EIA

Environmental Impact Assessment Report of

M/s H & M TRADERS

CHAK NO 301 G.B. TEHSIL & DISTRICT TOBA TEK SINGH

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DISCLAIMER

The data was based on the originality of project site shown by the project proponent/ stakeholders/ promoters, provided maps, verbal communications and all other related documents. The authenticity of supra-mentioned relies with the proponent/ stakeholders/ promoters, not with the environmental consultant. The EIA report can't be negotiated in any court of law.

ENVIRO STEWARDS CO.(PVT) LTD.

Representative: IEE & EIA Team

EXECUTIVE SUMMARY

Introduction

The executive summary is an outline of the key outcomes in EIA (Environmental Impact Assessment). The proponent intends to establish waste processing facility to safely handle the animal waste (animal-based fat) by the title "H & M Traders)" located at Chak # 301 GB, District Toba Tek Singh, over an area of 03 Kanal (16335 SFT). The consultant company for this project is Enviro Stewards Company (Pvt.) Limited.

This project specific EIA (Environmental Impact Assessment) presents a detailed account of environmental and social impacts likely to emanate from the establishment of Bio-Oil extraction unit. The Environmental Impact Assessment (EIA) report is prepared to assess the potential impacts likely to occur from the project's entire life cycle on the local environmental quality and communities.

The proposed project is the Bio-Oil extraction unit. It falls under Schedule II (list of projects requiring an EIA), Category B (Manufacturing and Processing), Sub sector 9 (Poultry Waste processing Units/Rendering Units) of the IEE / EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012). Details of the process description are given in Chapter 5 under the heading process details. The assessment came up with a set of impact mitigation measures for the project to pursue to minimize the adverse impacts on the environment and nearby communities.

Brief Outline of Project

The proponent intends to construct a Bio-Oil extraction unit in which animal waste will be collected from different sources and after cleaning & processing, oil will be extracted which will further used in different sectors. Some general details related to project are as follows:

Table 1 Brief of the Project

Name of the Project	M/s H & M Traders
Location of Project	Chak # 301 GB, District Toba Tek Singh
Proponent	Mr. Haq Nawaz
Total Area	03 Kanal (16335 SFT)
Raw material	Animal based fat
Product	Bio-Oil
Purpose of the Project	To establish waste processing unit for proper handling of animal waste and to keep the environment clean

Capacity of Project	02-03 tons per day
Cost of the Project	10 million PKR
Site Coordinates	30.929515 N, 72.417229 E
Nature of Area	Open Land
Current Status of Project	Proposed project. No activity is going on.
Ground Water	100-150ft
Manpower:	Construction: 10-15 Persons
	Operation: 10-12 Persons
Power Source	FESCO
Generators	01 Generator
Water Availability	Ground Water (100-150 ft)
Period of Construction	Approx. 01 Year
Assessed Environmental issues	Solid and Liquid waste will be environmental issues. So, these wastes should be disposed of as per guidelines by EPA & proposed in EIA (Environment Impact Assessment) report
Solid Waste Generation	During construction, there will be some stone, gravel, dust and sand particles. In operational phase, only domestic solid waste will be generated in a very negligible amount as the remaining solid waste left after oil extracted will be sold to the approved vendor of EPA.
Solid Waste Management	Managed as per standard practices suggested by EPA
Wastewater Generation	During operational phase, wastewater will be generated from washing of raw material and domestic wastewater will be produced
Wastewater Management	Wastewater after treatment in wastewater treatment facility which will be septic tank, will be disposed of in nearby sewerage system
Consultant Name	Enviro stewards Company (Pvt.) Limited
Compliance	Punjab Environmental Quality Standard (PEQS 2016) and time to time guidelines by EPA and other enforcement Department / Agencies.

Legal and Administrative Framework

The national guidelines and legislations related to the environment considered for the project include, National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), Punjab Environmental Protection Act (PEPA 1997), amended PEPA,

(2012), Punjab Environmental Quality Standards (PEQS), Land Acquisition Act (1894), Cutting of Trees (Prohibition) Act (1975), Punjab Wildlife Act (1974), Punjab Plantation and Maintenance of Trees Act (1974), Antiquities Act (1975) etc.

Environment related documents have been reviewed including submission of environmental assessment study report to obtain environmental approval was made mandatory by the Pakistan Environmental Protection Ordinance (PEPO), 1983 and the Pakistan Environmental Protection Act (1997). Section 12(1) of the PEPA (1997) amended 2017 stipulates that no project involving construction or any change in the physical environment can be undertaken unless an IEE or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

The Major Impacts

As it is the project falling in category of EIA, it is likely to generate adverse impacts. The impacts will be long or short term, negative or positive, temporary, and permanent as well. The impacts due to proposed project will be on:

Physical/Environmental Factors:

The impacts likely to impose/cause are:

i. Change in Soil/land.
ii. Decrease in groundwater level.
iii. Change in aesthetics of the area.
iv. Wastewater generation.
v. Odor Problem.
vi. Air Pollution.
vii. Solid waste generation.

Ecological Factors:

The impacts will be on:

i. Floral species.
ii. Fauna species.

Socio-economic Factors:

i. Economy of area.
ii. Employment rate in the nearby areas.

iii. Change in quality of life.

Recommendations for Mitigation Measures

The mitigation measures will be provided to reduce the impacts caused due to project activities. These proposed mitigation measures will be:

- Transport vehicles should be optimally loaded.
- Wastewater treatment facility will be provided.
- The wastewater will not be disposed of without treatment.
- Green belts will be provided to control noise pollution.
- Proper maintenance of machinery engines.
- Provide waste handling facilities such as waste bins.
- Proper use of PPE's during construction and operational activities.
- Provide jobs to local community.
- Effective ventilation systems to remove odorous gases.
- By keeping the solid waste away from sewerage so contamination will be less.
- Air Filtration Systems will be provided.
- Skilled and unskilled workers both should be provided with jobs.
- Training program for the workers before all activities of said project.

The detailed description of mitigation measures provided in chapter # 8.

Proposed Monitoring

It is the EIA project so the impacts will be long term, significant or adverse. These impacts can be reduced by regular monitoring and implementing all the mitigation measures. Environmental Monitoring Program should be formulated which ensures effective surveillance of the environmental parameters at various stages of the project development and compliances with PEQS and legal obligations.

An environmental management and monitoring plan provide a delivery mechanism to address the potential environmental impacts of a project during its construction and operational phase,

to enhance project benefits, and to introduce health and safety standards of good practice to be adopted for proposed project. The proponent will ensure the proper implementation of mitigation measures for the concerned installation and operation and maintenance phase through adequate monitoring. Monitoring for following Environmental Parameters is recommended:

- **Ambient Air**

Monitoring for ambient air should be conducted on a quarterly basis during the constructional phase of the project and a report should be submitted to EPA Punjab.

- **Noise**

Regular monitoring for noise level should be maintained periodically during construction and operation phases of the project and reports should be submitted to EPA Punjab.

- **Water quality**

Regular monitoring of water quality should be conducted during construction and operation phases of the project and a report should be submitted to Panjab. Record should be maintained regarding the underground water pump and consumption.

Conclusion & Recommendation

The proposed project is Bio-Oil extraction unit. Total production capacity is 3-4 tons with project cost of 10 million PKR. The cost of environmental budget is around 05 Lacs PKR.

The impacts include wastewater, solid waste, air quality, noise and are manageable by applying all the mitigation measures and by complying with environmental laws of the country. The major positive impacts of the project include job opportunities for local people as well as mange the animal waste efficiently. The Project will raise the worker's income and can improve social-economic infrastructure. Nevertheless, to ensure long-term environmental sustainability of the project, institutional arrangements must be put into place for controlling the adverse impacts all during the life of the project.

It is recommended that the proponent should obtain an environmental approval (No Objection Certificate) from the Punjab-EPA before proceeding further into the construction activities as per regulatory requirements.

1 INTRODUCTION

1.1 General

Bio-oil extraction from animal-based fat is an innovative and sustainable approach to utilizing waste by-products from the meat and poultry industries. These extraction units play a crucial role in converting animal fat into valuable oils, which can be used in various applications such as biodiesel production, industrial lubricants, cosmetics, and even food-grade products. By repurposing waste fat, these projects help reduce environmental pollution, lower dependency on fossil fuels, and promote circular economy practices.

In Pakistan, the extraction of bio-oil from animal-based fat is an emerging industry with significant potential for sustainable resource utilization. Given the country's large livestock and meat processing sectors, a substantial amount of animal fat is generated as a by-product, much of which remains underutilized or is disposed of improperly, contributing to environmental concerns. Establishing bio-oil extraction units can help transform this waste into valuable products such as biodiesel, industrial lubricants, and other commercial oils, reducing reliance on imported fossil fuels and supporting the circular economy.

The need for such projects is increasing due to global efforts to achieve sustainable energy solutions, waste reduction, and resource optimization. Additionally, bio-oil extraction supports waste management strategies by preventing improper disposal of animal fat, which can lead to environmental hazards such as water contamination and greenhouse gas emissions. As industries and governments push for cleaner alternatives and efficient resource utilization, bio-oil extraction units present a viable solution for both economic and environmental benefits.

1.2 Purpose of Report

This report has been prepared to conform to the requirements of the Punjab Environmental Protection Act (Amendment) 2012, which states that:

> ***"No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof."***

The purpose of this report is to evaluate the impacts caused on the environment and on human health by the said project. It also describes the mitigation measures and monitoring plan that will be followed during construction and operational phase.

According to EPA detailed information is provided in this report for the issuance of environmental approval in compliance with the Punjab Environmental Protection Act - 1997 (Amended 2012) Section 12.

The (Environment Impact Assessment) EIA report considers socio economic, physical, and environmental, land use, forestry, crops, water bodies, biodiversity (flora and fauna), heritage, and other relevant aspects associated with the project itself and the area around the project. The report also describes mitigation measures that will be adopted to undo environmental impacts on any segment of the environment i.e., human health and environmental health around the project site both during construction and normal operation of the project. The report provides relevant information, as required under the officially approved format, to help the decision makers (EPA Punjab in the Present case) before issuing the desired environmental approval.

