

EXECUTIVE SUMMARY

INTRODUCTION

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for the Establishment of Prime Protein Mill at Upper Seam Nala Kot Mahal, Sheikhpura Road, Tehsil and District Gujranwala. The main goal of the Proposed Project is to carry out the advanced processing of poultry by-products feathers which are not intended for human consumption, are transformed into valuable proteins, minerals and oils of good quality. For this instance, Environmental Impact Assessment of the Project has been conducted in accord with the Punjab Environmental Protection Act 1997 (amended 2022). The process for conducting environmental assessment and the results of EIA is described in this document.

SALIENT FEATURES OF PROJECT:

1.	Project Title	Establishment of Poultry Waste Rendering Unit namely "Prime Protein Mill"
2.	Project Location	Upper Seam Nala Kot Mahal, Sheikhpura Road, Tehsil and District Gujranwala.
3.	Proponent	Imran Yousaf S/o Atta Ullah
4.	Consultant	Environtech Consultants (Private) Limited
5.	Total Area	43560 SFT
6.	Total covered area	8539.14 SFT
7.	Total open area	34895.25 SFT
8.	Capacity of Project	Maximum 3200 liter/day Crude Oil 12,000 Kg Poultry Protein (Semi Powder)
9.	Location of project	32°05'33.8"N 74°07'20.3"E
10.	Nature of Area	Self-developed Industrial
11.	Present status of Land Use	Vacant Plot
12.	Land use in the surroundings of project site.	The surroundings are: North open/vacant plot South open/vacant plot East open/vacant plot West open/vacant plot
13.	Cost of Project	PKR 45 million PKR

14.	Raw material	Poultry Waste
15.	Product	Poultry Protein (Semi Powder) + crude oil
16.	Description of proposed project	The proposed project is the establishment of Poultry Waste Rendering unit.
17.	Nearby emergency services i.e. Hospital, police station, rescue, fire brigade etc.	DHQ Hospital, Rescue 1122, Police Station.
18.	Water Source	Ground Water
19.	Status of Project	Open Land
20.	Source of Power	GEPCO

PROJECT OBJECTIVES

The aim of the Proposed Project is to provide customers with good quality of poultry protein (semi powder) and crude oil product which aids proper development of chicks and hence used for feeding the domesticated birds.

SITE ALTERNATIVES

An open owned land is selected for the Establishment of Proposed Project. Easy and quick road access to the local markets is another reason that favored the selection of this site. Further, no important religious, archaeological, historical or recreational site, or any other ecologically sensitive, declared protected area or poor population exists within close vicinity of the selected site. Also, the site is within a self-developed industrial area that favors the point of selection of said site. In view of these facts, the said site was found to be best suitable for the project.

SCREENING

Section 12 of the Punjab Environmental Protection Act (PEPA) 1997 makes it mandatory for the proponent of a project to file with the Environmental Protection Agency either an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) in respect of the project.

Establishment of Prime Protein Mill falls under **Schedule-II, Category B (9) of IEE & EIA Regulations, 2022** which requires an EIA.

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Keeping in view, all the findings of the baseline study, and through general observation and desktop study, and understanding of the activities and processes involved in the project, environmental impacts have been anticipated. Following impact assessment methodology; i.e. defining the criteria for evaluation

of the impacts, identification of mitigation measures (all possible options), evaluation of the residual impacts and identification of the monitoring requirements, adequate and effective mitigation measures have been proposed for all construction and operation related likely environmental impacts of the project. These mitigation measures have been proposed in order of attempts to eliminate or minimize the impact, provide some compensation or rehabilitate the environment by some means.

Weather describes an impact as having both spatial and temporal impacts, which can be described as the change in an environmental parameter over a specified period and within a defined area, resulting from a particular activity compared with the situation which would have occurred had the activity not been initiated.

Key impacts related to the construction phase include:

- Construction Noise
- Solid Waste
- Soil Contamination
- Air Pollution
- Community and Workers' Safety
- Employment Conflicts

Mitigation measures recommended to be incorporated into the project include running the machines and vehicles on good quality (low-sulfur fuels) in good working order ensuring regular maintenance, tuning and servicing, and providing them with emission control devices, such as mufflers and silencers, etc. Water suppression and covered transportation and odor of the construction materials and slow driving on unpaved roads will control dust emission. Solid waste of construction activities will be used for flooring, while the remaining solid waste will be managed as per TMA practices in the area. For community safety, irrelevant persons will not be allowed inside. Safety of the workers will be ensured by developing SOPs for all jobs, training the workers to follow SOPs, discouraging any careless attitude of workers and providing the workers with, and encouraging them to use PPEs.

Key impacts related to the operation phase include:

- Noise
- Air pollution
- Wastewater
- Solid Waste
- Safety, Public Health & Nuisances

Since the soil of the area is rich in water reserve, water extraction for the unit operation; i.e. to meet municipal water requirements, for fire safety, and for cleaning up of the unit, will not disturb the water

availability in the area. Air emission sources are only a small boiler and generator. Dust from floor cleaning will also be insignificant. Solid waste will be municipal in nature. Safety of the workers is an issue of prime concern as in any occupational activity.

Municipal wastewater will be handled via Septic Tank whereas boiler wastewater will be managed in settling pit and then will be used for sprinkling purpose. Municipal solid waste will entirely be managed in accordance with the TMA practices in the area. Wet suppression during floor cleaning will suppress dust emission, and regular monitoring for preventive maintenance of the generator and the machines will check air quality. Noise from the generator and the other machines will be mitigated by regular servicing and tuning by enclosing them in soundproof rooms and by cropping and plantation in and around the premises. Safety issue will be managed by developing and updating from time to time, the SOPs for all work activities, training the workers to follow them, not tolerating any careless attitude of the employees during work, regular inspection to ensure no unsafe act or condition prevails at work site and lastly, by providing the workers with necessary PPEs (safety helmets, dust masks, safety shoes, ear plugs, special suiting for various jobs and areas, etc.) and encouraging the workers to use them. Adequate solid waste management and good housekeeping will ensure healthy environment at the unit, as solid waste if not adequately managed, can serve as a source of pathogens. An Emergency Response Plan and a firefighting plan will also be in place to deal with all sorts of emergencies

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

During construction, ambient air quality for dust level in particular, vehicle and equipment exhaust, noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. Monitoring Plan has been included in Chapter-6. During operation, noise level, ambient air quality and exhaust of generators and boiler (tests), solid waste management and community and workers' safety need to be monitored.

CONCLUSION

The Environmental Impact Assessment contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An

implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits. It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. The objective of preparation of an environmental study is to identify how the environment is impacted and to suggest mitigating measures to reduce if not totally eliminate adverse effects of a project. It is accordingly recommended that Environmental Approval for the project should be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponents of the project

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	11
1.1 GENERAL	11
1.2 THE PROPONENT	11
1.3 THE PROJECT	11
1.4 DETAILS OF CONSULTANTS	12
1.5 PURPOSE OF REPORT	12
1.6 SCOPE OF STUDY	13
1.6.1 IMPACT ASSESSMENT	13
CHAPTER 2: SCREENING AND SCOPING.....	15
2.1 SCREENING/TYPE AND CATEGORY OF PROJECT	15
2.3 SCOPING OF EIA	16
2.4 EIA METHODOLOGY	16
CHAPTER 3: DESCRIPTION OF PROJECT	21
3.1 GENERAL	21
3.2 TYPE AND CATEGORY OF PROJECT	21
3.3 OBJECTIVES OF PROJECT	21
3.4 VEGETATION FEATURES OF SITE.....	21
3.5 LOCATION AND LAYOUT OF PROJECT	21
3.6 ROAD ACCESS.....	21
3.7 COST AND MAGNITUDE OF OPERATION.....	22
3.8 SCHEDULE OF IMPLEMENTATION	22
3.9 RELOCATION AND REHABILITATION PLANS	23
3.10 PROJECT DESCRIPTION	23
3.11 EMISSION CONTROL TECHNIQUES	26
3.12 EMISSIONS CONTROL TECHNIQUES.....	26
3.11.1 Design, Operation and Specification of Dry Scrubber	27
3.13 SPHERE OF ODOR:	28
3.14 WASTEWATER TREATMENT	29
3.15 SOLID WASTE MANAGEMENT.....	29
3.16 GOVERNMENT APPROVAL	29
CHAPTER 4: BASELINE ENVIRONMENTAL PROFILE	30
4.1. Methodology	30
4.1.1 Data Collection	30
4.1.2 Social Survey	30
4.1.3 Sampling Design.....	31
4.1.4 Questionnaires.....	31
4.1.5 Data Editing and Analysis	31
4.1.6 Review of Legal and Administrative Framework	31
4.1.7 Baseline Conditions	31
4.2. Physical Environment	31
4.3. Project Area.....	32
4.4. Geography	33
4.5. Climate	33
4.6. Weather Around the year.....	34

4.7.	Seismology	34
4.8.	Temperature	35
4.9.	Rainfall.....	36
4.10.	Wind	37
4.11	Biological Environment	37
4.11.1	Flora	38
4.11.2	Fauna	38
4.12.	Environmental Monitoring Through Laboratory	38
	Sampling Sites.....	39
4.13.	Socio-Economic Environment.....	39
4.13.7	Quality of Life Values	40
4.13.9	Educational Institutes.....	41
4.13.10	Facilities Available	41
4.13.11	Literacy Rate.....	41
4.13.12	Common Diseases	41
4.14.	Favor for the Project	41
4.15.	Quality of Life Values.....	42
3.17	Suitability of the site.....	42
CHAPTER 5: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURE		42
5.1	GENERAL	42
5.2	OBJECTIVES	42
5.3	IMPACT ASSESSMENT METHODOLOGY.....	43
5.3.1	Screening of Potential Impacts	43
5.3.2	What is the problem?	43
5.3.3	When problem will occur and when it should be addressed?	43
5.3.4	Where problem should be addressed?	43
5.3.5	How the problem should be addressed?	43
5.3.6	Identification of Mitigation Measures.....	44
5.3.7	Evaluation of the Residual Impacts.....	44
5.3.8	Identification of Monitoring Requirements.....	44
5.4	Impacts Associated with Project Location.....	44
5.5	Impacts Associated with Design	45
5.6	Potential Environmental Impacts during Project Commencement/Construction Stage	45
5.7	Potential Environmental Impacts during operation phase	47
5.8	Potential environmental enhancement measures	48
CHAPTER 6: ENVIRONMENTAL MANGEMENT AND MONITORING PLANS.....		48
6.1	GENERAL	48
6.2	OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN	48
6.3	MANAGEMENT APPROACH	49
6.4	COMPONENTS OF THE EMP The EMP consists of the following:.....	49
6.5	ENVIRONMENT MANAGEMENT PLAN	49
6.6	ENVIRONMENTAL MONITORING PLAN	56
6.7	INSTITUTIONAL CAPACITY OF THE UNIT	61
6.7.1	PRIMARY RESPONSIBILITIES.....	61
6.7.2	OPERATION MANAGEMENT & CONTROL	61

6.7.3	SUPERVISION & MONITORING.....	61
6.7.4	COMMUNICATIONS AND DOCUMENTATION	61
6.8	ENVIRONMENTAL TRAINING.....	62
6.9	EQUIPMENT MAINTENANCE DETAILS.....	63
6.10	ENVIRONMENTAL BUDGET	63
CHAPTER 7:	PUBLIC CONSULTATION AND INFORMATION DISCLOSURE.....	64
7.1	Proponent's Environment Management Team.....	64
7.2	The Responsible Authority	65
7.3	Objectives of Consultation	65
7.4	Identification of Stakeholders.....	66
7.4.1	<i>Direct Stakeholders</i>	66
7.4.2	<i>Indirect Stakeholders</i>	66
7.4.3	<i>Other Departments and Agencies</i>	66
7.5	Public Disclosure.....	67
7.6	Consultation Process.....	67
7.7	Environmental Practitioners and Experts.....	68
7.8	Affected and Wider Community	68
7.8.1	<i>Views, Concerns and Suggestions of Various Stakeholders</i>	68
7.8.2	<i>Addressing Public Concerns</i>	69
7.9	Acceptance Level of the Project.....	69
CHAPTER 8:	CONCLUSION AND RECOMMENDATIONS	70
8.1	CONCLUSION.....	70
8.2	RECOMMENDATIONS	70
GLOSSARY		72
LIST OF ABBREVIATION		74
LIST OF PEOPLE CONSULTED AND THEIR VIEWS		76
SOURCES OF DATA		77
TERMS OF REFERENCES		78
LIST OF NAME, QUALIFICATION AND ROLES OF TEAM MEMBERS CARRYING OUT IN IEE/EIA STUDY		79

List of figures

Figure 1: Location map of proposed project	21
Figure 2: Road Access Map	22
Figure 3: Process flow diagram of Poultry Waste Rendering unit.....	24
Figure 4: Chicken rendering batch cooker	24
Figure 5: Pre-breaker.....	25
Figure 6: Centrifuge Machine	25
Figure 7: Dry Scrubber working principle.....	27
Figure 8: Dry scrubber preliminary design	28
Figure 9 Wind rose diagram	28
Figure 10: Design of septic tank and collection of municipal waste	29
Figure 11 Gujranwala is in the Rechna Doab region of Punjab, marked in grey	33
Figure 12: Climate Change in Gujranwala	34
Figure 13: Seismic Zone of Pakistan (Geological Survey of Pakistan)	34
Figure 14 Average Annual Temperatures and precipitation.....	35
Figure 15 Maximum temperature ranges.....	36
Figure 16 Annual cloudy, sunny and precipitation days.....	36
Figure 17 Annual Precipitation amounts	36
Figure 18 Annual average wind speed	37
Figure 19 Wind Rose diagram	37
Figure 20 Occupation of Respondents	40
Figure 21 personal Income	41
Figure 22: Hierarchy of Mitigations	44

List of Tables

Table 1: manpower for operational phase	25
Table 2: List of equipment	26
Table 3 : Environmental Management Plan for Pre-Construction, Construction and Operation Phase .	50
Table 4: Environmental Monitoring Plan for Construction Phase	58
Table 5: Environmental Monitoring Plan for Operation Phase	59
Table 6: Training program	62

CHAPTER 1: INTRODUCTION**1.1 GENERAL**

The Poultry Waste Rendering process handles the by-products of the poultry slaughter process. The poultry by-products that are not intended for human consumption are transformed into valuable proteins, minerals and oils. Poultry is a general term used for the animals such as chicken, turkey, ducks, geese etc. The poultry by-products consist of soft meat, feathers, blood, and deboning residue but can also consist of dead-on arrival (DOA), deboning residue and farm waste.

