EIA REPORT

Environmental Impact Assessment Report of

Bakhtawar Lubricants SMC (Pvt.) Ltd

Chak No. 4 M/R Near Adda 9 Kassi, Vehari Road, Multan

Submitted By:

M. Kashif Aziz

Prepared By:

Enviro Stewards Co. (Pvt) Ltd

0301-1199600

www.envirostewardspk.com

akmal@envirostewardspk.com

1st Floor Allied Bank, A Block Commercial Market, Canal View Society, Lahore

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

GUIDLINES FOR PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS CHECKLIST

Required Content	PAGE NO.
Executive summary	i
1. Title and location of project	i
2. Name of the proponent	i
3. Name of the organization preparing the report	i
4. A brief outline of the proposal	i
5. The major impacts	iii
6. Recommendations for mitigation measures	iv
7. Proposed monitoring	iv
Introduction	1
1. Purpose of report	1
2. Identification of project and proponent	2
3. Details of consultant	2
4. Brief description of nature, size, and location of project	3
Screening	6
Whether the Project requires IEE or EIA as per Regulations	6
Scoping	11
1. Spatial and Temporal Boundaries of Environmental Assessment	11
2. Important issues and concerns raised during consultation	12
3. Significant impacts and factors to be determined	12
Consideration of Alternatives	14
1. Site alternatives, their selection and rejection criteria	14
2. Design/Technology alternatives, their selection and rejection criteria	15
3. Environmental Alternatives, their selection and rejection criteria	15
4. Economic Alternatives, their selection and rejection criteria	15
Description of the project:	16
1. Objectives of Project	16

Required Content	PAGE NO.
2. Location and Site Layout of the project	17
3. Land use on the site	17
4. Road access	17
5. Vegetation features of the site	19
6. Cost and Magnitude of Operation	19
7. Schedule of implementation	19
8. Description of the project	20
9. Restoration and rehabilitation plans	24
Description of Environment	25
1. Baseline Physical Environment	25
2. Baseline Ecological Environment	30
3. Baseline Socioeconomic Environment	31
4. Lab reports of environmental analyses	Annexure
5. Suitability of the site	32
Impact Assessment	33
1. Methodologies for impact identifications (One/more)	33
✓ Checklists	✓
✓ Matrices	
✓ Networks	
✓ Overlays	
✓ GIS and Computer expert systems	
2. Characteristics of impacts (nature, magnitude, extent and location, timing, duration, reversibility, risk)	33
Screening of potential Environmental Impacts and mitigation measures on/during:	36
1. Project location	36
2. Design	37
3. Construction phase	37

Required Content	PAGE NO.
4. Operational phase	40
5. Potential Environmental Enhancement Measures	46
Environmental management and monitoring program	48
1. Description of proposed mitigation actions along with	48
2. Schedule for implementation and Environmental budget	53
3. Environmental Management Team along with their Roles and responsibilities (by name or position)	54
4. Proposed monitoring program to assess performance or output of EMP	55
5. Proposed EMP reporting and reviewing procedures	56
6. Any training needs required to ensure implementation of EMP and Monitoring plans	57
Stakeholders Consultation:	58
1. Proponent's Environment Management Team	59
2. The responsible authority	59
3. Other departments and agencies	60
4. Environmental practitioners and experts	61
5. Affected and wider community	62
Appendices	63
1. Glossary	66
2. List of abbreviations	69
3. Lists of individuals and organizations consulted	71
4. Sources of data and a full list of all reference material used	72
5. Terms of references of environmental reports and those given to individual specialists	73
6. List of names, qualifications and roles of team members carrying out the IEE/EIA study	74
7. Approvals from other concerned departments	Attached

EXECUTIVE SUMMARY

Introduction

The executive summary is an outline of the key outcomes in EIA (Environmental Impact Assessment). The proponent intends to establish an oil reclamation facility to meet the demand of vicinity by the title "Bakhtawar Lubricants SMC Private Limited" located at Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan, over an area of 37840 Sq. Ft. The consultant company for this project is Enviro Stewards Company (Pvt.) Limited.

Oil Reclamation / Regeneration is the process of restoring the oil's performance characteristics to its original new like condition. In other words, reclamation allows used oil to be used over and over against without the need for disposal. This project specific EIA (Environmental Impact Assessment) presents a detailed account of environmental and social impacts likely to emanate from the establishment of protein 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 an oil reclamation / blending plant. It falls under Schedule II (list of projects requiring an EIA), Category A (Energy), Sub sector 4 (Petroleum Refineries) 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 minimizing the adverse impacts on the environment and nearby communities.

Brief Outline of Project

The proponent intends to construct an oil reclamation and blending unit in which bulk quantity of oil is purchased, after heating and bleaching of oil low lubricant oil will be achieved which will further used in different sectors. Some general details related to the project are as follows.

Table 1 Brief of the Project

Name of the Project	Bakhtawar Lubricants SMC Pvt. Ltd.
Location of Project	Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan

Proponent	Muhammad Kashif Aziz
Total Area	37840 Sq. Ft.
Raw material	Used Oil
Product	Low Lubricant Oil
Purpose of the Project	To meet the demand of oil in other sectors
Capacity of Project	15 Ton
Cost of the Project	PKR 45 million
Site Coordinates	30.048427 N, 71.685301 E
Nature of Area	Open Land
Current Status of Project	Proposed project. No activity is going on.
Ground Water	100-150ft
Manpower:	Construction: 15-20 Persons
	Operation: 10 Persons
Power Source	MEPCO
Generators	50 KVA
Water Availability	Ground Water (100-150 ft)
Period of Construction	Approx. 01 Year
Assessed Environmental issues	Liquid waste will be environmental issues. So, this waste 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, and sand particles. In operational phase, no solid waste will be generated.
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 plant 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:

1) Change in Soil/land.
2) Decrease in groundwater level.
3) Change in aesthetics of the area.
4) Wastewater generation.
5) Odor Problem.
6) Air Pollution.
7) Solid waste generation.

Ecological Factors:

The impacts will be on:

1) Floral species.
2) Fauna species.

Socio-economic Factors:

1) Economy of area.
2) Employment rate in the nearby areas.
3) Change in quality of life.

Recommendation for Mitigation Measure

Following measures will be adopted to reduce impacts and to make the proposed project eco-friendly.

Impact	Mitigation Measure	
	Construction Phase	**Operation Phase**
Solid Waste Generation	• Solid waste handling facilities such as waste bins and skips in all sections of the factory. • Ensure that solid waste generated is regularly disposed of appropriately. • Waste will be managed by as per municipal practices. • Non-biodegradable and recyclable matter, such as containers, wastes, used materials and waste packaging materials will be sold to local contractors for recycling or reuse purpose.	• Proper domestic solid waste handling and management practices will be adopted. • Packaging waste, cutting waste will be properly disposed of at solid waste handling area. • Dried oil sludge will be managed as per EPA practices. • Process solid waste will be disposed of through EPA Certified Contractor. • Sludge from septic tank will be handled by waste contractors and the suggested method for safe disposal.
Wastewater Generation	• No water will be disposed of into sewer lines without proper treatment. • Municipal wastewater will be handled by septic tank and disposed of.	• Septic Tank of adequate capacity will be installed before disposing off. • The treatment system shall bring the values of untreated effluent within the limits of treated effluent discharge also to ensure this treatment as an environmentally friendly method to comply with PEQS/NEQS.

