ENVIRONMENTAL IMPACT ASSESSMENT REPORT

(EIA)

CONSTRUCTION OF RYK LUBRICANTS AT CHAK NO.06/NP, KLP ROAD, TEHSIL SADIQABAD, DISTRICT RAHIM YAR KHAN.



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EXECUTIVE SUMMARY

INTRODUCTION

This executive summary presents an overview of the main findings of the Initial Environmental Examination Report for **Construction of "Lubricant Blending / Reclamation Plant by M/s RYK Lubricants (Lubricant Plant)" located at Chak No.06 NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan**. The main goal of the Proposed Project is to provide a safe, economic and environment friendly Plant of Lubricant suppliers and direct consumers.

BRIEF OUTLINE OF PROJECT

Project	**Construction of Lubricant Plant by M/s RYK Lubricants.**
Location of the project	Chak No.06 NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan.
Proponent Name	Muhammad Zulfiqar s/o Abdul Khaliq
Consultant Name	MHR Environmental Consultants
Storage Capacity	(10000-L)
Total area of plot	8-Kanal
Cost of the project	25-Million

PROJECT OBJECTIVES:

The overall aim of the Proposed Project is to provide a safe, economic and environment friendly Plant of Lube Oil in the area. Further objectives of the project are:

1. Maintain continuity in supply of Lube Oil to the country through distributors and quality of services to the consumers.
2. Ease in availability of grease / oil.
3. Help to overcome the scarcity of bulk Lube Oil due to huge gap between demand and supply.
4. Discourage deforestation with reduction in use of fire wood and fossil fuels.

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Raw Material

Fired bricks and clay blocks
Cement composites, Steel
Concrete, Fabric, Glass, Metal } Varies

MAJOR IMPACT AND RECOMMENDED MITIGATION MEASURES:

Key impacts related to the construction phase include:

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

Mitigation Measure Recommended to be incorporated into the project include running the machines and vehicles on good quality (low-sulfur fuels) in good working order ensuring regular maintenance, tuning and servicing, and providing them with emission control devices, such as mufflers and silencers, etc. water suppression and covered transportation and storage of the construction materials and slow driving on unpaved roads will control dust emission. Regular testing for leakage detection will also be ensured. Solid waste of construction activities will be used for flooring, while the remaining solid waste will be managed as per practices in the area. For community safety, irrelevant persons will not be allowed inside. Safety of the workers will be ensured by encouraging workers to use PPEs. Detailed analysis is giving in chapter 5.

Key impacts reacted to the operation phase include:

- Noise
- Wastewater
- Solid Waste
- Gas Leakage
- Safety, Public Health & Nuisances

Wastewater will be municipal in nature. Solid waste will also be municipal in nature. Safety of the workers is an issue of prime concern in any occupational activity. Municipal wastewater will be handled via Septic Tank. Municipal solid waste will entirely be managed in accordance with the practices in the area. Wet suppression during floor

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cleaning will suppress dust emission. Noise from the vehicles will be mitigated by regular servicing and tuning. Safety issue will be managed by providing the workers with necessary PPEs (safety helmets, masks, safety shoes, ear plugs, special suiting for various jobs and areas, etc) and encouraging the workers to use them. Gas detection system will be installed to detect any leakage. An Emergency Response Plan and a firefighting plan will also be in place to deal with all sorts of emergencies. Proper First Aid Box and all safety measures will be provided to cater any emergency situation (complete gas leakage control plan is given in chapter 3).

PROPOSED ENVIRONMENTAL MONITORING PLANS:

During construction, ambient air quality for CO, NOX, SO2, PM2.5, PM 10 & SPM, noise level (tests), and Ground Water Quality will be tested using EPA Certified Labs and test report will be submitted to EPA Punjab as per NOC Conditions as well as community and workers' safety (visual) need to be monitored. During Operational Phase Ambient air quality for CO, NOX, SO2, PM2.5, PM 10 & SPM, noise level (tests), and Ground Water Quality will be tested using EPA Certified Labs and test report will be submitted to EPA Punjab as NOC Conditions. Plan has been included in Chapter 6.