Poultry Waste Rendering Mills in the world are pretty much diversified. There are several countries that have a great share in this industry like China, Pakistan, Turkey, Indonesia, Bangladesh, Egypt and United States etc.

For any development project to be initiated in Punjab, it is mandatory to accord Environmental Approval from EPA-Punjab under Section-12 of the Punjab Environmental Protection Act, 1997 (amended, 2012) by filing an IEE or EIA before EPA- Punjab, as may be defined in Review of IEE/EIA Regulations, 2022 or recommended by EPA-Punjab.

1.2 THE PROPONENT

Name of Proponent	Imran Yousaf S/o Atta Ullah
Address	House no. B-18, Muhalla Muhafiz Town, Gujranwala.

1.3 THE PROJECT

The Proposed Project is titled as Establishment of Prime Protein Mill to provide good quality of poultry protein meal and crude oil. Its salient features have been described later in this Chapter, and briefly in Executive Summary of this EIA Report.

1.	Project Title	Establishment of Poultry Waste Rendering Unit namely "Prime Protein Mill"
2.	Project Location	Upper Seam Nala Kot Mahal, Sheikhpura Road, Tehsil and District Gujranwala.
3.	Proponent	Imran Yousaf S/o Atta Ullah
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10.	Nature of Area	Self-developed Industrial
11.	Present status of Land Use	Vacant Plot
12.	Land use in the surroundings of project site.	The surroundings are: North vacant/open plot South vacant/open plot East vacant/open plot West vacant/open plot
13.	Cost of Project	PKR 45 million PKR
14.	Raw material	Poultry Waste
15.	Product	Poultry Protein (Semi Powder) + crude oil
16.	Description of proposed project	The proposed project is the establishment of Poultry Waste Rendering unit.
17.	Nearby emergency services i.e. Hospital, police station, rescue, fire brigade etc.	DHQ Hospital, Rescue 1122 , Police Station.
18.	Water Source	Ground Water
19.	Status of Project	Open Land
20.	Source of Power	GEPCO

1.4 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of this Proposed Project, the proponent has hired the services of the environmental consultants; **M/S Environtech Consultants (Private) Limited**. Team comprising of environmental scientists, environmental economists and sociologists has worked on this report. The lists of those experts is given as appendices-F:

1.5 PURPOSE OF REPORT

The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Proposed Project in that area.
- To identify preconstruction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.6 SCOPE OF STUDY

For the EIA study, the scope of work is as under:

- Description of physical, ecological and socio-economic conditions in and around the proposed facility. Project impact identification, prediction and significance at all stages of the project including planning, implementation and operation.
- Identification and assessment of the workability of mitigation measures to offset or minimize negative project impacts on environment.
- Identification of occupational hazards during all stages of the project and laying down suggestions for improvement in the conditions.

1.6.1 IMPACT ASSESSMENT

The environmental and socio-economic features and other project information collected, is used to assess the potential impacts of the activities. The issues studied include potential project impacts on:

- ✓ Geomorphology
- ✓ Meteorology
- ✓ Groundwater and surface water quality
- ✓ Ambient air quality & noise level
- ✓ The ecology of the area, including flora and fauna

- ✓ Local communities

Wherever possible and applicable, the discussion covers the following aspects:

- ✓ The potential change(s) in environmental parameters likely to be affected by project related activities
- ✓ The identification of potential impacts
- ✓ The evaluation of the likelihood and significance of potential impacts
- ✓ The defining of mitigation measures to reduce impacts to as low as practicable
- ✓ The prediction of any residual impacts, including all long-term and short-term, direct and indirect, and beneficial and adverse impacts
- ✓ The drafting of monitoring arrangements of residual impacts

CHAPTER 2: SCREENING AND SCOPING

2.1 SCREENING/TYPE AND CATEGORY OF PROJECT

According to the Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) which states;

“No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be or where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA) and has obtained from the Government Agency approval in respect thereof.”

As per Punjab Environmental Protection Act 1997 (amended 2022) and Environmental Impact Assessment (EIA) & Environmental Impact Assessment (EIA) Regulations, 2022 proposed project falls under **Schedule II, Category A** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage).

2.2 EIA PROCESS

2.2.1 Overview of EIA

EIA is a systematic process to identify, predict and evaluate the environmental impacts of proposed actions and projects. The process is applied prior to major decisions and commitments being made. Wherever appropriate, social, cultural and health effects are considered as an integral part of EIA. Particular attention is given to practical implementation of EIA to prevent and mitigate significant adverse effects of proposed undertakings.

2.2.2 Objectives

The overall objective of the EIA is as follows:

- Description of the proposed project, including an estimate of emissions, effluent and waste and consideration of the project alternatives;
- Identify and investigate all impacts of the proposed project on the physical, biological, and socio-economic environment;
- Evaluation of the baseline environmental conditions in the impact zone to provide a basis for assessing the incremental impacts of the proposed project, including existing pollution levels and nuisance conditions;
- Identification and assessment of the potential impacts on the environment during each of the project phases;
- To propose mitigation measures that would help the Project Proponent in conducting the operation in an environmental sustainable manner; and

- To develop an Environmental Management Plan that would assist the Project Proponent in the effective implementation of the recommendations of the EIA

2.3 SCOPING OF EIA

This consolidated EIA report covers the examination of physical, biological, environmental and socioeconomic impacts of the proposed project. The spatial and temporal scope of the project is described below:

2.3.1 Spatial Scope

Impacts have been assessed for the immediate and direct area of influence of the project defined as:

- Immediate Area of Influence: Within the proposed project site boundary.
- Direct Area of Influence: Within 5 Km from the proposed project site boundary.

2.3.2 Temporal Scope

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 8-12 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility.

2.4 EIA METHODOLOGY

The EIA project passes through series of stages prior to attaining approval from relevant environmental protection agency. The EIA process and the approach followed for the proposed project is defined below:

2.4.1 Scoping

Scoping is an early stage in the process and is designed to ensure that the environmental studies provide all the relevant information on:

- The impacts of the project, in particular focusing on the most important impacts;
- The alternatives to the project;
- Other environmental sensitivities to be addressed at early stage.

The EIA process started with the scoping study. The purpose of scoping was to identify:

- Important issues to be considered in an EIA;
- Appropriate time and space boundaries of the EIA study;
- Information necessary for decision-making;
- Significant effects and factors to be studied in detail.

The scoping was followed by data collection describes in subsequent section

2.4.2 Data Collection

Following literature reviews and data collection was carried out for EIA:

- A generic description of the proposed project and its related activities was collected from the proponent.
- Legislative review of the applicable laws, regulations, guidelines and standards from literature search.
- Baseline of the area's environmental and socio-economic settings was collected through literature search and field surveys

2.4.3 Baseline

The environmental impact is measured through a change in the environment, resulting from a designated action or activity. In order to identify such a change, it is essential to have as complete as practicable understanding of the nature of the existing environment, prior to its interaction with the proposed activity. This translates into the need to characterize the existing baseline environmental conditions, including establishing prevailing conditions for a range of environmental media, particularly air, water, soil and groundwater, flora and fauna and the human environment.

This was achieved through a detailed review of all secondary resources (i.e. existing documentation and literature); and the undertaking of project specific baseline studies and surveys to collect supplementary data in the following areas:

- Geology;
- Flora and fauna;
- Water quality characteristics;
- Traffic;
- Ambient air quality;
- Noise conditions;
- Socio-economic conditions;
- Archaeology.

Both the existing secondary sources and literature studies were conducted and integrated into one coherent description of baseline characteristics.

2.4.4 Evaluation of alternatives

To establish an environmentally sound preferred option for achieving the objectives of the proposed project, different alternatives including site selection alternatives were studied in collaboration with the project proponent.

- **Site Alternatives**

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

- 1) The site is at the safe distance from the nearest residential area.
- 2) The site is well connected to the other parts of the city through Sheikhpura road.
- 3) No human settlements displacement or relocation is associated with the project development and operation.
- 4) Operation of the proposed processing unit in the respective zone will provide job opportunities to local people and will improve their socio-economic status of the study area as 10 employees will be hired during the operational phase

- ***Project Alternatives.***

This project is sustainable both environmentally and economically. It provides valuable ingredients for animal feed and pet food. Protein rendering unit can produce high-quality protein meals and animal fats that are rich in essential amino acids, minerals, and energy. These products can be used as feed ingredients for livestock, poultry, fish, and pets. They can help to improve the health, growth, and productivity of animals.

It supports the meat industry and the economy. Protein rendering unit can help to increase the profitability and sustainability of the meat industry by adding value to the animal by-products. It can also create employment opportunities and income for the workers and farmers involved in the rendering process. It can also contribute to the export earnings of Pakistan by supplying protein meals and animal fats to other countries.

- ***Environmental Alternatives:***

Project is environmentally beneficial as it reduces the waste burden through proper management system. It reduces the environmental impact of animal waste disposal. By using protein rendering unit, animal by-products that would otherwise be discarded or incinerated can be recycled and reused for various purposes. This can help to save landfill space, reduce greenhouse gas emissions, and prevent the spread of diseases and pathogens.

- ***Economic Alternatives:***

The project will support the meat industry and the economy by increasing the profitability and sustainability of the meat production and processing sectors. Rendering can help to reduce the costs of waste management and disposal, as well as generate additional income and revenue from the sale of rendered products. Rendering can also create employment opportunities and income for the workers and farmers involved in the rendering process.

It contributes to the export earnings of Pakistan by supplying protein meals and animal fats to other countries. Pakistan is one of the leading exporters of animal by-products in the world, especially to China, Vietnam, Indonesia, Malaysia, and Thailand. In 2019, Pakistan exported 1.2 million metric tons of animal by-products worth \$270 million. Rendering can help to increase the quality and quantity of these exports by producing safe and hygienic products that meet the international standards and regulations.

2.4.5 Stakeholder consultation

Stakeholder consultation was carried out for the proposed project with primary and secondary stakeholders of the project. Following steps were involved to attain stakeholder consent:

- Providing information on the proposed project activities;
- Identifying the stakeholders' concerns, expectations and apprehensions about the proposed project;
- Summarizing the process outcome.

2.4.6 Important issues and concerns raised during consultation

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised. Stakeholder Consultation it is mentioned in detail in Chapter 8.

- During survey following concerns of the local community, Government Departments and Environmental Practitioners and experts were noted:
- Nuisance must be controlled.
- Latest/State of the art technology must be adopted.
- Locals should be preferred for the job opportunities.
- Monitoring should be done regularly to check efficiency of treatment plant and to comply with PEQS.
- 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.
- 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
- Job opportunities for locals

- 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

CHAPTER 3: DESCRIPTION OF PROJECT

3.1 GENERAL

This section of the study concentrates on details of the project and its salient features; such as location, site layout, objectives, selection of alternatives, cost and magnitude of operation and various phases. Inputs and discharges relevant to different phases of project, such as electricity & materials, etc. have also been examined as a response to possible environmental concerns.

3.2 TYPE AND CATEGORY OF PROJECT

The Proposed Project; i.e. Establishment of **Prime Protein Mill** falls under **Schedule-II, Category B (9) of IEE & EIA Regulations, 2022**.

3.3 OBJECTIVES OF PROJECT

The aim of the Proposed Project is to provide customers with good quality poultry protein and crude oil for manufacturing of poultry feed.

3.4 VEGETATION FEATURES OF SITE

Land is clear and there are no existing plants and vegetation on site. Various local plants will be grown at the project site in the open areas, and along the boundary, trees will be planted by the proponent.

3.5 LOCATION AND LAYOUT OF PROJECT

Proposed project is at Upper Seam Nala Kot Mahal, Sheikhpura Road, Tehsil and District Gujranwala.