Air Pollution	• Management needs to regularly carry out checks of all machinery and carry out regular servicing and maintenance of it to keep the environmental impact on account of their emissions to its minimum level. • For reducing fugitive dust, regular water sprinkling on roads has been carried out. • All trucks used for transportation will be covered, maintained, and optimally loaded. • Moreover, the green zone has been developed and tree plantation activities of proponent during operational phase would ensure minimal impact of fugitive dust emissions. • Generators will be installed with proper enclosure, tuning and maintenance to control emissions.	• Proper ventilation plan, good housekeeping, and regular monitoring for preventive maintenance of the generators are the control measures which will check air pollution. • Air masks, helmets and safety uniforms will be provided to the workers and proper check will be made to check its compliance in the premises.

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 reclamation unit and blending plant. Total production capacity is 15 Ton with project cost of Rs. 45 million. The cost of environmental budget is around 06 million.

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. 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 requirement.

1 INTRODUCTION

1.1 General

Lubricating oil is the very stable, non-volatile, and smallest fraction of crude petroleum. As petroleum products are essentially composed of hydrocarbons, lubricating oils have hydrocarbon structures, containing from 20 to 70 carbon atoms per molecule.

Lubricating oils are fluids such as engine oils, gear, hydraulic oils, turbine oils, etc., used to reduce friction between moving surfaces. They also serve to remove heat from working parts in machinery created by moving surfaces and provide a protective layer on the metal surfaces to avoid corrosion. They also act as a sealant to fill the microscopic ridges and valleys in any metal surfaces to increase the machinery efficiency. In addition, they serve as a cleaning agent to carry away dirt or other debris that may damage the bearings or other parts that are operated in tight tolerance. Debris is removed through the engine oil filter or the transmission filter.

Local production only fulfills the half of the lubricants demand in Pakistan whereas the demand for lubricants is continuously increasing in Pakistan. Several factors are contributing to the continuous increasing demand of lubricants in Pakistan such as increase in consumer vehicles, industrial development, power generators, and infrastructure development under CPEC project etc.

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	Muhammad Kashif Aziz
Designation	CEO
Address	Chah Ghulam Hussain Number Dar Wala PO military Farm Sher Singh Wala tehsil and District Multan
Project Details	
Project title	Bakhtawar Lubricants SMC Pvt. Ltd.
Project location	Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan

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 oil reclamation and blending plant. The total area of the project is 37840 Sq. Ft. approximately. The capacity of the project is 15 Ton. The land is agricultural in nature. The status of land/project site is that it is an open plot.

Table 2 Schedule of Area

Covered area of Ground Floor	6050 S. Ft.
Open area of G. F	31790 S. Ft.
Total Area of Plot	37840 S. Ft.

1.6 Location of Project

The project site is located Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan. The coordinates of the project site are 30.048427 N, 71.685301 E. The map is attached to it.

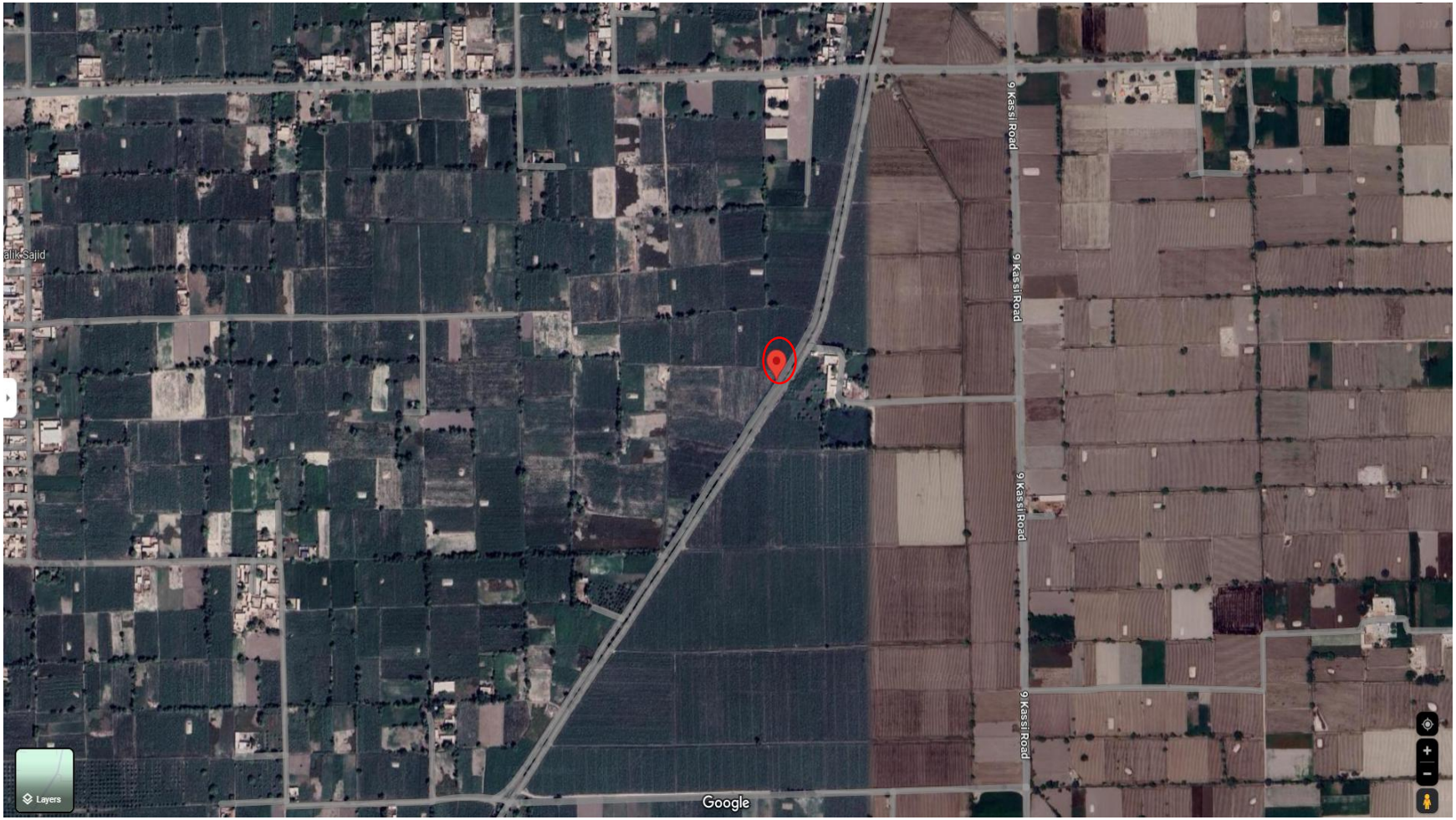

Figure 1 Location of Project Site

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 oil reclamation and blending plant. It falls under Schedule II (list of projects requiring an EIA), Category A (Energy), Sub sector 4 (Petroleum Refineries) 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 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 has 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 framed 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. The compliance of 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, land will be used as an oil reclamation unit. Within a radius of 2-km, no industry can be seen but few commercial markets are there represents 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 area and 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.