Sr#	Monitoring Points	Parameters	Frequency
1.	Emissions	CO, SO2, NOx, PM and Ringelmann	Monthly
2.	Ambient Air Analysis	CO, SO2, NOx, PM, O3, VOCs	Quarterly

Conclusion

The project is recommended for the issuance of Environmental Approval because the project proponent is willing to run the project in environment friendly way and to adopt the Environmental Enhancement Measures.

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(1)
INTRODUCTION

.1 GENERAL

The Project is for construction of **M/s RYK LUBRICANTS, Chak No.06/NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan.** A lubricant is a substance, usually organic, introduced to reduce friction between surfaces in mutual contact, which ultimately reduces the heat generated when the surfaces move. The property of reducing friction is known as lubricity. In addition to industrial applications, lubricants are used for many other purposes. It may also have the function of transmitting forces, transporting foreign particles, or heating or cooling the surfaces. Other uses include cooking (oils and fats in use in frying pans, in baking to prevent food sticking), bio applications on humans (e.g. lubricants for artificial joints), ultrasound examination, medical examination. It is mainly used to reduce friction and to contribute to a better and efficient functioning of a mechanism.

Lubricants have been in some use for thousands of years. Calcium soaps have been identified on the axles of chariots dated to 1400 BC. Building stones were slid on oil-impregrated lumber in the time of the pyramids. In the Roman era, lubricants were based on olive oil and rapeseed oil, as well as animal fats. The growth of lubrication accelerated in the Industrial Revolution with the accompanying use of metal-based machinery. Relying initially on natural oils, needs for such machinery shifted toward petroleum-based materials early in the 1900s. A breakthrough came with the development of vacuum distillation of petroleum, as described by the Vacuum Oil Company. This technology allowed the purification of very nonvolatile substances, which are common in many lubricants.

Although demand of Lube Oil / Grease is persistent throughout the year, supply of Lubricants from producers (or extractors) to distributors and marketing companies has been limited due to maintenance and overhauling shutdowns, which often creates shortages. Besides that, Lubricant producers are also limited in numbers and Lubricant marketing companies need to have a quota to be allocated by the producer. This factor makes Lubricant business vulnerable in the hands of Lubricant producers.

Additives *(Main article: Oil additive)*

A large number of additives are used to impart performance characteristics to the lubricants. Modern automotive lubricants contain as many as ten additives, comprising up to 20% of the lubricant, the main families of additives are:

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- Pour point depressants are compounds that prevent crystallization of waxes. Long chain alkylbenzenes adhere to small crystallites of wax, preventing crystal growth.
- Anti-foaming agents are typically silicone compounds which increase surface tension in order to discourage foam formation.
- Viscosity index improvers (VIIs) are compounds that allow lubricants to remain viscous at higher temperatures. Typical VIIs are polyacrylates and butadiene.
- Antioxidants suppress the rate of oxidative degradation of the hydrocarbon molecules within the lubricant. At low temperatures, free radical inhibitors such as hindered phenols are used, e.g. butylated hydroxytoluene. At temperatures >90 °C, where the metals catalyze the oxidation process, dithiophosphates are more useful. In the latter application the additives are called metal deactivators.
- Detergents ensure the cleanliness of engine components by preventing the formation of deposits on contact surfaces at high temperatures.
- Corrosion inhibitors (rust inhibitors) are usually alkaline materials, such as alkylsulfonate salts, that absorb acids that would corrode metal parts.
- Anti-wear additives form protective 'tribofilms' on metal parts, suppressing wear. They come in two classes depending on the strength with which they bind to the surface. Popular examples include phosphate esters and zinc dithiophosphates.
- Extreme pressure (anti-scuffing) additives form protective films on sliding metal parts. These agents are often sulfur compounds, such as dithiophosphates.
- Friction modifiers reduce friction and wear, particularly in the boundary lubrication regime where surfaces come into direct contact.[3]

Mineral oil

The term "mineral oil" is used to refer to lubricating base oils derived from crude oil. The American Petroleum Institute (API) designates several types of lubricant base oil:

- Group I – Saturates < 90% and/or sulfur > 0.03%, and Society of Automotive Engineers (SAE) viscosity index (VI) of 80 to 120
  Manufactured by solvent extraction, solvent or catalytic dewaxing, and hydro-finishing processes. Common Group I base oil are 150SN (solvent neutral), 500SN, and 150BS (brightstock)

- Group II – Saturates > 90% and sulfur < 0.03%, and SAE viscosity index of 80 to 120

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Manufactured by hydrocracking and solvent or catalytic dewaxing processes. Group II base oil has superior anti-oxidation properties since virtually all hydrocarbon molecules are saturated. It has water-white color.