Figure 1: Location map of proposed project

3.6 ROAD ACCESS

Main road (Sheikhpura road) and markets are in easy and close access of the proposed project site.

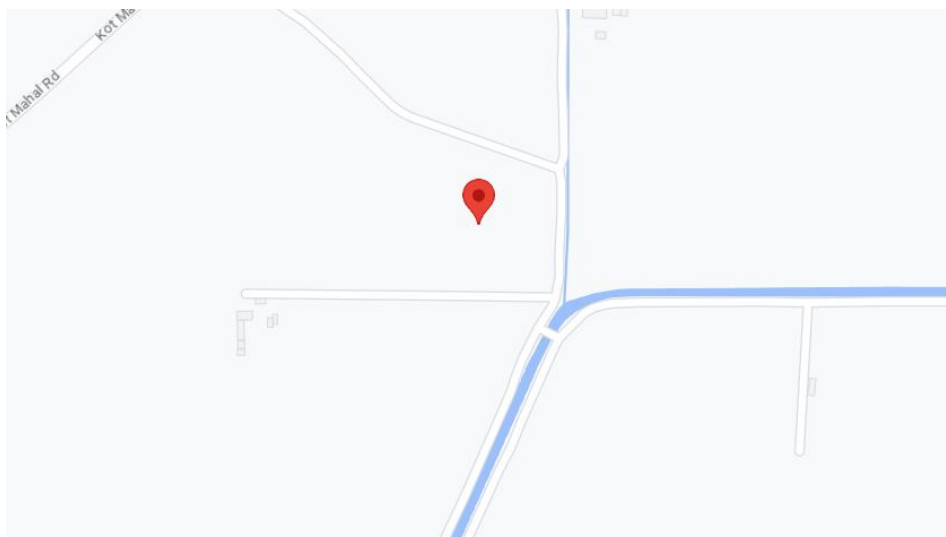


Figure 2: Road Access Map

3.7 COST AND MAGNITUDE OF OPERATION

Total cost of the proposed project is estimated to be around **45 million PKR** which includes the provision of installation, associated amenities and cost for utilities and equipment/machinery. Thus, falls under Schedule II for which **Environmental Impact Assessment (EIA)** report is required. Production capacity of proposed project will be 3200 liters crude oil/day and 12000 kg semi powder protein/day.

Table 1: Cost Breakup

Total Cost	45 million
Land Cost	20 million
Land development, Infrastructure and Amenities	10.5 million
Machinery	14 million
Environmental Budget:	0.5 million

3.8 SCHEDULE OF IMPLEMENTATION

It is projected that the construction phase of entire project will be started after getting environmental approval from EPA Punjab and complete in the period of 5-6 months. Activities involved are:

- Assessment of environmental impacts and its mitigation measures
- EIA approval, other local issues
- Implementation of recommended alteration in system, if required
- Commencement of operation

3.9 RELOCATION AND REHABILITATION PLANS

There exists no human settlement within 1 km (aerial) radius of the selected project site to be displaced owing to the commencement of the Proposed Project. No structure of any significance stands at the site to be relocated or dismantled.

3.10 PROJECT DESCRIPTION

The project envisages the setting up of a modern Poultry Waste Rendering Plant. The Major components of the project include Project Area, Cost, Operation, Machinery and other Facilities require for the project. Poultry feed manufacturing through Poultry Waste Rendering Plants for Sterilized Meat Meal are an indispensable part of poultry dressing operations. Poultry dressing or slaughter results in waste which is almost 30% of live bird weight. All the waste resulting from processing is pressure, cooked, sterilized and rendered into a sterilized meat meal. This is also technically known as 'Poultry By-product Hydrolyzed Feather Meal (PBHFM).' This Feed/meat meal made from poultry waste contains about 60-65% protein and 20-22% fat and 8-20% moisture. Hence, **rendering plants are also known as "Protein Recovery Plants"**. The process of Rendering is done in batches. Waste Rendering Plants are supplied in different capacities from 500 kg to 3500 kg of waste per batch. These plants can process about 6-7 of waste per day in digester. A battery of digesters can be used when the waste is in a large quantity. Larger batch capacities can also be supplied. Rendering is the process to convert dead chicken / chicken waste / feathers / tissues / market waste into the valuable material like feather meal / chicken meal. Rendering is a process that converts waste animal tissue to **value-added materials**. Rendering can refer to any processing of animal's products into useful materials, or more narrowly to the rendering of whole animal fatty tissues into purified fats like tallow. Rendering can be carried out on an industrial, farm, or chicken processing plant.

Raw Materials:

Feathers, dead chicken, chicken waste, leftover chicken of butcher shops, expired chicken.

Raw material will be purchased according to the per day consumption maximum capacity of the unit is 3200 liter/day Crude Oil, 12,000 Kg Poultry Protein (Semi Powder) for all 4 cookers. But it is possible that on some days 2 cookers will work and on some only one cooker will be operational. Keeping in view a tentative raw material requirement will be 16 ton/day

Product:

Proposed project shall have 2 products which are;

1. Poultry Protein (Semi Powder)
2. Crude Oil

Proponent of subject project shall sale these 2 products to market.

Process flow chart of rendering

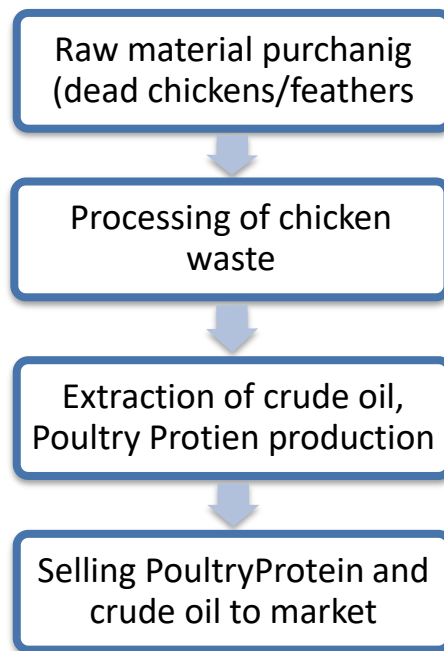


Figure 3: Process flow diagram of Poultry Waste Rendering unit



Figure 4: Chicken rendering batch cooker



Figure 5: Pre-breaker



Figure 6: Centrifuge Machine

Manpower Requirement

Semi-skilled workers will be needed to look after the raw material handling cleaning operations at the unit. Three people will be hired to manage the operations of the automated unit. Table shows the personnel, needed for the operational phase is under:

Table 2: manpower for operational phase

Description	No. (apprx.)
Boiler Operator	1
Cooker Operator	4
Mali	1

Driver	1
Helpers/ Office Workers	3
Total Production Staff	10

Machinery and Equipment Requirement

Various types of manufacturing equipment will be needed for steam generation, boiling and processing the poultry waste into poultry protein (semi powder) and crude oil. List of equipment for each phase, which will be required, is as under:

Table 3: List of equipment

Serial No.	Description	Details
1.	Cooker Machine	4
2.	Centrifuge Machine	1
3.	Boiler	1
4.	Generator Set	1
5.	Firefighting Equipment	As required

3.11 EMISSION CONTROL TECHNIQUES

Combustion of standard fossil fuels (natural gas and ASTM Grade Oil) in commercial and industrial boilers results in the following nine emissions; carbon dioxide, nitrogen, oxygen, water, carbon monoxide, nitrogen oxide, sulfur oxides, volatile organic compounds, and particulate matter. The latter five products of combustion are considered pollutants and are known to, either directly or indirectly, cause harmful effects on humans and the environment.

The following section describes the formation and control of each of the pollutants in commercial and industrial boilers:

- ✓ Carbon Monoxide
- ✓ Nitrogen Oxides
- ✓ Sulfur Oxides
- ✓ Volatile Organic Compounds/Hydrocarbons
- ✓ Particulate Matter

3.12 EMISSIONS CONTROL TECHNIQUES

For industrial and commercial boilers, the most effective method is to utilize clean fuels. The emission levels of particulate matter can be lowered by switching from a residual to a distillate oil or by switching from a distillate oil to a natural gas.

- ✓ Selective Non-Catalytic Reduction
- ✓ Selective Catalytic Reduction
- ✓ Combustion control techniques include:
- ✓ Low Excess Air Firing
- ✓ Low Nitrogen Fuel Oil
- ✓ Burner Modifications
- ✓ Water/Steam Injection
- ✓ Flue Gas Recirculation

Each method results in a different degree of NO_x control. For example, when firing natural gas, low excess air firing typically reduces NO_x by 10%, flue gas recirculation by 75%, and selective catalytic reduction by 90%. Moreover, Dry Scrubber will be installed with boiler. And for odor generated from production process cooker will be attached through a proper channel through which a cooker will be opened the contaminated and odorous emissions will be directly transfer to furnace (boiler room) where it will be incinerate.

3.11.1 Design, Operation and Specification of Dry Scrubber:

Dry scrubber will be installed on chimneys which will reduce up to 95% of emissions. Furthermore, the furnaces will work on electricity and no fuel will be used to gaseous emissions will be negligible. For dust control arising from combustion of raw material will be control via dry scrubbers. Moreover, for surface dust abatement, water showering will be practiced.

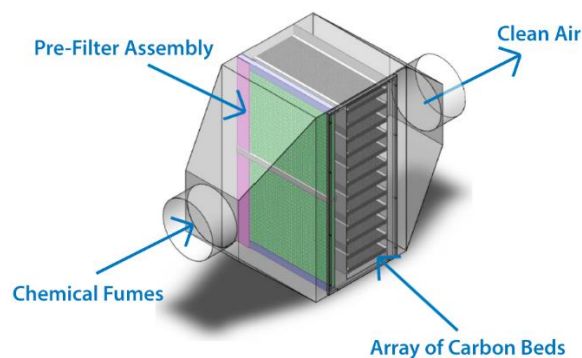


Figure 7: Dry Scrubber working principle

Voltage 440 Volt

Airflow (m³/h or CFM) 1500- 5000 CFM

Orientation Horizontal

Type Dry Scrubber

Automation Grade Automatic

Material of Construction Stainless Steel

Power Source Electricity

Efficiency >95%

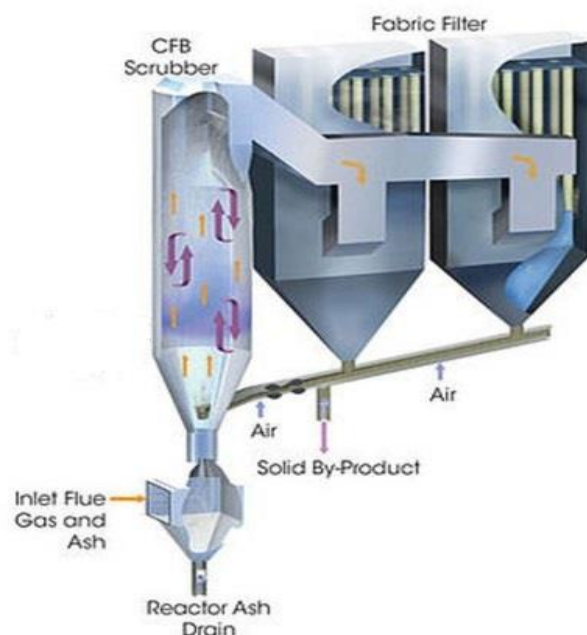


Figure 8: Dry scrubber preliminary design

3.13 SPHERE OF ODOR:

Odor sphere is totally dependent on the weather conditions and wind direction the sphere of odor which has been estimated is about 100m-500m in north-east of the unit as in windy days direction of wind is towards NE in district Gujranwala moreover proper treatment techniques will be adopted as mentioned in air emission and odor control assessment further more waste will be brought to unit on daily basis so it can be rendered daily.

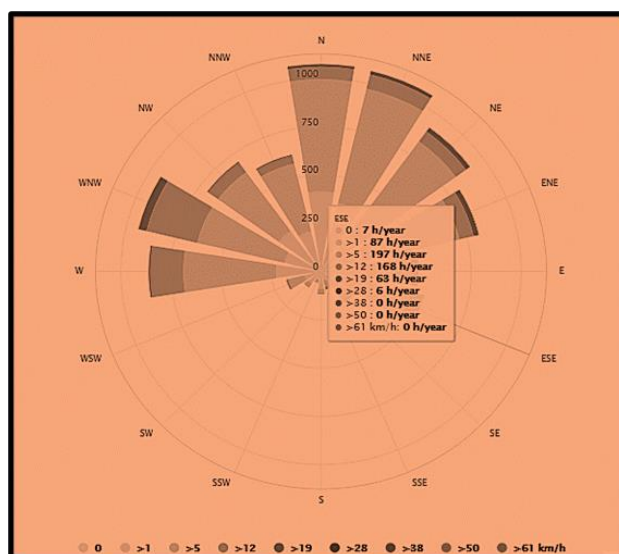


Figure 9 Wind rose diagram

3.14 WASTEWATER TREATMENT

No process water will be produced during processing of rendering. Only municipal water shall be produced which will be treated through septic tanks. Septic tanks are efficient in reducing BOD, COD, TSS and TDS. According to literature, COD of municipal water is very minimal in some cases it is below detectable limit. Pollution load can be reduced to minimum level by treating water in septic tanks.