1.3 Identification of Project and Proponent

Proponent Details	
Proponent name	Mr. Haq Nawaz
Designation	Proponent
Address	Kachi Basti, Mohalla Eidgah, District Toba Tek Singh
Project Details	
Project title	H & M Traders
Project location	Chak # 301 GB, District Toba Tek Singh

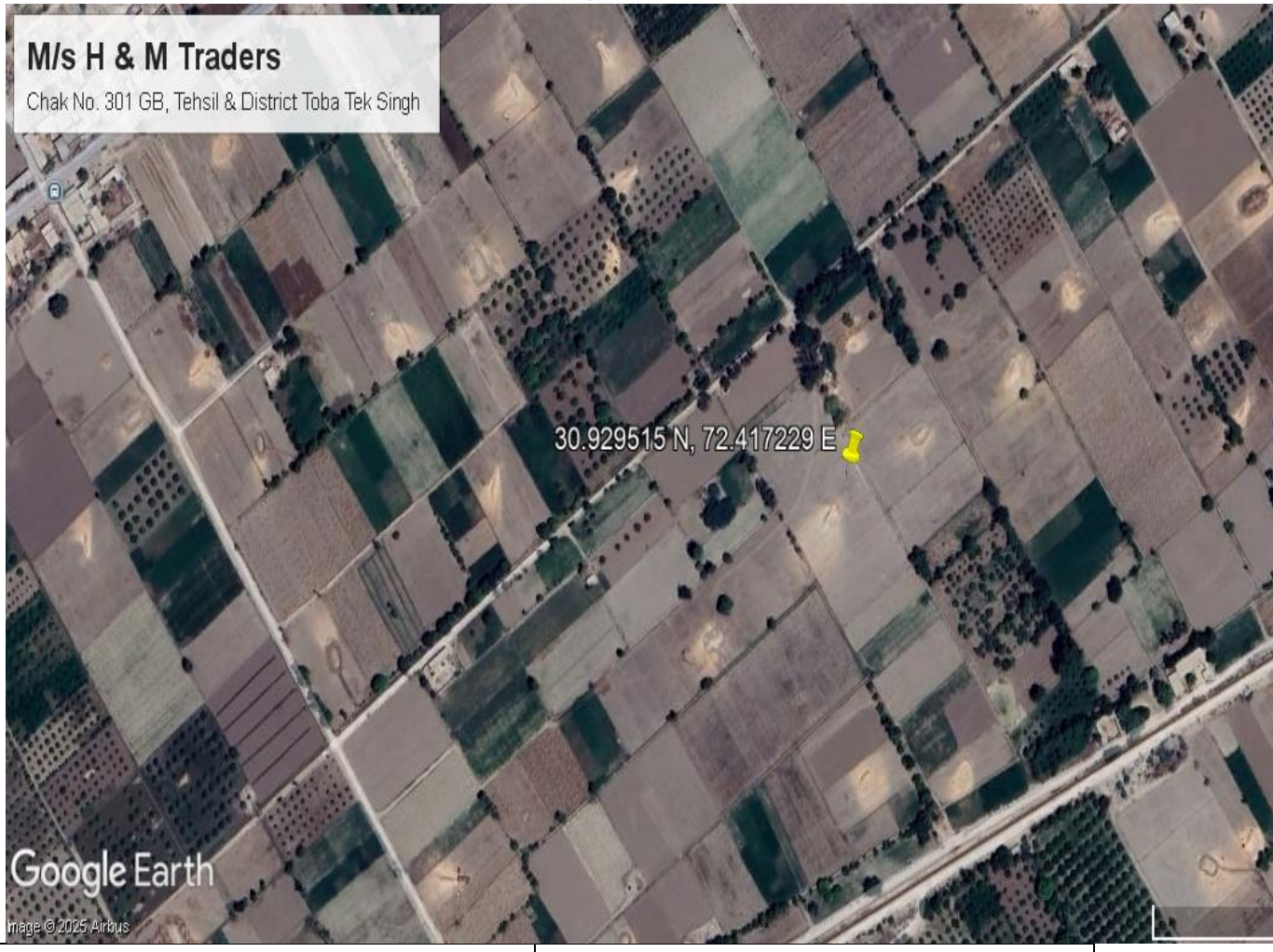
1.4 Consultant Details

Consultant Details	
Consultant name	Enviro Stewards Company (Pvt.) LTD.
Contact No.	+92-301-1199600
Address	1st floor Allied Bank A Block Commercial Market, Canal View Housing Society, Lahore.
Team Leader	
Name	Miss Sara Fatima
Designation	Senior Environmentalist
Contact No.	+92-301-1198600

1.5 Nature & Size of Project

The project deals with waste processing facility. The total area of the project is 03 Kanal (16335 SFT) approximately. The capacity of the project is 3-4 tons per day. The land is open in nature. The status of land/project site is that it is an open plot. No activity is going on before issuance of NOC from Environment Protection Department.

Table 2 Schedule of Area



Total area	**16335 SFT**
Gate, Office & Labor Room	691 SFT
Electrical	250 SFT
Boiler	665 SFT
Processing Area	2600 SFT

1.6 Location of Project

The project site is located at Chak # 301 GB, District Toba Tek Singh. The coordinates of the project site are 30.929515 N, 72.417229 E. The map is attached to it.

Figure 1 Location of Project Site

1.7 Extent of the EIA study, scope of the study, magnitude of the efforts

This EIA study has been accomplished following the requirements serial 2.3 of the "Guidelines for the preparation and review of Environmental Reports, October 1997". In compliance of PEPA, 1997(amended 2012) requirements, an EIA report has been prepared by the team of environmental experts. This document covers all environmental impacts, due to the proposed project, in and around the project area comprising the physical, ecological, and socio-economic aspects together with identification of the potential positive and negative impacts. Any developmental activities outside the project area like rehabilitation of the road and establishment of the other factories outside the project vicinity have not been covered under this EIA study.

The EIA report covers the examination of the physical, biological, and environmental, socioeconomic impact caused due to the following activities:

- Construction activities including the leveling and marking of land division.
- Relevant off-site construction activities like construction of access road.

2 POLICY, LEGISLATION, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 General

This section deals with the current policy as well as legal and administrative framework related to carrying out EIA (Environmental Impact Assessment) of various projects. Several laws exist in Pakistan, containing several clauses concerning protection of the environment. Like other Projects, this project is also required to go through an Environmental Assessment for getting a NOC under Section 12 of the Punjab Environmental Protection Act – 1997 (Amended 2012).

According to environmental laws of the country development projects must undergo the process of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) to predict and mitigate the impacts of the development at an early stage.

2.2 Screening

The proposed project is the waste processing facility. It falls under Schedule II (list of projects requiring an EIA), Category B (Manufacturing and Processing), Sub sector 9 (Poultry Waste processing Units/ Rendering Units) of the IEE / EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012). Details of the process description are given in Chapter 5 under the heading process details.

2.3 Existing Regulation and Framework

This EIA study has been carried out in the light of the policy guidelines for the preparation of IEE/EIA Reports under the procedure and practices formulated by the Provincial Environmental Protection Agency (EPA).

2.4 Relevant Legal / Institutional Framework

The applicable laws for the environmental study of the project are briefly given below. The proponent of the project will abide by the applicable laws and regulations.

2.4.1 National Conservation Strategy, 1992

On March 1, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country's deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life. The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

2.4.2 PEPO 1983, PEPA 1997 (Amended 2012)

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which was replaced by the Pakistan Environmental Protection Act (PEPA) 1997, through an Act of Parliament. Now the PEPA 1997 has been replaced by Punjab Environmental Protection Act 1997 (Amended 2012) on 18th April 2012.

Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out EIA/IEE for all development projects, but there were no EIA/IEE regulations under that ordinance.

Under section 12 of the Punjab Environmental Protection Act, 1997 (Amended 2012) it is mandatory to take an Environmental Approval Environmental Protection Agency for commencement of any construction of project.

2.4.3 National Environmental Policy 2005

The Government of Pakistan (GOP) has notified National Environmental Policy 2005, for different projects/aspects in which guidelines/priorities have been given to undertake the projects having significant environmental impacts.

2.4.4 Review of EIA and IEE Regulations 2022

The GOP has issued Review of Initial Environmental Examination and Environmental Impact Assessment Regulations 2022, to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

2.4.5 Guidelines for the Preparation and Review of Environmental Reports, 1997

The GOP has also framed guidelines for the preparation and review of IEE/EIA of projects in various developmental sectors.

2.4.6 Punjab Environmental Quality Standards (PEQS)

According to Punjab Environmental Protection Act, 1997 (Amended 2012), Punjab Environmental Quality Standards (PEQS) were established for municipal and industrial effluents and air emissions.

2.4.7 Guidelines for Sensitive and Critical Areas

GOP issued Guidelines for Sensitive and Critical Areas in October 1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the environmental assessment process, so that the projects are planned and sited in a way that protects the values of sensitive and critical areas.

2.4.8 Policy and procedures for the Filing, Review and Approval of Environmental Assessments, November-1997

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully consider.

2.4.9 Guidelines for Public Consultation, Pakistan Environmental Protection Agency October 1997

This guideline is part of a package of regulations and guidelines which include:

- Punjab Environmental Protection Act, 1997 (Amended 2012)
- Policy and Procedures for filing, review, and approval of environmental assessments
- Guidelines for the preparation and review of Environmental Reports
- Guidelines for sensitive and critical areas
- National Environmental Quality Standards (NEQS)

2.4.10 Punjab Wildlife Protection Act, 1974

This act was framed in 1974 by the province Punjab and is about of protection and conservation of Wildlife.

2.4.11 Forest Act, 1927

This act was filmed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

2.4.12 Explosive Act, 1884

This act deals with explosives in prohibiting either absolutely or subject to conditions, the manufacture, possession, or importation of any explosive which is so dangerous in character that, in the opinion of the appropriate Government, it is expedient for public safety to issue the notification.

2.4.13 Punjab Local Government Ordinance, 2022

Schedules 4 and 8 of this Ordinance pertain to environmental pollution. Under the Ordinance, the local councils are authorized to restrict projects causing pollution to air, water, or land. They may also initiate schemes for improving the environment.

2.4.14 Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 268 to 291 are about offences affecting public health. The offences relating to public Health safety and environment are as under.

Sec 268: Public Nuisance

Sec 269: Negligent act likely to spread infection of disease dangerous to life.

Sec 270: Malignant act likely to spread infection of disease dangerous to life.

Sec 278: Making atmosphere noxious to health.

Sec 284: Negligent conduct with respect to poisonous substance.

Sec 290: Punishment for public nuisance in cases not otherwise provided for.

Sec 291: Continuance of nuisance after injunction to discontinue.

2.4.15 Punjab Land Use Rules 2009

In January 2009 the Punjab Government notified "Punjab Land Use Rules 2009" for the clarification of Lahore Master Plan. In these rules permissible land use according to area type is defined.

2.4.16 Antiquities Act 1975

The law relates to protection of Antiquities, monuments, National &International heritage. Compliance with this Act is mandatory for the Installation of Generators. Under section 22 of the Act no development plan or scheme or new construction can be done within distance of 200ft from the boundary of the monuments/ National Heritage. There is no historical Site or monuments in the proximity of the project.

2.4.17 Solid Waste Management Rules 2005

The Solid Waste Management Department, CDGF, has notified these rules for proper waste management.

2.4.18 Labor Law

The labor laws apply on child labor and measuring instruments.

2.4.19 Safety & Civil Defense Laws

The civil defense laws provide details about safety, fire protection and civil defense.

2.4.20 Guidelines for Critical and Sensitive Area

These guidelines have been prepared under section 12 of Punjab Environmental Protection Act 1997 (Amended 2012) for protection and safety of critical and sensitive localities.

3 SCOPING

The scoping in Environmental Impact Assessment involves a comprehensive assessment of the potential impacts of a project or activity, including direct and indirect impacts, cumulative impacts, and potential long-term effects. This assessment is carried out by a team of environmental and social experts, who analyze the proposed project or activity in detail and identify potential risks and impacts on various aspects of the environment, such as air quality, water quality, biodiversity, and cultural heritage. In this Environmental Impact Assessment, a public consultation process is involved, where members of the public and other stakeholders can provide feedback and raise concerns about the proposed project or activity.

3.1 Spatial and Temporal Boundaries of Environmental Assessment

Due to construction of the proposed project. Within a radius of 2-km, no industry can be seen but a one commercial building over there represented in figure given below. By considering all these factors the current project will be installed by adopting proper mitigation measures to avoid disturbance in nearby areas and the local community. In the current project no significant emission will be observed because in the proposed project there will be only storage. Wastewater quality will be measured to ensure PEQS. No environmentally sensitive area is present within safe distance that could be impacted due to proposed project.

