civic amenities like markets are not available in some of the slum areas.

4.5.1.3 Educational Facilities

Educational facilities up to master level are available in almost all the localities and are easily approachable. Lahore is Pakistan’s largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. Most of the reputable universities are public, but in recent years there has also been an upsurge in the number of private universities. The current literacy rate of Lahore is 64%.

The system is divided into five levels: primary (grades one through five); middle (grades six through eight); high (grades nine and ten, leading to the Secondary School Certificate); intermediate (grades eleven and twelve, leading to a Higher Secondary School Certificate); and university programs leading to graduate and advanced degrees.

4.5.1.4 Medical Facilities

The proper health care facilities are present in the area for both male and female population.

4.5.1.5 Recreational Facilities

Lahore is the hub of cultural & religious recreational places. Many famous recreational places such as Badshahi Mosque, Shahi Qila, Tomb of Jahangir, Shalimar Garden, Minar-e-Pakistan, Lahore Zoo, Lahore Museum, Safari Park, Jallo Park, etc. are present for recreational activities. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals. Religious, ethnic, political and tribal conflicts do not exist among the people of the study area.

4.5.1.6 Types of Community

The main religion in Lahore is Muslim – mostly Sunni or Shia- which makes up 94% of the population. The remaining 6% are nearly all Christians. There are also a soffice number of minority religions such as Sikh and Hindu. The Lahoris are a cultural bunch of people celebrating many festivals around in the year – some religious, some historical and some are combinations of ancient and modern- even western – celebrations.

4.5.1.7 Types of Family

The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

4.5.1.8 Ethnic Status

The main castes and groups of the Lahore district are Arain, Jat, Rajput, Malik, Pathan, Mughal, Sheikh, Komboh and Gujjar. Besides, there are also village artisans, which include Lohars (blacksmiths), Tarkhan (carpenter), Kumhars (potters), Mochis (cobblers), Machhis (water-carries), barbers and weavers etc.

4.5.1.9 Status of Women Literacy

A vast majority of the females of the Study Area are illiterate which shows very low educational trend among females; however, young females have high literacy rate showing positive trend in female education.

4.5.1.10 Decision Making Authority

Majority of the females have no authority in decision-making process regarding their life. This shows non-participation of the females in decision-making process regarding the females and other issues.

4.5.1.11) Role of Women

Role of female is conventional and traditional. Most of the females are engaged in housekeeping. However, females also perform outdoor activities and duties. Females are supposed to be responsible to perform all the family activities and are involved in all types of family functions.

4.6 Quality of Life Values

If we specifically talk about the project area then majority of the people has to adopt seasonal occupation to supplement their income due to low-income level and inconsistent income opportunities. People are educated and doing jobs as per their profession and many are industrialists as well. Majority of the people are working as labors and many do their own common business (shopkeepers). The locals of this are provided with basic facilities like electricity, roads, transport etc. but are disorganized and mismanaged. If we talk about educational facilities then education up to master level are available in almost all the localities and are easily approachable. The proper health care facilities are present in the area for both male and female population. Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life. The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

4.7 Lab Reports of Environmental Analysis

Testing of different parameters has been done by proponents. The copies of lab reports of different environmental parameters are given in annexure.

SCREENING OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

Objectives of screening out all possible impacts and then providing their mitigation measures are:

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

Impact Analysis and Prediction

In order to give correct categorization to the present project Rapid Environmental Assessment Procedure was followed. It revealed that there some major impacts of the project have identified which will be controlled by adopting proper mitigation measures. These impacts are mainly attributed to solid waste & noise during the operational phase of this institute but most of the impacts are projected as moderate/minor impacts although project has many positive impacts on local public and economy. Slaughter House by Ejaz qadeer & Sons will adopt proper procedures to carry out the operation in environmental-friendly way.

Meetings:

For the impact analysis and predictions detailed meetings were held with the proponent, management of Proposed Slaughter Houseby Ejaz qadeer & Sons and with other stakeholders. Issues were discussed that may affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Consultations

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders, inhabitants of the villages, shopkeepers and workers in the area. These included local educational institutes, health departments, public representatives and

local residents. The purpose of such consultations is to obtain the feedback from the relevant persons.

The environmental issues have been identified during literature review, consultation with stakeholders, relevant reports and visits to project site. Various types of environmental issues likely to crop up during the life cycle of project are grouped in the following stages:

- ***Project location***
- ***Project design***
- ***Construction stage***
- ***Operation stage***

Environmental Parameters

5.1 Environmental impacts due to Project Location

This section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

Objectives of screening out all possible impacts and then providing their mitigation measures are:

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

Project Location

The said project is located at Mouza Kot Khawaja Saeed, Bhamma Road Tehsil Shalimar District Lahore .

The proponent has selected the site owing to the following reasons:

- The site is undisputed and under the ownership of the proponent.
- There is no community or human settlement on the site
- There is no fauna flora (particularly belonging to an endangered species) on the site

- Main road network runs in front
- There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, any structure of socio-cultural significance (historical or archaeological site or religious structures; Masjid, temples, etc.) within 10 km of the selected site

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

5.2 Impacts Associated with Design Phase

At the design phase, considerable impact can occur on land, soil, topography, ground water, and on people of the area. The design has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards. The design to be used for Proposed Slaughter House by *Ejaz qadeer & Sons* is state-of-art and environmentally friendly.

Mitigation Measures at Design Phase

At design phase special attention should be given to the design of the project in the sense that it has been designed in such a way as to cause minimum disruption and deterioration of environment and surroundings. However, in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the said *Proposed Slaughter House*will be adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health. There will not be any environmental problems at any stage from design stage to its operational stage. The project is to be designed in a way that it guarantees all out compliance with the Punjab Environmental Quality Standards (PEQS). The Proponent intends to construct the unit on modern lines, meeting International Standards, with incorporation of new Technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the Environment and will not pose any adverse impact or threat on any component of the Environment.

5.3 Impact during construction / development phase

The potential environmental impacts of the proposed project at site and surrounding area during the development / construction phase are described as follows:

5.3.1 Physical Environment

The main impacts of the project during development / construction of the new roads, civil works, development of parks, installation / laying pipelines, sewer system and installation of utility and equipment's will be the dust and noise from transportation of construction materials and equipment's. Standard Engineering Practices will be enforced on the construction / development site.

5.3.1.1 Seismic Hazard

Impact

In this zone, distant earthquakes with fundamental periods greater than 1.0 second may cause damage to structures. This factor requires special consideration of the designers. This will be a moderate negative impact.

Mitigation

All the foundations of the structure will be designed to withstand even moderate to large earthquakes. For seismic hazard analysis updated structural and seismic evaluations will be consulted.

5.3.1.2 Impact on Soil

Impact

During construction phase the soil quality may be affected due to very suffice amount of discharges during vehicle and equipment maintenance and leakage from equipment's and vehicles. The impact is not significant.