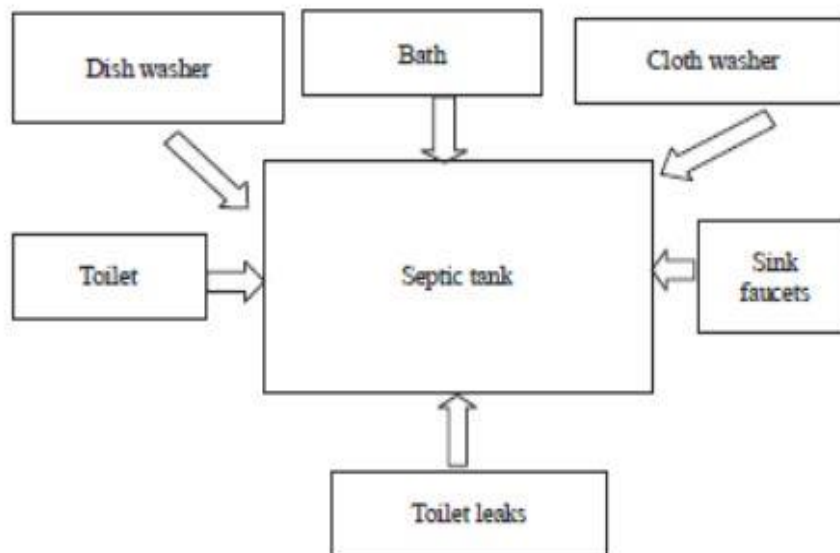


Figure 10: Design of septic tank and collection of municipal waste

3.15 SOLID WASTE MANAGEMENT

The proposed project is establishment of rendering unit. It shall involve processing of waste poultry feathers to product. No solid waste shall be produced as it will again be a part of production process of poultry protein and crude oil.

3.16 GOVERNMENT APPROVAL

Environmental Impact Assessment of project depicts that there will not sufficient environmental impacts of proposed project so an environmental approval must be awarded.

CHAPTER 4: BASELINE ENVIRONMENTAL PROFILE

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

4.1. Methodology

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

4.1.1 Data Collection

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

4.1.2 Social Survey

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

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

4.1.3 Sampling Design

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

4.1.4 Questionnaires

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

4.1.5 Data Editing and Analysis

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

4.1.6 Review of Legal and Administrative Framework

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

4.1.7 Baseline Conditions

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area

4.2. Physical Environment

Pakistan Can be divided into five broad physiographical regions. These are the mountainous regions of the north, the western highlands and plateaus, the sub-mountains Indus region, the Potohar Plateau, Salt Range, and the Indus Plain. Brief description of these regions are given below:

Region	Characteristics	Location	Height

Northern Mountainous	Hindu Kush Karakoram and Himalayan Mountain Ranges	Northern Part of KP, Gilgit Agency, Northern Areas and Kashmir.	Rises above 8,000m
Western Highlands and Plateaus	Toba Kakar, Sulaiman, Central Baruhi, Saihan, Central Makran, Makran Coastal and Kirthar Ranges	Mainly in Baluchistan, also parts of Sindh and KP	Between 1,200 to 3,000 m
Sub-Mountains Indus	Alluvial filled Basins	Plains of Peshawar Kohat and Bannu	Less than 1,000 m
Potohar Plateau and Salt Range	Flat to gently undulating surface, broken by gullies,	Mainly northern parts of Punjab, some parts of KP	Less than 1,000 m
Indus Plain	Flood plains of the Indus, Jhelum, Chenab Ravi and Sutlej Rivers	Punjab and Sindh	Less than 1,000 m

4.3. Project Area

It is a city and capital of Gujranwala Division located in Pakistan. It is also known as "City of Wrestlers" and is quite famous for its food. It is the 5th most populous city proper after Karachi, Lahore, Faisalabad and Rawalpindi respectively. Founded in the 18th century, Gujranwala is a relatively modern town compared to the many nearby millennia-old cities of northern Punjab. The city served as the capital of the Sukerchakia Misl state between 1763 and 1799, and is the birthplace of the founder of the Sikh Empire, Maharaja Ranjit Singh.

Gujranwala is now Pakistan's third largest industrial centre after Karachi and Faisalabad, and contributes 5% to 9% of Pakistan's national GDP. The city is part of a network of large urban centres in north-east Punjab province that forms one of Pakistan's mostly highly industrialized regions. Along with the nearby cities of Sialkot and Gujrat, Gujranwala forms part of the so-called "Golden Triangle" of industrial cities with export-oriented economies.

4.4. Geography

Gujranwala sits at the heart of the Rechna Doab, a strip of land between the Chenab in the north, and Ravi River in the south. Gujranwala is also part of the Majha, a historical region of northern Punjab. The city was built upon the plains of Punjab, and the surrounding region is an unbroken plain devoid of topographical diversity.

Gujranwala is 226 metres (744 ft) above sea level, sharing borders with Ghakhar Mandi and several towns and villages. About 80 kilometres (50 mi) south is the provincial capital, Lahore. Sialkot and Gujrat lie to its north. Gujrat connects Gujranwala with Bhimber, Azad Kashmir, and Sialkot connects it with Jammu. About 160 kilometres (99 mi) southwest is Faisalabad. To its west are Hafizabad and Pindi Bhattian, which connect Gujranwala to Jhang, Chiniot and Sargodha.



Figure 11 Gujranwala is in the Rechna Doab region of Punjab, marked in grey

4.5. Climate

Gujranwala has a hot semi-arid climate (BSh),[28] according to the Köppen-Geiger system, and changes throughout the year. During summer (June to September), the temperature reaches 36–42 °C (97–108 °F). The coolest months are usually November to February when the temperature can drop to an average of 7 °C (45 °F). The highest precipitation months are usually July and August when the monsoon reaches Punjab. During the other months, the average rainfall is about 25 millimetres (0.98 in). October to May have little rainfall.

Climate data for Gujranwala													[hide]
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	19.1 (66.4)	22.1 (71.8)	27.4 (81.3)	33.7 (92.7)	39.0 (102.2)	40.8 (105.4)	36.1 (97.0)	34.6 (94.3)	35.0 (95.0)	33.0 (91.4)	27.0 (80.6)	21.2 (70.2)	30.8 (87.4)
Daily mean °C (°F)	12.2 (54.0)	15.0 (59.0)	20.3 (68.5)	26.0 (78.8)	31.0 (87.8)	33.8 (92.8)	31.4 (88.5)	30.2 (86.4)	29.5 (85.1)	25.4 (77.7)	18.6 (65.5)	13.4 (56.1)	23.9 (75.0)
Average low °C (°F)	5.3 (41.5)	8.0 (46.4)	13.3 (55.9)	18.4 (65.1)	23.1 (73.6)	26.9 (80.4)	26.7 (80.1)	25.9 (78.6)	24.0 (75.2)	17.8 (64.0)	10.3 (50.5)	5.7 (42.3)	17.1 (62.8)
Average precipitation mm (inches)	31 (1.2)	30 (1.2)	29 (1.1)	18 (0.7)	19 (0.7)	46 (1.8)	147 (5.8)	168 (6.6)	65 (2.6)	9 (0.4)	5 (0.2)	14 (0.6)	581 (22.9)

Figure 12: Climate Change in Gujranwala

4.6. Weather Around the year

The mean maximum and minimum temperature in summer are 39 °C (102 °F) and 27 °C (81 °F) respectively. In winter it peaks at around 17 °C (63 °F) and 12 °C (54 °F) respectively. The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Gujranwala. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. For vacation planning, you can expect the mean temperatures, and be prepared for hotter and colder days. Wind speeds are not displayed per default but can be enabled at the bottom of the graph. Monthly precipitations above 150mm are mostly wet, below 30mm mostly dry.

4.7. Seismology

Pakistan is basically divided into 5 earthquake zones, four of them ranging from zero to four (0-4) and one zone i.e. five which is intensively dangerous ranges from five to ten (5-10). Zone zero describes least earthquake chances and destruction while 5-10 shows most chances of earthquake origination with extensive destruction like 08 October 2005 earthquake across the country. According to the map, district Gujranwala comes under zone 2A and no tectonic or thrust fault line is passing underneath the district Gujranwala thus making it less vulnerable to the destruction due to less seismic activity in the area.

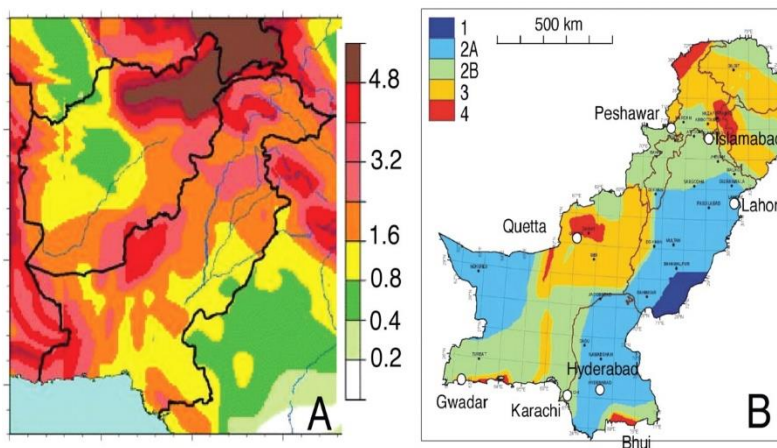


Figure 13: Seismic Zone of Pakistan (Geological Survey of Pakistan)

4.8. Temperature

The climate of the district can see extremes, with a summer maximum temperature 45 °C (113 °F) and a winter temperature of 12 °C (54 °F). The mean maximum and minimum temperature in summer are 39 °C (102 °F) and 27 °C (51 °F) respectively. In winter it peaks at around 17 °C (63 °F) and 12 °C (54 °F) respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season starts from November and continues until March. December, January and February are the coldest months.

Detail description of the seasons is as under:

- Winter (October to February): Moderate to extreme and dry
- Spring (March & April): Pleasant and moderately cold
- Summer (May to September): Very hot to humid
- Monsoons (June to August): Wet. Although the temperatures are milder but due to appreciable humidity, the heat is oppressive; and
- Post-Monsoon Summer (September & October): Moderate and slightly humid

Given below are the maximum and minimum temperatures of city throughout the figure.

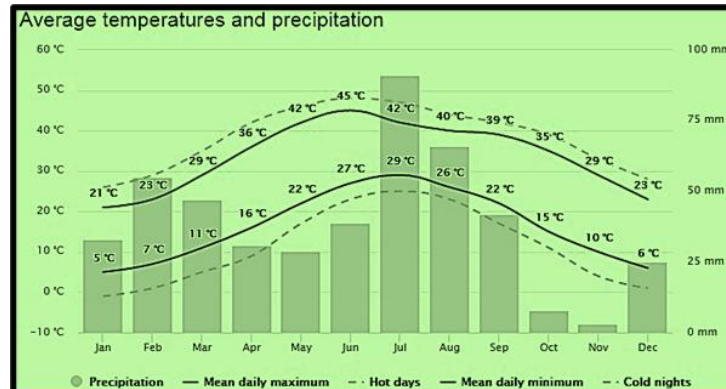


Figure 14 Average Annual Temperatures and precipitation

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. For vacation planning, you can expect the mean temperatures, and be prepared for hotter and colder days. Wind speeds are not displayed per default but can be enabled at the bottom of the graph.

The precipitation chart is useful to plan for seasonal effects such as monsoon climate in India or wet season in Africa. Monthly precipitations above 150mm are mostly wet, below 30mm mostly dry.

