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INTRODUCTION

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) Report for "M/S Muhammad Saeed Tanoli & Sons ZHA" Located at Muhmoodbhooti, Ahmad Town, street# 35 house# 50 Lahore. M/S Muhammad Saleem Tanoli & Sons ZHA intends to collect waste mobil oil/ petroleum products generated from motorcycles, cars, and other vehicles from various markets and workshops for further utilization in different industrial sectors e.g steel mills, rubber factories and other relevant industries. It will be only storage and handling of crude and used oil. The main goal of the Proposed Project is to provide a safe, economic and environment friendly storage and handling of Mobil oil/Petroleum products to the market to cope with ever growing demand. For this instance, Environmental Impact Assessment (EIA) of the Project has been conducted in accord with the Punjab Environmental Protection (Amendment) Act, 2012 and IEE/EIA Regulations 2000. The process for conducting environmental assessment and the results of EIA are described in this document.

BRIEF OUTLINE OF THE PROPOSAL:

PROPONENT NAME:	Muhammad Saeed S/O Sher Hussain
ADDRESS	R/O Post office New Khar Kot, Swar Mira, Tehsil and district Haripur
PROJECT TITLE:	M/S Muhammad Saeed Tanoli & Sons ZHA.
PROJECT LOCATION:	Muhmoodboti Ahmad Town, Street 35 House 50 . Sharifpura Lahore
PROJECT CO-ORDINATS:	31°35'34.5"N 74°24'55.1"
CONSULTANT NAME:	Lead Enviro safety Services Pvt Ltd.
COST OF THE PROJECT:	PKR 5 million

PLANT CAPACITY: 2MT/Day

PROPOSED PROJECT AREA: 10 marla

CURRENT STATUS: Project site is an Open/Vacant

NATURE OF AREA: Industrial

PROPOSED TREE PLANTATION: Trees will be planted along the boundary of the Proposed Project Area.

TYPE OF WASTEWATER: Domestic

WASTEWATER TREATMENT: Septic Tank will be installed for Domestic wastewater

SOLID WASTE MANAGEMENT: Will be handled as per TMA

PROJECT OBJECTIVES

The main objectives of this EIA are to establish baseline environmental conditions, identify potential impacts and suggest suitable mitigation measures for the execution of the proposed project. This study has been accomplished in line with the prescribed legal provisions of guidelines and directives of the Punjab Environmental Protection Agency.

The overall aim of the Proposed Project is to store and utilize the Petroleum product a safe, economic and environment friendly manner to meet the growing demand of market.

This executive summary presents an overview of the main findings of the EIA Report for the aforesaid project.

BENEFITS OF PROPOSED PROJECT

The proposed project shall yield following benefits:

- Maintain continuity in supply of Petroleum products to the consumers through distributors and quality of services to the consumers.
- Ease in availability of Petroleum products during crisis period.
- Help to overcome the scarcity to huge gap between demand and supply.

SITE ALTERNATIVES

No other site alternative was available to be considered as feasible option for proposed project as the land is owned by the proponent and this will be an extension in unit. The proposed site was selected because of the following reasons:

- Easy road access to the market
- No settlements at a safe distance
- No watercourse within a safe distance
- No ecologically sensitive or declared protected area within 10 km of the selected site

SCREENING

As per PEPA 2012, the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulations, 2022 the Proposed Project falls in **A (5) category** of in **Schedule-II**.

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Beneficial/Positive Impacts:

- Maintain continuity in supply of Petroleum products to the industrial sector
- Ease in availability Petroleum products during crisis period.
- Provision of employment and stimulation of local economy.
- Enhancement of community development through implementation of corporate social responsibilities.
- Help to overcome the scarcity due to gap between demand and supply**.**

Negative Impacts:

Environmental Parameters	Recommended Mitigation

A: Physical	
Effect on Geomorphology and Soil	• Spill Prevention and Response Plan for storage, use and transfer of fuel and hazardous materials should be prepared. • Workers should be trained on spill prevention and response plan. • Thick Plantation is recommended after completion of project to minimize land slippage and soil erosion impacts. • Fuels, lubricants, and chemicals should be stored in covered areas, underlain with impervious lining • Maintenance and washing of vehicles and equipment should be carried out at designated areas • Any hard surface or tarpaulin should be spread on area to prevent soil contamination. • Regular inspections should be carried out to detect leakages in construction vehicles and equipment • Appropriate arrangements, including shovels, plastic bags and absorbent materials, should be available near fuel storage areas.
Water Quality	• Lined Septic tanks will be provided • Fuels and lubricants will be stored in areas with impervious floors
Dust Emissions	• The most effective means of reducing the dust emission is wet suppression. Watering exposed surfaces and soil with adequate frequency to keep soil moist at all times can reduce the total dust emission from the project by as much as 75% • Dust emission from soil piles and aggregate storage stockpiles will be reduced by covering the piles, for example with tarpaulin or thick plastic sheet.

	• Good quality (low-sulfur) fuel will be used for vehicle and machinery • Provision of dust respirators to equipment operators who are exposed to dust while operating their equipment. • Tree planting on open and disturbed areas which will not be used by the operations.
Noise	• Reduce equipment noise at source by proper design, maintenance and repair of construction machinery and equipment • Minimize noise from vehicles by use of proper silencers and mufflers • Use noise-abating devices wherever needed and practicable. • The movement of vehicle should be restricted during night time. • Providing workers with noise related PPE's • Planting of trees that could serve as sound buffers. • Noise barriers must be put in on and around the project boundary • Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc
Water Quality	• Minimize the land disturbance as much as possible • Proper storage techniques will be adopted to avoid leakage and to prevent the erosion of soils • Existing drainage systems will not be altered. • Maintenance and fueling of the vehicles will be done at designated places (not at site) • Earthy materials and runoff will be handle in a manner that prevents adding suspended solids to flowing water which will prevents water pollution
B : Ecological	

Terrestrial Flora	• As such there's not any thick natural vegetation on the project site. So there is no possibility of vegetation loss. But Proponent has planned a Tree Plantation.
Terrestrial Fauna	• Wildlife protection and biodiversity management plan should be enforced in the case of disturbance to the wildlife present in the project area. • Labourers will not be allowed to discard food, plastic etc. which can attract animals/birds near the core site
C: Socio-Economics	
Health and Safety	• Occupational Health and Safety SOPs will be enforced • Personal Protective Equipment (PPEs) should be given to the workers • Wearing of the PPEs should be regulated strictly by the concerned authority • Exit route should be demarcated clearly • First aid kits should be present on-site to treat minor injuries • Routine medical check-ups of the labours should be done on the regular basis • Ambulance and related equipment should be made available immediately in the case of emergency and in the case of the disaster • No machinery should be left unattended, particularly in the running condition. • Nighttime driving of project vehicles should be limited. • Drivers will be trained to drive slowly following traffic rules.

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals.

During Constructional & Operational Activities, ambient air quality for dust level in particular, noise level (tests) and community and workers' safety (visual) need to be monitored. **1.2 lacs** are allocated as Environmental Budget for the proposed project. Monitoring Plan has been included in **Chapter-5**.

CONCLUSION

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

CHAPTER 1: INTRODUCTION

1.1 GENERAL

The history of the processing of petroleum products like kerosene oil, crude oil, and others in Pakistan is an important aspect of the country's industrial and economic development. Below is an overview of the key events, milestones, and statistical data related to oil processing in Pakistan:

Early History of Oil Discovery and Processing in Pakistan

Oil Discovery:

Pakistan's journey with oil began in 1915, when the first significant discovery of petroleum was made at the Khaur Oil Field in the Punjab region. This marked the beginning of oil exploration and development in the country.

However, large-scale oil exploration began in the 1940s and 1950s, primarily driven by foreign companies. The Pakistani Petroleum Act of 1950 was passed to regulate the exploration and production of petroleum.

Refining Infrastructure Development:

In 1950, the first oil refinery was established in Karachi, operated by the Pakistan Refinery Limited (PRL). This refinery had an initial capacity to process about 500 barrels per day.

Over the next few decades, the refinery sector expanded, and several other refineries were established in Karachi, Lahore, and other key cities. For example, Attock Refinery Limited (ARL) was set up in 1922 and later expanded.

Key Milestones in Oil Refining and Production

Introduction of Petroleum Products:

Kerosene oil has been used in Pakistan since the early 1900s. It became a major fuel for domestic use, particularly in rural areas, for cooking and lighting.

Crude oil was primarily refined into products such as gasoline, diesel, and kerosene. Kerosene was widely used until the 1990s, when its usage started declining in favor of LPG (liquefied petroleum gas) and natural gas, especially in urban areas.

Crude Oil Production:

Pakistan's crude oil production has remained relatively low compared to its consumption. As of 2023, Pakistan produced approximately 100,000 barrels per day of crude oil, which is far below the country's daily oil demand of around 400,000 to 500,000 barrels.

The shortfall in domestic production leads Pakistan to import a significant portion of its crude oil. In 2022, Pakistan's oil imports were valued at around $10.4 billion, with major suppliers including Saudi Arabia, Kuwait, and the UAE.

Domestic Consumption of Petroleum Products:

Gasoline is the most consumed petroleum product in Pakistan, followed by diesel and kerosene oil. However, kerosene oil consumption has been on the decline since the early 2000s due to the widespread availability of natural gas in urban areas and the increasing popularity of LPG in rural areas.

The demand for kerosene in Pakistan was around 2 million tons in the 1990s, but it fell drastically by the 2010s due to competition from other sources of energy.

Key Statistics (as of 2023)

Crude Oil Production:	100,000 barrels/day.
Refining Capacity:	450,000 barrels/day.
Oil Imports:	$10.4 billion (2022).
Refined Product Imports:	$7.2 billion (2023).

This Report presents the Environmental Impact Assessment (EIA) for this proposed project. For this purpose, the proponent has decided to engage environmental consultants, **M/S Lead Enviro Safety Services** The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental

Management Plan (EMP) for implementation of the project in environment-friendly manner.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing for the Environmental Approval.

1.2 THE PROPONENT

Name:	**Muhammad Saeed S/O Sher Hussain**
Address:	R/O Post office New Khar Kot, Swar Mira, Tehsil and district Haripur

1.3 THE PROJECT

The Proposed Project is titled as of M/S Muhammad Saeed Tanoli & Sons ZHA" Located at Muhmoodbhooti, Ahmad Town, street# 35 house# 50 Lahore. M/S Muhammad Saleem Tanoli & Sons ZHA intends to collect waste mobil oil/ petroleum products generated from motorcycles, cars, and other vehicles from various markets and workshops for further utilization in different industrial sectors e.g steel mills, rubber factories and other relevant industries. It will be only storage and handling of crude and used oil. The main goal of the Proposed Project is to provide a safe, economic and environment friendly storage and handling of Mobil oil/Petroleum products to the market to cope with ever growing demand

1.3.1 Nature of Project

This project is M/S Muhammad Saeed Tanoli & Sons ZHA

1.3.2 Size of Project

Proposed Project will have a capacity 2 Metric Ton/Day.