Mitigation

Any spill if occur will be immediately clean up. If the problem of water logging occurs during development phase the area will be immediately reclaimed. The impact is not significant. Depending on the nature of the material, location of spill and quality of spill, soil can get contaminated. Low permeable membrane should be present at the bottom of vehicles. Proper tuning of vehicles is also necessary. Due to mitigation measures, the overall impact on soil during construction phase is minor.

5.3.1.3 Impacts on Air Quality

Following potential impacts on air quality may occur during construction phase.

(a) Emission of Dust and Particulate Matter

During the development/construction vehicles and machinery will be employed. These will generate some dust and smoke temporarily. During construction phase due to continuous operation of machinery and movement of heavy trucks and vehicles can generate gaseous emissions and can have a slight adverse effect on the surrounding environment. Combustion exhaust from vehicles and construction equipment's during construction phase can affect ambient air quality of project area.

Mitigation

All vehicles, machineries, equipment and generators used during construction activities should be in good working condition, properly and be properly maintained in order to minimize exhaust emissions. This impact is classified to be short term, reversible and limited, as it will only occur during the excavation activities. Also, these impacts are expected to be contained within the site boundaries. For dust sprinkling of water is done to avoid dust.

5.3.1.4 Solid Waste

Impact

The solid waste generated during the construction phase of Project can pose a health hazard, pollute soil, surface and ground water if not managed properly. A significant impact will be interpreted if the waste management is not carried out properly; which may effect to health of workers, pollution of soil, surface or groundwater.

Mitigation

The Potential sources of solid waste from operational activities include excavated material, construction waste, food waste, plastics, and paper. Dumping of excavated waste will be done at a designated site approved by TMA, and it will be ensured minimum degradation to the soil around the Project area. Construction waste will also be disposed off as per TMA procedures. Other generated solid waste comprises of a domestic waste. Waste storage bins will be installed. The waste from these bins will be collected by the sanitary workers. The waste will be disposed off in accordance with the procedures of Tehsil Municipal Administration. No significant impact on the environment is anticipated from solid waste generation at the project site as the solid waste is managed efficiently.

5.3.1.5 Noise and Vibration

Impact:

When the construction work is undertaken, constant rattle of heavy machinery will raise the noise level in the Project Area. This noise and vibration will affect directly the residents of nearby areas. Noise due to the construction will be a minor negative impact.

Mitigation

Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

- Selection of up-to-date and well-maintained plant or equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.

- Confining of excessively noisy areas and limiting the work to normal working hours in the day;

- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; and

- Regular checkups and maintenance of the construction equipment, and oiling and greasing of the noise making mechanical parts.

5.3.1.6 Traffic Congestion and Disturbance to People

Impact

During the construction phase, the movement of heavy machinery and transportation of raw material and equipment may cause traffic congestions. As a result, the daily activities of the people of nearby localities as well as of the visitors may be disturbed, which will require proper mitigation measures. This will be a moderate negative impact.

Mitigation

During construction, following mitigation measures will be followed:

- Observation of timing by the vehicles carrying construction material of infrastructure to cause minimum disturbance to traffic on existing road. The construction equipment and machinery must be stationed in the boundary premises to avoid the traffic congestion on the main Road.

- Transportation of raw material and heavy machinery will be done early in the morning; and

- There will be coordinated planning of traffic movement by the Traffic Police and the Transport Department in accordance with the construction program with advance warnings to the affected residents and road users.

- All the machinery will stay inside the periphery of project so it will not cause disturbance in the traffic.

5.3.1.7 Workers' Safety

Impact

During construction phase minor and severe injuries to workers due to operation activities may occur. The construction activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

Mitigation

Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

Implementation of the following measures will ensure health and safety of the workers and the public during the construction phase:

- Construction workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;

- Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;

- The safety of the public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags; and Proper illumination will be provided at night.

Proposed Mitigation Measures during Construction / Development Phase

The potential negative impacts during construction and operational stage of the project should be mitigated to an acceptable level. Following environmental protection measures are adopted to

eliminate adverse environmental impacts or to reduce them to an acceptable level within the legislative and regulatory framework. The proposed mitigation measures are listed below:

- Appropriate waste disposal mechanism should be followed during the construction phase. The construction waste would be disposed in a manner that does not contaminate surface or groundwater.
- The construction waste generated will be used for earth filling within the project site premises.
- The Contractor needs to make sure that their machinery and equipment are properly tuned and serviced and there is no leakage of oil from construction equipment's and machineries.
- Contractor should give assurance of quality of machineries and equipment's which will be used during excavation and construction process.
- All vehicles, machineries, equipment and generators used during construction activities should be in good working condition and be properly maintained in order to minimize exhaust emissions.
- Construction labor must be trained in safety procedures for all relevant aspects of construction
- Helmets or hard hats should be worn by workers at all time of work and everywhere on the Project Site.
- Regular checks should be carried out to ensure that the contractor is following safe working procedures and practices.
- Workers should be provided with personal protective equipment's (PPE's) such as safety jackets, ear plugs or ear muffs, special boots and dust masks.
- Use of up-to-date and well-maintained machineries or equipment with reduced noise level.
- Confining excessively noisy work to normal working hours in the day, as much as possible.
- Providing construction workers with suitable hearing protection like ear cap, or ear muffs and training them in their use.
- Ear muffs or ear caps should also be provided to those people living in nearby area

5.4 ***IMPACTS DURING OPERATIONAL PHASE:***

The anticipated impacts related to the proposed project have been studied for operational stage and is discussed as follows:

1.4.1 Noise:

The main sources of pollution from noise are during animals loading and unloading, vehicle movements, operation of machines. The increased noise may be a source of disturbance to workers, working near to the machines. Noise level during operation phase of said unit is limited to operational site. Workers could be exposed to high noise levels, however only concerned staff will be working in the area with required personal protective equipment (PPE) to minimize or reduce the noise exposure. The residential area is located at a safe distance from the project site and there will be no significant impact on the community.

Mitigation

- Effective noise suppression design and plan is made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise.
- It is ensured that power engines, vehicles and other potentially noisy equipment are in good condition. Noise from generators, vehicles, other equipment and machinery will be kept to the minimum through regular maintenance.
- Noise monitoring is carried out periodically.

5.4.2 Air Quality

Air emissions from the project are relatively small. Particulate emissions are typically not significant but only as a result of dry product only. Gaseous emissions are including NOx, SO2, CO and PM (nitrogen oxides, sulfur dioxide, particulate matter, and carbon monoxide) from and combustion products from vehicles used for project activities. The emissions from power will be less in concentration. The emission levels depend on the type and quality of fuel and the manner in which it is burnt. Results of environmental monitoring as attached with the report are showing all these emissions within limits.