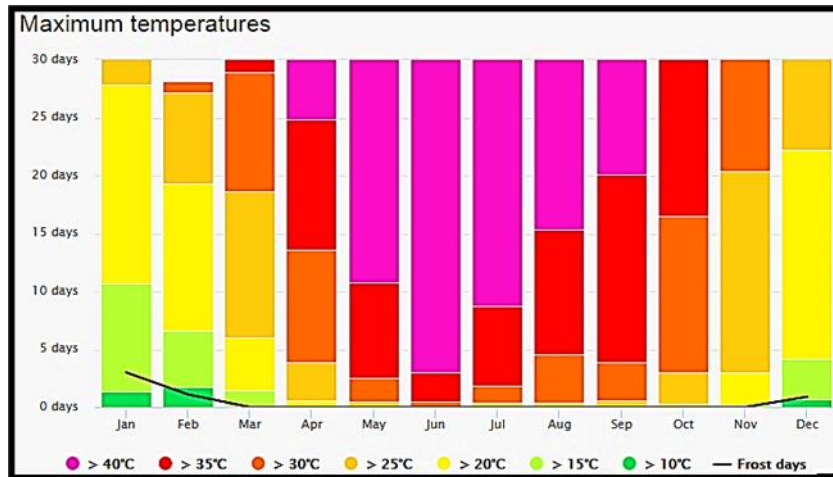


Figure 15 Maximum temperature ranges

4.9. Rainfall

The average yearly rainfall lies only at about 355 mm (15.3 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

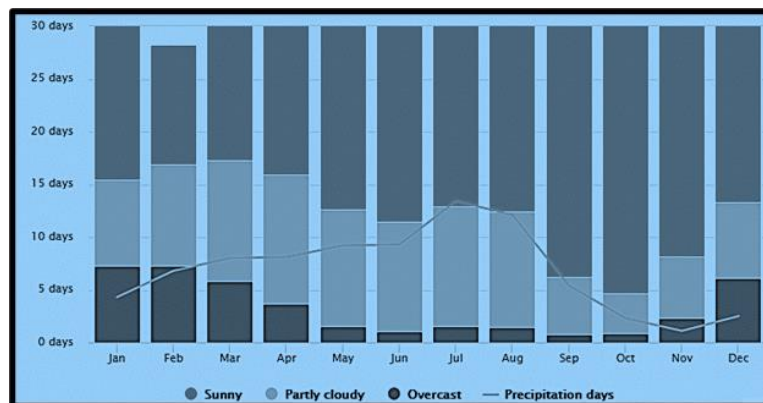


Figure 16 Annual cloudy, sunny and precipitation days

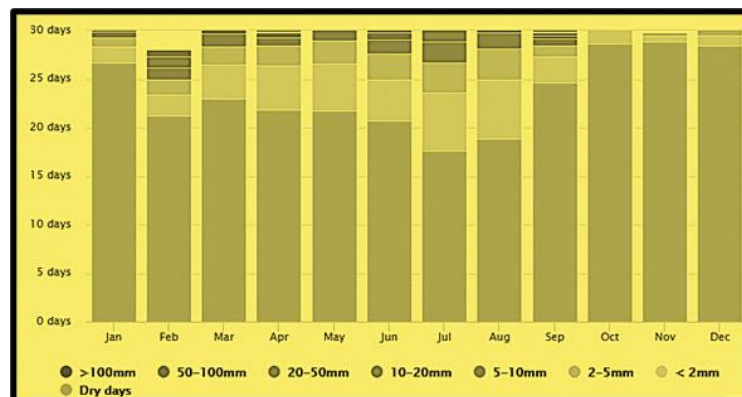


Figure 17 Annual Precipitation amounts

4.10. Wind

The region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months. The prevalent wind speed ranges from 10-25 km/h, however on some days, there appear storms of 60 km/h.

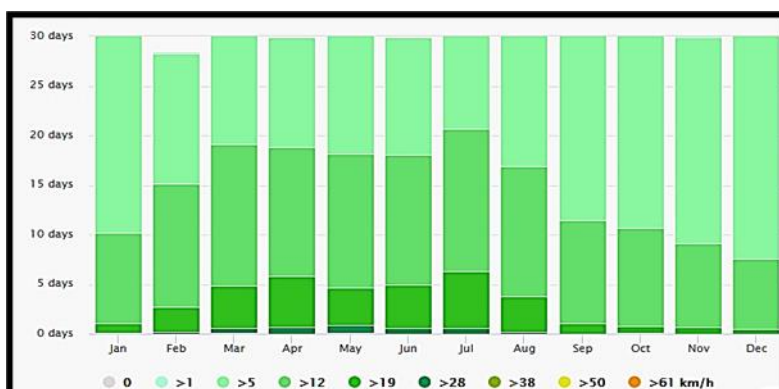


Figure 18 Annual average wind speed

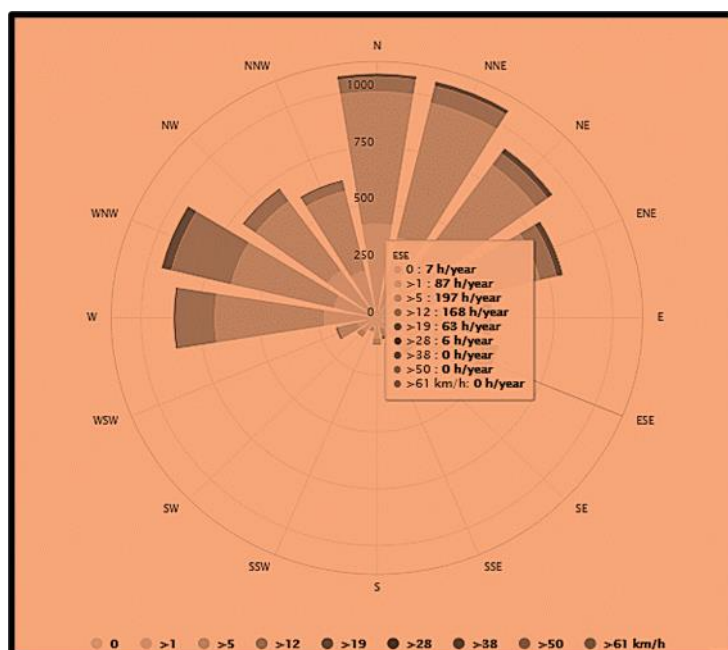


Figure 19 Wind Rose diagram

4.11 Biological Environment

Gujranwala is enriched with the presence of natural flora and fauna, although with the growing population and development activities, there are however no significant or well-shaped trees and shrubs on the project site. There are some trees only along the main roads.

4.11.1 Flora

Trees, also called the 'lungs' of the earth, are important for the restoration of the ecosystem. People can benefit incalculably from their survival and existence. Trees have also been a source of medicine for thousands of years and a refuge for various species of birds.

Project Site:

No threatened or endangered species and medicinal plants are present in the project area. No vegetation or plants will be removed due to commencement of project as the site was clear and no flora existed there. Taai, Baccane, Eucalyptus and Neem are present around the project site.

However proper tree plantation and green belts are planned by the proponent as marked on map and is under-development. Greenery and trees are present in surroundings of site too. Site area is agricultural in nature.

4.11.2 Fauna

With an increase in the rate of urbanization, the ecology of area has been considerably affected but there is no threatened or endangered species found in the project site. No wildlife was present there. Only cats, dogs, sparrows and crows passed by temporarily. No permanent habitat of any fauna was found.

4.12. Environmental Monitoring Through Laboratory

Laboratory analysis for environmental monitoring establishment steel manufacturing unit is done in order to check the baseline conditions and pollution load. In this connection Solution Environmental & Analytical Laboratory (SEAL), an EPA certified laboratory, was engaged to carry out environmental monitoring of wind speed, air quality, drinking water quality, noise level and particulate matter concentration in the project area.

Central Environmental Services has facilitated Solution Environmental & Analytical Laboratory (SEAL) to collect the ambient air samples from project site located at Munir Chowk, Civil Lines, Gujranwala. The sub-project locations are well outside the metropolitan centers. The project is being constructed in agricultural cum commercial zone.

The detail information related to the testing is given below:

Sampling Sites

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

4.13. Socio-Economic Environment

This section provides collective information about the existing socio-economic and environmental condition of the project area within the AOI. The different types of socio-economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of Environmental Management and Monitoring Plan (EMMP). The study also helped to assess the positive or adverse impacts on local community. The major occupation of the people in the study area is agriculture and the detail of crops, being sown in this specific area is given below:

4.13.1 Cultivated Crops

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

4.13.2 Livestock

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

4.13.3 Physical structures

There is no population living in the project area but the study area is populated. The land use on the project site is commercial cum agricultural. The people in this area are privileged of basic facilities like health, proper sewerage and sanitation facility, medical facilities, provision of safe drinking water, etc.

4.13.4 Religious Structure

There is a mosque located at 350m from the project area. There is no shrine, structure or any other religious infrastructure present within close proximity of proposed project site that could be damaged and dislocated due to the proposed project establishment.

4.13.5 Protected Structures

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

4.13.6 Cultural Heritage and Community Structure

As stated earlier that the project area has no physical structure that may be damaged due to the establishment hospital. Envirotech Consultants Private Limited team also visited the study area but did not find any cultural heritage and community structure within the study area that could be impacted due to the proposed project.

4.13.7 Quality of Life Values

Socio-Economic Questionnaire and Environmental Checklist were used as survey tools by the Envirotech Consultants Private Limited survey team to collect desired information.

4.13.8 Occupation of Respondents

Majority of the respondents (20%) belongs to the labor class, 33% have their own business, 13% daily wagers, 13% attached with agriculture, 7% shopkeepers and remaining 7% are private employees. During survey, efforts were made to interact with people representing all walks of life. The detailed graphic representation of occupational status is given below:

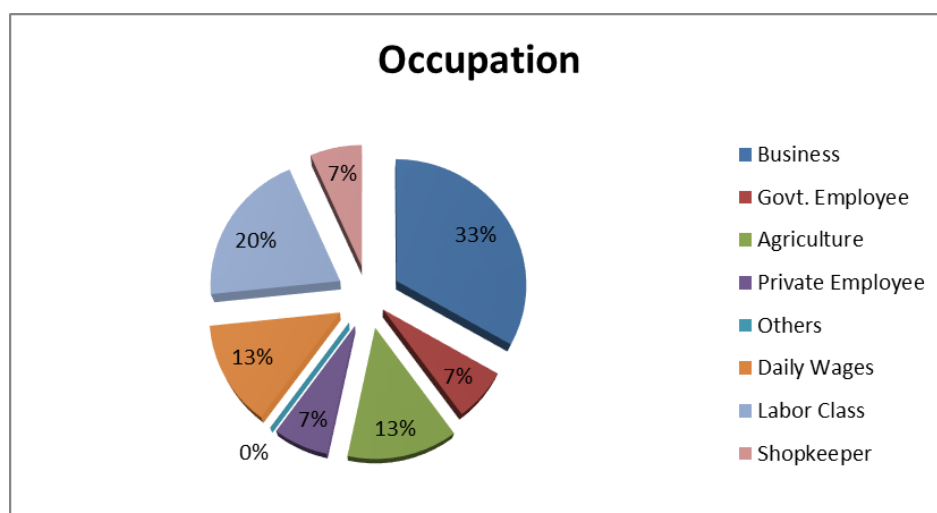


Figure 20 Occupation of Respondents

4.13.9 Personal Income

Based on the sample survey results, as the figure shows that nobody was earning less than 20,000 rupees, 69% of respondents fall within the income range of 20,000 – 25,000, 23% respondents earn 30,001 – 40,000 while only 5% of the respondents earn within the range of 40,001 – 45,000.

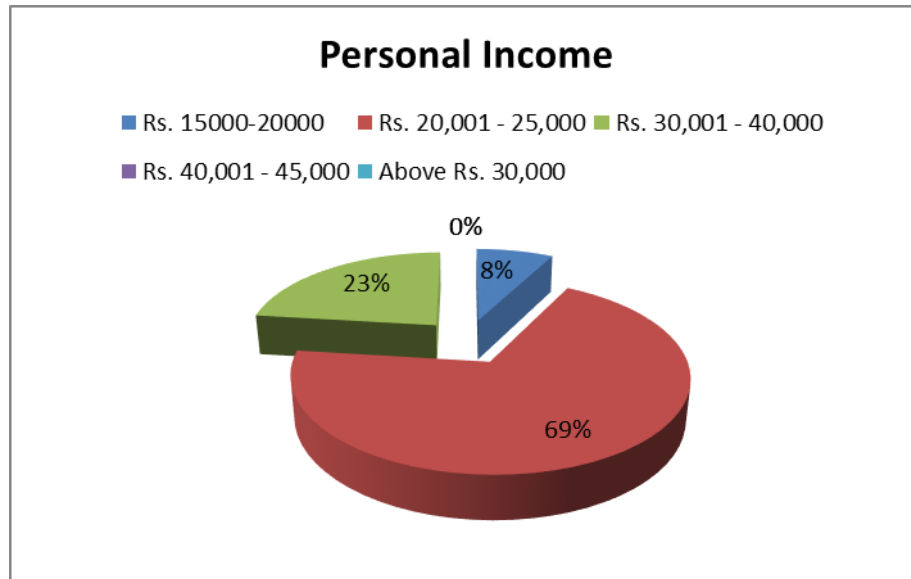


Figure 21 personal Income

4.13.9 Educational Institutes

Many educational centers are present in the study area.

4.13.10 Facilities Available

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

4.13.11 Literacy Rate

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

4.13.12 Common Diseases

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

4.14. Favor for the Project

Respondents were inquired about their views regarding the proposed project. Out of total 14 respondents 95% of the respondents knew about the project whereas, rest of the respondents doesn't have prior knowledge of the project planning and commencement. Almost 90% respondents of were in favor of the

establishment of hospital in their vicinity as this will increase the employment opportunities and raise the overall socio-economic status of the area.

4.15. Quality of Life Values

Most of the respondents had the basic social facilities such as; basic health facility, electricity, water supply, roads, rail, public and private transportation to sustain life. Most of the respondents were working with the agricultural, livestock, doing their own business, shopkeepers and working as the labor in the nearby industries. The common diseases observed in that area were Diarrhea, cough diabetics and heart diseases

3.17 Suitability of the site

The consultations demonstrated that goodwill towards the project proponents indeed exists; approval for project activities by the communities was evident. The consultations were considered a good gesture and appreciated. Proposed project will help in improving the health conditions of the area so the respondents were positive about the proposed development. Proponent recognizes that benefits from the project should be distributed judiciously and equitably especially among primary stakeholders in the project area, and will continue to ensure that this principle is followed in its projects and community development program

CHAPTER 5: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURE

5.1 GENERAL

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.