- Group III – Saturates > 90%, sulfur < 0.03%, and SAE viscosity index over 120

Manufactured by special processes such as isohydromerization. Can be manufactured from base oil or slax wax from dewaxing process.

- Group IV – Polyalphaolefins (PAO)
- Group V – All others not included above, such as naphthenics, polyalkylene glycols (PAG), and polyesters.

The lubricant industry commonly extends this group terminology to include:

- Group I+ with a viscosity index of 103–108
- Group II+ with a viscosity index of 113–119
- Group III+ with a viscosity index of at least 140

Can also be classified into three categories depending on the prevailing compositions:

- Paraffinic
- Naphthenic
- Aromatic

Synthetic oils[edit]

Petroleum-derived lubricant can also be produced using synthetic hydrocarbons (derived ultimately from petroleum), "synthetic oils".

These include:

- Polyalpha-olefin (PAO)
- Synthetic esters
- Polyalkylene glycols (PAG)
- Phosphate esters
- Alkylated naphthalenes (AN)
- Silicate esters
- Ionic fluids
- Multiply alkylated cyclopentanes (MAC)

Solid lubricants *(Main article: Dry lubricant)*

PTFE: polytetrafluoroethylene (PTFE) is typically used as a coating layer on, for example, cooking utensils to provide a non-stick surface. Its usable temperature range up to 350 °C and chemical inertness make it a useful additive in

special greases. Under extreme pressures, PTFE powder or solids is of little value as it is soft and flows away from the area of contact. Ceramic or metal or alloy lubricants must be used then.

Inorganic solids: Graphite, hexagonal boron nitride, molybdenum disulfide and tungsten disulfide are examples of solid lubricants. Some retain their lubricity to very high temperatures. The use of some such materials is sometimes restricted by their poor resistance to oxidation (e.g., molybdenum disulfide degrades above 350 °C in air, but 1100 °C in reducing environments.

Metal/alloy: Metal alloys, composites and pure metals can be used as grease additives or the sole constituents of sliding surfaces and bearings. Cadmium and gold are used for plating surfaces which gives them good corrosion resistance and sliding properties, Lead, tin, zinc alloys and various bronze alloys are used as sliding bearings, or their powder can be used to lubricate sliding surfaces alone.

Aqueous lubrication

Aqueous lubrication is of interest in a number of technological applications. Strongly hydrated brush polymers such as PEG can serve as lubricants at liquid solid interfaces.[8] By continuous rapid exchange of bound water with other free water molecules, these polymer films keep the surfaces separated while maintaining a high fluidity at the brush–brush interface at high compressions, thus leading to a very low coefficient of friction.

Biolubricant

Biolubricants are derived from vegetable oils and other renewable sources. They usually are triglyceride esters (fats obtained from plants and animals). For lubricant base oil use, the vegetable derived materials are preferred. Common ones include high oleic canola oil, castor oil, palm oil, sunflower seed oil and rapeseed oil from vegetable, and tall oil from tree sources. Many vegetable oils are often hydrolyzed to yield the acids which are subsequently combined selectively to form specialist synthetic esters. Other naturally derived lubricants include lanolin (wool grease, a natural water repellent).

Whale oil was a historically important lubricant, with some uses up to the latter part of the 20th century as a friction modifier additive for automatic transmission fluid.

In 2008, the biolubricant market was around 1% of UK lubricant sales in a total lubricant market of 840,000 tonnes/year.