Mitigation:

- Clean and maintain a sufficient level of temperature and humidity in every section.
- The process of dry powdered milk is carried out in closed chamber.
- Stacks of generators are equipped with air emission control technology.
- Proper handling of raw material to minimize the likelihood of fugitive dust and emissions during storage.
- Monitoring of Ambient air parameters (Particulate matter, CO SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS.
- Sprinkling of water is being done for dust suppression.
- Plantation of indigenous trees within the premises and along the boundary.

5.4.3 Wastewater

Wastewater generated from the process of aforesaid unit during washing of tanks and municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic Tank. The wastewater is treated in installed wastewater treatment plant.

Mitigation

There will be proper treatment mechanism of wastewater produce from this Proposed Slaughter House it has no considerable impact on environment. The domestic wastewater generated will be treated properly through the septic tank. The sewerage will be collected into disposal area and from that area it will be disposed of in municipal committee sewerage system.

5.4.3 Solid Waste

Impact

Solid waste generated from unit comprises of final product packaging waste like cartons, material bags, tetra pack cartons etc. Most of the generated waste is recyclable. The rejected raw material will be handed back to the supplier. The

generated domestic solid waste will be handled as per area practices. If the waste management is not carried out properly, it can affect health of workers, pollution of soil, surface or ground water. All waste generated from the project is managed by said controls. The environmental impacts will be minimized after the implementation of the said mitigations.

Mitigation

GENERAL WASTE MANAGEMENT PRACTICES

During operational phase of the project, a proper waste management plan is devised and implemented. Key elements of the waste management system will include the following:

ON-SITE HANDLING

- Proper waste collection system is ensured. For this purpose, waste bins are placed inside the boundary.
- The recyclable waste is sent to waste contractors.
- Records of generated waste should be maintained.
- All non-hazardous waste that can be recycled or reused is handed over to the contractors.

OTHER MANAGEMENT MEASURES

- Training will be provided to personnel for identification, segregation and management of waste.
- All containers of waste will be labeled properly.
- In-house audits of the waste management will be undertaken on regular basis.

RESIDUAL IMPACTS

Proper implementation of the mitigation measures will minimize the residual impact from waste. Monitoring and inspection will be undertaken to ensure the implementation of mitigation measures.

5.4.4 Safety Hazards

Safety hazards in these Proposed Slaughter Housefacilities are generally associated with fire. The fire can pose a serious risk to human health & life in case of any accident.

Mitigation Measures

Fire extinguishers will be installed by the proponent in this Proposed Slaughter House for overcoming the risk associated with the fire hazard. The emergency exit stairs & doors will be present to overcome the potential negative impacts in case of emergency situations. Fire Hydrants & Fire Extinguishers will also be present to minimize the potential negative impacts in case of emergency fire. The Fire extinguishers will be present to overcome the hazard of fire in case of any accident. The adequate ventilation will be provided to avoid any kind of smoke hazard.

For the facility renovation /expansion activities, a site-specific Environmental Management Plan (EMP) will be prepared for each facility or a cluster of facilities. This EMP will include the site- specific mitigation measures to address safety hazards associated with the renovation/rehabilitation activities.

5.4.5 Vehicular Parking:

Impact

Traffic to and fro the site may cause traffic congestion or excessive noise potentially leading to complaints. Narrow roads/ accesses create traffic jams and inconveniences to other road users specially the inhabitants.

Mitigation:

The proper vehicular parking area has been left by the proponent inside the project vicinity. Furthermore the following mitigation measures will be implemented:

- Existing and proposed access roads will be capable of adequately serving the traffic generated and should be according to norm in order to allow two way traffic.
- Provision will be made for adequate parking, loading and unloading facilities.
- Car parking areas will not be permitted alongside main roads or other busy roads.
- The environment and amenity of the area will not be compromised through traffic or parking problems as well as dust and exhaust nuisances.
- Access for Disabled Persons - The improvement of access and provision of facilities to ease the passage of mobility impaired people will be considered as an integral part of the design.

5.4.7 *Eco-friendly Measures and Sustainability*

The design, construction and maintenance of buildings have a tremendous impact on energy consumption, water consumption, productivity and health of people and nature. Best environment friendly practices and initiatives need to be adopted during the construction and operation of this slaughter unit, such as:-

- Adoption of sustainable building designs (provision of sunshades/ awnings to prevent heating of the buildings, provision of double glazed openings to promote insulation for buildings, esp. with metal roof).
- Provision of adequate green spaces /areas, planting of trees/ ornamentals on site.
- Renewable energy source (solar water heaters and photovoltaic cells); energy efficient appliances (fridges, ovens, Air Conditioners); energy-saving devices (LED lamps).
- Waste segregation for recycling and composting.
- Rain water harvesting for washing of premises.

5.5 Potential Environmental Enhancement Measures

Tree plantation and cropping within the premises have been planned by the proponent for environmental enhancement. The Proponent will also make arrangements for protection and maintenance of trees.

Names of Trees, Plants etc.

The following plants are recommended for this project, however other trees will be consulted with gardening experts and other endangered trees will also be planted.

Local Name	**Scientific Name**
Cono Tree	*Conocar pieceo*
Arabic Gum tree	*Acacia nilotica*
Golden Shower tree	*Casia Fistula*
Indian Beech tree	*Pongamia Pinata*

Kachnar	*Bauhinia variegate*
Jasmine	*Jasminum*
Lilly	*Lilium*
Lotus	*Nelumbo Nucifera*
Rose	*Rosa Indica*

Excavation for planting shall include plant pits and planting beds. The minimum depths of plant pits or beds shall be measured from Premises the grade. Plants beds and pits shall be tested for drainage before planting by filling with water twice in succession. Conditions the retention of water in planting the beds or pits for more than 24 hours shell be brought to the attention of the Architect. If rock, underground construction, obstructions, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be select by the architect. The contractor shall be responsible for all damages resulting from any neglect and failure to comply with this requirement.

Following excavation planting pits, the pits shall be back filled with the sweet soil mixture as specified. Three day prior to planting, the pits shall then be filled with water for consolidation of soil. The dimensions of the panting pits are as follows:

A. Trees: 3x3x3
B. Shrubs: 2x2x2
C. Hedges: trenching 2wide x'2 deep of required length.
D. Creepers and vines: 2wide x 2 deep of required length.
E. Edges and flowers beds: 'fill flower box with sweet soil as per the Architect's drawings. For seasonal flowers, the beds are to have the minimum of 12" sweet soil and 4" 'manure.

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plants become damage or injured,

they shall be treated or replaced. Protection shall also include all temporary protections fences and barriers. all signs and all other work incidental to proper maintenance.

ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

Proposing the mitigation measures for the negative environmental (physical, biological and socio-economic) impacts arising from the various project activities is not the only responsibility of the proponent; rather the proponent is liable to provide a complete plan showing in-depth details of how the activities will be managed in a way to keep environment undisturbed or in a state receiving least burden from the project construction and operation. This plan; called as the "environmental management plan" not only states the mitigation measures of the negative environmental impacts but also makes some person or authority responsible for carrying out that mitigation measure. Having an EMP in an IEE binds the specified people for taking the indicated mitigation measure.

An environmental management plan is a project or site-specific plan developed to ensure that all the necessary measures are identified and implemented in order to protect the environment and to meet the environmental legislations.

6.1 Institutional Capacity

It is the responsibility of the management of the project to ensure that monitoring of air, water, soil and noise are being carried out efficiently and properly maintain the records of monitoring in order to access the environment quality. There should be precise recording and maintenance of all information generated during the monitoring. The management must hire a person to look over the monitoring. It is also the responsibility of management to ensure that all mitigation measures are being implemented to eradicate the possible adverse environmental impacts. For capacity building, all the employs should be given awareness about the environment and what should be their roles to protect the environment. Hired workers should be aware of the safety procedures and what to be done in emergency situations. Lectures should be given on environment safety twice a year. Training should be conducted yearly or twice a year to cope with emergency situations. The management must ensure that environment management plan is properly carried out. The EMP aims to ensure that

- Site activities are well managed
- All environmental safeguards are carried out correctly
- Adverse impacts on environment are minimized
- The biodiversity of the site is conserved or enhanced

- All relevant legislation is complied with
- The project is monitored for environmental impacts

Local workers will be hired during operation phase and one person from management should be there in order to implement EMP for construction phase. There will be 10-15 workers during construction phase and 8-10 workers will be hired during operational phase of the project. There will be a contractor who will head the workers in construction phase and supervisor will head the workers during operational phase. It is the responsibility of management that contractor and supervisor should implement safety procedures of health and environmental safety.

6.2 Training Schedules

The whole staff will be given training on different things like:

1- Health Safety & Environment Awareness Session

This training would be for whole Office staff and it would be done once in every 6 months.

2- Emergency Preparedness Training

This training would be arranged once in a quarter of every year by hiring consultant firm. This training would be helpful to ready the employees to handle any kind of emergency situation.

3- Fire Safety

This training would be for whole staff and it would be done once in every 6 months

6.3 Summary of Impacts and Mitigation Measures

When all impacts are considered, the impacts of highest significance are those that will affect the natural environment. Although there will be a number of social impacts of high significance, the majority of the impacts on social conditions are of moderate significance. Furthermore, it is clear from the description of the existing environment in by Ejaz qadeer & Sons that the disruption to social conditions and the existing social impacts are already of very moderate, and the project will not add any substantially new negative impacts to those that are already present.

Summary of impacts and their Mitigation Measures

During Construction	
• **Dust emission during construction and vehicle movement.**	• Water will be sprinkled in case of dust problem on all exposed surfaces to suppress emission of dust. • Vehicular movement will be restricted to a specific time for supplies of construction material and machinery. • Personal protective equipment will be provided to the workers.
• **Gaseous emissions may arise from construction equipment**	• All vehicles and other equipment used during the civil work will be maintained in good working condition in order to minimize emission of pollutants. • Emissions from the machinery and vehicles will be monitored on regular basis to ensure compliance to PEQS.
• **Noise will generate during construction**	• Blowing of horn by the project related vehicles will be strictly prohibited. • Workers will be provided with personnel protective equipment (ear Plugs) at places of high noise levels.

• **The water pollution will not be significant as this will be used only in small quantity and there will be no addition of large amount of contaminants**	• Loss of water will be minimized. Water conservation practices will be followed.

to water.	
• **The project site is located in industrial estate construction will not impact on Terrestrial Ecosystem.**	• Night time construction activities will be avoided. • The plants and grass near the site will be protected to the extent possible. • Plants & trees will be planted on the site and landscaping of the area will be done to increase its aesthetic value. • The plant will improve the aesthetic value and climatological conditions of the area.
• **Waste may result from construction which will include, packing material, scrap metal from construction and equipment fabrication, vehicle maintenance**	• Recyclable material will be separated at source. • Waste bins will be placed at the construction site for waste materials including plastic, paper, metal, and wood. • The recyclable waste will be sold to or picked up by waste contractors • All non-hazardous waste material that cannot be recycled or reused will be disposed properly at disposal station..
• **There will be no traffic congestion and disturbance to the people. All the constructional work of the project will be carried out within the project premises. So there will be no traffic congestion on road passing in front of the project site.**	• The proposed site is located in industrial area. Adequate mitigation measures will be provided within the project area to avoid any disturbance in the traffic flow on the project's road. Parking space will be provided for the vehicles working for the project activities within the project premises.
• **Sewage will be produced.**	• Sewage water will pass through septic tank before discharge to main drain.
• **Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a moderate negative impact.**	▪ The Contractor will ensure that the workers/labour are trained in safety procedures for all relevant aspects of construction; ▪ workers will be provided with proper safety equipment such as helmets, goggles, masks, where required and considered

	necessary; ▪ Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/incident; ▪ Proper illumination will be provided at night; ▪ Warning signs will be displayed in local language where considered necessary. ▪ Fence will be used all around thesite.
• **The project will provide employment opportunities for local people during construction Phase**	• No mitigation measure required.
OPERATIONAL PHASE	
• **During operational stage there will be no impact on pattern of rainfall, climate and other related factors. Thus its impact on meteorology will be insignificant**	No mitigation measures required
• **Sewage will produce from washrooms & process flow.**	Sewage will pass through septic tank & treatment plant before discharge in drain.
• **Emission from vehicles & generator's**	All vehicles and other equipment used will be maintained in good working condition in order to minimize emission of pollutants. Emissions from the vehicles will be monitored on regular basis to ensure Compliance to PEQS. Emission control machinery will be used for stacks generators etc.
• **The operational phase will not pose any adverse impacts on Biological Environment.**	The Proponent will plant indigenous plants and trees within and around the project site to improve the climatological condition and aesthetic value of the area.
• **Noise will generate from machinery.**	Proponent will provide personal protective equipment (ear plugs) to the workers. And will keep the machines in proper condition to avoid unnecessary noise.

• **Small amount of solid waste will generate.**	Very small amount of solid waste will generate which will hand over to the waste

	Collector/contractor.
• **The project is considered to be compatible with the surrounding landscape and is not likely to impact negatively on the existing visual quality or landscape character of the area; rather it is expected to improve the general environment.**	Monitor housekeeping, littering and illegal dumping The proponent will plant ornamental and indigenous species of plants to increase the esthetic values of the project.
• **The production activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a moderate negative impact.**	The workers/labor are trained in safety procedures for all relevant aspects of construction; Workers will be provided with proper safety equipment such as helmets, goggles, masks, where required and considered necessary; Formal emergency procedures will be developed in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/incident; Warning signs will be displayed in local language where considered necessary.