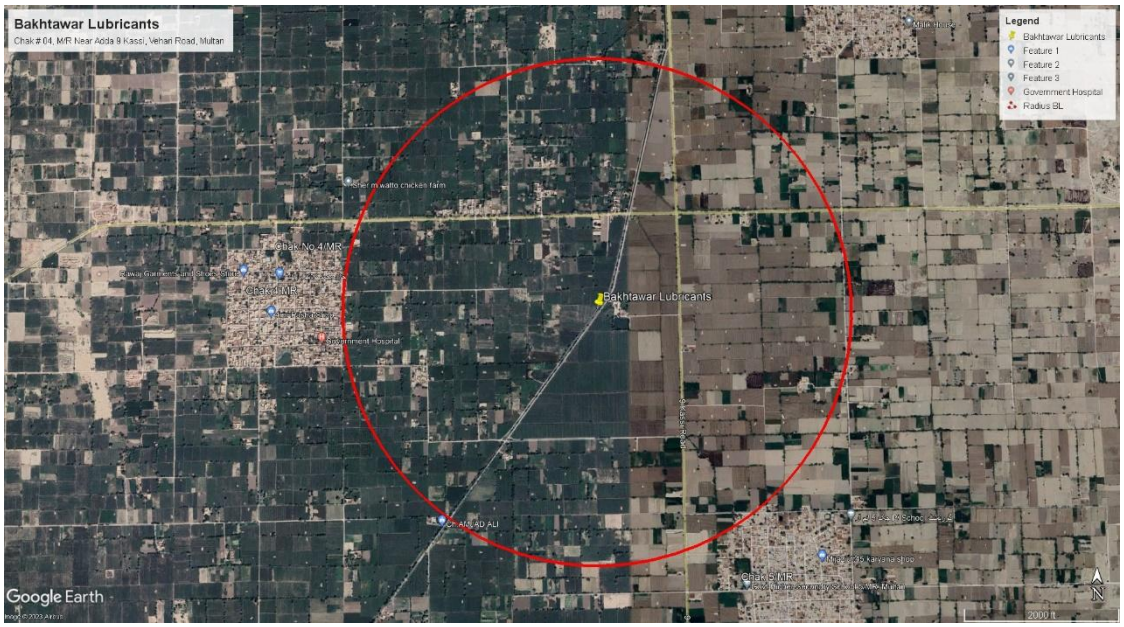

Figure 2 (2-Km Radius from Project Site)

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 LPG storage devices.
- Wastewater should not dispose of without proper treatment.
- Solid waste must be collected timely.
- Gas measurement devices should be used for continuous monitoring.
- A proper wastewater treatment plant 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 used.
- The cleanliness of the 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 (WB December 1996). 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 plot, and very few commercial buildings and industries are there. 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:

- Land is owned by Proponent.
- There is no environmentally sensitive area is present near the site.
- No need for resettlement around the location.
- The watercourse is not present near the area.
- Easy road access to the market.
- Availability of main road.
- Less industries found near the project site.
- 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 (Septic Tanks). To avoid any hazard, best management practices will be followed.

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, septic tank will be installed.

4.4 Socio-economic Factors/ alternatives

Currently selected design is economically efficient. 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 oil reclamation and blending plant named as Bakhtawar Lubricants SMC Pvt. Ltd. located at Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan. The cost of the project is around 45 million PKR. According to projects categorization for environmental assessment studies, the proposed project falls under Schedule II (list of projects requiring EIA), Category A (Energy) and sub sector 4 (Petroleum Refineries) 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 the said project is:

- It will help to produce superior quality reclaimed oil for end consumers.
- The said project is itself value addition project.
- Socio-economic up-lift of the proponent

5.3 Location and Site Layout

The location of project is Khewat No. 10, Khatooni No. 60 to 71, at Chak # 04, M/R Near Adda 9 Kassi, Vehari Road, Multan. The coordinates of project site are 30.048427 N, 71.685301 E. Total area of project site is 37840 Sq. Ft. Google map is attached with file.

5.4 Land Use On-Site

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

5.5 Road Access

The road near the project site is linked with 9 Kassi Road. Service roads also connected with the main road.