As of 2020, researchers at Australia]s CSIRO have been studying safflower oil as an engine lubricant, finding superior performance and lower emissions than petroleum-based lubricants in applications such as engine-driven lawn mowers, chainsaws and other agricultural equipment. Grain-growers trialling the product have welcomed the innovation, with one describing it as needing very little refining, biodegradable, a bioenergy and biofuel. The scientists have

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reengineered the plant using gene silencing, creating a variety that produces up to 93% of oil, the highest currently available from any plant. Researchers at Montana State University's Advanced Fuel Centre in the US studying the oil's performance in a large diesel engine, comparing it with conventional oil, have described the results as a "game-changer".

IDENTIFICATION OF THE PROJECT:

This document presents the Environmental Impact Assessment (EIA) report for **Construction of "Lube Oil Reclamation Plant by M/s RYK LUBRICANTS"** located at Chak No.06/NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan. 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 operation phase of the project along with proposing suitable mitigation measures and formulation of 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 before issuing the Environmental Approval.

1.2 IDENTIFICATION OF PROJECT PROPONENTS

Proponent Name	**Muhammad Zulfiqar**
Address	Post Office Same, Chak No.001/P, Tehsil Khanpur, District Rahim Yar Khan.
CNIC Number	31301-8449765-9

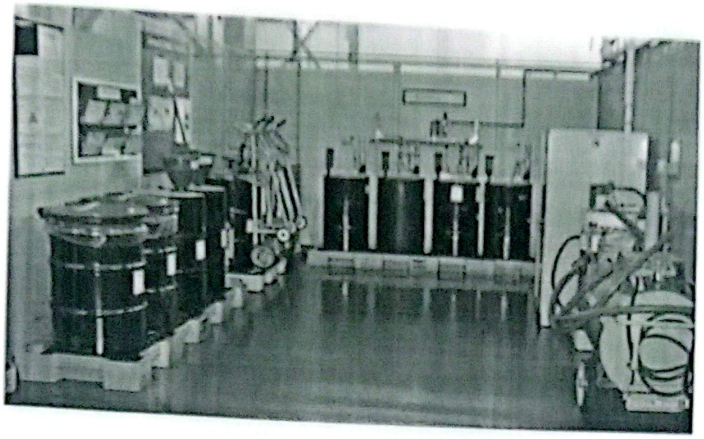
1.3 NATURE OF PROJECT

This project is the Construction of Lube Oil Reclamation Plant.

1.3.1 SIZE OF PROJECT

Proposed Project will have a production capacity of 7500+MT/Annum with storage capacity of 10000-L.

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1.3.2 LOCATION OF PROJECT

This project is to be located at Chak No.06/NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan.

1.3.3 AREA OF PROJECT

Total Area of the Project is 8-Kanal. Schedule of area is given in Map.

1.3.4 COST OF THE PROJECT

Cost of project has been estimated PKR.25-Million.

1.4 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of the proposed project, the proponent has hired the services of the environmental consultants; M/S MHR Environmental Consultants, 9-Umer Centre, Mozang, Lahore. Team comprising of Environmental Engineers, Chemical Engineers, environmental experts and environmentalists has worked on this report. (MHR) is one of the accredited Environmental Consultancy Company in Pakistan with an unrivalled reputation for providing expert, tailored services and solutions. The firm provides the environmental services, litigation and consultancy to clients both industry and government. Also is providing quality services in various environmental sectors i.e.

- Environmental Assessment Reports i.e. IEE/EIA
- Baseline Studies
- Environment Management Plan (EMP)
- Designing of Emission Control Equipment
- Waste Water Treatment Plant (WWTP) Designing
- WWTP Construction Supervision, Commissioning and Operations

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- Establishing Bottled Water Plant based on RO or UF
- Monitoring and inspection
- Environmental modelling

Study team:
The following lists the names of experts involved in the making of EIA report:

- *Mr.Nadeem Shahzad,(Engineer)*
- *Mr. Shafqat Ali (Environmental Management / Coordinator)*
- *Miss Sonia Taimoor (Environmental Sociologist)*
- *Kiwan Hassan Khatana (Environmental Lawyer)*
- *Ms Fouqia Khalida (MSc Environment)*
- *Mr. Yasir Ali (Manager)*

1.5 PURPOSE OF PROJECT

The development of any Project leads to positive and adverse changes in environment and 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 establishment of proposed project will cause 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 main objectives of this EIA study are:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.