Figure 2 Radius of 2 Km from Project Site

3.2 Important Issues and Concerns Raised during Consultation

During consultation it was observed that many people were in favor of the project but some of the issues and concerns were raised. During survey following concerns of local community, Government Departments, Environmental Practitioners and Experts, nearby industries were noted:

- Local should be preferred for the job opportunities.
- Proper training should be given to workers.
- Noisy activities should be confined.
- Air pollution should be controlled effectively.
- There should be careful handling of animal waste.
- Wastewater should not dispose of without proper treatment.
- Solid waste must be collected timely.
- A proper wastewater treatment should be installed.
- Ensure the tree plantation in the vicinity of area.
- Health and safety of workers should be ensured.
- EMMP should be designed and enforced with great spirit.
- Respective team officers should be responsible for the implementation of management plan and actions.
- Avoid the excessive use of groundwater. Limited amount of water should be use.
- Cleanliness of area should be ensured.
- To reduce or avoid air pollution transport vehicles should be covered in the construction phase.
- Proponent shall work for betterment of community.

3.3 Significant Impacts and Factors to be Determined

The factors and impacts to be determined around the project site are:

- Dust and Particulate emissions
- Wastewater generation and its treatment
- Control Air emissions
- Solid waste management
- Occupational Health and safety
- Site Security
- Check and balance of machinery.
- Traffic Management
- Hygiene management
- Community impacts
- Job opportunities for locals
- Confined noisy activities.
- Resource conservation
- Odor producing in the process unit.
- Avoid excessive water consumption.
- Energy efficient techniques must be adopted.
- Proper site restoration after construction
- Tree plantation at designated green areas
- Emergency preparedness

4 ALTERNATIVE CONSIDERATION

Alternatives are examined to determine the best method of achieving project objectives and to reduce environmental impacts. Alternatives are recommended and examined to determine the best method of achieving project objectives, while minimizing environmental impacts. The discussion and analysis of alternatives in an Environmental Impact Assessment (EIA) study should consider other practicable strategies that will promote the elimination of negative environmental impacts identified. Also, it is essential to develop most suitable technology or design option. This evaluation explains the selection of the most feasible alternative in terms of economics, environment, and health & safety. It outlines the following options that were considered for this project: Most suitable options that were considered for this project are related to:

- Site alternative, their selection and rejection criteria
- Design / technology alternative, their selection and rejection criteria
- Environmental alternative, their selection and rejection criteria
- Economic alternatives, their selection and rejection criteria

4.1 Site Selection

The selected site is open land. No project site alternative was considered as the proposed location is the open area. The following factors are the main reason for selected land and no alternative is considered due to:

- There is no environmentally sensitive area is present near the site.
- No need for resettlement around the location.
- Easy road access to the market.
- Availability of main road.
- The site is at a safe distance from sensitive receptors.
- Availability of basic facilities (road, power, water, telephone etc.)

By considering these values the selected site is a source of development in the area. Also, away from protected and sensitive areas. So, the site is suitable for the establishment of said project.

4.2 Design/ Technology Selection

For the development of the current project state-of-the-art technology will be selected to avoid emissions and long-term environmental impact. The proponent will use updated technology

and new machinery to run the process. This system emits less emissions and can work properly. The proponent is doing heavy investment for this project so latest/state of art technology will be preferred to ensure good quality products. Water mitigation techniques are also considered at their best including wastewater treatment process. There will be no use of any hazardous chemical during the process.

4.3 Environmental Factors

The unit site is in an area which is away from any biodiversity including forestry, wildlife, migratory birds, flora and fauna, fishery. There is no cultural or any other heritage in the project area. There is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site. After completion of construction, proper landscaping will be done. Moreover, the proponent is very concerned and conscious about the quality and equally about the environmental protection and resource conservation. For wastewater treatment plant will be installed.

4.4 Socio-economic Factors/ alternatives

Tree plantation will be done that will reduce temperature of the area and act as noise barrier. Building design will be such that maximum use of day light and LED lights will be installed to minimize electricity consumption. Job opportunities for the local person as well as for the skilled person. The economy rate of the project site will also increase. The cumulative effect of this types of projects would result in noticeable economic growth.

5 PROJECT DESCRIPTION

5.1 Type and category of Project

The project is construction of waste processing unit named H & M Traders located at Chak # 301 GB, District Toba Tek Singh. The cost of the project is around 10 million PKR. According to projects categorization for environmental assessment studies, the proposed project falls under Schedule II (list of projects requiring EIA), Category B (Manufacturing & Processing) and sub sector 9 (Poultry Waste Processing Unit/ Rendering Units) of the EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment for (EIA) is mandatory for getting Environmental Approval.

5.2 Objective of Project

The objective of aforesaid project i.e., establishment of waste processing unit is to go for proper handling of animal based fat and then further use of this oil by the vendors which purchased it in the poultry feed manufacturing. The project will encompass modern state-of-the-art facility with the objective of maintaining the Environment neat and clean. The project will have following advantages:

- The project will provide additional income and gainful employment to local people.
- The primary objective of a waste processing unit is to effectively manage, and process poultry waste generated from poultry farms, slaughterhouses, and processing facilities.
- The unit aims to reduce the volume of waste and minimize its negative environmental impact through proper treatment and utilization.
- This includes extracting bio oil for further utilization in various industries. By recovering and repurposing these resources, the unit promotes resource conservation and contributes to a circular economy approach.
- The said project is itself value addition project.
- Socio-economic up-lift of the proponent
- Creation of new job opportunities and promoting income prospects for those engaged in the allied activities associated with operation of project is considered as indirect objectives of the project.

5.3 Location and Site Layout

The location of project is Chak # 301 GB, District Toba Tek Singh. The coordinates of project site are 30.929515 N, 72.417229 E. Total area of project site is 03 Kanal (16335 SFT). Google map is attached with file.

5.4 Land Use On-Site

The land area is open plot. After issuance of NOC the construction activity will start.

5.5 Plantation Plan

Approximately 500-1000 plants will be planted in and around the project vicinity to enhance the landscape beauty and to make the ambient air quality better. These plants will include ornamental, coreopsis, and daylily plants as well. But most trees will be shade providing.

5.6 Road Access

The main roads near the project site are Toba Tek Singh-Shorkot Road some service roads will also available near the project site. Due to this main road availability, the access to project site is easy. All the constructional & operational activities and basic needs provision will be made easy by the road access.

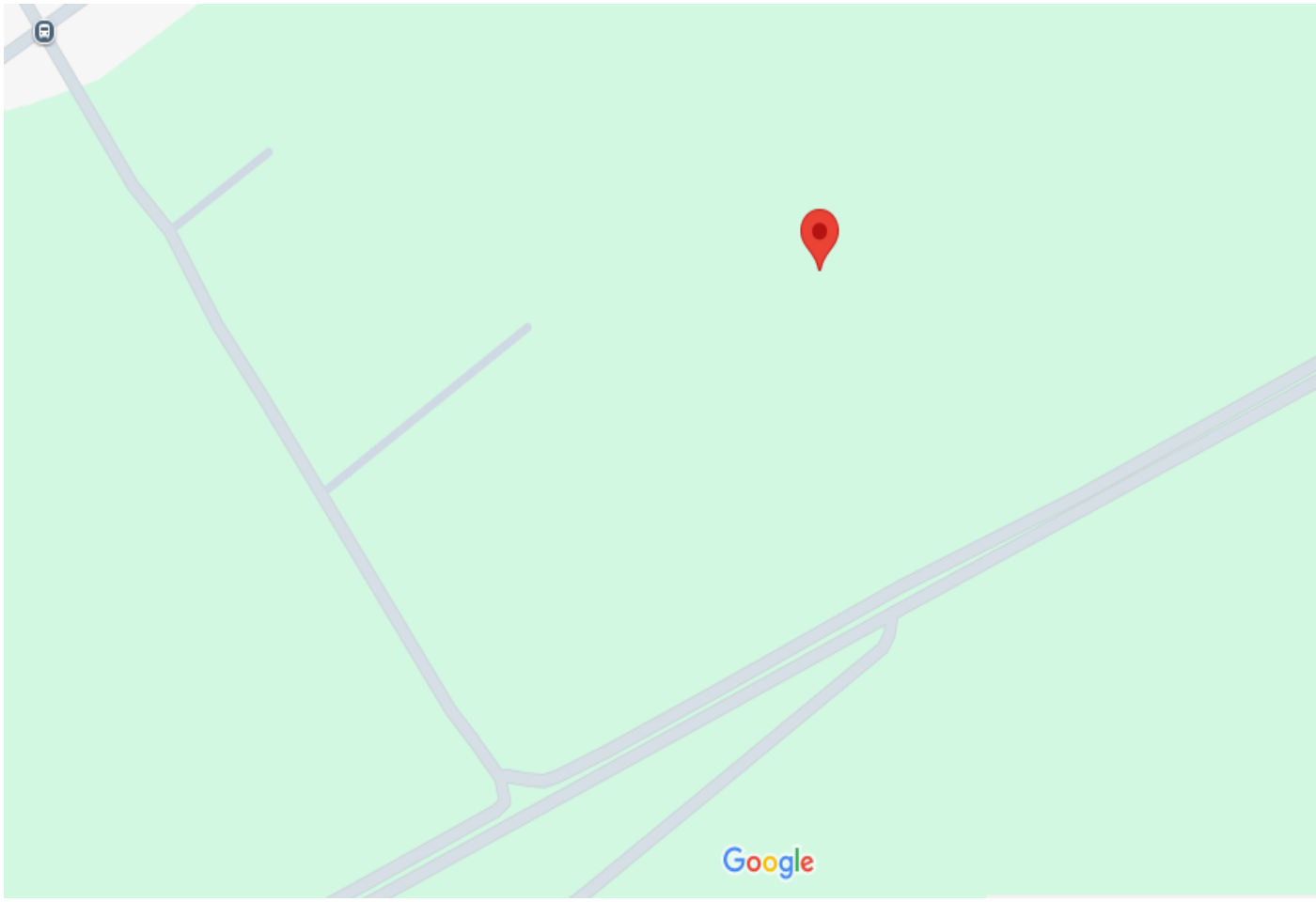


Figure 3 Road Access

5.7 Vegetation Features of the Site

The land is clear, no vegetative feature found there. After some distance there are few trees, green patches present.

5.8 Cost and Magnitude of Operation

The total cost of the project is 10 million PKR. The total area is 03 Kanal (16335 SFT), and the site coordinates are 30.929515 N, 72.417229 E.

Table 3 Cost Break-down.

Amenities	Cost in PKR
Land Cost, Infrastructure development, water supply, boundary walls, electric supply, roads etc.	75 lacs
Solid Waste Management	2 Lacs
Wastewater Management	5 Lacs
Tree Plantation	8 Lacs
EMMP & Other miscellaneous	10 Lacs

Total Cost	**10 million**

Detailed site survey & planning during development of the proposed project will be done. However, the budget will be allocated for purchase and maintenance of standardized PPEs for workers, for waste management and environmental enhancement.

5.9 Schedule of Implementation

Project schedule (tentative) is described hereunder.

Stage I: The clearing of land, preparation of land for construction activity.

Stage II: During this phase machinery will be brought to the site and installed.

Stage III: In this phase all the outstanding activities will be completed, construction activities will be initiated.