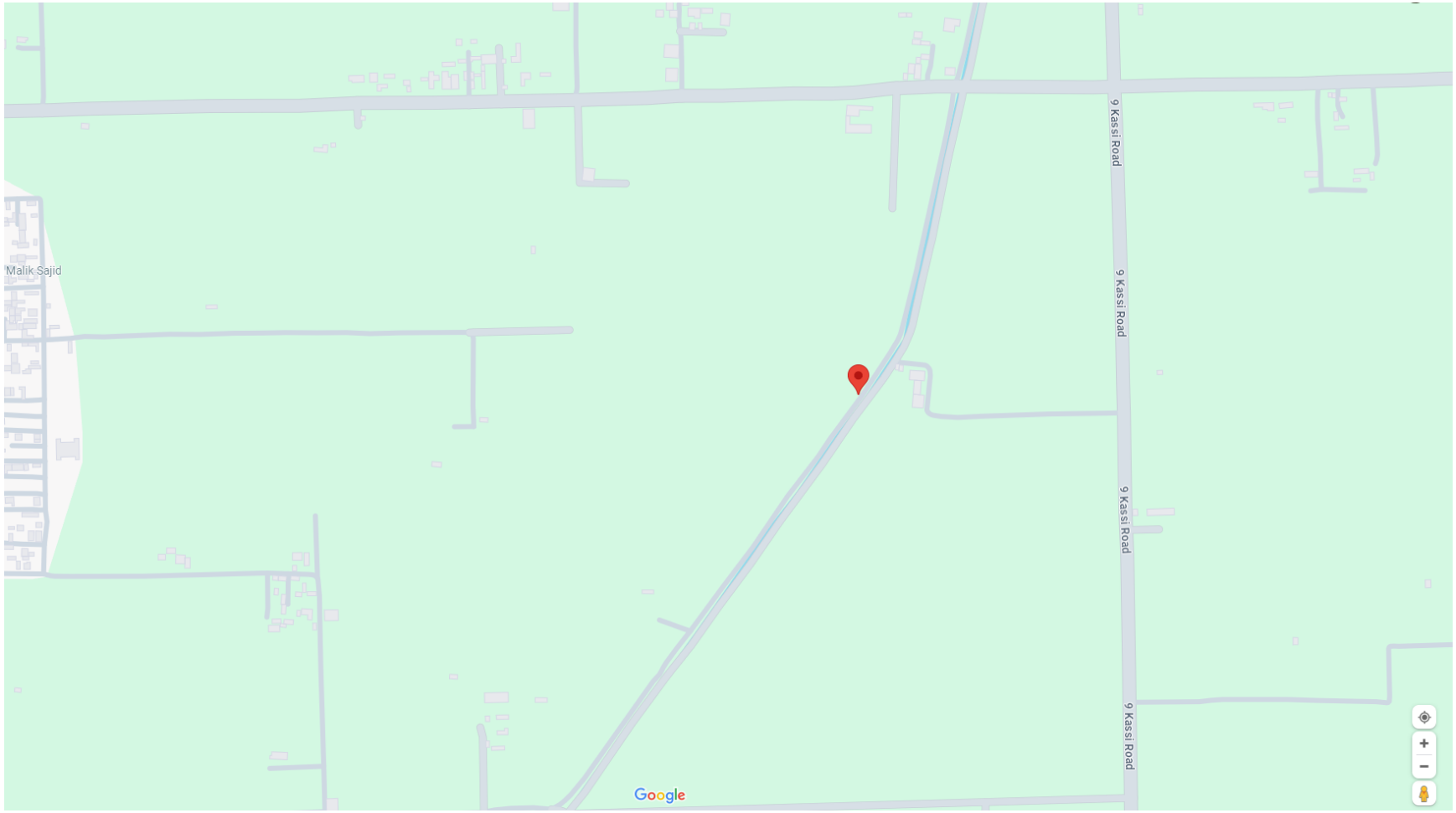

Figure 3 Road Access

5.6 Vegetation Features of the Site

The land is clear, few vegetative features found there. After some distance there are few trees, green patches present.

5.7 Cost and Magnitude of Operation

The total cost of the project is Rs. 45 million. The total area is 37840 Sq. Ft., and the site coordinates are 30.048427 N, 71.685301 E.

Table 3 (Cost Break-down)

Amenities	Cost
Land Cost	18 million
Infrastructure development, water supply, boundary walls, electric supply, roads etc.	22 million
Solid Waste Management	02 million
Wastewater Management	02 million
Tree Plantation	01 million
Total Cost	**45 million**

5.8 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											

5.9 Process Description

The proponent tends to establish an oil reclamation unit including blending unit to fulfill the market demand. The basic detail regarding the process is:

Raw Material	Used Oil
Final Product	Low Lubricant Oil
Capacity	15 Ton

The procedure followed in the oil reclamation process is as follows:

- Collection of Used Oil
- Heating of Used Oil
- Cooling of Heated Oil
- Bleaching of Oil
- Finished Product
- Blending Plant
- Packing of Oil

- Dispatch and Supply

1) Collection of Oil

The following raw material to be used to produce reclaimed oil is, used engine oil. The used engine oil is purchased from different nearby units and carried to the oil reclamation unit. After arrival the drums of oil will be unloaded and stored near the facility.

2) Heating of Oil

The first process in oil reclamation is heating oil. In this section thermo oil heaters with a capacity of 2 tons will be used to raise the temperature of the oil. In this way, all suspended particles are removed. Now this has a small number of particles which are to be separated from the oil. After that this oil will be shifted to the other tank for the next step of the process. Some of the waste will be produced during this process.

3) Cooling Process

To reduce the temperature of oil, oil is sent to cooling tank. In this there are some rods, the water from one side of tank will be pass through the oil and from other side it will be collected to avoid spreading. The wastewater contains some of the oil particles.

4) Bleaching of Oil

For the removal of remaining waste bleaching of oil is done. For this purpose, hydrochloric acid is added into the tank. The waste particles/ contaminants in the oil comes up on the surface. It is then removed, and clean oil remains lower.

5) Removing Moisture Content

Some of the moisture is present in this oil. To remove this content the oil is transferred to high vacuum D-shaped tank. After injection in this the moisture is absorbed and final product of lubricants is achieved.

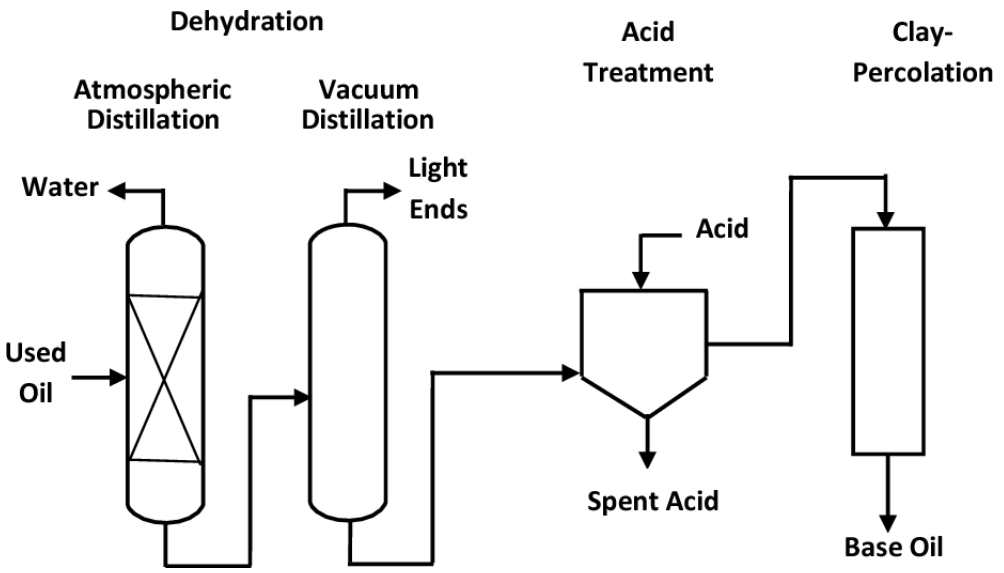

Figure 4 Process Flow Diagram of Oil Reclamation

6) Blending Plant

The obtained base oil of lubricant is mixed with refined oil and some additives added to it. The purpose of adding additives is to enhance the viscosity and color of base oil. By blending all the oil in blending plant, the product is achieved in the form of low lubricant.

7) Packing of oil

The final product of oil is packed in the drums, and it is then stored.

8) Dispatch and Supply

The final product will be packed and will be ready to be shipped to the market to meet the market demand.

SUPPLIES

The following supplies will be required/utilized for the reclamation of the 15 Ton of oil.

USAGE OF END PRODUCT

The reclaim oil will be further used in processing of heater engines and weaving machines used in textile.

Water Supply

The source of water for the proposed site is ground water. Water tank will be provided at project site.

Power Source

MEPCO (WAPDA) will be the main source of the power. One generator of 50 KVA will be used as a power backup.

Manpower

There will be approximately 15-20 workers during construction phase and 10 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

Parking Area

Parking area will be provided for the vehicles.

Management Plans

For the management of the wastewater and solid waste following measures will be adopted:

Wastewater

This generated wastewater will be treated through wastewater treatment plant of adequate capacity before disposal. Septic tank will be installed for treatment.

Solid Waste Management

A solid waste bin of maximum capacity will be provided at project site. The waste will be properly collected.

Plantation Plan

Approximately 1000-2000 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.

Fire Fighting Plan

Fire fighting system will be available in case of any emergency. Following materials will be used to deal any emergency:

- Fire Extinguishers
- Fire alarms
- Fire blankets

5.10 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.

5.11 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.

5.11.1 Health, Safety & Hygiene

Health, Safety & Hygiene includes the following:

5.11.2 First Aid facility

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

5.11.3 Safety Trainings

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

5.11.4 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.