5.2 OBJECTIVES

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

- To find different alternatives and ways of doing 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

5.3 IMPACT ASSESSMENT METHODOLOGY

5.3.1 Screening of Potential Impacts

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

5.3.2 What is the problem?

The proposed project is of rendering unit. The nature of the land is open land having native vegetation such as Neem, Kikar, Safeda and wild grass. The study area is unfertile, leveled and industrial land. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. The major impact associated with the operation of rendering unit includes the management of the solid waste generated during the processing, wastewater management, raw-material storage and air pollution due to the emission of particulate matter from operation of unit.

5.3.3 When problem will occur and when it should be addressed?

The impacts from the establishment of rendering unit will occur during the operation due to the manufacturing work involved and the people residing in the project area. These issues included; noise generation, air emissions, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

5.3.4 Where problem should be addressed?

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

5.3.5 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. For example, against dust emissions sprinkling of water may be done on regular basis, for solid waste proper solid waste management and disposal practices may be adopted, to manage liquid waste proper treatment may be made before discharging into the receiving body. The change landscape is estimated to be quite minor and the removed topsoil may be used to reclaim the disturbed areas.

5.3.6 Identification of Mitigation Measures

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

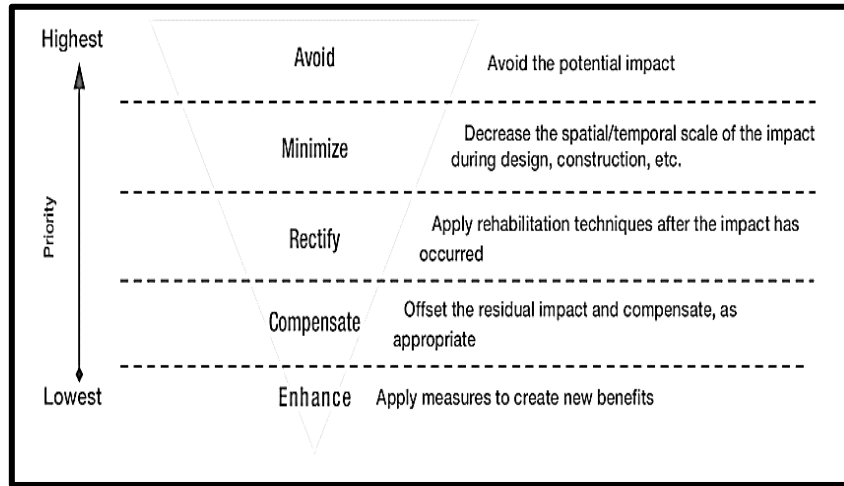


Figure 22: Hierarchy of Mitigations

5.3.7 Evaluation of the Residual Impacts

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

5.3.8 Identification of Monitoring Requirements

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

5.4 Impacts Associated with Project Location

While citing a unit, care should be taken to minimize the adverse impact of the facility on immediate neighborhood as well as distant places. The application of good and sound citing criteria is often the best and first strategy to minimize the environmental and social impacts that can be caused by a project. The Proposed site is undisputed open rural land and owned by proponent. Easy road and rail access, no archeological or cultural resources to be dismantled or relocated, and not ecologically sensitive or declared protected area existing on proposed site that favors the point of no impact due to project location.

5.5 Impacts Associated with Design

At the design phase, the design unit has sought to minimize any environmental impacts by ensuring that the project should be according to environmental guidelines. Project design also takes account of the need to avoid creating potential impacts. Local aesthetic value is another issue to be considered during project design.

5.6 Potential Environmental Impacts during Project Commencement/Construction Stage

The Environmental and Socio-Economic Impacts associated with the construction activities are the following:

Environmental aspect	Potential impact	Proposed Mitigation measure
Noise	Project commencement /construction activities may increase noise level and cause noise level to exceed the standard. When one or more than one equipment works simultaneously, the noise at the receptor will increase. the predicted noise when three of the nosiest equipment are operating will be about 64 dB (A). This requires no mitigation. the noise could be of the order of 60Db (A), Meeting the Pak EPA and WORLD Bank guideline for day noise level in industrial and commercial areas	❖ Project commencement / construction equipment will be equipped with engine silencers or use equipment which generate lower noise level ❖ noise creating activities will be carried out during day light hours. ❖ The construer will inform local public regarding the unavoidable noise creating activities timing and project commencement /construction plan prior to the project commencement /construction.
Environmental aspect	Potential impact	Proposed Mitigation measures
Air Quality	Transportation of construction material equipment transportation and Project commencement /construction activities may cause the increase of dust and toxic gases. Combustion process in vehicles result in exhaust gases. It will result in visibility loss and loss fresh air.	❖ Project construction material and waste will be removed from the construction area as soon as possible. Spoil truck material trucks and stocPunjabiles will be covered at all times ❖ Regular water spraying will be done on open surface. ❖ The equipment and machinery will be regularly checked and malfunction observed will be corrected accordingly. ❖ The truck speed will be limited to minimize dust generation.
Vibration	Project commencement /construction transportation, and activities may cause high level vibration, which cause the trouble to persons in buildings.	❖ Contractor will intensify the Project commencement /construction activities during the dry season.

Soil and Erosion	The Project commencement /construction activities will cause soil erosion during leveling trenching.	❖ Project commencement /construction site will be properly marked. ❖ The movement of machinery will be restricted to the construction are. ❖ There will be regular sprinkling of water on kick off dust.
Geology and mineral	No significant mineral sources exist within the vicinity of the project	-----
Flora and fauna	There is no unique or endangered species of flora and faunal origin present in area on which disturbance may be caused by the proposed action	❖ There will be plantation of trees shrubs and bushes around the boundaries. ❖ Landscape the plant site.
Solid Waste	The Project commencement /construction activities will generate solid waste including packing and shipping materials i.e. pallets, Styrofoam plastics etc.	❖ There will be collection of waste at the source and placement in suitable places. ❖ The non -recyclable waste will be handed over to the waste collection vehicles. ❖ The unused waste will be disposed-off properly.
Wastewater	The wastewater of Project commencement /construction activities and human use i.e toilets water will cause soil water and ground water	❖ The wastewater will be treated and then it will be discharge. ❖ Where it is not available, they shall be used the septic tank
Socio Economic Impacts	There is an increase of employment opportunities during Project commencement /construction stage. So ultimately there is increase of income and positive impacts on life.	This requires no mitigation measure.
Occupational Health & Safety	The Project commencement /construction activities involve the direct health and safety issues for works. It can cause injuries to workers and diseases	❖ There will be implementation health and safety rules. ❖ Sanitary facilities, potable water will be provided ❖ There will security of the project site.
Environmental aspect	Potential impact	Proposed mitigation measure

5.7 Potential Environmental Impacts during operation phase

The operation phase of the project has positive impact as well as negative impacts. The positive impact is increase in employment opportunities and increase in country 's The following are the negative impacts of the operation phase.

✓ **Air emissions:**

Significant air emissions during the operation of the said project comprise:

• **Odorous gases**

For that a proper control system will be installed from which odours gases will be channeled to furnace from cooker to incinerate.

• **Dust**

Water sprinkling will be done

• **Emissions from Boiler**

Installation of cyclones to control emissions from the operation of boiler.

✓ **Solid waste**

It shall involve processing of waste poultry feathers to product. No solid waste shall be produced as it will again be a part of production process of poultry protein and crude oil.

✓ **Noise**

It will be ensured that generators, vehicles and other potentially noisy equipment used are in good condition. Noise from vehicles, generators and other equipment and machinery will be kept to the minimum through regular maintenance. Noise monitoring should be carried out periodically.

✓ **Wastewater**

Only municipal wastewater will be generated for which a Septic Tank (Depth = 5 ft, Length/Width = 7.5 ft) will be installed to treat municipal wastewater.

✓ **Socio-economic**

The Project is expected to open additional source of occupation and income for the local residents which is a positive effect of the establishment of the unit. The impact will be direct, high, local, long-term and hence very significant

✓ **Occupational Health & Safety**

- Workers' awareness about safe and healthy environment through training sessions.

- First Aid Box will be kept in every shed in easy approach of all workers in case of any injury or mishap.
- To avoid any chance of fire, fire extinguishers will be kept readily available.
- Basic medical and safety training will be held from time to time, to minimize the risk of health and safety issues in the farm premises.
- Unsafe acts and habits as well as careless attitude will not be tolerated during work.
- Efficient incident reporting mechanism shall be in place.
- Good housekeeping will be assured.
- Proper solid waste management to assure no waste is left unmanaged.
- Mortality pit for dead birds.

5.8 Potential environmental enhancement measures

Tree plantation within and outside the premises is a potential environmental enhancement measure. A large area will be reserved for tree plantation and among plants native flora like Peepal, Kikar and Amaltas will be planted in the specified green zone.

CHAPTER 6: ENVIRONMENTAL MANGEMENT AND MONITORING PLANS

6.1 GENERAL

This EIA provides the Environmental Management Plan (EMP) of the project for its construction and operational phases to keep it environment benign as well as the monitoring plan to ensure the compliance of the established EMP. Outline and key features of the EMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation.

Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring. This section also underlies the monitoring framework for both construction and operation phases to check compliance of the EMP and to take timely actions for correction in case any accident of significant criteria, requirements or goals are found.

6.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

- ✓ Facilitate the implementation of the mitigation measures identified for construction phase in the EIA.
- ✓ Define the responsibilities of the project proponent and contractor and provide a means of effective communication of environmental issues between them.
- ✓ Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures
- ✓ Provide a mechanism for taking timely action in the face of unanticipated environmental situations.

- ✓ Identify training requirements at various levels.

6.3 MANAGEMENT APPROACH

The organizational roles and responsibilities of the key players are summarized below: **Proponent:** The project proponent will undertake overall responsibility for compliance with the EMP. Proponent will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

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

6.4 COMPONENTS OF THE EMP

The EMP consists of the following:

- ✓ Management plan
- ✓ Monitoring Plan
- ✓ Communication and documentation
- ✓ Institutional capacity
- ✓ Environmental training

6.5 ENVIRONMENT MANAGEMENT PLAN

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during construction and operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environmentally friendly.

Table 4 : Environmental Management Plan for Pre-Construction, Construction and Operation Phase

PROJECT ACTIVITIES	TYPE OF IMPACT	POTENTIAL IMPACTS ON ENVIRONMENT	EXTENT / MAGNITUDE	MITIGATION MEASURE	INSTITUTIONAL RESPONSIBILITY		ENVIRONMENTAL BUDGET
					IMPLEMENTING BODY	SUPERVISION	
PRE-CONSTRUCTION							
Land acquirement and land use	Physical, Social and Aesthetical	Positive use of land but proper planning will be required	More/to proponent	- Land is owned by proponent - Land will be improved from open land to self-developed industrial land.	Contractor	Proponent*	--
Use of local manpower	Social	Employment Generation	Less / Adjacent area	Local people will be hired for less technical work or non-skilled work	Contractor	Proponent*	--
Wildlife protection	Biological	Accidents/ dangers to fauna	Less/ Adjacent area	Avoidance - A ‘no-hunting, no trapping, no harassment’ policy will be strictly enforced. - Trading of wild animals or birds by project personnel will also be prohibited. - Wildlife protection rules will be included in the Camp Rules	Contractor	Proponent*	--
CONSTRUCTION							

Civil works	Physical, Social, Biological, Aesthetical	Soil Erosion, Emissions, Water Contamination, Noise & Vibration, Wildlife affected, Employment, Health & Safety of Workers	More/ Adjacent area	Minimization: - Dust emission from soil piles and aggregate storage stock piles will be reduced by keeping the material moist by sprinkling of water at appropriate frequency Avoidance: - Covering the pile, for example with tarpaulin or thick plastic sheets, to prevent emission. - Noise control measures will be implemented - Wildlife protection rules will be included in the Camp Rules - Off-road driving will be minimized in order to avoid accidental killing of fauna.	Contractor	Proponent*	50,000/-
Movement and fueling of vehicles	Physical & Aesthetical	Soil & Water Contamination due to Fuel Leakages & Spillage, Emissions, Noise & Vibration	Moderate/ at the site	- Periodic maintenance and inspection of vehicles - Vehicles with leaks will not be operated. - Vehicles should not be washed or serviced in the field. - No vehicle-related waste, such as oils, filters, old tires or parts, will be left in the field - All vehicles will be maintained in good working condition	Contractor	Proponent*	50,000/-

				All vehicles will have properly functioning silencers (mufflers).			
Transportation of construction material	Bio-physical	Dust and Particulate Emissions, Noise Generation, Safety and Health Effects	Moderate/ Adjacent area	Minimization: - Excessive use of horns will be avoided - PPE's will be provided to workers Avoidance: - Covering of transporting material trucks - Nighttime driving of project vehicles will be limited where possible - Low speed limit will be maintained on the section of the access road that is adjacent to the community and site. - The fence surrounding the site will be put in on during the construction to prevent access to the construction site	Contractor	Proponent*	50,000/-
Use of local water resources	Physical, Social & Biological	disturbance to local community	Less/ adjacent area	Avoidance: - Initiation of water conservation program Reduction: - Where possible, water should be recycled	Design engineer & Contractor	Proponent*	40,000/-
POST-CONSTRUCTION/OPERATION							