6.4 Equipment's Maintenance Details

The maintenance of equipment is necessary for

- Achieving the best performance for the equipment and facilities.
- Reduction of the risks resulting from operation conditions to minimum levels.

For the current proposed project, it is therefore recommended to

- Prepare and keep the record of equipment maintenance log
- Prepare proper maintenance sheets for vehicles.
- Use fully tuned vehicles and machinery.
- Proper maintenance of machinery during operation.

6.5 Cost Breakup of Environmental Budget

A total of 0.5 Million will be assigned for environmental budget. Tree plantation will be done from this budget. This budget can be increased in case of any requirement.

Sr. No	PROJECT ACTIVITIES	ALLOCATED BUDGET
1	Water Sprinkling	20,000 PKR
2	Personal Protective Equipment's (PPEs)	50,000 PKR
3	Safety & awareness Board	30,000 PKR
	Fire safety	50,000
4	Sanitation and Waste disposal facilities, Solid Waste Bins	50,000 PKR
5	Tree Plantation	300,000 PKR
6	**Total Amount**	**500,000 PKR**

6.6 Organizational Structure & Responsibilities

The organizational structure for the Environment Management Plan is outlined below:

Primary Responsibilities

The administration is primary responsible for implementing EMP within this project construction and operational phase

Operational Management and Control

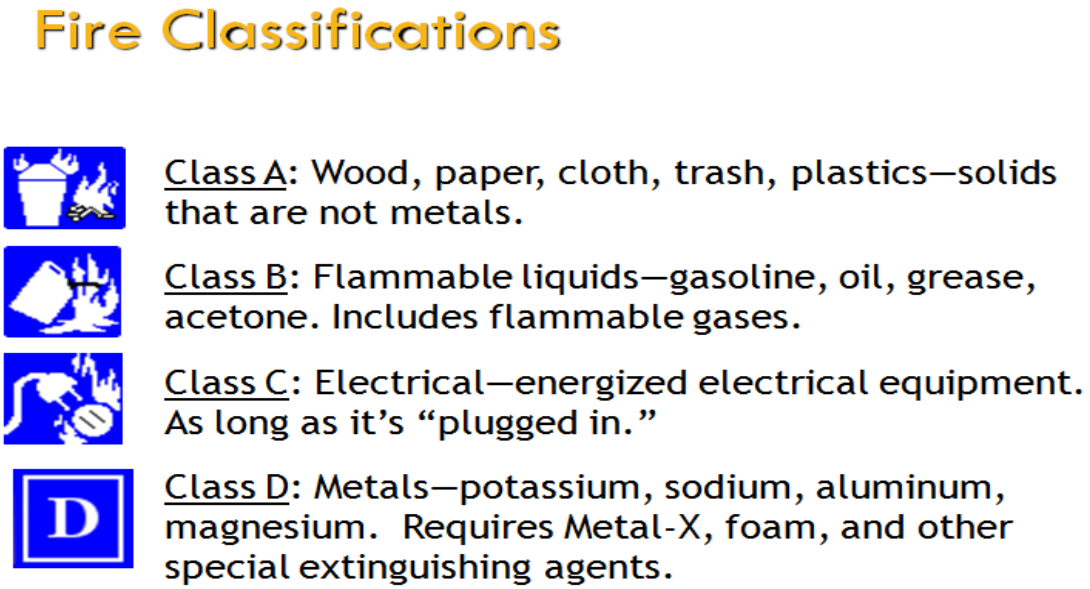
Conducting the operational activities in the environmentally sound manner will be the responsibility of the administration.

Supervision and Monitoring

Senior Supervisor will be responsible for all environmental issues and for the implementation of EMP.

Fire Fighting Plan

Fire can be of different types depending on the material which catches fire and every different type of fire has different method to handle it. The classification of fire is given below:



Proposing the mitigation measures for the negative environmental (physical, biological and socio-economic) impacts arising from the various project activities is not the only responsibility of the proponent; rather the proponent is liable to provide a complete plan showing in-depth details of how the activities will be managed in a way to keep environment undisturbed or in a state receiving least burden from the project construction and operation. This plan; called as the "environmental management plan" not only states the mitigation measures of the negative environmental impacts but also makes some person or authority responsible for carrying out that mitigation measure. Having an EMP in an EIA binds the specified people for taking the indicated mitigation measure.

MITIGATION AND IMPACT ASSESSMENT

The impact assessment methodology is discussed below:

3.1.1.1 What is the problem i.e. in terms of "major environmental impacts" which may arise by the subject project activity?

The major impacts may arise by the subject project include particulate matter & dust, noise, solid waste and wastewater. Other impacts are of minor importance. These impacts will arise during construction and operation but precautionary measures will be adopted prior to start the activity, during the activity and post activity.

3.1.1.2 When the problem will occur and when it should be addressed?

Any impact that would arise due to the subject project activity will be addressed on site. Trainings will be conducted on site prior to start work while other precautionary measures will also be adopted to make the project safe and environmental friendly.

3.1.1.3 Where and how the problem should be addressed?

HSE manager/environmental manager along with site manager will be appointed to assess any impact that could be arisen during both phases. He would be responsible to address the problem and to mitigate it.

3.1.2 Whys of achieving mitigation measures

3.1.2.1 Changing in planning and design:

By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed in previous chapters.

3.1.2.2 Improved monitoring and management practices:

Management of M/s ***Ejaz qadeer & Sons*** shall take appropriate measures to provide pollution free and safe environment during the proposed project activity by implementing improved management practices and monitoring techniques suggested in EMP.

3.1.2.3 Compensation in money terms:

M/s Ejaz qadeer & Sons will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures. Design of the project will assure the structure stability and project life in a long run.

3.1.2.4 Replacement, relocation and rehabilitation:

M/s Ejaz qadeer & Sons will develop Restoration/ reclamation or tree planation plan to restore the project area. Maximum Plantation will be done with native species within the building, along the boundary wall and along the road side if directed by EPA. Also, in-front of main area, horticulture plan will be formulated and area for thiswill be kept reserved.