5.11.5 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.

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

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the project site but also the city to assess whether the project under assessment can or does have any impacts on any of these parameters. Multan is a city in the Punjab, Pakistan. The city consists of tehsils Multan Saddar, Jalalpur Pirwala and Shahabad and other. It is a well-known cotton-growing area. Its approximate height above Sea level is 500ft. The fauna and flora of the area include: Ukkan, Kikar, Beri, Jand, van, and Karil. No special species of animal's worth mention are to be found. The demographical profile of city shows that the total area of the district is 3,721 square kilometers (1,436 sq. mi). Its elevation is about 122 m. According to Census 2017, the population is about 1.872 million. (Census Report 2017).

6.1.1 Geological Formation

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the project site but also the city to assess whether the project under assessment can or does have any impacts on any of these parameters. Development wise, it is more developed than the other tehsils of

district Multan: Multan Saddar, Jalalpur Pirwala and Shujabad. City became more famous nationally and internationally after the General Elections of 2013 when allegations of rigging were put by the Pakistan Tehrik-e-Insaaf in National Assembly Constituency NA-154.

6.1.2 Seismicity

Pakistan lies on an active seismic belt of earth. Seismic observations indicate that hundreds of shocks originate every year. Mostly, these seismic waves are of low intensity and do not have significant effect. According to seismic zones of UN- Habitat the project area falls under Zone 2A. The seismic zoning is shown in the figure.

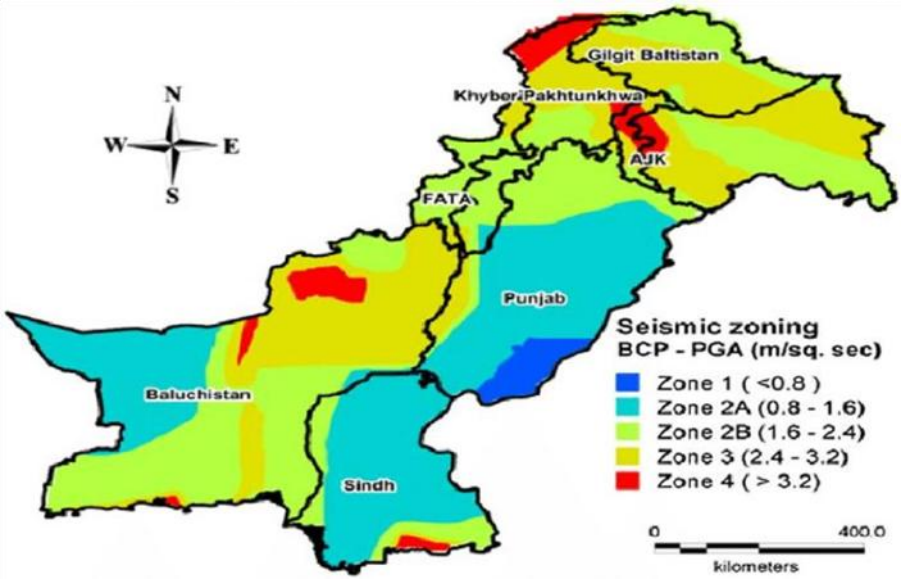

Figure 5 Seismic Zone of Pakistan

6.1.3 Climate

Climatically Multan is hot, arid, and very dry as it receives less than 125 mm of annual rainfall. May, June, and July are the hottest months and the mean maximum and minimum temperatures for these months are 42° C and 28 ° C respectively. Dust storms are a common occurrence in the city, and the monsoon rains, from June to September, can be severe.

Table 4 Climate of Project Area

Month	Mean temp. Max (Celsius)	Mean temp. 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**

6.1.4 Season and Rainfall

Rainfall also varies markedly and it's predictably not certain from year to year. A wet year may be followed by a dry year. Rainfall in the regions mainly occurs in July and August when the monsoon depression travels westward. Precipitation has marked seasonal fluctuation. The average annual rainfall based on the 32 years observation is 125 mm (4.921 inches), almost all of which occurs in the two months of July and August (Reference: The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan).

6.1.5 Temperature

The project area is semi-arid and characterized by large seasonal variations of temperature. The summer season lasts from April to September with an average temperature of 31.25°C (88.25°F). The extreme maximum and minimum temperature in Summer being 48.0°C (118.4°F) and 9.0°C (48.5°F) respectively. During the winter months, the daytime temperature generally ranges between 19.4°C (67.02°F) to 33.9°C (93.02°F) and night temperatures are generally in the range of 4.8°C (40.64°F) to 17.7°C (63.96°F). Extreme minimum temperature

sometimes reaches to –2°C (28.4°F). It generally begins to be active from mid-December and tends to concentrate over this region. In the fold of these disturbances sometimes well marked cold fronts are formed. (Reference: The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan).

6.2 Environmental baseline modeling

6.2.1 Noise Level

Noise is described as an unwanted sound emitted from un-avoidable 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 aero plane flying etc. The noise pollution in the project area is 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.

6.2.2 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 atmosphere or by the change in concentration of the chemicals already existing in the atmosphere. Atmospheric pollution particularly in urban area has a strong impact upon daily life. The reasons of such changes can both be natural as well as anthropogenic. Ambient air quality is a key to measure the concentration of the various chemicals in 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.

6.2.3 Surface Water and Ground Water

There are no surface water resources like canal or ponds, near the project area. The area surrounding the project site is poorly drained. Ground water is the principal source of municipal water supply. This is also the case in the immediate vicinity of the site. The City's drinking water is obtained from groundwater aquifer by means of tube wells located throughout the area. Groundwater is pumped from 60-65 ft. feet and is generally good for direct consumption.

6.3 Ecological Environment

In this section, the baseline environmental conditions pertaining to biological environment are described. These conditions have subsequently been used to identify the potential impacts on the biological environment that are likely to arise from the project activities.

6.3.1 Flora

There are no natural forest trees, grassland, or ecological important place. But the natural vegetation has been replaced by the agricultural crops. So, this sector consists generally of agricultural land irrigated by tube wells. Multan district is distinguished for its status in Agricultural production especially cotton and Mango. It has renowned Agricultural research institutes like i.e., Central Cotton Research Institute, Cotton Research Station, Mango Research Station, Agricultural College at Baha-ud-Din Zakria University.

Table 5 Fruiting Plant

Local Name	Fruiting Plant Specie
Mango	Mangifera Indica
Guava	Psidium guajava
Date Palm	Phoenix dactylifera

Table 6 Plant Species

Local Name	Scientific Name
Kikar	Acacia nilotica
Sufaida	Eucalyptus camaldulensis
Albizia lebbeck	Siris
Peepal	Ficus religiosa
Tahli	Dalbergia sissoo
Beri	Ziziphus nummularia

6.3.2 Fauna

The project area, on account of nature of vegetation and topography, is rich in vegetation and wildlife. Fauna of the project area consists of:

1. Mammals
2. Reptiles
3. Amphibians
4. Birds

The most common species are:

Table 7 List of Fauna

Local Name	Species
Quail	Coturnix coturnix
Owl Pigeon	Columbia Livia
Corvus splendens	House Crow
Ranatigrina	Frog

6.4 Socio Economic Environment

The project site is in industrial land; hence direct disturbance to communities will be minimum from the project activities. However, the physical extent of the study area extends up to 5km surrounding the proposed site (referred as project area) considering the physical, ecological, and socioeconomic boundaries beyond which the project is not likely to significantly influence local communities, and with a view of covering a substantial sample size for collection of reliable and authentic socio-economic data.