1.3.3 Location of Project

The Proposed project is located at Muhmoodboti, Ahmad Town, Street No. 35 House No. 50 SharifPura Lahore

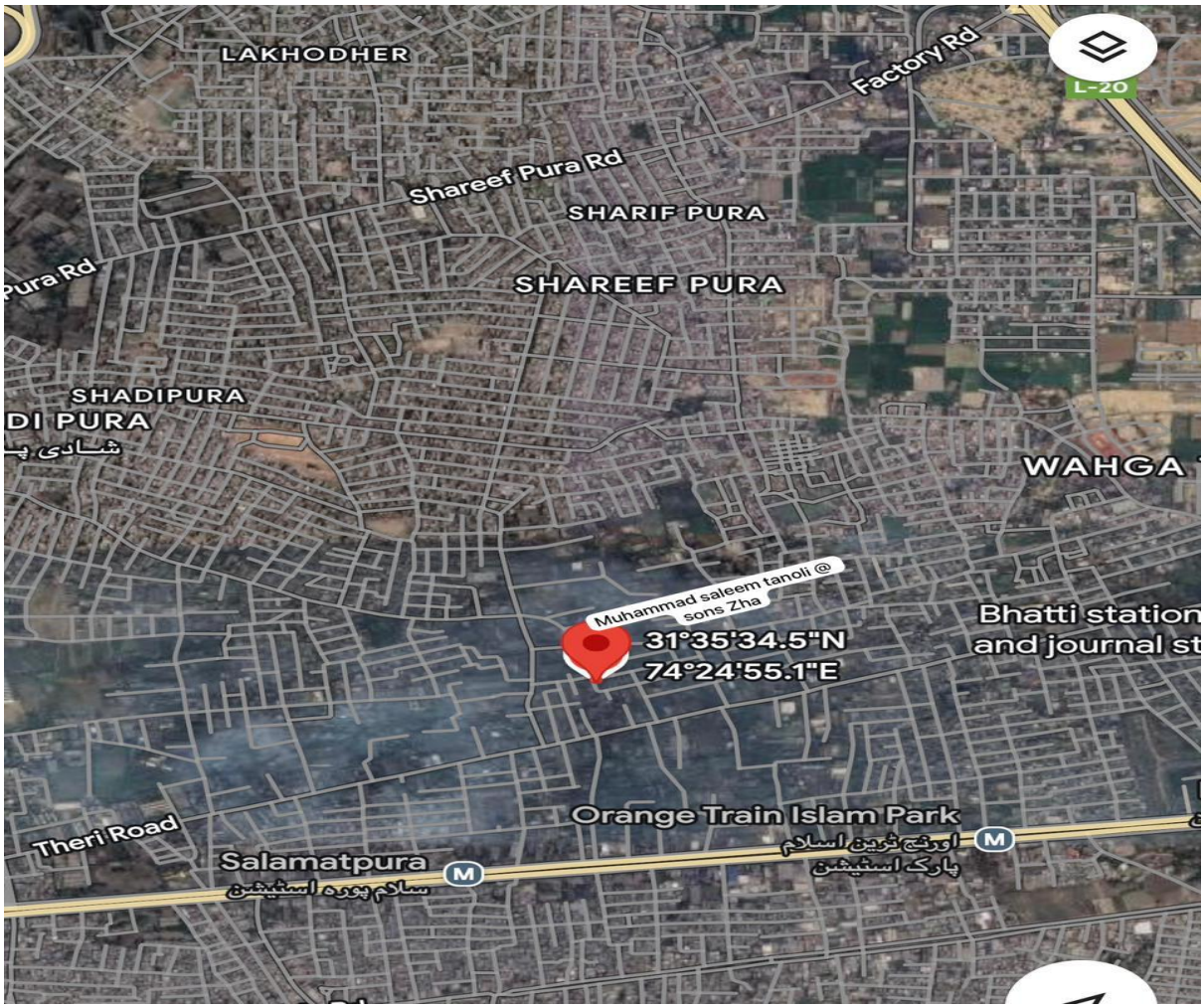

Figure 1: Location of Project

1.3.4 Area of Project

Total area of the Project is 10 Marla

1.4 ENVIRONMENTAL CONSULTANT OF PROJECT

The proponent has engaged M/s Lead Enviro Safety Services pvt Ltd to conduct the EIA (Environment Impact Assessment) study of aforesaid project in accordance with guidelines issued by EPA, Punjab. For this purpose, M/S Lead Enviro Safety Services pvt Ltd the has engaged the group of professionals which comprises of environmental specialists, environmental engineers and chemical engineer.

1.5 PURPOSE OF EIA REPORT

The establishment of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. The commencement of a project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

The predominant objectives of this EIA report were:

- To assess and report the prevailing environmental conditions of the project area.
- To develop a baseline in order to evaluate the suitability of the project in particular area.
- To recognize activities during pre-development, development and operation of project and its associated impacts.
- To assist the proponent for planning, designing and implementation of the project, keeping in view the elimination or minimization of negative impacts.
- To develop proper mitigation as well as monitoring plans for the uniform implementation.

- To provide opportunity to the public for a better understanding of the project as well as its impacts on community and environment in context of sustainable development.
- To prepare an EIA report for the submission to Environmental Protection Agency, Punjab for Environmental Approval.

Chapter 2: SCREENING AND SCOPING

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

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

As per Punjab Environmental Protection Act 1997 (amended 2012) and Initial Environmental Examination (IEE) & Environmental Impact Assessment (EIA) Regulations, 2000 proposed project falls under A (5) ***"Oil & gas extraction projects including exploration, storage, production, gathering systems, and separation"*** category mentioned in **Schedule-II**. Thus, requires an EIA Report is being prepared for duly submission in EPA, Punjab.

2.1 EIA process

2.1.1 Overview of EIA

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

2.1.2 Objectives of EIA

The overall objective of the EIA is as follows:

- Description of the proposed project, including an estimate of emissions, effluent and waste and consideration of the project alternatives;

- Identify and investigate all impacts of the proposed project on the physical, biological, and socio- economic environment;
- Evaluation of the baseline environmental conditions in the impact zone to provide a basis for assessing the incremental impacts of the proposed project, including existing pollution levels and nuisance conditions;
- Identification and assessment of the potential impacts on the environment during each of the project phases;
- To propose mitigation measures that would help the Project Proponent in conducting the operation in an environmental sustainable manner; and
- To develop an Environmental Management Plan that would assist the Project Proponent in the effective implementation of the recommendations of the EIA.

Project land is owned by project proponent. Impacts have been assessed for the immediate and direct area of influence of the project defined as:

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

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 3-4 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility. The impacts related to the decommissioning of the proposed project will be assessed at the time of decommissioning which will involve carrying out site assessment study at the proposed project location.

Project location is given in below figure:

2.2 Scope of EIA

This consolidated EIA report covers the examination of physical, biological, environmental and socioeconomic impacts of the proposed project

The spatial and temporal scope of the project is described below:

2.2.1 Spatial scope

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

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

2.2.2 Temporal scope

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 3-4 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility. The impacts related to the decommissioning of the proposed project will be assessed at the time of decommissioning which will involve carrying out site assessment study at the proposed project location.

2.2.3 EIA methodology

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

2.2.4 Scoping

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

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

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

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

The scoping was followed by data collection describes in subsequent section.

2.2.5 Data collection

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

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

2.2.6 Baseline

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

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

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

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

2.2.7 Evaluation of alternatives

To establish an environmentally sound preferred option for achieving the objectives of the proposed project, different alternatives including site selection, raw material and technology alternatives were studied in collaboration with the project proponent. Technology selection was made taking in to consideration environmentally, economically and socially suitable as well as technically feasible options.

2.2.8 Stakeholder consultation

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

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

2.2.9 Impact assessment and mitigation

The information collected in the previous phases was used to assess the potential environmental impacts of the proposed project activities. The impact assessment approach is provided in **Table.** Impacts of project activities on environment. The issues studied during impact assessment include potential impacts on:

- Physical environment of the area
- Biological environment of the area
- Socio-economic environment of the area

Impact Characteristics	Categorise
Nature of the Impact	**Direct:** The environmental parameter is directly changed by the project. **Indirect:** the environmental parameter changes as a result of change in another parameter.
Duration of the	**Short term:** Lasting only till the duration of the

impact	project such as noise from the construction activities. **Medium term**: Lasting for a period of few months to a year after the project before naturally reverting to the original condition. **Long term:** Lasting for a period much greater than medium term impacts before naturally reverting to the original condition.
Geographical Location of the impact	**Local:** Within the area of project i.e. operation site and access road. Regional: Within the boundaries of the project area. **National:** Within the boundaries of the country. **Global:** Trans-boundary impacts
Timing	Construction Operation
Likelihood of the impact	**High:** High likelihood of occurrence during lifetime of operation, Regular/continuous part of operations. **Moderate:** Moderate possibility of occurrence during lifetime of operation, Periodic/occasional part of operations. **Low:** Unlikely to occur during lifetime of operation.
Impact Characteristics	Categorise
Reversibility of the impact	**Reversible:** When a receptor resumes its pre-project condition. **Irreversible**: When a receptor does not or cannot resume its pre-project condition.
	Major, Moderate, Minor, Negligible and Beneficial

Significance of the impact	Based on the consequence, likelihood, reversibility, geographical extent, duration, level of public concern and conformance with legislative or statutory requirements.
Consequence severity of impact	**High:** ▪ Serious/catastrophic damage to environment ▪ Direct legislative requirement ▪ Corporate requirement ▪ Serious threat to corporate reputation/profitability/ability to do business. **Medium:** ▪ Measurable damage to the environment ▪ Subject to potential future legislation ▪ Potential to affect reputation/cost ▪ Implication/reduced efficiency **Low:** ▪ Negligible damage to the environment No risk to business

2.3 Important issues and concerns raised during consultation

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

Chapter 7.

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

- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.

2.4 Significant impacts and factors to be determined

Main impacts and factors to be determined are:

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

2.5 ALTERNATIVES

2.5.1 Site Alternatives

No site alternative was considered for the aforesaid project as the site selected for the establishment of the aforesaid project is within the premises of existing unit. The selected site is undisputed, and it is under the ownership of proponent. The site is most feasible in context of social and environment position as well as in achieving the intended objectives. The selected site has no houses also no ecologically sensitive area within a safe radius is present. It is best suited for the project.

2.5.2 Environmental Alternatives:

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within proximity of the selected site i.e., within 5 Km which is a safe distance. In view

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

CHAPTER 3: DESCRIPTION OF PROJECT

3.1 GENERAL

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

3.2 TYPE AND CATEGORY OF PROJECT

Section 12 of Punjab Environmental Protection Act says that no proponent of a project shall commence/ undertake construction or operation of any sort unless they had filed with the Provincial Agency an Initial Environmental Examination (IEE) and an Environmental Impact Assessment (EIA), where the project is likely to cause an adverse environmental effect. The Proponent has to secure approval from the Provincial Agency in respect thereof. Punjab Environmental Protection Act provided the guidelines for categorizing the projects. As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Proposed project falls in the category A (5) ***"Oil & gas extraction projects including exploration, storage, production, gathering systems, and separation"*** category mentioned in Schedule-II .

3.3 OBJECTIVES OF THE PROJECT

Present Project has following objectives;

i. It is expected to benefit local population
ii. To provide job opportunities to local public and to improve their living standards
iii. To improve the economic activities
iv. Maintain continuity in supply of Petroleum products to the consumers through distributors and quality of services to the consumers.

v. Private investment will be beneficial for the national economy and GDP as well

vi. Ease in availability of Petroleum products during crisis period.

3.4 LOCATION AND LAYOUT OF PROJECT

3.4.1 Location of the Project

The project is located at Mumoodboti, Ahmad Town, Street No. 35 House No. 50 SharifPura Lahore

3.5 LAND USE ON SITE

Land used for proposed project is industrial in nature. There is no sensitive area present in and around the proposed project site as the site falls in industrial land.

3.6 ROAD ACCESS

The proposed project is accessed through Their Road and old GT Road road.

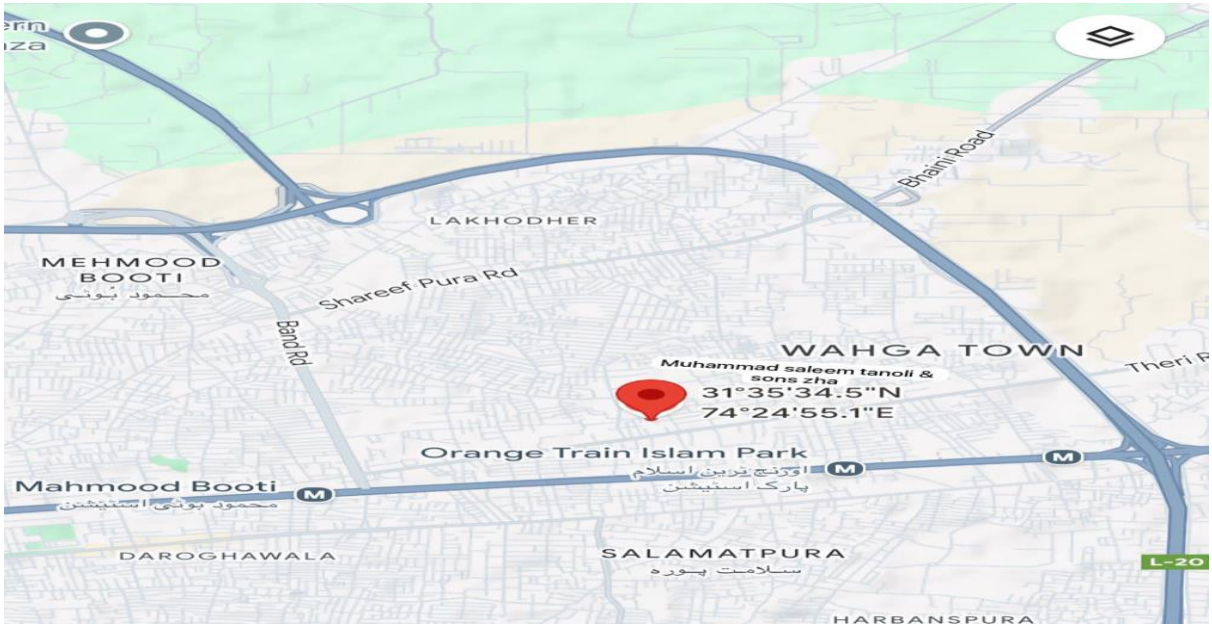

Figure 2: Access Road to the Area

3.7 VEGETATION FEATURES OF SITE

Land is clear and there exist no plants and vegetation on site. Various local plants will be grown at the project site in the open areas, and along the boundary, trees will be planted by the proponent and the list of the native species which will be planted on site is given below:

Table 1: Trees to be planted at project site

Sr#	Local Name	Type	Biological Name
1.	Kikar (native and introduced)	Scrub Tree	*Prosopisjuliflora*
2.	Bushes	Bushes	*Mesquite bushes*
3.	Guava	Fruit Tree	*Psidiumguajava*
4.	Shahtoot	Fruit Tree	*Morusrubra*

3.8 DESCRIPTION OF PROJECT

3.8.1 RAW MATERIALS

The M/S Muhammad Saleem Tanoli & Sons ZHA is only storage of Mobil Oil and Petroleum products .there will be no process involved it will be just storage and handling

3.8.2 FINAL PRODUCT

3.8.3 M/S Muhammad Saleem Tanoli & Sons ZHA will be only storage unit of used mobil oil therefore there will be no process and no final product

3.8.4 Capacity

Total production capacity of lubricants manufacturing unit will be 2 metric ton/Day.