ENVIRONMENT MANAGEMENT PLAN

Objective	Management Action	Responsibility	Time framework	Residual impact
Construction phase				
Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers was undertaken without discrimination and in accordance with company recruitment policy by contractors involved in Construction	Contractor	On commencement of construction activities	Unemployed people of area got job opportunities and their standard of living improved
To promote the use of local service providers	Local procurement of goods and services was undertaken wherever possible and cost effective and where practicable to the Project	Contractor	On commencement of construction Activities	Indirect job opportunities
Safety during construction				
To ensure safety on construction site	• Safety signage was put in relevant places within the construction site • Construction drivers are subjected to public safety awareness • Reckless driving by construction workers was prohibited and monitored	Contractor/Environmental manager/HSE manager	On commencement of construction activities	Safety of workers was ensured by implementing said mitigation measures

	• Workers were given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. and its use will be strictly enforced • Workers were trained on the regular basis regarding personal safety • Incidents were reported directly to the concerned authority			
Construction waste management				
To prevent the contamination of soils and water resources due to inappropriate management and disposal of waste	• Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Proper management of the waste at site • At the end of the construction phase, left-over waste was removed by using the standard waste management procedures • All the idle machinery and equipment was immediately removed from the site	Contractor	Throughout construction stage	Waste was disposed of/reused/ recycle or resale as per practices of area

	• Scrap and the debris was removed from the site at the end of the construction stage after appropriate segregation of the material			
Pollution control management				
To contain spillages	• Proper maintenance of construction vehicles and equipment was undertaken • Appropriate environmental security measures including shovels and plastic bags etc. were provided to prevent accidental release to ground. • Appropriate procedures and protocols were established and monitored for materials transport and handling whilst on the site.	Contractor	On-site establishment	Potential for accidental release of materials during transport and handling on the site was minimized.
To manage sewage	Portable toilets were provided at site.	Contractor	On commencement of construction	Portable toilets were cleaned properly and regularly
Protection of biodiversity				
To avoid unnecessary disturbance of and quick	• Avoid destruction of biodiversity outside the designated factory construction site	Contactor	Throughout construction phase	Vegetation loss cannot be avoided, but successful restoration, improvement and

recovery of biodiversity in the project site	• Minimize clearing of vegetation during construction • Surface soil excavated during construction to be placed back on the sub-soil to fast vegetation recovery • Prepare and implement an appropriate landscaping programme to help in re-vegetation of affected project areas after construction • The flora of the site was restored at the end of the construction phase by landscaping and planting native Vegetation			long-term management of the surrounding areas and maintenance of planted trees was provided
Air quality & dust management				
To minimize the dust entrainment during construction	• Regular surface was implemented on dusty sections in the factory construction site • Strict on-site speed controls were enforced for construction vehicles • All trucks hauling soil, sand and other loose materials were covered	Contractor	On commencement of construction activities	Dust propagation was limited to construction area and did not influence local community. However workers were supplied with dust masks especially on dry days.

	• No excavation activity will be carried out during windy days • Fuel-efficient and well-maintained haulage trucks were employed to minimize exhaust emissions • Construction workers were sensitized on measures to reduce air pollution			
Noise				
To minimize disturbance due to noise	• Loading and unloading of materials was done carefully to reduce noise disturbances to surrounding households • Residences are at a safe distance from site so no disturbance is envisaged. • Drivers were instructed to avoid unnecessary gunning of vehicles, hooting and buzzing. • Regular maintenance of the machinery was done to reduce the noise • Vehicles were tuned on regular basis	Contractor	On commencement of construction activities	Noise level was within PEQs
Occupational health & safety				

To ensure healthy and Secure/safe environment in the construction site for all workers	• Management ensured that fire extinguishers are located in strategic and visible places • All vehicles and construction equipment were under control of competent personnel • Inspection of material and harmonization to the occupational health and safety standards. • Adequate security for workers was be provided during construction • Sensitize workers to operate in teams	Contractor	Throughout construction phase	Record of all incidents was maintained and reported to HSE manager.
Operation phase				
Wastewater management				
Degradation of surface waters quality due to process water and sewage direct disposal	• Wastewater generated from the process of aforesaid unit during washing of tanks and municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic Tank. The wastewater is treated in installed	Proponent/unit management	Throughout project life cycle	None

	Wastewater treatment plant.			
Air quality management				
Particulate emissions and generator stack emissions	• Clean and maintain a sufficient level of temperature and humidity in every section. • Proper handling of raw material to minimize the likelihood of fugitive dust and emissions during storage. • Monitoring of Ambient air parameters (Particulate matter, CO SOx, NOx) emissions should be carried out on	Safe Enviro Solutions.	Throughout operation phase	Local air quality will be virtually unaffected and will be based on PEQs

	regular basis to ensure compliance with the PEQS. • Sprinkling of water is being done for dust suppression. • Plantation of indigenous trees within the premises and along the boundary.			
Noise & vibration				
To minimize disturbance of communities due to noise	• Effective noise suppression design and plan is made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise. • It is ensured that power engines, vehicles and other potentially noisy equipment are in good condition. Noise from generators, vehicles, other equipment and machinery will be kept to the minimum through regular maintenance.	Management	Throughout project life cycle	Noise level will be based on PEQs

	• Noise monitoring is carried out periodically. • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • Introduction of control and monitoring rooms having good sound insulation properties. • All the workers will be provided with ear plugs. • All the transporters will be advised to carry out regular maintenance of their vehicles.			
Traffic & transport				
Increased heavy vehicles traffic both locally and nationally.	• Maximize the use of the rail network, when available, for bulk deliveries and abnormal loads. Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should	Management of Ejaz qadeer & Sons	Throughout project operation	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.

	be scheduled to avoid peak times to reduce congestion			
HSE				
To minimize loss work injury/hazards/incidents/ accidents	• Training regarding HSE should be given on the regular basis • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority	Environmental manager/Safe Enviro	Throughout life cycle of project	Potential of injuries will be minimized
First aid				
To ensure safety and health	• First aid box will be available at the site • First aid training will be given to the employees on the regular basis • Numbers of all the concerned/authorized persons that will	Environmental manager/Safe Enviro	Throughout life cycle of project	None

	be contacted in the case of emergency will be displayed on-site			
Fire hazard				
To prevent any disaster	• Firefighting equipment including DCP type fire extinguisher, CO2 Type extinguisher, sand buckets, sand drums with spade and hose pipe cabinet will be installed inside the plant • All the equipment will be placed at strategic locations where the risk of out-burst of the fire is high. List of fire posts is annexed. • Smoking will not be permitted in the vicinity of the plant • Regular site inspection will be done to eliminate all the chances of the hazards • Checking and maintenance of the fire-fighting equipment will be carried out on the regular basis • Emergency evacuation plan is annexed.	Environmental manager/Safe Enviro	Throughout life cycle of project	Potential of disaster will be minimized by suggested mitigation measures implementation

Employment				
To provide job opportunities and helping in improving living standard of people	• During this phase, skilled and unskilled labor will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. • Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labour and after completion of construction phase serve as a permanent business opportunity.	Management of Ejaz qadeer & Sons	During construction and operation phase	Direct and indirect jobs

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Table 7-2: Environmental Monitoring Plan