6.4.1 Study objectives

The socio-economic study undertaken for the Environmental Impact Assessment (EIA) was designed and conducted to meet the following objectives:

- To assess the human environment of the area i.e., to determine the Quality of life of communities within the Region of Influence.
- To have an insight into the day-to-day activities of people especially focusing on their income generating activities viz., agriculture and labor.
- To access the vulnerabilities of the local communities and the effects of project activities on their Quality of Life and Consultation with communities regarding the proposed project activities and to find out their concerns and aspirations.

6.4.2 Resettlement patterns

Different type of houses was observed in Multan during survey i.e., katcha, pakka, semi pakka etc having poor drainage system. Majority of people live within the village, a few in their farmhouses (Deras) while some make their homes on their agricultural land. So, there is no formal pattern of settlements. Family composition of both the villages is dominantly joint family system but a few nuclear families also exist in the area. Both the villages have the facility of electricity and Sui-gas. People use groundwater obtained via hand-pumps for drinking purposes without any treatment.

6.4.3 Indigenous people

People inhibiting the project area are of different castes and races. Most of the families have been living here in these villages from 20 to 25 years which has led to homogeneity of culture and the development of a closed economy. There is no danger or damage or elimination of indigenous community as the locals are steeped in their customs and have no intention of relocating.

6.4.4 Religion, ethnic group, and Cast Patterns

99% communities of these villages are Punjabi speaking only 1% community belongs to other ethnic groups like Sraiki, Pashto etc. Religion plays an important role in the social structure of the society. Sunni Muslims is primarily inhibiting these two villages except a few families of Ahl-e-tasheh and Ahl-e-Hadees also lives here.

6.5 Quality of Life Value

Overall, the social and physical infrastructure is not up to the mark in the project area. However, the project area is better as compared to the other rural areas of the province. A brief account of the education, health, infrastructure, and markets of the area is as follows:

6.5.1 Education

The level of literacy is low as compared to the literacy rate of the district Multan i.e., 45%. Average education of the community is Primary. Though there are higher secondary government schools, private sector schools and colleges for girls and boys are also available near the vicinity of project area. People go to Multan and other cities of Pakistan for university education.

6.5.2 Health facility

Basic Health Unit, Dispensaries and Private clinics exist in the surrounding villages of the project area. People also access to private hospitals in city and sometimes to nearby private dispensaries.

Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed.

6.5.3 Economy of Area

District Multan is an industrial and commercial city having multi-occupations. The population of the area is having different occupation including government and private services as well as

agriculture. The women also assist their men in the economic activity in different fields of business, service, education, and other institutions. Women mostly serve in schools, colleges, and hospitals.

Multan is generating many employment opportunities for its locals and outsiders. Industrial areas are using manpower, while nearby towns are providing business opportunities to the residents. In this semi urban area, people are involved in daily wages jobs, while some are involved in small business. They normally travel to adjacent areas for work. Some work in the industrial area and in the surrounding universities and colleges. People are also involved in agriculture. Area having access to irrigation water is another source of income. Similarly, livestock is a secondary source of income. It is safe to assume that livestock farming is practiced uniformly in both types of areas. Economy of the project area is dependent primarily on two occupations i.e., agriculture (maximum) and livestock (limited extent), while some locals are also involved in manual labor.

6.5.4 Agriculture

Agriculture is one of the most important economic activities in the project area. Major crops of the area are:

In Rabi: Wheat, Fodder, and some seasonal vegetables

In Kharif: Rice, Sugarcane, Fodder and Seasonal Vegetables

Irrigation in the area is primarily sustained through tube-well irrigation. Canals are the major sources of water supply for irrigation in the area.

6.5.5 Livestock

Livestock ownership has also developed in the project area; especially among poor families who sell animals during emergency days as mostly unemployed people depend on livestock and sometimes agriculture. The people have livestock which include cows, goats, sheep, and donkeys. All the animals are of native breed. Milk and butter from the livestock are consumed by the household and are sometimes sold in the market.

Good breeds of buffaloes and cows are found in the project area. Goats, horses, asses, and mules are also part of the livestock in these villages.

6.5.6 Archeology and Cultural Sites

There were no archaeological sites near the project area although nearest chaks do have mosques, graveyards and darbars.

7 IMPACT ASSESSMENT METHODOLOGY

This section discusses the potential environmental impact for the construction of oil reclamation unit by M/S Bakhtawar Lubricant SMC Pvt. Ltd. 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

The assessment conducted in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated based on magnitude, immediacy, and sustainability. The method used to evaluate the impacts of proposed project is Checklist method. 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

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion		*		*		*		*			*		*
Air Quality		*	*			*		*			*		*
Ground Water Quality		*	*		*		*		*				*
Noise Level		*	*			*		*			*		*
Wastewater Generation	*		*		*		*		*				*
Solid Waste	*		*		*			*		*			*
Aesthetic		*		*		*		*			*		*
Flora		*		*		*		*			*		*
Fauna		*		*		*		*			*		*
Employment Rate		*	*			*	*			*		*	
Economic Uplift		*	*			*	*			*		*	
Health and Safety		*	*			*		*			*		*

IMPACTS DURING OPERATIONAL PHASE

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion	*		*			*	*			*			*
Air Quality		*		*		*		*			*		*
Ground Water Quality	*		*		*		*			*			*
Noise Level		*		*		*		*			*		*
Wastewater Generation	*		*		*		*		*				*
Solid Waste		*	*			*		*		*			*
Odor		*	*		*			*			*		*
Aesthetic		*		*		*		*			*		*
Flora		*		*		*		*			*		*
Fauna		*		*		*		*			*		*
Economic Uplift	*		*		*		*		*			*	
Employment Rate	*		*		*		*		*			*	
Health and 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 of oil reclamation, blending unit 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 reclamation of oil 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.

Follow the messages and instructions displayed on HSE notice boards installed on the premises of the site.

- Be aware of emergency escape routes
- Promptly report all accidents to the concerned environmental manager
- Not smoke or produce flame in No Smoking Areas

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 building 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.

Change in drainage pattern:

Impacts

Excavation activities required for infrastructure installation (lying of water/sewage pipes, electrical cables, etc.) may adversely impact the existing drainage patterns in the area. Loss of topsoil due to soil erosion may remain a problem during clearing and construction phases of the project.

Mitigation

Site clearing activities should be conducted in stages to minimize the area of exposed soil at any given time.

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 being use for industrial & commercial activities. 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 proposed impact will be direct, low, short-term, and hence in-significant.