1.6 DOCUMENT STRUCTURE

The report comprises of following chapters;

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Chapter 1: **Introduction** (Briefly presents the project introduction, objectives and need of the study).
Chapter 2: **Scoping** (Spatial and Temporal Boundaries of Environmental Assessment)
Chapter 3: **Consideration of Alternatives** (Project related study)
Chapter 4: **Project Description** (Presents relevant information about the project and its major components).
Chapter 5: **Description of the environment** (Establishes baseline conditions for physical, biological and socio-economic conditions of the Project area).
Chapter 6: **Environmental Impacts and Mitigation Measures** (Deals with the potential environmental impacts and mitigation measures, which have been proposed to mitigation the environmental impacts of the Project).
Chapter 7: **Environmental Management Plan** (Outlines institutional structure for the implementation of the Environmental Management Plan).
Chapter 8: **Stakeholders Participation** (Realtime Comments collected during the visit for environmental study).
Chapter 9: **Recommendation and Conclusion** (This chapter gives recommendations for elements of special interests and concludes the whole report).

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SCOPING

2.1 SPATIAL & TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT

First step (Pre-Environmental Impact Assessment)

The first step is to determine the types of processes to be chosen and the different potential sites to be studied. Following the financial and technical thinking throughout, the EIA becomes more precise at each phase, in order to propose the best processes and sites according to local resources and sensitivities.

Once the project is almost defined the EIA analyzes a small range of solutions which compares a few process variations and a few pre-selected sites. Sometimes there is only one site and only one process left.

Second step (detailed Environmental Impact Assessment)

The second step of the EIA begins by scoping and screening the main impacts to be studied. It is important to implement the "scoping" with local authorities and representatives of affected groups to avoid omitting potentially important impact. It is now appropriate to have the terms of reference of the IEE drawn up by a steering committee, in order to pinpoint the exact contents of the IEE and the best way to conduct it.

Pre-environmental Impact Assessment

This part constitutes the first step of the EIA. It leads from the pre-feasibility study to a well-defined project that can be shown to authorities and local representatives. This first step towards the project must be the result of a financial, technical and environmental analysis leading to the final project bringing together the best available technologies and the least sensitive sites. The environmental survey during this phase must analyze:

- Potential sites,
- Raw material
- Constructional processes,
- Transportation.

Site selection

The first task of this activity is to demarcate the site and other benchmarks, with the help of drawings prepared during the pre-construction and design phase of the project. Once marking is complete; the land will be cleared and prepared for subsequent construction activities. The whole purpose is to maintain the harmony of the area during construction.

Pre-construction/Design Phase Site Investigation:

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The geotechnical and soil investigation of the project site will be carried out for determining the suitability of a site to support the structures, and other development works.

Geotechnical/Soil Investigation:
An extensive soil investigation of the project site will be carried out. The topographical survey will be undertaken by the surveying consultant to demarcate the area and measure the ground elevation. Subsequently, engineering details will be worked out, and working drawings, specifications for equipment and material will be prepared.

Selection of Contractor:
Once, the engineering details become available Builders and Developers will start to work on the project.

Construction Phase Contractor Mobilization:
This component involves the transportation of construction machinery and equipment to the project site and the establishment of the contractor's camp and office. The contractor will be responsible for the activities being carried out at the project site.

Raw material	
Fired bricks and clay blocks Cement composites Concrete Sand Stone Steel Plastic pipes	Varies

Deforestation and reforestation usually necessitate an assessment of the impact on:

- **The remaining stands:**
  - Falling trees and skidders. The number of non-target destroyed trees can be higher than that of target trees.
  - Selected removal of certain species can lead to biodiversity depletion,
  - Systematic removal of the best trees leads to genetic erosion,
  - The absence of seed trees endangers the regeneration of the forest,
  - Large gaps in the canopy expose the remaining stands to wind-throw risks,
  - Endemic species can be threatened, by deforestation or reforestation,
  - Fire risks have to be considered both in the case of deforestation and reforestation particularly when using sensitive species like pines.
- **Water resources:**
  - Deforestation generally increases surface run-off which can involve erosion and floods,
  - Soil preparation for reforestation exposes it to both wind and water erosion. This erosion usually produces turbidity in water and sedimentation in the river beds.
  - Pollution can be generated by fuel leakage and the use of pesticides.