Env. Components	Project Stage	Parameters	Instrument	Standards	Monitoring			Institutional Responsibility
					Location	Frequency	Duration	
Air	Construction	PM_{10}, SO_2, NO_2, CO, SPM ,O_3	Air Quality Monitors/Gadgets	PEQS	Project site	Twice during construction	As per approved testing method	Contractor through approved monitoring lab
	Operation	Stack emissions	Air Quality Monitors/Gadgets	PEQs	Stack	Quarterly	As per approved testing method	Through approved third party/monitoring lab

Noise Levels	Construction	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Twice during construction	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Contractor through approved monitoring lab
	Operation	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Quarterly	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Through approved third party/monitoring lab
Wastewater	Operation	BOD, COD, TSS etc.	Through approved equipment	PEQs	ETP	Quarterly	As per approved testing method	Through approved third party/monitoring lab

✓ CHAPTER 8: STAKEHOLDER CONSULTATION

5.1 GENERAL

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

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

- Share information with stakeholders on said project installation and operation
- To access the impacts on the physical, biological, and socio-economic environment
- Understand stakeholder concerns regarding various aspects of the project
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the said project
- To invite people to express their views about the positive/negative impacts on their life styles and environment

This report includes all the comments, which were taken into account in preparing the definitive development concept for the establishment of said project. Public consultation Performa is attached as Annexure of this EIA Report.

5.2 OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It provides an opportunity to exchange knowledge with the all stakeholders. Referring particularly to a project related to environmental assessment, involvement of public is all the more essential, as it leads to better and more acceptable decision-

making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-developmental phase, goes a long way in updating the knowledge and understanding.

5.3 IDENTIFICATION OF STAKEHOLDERS

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted. They are the key players including; shops owners, vendors, public offices, school, university, hospitals. Not only published material (Both brief and comprehensive literature were obtained on request) but also noted their views and the concerns. Following stakeholders are identified for this project:

Project stakeholders include the settled families, property owners or the tenants, businessmen (land owners, traders, shopkeepers, vendors, transporters, restaurant owners etc.), employees of the commercial entities. PAPs are of two types, for instance:

5.3.1 Direct

In this case, the PAPs are those who will be benefited directly by project. No disturbance on the local community is being foreseen due to the installation of the said project.

5.3.2 Indirect

Indirect impact will occur on those who are living or doing business within project area of influence. Indirect respondents include;

- ✓ Government agencies responsible to deal with the project related activities
- ✓ Government Agencies directly, indirectly or widely involved in the execution and monitoring of the said project
- ✓ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related

5.4 PUBLIC DISCLOSURE

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

5.5 CONSULTATION PROCESS

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

- Data collection regarding the socio-economic condition of the study area
- Pretesting of socio-economic survey tools in the field
- To consult the locals for collection of information on biological environment

Various meeting with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison

- Documentation of information narrated by the stakeholders and mitigation measures said by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback

5.5.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

5.5.1.1 Consultation Material

The main document for distribution to stakeholders during the consultations was Social Impact Assessment Interview. The filled Survey forms of stakeholders are annexed.

5.5.1.2 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings held in the project area. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the said project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis, and interpretation.

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations

unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

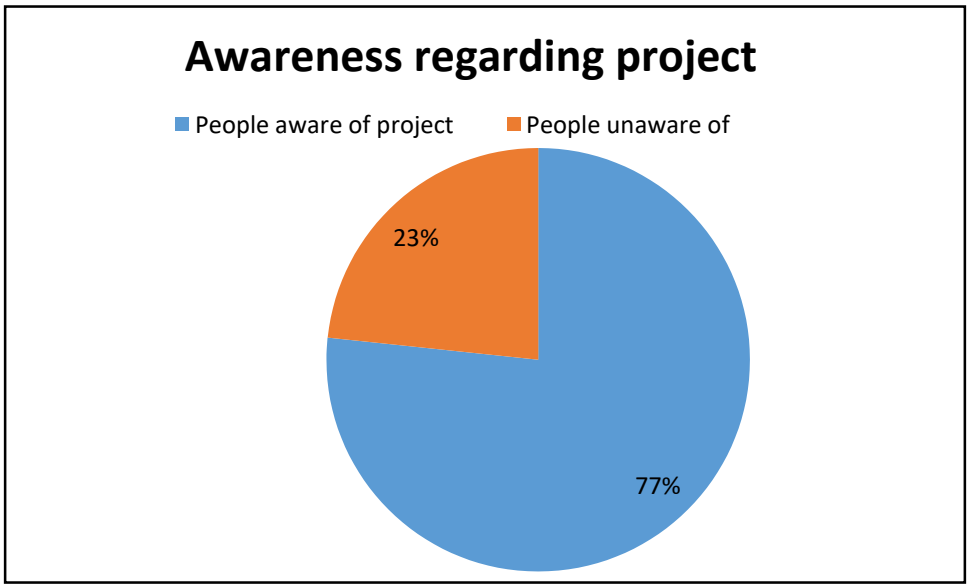
5.5.2 Primary Stakeholders Consultation

The community consultations were conducted with the community members outside their settlements to encourage and facilitate their participation.