3.8.5 PROCESS DESCRIPTION

M/s Muhammad Saleem Tanoli & Sons Zha intent to established a unit for the storage and handling of Mobil Oil and Petroleum Products. it will collect from vehicles e.g Motorcycles , Cars, wagons and other vehicles and workshops ant then it will utilize in different industrial sector like steel mill cement industry for the kilns or any other energy process

Storage of Used Mobil Oil

Containers:

- Use clean, leak-proof, sealable containers (e.g., steel or plastic drums rated for oil storage).
- Ensure containers are clearly labeled:
  "Used Oil – Do Not Mix with Other Wastes"
- Avoid using containers that previously held chemicals or solvents unless properly cleaned.

Storage Area Requirements:

- Store containers in a well-ventilated, dry, and covered area (to prevent water contamination).
- Use secondary containment (like spill pallets or bunds) to catch leaks or spills.
- Keep away from heat sources, open flames, or direct sunlight.

3.9 **SUPPLIES**

3.9.1 Water Supply

The water requirement for the project will mainly consist of domestic purpose. The groundwater will be utilized to fulfil the general requirement of water. The total water requirement will be 200 gallons per day.

3.9.2 Fire-Fighting System& Emergency Response Plan

Emergency Response & Evacuation Plan is designed to respond any emergency situation arises (medical, fire, disasters etc.) and provide a process for continuous medical support and evacuating people from danger, protect assets, property and to restore operations to normal as quickly as possible. Their objective is to provide a safe and healthy environment for employees, contractors, visitors and guests.

In the event of an emergency, the Emergency Response Team (ERT) will respond immediately to take appropriate actions. Frequent drills/training will be conducted to ensure that they react in an organized manner.

3.9.3 Electricity

Source of power will be LESCO (WAPDA) only.

3.9.4 Manpower

A total of 25-30 employees including mechanically, electrical, machine operators, sweepers and other managerial and office staff shall be working here.

3.9.5 Health, Safety & Hygiene

Health, Safety & Hygiene includes the following:

3.9.5.1 First Aid facility

At workplace workers and employers should have enough information, knowledge and training regarding first aid treatment in case of any emergency. The subject project will provide proper medical facilities to workers and staff to cope with any incidental accidents and proper training about first aid will be provided to workers and staff.

3.9.5.2 Safety Trainings

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

3.9.5.3 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.

3.9.6 Personal Protective Equipment

To control any health and safety risk and to reduce the magnitude of any adverse impact, we have to devise control strategies and adopt them in the following category order:

- Control at source
- Propagation Control
- Control at receiver end

Of these three, the first two are of prime importance but the last one should always for every risk at every workplace; standardized according to the working conditions and the people employed in the job. The first two effectively mitigate the risks and impacts but the third one compensates the left over and unavoidable losses by protecting the receiver and keeping it to a tolerable exposure level for that impact/risk. For this purpose, the equipment provided are termed as 'Personal Protective Equipment'. Following PPEs will be provided in project

- Safety Helmet
- Safety Shoes
- Safety Masks
- Safety Jackets

3.9.7 Wastewater

Effluent arising from domestic activities will be treated in septic tanks and then will be released into soakage pit, to address the water depletion issue. Proposed Project activities do not rise waste effluent hence waste water treatment system is not required.

3.9.8 Air Emissions

No air emission is likely to be produced during construction and operation of the proposed project; except the dust or particulate matter produced during floor cleaning and the movement of the vehicles. Water sprinkling will be carried out on the regular basis to suppress the dust emission. Proper ventilation system is developed for complete circulation of air. The proponent is trying to conserve water by re-circulating the washing water. Generator will be kept in proper enclosure.

3.9.9 Noise

During operation, loading and unloading will be the cause of noise. Proper tuning of vehicles will mitigate this problem. Moreover, Tree Plantation along the boundary of Proposed Project and Plantation within the unit will further reduce noise, since plants and trees serve as noise absorbers. Construction

activities noise will be temporary and will be mitigated by measures as stated in Chapter-5&6.

3.9.10 Solid Waste

Solid waste will be municipal in nature and will be handled by solid waste management contractor as per TMA practices.

3.10 COST AND MAGNITUDE OF OPERATION

Project involves machinery installation cost, PPEs, safety equipment's and purchase of raw materials. Total cost of the project is **5 Million** PKR. Despite all these costs, project is found to be feasible.

Total Cost	12 Million
Machinery Cost e.g containers and vehicles	2 Million
Land Development and Infrastructure	2.5 Million
Environmental Budget	**0.5 Million**

3.11 IMPLEMENTATION SCHEDULE

a. Phase-I (Start-up Phase)

Phase -1 is the start-up phase, which involves Construction of basic infrastructure and installation of machinery. The NOC's from related departments have been taken except from EPA Punjab and this report has been prepared to obtain NOC from EPA Punjab.

b. Phase-II (Wrap-up Phase)

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

3.12 RELOCATION AND REHABILITATION PLANS

No human population resides within project area as the proposed project land is Leased by the proponent. The nearest populated area is approximately 400 m away from the aforesaid project location. No structure of any significance (cultural, religious, archaeological, recreational or any other) stands on the land selected for the project requiring dismantling or relocation. No flora or fauna; especially belonging to endangered species is found within a safe distance from the site which will be removed or moved to some other part. Hence, no relocation and resettlement is required.

The land ownership documents showed that land is owned by Proponent and the land ownership documents are attached as Annexure of already submitted EIA Report. Moreover, there is no dispute and rehabilitation associated with the establishment of

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

4.1 Project Area

Proposed project has an area of 10 Marla in Lahore District. The proposed project site is cleared land; therefore, no tree cutting is involved. Land is owned by the proponent, while the subject project Muhammad Saeed Tanoli & Sons ZHA is limited by shares under a sole propter.

4.2 Methodology

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

4.3 Data Collection

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

Non-Government Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

4.4 Social Survey

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

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

4.5 Review of Legal and Administrative Framework

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

4.6 Baseline Conditions

Baseline conditions refer to the existing physical, environmental and socio-economic status of the project area. On the basis of baseline information, the project interventions are assessed, and mitigation measures are proposed. The baseline information also helps to indicate the specific issues to be monitored during construction and operational phases. The baseline data (physical, biological and socio-economic parameters) related to the project area is described below. Information provided is based on primary and secondary data collected by site visits, desk studies and consultation with locals respectively. This section gives the overview of the topology, geology, seismology and meteorological conditions of whole city whereas, it gives

detailed information about the surface water, ground water and air quality of the project area. The detail of each parameter is discussed in sub-sections below:

4.7 Physical Environment

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

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

4.7.1 Geological Formation

Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhu pura District. The original physiographic features like channels remnants and levees have been destroyed or changed by the construction of urban infrastructure. Flood plains have been confined by construction of embankments (bunds) and spurs. Sub-recent flood plain is 4 to 8 meters higher than the recent flood plain and can be identified at number of places i.e. Shalimar Garden, Moghalpura and Multan Road.

Terrain of the proposed project site is predominantly flat. Lahore district is situated at an average elevation of 210 meters above mean sea level. The alluvial subsoils are of late Pleistocene and were formed by the flood plains of river Ravi. These consist of clay, silt and sand. The thickness of clay increases with distance from the river bed.

4.7.2 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.

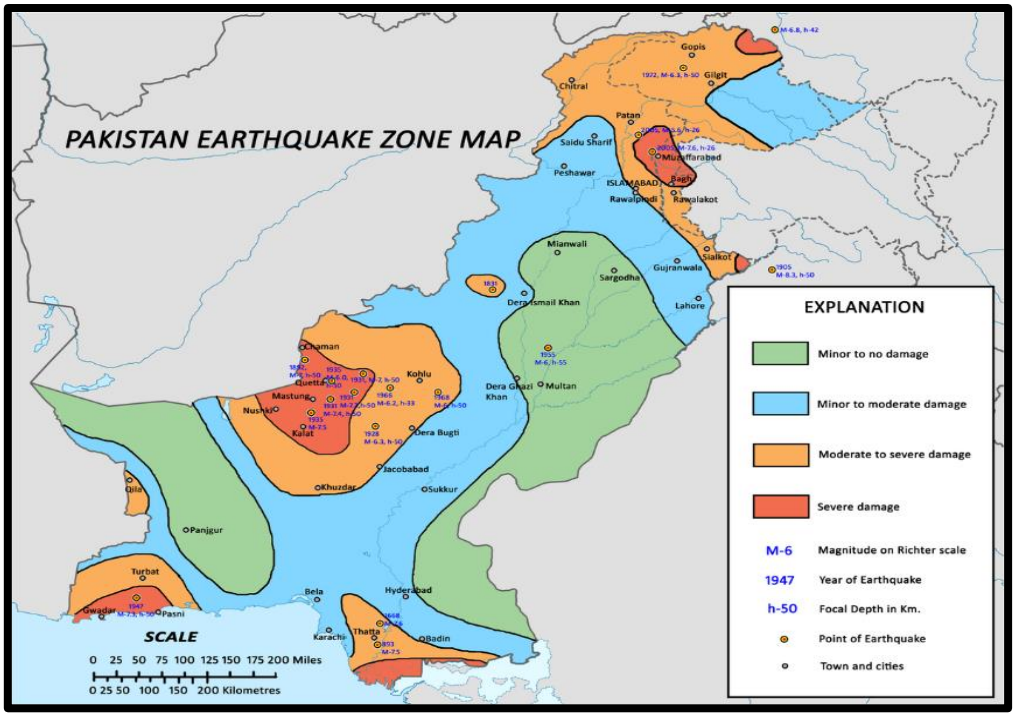

Figure 3: Seismic Zoning of Pakistan

4.7.3 Climate

The Purposed project site is located in Lahore and has distinct seasons marked by wide variation in temperature. The coldest month is January in which the mean maximum temperature is 19.4 °C and the mean minimum temperature is 6.6 °C. June is the hottest month with the mean maximum temperature near 39.8 °C and the mean minimum temperature as 27.4 °C. Mean temperature of the region from 2010-2018 is given in Figure 5.

The average annual rainfall from 2010-2018 in Lahore works out to be 126.16 mm. Nearly 70% of it received in the form of high intensity showers during the monsoon (July, August, September) and the remaining in winter. The yearly variations are considerable. The average quarterly rainfall at Lahore during the last 9 years (2010-2018) is also shown in Figure 6.

The most humid period is in month of February with average humidity of 53.125 % and the least humid period is in the month of May with average humidity of 18.875 %. The average monthly humidity of Lahore region form last 9 years (2010-2018) recorded is 35.25 %. The average quarterly humidity of Lahore is shown in Figure 7.

During cold seasons of the year northern winds prevail and during hot seasons southern winds. Monthly mean velocity of the wind (Knots) taken for the period 2010-2018 is 5.46 and shown in Figure 8.