Mitigation Measures

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

Impact on Air Environment

Air emissions will be generated from production of steam from coal-based boiler will be used. This would be the source of air emissions that would deteriorate the project area air quality. Moreover, dust will be generated due to the frequent movement of vehicles carrying the raw-material and finished goods. During operational phase, suspended particulate matter and gaseous emissions will be the main pollutant. Gaseous emissions from generators will be controlled as waste heat recovery boiler will be installed to capture waste heat generated from the generators.

Due to increased vehicular movement increase in NO_x, SO_X, VOC, and CO concentrations will be observed at the project site. As most of the construction equipment will be mobile, the emissions are likely to be fugitive and not concentrated on a single source or place. As the impacts will be localized in nature, the areas outside the said project boundary are not likely to face any significant adverse impacts with respect to ambient air quality.

Nature of Impact

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

Mitigation Measures

Following mitigation measures will be adopted:

- For dust suppression regular sprinkling of water will be carried out.
- 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.
- Wet scrubbers will be used for the boiler emissions.
- Native tree would be planted along the boundary of project area to keep environment healthy. For removal one tree, 3-5 trees will be planted.

Noise Environment

Noise, an unwanted sound, affects human being. Excessive exposure to noise produces varying degree of damage to hearing system. It leads to headache, fatigue, etc. Continuous exposure of increased level 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 proposed impact will be direct, low, short-term, and hence in-significant.

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 vised to carry out regular maintenance of their vehicles.

Solid Waste Management

The key solid wastes and by-products; directly re-useable and recyclable matter (such as containers, waste papers, used materials, waste packaging materials, scrap of clothes).

Segregation of waste will be done at source. Transfer of waste from waste yard will be done on daily basis, some item will be directly re-used by another party, and few will be recycled and Sludge of septic tank, Oil sludge, used oil and lubricants incinerated in environmentally friendly manner via EPA Approved Vendor/incineration facility.

Record of waste generation and quantity of waste provided to vendor for re-used and recycling and incineration will be maintained at main store office on daily basis for necessary verification at any time.

After collection of solid waste vendor will be responsible to provide certificate about quantity of waste: -

- Directly re-used by another party.
- Recycled and sale to the market.
- Incinerated by vendor.

Nature of Impact

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

Mitigation

Following mitigations should be adopted to manage generated solid waste.

- The recyclable and reusable waste will be sold to the contractor which will include paper, plastic, and non-ferrous material.
- Waste bins will be placed in the facility at the strategic position for the collection of solid waste.

- The installed bins will be covered to reduce the chances of the disease vector production.
- Record of generated waste during the project activity should be maintained on the regular basis. Quantity of the waste disposed, recycled or reuse will be logged on a waste tracking register.
- Regular training will be given to the workers dealing with the waste management it will include identification, segregation, and management of waste.
- The ash generated from the boiler will be disposed of through EPA Certified contractor on regular basis. It can be used for the filling of low-lying areas.
- The dried sludge removed from Septic Tank will be sold to the certified contractor for the management of the generated solid waste.

Water Environment

Wastewater will be generated may impact the surface & ground water quality of area, if not treated. Moreover, the use of chemicals during process may pose threat and cause water pollution. In addition to the use of chemicals, its spillage may deteriorate water quality.

Nature of Impact

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

Mitigation

Following mitigations should be adopted to manage generated wastewater:

- The domestic wastewater will be treated through septic tank prior to disposing off in nearby wastewater drain.
- For the treatment of wastewater, septic tank of adequate capacity and technology will be installed.
- Water conservation activities will be adopted for the preservation of water.
- Water conserving methods will be applied by placing taps and toilets.
- All faults will be monitored and fixed.
- Freshwater conservation techniques should be adopted to ensure sustainable development such as wastewater recycling plant.

- Monitoring of effluents shall be carried out as per requirement of Self- Monitoring and Reporting Tools (SMART) to ensure compliance with the PEQS.
- It will be ensured that no solid waste will be entered in the wastewater.

Health & Safety of Workers

Improper handling of chemicals 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 the 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 the regular basis.
- Workers will be given PPEs such as helmets, mask, earplugs/muffs, safety boots, etc.
- It should be strictly enforced to wear PPEs while working.
- Incidents should be reported directly to the concerned authority.
- Spillage prevention plan should be adopted, and it should be implemented effectively.
- Floor surfaces shall be maintained and cleaned on regular basis.
- Floor should be kept clean and free of oil spills, other slippery fluids or materials and obstructions.
- The effective use of hearing-protection devices shall be ensured.
- Protective measures and emergency rescue procedures should be followed strictly.
- Only authorized persons shall be allowed in the processing and chemical storage areas.

- Unloading of the raw-material and loads of the final products should be controlled, supervised, slow and smooth.

Chemical Hazards

Direct exposure to chemicals may occur during the handling of chemicals. Avoid unnecessary chemical exposure to the workers who are working in the process area or related to the process. A long term and direct chemical exposure may impact the health of the workers and the risk of the spillage may increase.

Nature of Impact

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

Mitigations

Following mitigation measures will be adopted:

- Personal Protective Equipment (PPEs) should be given to workers including protection and impermeable clothing for use during processing and handling chemicals, gloves, mask, safety boots, goggles, etc.
- Proper plan for the movement of the raw materials should be planned.
- Only authorized persons should be allowed for the handling of the chemicals.
- Wearing of the PPEs should be regulated strictly by the concerned authority.
- Chemical spillage will be avoided by developing proper SOPs for the handling of the chemicals.
- Chemicals and final products will be stored properly, and all precautionary measures will be adopted to eliminate all the hazards and risks associated with the handling and storage of material.

Security Risks

Many workers will be hired including skilled and un-skilled laborers. The increase in the number of the 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 to 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 to the workers should be provided.

Emergency Response

Emergency response preparedness committee will be formulated consisted of heads of all the departments. Emergency Response Leader will be the head of the team assisted by safety team and safety supervisors. Emergency Response Leader along with his team will ensure that in the case of emergency, team is prepared for firefighting and the first aid kits will be provided which may include blankets, hot water bottles, stretchers, benches, sterilized dressing, cotton, and iodine (2% alcohol).

Incidents and accidents may take place unexpectedly during project operations no matter how effective, strong, and efficient the mitigation measures for all adverse impacts; especially the safety issues may be adopted. These may include accident and natural disasters.

Nature of Impact

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

Mitigation

Following mitigation measure will be adopted:

- Site in-charge should be responsible to ensure that fire-fighting plan has been implemented with true spirit.
- Safety team will be responsible to monitor the activities and to act on the approved firefighting plan in the case of fire.

- Designated area fire marshals will be responsible to monitor their respective areas and act on firefighting plan in case of fire.
- Workers should be given adequate training of handling machinery.
- Emergency call service must be made available.
- The drills to check the response of the workers against any emergency will be carried out on the regular basis.
- Safety and hazards signs will be displayed with the facility to avoid any unfortunate incident.
- Only authorized persons will be allowed for the handling of the chemicals.