Stage IV: After completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Activities	Times Frame										
	Four Week		Four Week			Four Week		Four Week		Four Week	
Preliminary Phase (Land Acquiring etc.)											
Design Phase											
Pre-Construction Activities Finalization											
Construction Phase											
Purchasing Phase											
Machinery Installation											
Commissioning Phase											
Recruiting of Staff											
Operation Phase											

5.10 Process Description

The proponent intends to establish waste processing facility to safely handle the animal waste (animal based fat) by the title "H & M Traders" located at Chak # 301 GB, District Toba Tek Singh, over an area of 03 Kanal (16335 SFT). The basic detail regarding the process is:

Raw material	Animal based fat
Final Product	Bio-Oil
Capacity	3-4 tons

The main steps of the whole process are given below:

1. Collection of Raw Material

The process begins with the collection of animal fat from slaughterhouses, meat processing plants, and other sources where animal by-products are generated. The quality of the raw fat is crucial for the efficiency and purity of the extracted oil. Proper handling and transportation of the fat are essential to prevent contamination and spoilage. In large-scale operations, fat is stored in temperature-controlled conditions to maintain its quality before processing.

2. Cleaning and Pre-Treatment

Before the extraction process begins, the collected fat is cleaned to remove impurities such as blood, tissue residues, and dirt. This step is essential to improve the efficiency of oil extraction and ensure a high-quality final product. Cleaning is usually done by washing the fat with water or using mild chemicals to dissolve unwanted substances. Additionally, excess moisture is removed, as water content can interfere with the oil separation process.

3. Heating and Melting

The cleaned fat is then subjected to control heating to break it down and release the oil. This step is essential as animal fat exists in a semi-solid or solid state at room temperature. By applying heat, the fat liquefies, allowing the oil to separate from the solid components such as connective tissues, proteins, and other residues. The heating process is typically carried out in large vessels or tanks equipped with a heating system, such as a boiler or direct steam injection. The temperature must be carefully controlled to prevent overheating, which can degrade the oil quality.

4. Oil Separation

Once the fat has melted, the liquid oil is separated from the solid residues. This will be done through by allowing the heavier solids to settle at the bottom while the lighter oil remains on top. The extracted oil is then passed through filtration stages to remove any remaining fine particles, ensuring clarity and purity.

5. Storage & Distribution

The final bio-oil is stored in clean, airtight containers or storage tanks to prevent oxidation and contamination. The extracted oil is now ready for use in various industries, including biodiesel production, industrial lubricants, and animal feed additives.

Process Flow Chart

The process involved simple steps that is given in the form of process flow chart below:

Usage of End Product:

These products are then sold to various industries including pet food manufacturing and industrial applications.

Water Supply

The source of water for the proposed site is ground water at the depth of 100-150 ft.

Electricity

FESCO (WAPDA) will be the main source of the power. However, generator will be on standby mode having capacity of 100 KV.

Manpower

There will be approximately 10-15 workers during construction phase and 10-12 workers on the unit during operational phase.

Personnel Protective Equipment

Following Personnel Protective equipment will be provided to the workers for their safety:

- Protective Gaggles
- Protective leather/rubber shoes
- Gloves-leather, canvas, rubber, and plastic
- Gas masks
- Protective shields
- Helmets
- Overcoats

Management Plans

For the management of the wastewater and air emissions, odor following measures will be adopted:

Wastewater

This generated wastewater will be treated through a wastewater treatment plant of adequate capacity before disposal. A septic tank will be used for treatment.

Air Emissions

The only source of air emissions is VOC's, NO_X, SO_X. Wet scrubber will be installed to control emissions. No air emission is likely to be released during operation of aforesaid project; except the dust or particulate matter to be produced during floor cleaning and other such operations, which also will not be posing any environmental threat (will not breach the safe standards). Wet suppression will be done to control dust emissions. Generator will be kept in proper enclosure.

Noise

All the machinery will be installed and operated in a closed hall and from operation of machinery, generator noise will not be a problem as the residential area is at adequate distance. Further, administration of unit it will take the precautionary measures to avoid the noise emissions. There is no possibility of noise pollution from aforesaid activity. Installation activities will however add great to the noise, but that noise will be temporary and will be mitigated by measures.

Further trees to be planted within the facility which will act as noise absorbers and workers will used as PPEs whenever and wherever might be necessary.

Odor

Enclosure and Ventilation: Enclose the whole process areas and use effective ventilation systems with proper air filtration to capture and remove odorous gases. This helps contain and control odors within the facility.

Odor Neutralizers: Use odor neutralizing agents or masking agents in areas where odor control technologies might not be sufficient. These agents can help counteract unpleasant odors and create a more pleasant working environment.

5.11 Details of Restoration and Rehabilitation at the end of the Project Life

The estimated life of the project is about 25 years approximately. Much before the project approaches the end of its first life cycle it will be completely renovated; refurbished and even new/latest art of the equipment will replace the older one. All civil structures and related infrastructures will be extensively renovated.

All activities will be carried out in accordance with prevailing environmental management laws and controls to avoid any damage to any segment of the environment or human health around the project site. Rehabilitation would not be required as such at the current project site, however, restoration plans to be practiced during different phases of the project at various levels are illustrated hereunder.

5.12 Government approvals and leases

As the approval from Environmental Protection Agency (EPA), Government of Punjab, and Lahore is mandatory before the start of construction of the project in compliance with Section-12 of the Punjab Environmental Protection (Amendment) Act 2012, therefore, this EIA report has been prepared to submit in EPA Punjab.

5.12.1 Health, Safety & Hygiene

Health, Safety & Hygiene includes the following:

5.12.2 First Aid facility

At workplace, workers and employers should have enough information, knowledge and training regarding first aid treatment in case of any emergency.

5.12.3 Safety Trainings

Workers and all the staff will be provided with proper training about the work and safety practices.

5.12.4 Use of Drugs and Narcotics

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

5.12.5 Safety signs/Safety boards

At any workplace safety signs and symbols are very important to avoid many accidents. They must be in easy and understandable language to all the workers. Workers should have the

knowledge of sign wordings and they must be trained and aware about them. Safety signs, symbols and boards must be provided by every department to protect the workers and employees from the risks of hazards that has not been controlled by other means. At the subject project, safety signs and boards are placed to avoid the workers and staff from any risk.

Figure 4 Safety Signs

6 DESCRIPTION OF ENVIRONMENT

Environmental baseline data study is essential while preparing EIA reports. The basic purpose is to establish a clear understanding of existing environmental conditions in the project area and to identify potential impacts of the proposed project. It refers to the collection of baseline information on biophysical, social, and economic aspects of project location.

A site visit was conducted to survey the field area for collection of relevant data. Interviews were conducted with the public and stakeholders of the project area to seek public opinion on the implementation of the proposed project. Various Governmental and Non-Governmental Organizations (NGOs) were also visited for the collection of relevant data and their views on the proposed project were recorded for incorporation into the EIA report. The environmental impacts of any activity or process will be assessed based on deviation from the baseline or normal situation. The following components form part of the baseline.

- Physical Environment
- Ecological Environment
- Socio-Economic Environment

6.1 Physical Environment

Toba Tek Singh is in central Punjab and occupies 3,252 square kilometers and is made up of large areas of lowlands that flood frequently during the rainy season; the floods originate from the Ravi River that runs along the southern and southeastern borders. Coordinates of Toba Tek Singh are 30°58′16″N 72°28′57″E. Gojra is the tehsil of Toba Tek Singh. The pre-partition T.T. Singh had a sizable Sikh population, much of which migrated to Punjab in modern India in 1947.

6.1.1 Geological Formation

Soils mean differently for different people. While for a soil scientist it means the upper a few layers created through weather effect in which plants are grown the solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal materials. Geographically, Pakistan is highly diversified in environment and landscape. Lofty snow-clad mountains, extensive rivers, piedmont plains, and vast sandy deserts have resulted in variations of soil forming elements. Accordingly, to have a generalized account of various kinds of soils which are available in Pakistan, the country has been divided into nine broad ecological zones.

6.1.2 Topography

The soil of the project area is made up of river Alluvia brought down from the Himalayas and deposited during the Pleistocene epoch. The sediments generally are loamy in the northern reaches and become silty southwards. Finer materials settled in the digressional parts and coarse materials on higher undulations, intermediate level area received the particles-sized fractions in between. The sediments are characteristically calcareous and of mixed minerals makeup. The soils are typically deep calcareous, weakly structured, bright colored and with a zone of secondary lime accumulation at or near one meter depth.

6.1.3 Geology and Soil

There is an important relation between soils and environment. The environment is greatly influenced by soils. Soils also provide food, clothes or housing population and lumber products, medicinal plants etc.

Soil is not a lifeless residual layer, rather it is a very dynamic element of environment in which complicated physical, chemical, and biological activities are constantly proceeding. It is dynamically developing and changing body. Soil scientists restrict the word soil or solum merely to the surface material, which has come to have distinct layers or horizon over the extended period.

The soil in Tehsil Chicha watni is fertile. The vegetation is short and scrubby. The land supports grasses, shrubs, and some forests. Alluvial deposits in Sahiwal are remarkable structural features of Sahiwal Tehsils. No visible signs of soil contamination were observed at the project

location during the site visits. There is no sign of soil erosion or landslide anywhere within 500 m of the project site.

6.1.4 Seismicity

Seismic Zoning Map of Pakistan showing Project site area is presented as Figure indicating zones according to the Building Code of Pakistan. The project area falls in Seismic Zone 2A zone according to the Seismic Zoning Map of Pakistan.

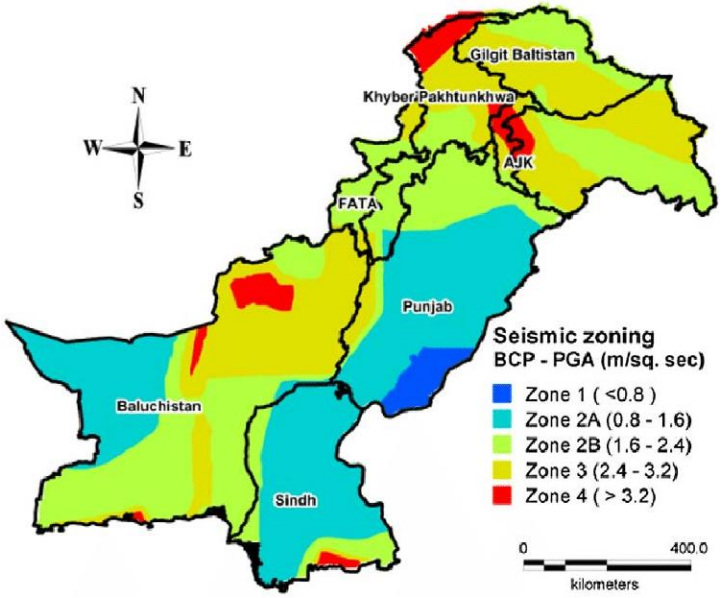


Figure 5 Seismic Zone of Pakistan

6.1.5 Climate

The climate of most parts of the Project Area is arid to semi-arid characterized by four seasons in a year, that is, winter from Mid-November to February, spring during March and April summer from May to Mid-September and autumn from Mid-September to Mid-November. There exist several meteorological stations in the project area; data recorded at some of these stations is provided in the following sections.