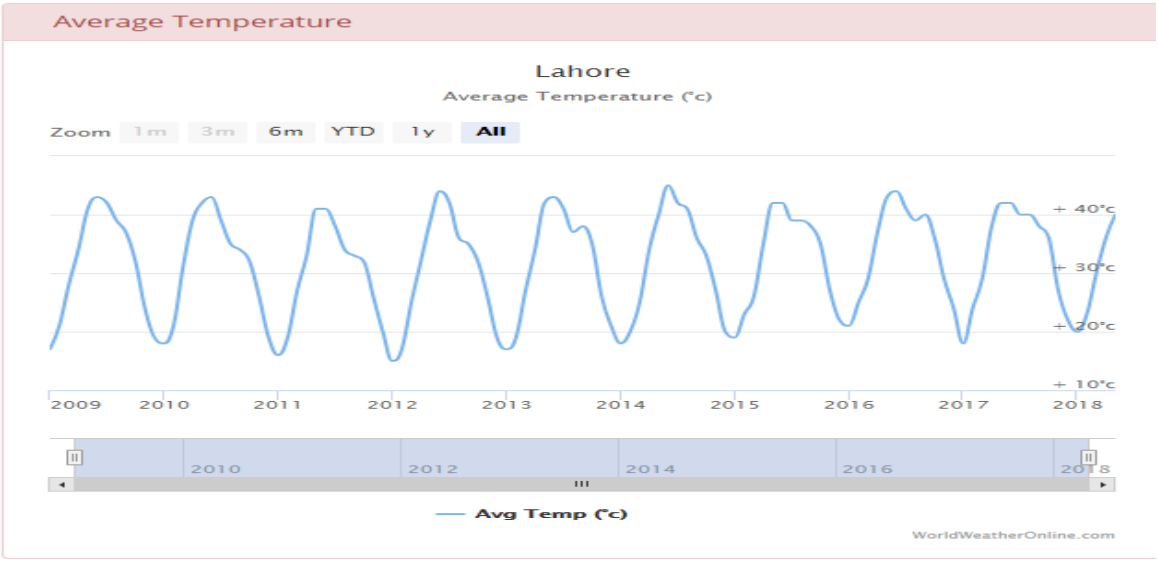

Figure 4: Average Annual Rainfall

4.7.4 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.

The project is in a flat plain area and the average elevation of the project district is barely 50 m above sea level. The description of the physical environment of Lahore and the project site is presented in the following sub sections.

4.7.5 Geology

Lahore lies on the alluvial plain called Bari Doab. Doab is a local word for area between rivers. Bari Doab is a part of the Indo-Gigantic alluvial plain formed by the Indus River and its tributaries. It is bounded by Ravi and Chenab rivers in the northwest and west and by Sutlej River in the southeast. Northeastern boundaries of Doab lie near the foothills of the Himalayan Ranges. The Bari Doab is covered by Quaternary alluvium which overlies semi-consolidated

Tertiary rocks or Metamorphic and igneous rocks of Precambrian age. Except for a small area in the northeastern part of Doab where basement rock was encountered no information is available at present regarding the distribution of Tertiary and Precambrian rocks in the Doab.
The project site is situated in Shah Jamal, Lahore. The project site is located in Punjab which is a vast plain of alluvial material, deposited by Indus basin and five main rivers crossing the Punjab Plain. Thickness of alluvial deposits is thought to be more than 300 m which are underlain by the basement rocks of the Indian shield. The project site falls in the Punjab plain which shows low to moderate level of seismicity. The project region has also been subjected to severe shaking in the past due to earthquakes in the Himalayas. The epicenters of low to moderate magnitude earthquakes recorded in the Punjab Plain are associated with the subsurface fractures in the basement rocks which are concealed by the thick alluvial deposits. The known main active fault near Lahore is the Main Boundary Thrust (MBT) which passes at a distance of about 180 km towards northeast along the Himalayan front.
Probabilistic seismic hazard assessment recently carried out for Lahore area as part of the revision of seismic provisions of the Building Code of Pakistan shows that the project area falls in Zone 2A. Seismic zone of Pakistan is shown in figure 4.1. It is therefore recommended that the project structures should be designed to cater the requirements of Zone 2A of Building Code of Pakistan (2007). Based on the evaluation of tectonic setting and seismicity of the project region, the important project structures are designed to withstand a horizontal peak ground acceleration of 0.15g with 10% exceeding probability in 50 year

4.7.6 Topography

This is an alluvial area and aggregate and sand for project construction have to be imported from external quarry sources

4.7.7 Soils

The soils of the project are characterized as alluvium deposits of sandy-loam and sandy-silt. These soils are generally well drained but due to vast irrigation networks some signs of water logging and salinity have been observed in the area.

4.7.8 Temperature

Summer season prevails from April to October. Average temperatures during summer are 40 degrees and 15 degrees Celsius respectively. Hottest month is June, during which temperature rises as high as 40 degree Celsius. Winter occurs from November to mid-February.

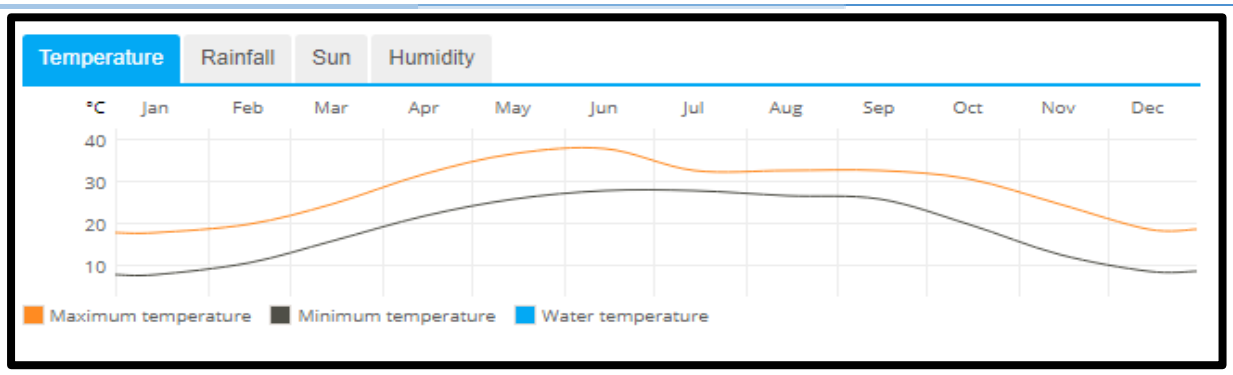

Figure 5: Graphical Representation of the Temperature

4.7.9 Surface Water and Groundwater

Major water bodies in the Study Area include the Indus River and the under construction RBOD (Right Bank Outfall Drain). Groundwater is not major source of drinking water in the Study Area due to high amount of salinity in the groundwater

4.7.10 Ambient Air Quality

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

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

4.7.11 Noise Levels

Noise is described as an unwanted sound emitted from unavoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is sensory. The perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude airplane flying etc. The noise pollution in the project area is a source of pollution and nuisance. Among eight noise measurement locations in the cities, the study says, on average, the noise level ranged from 57-60 dB (A) in and around the project site.

4.8 Ecological Environment

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

4.8.1 Wildlife

Because of extensive cultivations, high population and human activities, there is little wildlife in the project area. However, the local population as well as the Wildlife Department has reported some fauna. The following is the wildlife profile of Okara District, in general:

Mammals: Common mammals reported from the project area wild-boar, hyaena (Hyaena striata), Red Indian foxes (Vulpes bengalensis), porcupines and jackals (Canis aureus). Until a few years ago the wolf (Canis palfies) was also found in riverain forests, but the species has almost become extinct due to loss of forests

Birds: The commonly found birds of the area are hawk, kite. partridge and common crow. A large variety of waterfowls and migratory birds also visit the region because of the barrages and wetlands in the area.

Reptiles: Because of the hot and humid climate of the region, some population of reptiles has also been reported from the project area. Reptilian and amphibian fauna is not well documented. However, local people have

reported that snakes and lizards are common in the region. Wild boar is reported to be inflicting serious crop damages, mainly to sugarcane and potatoes crops. Some degree of illegal hunting, poaching, and trapping has been reported from the project area.

4.8.2 Flora

The entire Lahore District has no natural forests, mainly due to vast agricultural activities. Until a few decades ago Ravi River was well known for riverain forests, known as Bela forests, which have almost become extinct due to lack of water. Except Pipli Pahar irrigated plantations of 7,275 acres, the district has no other reserved forests. However, according to an old provincial notification, the trees along canals, provincial highways and rural roads are the responsibility of the forest department and fall in the category of reserved forests. 30. The canal segment of the project has few mature endemic tree species.

There is linear planting of eucalyptus along the Government RoWs. Other species in the area are rosewood, Sheesham (Dalbergia sissoo) which is mostly diseased due to some fungal attack. The dominant tree species in this zone are Sheesham (Dalbergia sissoo), Keekar (Acacia arabica), Peeloo (Salvadora persica), Bohar (Ficus religiosa), Gaz (Tamarix indica), Nim (Azadirachta indica), Eucalyptus and Mesquite (Prosopis juliflora), the last two being the exotic species and mesquite has suppressed endemic species to a great extent.

The endemic species of Peeloo and Bohar are reported to be endangered, as the forest department is not propagating the same, and similarly the wild berry (Zizyphus nummularia) has almost become extinct. Local farmers are practicing a small degree of farm-forestry in the project area to meet their fuel-wood and other day-to-day needs. The common species in such plantations are Poplar (Populus alba), Eucalyptus, Keekar (Acacia arabica), mulberry (Morus alba) and Jamun (Syzygium cumini).

4.8.3 Fauna

No tigers or leopards are found in the district. Jackal, black cats, Indian hare and house rat are common. Ducks are found along the rivers and marshes.

No endangered or rare species of flora or fauna are present in the project areas.

4.8.4 Forest resources

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4.9 Socio Economic Environment

Social Impact Assessment is a methodology used for examining social change due to external sources, especially specific developmental projects, but also government policies, technological changes and social processes or anything that has a social impact.

4.9.1 Demographic Profile

According to the 1998 census, the district Okara has a population of 6318745 o

4.9.2 Religion

Okara, encompassing a radius of 25 km, . The population of Lahore is over 99% Muslim with a Sunni majority and Shia minority; there are also small non-Muslims groups of Christians, Hindus, and Sikhs.

4.9.3 Languages and Major Casts

The major language spoken in the lahore is Punjabi and urdu (which is written in Perso-Arabic script, known as Shahmukhi in Pakistan) and Punjabis make up the largest ethnic group (overlap into neighbouring India). Punjabis themselves are a heterogeneous group comprising different tribes and communities, although caste in Haveli Lakha has more to do with traditional occupations such as blacksmiths or artisans as opposed to rigid social stratifications. The most important tribes within Haveli Lakha include Rajputs, Syed, Jats, the Arain, Gujjars and Gakhars. Smaller tribes include the Awans, Rawns, Kamboh and Maliks.

4.9.4 Dress

Majority of the people wear Qameez and Shalwar. English dress, shirt and Trousers are also common

4.9.5 Health Facilities

Medical In the meantime, here are some medical facilities in Lahore:

- Lahore General Hospital — major public teaching hospital
- Mayo Hospital — large old hospital
- Shaikh Zayed Hospital — teaching & tertiary care
- Pakistan Kidney & Liver Institute — specialized in kidney & liver care
- DHA Medical Center — provides primary care + emergency services etc.

4.9.6 Educational Facilities

High level education is available near site area well renowned schools and colleges are present at very a lesser amount of distance. The private education schools also exist near the project site. The project area has fortunately privileged of big colleges and universities.

Figure 6: Graph Showing Educational Condition

4.10 Site Suitability

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

5. *CHAPTER:* POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

5.1 GENERAL

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

5.2 OBJECTIVES

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

- To find different alternatives and ways of doing the project activities

- To enhance the environmental and social benefits of proposed project
- To avoid, minimize and remediate the adverse impacts if occurs.

5.3 PURPOSE OF MITIGATION MEASURE

The basic purpose of mitigation measures is to reduce the impacts of operations on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

5.3.1 What is the problem?

The Lubricant oil and petroleum manufacturing unit. The nature of the land is defined as the industrial land. So, the major impacts associated with the establishment of said unit during construction phase will include; Raw material storage and transportation, excessive consumption of water and noise generation from various constructional activities. During the operational phase solid waste management and wastewater disposal issues may arise.

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

The impacts from the installation of Petroleum products & Lubricant oil manufacturing unit will occur during the pre-operational phase of the aforesaid project due to the civil work involved. During operation phase it will include; noise generation, solid waste management, wastewater management and disposal, etc. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

5.3.3 Where problem should be addressed?

The problem will be generated should be addressed on source i.e. at site within the same timeframe.

5.3.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. Like for dust emissions sprinkling of water will be done, for solid waste proper solid waste management and disposal practices will be adopted, to manage liquid waste proper treatment will be done before discharging into the receiving body.

5.4 WAYS OF ACHIEVING MITIGATION MEASURES?

Following ways will be adopted to reduce the impacts of the establishment of waste Petroleum products & Lubricant oil storage unit:

5.4.1 Changing in Planning Design

For the establishment of the Petroleum products & Lubricant oil Manufacturing unit, within the premises of already existing unit by M/S Muhammad Saeed Tanoli & Sons ZHA Limited an area has been selected for the installation of proposed unit. In the project area or its vicinity no ecologically, important area is present. Building will be constructed on modern environmental friendly design. However, no human settlement or infra-structure will be dislocated due to the establishment the aforesaid project. So, no adverse impact is being envisaged. Hence, there is no need to change the design of project is required.

5.4.2 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check.