Heavy equipment operation	Physical	Particulate Matter, Noise, Vibration	Moderate/ Local	Avoidance: • Spill prevention trays provision • No machinery will be left unattended, particularly in running condition • All vehicles, generators and other equipment used during the construction and operation will be tuned and maintained in good working condition in order to minimize emission of pollutants • Reducing equipment noise at source by proper design, maintenance and repair of construction machinery and equipment, • Minimizing noise from vehicles and power generators by use of proper silencers and mufflers • Use noise-abating devices wherever needed and practicable. Reduction: • PPE's provision	contractor	Proponent*	50,000/-
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Solid Waste Generation	Physical, Biological, Social	Soil Contamination, effecting GW Quality, Biological, Particulate Matter, Health, Economy, Welfare	Severe/ local and global	• Separation of recyclable material • Provision of Separate waste bins • Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.	contractor	Proponent*	50,000/-
Power Generator operation	Physical	Noise, Vibration	Moderate/ Local	Avoidance: • Isolate the generator by enclosing it in a sound proof room to restrict noise and vibration to that room. • Carry out regular monitoring and preventive maintenance of generator • Minimizing noise from power generators by use of proper silencers and mufflers Reduction: • PPE's provision and use • Tree plantation • Use noise-abating devices wherever needed and practicable.	Contractor	Proponent*	30,000/-
Wastewater management	Physical/social	Degradation of water quality	Moderate/local	Reduction:	Contractor	Proponent*	

				- Wastewater will be drained after passing through a Septic Tank - Boiler wastewater will be treated in settling tank and will be used for sprinkling purpose			40,000/-
Air quality management	Physical	PM	Moderate/adjacent areas	Avoidance: - No waste should be burnt at the premises. - Regular monitoring and maintenance of generators - Tree plantation will help absorb air pollutants - Boiler of good quality will be used. - Both generator and boiler will be enclosed in room.	Contractor	Proponent*	50,000/-
Disaster Planning	physical, social	reduction of biodiversity, community grievance, economy, welfare	severe/local	Avoidance: - Proper disaster planning should be done to meet any emergency situation - Firefighting equipment and other safety appliances should be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood	Contractor	Proponent*	20,000/-

6.6 ENVIRONMENTAL MONITORING PLAN

Environmental monitoring is a vital component of the Environmental Management Plan. It is the mechanism through which the effectiveness of the environmental management Plan in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions. The main objectives of the environmental monitoring are:

To provide a mechanism to determine whether the project construction contractors are carrying out the project in conformity with the EMP.

- ✓ To identify areas where the impacts of the project are exceeding the criteria of significance and, therefore, require corrective actions.
- ✓ To document the actual project impacts on physical, biological, and socio-economic receptors, quantitatively where possible, in order to design better and more effective mitigation measures.

Following environmental record should be maintained:

- ✚ Periodic inspection reports of the site
- ✚ Audit reports
- ✚ Incident record of all moderate and major spills and other incidents and accidents. The record will include:
 - ✓ Location of spill or battery limit of the accident
 - ✓ Estimated quantity or the amount of injury (as may be reported in LTI or LWI)
 - ✓ Spilled material or nature of injury or loss (temporary or permanent)
 - ✓ Restoration measures
 - ✓ Photographs

Description of any damage to vegetation, water resource, or community asset.

- ✓ Corrective measures taken, if any
- ✓ Waste Tracking Register that will hold records of waste generated during the construction period. This will include quantities of waste disposed, recycled, or reused.
- ✓ Records of water consumption with use wise breakdown

Survey reports, in particular, the following:

- ✓ Vehicle and equipment noise.
- ✓ Ambient noise survey reports.

- ✓ Ambient level of PM
- ✓ Vendor data—all vendors disturbed by the project and compensation paid Public infrastructure: Record of all damages and repair work undertaken.
- ✓ Employment
- ✓ Total number of unskilled, semi-skilled, and skilled jobs offered during Construction.
- ✓ Name and domicile of the employed staff.
- ✓ Project and Community Interface
- ✓ Record of community complains and the measures taken to address them.
- ✓ Number of meetings held in various communities and data of persons who attended
- ✓ Environmental and social training records

Table 5: Environmental Monitoring Plan for Construction Phase

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Noise Levels	To determine the effectiveness of the noise abatement measures on the sound level	Noise level on the site and adjacent area on dB(A) scale	Noise level reading will be taken	at least 3 working days and on weekend monthly	At least three locations on the unit boundary and three locations at the receptor end	Environment Officer /manager
Waste Collection, Storage and Disposal	To check the availability of Waste Management System and Implementation	Inspection of Waste Generation, collection, Storage and Disposal at site	Visual inspection	Once daily	Construction site	Environmental officer/manager
Soil contamination	To determine the effectiveness of the control measures taken to minimize the spillage of oil and chemicals	Inspection of equipment and vehicles	Visual inspection and availability checks	monthly inspection	all vehicles and equipment in use at construction site	Contractor/Environmental officer
Worker's safety	To check and evaluate the effectiveness of the workers' safety plan	Injuries and accidents	Recording injuries	daily	Onsite	HSE/contractor
Water conservation	To determine the effectiveness of the Water Conservation Techniques in Practice	leakages, spills and wastages	Visual inspection and record tracking	On monthly basis	at all points of use	Environmental officer/manager

Table 6: Environmental Monitoring Plan for Operation Phase

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Noise level (dB)	To check whether the existing noise control measures are able to bring the sound level within prescribed limits	Noise level near the receptor	Noise Measurement	Quarterly	At least three locations on the plant boundary and three locations at the receptor level	Environment officer
Waste disposal, procedure for waste collection, storage, and disposal	To check the availability of waste management system and implementation	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	Once daily	Entire unit	Administration Officer
Safety	To check and evaluate the effectiveness of the workers' safety plan and availability and access of first aid facilities	Injuries	Injuries will be recorded	Daily	Entire unit	Administrator

Ambient Air Quality	To determine if the project operation is causing any (adverse) variation in ambient air quality in comparison with the PUNJABEQS limits	Source Emission parameters and Ambient Air Quality parameters	Tests	Processing halls and project boundaries.	Monthly	Environment Officer
Water conservation	To determine the effectiveness of the Water Conservation Techniques in Practice	leakages, spills and wastages	Visual inspection and record tracking	On monthly basis	at all points of use	Environmental officer/manager
Vehicle and equipment exhaust	To confirm the availability of exhaust control devices with the construction vehicles and equipment and their maintenance levels	Air quality at different points around the vehicles and equipment	Readings will be taken	on three typical working days	At least three points around the vehicles and equipment and three points at some distance downwind	Administration

6.7 INSTITUTIONAL CAPACITY OF THE UNIT

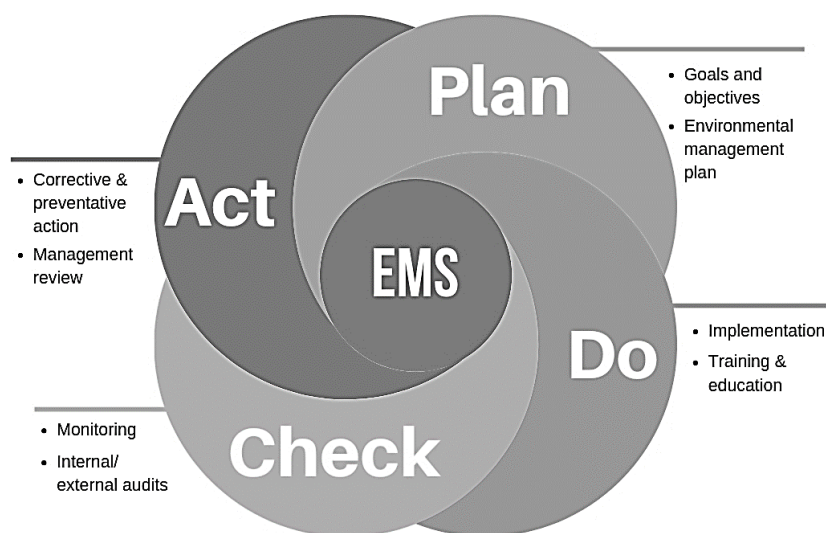
The organizational structure for the Environment Management Plan is outlined below:

6.7.1 PRIMARY RESPONSIBILITIES

The primary responsibility for implementing EMP within the company lies with the owner of Plant.

6.7.2 OPERATION MANAGEMENT & CONTROL

Conducting the operational activities in environmentally sound manner will be the responsibility of the concerned Manager; for which he will be trained.



6.7.3 SUPERVISION & MONITORING

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

6.7.4 COMMUNICATIONS AND DOCUMENTATION

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

6.7.5 MEETINGS

Two kinds of environmental meetings will take place during the project:

1. Kick-off meetings
2. Weekly meetings

The purpose of the kick-off meeting will be to present the EMP to project staff and discuss its implementation and to discuss any event of environmental significance that has happened in the under-discussion industry or a similar industrial unit to investigate its root causes and develop its solutions.

The purpose of the weekly meetings will be to discuss the conduct of the operation and environmental issues and their management. The proceedings of the meeting will be recorded in the form of a weekly environmental report.

6.7.6 CHANGES-RECORD REGISTER

A change-record register will be maintained at the site, in order to document any changes in project design. These changes will be handled through the change management mechanism.

6.8 ENVIRONMENTAL TRAINING

Environmental training will help ensure that the requirements of the IEE/EIA and EMP are clearly understood and followed by all project personnel in the course of the project.

Table 7: Training program

Target audience	Trainers	Contents	Schedule
Selected management staff	Environmental Management Team of Proponent	Key finding of mitigation measure	After every five months
All personnel	HSE Trainer	Mitigation measures	Monthly
Technical Staff	Environmental Management Team of Proponent	Waste disposal, vehicle movement restriction and other mitigation measures	After every three month
Other staff	Environmental Management Team of Proponent	Waste disposal, resource conservation and other mitigation workers	Monthly

6.9 EQUIPMENT MAINTENANCE DETAILS

Equipment of latest technology with high efficiency will be purchased by the Proponent. Maintenance of Equipment will be done twice year for the smooth operation of Plant.

6.10 ENVIRONMENTAL BUDGET

Approximately **PKR 0.5** budget will be reserved for the Environmental Monitoring and measures.

CHAPTER 7: PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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

7.1 Proponent's Environment Management Team

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts and will be appointed after operation of project starts.

Roles and Responsibilities		
Sr#	Concerned Persons	Duties
1	The Project Manager	Following will be the responsibilities of the Project Manager • Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment. • Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s) • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents • Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed • Project Manager is expected to continually monitor and improve the overall performance of their operation
2	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised • Identifying, assessing and managing health and safety risks • Consulting with workers (including staff, affiliates and contractors): i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments

- Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment
- Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk
- Assisting with the development, implementation and maintenance of a return-to-work program for injured staff.
- Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP
- Take appropriate action if the specifications contained in the EMMP are not followed
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible
- Review and approve construction methods, with input from the Site Manager, where necessary
- Ensure that activities on site comply with all relevant environmental legislation
- Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit
- Liaise with the Site Manager regarding the monitoring of the site
- Report any non-compliance or remedial measures that need to be applied
- All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager

7.2 The Responsible Authority

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint an HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage the all HSE condition at the PEQS. Furthermore EPA- PUNJAB will be responsible for the inspection regarding proper execution of EMP.

7.3 Objectives of Consultation

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

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

7.4 Identification of Stakeholders

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

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

7.4.1 Direct Stakeholders

No disturbance in the local community is being foreseen due to the installation of the rendering unit as the minimum distance between the community and the project area is more than 1 km Meters. No property loss is being envisaged due to the construction of the Prime Protein Mill .

7.4.2 Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns (Human Settlement) will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the installation of the Prime Protein Mill .

7.4.3 Other Departments and Agencies

Following departments are related to the project in public consultation:

- ➔ **Government Agencies directly, indirectly or widely involved in the execution and monitoring of the proposed project**

- ➔ Government departments such as TMA and Planning & Development Department, Forest Department, Agricultural Department Industrialist around the estate and working on the other development activities are considered as indirect stakeholders
- ➔ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related to the project

7.5 Public Disclosure

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

7.6 Consultation Process

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

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

Various meetings with the stakeholders were held the following objectives:

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

7.7 Environmental Practitioners and Experts

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

7.8 Affected and Wider Community

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

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

7.8.1 Views, Concerns and Suggestions of Various Stakeholders

Community showed a lot of concerns; a few are being mentioned here:

- ✍ **Removal of shrubs and trees should be avoided to the extent possible**
- ✍ **The project will become the source of income for local to earn their livelihood easily and honorably**
- ✍ **The area will become further industrialized**
- ✍ **For the solid waste management and waste disposal, proper disposal techniques should be adopted**
- ✍ **Employment opportunities will be generated, and locals should be hired on the priority basis**
- ✍ **The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly.**
- ✍ **Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions**
- ✍ **Removal of shrubs and trees should be avoided to the extent possible**
- ✍ **Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training**
- ✍ **The contractor should prefer hiring local labor from adjacent nearby villages**
- ✍ **Indigenous trees around the facility should be planted to control air pollution and as the compensation**
- ✍ **Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies within the radius of 0.8 km**

Concerns

- ☒ **Workers should be hired from local community**
- ☒ **Proper disposal of solid waste should be practiced**
- ☒ **Indigenous trees around the facility should be planted to control air pollution**
- ☒ **Removal of shrubs and bushes should be avoided to the extent possible**

7.8.2 Addressing Public Concerns

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

a. Grievances Redressed Committee

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

7.9 Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (88%) of nearby shops, industries, Human Settlement were in favor of the proposed project. They expect that installation of the rendering unit will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the Proposed Establishment of Prime Protein Mill . Its main objective is to cater the rising demand of poultry protein (semi powder) and crude oil from poultry waste.