Table 4 Climate of Site

Month	Mean Temperature Max (Celsius)	Mean Temperature min (Celsius)	Precipitation (%)	Relative Humidity (%)
January	19.7	5.0	33.8	66.2
February	21.6	7.7	50.0	60.0
March	26.0	12.5	60.5	53.8
April	33.0	17.7	36.5	41.8
May	38.1	22.0	31.8	32.5
June	40.5	25.8	51.6	37.8
July	35.7	25.8	23.3	67.8
August	34.4	25.3	22.2	70.8
September	35.0	23.0	77.7	65.5
October	33.1	16.6	12.2	55.6
November	27.8	9.9	9.9	62.7
December	21.5	5.7	30.4	68.9
Annual mean	30.6	16.4	36.6	56.4

Gojra shows no prevailing wind directions in the mornings. Wind direction is evenly distributed throughout the year. In the late afternoon, winds are mainly from the southwest, except in July and August when southeastern winds dominate.

6.1.6 Temperature

Project area falls in central Punjab. Being flat topography, essential climate features are the same. The maximum temperature in summer reaches 44°C. In winter the minimum is 1°C. The mean maximum and minimum temperatures in summer are 41°C and 27°C; and in winter 19°C and 4°C respectively. The summer season starts from April and continues till October. May, June, and July are the hottest months. The winter season on the other hand starts from November and continues till March, December, January, and February are the coldest months.

6.1.7 Rainfall

The rainy season starts in July and ends in September. Annual rainfall is 408mm. More rains occur in July and August than any other months. Most of the winter rains are received in the months of January, February, and March.

6.1.8 Ambient Air Quality

Atmospheric pollution means the imbalance in the normal air chemistry. It can occur due to the addition of a new chemical into the atmosphere or by the change in concentration of the chemicals already existing in the atmosphere. Atmospheric pollution particularly in urban areas has a strong impact upon daily life. The reasons for such changes can both be natural as well as anthropogenic. Ambient air quality is a key to measuring the concentration of the various chemicals in the atmosphere; especially of the chemicals which pose detrimental effects on health, safety, and environment, to have a comparison with their safe concentrations, as established in WHO Standards and NAAQS.

It was observed during the visit that Petrol and Diesel operated vehicles are emitting smoke and exhaust gasses in excessive quantities which are the leading sources of environmental pollution and are responsible for the air quality worsening. In fact, exhaust emissions (including dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons, and particulates) and Evaporative emissions (including vapors of fuel, which is released into the atmosphere, without being burnt) are the prime reasons of deterioration of air quality. The following table is presenting the measured parameters of the ambient air look from the center of the project area for assessment of air quality.

6.1.9 Noise Levels

Noise is described as an unwanted sound emitted from unavoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is sensory.

The perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude airplane flying etc. The noise pollution in the project area is a source of pollution and nuisance. Among eight noise measurement locations in the cities, the study says, on average, the noise level ranged from 57-60 dB (A) in and around the project site.

6.2 Biological Environment

District Toba Tek Singh and Gojra tehsil is enriched with the presence of natural flora and fauna; although with the growing population and development activities, the presence of some has been somewhat affected. There are however no significant or well-shaped trees and shrubs on the project site. There are some trees only along the main roads.

6.2.1 Wildlife, Fisheries & Aquatic Biology

There is no wildlife except jackals, dogs, and snakes etc. Common species of birds found in the project area are sparrows, crows, pigeon, dove, tiliar (starling), parrot, quail, pintail, and hummingbird etc.

Table 5 List of Birds

Common English name	Scientific name
Peregrine Falcon	*Falco peregrinus*
Kestrel	*Falco tinnunculus*
Indian Sparrow	*Passer domesticus*
Crow	*Corvus brachyrhynchos*
Kingfisher	*Alcedinidae*
Owl	Bubo virginianus

6.2.2 Terrestrial Habitats, Forests and Protected Species

Vegetation cover and trees

The district trees consist of jand (Prosopis spicigera), karir (Capparis aphylla), beri (Zizyphus jujuba), van (Salvadora oleoides), kikar (Acacia nilotica), shisham (Dalbergia sissoo) and aak (Calotropois spp). Various herbs can also be found, including harmal, akrey and bathoo. There is wild growth of Mesquite bushes and some Eucalyptus trees in the areas near the works, but natural forest cover has been significantly reduced in the past. Some of the older stands of trees specially fruit trees, still survive the onslaught of urbanization on this previously natural and agricultural area. There is probably little natural vegetation in the project area.

Protected areas / National sanctuaries

In Pakistan there are several areas of land devoted to the preservation of biodiversity through the dedication of national parks and wildlife sanctuaries. There are no protected areas near proposed site.

6.3 Socio Economic Assessment

Social change is the consequence of almost any intrusion into the community life of any society. The intrusion can be in the form of any developmental projects or nonspecific, less tangible forms such as increased exposure to other cultures, technological changes and so on.

6.3.1 Demographic Profile

Gojra Tehsil, located within the Toba Tek Singh District of Punjab, Pakistan, encompasses an area of approximately 851 square kilometers. As per the 2017 census, the tehsil's population stood at 657,222 individuals, with a gender distribution of 329,446 males and 327,690 females, resulting in a sex ratio of 100.54 males for every 100 females.

Urban and Rural Distribution

The population is divided between urban and rural areas:

- **Urban Population**: 174,831 residents, accounting for 26.60% of the total population.
- **Rural Population**: 482,391 residents, making up 73.40% of the population.

The urban population resides primarily in the municipal limits of Gojra city, while the rural populace is spread across various villages and settlements within the tehsil.

Administrative Subdivisions

Gojra Tehsil is administratively divided into 24 Union Councils, facilitating local governance and development initiatives.

6.3.2 Literacy Rate

The literacy rate in Gojra Tehsil varies between urban and rural areas:

- **Overall Literacy Rate**: 68.30%
- **Urban Literacy Rate**: 73.69%
- **Rural Literacy Rate**: 62.91%

6.3.3 Population Growth

Between the 1998 and 2017 censuses, Gojra Tehsil experienced an average annual growth rate of 1.50%, reflecting a steady increase in population over the years.

6.3.4 Linguistic Composition

The linguistic distribution in Gojra Tehsil is predominantly Punjabi, with the following breakdown:

- **Punjabi**: 724,565 speakers
- **Urdu**: 25,978 speakers
- **Pashto**: 2,070 speakers
- **Sindhi**: 1,688 speakers

This linguistic diversity reflects the multicultural fabric of the region.

6.3.5 Religion

Punjabi is the predominant languages being spoken in the district followed by Urdu, Pushto and Siraiki spoken.

6.3.6 Dress

Majority of the people wear Qameez and Shalwar. English dress, shirt and Trousers are also common in Sahiwal as well like other big cities of Pakistan.

6.4 Quality of Life Values

6.4.1 Health Facilities

Ample medical and health facilities are available in district. District Headquarter Hospital and Tehsil Headquarter Hospital are established at District & Tehsil Headquarters respectively. In rural areas dispensaries & rural health centers are functional.

6.4.2 Customs

The people are very much concerned about castes and beliefs, visiting shrines is very common among them.

6.4.3 Electric Supply

FESCO power supply will be available at the site.

6.4.4 Telephone Facilities

Both Landline and Cellular telephone facilities are present in the project area.

6.4.5 Agriculture

District Toba Tek Singh and Gojra is one of the best producers of orange "locally known as kenno". It contributes towards export standard quality of orange produced in all Pakistan. Most people living in this district have profession of agriculture and it produce several kinds of agricultural and dairy products like meat, eggs, cotton, maize, several pulses, peach, guava, tomato, melon, watermelon, mango, tobacco, and onion.

Major crops of the town are wheat, grain, peas, barley are the important crops of Rabi season, while Kharif crops are cotton, sugarcane, potato, bajra, oil seeds which are shipped by rail and road to other parts of the country.

6.4.6 Site of Physical, Cultural Heritage

There are no documented or protected sites of archaeological, cultural, historical & religious significance in the project area. No visible signs were observed of such sites while conducting the field work.

6.5 Site Suitability

As the site is way from human settlement and no relocation is required for establishment of current project. The site does not fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not impact by the construction activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of above-said project.

7 IMPACT ASSESSMENT METHODOLOGY

This section discusses the potential environmental impact for the establishment of waste processing unit by M/S H & M Traders. The impacts may include soil contamination, water resources depletion, biological resources disturbance and socio- economic impacts and, where applicable, identifies mitigation measures that will reduce significantly, if not eliminate, its adverse impact. The assessment conducted in this Section is based on potential impacts on overall environmental receptors within the project area.

- To find different alternatives and ways of conducting the project activities, this may cause adverse environmental and social impacts on the surroundings.
- To enhance the Environmental and Social benefits of project.
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept within acceptable limits.

It includes the magnitude, the extent of the impact and the nature of the anticipated impact that is likely to be occurred from the proposed project activity.

7.1 Methodology

This section discusses the project's potential environmental impacts due to the proposed project. The adverse impact may occur on; the area's geomorphology, soil, water resources, air resource, biological resources, and socio-economic condition and where applicable, identifies mitigation measures that will reduce significantly, if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated on the basis of magnitude, immediacy and sustainability.

There are various methods for Impact assessment such as listed below:

1. Checklists
2. Matrices
3. Networks
4. Overlays
5. GIS and computer expert systems

The method used to evaluate the impacts of proposed project is **Checklist Method**. This method has been used to identify the significance and magnitude of the impacts as well as the

nature, reversibility, and extent. The impact assessment done based on project phases from construction to operation. In checklist method, the impacts are tabulated in the form of cells. This method has been used to identify the significance and magnitude of the impact as well as the nature, reversibility, and extent. The impact assessment done based on project phases from construction to operation.

7.2 Characteristics of Impacts

The impact analysis is characterized as following:

- Positive and Negative Impacts
- Long- and Short-Term Impacts
- Direct and Indirect Impacts
- Continuous and Intermediate Impacts
- Wide and Local Impacts
- Large, moderate, and minor Impacts

IMPACTS DURING CONSTRUCTION PHASE

onents	Impact Characteristics											
	Duration		Location		Frequency		Extent		Significant			
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positi
ion		*		*		*		*			*	
ity		*	*			*		*			*	
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		*		*		*		*			*	
t Rate		*	*			*	*			*		*
Uplift		*	*			*	*			*		*
Safety		*	*			*		*			*	

IMPACTS DURING OPERATIONAL PHASE

onents	Impact Characteristics											
	Duration		Location		Frequency		Extent		Significant			
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Posi
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Uplift	*		*		*		*		*			*
t Rate	*		*		*		*		*			*
Safety		*	*			*		*		*		

8 ANTICIPATED IMPACTS AND MITIGATION MEASURES

This section provides the analysis of the potential impacts during construction and operational phases of the proposed project on the physical, biological, and socioeconomic environment of the project area. Environmental sensitivity of the project area is described through a thorough review of the project activities. This chapter then suggests effective mitigation strategies to help combat the adverse nature of these impacts and delivers a monitoring scheme to manage them.

Impact Significance

As the project related to waste processing unit that is why it can majorly impose impacts on water, land, air and on workers' health. The further detail under here:

Approaches for Mitigation Measures

The following approaches may use to mitigate the impacts of the project.

Avoid	Change of route or site details, to avoid damage important ecological or archaeological features.
Replace	Regenerate similar habitat of equivalent ecological value in different location.
Reduce	Filters, cyclones, noise barriers, dust, enclosures, visual screening, Wildlife corridors and changed time of activities to reduce the impact.
Restore	Site restoration at the end of the operational activities
Compensate	Relocation of displaced communities, facilities for the affected communities, financial compensation for the affected individuals, etc.,

8.1 Impact and Mitigation Measures Related to Project Location

Since the project aims at so it may affect the water body, air quality of the project location. Domestic Solid waste products may affect the aesthetics of the area.