5.4.3 Compensation in Money Terms

There is no damage envisaged to fauna, flora or any other biological source due to the establishment of Petroleum products & Lubricant oil storage unit. Proposed site is located in an industrial area and selected site for the proposed project is within the premises of already existing unit of proponent. So, no compensation in monetary terms will be needed as the land is owned by the Client.

5.4.4 Replacement/Relocation/Rehabilitation

The aforesaid project is located within the already existing unit of M/S Muhammad Saeed Tanoli & Sons ZHA and land is in industrial area where there is no sensitive area, population or natural resource is present which could be impacted due to the establishment of Petroleum products &

Lubricant oil manufacturing unit. No replacement, relocation and rehabilitation are requiring for the aforesaid project establishment.

5.5 ANTICIPATED POTENTIAL ENVIRONMENTAL IMPACTS (CONSTRUCTION & OPERATION PHASE)

An impact is any change to the existing environmental and social conditions caused by human activities or an external influence. Impacts can be positive (beneficial) or negative (adverse), direct or indirect, short-term or long-term as well as local or regional. Impacts are termed as cumulative when they add incrementally to existing impacts. Both positive and adverse environmental impacts could arise during the site preparation and operational phases of the proposed project.

Construction and everyday operations would involve the use of mechanized equipment with the potential hazard to release pollutants, such as particulate matter (dust), human and domestic waste, debris and wastes. Anticipated impacts associated with proposed project at development and operation will be reduced up to significant level by adopting best management and monitoring practices. Management and monitoring practices are given below in details below under each specific impact.

Table 2: Impact Matrix

Sr. #	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibility	
		Long	Short	Direct	Indirect	Cont.	Intermittent	Wide	Local	Large	Moderate	Minor	Rev.	Ir-rev.
Beneficial Impacts														
1.	Resources		♦	♦		♦			♦		♦			♦
2.	Employment Opportunities	♦		♦		♦			♦			♦		
3.	Accessibility through Road Network	♦			♦	♦			♦			♦		♦
4.	Social Amenities	♦			♦		♦		♦		♦			♦
Adverse Impacts														
1.	Air Quality Deterioration		▲	▲			▲		▲			▲	▲	
2.	Noise Pollution		▲	▲			▲		▲			▲	▲	
3.	Water Pollution	▲		▲			▲		▲		▲			▲
4.	Flora and Fauna		▲		▲		▲		▲			▲	▲	
5.	Soil Contamination	▲		▲		▲			▲		▲		▲	
6.	Storage and Filling		▲		▲		▲		▲		▲		▲	
7.	Health and Safety	▲		▲			▲		▲			▲		▲
8.	Aesthetics		▲	▲			▲		▲		▲		▲	
9.	Land Use Change	▲		▲		▲			▲		▲			▲

5.6 IMPACTS ASSOCIATED WITH PROJECT LOCATION

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

- The selected site for the proposed extension is within the premises of existing unit.
- The site is undisputed and allotted to the proponent
- The site has the potential to store the required amount of the raw-material
- There is no community or human settlement present on-site
- There is no fauna or flora belonging to an endangered species present on-site
- The site has accessible through road network i.e., connected to the main road via access roads
- There is no ecologically sensitive or declared protected area (PA) like; Reserved Forest, Fish Hatcheries, Territorial Waters, Wildlife or Game Reserves. Moreover, there is no socio-cultural significant structure (historical or archaeological site or religious structures; Masjid, temples, etc.) located within safe radius of the selected site that could be impacted.

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

5.7 IMPACTS AND MITIGATIONS DURING DESIGN PHASE

During design phase most of the impacts will disturb the physical environment as well as the parameters associated with the social structure of the society.

5.7.1 Location

While citing a project, care should be taken to minimize the adverse impact of the facility on immediate neighborhood as well as distant places. The application of good and sound citing criteria is often the best and first strategy to minimize the environmental and social impacts that can be caused by a

project. The Proposed site is undisputed open rural land and under the ownership of the Proponent.

Easy road access, no settlements in close vicinity, no archeological or cultural resources to be dismantled or relocated, and no ecologically sensitive or declared protected area existing on proposed site that favors the point of no impact due to project location.

Mitigation

No mitigation measure is required as the proposed project will be installed in an already existing unit of proponent which do not have any adverse impacts on its surroundings due to significant distances from sensitive receptors.

5.7.2 Designing

At the design phase, no considerable impact will occur on land, soil, topography, ground water, and on people of the area.

Mitigation

The Proponent shall construct the unit on modern lines, meeting International Standards, with incorporation of modern technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the Environment and will not pose any adverse impact or threat on any component of the Environment.

5.8 IMPACTS ASSOCIATED WITH CONSTRUCTION PHASE

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

- Construction Noise
- Dust Emission During Construction
- Change of Land Use
- Water Sourcing
- Vehicle and Equipment Exhaust
- Soil Contamination
- Camp Effluent
- Hazardous and Non-Hazardous Waste Management

- Disturbance to Wildlife
- Socioeconomic Impact
- Community and worker's Safety
- Traffic Disturbance
- Local Employment Conflicts
- Archeological Resources
- Project and Community Interface

5.8.1 IMPACTS ON PHYSICAL ENVIRONMENT

5.8.1.1 Effect on Geomorphology and soil

Potential Impacts

Spills of chemicals and fuel during handling, transportation and storage may result in contamination of soil at the construction site. During a typical construction project spill of fuel, lubricants, and chemicals can take place. As a result, contamination of soil will occur, significance will depend on the nature of material, location of spill and quantity of spill.

The likely impacts of these activities may include:

- Physical scarring of the landscape
- Increased risk of land slippage
- Erosion from road sides, well pads and sloped surface as wells as soil and slit from the cleared area, results in increased sediment load in surface run off.
- Soil contamination

Impact Assessment

Soil contamination may occur due to spillage and leakage of fuels, and other chemicals. This possibility of impact is more at fuel and chemical storage areas at campsites, vehicles and machinery used in the field and areas of vehicle fueling and maintenance.

There are no visible signs of any adverse impacts on the soils and to avoid such conditions following mitigation measures are provided and will be followed

Mitigation Measures

- Spill Prevention and Response Plan for storage, use and transfer of fuel and hazardous materials should be prepared.
- Workers should be trained on spill prevention and response plan.
- Thick Plantation is recommended after completion of project to minimize land slippage and soil erosion impacts.
- Fuels, lubricants, and chemicals should be stored in covered areas, underlain with impervious lining
- Maintenance and washing of vehicles and equipment should be carried out at designated areas
- Any hard surface or tarpaulin should be spread on area to prevent soil contamination.
- Regular inspections should be carried out to detect leakages in construction vehicles and equipment
- Appropriate arrangements, including shovels, plastic bags and absorbent materials, should be available near fuel storage areas.

Residual impacts

No residual impact to soil will be caused provided the above-mentioned measures are implemented properly.

Monitoring requirement

- Regular inspection of soil of the project area should be undertaken
- Document all related accidents of spillage to take corrective actions and to avoid reoccurrence.

5.8.1.2 Water Quality

Potential impacts

The quality of surface and groundwater supplies may deteriorate if pollutants mix with surface runoff during rain are carried to water resources in the vicinity, or if pollutants leach into the ground.

The storage and handling of fuels and lubricants may also contaminate surface and groundwater resources, if there are spillages that wash into surrounding areas or seep into the ground.

Improper disposal of domestic effluent from the camp may result in contamination of soil and water and become a health hazard. A significant impact on the environment will be interpreted if the wastewater discharged is not in compliance with the Punjab Environmental Quality Standards for municipal effluent.

Impact Assessment

A significant amount of sediment may get washed into fields and watercourses if it rains during the construction period; however, the impact is not expected to be significant. Potential sources of pollution in such cases may include:

- Domestic waste (sanitary and kitchen discharge)
- Oil and Petroleum products from vehicles
- Sediments from altered land surfaces (campsites)
- Stored Fuel, and other chemicals

Mitigation Measures

- Lined Septic tanks will be provided
- Fuels and lubricants will be stored in areas with impervious floors
- Proper drainage will be provided to construction camp and construction site.

Residual Impacts

Implementation of the proposed mitigation measures is not likely to leave any significant impact on the soil or surrounding land.

Monitoring requirement

Periodic monitoring will include:

- Discharge rate of wastewater
- Chemical analysis of the wastewater

5.8.1.3 Water Use

The water during the construction activity will be required for the domestic water consumption and for the construction activities including sprinkling of water for dust suppression.

Potential impacts

The extraction of water for the construction may affect the water availability for other water users. An adverse impact on the water resources will be interpreted if it is established that the water extraction during construction has directly affected the ability of the community to meet their water needs

Mitigation measures

Following mitigation measures should be incorporated to minimize any impacts;

- Water conservation program will be initiated to Prevent Wastage of water.

5.8.1.4 Dust Emissions

Dust generated during construction activities can be substantial. Dust or the equivalent technical term 'particulate matter,' is generally defined as any airborne finely divided solid or liquid material up to the size of about 100 microns (micrometers or one millionth of a meter).

Potential Impacts

Particulate matter emitted can result in deterioration of ambient air quality in the vicinity of the source and be a nuisance to the communities and plant workers. The main health hazards are the particles smaller than 10 microns (designated as 'PM_{10}') as they are Respirable. Larger particles also tend to settle rapidly and often do not reach receptors. In cases where they reach the receptors, the dust is considered a nuisance as it may spoil property and affect visibility. A significant effect on the environment will be interpreted if there is an increase in visible dust beyond the boundaries of the power plant due to activities undertaken at the plant site, or the dust affects local property or results in complaints from the community.

Impact Assessment

Potential sources of particulate matter emission include earthworks (dirt or debris pushing and grading), exposed surfaces, truck dumping, hauling, vehicle movement on unpaved roads, and concrete mixing and batching. The

quantity of dust that will be generated on a particular day will depend on the magnitude and nature of activity and the atmospheric conditions prevailing on the day.

Mitigation measures

- The most effective means of reducing the dust emission is wet suppression. Watering exposed surfaces and soil with adequate frequency to keep soil moist at all times can reduce the total dust emission from the project by as much as 75%
- Good quality (low-sulfur) fuel will be used for vehicle and machinery
- Materials that are susceptible to dust formation will be transported only in securely covered trucks to prevent dust emission during transportation.
- Provision of dust respirators to equipment operators who are exposed to dust while operating their equipment.
- Tree planting on open and disturbed areas which will not be used by the operations.

Residual Impacts

The effects of the dust nuisance are temporary with no long-lasting impact expected after the completion of the construction.

Monitoring requirements

- Dust emission will be visually monitored
- Ambient air quality will be checked near or at project site.

5.8.1.5 Noise

Potential issues

Depending on the Equipment used and its distance from the receptors, the community and the unit workers may typically be exposed to intermittent and variable noise levels. During the day such noise results in general annoyance and can interfere with sleep during the night. The potential noise related issues during construction is the disturbance to workers and the surrounding communities due to construction machinery operation on the site.

Impact Assessment

The potential sources of significant noise during the machinery installation period include the installation of equipment and related traffic. The noise will be maximum during the day time when activities are ongoing.

Mitigation Measures

- Reduce equipment noise at source by proper design, maintenance and repair of construction machinery and equipment
- Minimize noise from vehicles by use of proper silencers and mufflers
- Use noise-abating devices wherever needed and practicable.
- The movement of vehicle should be restricted during night time.
- Providing workers with noise related PPE's
- Planting of trees that could serve as sound buffers.
- Noise barriers must be put in on and around the project boundary
- Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc

Monitoring requirement

Monitoring will be done on regular basis to avoid increase in noise beyond PEQ's

5.8.2 IMPACTS ON BIOLOGICAL ENVIRONMENT

5.8.2.1 Flora

The project area is an open land owned by Proponent and present in industrial area. So, there is no possibility of vegetation loss. But Proponent has planned a Tree Plantation plan within the Project area.

5.8.2.2 Fauna

During the construction phase, there will be considerable human interventions in the project area which can potentially affect the wildlife resources of the project area. Following mitigation measures will be followed for prevention of accidents of wildlife and birds.

Mitigation

- A 'no-hunting, no trapping, no harassment' policy will be strictly enforced.
- Trading of wild animals or birds by project personnel will also be prohibited.
- Wildlife protection rules will be included in the Camp Rules
- Proper signs for birds protection will be placed

5.8.3 SOCIO-CULTURAL IMPACTS

5.8.3.1 Possible Displacement

As the site is owned by proponent, resettlements and community are at a safe distance from site, so no displacement or relocation of people is expected.

5.8.3.2 Induction of Labor

During the proposed project, unskilled, semi-skilled, and skilled labor will be employed for various jobs. All of this means that the proposed program will create job opportunities for the local community. Families close to the project activities expect an improvement in their quality of life and employment not equitably and judiciously distributed between the tribes of the project area will result in intertribal conflict.