EIA of Proposed Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study shall reduce, if not eliminate, these impacts so that these are within acceptable limits. Moreover, no deterioration, depletion or exploitation of resources is expected to be caused by this project. Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented. It is accordingly recommended that Environmental Approval for the project may be issued by the PUNJAB Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

8.2 RECOMMENDATIONS

The Environmental Impact Assessment study and survey results are finally evaluated to recommend the following:

- ✓ Implementation of EMP must be given top priority.
- ✓ Proper PPEs including ear plugs, earmuffs, mufflers, goggles, gloves and shoes etc. should be provided to workers
- ✓ Train workers to use PPEs
- ✓ Advise workers to follow SOPs.
- ✓ Installation of fire extinguishers in the premises and their monitoring must be ensured.
- ✓ Equipment maintenance and efficiency must be checked.
- ✓ No compromise on public health and environment should be allowed.
- ✓ Waste minimization practices should be employed, and workers should be encouraged to adopt such methods.
- ✓ Wages should be distributed on time.

- ✓ Proper tree plantation plan should also be developed in order to make the unit environment friendly.
- ✓ Small waste storage bins should be installed at different corner for proper waste collection and discharge.
- ✓ Proper dispensary and first aid box should be provided for workers
- ✓ Smoking should be avoided within premises of project site and near fuel storage areas.
- ✓ The Security Guards shall also be trained to act in case of all possible emergency situations. The fire alarms can be activated to signal evacuation. At the same time, communication shall be made with hospitals, emergency services and police for urgent support.

GLOSSARY

Aesthetic	Concerned with beauty or appreciation of beauty.
Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Convention	An agreement between states covering particular matters, especially one less formal than a treaty.
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Ecology	The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Endangered species	A species of animal or plant that is seriously at risk of extinction.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specific is being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Framework	A framework is a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful.
Hazardous Waste	Hazardous Waste is waste that poses substantial or potential threats to public health or environment.
Livelihood	A set of activities involving Securing the basic necessities – food, water, shelter and clothing of life.
Municipal Waste	Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses.
Nature	The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.
Penicillin's	The term "penicillin" is defined as the natural product of Penicillium mould with antimicrobial activity.

Pharmaceutical Industry	The pharmaceutical industry is the part of the healthcare sector that deals with medications
Preservation	Preservation is the strict setting aside of natural resources to prevent the use or contact by humans or by human intervention. In terms of policy making this often means setting aside areas as nature reserves (otherwise known as wildlife reserves), parks, or other conservation areas.
Proponent	A person who advocates a theory, proposal, or course of action.
Rehabilitation	To restore to a condition of good health, ability to work, or the like.
Resettlement	The settlement of people in a different place.
Resource	A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.
Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
Stakeholder	A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees and customers.
Topography	Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.
Vaccines	A substance used to stimulate the production of antibodies and provide immunity against one or several diseases, prepared from the causative agent of a disease, its products, or a synthetic substitute, treated to act as an antigen without inducing the disease
Vegetation	Plants considered collectively, especially those found in a particular area or habitat.

LIST OF ABBREVIATION

ABBREVIATION	DESCRIPTION
ASR	Air Sensitive Receivers
BDL	Below Detection Limit
BOD	Bio-chemical Oxygen Demand
CC	Construction Contractor
CDM	Clean Development Mechanism
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
DCO	District Co-ordination Officer
DD	Deputy Director
DG	Directorate General
DRR	Disaster Risk Reduction
DWQS	Drinking Water Quality Standards
EE	Environmental Engineer
EIA	Environmental Impact Assessment
EMMP Plan	Environmental Management and Monitoring
EPA	Environment Protection Agency
EPC	Engineering Procurement Construction
EPD	Environment Protection Department
EPHE	Environmental & Public Health Engineering
FGDs	Focused Group Discussion
GDP	Gross Domestic Product
gm	Gram
GoP	Government of Pakistan
IEE	Initial Environmental Examination
LGO	Local Government Ordinance
LDL	Lowest Detection Limit
mg/l	Milligrams per liter
MSL	Mean Sea Level

NCS	National Conservation Strategy
NEQS	National Environmental Quality Standards
NEP	National Environmental Policy
NO2	Nitrogen Dioxide
NOC	No Objection Certificate
OH & S	Occupational Health and Safety
PAPs	Project Affected Persons
PEPA	Pakistan Environmental Protection Act
PEPC	Pakistan Environmental Protection Council
PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
SO2	Sulfur Dioxide
SOP	Standard Operating Procedures
SWM	Solid Waste Management
TA	Technical Assistance
TORs	Terms of Reference
TSS	Total Suspended Solids
UNDP	United Nation Development Pro
WASA	Water and Sanitation Agency

LIST OF PEOPLE CONSULTED AND THEIR VIEWS

SR. NO.	NAME	ID CARD NUMBER	OCCUPATION	CONCERN/VIEWS
1.	Ghulam Shabir	36303-7360882-5	farmer	Positive
2.	Ansar Ali	34101-5615463-9	Farmer	Positive
3.	Liaqat Ali	34101-527.5075-1	Farmer	Positive
4.	Abdul Rehman	34102-0434594-7	Shop Owner	Concerned about air pollution
5.	Muhammad Bilal	36303-9299987-3	Shop Owner	Concerned about Noise pollution
6.	Muhammad Yousaf	36302-5965175-3	Daily Wager	Positive
7.	Muhammad Asif	36303-4107290-1	Daily Wager	Positive
8.	Muhammad Iqbal	36303-1561962-1	Vendor	Positive
9.	Abdul Hameed	36302-0474840-7	Vendor	Positive
10.	Muhammad Imran	42201-3691562-7	Daily Wager	Positive
11.	Muhammad Sabir	36303-9221124-3	Vendor	Concerned noise pollution
12.	Muhammad Shahid	36306-4248907-7	School Teacher	Wastewater should be properly treated prior to final disposal in nearby drain

SOURCES OF DATA

-  https://poultry.punjab.gov.pk/rendering_plants
-  [https://en.wikipedia.org/wiki/Rendering_\(animal_products\)](https://en.wikipedia.org/wiki/Rendering_(animal_products))
-  https://www.aphis.usda.gov/animal_health/carcass/docs/training/7-rendering.pdf
-  Sarwar, M. U. H. A. M. M. A. D., Khan, M. A., & Iqbal, Z. A. F. A. R. (2002). Status paper feed resources for livestock in Pakistan. *Int. J. Agric. Biol*, 4(1), 186-192.
-  Rafiq, M. A., Ali, A., Malik, M. A., & Hussain, M. (2010). Effect of fertilizer levels and plant densities on yield and protein contents of autumn planted maize. *Pak. J. Agri. Sci*, 47(3), 201-208.
-  Field Surveys
-  Public Consultations

TERMS OF REFERENCES

The consultants are required to carry out an Initial Environmental Examination study of the project under Section-12 of Pakistan Environmental Protection Act 1997/ Punjab Environmental Protection (Amendment) Act 2012.

The Study should be comprehensive and should cover all aspects which are envisaged under the relevant national and provincial laws & regulations including but not limited to:

- Identification and recommendation for suitable solution/treatment/mitigation measures for emissions and effluents such as wastewater and sludge etc. in accordance with Punjab Environmental Quality Standards (PEQS).
- Identification and recommendation for suitable solution/treatment/mitigation measures of solvents, oils (tar), hazardous waste, organic compounds, steam, flue gases, particulate matter and chemical compounds harmful for the environment and other substances leading to air, noise, water and soil pollution in accordance with PEQS.

The Study should be acceptable to the relevant national and/or provincial authorities (relevant authorities) in Punjab.

**LIST OF NAME, QUALIFICATION AND ROLES OF TEAM MEMBERS CARRYING OUT IN IEE/EIA
STUDY**

Sr.No.	Name	Designation	Role and Responsibility
1.	Dr. Mateen Shafqat		Technical Peer Review
2.	Mr. Kamal Ahmed Cheema	Lead Environmentalist	Technical Peer review
3.	Ms. Maham Ayesha	Manager Operations	Legal framework review and Stakeholder consultation IEE/EIA Expert, Environmental & Social Baseline, Report Writing.
4.	Arslan Iqbal	Environmentalist	Project Coordination and management, Impact Assessment and Mitigation Measures, Environmental Management Plan, Technical Report Writing.
5.	Mr. Jawad Shafiqe	Zoologist	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing.
6.	Ms. Amna Hafeez	Environmentalist & GIS Expert	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing. Project GIS Mapping
7.	Ms. Rahma Butt	GIS Expert	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing.

Required Content	EIA Report		
	PAGE NO.	REMARKS (If Any)	LACKING
Executive summary:			
1. Title and location of project	01		
2. Name of the proponent	01		
3. Name of the organization preparing the report	01		
4. A brief outline of the proposal (type, process, technology and land requirement)	01	Updated	
5. The major impacts	03		
6. Recommendations for mitigation measures	04		
7. Proposed monitoring	05		
Introduction:	12		
1. Purpose of report			
2. Identification of project and proponent	11		
3. Details of consultant	12		
4. Brief description of nature, size, and location of project	12		
Screening: Whether the Project requires IEE or EIA as per Regulations	15		
Scoping			
1. Spatial and Temporal Boundaries of Environmental Assessment	16	incorporated	
2. Important issues and concerns raised during consultation	19	incorporated	
3. Significant impacts and factors to be determined	20	incorporated	
Consideration of Alternatives			
1. Site alternatives, their selection and	18	Updated	

rejection criteria			
2. Design/Technology alternatives, their selection and rejection criteria	18		
3. Environmental Alternatives, their selection and rejection criteria	18	incorporated	
4. Economic Alternatives, their selection and rejection criteria	19	incorporated	
Description of the project:			
1. Objectives of Project	21		
2. Location and Site Layout of the project (May be annexed at the end of report)	21	incorporated	
3. Land use on the site	21		
4. Road access	22		
5. Vegetation features of the site	21		
6. Cost and Magnitude of operation	22	incorporated	
7. Schedule of implementation	22	incorporated	
8. Description of the project (Process flow chart/steps, Technology, Raw material and products, by-products)	23	Updated	
9. Restoration and rehabilitation plans	23		
Description of Environment:			
Clear-cut picture of existing environmental resources:			
1. Baseline Physical Environment	31		
2. Baseline Ecological Environment	38		
3. Baseline Socioeconomic Environment	49		
4. Lab reports of environmental analyses (along with soil tests, geo- investigation in case of building projects and industries)	--	Attached along with the EIA.	

5. Suitability of the site (not prohibited, environmentally sensitive, incompatible to surroundings and unsuitable)	42		
Impact Assessment			
1. Methodologies for impact identifications (One/more)			
✓ Checklists	45		
✓ Matrices	NA		
✓ Networks	NA		
✓ Overlays	NA		
✓ GIS and Computer expert systems	26	Project Site Analysis has been through Google Earth.	
2. Characteristics of impacts (nature, magnitude, extent and location, timing, duration, reversibility, risk)	43	incorporated	
Screening of potential Environmental Impacts and mitigation measures on/during:			
1. Project location	45		
2. Design	45		
3. Construction phase	45		
4. Operational phase	47		
5. Potential Environmental Enhancement Measures	47		
Environmental management and monitoring program			
i. Description of proposed mitigation actions along with:	50		
ii. Schedule for implementation and Environmental budget	64		

iii. Environmental Management Team along with their Roles and responsibilities (by name or position)	62		
iv. Proposed monitoring program to assess performance or output of EMP	57		
v. Proposed EMP reporting and reviewing procedures	62		
vi. Any training needs required to ensure implementation of EMP and Monitoring plans	63		
Required Content	EIA Report		
	PAGE NO.	REMARKS (If Any)	LACKING
Stakeholders Consultation: Communicate the possible impacts and concerns to the following to assist further analysis and decision making:			
i. Proponent's Environment Management Team	65	incorporated	
ii. The responsible authority	66		
iii. other departments and agencies	68		
iv. Environmental practitioners and experts	69	incorporated	
v. Affected and wider community	69		
Appendices			
1. Glossary	73		
2. List of abbreviations	76		
3. Lists of individuals and organizations consulted along with their written feedback	78	incorporated	

4. Sources of data and a full list of all reference material used	79	incorporated	
5. Terms of references of environmental reports and those given to individual specialists	81	incorporated	
6. List of names, qualifications and roles of team members carrying out the IEE/EIA study	82	incorporated	
7. Approvals from other concerned departments		Attached as an Annexure	