Mitigation

- Plantation will be done around the project location to minimize the effect of vegetation removal.
- Proper waste management will be done to avoid any pollution.
- The selected site is located at adequate distance from the various sensitive receptors.
- The site is accessible through metaled road network.

8.2 Anticipated Environmental Impacts related to Project Design

All the process will be fully controlled so impact due to design will be negligible. In case of any negligence in process adverse effect may occur.

Mitigation

- Proper handling of storage equipment will be ensured.
- Implementation of safety measures.
- Wastewater treatment facility will be available.

8.3 Impacts and Mitigation Measure during Construction Phase

Environmental impacts due to project construction are as under:

Air quality:

Impacts

Due to the construction activities like excavation, clearing, leveling, compaction, etc., dust will be raised and due to slightly increased traffic, slight emissions of SO_2, NO_x, CO and SPM are inevitable. Uncovered vehicles for transportation of building materials as well as their storage, especially gravel, sand and cement on the construction site can lead to chance dispersal of materials during heavy rains or high winds during dry periods. This could have a negative impact on the workers of the nearby industries and the passers away. Also, the mixing of raw materials and blistering will generate solid waste composting of chemicals and when exposed to air can affect the environment and air as well.

Mitigations

Spray by water trucks after every 2 hours to minimize the dust of construction areas and exposed terrain should be done regularly. The construction machinery and equipment must be kept maintained on a regular basis. Tuning of vehicles should be made mandatory to reduce emissions of SO_2, NO_x, CO and PM_{10}. Vehicles or trucks carrying cement, sand, aggregate and other materials shall be kept covered with sheets to help contain construction materials being transported within the body of each carrier.

Noise:

Impact

During construction process compaction, blistering and mixing of raw material machinery granulation Process, use of heavy machinery for clearing of the site and trolleys and trucks used for the transportation of construction materials will create some noise and vibration as well.

Mitigations

Engines of vehicles visiting the project site should be properly tuned-up. Truck/tractor drivers should be instructed not to play loud music and stop use of horn. Noise control measures should be taken such as provision of silencers on the heavy construction vehicles. The green zone of plants will also help decrease sound levels.

Health and safety:

Impacts

The possibility of health and safety hazard of workers is always present during construction phases like laying of pipes, installation of scaffolding and machines installations. To avoid cuts and damage to the skin during sterilization, packaging of the medicines certain medical facilities must be present at the site during construction.

Mitigations

To handle emergency medical situations, first aid facilities have already been made available for the workers at the site. Avoid all possible injuries during construction of the project. The contractor will ensure the availability of transport and driver to handle any emergency condition during construction activities at the project site. Safety equipment like belts, gloves and helmets should be strictly used by the labor at the work site. Implement training programs that support the achievement of the unit's staff and personnel's competency in relation to health, safety, and environment. Wearing personal protective equipment should be made mandatory. The supervisory staff and workers to the extent possible must.

Construction waste disposal:

Impacts

Disposal of construction debris produced shall be properly disposing of otherwise it would have negative impacts on the site and surrounding area. Material including concrete waste, wood, steel, plastics sheets, etc., may result in drainage blockage.

Mitigation

A site waste management plan should be made the responsibility of the contractor to provide for the designation of appropriate waste storage area on the site and a schedule for the timely collection and removal of construction debris to an approved dump site. The waste should be properly segregated and separated to encourage recycling of some useful waste materials.

Flora & fauna:

Impacts

Previously, no plants or trees existed on the project site. Hence, no negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.

Mitigation

To reduce construction impacts on surroundings and workers, a tree plantation program has been designed by the project proponent as it would help in cleaning the environment during operational life of the project too. The landscape plan would assure that designated trees are planted and that areas suitable for planting are identified and landscaped using majorly local trees and shrub species used for feeding by local bird species.

Socio-economic environment:

Impacts

Several categories of employees will be required during the construction phase. This will include skilled and unskilled laborers, engineers, contractors, and a small number of other professionals. These levels of short-term employment would have a positive impact on the local economy and on regional unemployment.

Mitigation

Strong and comprehensive plantation plans also lessen the fear of the local people towards environmental issues. Sustainable development approaches through conservation of natural resources would be the best strategy to compensate for negative socio-environmental impacts. Environmental aspects of the project should be well taken care of through the implementation of the Environmental Management and Monitoring Plan (EMMP) as recommended in this report. The socially responsible attitude of the project management towards local people and resources can make project people friendly.

8.4 Impacts and Mitigation Measures during Operational Phase

This section delineates the potential impacts during operation phase of the project and the mitigation measures to counteract these impacts. The summary of the impacts and possible mitigation measures are as follows:

Impact on Ecology

Currently, the site is open. After the completion of said project different native and ornamental plants species has been planted in designated green spaces and along boundary of project site. The overall aesthetic beauty of the area has been enhanced and it will have a significant impact on the overall ecology, aesthetic, and landscape of the area.

Nature of Impact

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

Mitigation Measures

This impact is positive, long-term, and significant. Hence, it doesn't require any mitigation measure.

Impact on Air Environment/Odor

Solid waste generated during the rendering process, particularly if not properly stored or managed, can emit odors, and attract pests such as flies and rodents. These issues can lead to nuisances for nearby communities and create potential health risks.

Nature of Impact

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

Mitigation Measures

Following mitigation measures will be adopted:

- Implementing effective odor control measures, like covers, air filtration systems, or biofilters, can help minimize odors emanating from solid waste storage areas.
- Solid waste should be stored in appropriate containers or storage areas to prevent odors, minimize pest attraction, and reduce the risk of contamination.
- Adequate covers and containment systems will help reduce the containment of any potential pollutants.
- Vehicles used for transportation of raw material as well as finished product and the utility vehicles will be regularly serviced and maintained to keep the environmental impact on account of their exhaust emissions to its minimum level.
- Native trees would be planted along the boundary of the project area to keep the environment healthy. For removal of one tree, 3-5 trees will be planted.

Noise Environment

Noise, an unwanted sound, affects human beings. Excessive exposure to noise produces varying degree of damage to hearing system. It leads to headaches, fatigue, etc. Continuous exposure of increased levels of noise will have an adverse impact on the health of workers as well as the people residing in surrounding area.

Nature of Impact

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

Mitigation Measures

In general, the following methods will be adopted to control the noise pollution from the proposed units.

- Proper encasement of noise generating sources will be done to control the noise levels within prescribe PEQS 2016 limits.
- A thick greenbelt will be developed all around the plant which will be acting as noise barrier.
- The use of concrete and masonry walls & barriers keeping in view the benefits of stiffness weight & cavity construction & the need to provide well sealed sound attenuating doors & windows.
- Attenuation by use of sound absorbents on walls and fixed or suspended ceilings.
- The use of mufflers, sound attenuation and acoustic louvers in air flow paths, taking particular care to direct inlet and discharge an opening away from critical areas wherever possible, to take advantage of direct effects.
- All the transporters will be visited to carry out regular maintenance of their vehicles.

Solid Waste Management

While bio-Oil can be a valuable resource, its safe disposal can be challenging. If not managed properly, improper disposal of residuals can lead to environmental contamination. The high nutrient content of the solid waste can cause pollution if it enters water bodies or is not adequately contained.

Mitigation

Proper Storage and Handling: Solid waste should be stored in appropriate containers or storage areas to prevent odors, minimize pest attraction, and reduce the risk of contamination.

Proper Disposal or Utilization: The residuals left after oil extraction should be properly utilized as a feed ingredient or disposed of in accordance with local regulations and guidelines. If used as animal feed, it should meet safety standards and avoid potential risks associated with pathogens or contaminants.

Water Environment

Bio Oil extraction unit generate wastewater containing organic and inorganic materials, which requires proper treatment before discharge to prevent contamination of water bodies. If not

appropriately managed, the discharge of untreated or poorly treated wastewater can have negative impacts on water quality, aquatic ecosystems, and human health.

Nature of Impact

Significant if not properly managed

Mitigation

Unit should have wastewater treatment systems in place to effectively remove pollutants and contaminants from the wastewater. The treatment facility like septic tank should be installed.

Health & Safety of Workers

Improper handling of chemicals, poultry waste and raw material may cause various health issues such as inhaling, injection, workplace incident, physical hazards, chemical hazards, etc. It can cause allergy reaction and many other issues. To ensure the safety of workers these impacts need to be managed effectively.

Nature of Impact

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

Mitigation

Following mitigations should be adopted to improve the health and safety:

- Regular inspection and maintenance of the plant will be carried out to eliminate the risk and associated hazards of any unfortunate incident.
- Workers will be trained on a regular basis regarding personal safety, disaster management physical and chemical hazards.
- Operators operating the plant should be fully trained and equipped.
- Training regarding HSE should be given on a regular basis.
- Workers will be given PPEs such as helmets, mask, ear-plugs/muffs, safety boots, etc.
- It should be strictly enforced to wear PPEs while working.
- Incidents should be reported directly to the concerned authority.
- Floor surfaces shall be maintained and cleaned on a regular basis.
- The floor should be kept clean and free of oil spills, other slippery fluids or materials and obstructions.
- Protective measures and emergency rescue procedures should be followed strictly.

- Only authorized persons shall be allowed in the processing and storage areas.
- Unloading of the raw material and loads of the final products should be controlled, supervised, slow and smooth.

Security Risks

Many workers will be hired including skilled and un-skilled laborers. The increase in the number of individuals residing in the area, may lead to an increase in crime and violence in surrounding areas. The nature of the impact is low as the locals will be preferred for hiring.

Nature of Impact

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

Mitigation Measures

Following mitigation measures will be adopted:

- Proper security will be provided for the workers working in the premises of proposed project.
- Before hiring any worker and his criminal record may be checked.
- CNIC of all the workers will be kept by the proponent.
- Strict law will be enforced to control the crime at site.
- Security for the workers should be provided.

Socioeconomic Impact

It is envisaged that the adverse impacts associated with the operation of said project includes local community will be disturbed due to increase in the traffic load (i.e., vehicles carrying raw material and final products), wastewater management, solid waste management & disposal, soil pollution, etc. The intensity of the aforesaid project will be quite low. The commencement of the aforesaid project will have a beneficial impact on the surrounding community such as increase in employment opportunity, increase in the wages of the local area employees, increase in revenue generation, provision of social welfare funds of the employees and appreciation of land value.

Impacts

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

Mitigation Measure

No mitigation measures will be required.

8.5 Environmental Enhancement Measures

Following necessary measures will be adopted during construction and operation:

- Sprinkling of water will be done on dusty road and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Proper SOPs will be followed with proper schedule along with the HSE conditions.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and agreement will be made.
- Noise will be controlled by adopting proper measures.
- Safety signs will be placed at all locations where required.
- First aid facilities will be made available.
- Any possible measure will be adopted to make the project safe and environmentally friendly.
- Fire safety management will be done.
- Fire Fighting Equipment will be installed and managed

9 ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

This chapter provides a detailed environmental management plan and strategies. The objective of the Environmental Management and Monitoring Plan (EMMP) is to address all the major environmental issues and provide a framework for the implementation of the proposed mitigation measures during the operational phases of the proposed project.