Mitigation Measures

- All unskilled jobs will be provided to the local communities.
- Before project, the local communities and other stakeholders in the project area will be informed of the employment policy in place and the number of people that can be employed from the local communities.
- Local people closest to the project site (and therefore the most likely to be affected by project activities) will be given preference.

5.8.3.3 Community Health

People from the project area regularly travel to other cities, and thus cannot be considered isolated from the rest of the country. They are regularly exposed to illnesses common to urban populations and have similar levels of immunity. Workers will undergo medical examinations before being hired and

will be screened for communicable diseases. In addition, there will be very little contact between workers and local people. The project is therefore very unlikely to lead to an epidemic of any sort among local communities.

Mitigation Measures

The crew will undergo medical examinations before being hired and will be screened for communicable diseases. The project is therefore very unlikely to lead to an epidemic of any sort among local communities.

- All employees shall undergo regular check up with physician to ensure that they have good health.
- The proponent will provide regular medical practitioner for the regular checkup of the employees' health.
- Conduct free clinic and medical mission to regularly check the health condition of the residents of the community.

5.8.3.4 Safety

Potential Issues

Safety always remains an area of utmost concern in any occupational activity; construction being one. Not only workers but the people from surrounding communities on the roads adjacent to the site are at stake of safety risks as well.

The safety issue is that of traffic entering and leaving project site for transport of goods and materials. Workers safety is also an issue because of machinery if they show carelessness.

Mitigation measures

To reduce the hazard, the following mitigation measures will be implemented:

- A stop sign will be put up on the access road
- A speed breaker will be constructed on the access road
- The speed limit for the access road will be kept low
- A public safety plan should be developed and displayed
- Community complaint register and other mean should be adopted for the community to complain.

- All entry points into the construction area should be staffed 24 hour a day. People who are not related to the project should not be allowed inside.
- No machinery should be left unattended, particularly in the running condition.
- Nighttime driving of project vehicles should be limited.
- Drivers will be trained to drive slowly following traffic rules.

5.8.3.5 Interaction with Communities

There is expected to be very little interaction between crews and local communities, expect for the local people who are hired for the project.

Mitigation Measures

Proponent will strive to maintain contact with major stakeholders, particularly local communities, through all stages of project implementation. This is necessary to engender sense of community in the project proponents and to ensure that the community's concerns are responded to at every stage. The purpose of such contact is to develop a relationship of trust with the local communities.

5.8.3.6 Archeological or Cultural Resources

No known sites of archeological or cultural value are known to exist near the proposed well site or along the access road. The project is therefore not expected to have any impact on archeological or cultural resources of the area.

5.9 IMPACTS AND MITIGATIONS DURING OPERATIONAL PHASE

The Environmental and Socio-Economic impacts associated with the operation phase of the power plant are following:

- Air Emissions
- Noise
- Wastewater
- Water Resources
- Waste Management
- Occupational Health and Safety

5.9.1 IMPACT ON PHYSICAL ENVIRONMENT

5.9.1.1 Water Consumption

The increased withdrawal of water for the Proposed Project may affect the water availability for the other users of the Project Area. A significant impact will be interpreted if water extracted for the project directly affects the ability of the community and other users to meet their water needs.

Impact Assessment

Water usage will be only domestic in nature.

Mitigation Measures

- Water conservation program will be initiated in plant colony to prevent wastage of water.

5.9.1.2 Water Quality

Potential Impacts

Water pollution is contamination of water by undesirable foreign matter. It impacts surface water and underground water. At the project site, there will be no wastewater generation during operational activity as project does not involve any processing and no water will be consumed during storage except domestic purposes. The discharge of effluent from unit will be only municipal.

Mitigation Measures

- There will be no any industrial activity so no wastewater will be generated, domestic wastewater will be treated by passing through septic tanks to soakage pit.

5.9.1.3 Soil Contamination

Leakage of lubricants oil and petrol or diesel from tankers arriving on site during process of Petroleum products & Lubricant oil manufacturing unit can cause soil contamination.

Mitigation Measures:

Ensure that vehicles are well tuned and have no leakage and implementation of accidental spillage plan.

5.9.1.4 Air Quality

Project only involves Petroleum products & Lubricant Oil storage. The production process will take place in closed tank type machine, so there will be no emissions. Only dust will be generated during floor cleaning and vehicles movement that will be controlled by water sprinkling.

Residual Impacts

Implementation of the mitigation measures proposed above will result in negligible / no residual impact due to noise on surrounding environment.

Monitoring Requirements

During project operation, it should be ensured that the noise level at the project site does not exceed the prescribed limits.

5.9.1.5 Solid Waste Management

Potential Issues

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

Impact Assessment:

Potential source of solid waste from operational activities include:

- Office waste
- Rags
- Paper

No significant impact on the environment is anticipated from solid waste generation at the project site as the generated solid waste comprise of a domestic waste and waste scrap mainly which would be sold to their respective dealers.

Mitigation Measures

Key elements of the Waste Management System will be the following:

- Separate waste bins will be placed for different type of wastes
- Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- Waste will be managed by solid waste management contractor.

Residual Impacts

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

5.9.1.6 Emergency Response

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;

- Fire hazard

FIRE HAZARD

During operational phase of the project, fire hazard poses a serious threat. Fire extinguisher details are mentioned on map.

Mitigation

- Fire extinguishers should be properly maintained and checked periodically.
- Adequate fire hydrant system should be installed.
- Flammable materials should be prohibited in the premises.
- Fire alarm systems should be maintained for detection and warning of fire.
- Pressure gauges should be checked monthly.
- Adequate training of workers on use of firefighting system to deal with the situation.
- Administration of the unit will make a proper evacuation plans for emergency escape from all halls.
- Emergency call service must be made available.

- Firefighting team must remain ready at all times.

5.10 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

5.10.1 Tree Plantation

Tree plantation within and outside the premises is a potential environmental enhancement measure. A large area will be reserved for tree plantation and among plants native flora like Peepal, Kikar, Dherak, Safeeda and Amaltas will be planted in the specified green zone which will have the maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like roses and other ornamental evergreen plants will also be introduced in the lawn which will enhance aesthetic beauty. In addition, trees like Safeeda and Amaltas will be planted as boundary wall inside the lawn which will look like green wall. The proponent will also make arrangements for protection and maintenance of trees.

5.10.2 Facility Design

The introduction of an ecologically effective and efficient design of a facility is the environmental enhancement measures planned by the proponent to be incorporated into the design of the intended project.

5.11 SOCIAL ENHANCEMENT MEASURES

Following measures will be adopted to improve the socio-economic condition of the area:

a. Employment/Poverty Alleviation

The employment opportunities in the project area will be increased due to the establishment of Petroleum products & Lubricant oil manufacturing unit at the aforesaid location. During establishment of the aforesaid facility un-skilled workers will be required as labors, sanitary workers and sweepers as well as for the skilled workers such as; accounts and managers to run the administration office local community will be considered on the priority basis. In totality, the overall economic conditions of the area will be improved due to the establishment of the aforesaid project.

b. Local Economy

The employment opportunities and/or income sources generated by the project construction and operation will be long term in nature. These will be enhanced once the construction phase is completed. The local economy will experience a slight boom during development and operational period.

6. *CHAPTER:* ENVIRONMENTAL MANGEMENT AND MONITORING PLANS

6.1 GENERAL

This EIA provides the Environmental Management Plan (EMP) of the project to keep it environment benign as well as the monitoring plan to ensure the compliance of the established EMP.

Outline and key features of the EMP for construction and operations phase is presented in sub-sections below. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require regular monitoring. This section also underlies the monitoring framework for both construction and operation phases to check compliance of the EMP and to take timely actions for correction in case any accidence of significant criteria, requirements or goals are found.

6.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

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

6.3 MANAGEMENT APPROACH

The organizational roles and responsibilities of the key players are summarized below:

Proponent*:* The project proponent will undertake overall responsibility for

compliance with the EMP. Concerned Departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

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

6.4 COMPONENTS OF THE EMP

The EMP consists of the following:

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

6.5 IMPACTS AND THEIR MITIGATION SUMMARY

Environmental and social impacts have been identified for the process of Petroleum products & Lubricant oil manufacturing unit and their impacts had been mitigation by adopted measures as recommended in EMMP of this EIA Report within the Project Area of Influence. The major impacts on physical, biological and social environment are described as under:

Table 3: Summary of Impacts

Environmental Parameters	Impact Assessment during Different Phases
	Operational
A: Physical	
Land Resources	
Soil Erosion and Contamination	-2p
Storage and Filling	-1p
Land Use	-2p
Air Resources	
Noise Pollution	-1t
Air Emission	-2t

Dust	-1t
Water Resources	
Ground Water	-1t
Surface Water	-3t
B : Ecological	
Flora / vegetation	-1t
Terrestrial Fauna	-1t
C: Socio-Economics	
Health Deterioration	-1t
Aesthetic	1p
Employment Opportunities	+1p
Accessibility	+2p
Local Resources	+1t
Land Value	+2t
Community Development	+1t
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible	

6.6 ENVIRONMENT MANAGEMENT PLAN

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

Table 4: Environmental Management Plan

Objective	Management Action	Responsibility	Time framework	Residual impact
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with recruitment policy by contractors involved. The employment will be based on skills and working attitude that of industrial level.	Proponent /Contractor	On commencement of construction and operational activities	Unemployed people of area will get job opportunities and their standard of living will be improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Proponent /Contractor	On commencement of construction and operational activities	Indirect job opportunities
To contain solid waste	• Proper maintenance of vehicles and	Contractor	Throughout project life	Potential for accidental release of materials during transport

	equipment will be undertaken • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols to be established and monitored for materials transport and handling whilst on the site. • Temporary waste bins will be provided for the solid waste which be managed as			and handling on the site will be minimized.

	per municipality practices of the area.			
Protection of biodiversity				
To avoid unnecessary disturbance of and quick recovery of biodiversity in the site	• Avoid destruction of biodiversity outside and inside the project area • Minimize clearing of vegetation • Prepare and implement an appropriate landscaping program to help in re-vegetation of affected project areas after construction • The flora of the site should be restored at the end of the phase by landscaping and	Contactor/ Proponent	Throughout project life	Vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of planted trees will provide significant compensation The project site does not have any sensitive species.

	planting native vegetation • No hunting, trapping and harassment policy will be adopted in case of fauna seen at the site • Trading of the wild fauna will be strictly banned • Rehabilitation and Re/Afforestation			
Wastewater management				
During the performing activities chances of the groundwater water contamination are quite low	• Land disturbance will be minimized as much as possible • Proper raw material storage techniques will be adopted to avoid leakage and to	Contractor	Throughout project life cycle	None

	prevent the erosion of soils • Drainage ditches will only be constructed where necessary • Existing drainage systems / channels will not be altered. • Regular water sprinkling will be done in order to control fugitive dust emissions, that may become cause the deterioration of the water resource • Earthy materials and runoff should be handled in a manner that prevents adding suspended solids to flowing water			

	which will prevents water pollution			
Air quality and dust management				
The major source of air emissions is from extraction activities, emissions from the transportation, generators.	• Fugitive dust emissions will be reduced significantly by converting the un-metaled road to the stone road by using the aggregate • Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic • Re-vegetation will be done to the disturbed areas as soon as possible after disturbance • Regular water sprinkling will be done to suppress	Contractor	Throughout project life cycle	Localized minor effects on air quality at properties very close to certain roads but increments a very small fraction of air quality criteria.

	the fugitive dust emissions • Training will be given to workers to handle loose materials and debris to reduce fugitive emissions • Employment of water sprinkling will be done on all material as the most effective means of reducing the dust emission is wet suppression. Watering exposed surfaces and soil with adequate frequency to keep soil moist at all times can reduce the total dust emission from the project by as much as 75%			

	• Dust emission from storage stockpiles will be reduced by covering the piles, for example with tarpaulin or thick plastic sheet • Good quality (low-sulfur) fuel will be used for vehicle and machinery • Provision of dust respirators to equipment operators who are exposed to dust while operating their equipment			
Noise & vibration				
To minimize disturbance of communities due to noise	• No residential community is located within safe radius of the project area. So, no mitigation is	Proponent / Contractor	Throughout project life cycle	Noise level will be based on PEQs

	required to reduce the impact on the community • Reducing equipment noise at source by proper design, maintenance and repair of machinery and equipment • Noise from vehicles will be minimized by use of proper silencers and mufflers • Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc. • Personal Protective Equipment (PPEs) should be given to the workers working on-site and wearing of the			

	PPEs should be regulated strictly by the concerned authority • Tree plantation may be done to reduce the impact habitats and fauna significantly			
Land quality				
Accidental release of fuels, oils, materials, etc., to the ground	• Appropriate procedures and protocols to be established and monitored for materials delivery and handling. Proponent will have, at all times, clean up kits available. • All storage areas will have appropriate environmental security measures to prevent	Contractor / Proponent	Throughout project life cycle	Potential for accidental release of materials during use, handling and storage will be minimized/ controlled.