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- **Air and climate:**
  - The major emissions into the air are smoke and dust which can hurt affected groups.
  - Climate changes can affect both micro-climate (generally increasing temperature and wind speed, and diminishing evaporation) and global climate with, for instance, the greenhouse effect caused by deforestation.
- **Soil:**
  - Deforestation and reforestation operations can lead to erosion, depletion of soil fertility and risks of landslides,
  - In some cases, fast growing plantations (i.e.: eucalyptus) can gradually both deplete soil fertility and acidify it.
- **Biodiversity:**
  - Destruction of large tracts of forest, without maintaining ecologically rich zones, is a major concern in forest exploitation,
  - Wildlife often suffers from noise pollution and increased pressure from poaching.

Constructional processes

It is important to note here that the EIA is implemented before project construction. This implies that data will not be available on site. The EIA team must at this stage include a process specialist to predict the various emissions and performances of the proposed processes and procedures.

Environmental issues are too complicated and interconnected to be solved one at a time. The limits of the "end of pipe" approach, commonly used during decades, are well-known and it is now necessary to use systematic approaches in order to introduce a more global conception of the environment and to address the source of the problems directly.

For the person conducting an EIA, this logical framework means that the sooner causes for concern are well understood, the better environmental issues are resolved. It is thus very important to put a strong emphasis on assessment before project implementation. This will prove not only more environmentally friendly but also more cost effective.

It is very important to note that technology is always evolving and, in the EIA team, it is the process specialist's role to propose the best available solution to any problem related to environmental considerations and human well-being. This chapter is mainly constructed to allow EIA authors to classify the project in comparison with international standards.

Transportation

In most cases, transport of raw materials, general supplies and final products causes an increase in traffic around the facilities. Transportation may have repercussions, hence the need to consider the five key activities concerned: planning transport development, siting transport facilities, the construction of transport infrastructure, maintenance and operation of transport infrastructure and the use of transport infrastructure and vehicle maintenance.

- **Planning transport development**

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If the creation of the project involves important changes in traffic conditions, the IEE must study the transportation alternatives both for the siting of transport facilities and for the modes of transportation. It is important to compare at this stage the different possibilities of transportation (road, rail or shipping) and to choose the least expensive in terms of investment, maintenance, environment and security. A matrix analysis can be relevant in evaluating each possibility.

- **Siting transport facilities**

  Roads, railways and harbours are infrastructures which generally need their own EIA. The project EIA must nevertheless study this problem and propose a global solution for the project services which truly respects the environment. Any change in the road capacity also has to be seriously addressed, mainly for affected communities.

Project justifications

Once the different sites are pre-selected and a comparative analysis effected, and once the best technologies available have been selected to remedy possible environmental problems, the project is well defined and can be presented to the authorities and the affected populations.

The definition of the project represents extensive studies and work. This aspect must be valorized at this stage of the EIA to explain as precisely as possible the reasons which have led to advocate the project as it stands. Matrix explanation of why each site, resource, process, infrastructure, have been chosen over others can help to justify the project.

Depending on the authorities' requirements, the owners' choice or other considerations, the EIA plan can vary from case to case. Some EIA s study the different alternatives right to the end of the assessment and leave the final decision to the authorities, some others, as presented before, define the best project in the best site and then propose to study more precisely its environmental and social impacts. There are no standard best solutions, each case must be treated as a particular case where the best solution has to be defined by the steering committee.

2.2 IMPORTANT ISSUES AND CONCERNS RAISED DURING CONSULTATION

Local community perception with regard to the implementation of the project components has been carried out during this EIA study. This gave the perception of the general public about this project. The results of public consultation conducted in the study area showed a strong agreement among the attendees (official stakeholders, representatives, general public, local community leaders, etc.) that this project will improve overall socio-economic conditions of people of the area. They had little reservation regarding some adverse impacts on different environmental parameters during construction and operation stages of the proposed project.

1. Due to constructional activities of the project traffic issues will be come up.
2. Due to constructional activities dust emissions will be raised.
3. Due to constructional activities noise issues also be raised.