9.1 Objective of Environmental Management Plan

The EMP has been prepared with the objectives of:

1. Defining roles and responsibilities of the project proponent for the implementation of EMP and identifying areas where these roles and responsibilities can be shared with other parties involved in the execution and monitoring of the project.
2. Outlining mitigation measures required for avoiding or minimizing potential impacts assessed by the EIA.
3. Developing a monitoring mechanism and identifying requisite monitoring parameters to confirm effectiveness of the mitigation measures recommended in the EIA.
4. Defining the requirements for communication, documentation, training and monitoring, management, and implementation of the mitigation measures.
5. A reduction in negative environmental impacts and improved reputation.

9.2 Proposed Mitigation Actions

Mitigation planning is the process used by state, tribal, and local leaders to understand risks from natural hazards and develop long-term strategies that will reduce the impacts of future events on people, property, and the environment.

ENVIRONMENT MANAGEMENT AND MONITORING PLAN			
S. #.	**IMPACT**	**MITIGATION MEASURE**	**RESPONSIBILIT** **IMPLEMENTAT**
A	**CONSTRUCTION PHASE**		
1.	**AIR QUALITY**		

	Dust, SO_2, NO_x & CO emissions from trucks, cause health issues to workers. There will be particulate natter during the Construction.	• Spray by water trucks to minimize the dust. • Maintenance of construction machinery should be mandatory to reduce emissions.	Contractor
2.	**NOISE**		
	The impact of noise generated during construction	• Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels.	Contractor
3.	**OCCUPATION, HEALTH, AND SAFETY**		
	There will always be the possibility of hazard to health and safety of workers to occur during construction stage, lying of piles, and machines installation.	• First aid facilities should be readily available for the workers at the site. The contractor will ensure the availability of transport and driver to manage any mishap which may occur. • Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site. • Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE.	Contractor
4.	**DISPOSAL OF CONSTRUCTION DEBRIS**		
	Each phase of the development shall produce solid waste, disposal of which, if not managed properly could have negative impacts on the site and surrounding area.	• A site waste management plan should be the responsibility of the contractor. The waste should segregate and separated to encourage recycling of some useful waste materials. • Train or educate the involved stakeholders on the importance and means of waste management and handling.	Contractor
5.	**GROUND WATER QUALITY**		
	No appreciable impacts on the ground water quality occur.	• Avoid accidental spills through decent work practice.	Contractor
6.	**SOIL CONTAMINATION**		
	Any improper storage or handling of materials including paints, fuels, solvents, oil, cement, etc. would result in soil contamination.	• The contractor should require imparting proper training to their workforce in the storage and handling of materials	Contractor
7.	**FLORA & FAUNA**		

	No negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.	• Trees and ornamental plants shall plant along the project boundary which will increase the aesthetic value of the site and will combat pollution. • Landscaping is seemed to be a powerful mitigation activity with a positive impact.	Contractor
8.	**SOCIO-ECONOMIC ENVIRONMENT**		
	Several categories of employees will be required during the construction phase. This would have a positive impact on the local economy and on regional unemployment.	• The socially responsible attitude of the project management towards local people and resources can make project people friendly. • Awareness and educational programs introduced by the project management or e area can reduce the fear among the people regarding non-local people.	Contractor & Proponent
B.	**OPERATIONAL STAGE**		
1.	**AIR QUALITY**		
	Air pollution is due to transport and vehicle. Due to few fumes of mix in the air produce smell.	• Proper maintenance and tuning of the vehicles can reduce it. • Maintaining the pressure of cylinders, will be less risk of explosion. • Enclosure and Ventilation system to reduce odor.	Proponent
2.	**NOISE QUALITY**		
	Noise due to movement of vehicles, during transfer of materials	• Plantation along with boundary will make buffer zone to avoid noise.	Proponent
3.	**OCCUPATION, HEALTH, AND SAFETY**		
	There will always be the possibility regarding hazards to health and safety of workers to occur during the operational phase of the project. In Case of any leakage/evaporation skin burn issues will be there.	• All the workers involved in transport of the materials suggested to wear boots, gloves, safety cap to avoid injury. • All workers must know the safety measures regarding handling of cylinders	Proponent
4.	**SOLID WASTE**		
	The solid waste may negatively impact the site, the workers, the visitors, and the factory surrounding in diverse ways including aesthetically, occupationally as well as from health, safety, and environmental point of view.	• Domestic solid waste will be collected in waste bins. • The residual left after oil extraction will be sold to the approved vendor. Meanwhile the storage of the residual should be handle safely.	Proponent
5.	**WASTEWATER QUALITY**		
	Domestic wastewater will be generated. During Process wastewater will also be generated.	• Wastewater treatment facility which will be septic tank, will be installed.	Proponent
6.	**FLORA AND FAUNA**		

	Excessive plantation shall be done on the walls. This will function as buffer zone and bring healthy change in environment during operational phase of project.	• The process of plantation should be kept sustainable throughout project life.	Proponent
7.	**SOCIO-ECONOMIC ENVIRONMENT**		
	A few employees will be required in the operational phase, and this would have a positive impact on the local economy and on regional unemployment.	• The management of the project can capitalize the cheerful outlook of people of the study area towards this project by offering them maximum employment opportunities. • Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.	Proponent

9.3 Schedule for Implementation and Environmental Budget

Schedule of Implementation

Project schedule (tentative) is described hereunder.

Stage I: The clearing of land, preparation of land for construction activity.

Stage II: During this phase machinery will be brought to the site and installed.

Stage III: In this phase all the outstanding activities will be completed, construction activities will be initiated.

Stage IV: after completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Activities	Times Frame										
	Four Week		Four Week			Four Week		Four Week		Four Week	
Preliminary Phase (Land Acquiring etc.)											
Design Phase											
Pre-Construction Activities Finalization											
Construction Phase											
Purchasing Phase											

Machinery Installation											
Commissioning Phase											
Recruiting of Staff											
Operation Phase											

Environmental Budget

Sr.no.	Environmental Components	Quantity	PKR	Details/ Basis
1	**Tree Plantation**	100-500	08 Lacs	Cost includes plantation and maintenance up to three years
2	**Solid Waste Management**	L.S.	02 Lacs	Lump sum
3	**Wastewater management**	L.S.	05 Lacs	Lump sum
4	**Health & Safety Measures**	L.S.	25,000	Lump sum
5	**Miscellaneous Cost**	L.S.	70,000	Lump sum
6	**Air Quality Monitoring**	2	15,000	2 samples @ 7500/Sample
7	**Water & Wastewater Quality Monitoring**	2	10,000	2 samples @ 5000/Sample
8	**Noise Level Monitoring**	2	10,000	2 samples @ 5000/Sample
9	**Soil Tests**	2	10,000	2 samples @ 5000/Sample
10	**Training**		10,000	Lump sum
11	**External Monitoring**		50,000	Lump sum
Total Environmental and Social Management Cost			**Approx. 17 Lacs**	

9.4 Environment Management Team

Responsibilities of Proponent

The project owner (proponent) will be responsible for the environmental management and supervisory affairs during the installation and operational phase of the proposed project. An environment personnel designated by the management of proposed project will look after the environment related issues during the operational phase. The responsibilities of environmental personnel are as follows:

1. Monitoring progress of the project as per planned schedule of activities
2. Exercising oversight over the implementation of environmental mitigation measures by the contractor
3. Documenting the experience in the implementation of the environmental process
4. Preparing training materials and implementing programs
5. Maintaining interfaces with the other lined departments/ stakeholders
6. Reporting the status of EMP implementation to the management

Responsibilities of project contractor:

Contractor appointed for the commissioning of the project including the auxiliary facilities is responsible for:

- Implementation of all provisions of the EMMP and with any environmental and other codes of conduct required by the project.
- Provision of proper Personal Protective Equipment (PPE) to the workers and train them for their proper use.

9.5 Monitoring Program to Access Performance

Following functionaries will be involved in the implementation of EMP or to access output:

1. The project owner (proponent) as the project proponent and owner of the EMP.
2. Project excavation contractor(s) as executors of the EMP during installation phase of the project.
3. Transportation & Maintenance (O&M) and the health, safety, and environment team of the proposed project as an executor of the EMP during the transportation phase of the project.

9.6 EMP Reporting and Review Procedure

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Construction and Operational Phase					
Land Resource	Solid Waste	Implementation of Solid waste Management system	Record keeping and timely transfer of waste from bags to the disposal Site for disposal	Daily	Manager HSE/Project Proponent
	Soil Contamination	Implementation of Management Plan	Visual monitoring and complete soil analysis	Daily and annually	
Ecological	Flora	Uprooting of trees	Inventory of uprooted	During Baseline	
Air Resource	Air Emission	Dust emissions during Construction and Operation	Monitoring of the emissions as per applicable standards Water sprinkling will be done regularly to avoid dust emissions	Once before start of operation and after that as when required during operation	
	Dust				
Noise	Noise Pollution	Development/operational material transportation	As per applicable standards	Fortnightly	
Water Quality	Wastewater generation	Domestic wastewater, due to construction activities	Water quality testing	Monthly	
Health and Safety	Health risk	During construction and operational phase due to more chemical usage	Keep record of workers as they use PPE's and follow safety signs and instructions	Daily	
Resource		During construction phase	Trees and vegetation during operation phase	Survey, once in a year and after the completion	

				of the Project	

9.7 Training Schedule

Proponent provides periodic Environmental and HSE trainings to workers working in their existing plants. The management of Proponent feels HSE is important for moral, legal, and financial reasons. The management of proponent has developed strict SOPs for Health and Safety of workers. These SOPs includes SOPs for Personal protective equipment's, Risk Assessment, permit to work, SOP for work at height, Fire Safety and Prevention, Confined Space entry etc. A comprehensive annual training calendar has also been developed for training on topics of HSE for management as well as labors. A training log will be maintained by Site engineer and contractors.

Participants	Date, Time & Location	Training Topics	Schedule	Responsible Authority
Staff of team management and contractor	As specified	• Introduction to the project and EMMP. • EMMP communication, documentation, monitoring, and reporting requirements.	Every month	Project manager
All site personnel	As specified	• Site induction training on HSE system and requirements • Environmental sensitivities of the project area • Communication of environmental problems to corresponding officials • Waste disposal	After every week	Project manager
Drivers	As specified	• Road safety • Road restrictions • Vehicle restrictions • Waste disposal • Defensive driving	After every 3 months	Project manager
Camp Staff	As specified	• Camp operations • Waste disposal • Good housekeeping	Monthly	Project manager

10 STAKEHOLDERS CONSULTATION

Social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and build understanding by actively involving individuals, groups, and organizations, which have stake in the project. This involvement increases the project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

To evaluate the socioeconomic and environmental impacts, filed surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identify the diverse types of stakeholders and ascertain their perceptions about the project, an initial environmental examination was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

10.1 Objective of Consultation

Public consultation plays a vital role in studying the effects of the project on the stakeholders and in the successful implementation and execution of the proposed project. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the construction of the proposed unit.

10.2 Proponent's Environment Management Team

Sr. No.	Managers	Responsibilities

1	Contract Manager	• Implementation of EMP • Environmental issues identification during pre-construction phase. • Communication EMP to all employees.
2	Contractor	• Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit. • Ensure that the project management team is notified of any non-conformance of control measures or environmental incident where the environment has been put at risk.
3	Site manager	• Ensure site material and safe handling of hazardous waste. • Controlled access arrangement to avoid hazards. • Emergency arrangements to avoid any unfortunate incident. • First aid facilities/services should be available on-site. • Ensure good standards of workmanship.
4	Site HSE advisor	• Management plan to be followed and implemented. • Daily checks & weekly checks. • Regular consultation with workers.
5	Site Environment advisor	• According to legislation and consent develop EMP. • Ensure application of EMP. • Conduct regular site inspection.
6	Public Contact Officer	• First point of contact for members of the public. • Arrange and manage public forums. • Maintain relations with stakeholders. • Door to door surveys as appropriate. • Coordination with work.