	accidental release to ground. • Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, refueling and maintenance areas will include some form of secondary containment.			
HSE				
To minimize loss work injury/hazards/incidents/accidents	• Health and Safety SOPs will be enforced • Personal Protective Equipment (PPEs) should be given to the workers & wearing of the PPEs should be regulated strictly	Contractor / Proponent	Throughout life cycle of project	Potential of injuries will be minimized

	by the concerned authority • Exist route should be demarcated clearly • First aid kits and facilities to treat minor injuries should be present on-site • Sprinkling of the water will be done due the peak-operational hours to suppress the fugitive dust emissions • Routine free medical check-ups of the workers should be done on the regular basis • Ambulance and related equipment should be made available immediately in the case of emergency			

	and in the case of the disaster • A Barrication/stop sign will be put up on the access road to avoid any unfortunate incident • A low speed limit for the access road will be enforced • Community complaint register, and other mean should be adopted for the community to complain. • All entry points into the area should be staffed 24 hour a day. People who are not related to the project should not be allowed inside. • No machinery should be left unattended,			

	particularly in the running condition			

6.7 ENVIRONMENTAL MONITORING PLAN

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

Table 5: Environmental Monitoring Plan

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility	Environmental Budget
Noise level (dB)	To check whether the existing noise control measures are able to bring the sound level within prescribed limits	Noise level near the receptor	Noise Measurement	Annual	Near the machinery working area & at a distance of 100 m	Environment officer	10,000/-
Emission of Gases and Particulates which may pollute the Environment	To determine the effectiveness of the Air Pollutants' abatement devices	Source Emission parameters	Ambient Air	Quarterly / Monthly (depending on frequency of operation)	Near the machinery working area & at a distance of 100 m	Environment Officer/Manager	30,000
Waste disposal, procedure for waste collection,	To check the availability of waste management system and implementation	Inspection of waste management practices	Visual inspection	Per routine	Project area	Cleaning Department	50,000

storage, and disposal							
Safety	To check and evaluate the effectiveness of the workers' safety plan and availability and access of first aid facilities	Injuries	Injuries are being recorded	Daily	Entire working area	Health & Safety	20,000/-

6.8 SOCIAL MANAGEMENT PLAN

Based on the initial benchmark study, the following preliminary recommendations will be further adjusted according to the results of the Social Impact Assessment process to be conducted at a later stage:

- The management of the Project can capitalize on the positive attitude of the people of area towards proposed Project by offering them maximum employment opportunities based on the available skill and working attitude.
- Insufficient and inadequate socio –economic structure of the community of the area also provides ample opportunities to the Proponent to win sympathies of local people in their favor, by introducing meaningful and manageable plan of the community development.
- Extensive and comprehensive plantation plan can also lessen fear of local people towards environmental issues.
- Sustainable development approach through conservation of natural resources would be the best strategy to improve environment, conserve resources and strengthen ecological resilience.
- Proponent should offer technical training opportunities to the local youth, if possible, to improve technical knowledge at local level, engage young generation in fruitful activities and skill development and adequate time management.
- Social responsible attitude and stewardship of Proponent towards local people and resources can make project more people friendly.
- To avoid any political, ethnic and value conflict, Proponent may win the confidence of local powerful elites, authorities, leaders and interest groups by adopting informal confidence building measures.

6.9 INSTITUTIONAL CAPACITY OF THE UNIT

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

6.9.1 Primary Responsibilities

The primary responsibility for implementing different aspects of the EMP within the company lies with the Proponent / Contractor.

6.9.2 Operation Management & Control

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

6.9.3 Supervision & Monitoring

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

6.9.4 Communications & Documentation

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

6.9.4.1 Meetings

As environment is multidisciplinary subject with environmentalist having a dynamic role therefore Environment Officer would be considered as integral part in both constructional and operational team. Participation of Environment Officer in daily morning meeting and any other special meeting is mandatory. Besides internal meeting HSE Engineer/Environment Officer is also responsible to conduct meeting with local in keeping administration in liaison.

6.9.4.2 Changes-Record Register

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

6.10 ENVIRONMENTAL TRAINING

Proponent aims to conduct Training& Development that impart knowledge to young generation meeting the basic principle of sustainable development. The training covers all aspects of environment, Health & safety beside technical knowledge regarding Petroleum products & Lubricant oil manufacturing unit. Training and capacity building trainings will be conducted on the regular

basis to enhance the capacity of the workers hired for proposed project. Following is the detailed plan along with the schedules of the training:

Table 6: Training and Capacity Building

<table>
<tr><th colspan="4">Training and Capacity Building Plan</th></tr>
<tr><td rowspan="2">Potential Impacts</td><td colspan="3">Operation Phase</td></tr>
<tr><td colspan="3">During operational phase, nearby society and workers will face problems like:
Air Pollution
Noise Pollution
HSE
First Aid Training</td></tr>
<tr><td>Mitigation</td><td colspan="3">Training and Capacity Building Plan</td></tr>
<tr><td>Management Plan</td><td colspan="3">Training and Capacity Building Plan
Project will ensure training for the project staff, labour and the supervisory staff of the Proponent through the provision of one day basic training on recruitment and then on all needed skills, covering environmental and social aspects of the projects in general, and implementation requirements will emphasis on the development projects in general, and implementation requirements with emphasis on the roles and responsibilities of the staff and the labour while executing the environmental monitoring plan in particular. The training protocols will include the following aspects:
Procedures for monitoring the air quality parameters and measures to be adopted for avoiding or minimizing air pollution
Safe waste disposal practices
Safety measures against hazards for workforce and the local communities arising from the construction activities
Use of safety gadgets by the workforce</td></tr>
<tr><td rowspan="2">Monitoring</td><td>Responsibility</td><td>Responsible</td><td>Monitoring Duration</td></tr>
</table>

Training of staff, vehicle operators and labour	Project Manager / Operations Manager	Once on recruitment then on required skill.

6.11 EQUIPMENT MAINTENANCE DETAILS

The Client and Contractor will be responsible to maintain equipment with higher efficiency and in good working conditions. The equipment will be maintained twice a year as well as monthly inspection will be done on the regular basis to keep the process going without any interruption.

6.12 ENVIRONMENTAL BUDGET

Approximately 1 lac PKR per year budget will be reserved for the Environmental Monitoring and measures. It will also include cost for plantation, providing PPEs and HSE trainings.

7. Chapter PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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

7.1 Proponent's Environment Management Team

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

Roles and Responsibilities		
Sr#	**Concerned Persons**	**Duties**
1	The Project Manager	Following will be the responsibilities of the Project Manager • Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment. • Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s) • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents • Ensuring project execution within defined budget and timelines

		• Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed • Project Manager is expected to continually monitor and improve the overall performance of their operation
4	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised • Identifying, assessing and managing health and safety risks • Consulting with workers (including staff, affiliates and contractors): i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk

		• Assisting with the development, implementation and maintenance of a return to work program for injured staff. • Be fully conversant with the EIA and conditions of its approval • Be fully conversant with the EMMP • Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance • Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP • Take appropriate action if the specifications contained in the EMMP are not followed • Monitor and verify that environmental impacts are kept to a minimum, as far as possible • Review and approve construction methods, with input from the Site Manager, where necessary • Ensure that activities on site comply with all relevant environmental legislation • Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit • Liaise with the Site Manager regarding the monitoring of the site • Report any non-compliance or remedial measures that need to be applied • All environmental problems arising on the construction area will be reported to the Site

		Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager

7.2 The Responsible Authority

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

- **Share information with stakeholders on proposed project installation and operation**
- **Access the impacts on the physical, biological, and socioeconomic environment**
- **Understand stakeholder concerns regarding various aspects of the project commencement**
- **Find out valuable suggestions by the stakeholders to improve the proposed project design**
- **Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area**
- **Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project**
- **Invite people to express their views about the positive/negative impacts on their lifestyles and environment**
- **Disclose information about contact offices/officers for any complaints/queries**

It is envisaged, there will be no social impact being foreseen due to the construction and operation of M/S Muhammad Saeed Tanoli & Sons ZHA at the proposed location. 400m is the nearest community from the project area. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of Petroleum products & Lubricant Oil manufacturing plant.

7.3 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the

project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-development phase, goes a long way in updating the knowledge and understanding.

7.4 Identification of Stakeholders

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

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

7.4.1 Direct Stakeholders

As, no disturbance in the local community is being foreseen due to the installation of the Petroleum products & Lubricant oil manufacturing plant as the minimum distance between the community and the project area is1.66 km (Chak no 47/2L). No property loss is being envisaged due to the construction of M/S Muhammad Saeed Tanoli & Sons ZHA

7.4.2 Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the installation of M/S Muhammad Saeed Tanoli & Sons ZHA

7.4.3 Other Departments and Agencies

Following departments are related to the project in public consultation:

- **Government agencies responsible to deal with the project related activities**
- **Government Agencies directly, indirectly or widely involved in the execution and monitoring of the proposed project**
- **Government departments such as TMA and Planning & Development Department, Forest Department, Agricultural Department Industrialist around the estate, Civil Defense, Ogra and working on the other development activities are considered as indirect stakeholders**
- **Workers of political, cultural, religious or social scientific bodies, directly or indirectly related to the project**

7.5 Public Disclosure

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

7.6 Consultation Process

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

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

Various meetings with the stakeholders were held the following objectives:

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

7.7 Environmental Practitioners and Experts

Officers of government departments and Educational Institutes were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance. List is attached as an annexure.

7.8 Affected and Wider Community

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to creation of possible impacts,

adverse impacts and beneficial impacts, including; employment opportunities, income generation activities, change in living standards and provision of the amenity.

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

7.8.1 Views, Concerns and Suggestions of Various Stakeholders

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

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

Concerns

- ☑ **Workers should be hired from local community**
- ☑ **Proper disposal of solid waste should be practiced**

- ☑ **The provision ofPetroleum productsshould be at economical rates.**
- ☑ **Indigenous tress around the facility should be planted to control air pollution**
- ☑ **Removal of shrubs and bushes should be avoided to the extent possible**

7.8.2 Addressing Public Concerns

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

a. Grievances Redressed Committee

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

7.9 Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (88%) were in favor of the proposed project. They expect that installation of the Petroleum products & Lubricant oil manufacturing unit will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities.

8. *CHAPTER:* CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the proposed M/S Muhammad Saeed Tanoli & Sons ZHA.

EIA of Proposed Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study.

The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study will strengthened the environment and promote sustainable development.

Based on overall assessment of the environmental impact of the project, it is concluded that the economic benefit from the project is not at the cost of environment. Further the project is not likely to cause any significant adverse impact on the physical and biological environment but positive impact on social development and economic prosperity of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

8.2 RECOMMENDATIONS

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

- Implementation of EMP must be given top priority.
- Proper PPEs including ear plugs, ear muffs, mufflers, goggles, gloves and shoes etc. should be provided to workers
- Train workers to use PPEs
- Advise workers to follow SOPs.
- Equipment maintenance and efficiency must be checked.

- No compromise on public health and environment should be allowed.
- Waste minimization practices should be employed, and workers should be encouraged to adopt such methods.
- Wages should be distributed on time.
- Proper tree plantation plan should also be developed in order to make the unit environment friendly.
- Small waste storage bins should be installed at different corner for proper waste collection and discharge.
- Proper dispensary and first aid box should be provided for workers
- Smoking should be avoided within premises of project site and near fuel storage areas.
- The Security Guards shall also be trained to act in case of all possible emergency situations. The fire alarms can be activated to signal evacuation. At the same time, communication shall be made with hospitals, emergency services and police for urgent support.
- The proposed Environmental Management & Monitoring Plan should be implemented.

Glossary

Environmental Management System (EMS):

A set of management process and procedure that allows an organization to analyses and reduce the environmental impacts of its activities. Environmental Monitoring Systematic, geo-referenced observations of the environment essential to detecting changes in ecosystems over time. Environmental Protection Plan (EPP) a practical tool that describes the actions required to minimize environmental effects before, during and after project implementation. The plan may include details about the implementation of the mitigation measures identified in the environmental assessment, such as who is responsible for implementation, where the measures are intended to be implemented, and within what timeframe.

Extension:

A part that is added to something to enlarge or prolong it.

Habitat:

Land and water used by wildlife. This may include biotic and Abiotic aspects such as vegetation, exposed bedrock, water, and topography.