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.
- PPEs will be provided to workers during working.
- 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**	**RESPONSIBILITY**	
			IMPLEMENTATION	**MONITORING**
A	**CONSTRUCTION PHASE**			
1.	**AIR QUALITY**			
	Dust, SO_2, NO_x & CO emissions from trucks, cause health issues to workers. Particulate matter will be generated during the Construction.	• Spray by water trucks to minimize the dust. • Maintenance of construction machinery should be made mandatory to reduce emissions. • Haul-trucks carrying earth, sand, aggregate and other materials will be kept covered with tarpaulin to reduce dust pollution.	Contractor	Proponent through Consultant
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	Proponent through Consultant
3.	**OCCUPATION, HEALTH, AND SAFETY**			
	There will always be the possibility regarding 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 handle any misshape 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	Proponent through Consultant

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 made the responsibility of the contractor. The wastes should be properly segregated 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	Proponent through Consultant
5.	**GROUND WATER QUALITY**			
	No appreciable impacts on the ground water quality are anticipated.	• Avoid accidental spills through good work practice.	Contractor	Proponent through Consultant
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 be required to impart proper training to their workforce in the storage and handling of materials	Contractor	Proponent through Consultant
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 be planted along the project boundary which increase the aesthetic value of the site and will combat pollution. • Landscaping is deemed to be a powerful mitigation activity with a positive impact.	Contractor	Proponent through Consultant
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.	• 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	SIE

B.	**OPERATIONAL STAGE**			
1.	**AIR QUALITY**			
	Air pollution due to transport and vehicle. Due to some fumes of chemical the toxic particles mix in the air	• Proper maintenance and tuning of the vehicles can reduce it. • Proper ventilation system will be provided. • Scrubbers will be provided to reduce air pollution.	Proponent	EPA
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	EPA
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 will be suggested to wear boots, gloves, safety cap to avoid injury. • All workers must know the safety measures regarding handling of cylinders. • Proper training will be provided to the workers.	Proponent	EPA
4.	**SOLID & HAZARDOUS WASTE**			
	The solid waste may negatively impact the site, the workers, the visitors, and the factory surrounding in different ways including aesthetically, occupationally as well as from health, safety, and environment point of view.	• Domestic solid waste will be collected in waste bins. Hazardous waste will be stored in separate bins. • Must use protective gloves while carrying the containers to avoid any hazardous effect	Proponent	EPA

5.	**SOIL QUALITY**			
	Spillage of oil and mishandling of oil will seep into the ground and will affect the quality of soil	• Proper training of workers must be required. • Avoid the spillage of any material. • In case of spillage use appropriate method to clean the area as soon as possible with adequate measures	Proponent	EPA
6.	**WASTEWATER QUALITY**			
	Domestic wastewater and during operational activities wastewater will be produced.	• Domestic wastewater will be disposed of by meeting PEQS. • Treatment plant will be provided.	Proponent	EPA
7.	**FLORA AND FAUNA**			
	Excessive plantation shall be done on the walls. This will act 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	EPA
8.	**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 positive attitude 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	EPA

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	Pak. Rs.	Details/ Basis
1	**Tree Plantation**	1000-1500	01 million	Cost includes plantation and maintenance up to three years
2	**Solid Waste Management/ Mortality Pits**	L.S.	02 million	Lump sum
3	**Wastewater management**	L.S.	02 million	Lump sum
4	**Health & Safety Measures**	L.S.	70,000	Lump sum
5	**Miscellaneous Cost**	L.S.	42,000	Lump sum
6	**Air Quality Monitoring**	2	15,000	2 samples @ 7500/Sample
7	**Water & Wastewater Quality Monitoring**	2	12,000	2 samples @ 6000/Sample
8	**Noise Level Monitoring**	2	10,000	2 samples @ 5000/Sample
9	**Soil Tests**	2	10,000	2 samples @ 5000/Sample
10	**Training**		50,000	Lump sum
11	**External Monitoring**		60,000	Lump sum
	Total Environmental and Social Management Cost		**Approx. 06 million PKR**	

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.

9.3. 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 mainly 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	

9.6 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 different 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. • Carry out 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 possible 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 carried out 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 carried out. • 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.

Stakeholders' participation Performa's and socioeconomic questionnaire were filled by the inhabitants 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 supply good quality product to end users. 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's 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.
- Availability of water for the project will be ensured without affecting the needs of the people around the project area.
- Wastewater treatment plant will be installed and treated wastewater will be disposed of.
- There will be proper waste collection system.

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. #	Names	Concerns
1	Kamran Ali Khan	During the survey in the study area following concerns of the local community were noted: • Air pollution should be controlled effectively such as emissions generated from power generating activities. • Chemicals/oil should be stored and handled properly only authorized persons should be allowed near the storage area. • Locals should be preferred for the job opportunities. • Ensure the installation of Wastewater treatment facility. • Wastewater should be treated prior to final disposal in nearby drain. • Solid waste should be managed effectively by adopting the standard practices of the area. • An effective EMMP should be designed and enforced with true spirit. • Health of the workers should be ensured. • Planation should be carried out at extensive scale. • Construction activity should be carried out during day hours. • Noisy activities should be confined.
2	Muhammad Waqas	
3	Qaiser Farooq	
4	Ghulam Mujtaba	
5	Mehboob Alam Shahid	
6	Muhammad Latif	
7	Mazhar Hussain	
8	Shahbaz Khan	
9	Waseem Ahmed	
10	Rab Nawaz	
11	ALLAH Yar	
12	Daniyal Azam	
13	Muhammad Jabbar	
14	Muhammad Ramzan	
15	Ahmed Saeed	

SOURCE OF DATA

- Punjab Environmental Protection (Amendment) Act 2012 (PEPA)
- Guidelines for the preparation and review of Environmental Reports, October 1997
- Review of IEE/ EIA Regulation, 2022
- The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan
- World Weather Online.com
- https://www.machinerylubrication.com/Read/266/oil-reclamation
- https://oilregeneration.globecore.com/oil-regeneration-oil-reclamation
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- Material Safety Data Sheet (MSDS) of chemicals
- /www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA-
- Water_Efficiency_on_the_Farm_Booklet_WEB.pdf
- http://www.madehow.com/Volume-2/Lead.html
- http://www.ijirset.com/upload/2013/november/18_Disposal.pdf

TERM OF REFERENCE

* According to regulation 7 of Review of IEE and EIA regulations, 2022, proponent shall pay, at the time of submission of IEE/EIA, a nonrefundable review fee to EPA, in accordance with rates specified in schedule-III.
* Proponent shall be responsible for paying any fines/ penalties levied by the EPA Punjab or Environment Tribunal.
* Provide all documents/details required for completion of IEA report.
* Proponent shall be responsible correctness and validity of all information and documents provided to the consultant for onward submission to EPA Punjab and consultants will bear no responsibility.

In M/S BAKHTAWAR LUBRICANT SMC PVT. LTD.

For Enviro Stewards Co. Pvt. Ltd

Ms. Sara Fatima

Mr. Zia ur Rehman

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		
7	Miss Misbah Ali	B.Sc. Environmental Engineering
8	Engr. Muhammad Bilal	B.Sc. Environmental Engineering
Sociologist		
9	Qazi Muhammad Ahmed Raza	M.Phil. Sociology

1st Floor Allied Bank, A Block Commercial Market, Canal View Society, Lahore