10.3 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 all HSE conditions at the PEQS.

10.4 Other Department and Agencies

For the impact analysis detailed meetings were held with the management of said project, local community, education institutes, health institutes, hospital, and NGOs. Issues were discussed that may affect the environment and the implementation of the proposed project.

All mitigation measures were considered and incorporated in the Environmental Management Plan.

Sr. No.	Designation	Concerns
1.	**Environment Protection Department (EPD)**	
	General Manager	• Solid waste should be managed in Environmentally friendly manner. • Wastewater should be treated effectively & approval should be acquired from concerned agency before disposing off in nearby drain. • HSE* at the site should be managed effectively. • No impact is being foreseen due to the selected location. • Locals should be given job opportunity.
	Environmental Inspector	
2.	**Social Welfare Department (SWD)**	
	Deputy Director Officer	• Final goods should be affordable for the locals. • The proposed product should facilitate locals and they should be economical. • Job opportunities should be given to the locals. • Wages should be given according to the work assign to them. • Life insurance of the workers should be given as well as all the facilities should be given as per labor laws.
3.	**Irrigation Department**	
	Subdivision	Following comments were suggested: • Untreated wastewater should not be disposed of in the nearby drains without proper treatment. • Beneficial as job opportunities will be available to the residents.
	Executive Engineer	
4.	**Forest Department**	
	District Forest Officer	Following recommendation were suggested by the forest department: • Planation and landscape activities should be conducted on broader scale. • Proper drainage system must be available at site

10.5 Environmental Practitioners and Experts

Sr. No.	Name	Designation	Comment/ Suggestions

1.	Sara Fatima	Senior Environmentalist	• She said that the project will have positive impact on economy, but its construction should be done in environmentally friendly way. • Basic facilities should be provided to local community
2.	Zia Ur Rehman Farooqi	Ph.D. Scholar Environmental Sciences	• Tree plantation in designated green zones should be conducted. • Proper disposal of the solid waste • HSE management measures should be adopted and implemented effectively
3.	Kanza Fatima	Junior Environmentalist	• Waste must be collected and dispose of properly. • Ensure the use of PPE's during the operational activities. • Wastewater should be treated. • Ensure the tree plantation
4.	Aleeza Kanwal	Junior Environmentalist	• Health and safety department and trained people should be there in case of any emergency. • Periodic monitoring of every fire extinguisher (expiry date, type)
5.	Mr. Saffi Ahmed	Environmentalist	• He said that locals should be preferred for employment. • Value addition of area. Proper mitigation measures must be adopted while construction and operation of this project
6.	Engr. M. Bilal	Environmental Engineer	Following comments are summarized to control the air pollution generation during operational phase. • It should be ensured that the pollution abatement technique

10.6 Affected and Wider Community

There is no affected community present in the radius of our study area. Enviro Stewards Company (Private) Limited team has consulted with the inhabitants of the different areas. They provided positive remarks regarding the subject project and in favor of the subject activity for the proposed project.

The inhabitants filled stakeholders' participation Performa's and socioeconomic questionnaire to evaluate the project socio-economic impacts. List of respondents and socioeconomic questionnaires are attached as Annexure with the report.

The stakeholder category involves nearby residents, different industries, shopkeepers. The issues discussed with them are mostly related to the following:

- Activities of project.
- Impacts caused due to certain activities during construction and operational phase.
- The proposed mitigation measures.

11 CONCLUSION

The aim of the project is to develop waste processing facility by the name of H & M Traders in order to achieve sustainable environment. The project falls under the category of environmental impact assessment.

At the end of study, it has been found that:

- Environmental monitoring by the project proponent and a third party will also ensure that the project runs in accordance with the legal requirements.
- There is no sensitive area/element near the project site.
- The noise levels will be kept well within the required limiting values of the PEQS Pakistan.
- This project will create job opportunities during construction and operation stages leading towards reduction of poverty.
- EMP, as recommended in this EIA Report, is to be put in place during all constructional and operational stages of the project.
- All the protective measures for workers' health and safety will be followed.

- Odor controlling measurements will also be followed.
- Availability of water for the project will be ensured without affecting the needs of the people around the project area.
- Wastewater treatment facility (septic tank) will be installed and treated wastewater will be disposed of.

GLOSSARY

Accommodate	(Of a building or other area) provide lodging or sufficient space for. "The cottages accommodate up to six people
Assessment	The action of assessing someone or something. "The assessment of educational needs"
Aspects	A distinct feature or element in a problem
Adverse	Preventing success or development; harmful; unfavorable. "Taxes are having an adverse effect on storage"
Authorized	Having official permission or approval. "An authorized dealer"
Amendment	A minor change or addition designed to improve a text, piece of legislation, etc. "an amendment to existing bail laws
Ambient Air	Ambient air quality refers to the quality of outdoor air in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution
Archaeological	The scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities
Annunciation	A formal public statement
Baseline	The existing conditions against which impacts of the proposed action and its alternatives can be compared.
Crushing	Deform, pulverize, or force inwards by compressing forcefully. "You can crush a pill between two spoons"
Containers	An object for holding or transporting something. "The cakes will keep for up to two weeks if kept in an airtight container"
Compliance	Acting according to certain accepted standards
Discrepancies	A difference between conflicting fact, claims or opinions
Disposal	the action or process of getting rid of something
Dumped	Deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way
Effluent	Any material in solid, liquid, or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension, or vapor

Environmental impact statement (EIS)	A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.
Emission	The storage and discharge of something, especially gas, or radiation." The effects of lead emission on health"
Evaluated	Estimate or determine the nature, value, quality, ability, extent, or significance
Graded	Arranged in a sequence of grades or ranks; "stratified areas of the distribution"
Generation	The storage or creation of something
Incinerator	A furnace or a container for burning waste materials
Inadequate	Not capable or competent; lacking
Implementation	The process of putting a decision or plan into effect; execution
Intends	To have in mind as something to be done or brought about, plan: to design or mean for a particular purpose, use, recipient, etc.
Landfill site	For the disposal of solid waste in which refuse is buried between layers of dirt to fill in or reclaim low-lying ground
Legislation	Law enacted by a legislative body
Mobilization	To release or make available, as cells or chemical substances
Mitigation	The action of lessening in severity or intensity
Noise	Loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities
Potential	Having or showing the capacity to develop into something in the future
Pedestrian	A person who goes or travels on foot; walker
Proponent	The person who proposes or intends to undertake a project
Sanitary	Relating to the conditions that affect hygiene and health, especially the supply of sewage facilities and clean drinking water
Segregate	Set apart from the rest or from each other; isolate or divide. "Disabled people should not be segregated from the rest of society
Settlement	An official agreement intended to resolve a dispute or conflict. "Unions succeeded in reaching a pay settlement

Ton	A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2 to 205 pounds
Transportation	The action of transporting someone or something or the process of being Transported. "The era of global mass transportation"
Ultimate	Being or happening at the end of a process; final. "Their ultimate aim was to force his resignation"
Violations	the action of violating someone or something
Working place	From the out by side of the last open crosscut to the face
Flora	All the plant life in a particular region or period
Fauna	All the animal life in a particular region or period
Demarcated	Separately clearly, as if by boundaries
Screening	The display of a motion picture
Substitutions	An event in which one thing is substituted
Smelting	extract (metal) from its ore by a process involving heating and melting
Regulations	An authorized rule
Recycling	process of converting waste materials into new materials and objects
Stakeholders	A person or organization with an interest or concern in something
Rehabilitation	The conversion of waste land into land suitable for use of habitation or cultivation

LIST OF ABBREVIATION

AA	Ambient Air
APHA	American Public Health Association
AOI	Area Of Influence
BOD_5	Biological Oxygen Demand
CMS	Convention On Migratory Species

COD	Chemical Oxygen Demand
dB(A)	Decibel
EA	Environmental Assessment
EHS	Environmental Health Safety
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
PEPA	Pakistan Environmental Protection Act
EPA	Environmental Protection Agency
ESIA	Environmental And Social Impact Assessment
ESA	Environmental And Social Assessment
ESMP	Environmental/Social Management Plan
EMP	Environmental Management Plan
GIS	Geographical Information System
GOP	Government Of Pakistan
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HSE	Health Safety & Environment
HWMS	Hazardous Waste Management System
IEE	Initial Environmental Examination
IAIA	International Association for Impact Assessment
IWM	Industrial Waste Management
IUCN	International Union for Conservation of Nature
KM	Kilometers
LGO	Local Government Ordinance
MEAS	Multilateral Environmental Agreements
MSDS	Material Safety Data Sheets
NEQS	National Environmental Quality Standards
PPE	Personal Protective Equipment
PEQS	Punjab Environmental Quality Standards
NEAP	National Environmental Assessment Plan
Q&EHS	Quality, Environment, Health & Safety

O & M	Operation And Maintenance
PKR	Pak Rupees
PPM	Parts Per Millions
PEPC	Pakistan Environmental Protection Council/Punjab
QA/QC	Quality Assurance/Quality Control
RAP	Resettlement Action Plan
SWM	Solid Waste Management
TDS	Total Dissolved Solids
UNFCCC	United Nation Framework Convention on Climate Change
UNCC	United Nation Convention to Combat Desertification
UNEP	United Nations Environmental Programs
GOP	Government Of Pakistan
WHO	World Health Organization
R&R	Rehabilitation And Resettlement
WWTP	Wastewater Treatment Plant

LIST OF PEOPLE CONSULTED WITH WRITTEN FEEDBACK

Sr.#	Name	Concerns
1.	Kamran Ali Khan	**During the survey in the study area following concerns of the local comm**
2.	Muhammad Waqas	• Air pollution should be controlled effectively such as emissions gen generating activities.
3.	Qaiser Farooq	• Residual should be stored and handled properly only authorized per near the storage area.
4.	Ghulam Mujtaba	• Locals should be preferred for the job opportunities.
5.	Mehboob Alam Shahid	• Wastewater should be treated prior to final disposal in nearby drain.
6.	Muhammad Latif	• Solid waste should be managed effectively by adopting the standard
7.	Mazhar Hussain	• An effective EMMP should be designed and enforced with true spir
8.	Shahbaz Khan	• Health of the workers should be ensured.
9.	Waseem Ahmed	• Planation should be carried out at extensive scale.
10.	Rab Nawaz	
11.	ALLAH Yar	
12.	Ahmed Saeed	

13.	Muhammad Jabbar	• Construction activity should be carried out during day hours. • Noisy activities should be confined.
14.	Muhammad Ramzan	
15.	Akram Ali	

SOURCE OF DATA

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- World Weather Online.com
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- https://www.pbs.gov.pk/sites/default/files/population/2017/punjab_tehsil.pdf?utm_source=chatgpt.com

List of names, qualifications and roles of team members carrying out the IEE/EIA study

Sr. #	Name	Qualification
Team Leader		
1	Miss. Sara Fatima	M.Phil. Environmental Sciences
Environmental Scientist		
3	Mr. Zia Ur Rehman Farooqi	Ph.D. Environmental Sciences (Scholar)
4	Hafiz Zeeshan Safdar	M.Sc. Analytical Chemistry
5	Mr. Saffi Ahmed	M.Phil. Environmental Sciences
Environmental Engineers		