Impact:

Any aspect of a project that may cause an effect; for example, land clearing during construction is an impact, while a possible effect is loss and fragmentation of wildlife habitat. **Indirect Effect:**

An effect in which the cause-effect relationship (e.g., between the project's impacts and the ultimate effect on a Valued Ecosystem Component) has intermediary effects. As an interaction with another effect is required to have a cumulative effect (hence, creating intermediary effects), cumulative effects may be considered as indirect. Industry Relations Corporation (IRC) The Corporation or organization that a First Nation has created to manage the First Nation's relations, including Consultation with Alberta, Canada and Industry.

Lubricant:

A substance used for lubricating an engine or component, such as oil or grease

Mitigation:

The elimination, reduction or control of the adverse environmental effects of the project. Mitigation includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Non-Renewable Resource:

Natural resources that are in fixed supply such as coal, oil and minerals.

Project:

The activity or group of activities proposed by the Proponent. The types of activities that could be subject to Alberta's environmental assessment process are listed in the Schedule of Activities in the Environmental Protection and Enhancement Act and in the Water Act. The Project includes all associated construction, operation, decommissioning and reclamation activities and all phases of development described by the Proponent. Project Area Project Footprint/Study Area The area includes all lands subject to direct disturbance from the project and associated infrastructure.

Residual Effect:

An effect that remains after mitigation has been applied

Scoping:

An activity that focuses the assessment on relevant issues and concerns and establishes the boundaries of the environmental assessment. A consultative process for identifying and possibly reducing the number of items (e.g., issues, VECs) to be examined until only the most important items remain for detailed assessment. Scoping ensures that assessment effort will not be expended in the examination of trivial effects.

Significance:

A measure of the magnitude, duration, frequency, timing, probability of occurrence, ecological and social context, geographic extent, and degree of reversibility of an effect on a Valued Ecosystem Component

Emission:

One or more substances released to the water, air or soil in the natural environment.

LIST OF ABBREVIATIONS

AOI	Area of Influence
CO_2	Carbon dioxide
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
GM	General manager
IEE	Initial Environmental Examination
Ltd.	Limited
m^3	Cubic meter
m^3/h	Cubic meter per hour

MW	Megawatt
M/S	Messrs.
MT	Million tons
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPC	Pakistan Environmental Protection Council
PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SMART	Self-Monitoring and Reporting
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
TPD	Tons per day
WAPDA	Water and Power Development Authority

LIST OF PEOPLE CONSULTED

Sr. #	Date	Name	CNIC	Location	Occupation of participant	Concerns /feedback
1.	10-07-2021	Junaid Sardar	36303-7986031-5	Shershah	Farmer	It is a good project because it will help to improve employment status of the area.
2.	10-07-2021	Saad Salim	34101-4631565-9	Shershah	Businessman	Positive, He added that project will create job opportunities.
3.	10-07-2021	Jawad Shafeeq	36303-8796299-3	Shujaabad	Shopkeeper	He welcomed the project perceiving the development of the project area.
4.	10-07-2021	Zunaid Ali	36302-5175965-3	Shujaabad	None	It will provide Petroleum products & Lubricant oil to local Market.
5.	10-07-202	Bilal Noor	36303-7029041-1	Shershah	Petrol Pump Owner	It will create job and business opportunities.
6.	10-07-2021	Shafiq Ahmad	36303-2191842-3	Shujaabad	Worker at a filling station	Alternate oil lubricant option.
7.	10-07-2021	Saeed Ahmed	36302-8047404-7	Shershah	Farmer	He perceived the project as good for local area
8.	10-07-2021	Usman Jaleed	36302-3275124-9	Shershah	Labour	Positive
9.	10-07-2021	Shahid Nadeem	36302-0474840-7	Shujaabad	Farmer	It improves basic infrastructure of area.
10	10-07-2021	Nahid Akhtar	36302-7241090-1	Nearby Fish Farm	C.E. O	Community Development
11	10-07-2021	Naeem Shah	36303-0873682-9	Shujaabad	Shopkeeper	Will be better for economic viability of area
12	10-07-2021	Kabir Ali	36303-8236708-5	Shershah	Student	He demanded from the project proponents to conduct their project activities in environment friendly manners.
13	10-07-2021	Shafiq Muawar	36303-9299987-9	Multan	Managing director at a private firm	It provides jobs to nearby areas.
14	10-07-2021	Kaleem	------	Multan	Inspector Patrolling Police	Better job and business opportunities for locals.

Sources of Data

- **https://www.pmd.gov.pk/en/**
- **http://www.agripunjab.gov.pk/**
- **https://www.pbs.gov.pk/**
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- **Naveed, T., Ahmed, N., Bhutto, S., Tunyo, N., & Hashmi, D. R. (2021). A sustainable solution to treat textile effluent by employing combined coagulation, oxidation and ultrafiltration techniques. Journal of Applied Research in Water and Wastewater, 8(1), 66-70.**
- **Field Surveys**
- **Public Consultations**

TERMS OF REFERENCE (TORS)

ENVIRONMENTAL IMPACT ASSESSMENT OF M/S Muhammad Saeed Tanoli & Sons ZHA

1.1 PROJECT PROPONENT:

Muhammad Saeed

1.2 SCOPE OF WORK: CONSULTANT

Mr. Muhammad Saeed intends to establish a waste and used Petroleum products and Lubricant oil storage Unit

1.3 SPECIFIC OBJECTIVES:

The EIA shall be carried out with an objective of identifying environmental impacts during change in Land use of the Master Plan. The specific objectives will be as follows:

- Identification of impacts on physical environment including land, water, and air and suggesting mitigation measures.
- Identification of impacts on biological environment including flora, fauna and natural habitat and suggesting mitigation measures.
- Identification of impacts on socio-economic environment in the vicinity of the proposed landfill site and suggesting mitigation measure.
- Mitigation measures for potential impacts (Physical, Biological and Socio-environmental)
- Environmental Management and Monitoring Plan/ Contingency Measures

1.4 THE IEE SHALL COVER FOLLOWING MAIN AREAS:

- Background of the project – Justification
- Objectives
- Site locations and mappings
- Complete description of the proposed sites
- Collection, analysis and presentation of baseline data
- Identification of significant environmental issues
- Assessment of direct, indirect and cumulative impacts on environment

- Mitigation measures to minimize predicted adverse impacts
- Assessment of public perception about proposed project
- Meeting with the stakeholders and their perception
- Review of the relevant Policies, Legislation and Regulations
- Monitoring plan
- Conclusions

1.5 MAJOR TASKS:

The consultant shall be responsible for undertaking the following tasks in EIA study.

1.5.1 Collection and collation of Secondary Information:

Prior to the start of field activities, available secondary data and reports will be reviewed in detail.

1.5.2 Analysis of Alternative:

Suitable site alternative will be suggested, if required, by the review of relevant maps, available secondary data and legal review.

1.5.3 Location Alternative:

Alternative site will be suggested, if required, by using relevant maps and GPS during area visits.

1.5.4 Management and Operational Alternatives:

Management and operational alternatives will be suggested, if required, by the review of institutional set-ups of departments relevant to the project.

1.5.5 Design Alternatives:

Design alternatives will be suggested, if required, by the review of current design layout.

1.5.6 Review of Relevant Environmental Laws:

The Consultants will carefully review the national/local authority laws, Pakistan Environmental Protection Act 1997, Forest Act 1930, Land Acquisition Act 1874 etc. and international regulations like World

Bank Operational Policy, Cites Act etc. for conducting IEE study. This approach will eliminate any chances of the rejection of the project by the concerned EPA due to the consideration of all the concerned laws during the preparation of the IEE report.

1.5.7 Collection of existing Environmental setting/baseline Data:

Based on the desk study and reconnaissance survey, checklist and questionnaires / Performa's will be prepared for the baseline surveys. Consultants will proceed to the site and the collection of primary data /database on the environmental aspects will be done, which includes the following:

1.5.8 Physical resources:

Physiographic, topography and soils, atmosphere, climate, hydrology, surface water, ground water, geology, seismology etc including environmental monitoring and testing.

1.5.9 Environmental Monitoring:

In case of the absence of updated data, one-time limited environmental monitoring will be conducted in order to assess and analyze the existing level of particulate and gaseous emissions, potable water and liquid from any existing sources lying within the Study Area.

The environmental monitoring and testing will be carried out through EPA approved Environmental Laboratory.

1.5.10 Ecological resources:

Identification of the number of tree species present in the project area, as well as, determination of tree density and area covered by them. Tree counting and their identification along with other vegetation and crops, if any, will be done by making field visits, and by the review of the available literature relevant to the study. Information about the flora and fauna of the area will be collected. Information of the type of the livestock in the area will be noted along with their density.

1.5.11 Socio-economic survey:

Data on social and cultural conditions of the study area will be collected. Determination of the population density in the study area will be done by the review of district census report. The social survey also includes Land acquisition survey (if required) and Identification of vulnerable people/groups i.e. Project Affected People, if any. Data about population density, Infrastructure (electricity, sanitation/ drainage facilities, mode of transportation), health and education status will be collected. Data collection about number of schools and hospitals in the area, if any; no. of graveyards in the area, if any; no. of recreational and commercial areas, if any; availability of utilities; and strata of socio-economic group of people dominant in the area will be kept in focus during baseline study..

1.5.12 Evaluation / Identification of Potential Impacts:

Prediction and assessment of the proposed Project's likely negative impacts during the construction and operational stages will be carried out by conducting the field visits of project and study area. The impacts will be discussed in three sectors with reference to the following parameters:

1.5.13 Physical environment:

Under physical environment, impacts on following areas will be measured.

- **Land resources:** Evaluation of the environmental effects of the project on land use in the immediate vicinity of the project (i.e. within the identified boundaries of the project) will be done, e.g. Agriculture, Archaeological, Historical and Cultural monuments
- **Water resources:** Precipitation, surface water resources, ground water resources.
- **Air quality:** levels of air pollutants like particulate matter, CO and other parameters and their adverse impacts, if any, on the surrounding environment will be determined to evaluate its effects.

- **Noise levels** will be evaluated for the construction and operational phase of the project

1.5.14 Ecological environment:

Impacts on ecological environment may include

- Impacts on fauna of area, livestock and migratory birds (if any)
- Reserved forests, if any.
- Relocation/resettlement issues etc.
- Impacts on flora

1.5.15 Socio-economic Impacts:

- Impacts on livelihood of Project Affected Persons (PAPs) (if any): Questionnaires will be developed and prepared and filled during the field visits to know about the public perception of the study area.
- Impacts on social settings of the project area.
- Relocation/ resettlement issues
- Impacts of the project on local property values and insurance rates will be taken in to consideration.
- Disruption archaeological, historic, religious, and unique natural values in the project area if any

1.5.16 Suggested Mitigation/contingency Measures:

After the identification of the adverse environmental impacts, necessary mitigation measures would be proposed. Mitigation plans will be proposed based on the intensity of each impact. For instance, if the impact is low enough, it may be ignored; if the impact is high, specific mitigation measures will be recommended/suggested and if the impact is medium, it may need some mitigation measures or simply be monitored/managed properly in order to ensure that it remains within the acceptable limits.

1.5.17 Environmental Management Plan (EMP):

An Environmental Management Plan (EMP) will be developed. EMP will propose a plan of action that will indicate the responsibilities and required measures to minimize the negative environmental effects of the project at different stages.

Under the EMP, institutional set up will be studied and the required enhancement, which is deemed necessary for effective management and monitoring of the environmental activities, will be proposed. The EMP will address the following aspects:

- Organizational structure and responsibilities;
- Mitigation Plan;
- Environmental Monitoring Plan;
- Communication and documentation;
- Training of Staff;
- Environmental Cost;

1.5.18 Stakeholder participation and consultation:

Consultation is required at least during two stages of the IEE process as follows:

- During the process of the IEE Study and report preparation, the public is consulted through meetings, seminars, or workshops. Proponents will hold public meetings and/or open houses in local communities to describe the details of the project and to receive feedback on potential issues, interests or concerns related to the project. Engagement may also include informal discussions with landowners and nearby residents and meetings with community associations, businesses, municipal councils, regional planning agencies, public interest group's communities.
- Once the draft IEE report has been prepared & submitted then public hearing is required. The consultants shall fully assist the Client in the public hearing, including furnishing the replies/information to the questions/issues raised during the hearing.

1.5.19 Deliverables Consultant:

1. Complete Draft IEE report featuring all the development sites. The IEE report shall be completed in respect of baseline data, detail socio and environmental impact assessment, Environmental Management Plan and Alternatives considered.
2. Final EIA Report to be submitted after receiving comments from Clients.

1.6 Time Duration:

The time duration for completion of whole study is 2 months.

1.7 SCOPE OF WORK; Client:

The client has following scope of Work

1. Give all data related to the current and proposed Land use of the sites.
2. Give all the detail maps of the sites.
3. Give coordinates of all the sites
4. Give detail description of the area.
5. Land use Study for the sites.
6. Arrange Stakeholders consultation along with Consultants
7. Submission of EIA report in EPA and its follow-up until award of NOC.