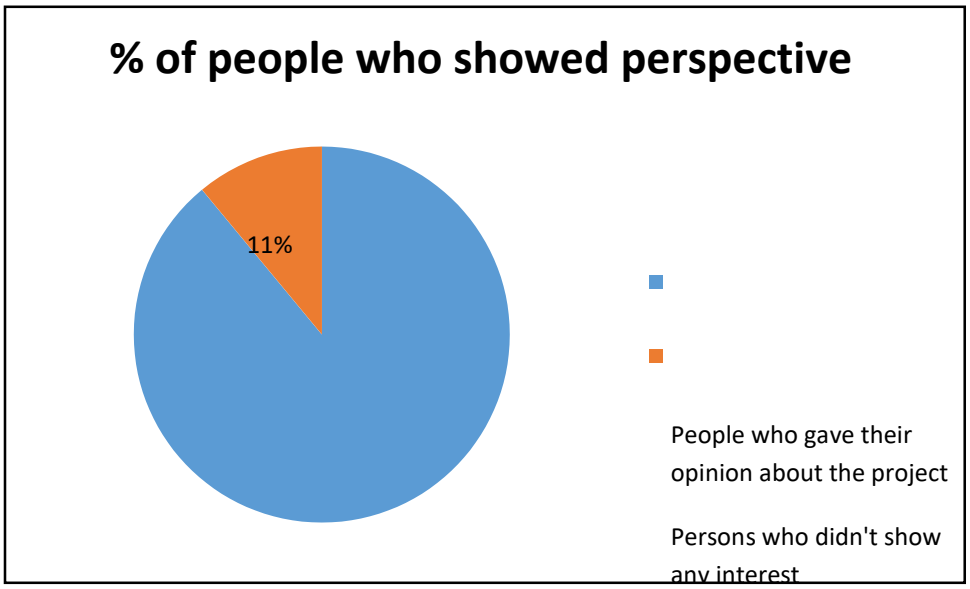
5.5.2.1 STAKEHOLDER CONCERNS AND RECOMMENDATIONS

The summary of consultation with various stakeholders is given below

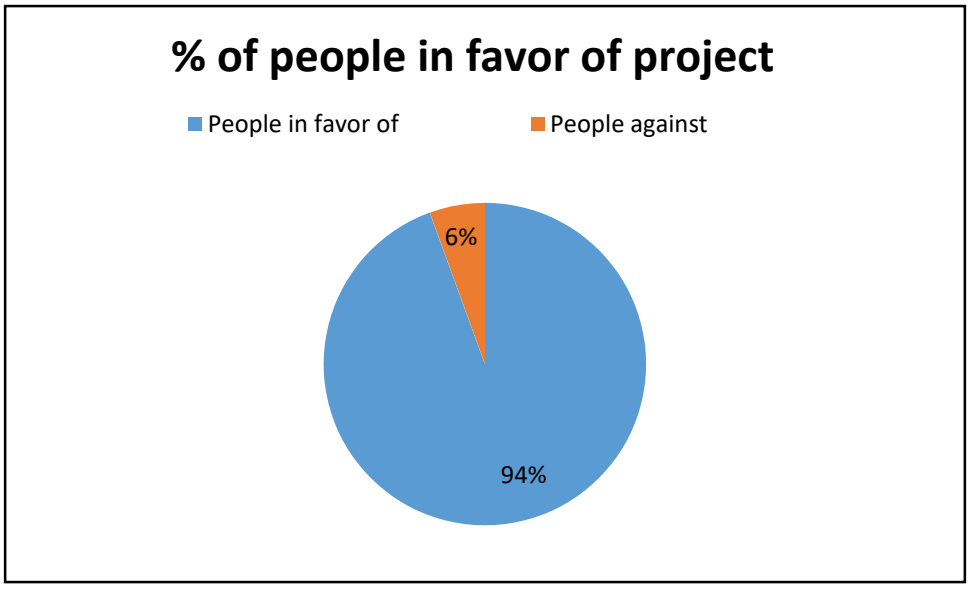
Out of total respondents of, 77% knew about the project whereas 23% were not aware of the project planning and implementation. All people were then briefed about the project.



89% commented their views about the project and 11% didn't respond.



Out of 89%, majority of the people (about 94%) favored the construction of the project keeping in view its importance and 6% people showed pessimistic views in general but mitigation measures and solutions to their concerns were provided.



Majority of people were in favor of project. They said that project will result not only in direct jobs opportunities for locals but also will enhance subsidiary business, trade, education, and agriculture and community development. The people were of the view that industry might also

elevate education standards, struggle for career enhancement besides improvement in standard and quality of living in area. People were also of the view that industry may also be instrumental in connecting the local people with major cities and will result in increase in GDP.

Very few near to 6 % only shows concerns over generator emissions, noise, and wastewater and health impacts. Majority of the concerns were changed in the favor of installation after communicating the participants proper solutions and mitigation measures

5.6 STAKEHOLDERS CONSULTED

Names of consulted stakeholders are given in table below:

✓ **Table 5-1: List of consulted stakeholders**

Sr. No	Stakeholder name
1.	Zeshan Chodhary
2.	Asif ali
3.	Shoukat Khan
4.	Mehboob Ikram
5.	Sharif
6.	Muhammad Iqbal
7.	Rahat Ali
8.	Muhammad Zaheer
9.	Muhammad Rizwan
10.	Muhammad Javed
11.	Muhammad Bashrat
12.	Muhammad Aslam Khan
13.	Muhammad Asif
14.	Muhammad Ali
15.	Kashif Ali
16.	Irfan Jamel
17.	Hamza Irshad
18.	Hameed Ahmad

Reporting

Sr. No		**Detail**
5.1	Clear reporting style supported by maps or other descriptive details	The said instructions have been followed in this report.
5.2	Specific term of references should be present in report	This is attached with this report.
	Appendices Glossary	This is attached with this report.
	1- List of Abbreviations	This is attached with this report.
	2- List of individuals or organizations consulted along with their written feed back	This is attached with this report.
	3- Sources of data and full list of all reference material used	This is attached with this report.
	4- Terms of references for environmental reports	This is attached with this report.
	5- List of names, qualifications and roles of team members carrying out the IEE/EIA study	This is given at Page 15 of this report.

Annexure

REFERENCES

- SEMDA pre-feasibility study for establishment of SLAUGHTER HOUSES
- D. E. Walsh and K. A. Gilles, "slaughter houses", Elements Of Food Technology,
- N. W. Desrosier, Editor, AVI Publishing Company, Inc., 1977. 1992 Census Of Manufactures: Miscellaneous Food And Kindred Products,
- Preliminary Report Industry Series, U. S. Department of Commerce, Bureau of Census,
- Issued August 1994.
- Guidelines for Preparation and Review of Environmental Reports
- Guidelines for Public Consultation
- Labor Laws
- Meteorology Department Data (from website)
- National Environmental Policy 2005
- National Environmental Quality Standards (Self-Monitoring and Reporting by Industries) Rules, 2001
- Pakistan Biosafety Rules 2005
- Pakistan Environmental Protection Act, 1997
- Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations, 2022.
- The Land Acquisition Act, 1894
- The Punjab Local Government Ordinance, 2001
- Punjab Environmental Protection (Amendment) Act, 2012

LIST OF ABBRIVIATIONS

CO	Carbon monoxide
CO_2	Carbon dioxide
NFPA	National Fire Protection Association
SO_2	Sulphur Dioxide
°C	Degree Celsius
PM10	Particulate Matter >10
EIA	Environmental Impact Assessment
EMMP	Environment Management & Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environment Protection Department
PEQS	Punjab Environmental Quality Standards
SPM	Suspended Particulate Matter
HSE	Health Safety and Environment
UDT	Urban Development and Tourism
SEP	Standard Engineering Practices
ERP	Emergency Response Plan
SWM	Solid Waste Management
IEE	Initial Environmental Examination
Km	Kilometer

CUM	Cubic Unit per Meter
GWT	Ground Water Table
Ltd.	Limited
HC	Hydrocarbon
Mm	Millimeter
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PA	Protected Area
PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipments
Pvt.	Private
SFT	Square Foot
SOPs	Standard Operation Procedures
SO_x	Oxides of Sulphur
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority

WASA	Water and Sanitation Agency
WHO	World Health Organization

LIST OF EIA STUDY TEAM WITH QUALIFICATION AND POSITION IN TEAM

Name	Qualification	Position in the EIA/IEE Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Ammara Anwar	MS Environmental Science PU-Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Faisal Irshad	BS (Hons) Environmental Engineering (UET Lahore)	Environmental Engineer
Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)