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4. Others

To cure all these issues the proponent has already planned proper mitigation measures as discussed in accompanied Environmental Management Plan.

2.3 SIGNIFICANT IMPACTS AND FACTORS TO BE DETERMINE

The proposed public consultation schedule at various phases of the Project. During construction and operation of the project, public consultation is planned as follows:

i. Suggestions of the general public may be sought through press or other mass media whenever deemed necessary.
ii. Local NGOs (if any, at any time during project construction or life), particularly working in the sector of environmental sanitation, will actively be involved in public representation.
iii. TMA will frequently be contacted on matters concerning the progress, adverse impacts and mitigation measures.
iv. To identify and assess significant social impacts, of the project activities on the surrounding area and people;
v. To propose suitable means for probable mitigation of the significant adverse social impacts.

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CONSIDERATIONS OF ALTERNATIVES OF PROJECT

3.1 Site alternatives, their selection and rejection criteria:

ıe land is already acquired by the project proponent as prospecting license for housing unit. The ea is considered suitable in terms of environment as well as geologically for establishment of YK Lubricant. Following is the realistic detail in this regard:

i. Without or Zero or No Project Alternative

ıe "No Project Alternative" alternative would mean that: land and environment of project area is uch suitable for the establishment of housing projects; therefore, development of proposed RYK ıbricant project would play its contribution towards housing sector's progress in the Pakistan at is currently much needed. Additionally, potential for employment during all stages of project ould be retained. Thus, establishment of current project is highly needed. Therefore, —No oject Option does not remain a suitable alternative here.

he 'No-Action' option, if taken, will prevent the country from reconnoitering the potential to ıcrease its lube demands. The current activity offers a chance to improve Pakistan's engine oil ılance and decrease the gap between the requirements by the application of project.

ther impacts of the 'No-Action' option would be loss of employment opportunities and ıfrastructural development in the project area, as the project is bound to create jobs and improve ıe existing infrastructure of the surrounding areas.

3.2 Design / Technology Alternatives, Their Selection & Rejection Criteria:

Vhile considering process and technology alternatives, it has been kept into mind that the proposed roject shall play its role towards energy and water conservation and least amounts of wastes to e discharged.

Jsing EURO II fuel in engines like generators and other machinery instead of diesel or bad quality ıel oil would create less opportunity of gaseous emission. No need for effluent treatment as enerated effluent are collected in effluent tank and after neutralization through alkaline method, re thrown to the main sewer line.

3.3 Environmental Alternatives, Their Selection & Rejection Criteria:

As the project proponent has already a vast experience of working in the field of housing, therefore, ıo alternative project was considered to be established. Some issues discussed below hereunder:

3.3.1-Shifting of the project to some other location

The third option for the project is to shift the project to some other location if it might be feasible but here in this case RYK Lubricant will operated in highly feasible area. Project will

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t be considered to shift to any other place due to following reasons.

3.1.1-Land ownership

esent land ownership is rest with the project Proponent i.e. Muhammad Zulfiqar. Although ols like *resettlement action plan* and *compensation entitlement framework* can address the nd acquisition related social issues, often resentment remains among the communities. herefore, it is desirable that the site for the project is either located on land owned by the oject proponent or is owned by another corporate body or a government agency. Since land owned by proponent himself there is no issue of land ownership.

3.1.2-Estimated population on the surrounding of the site

terms of the social and environmental soundness the most preferable site for housing roject should be the one that has sufficient distance from the industrial area and number of ersons residing in its surroundings. Potential issues related to noise, air pollution, and ommunity safety become more difficult to mitigate if the project is located in relatively ndustrial areas or near to it. For this purpose the settlements falling inside a 5km radius of ne sites are being considered and the number of people residing within the said radius is stimated. **Goth Machi** is near from the site and consists of size approximately 500-600 ouseholds. Therefore, surrounding of the project has little amount of population as said roject is existed at KLP Road, the households of Goth Machi are situated in eastern site of he project. The details of population residing and their life style are described in demography ection of the report.

3.3.1.3-Access to the site

KLP Road access to the project site is present as the project front. The issues that are related o access road include community safety, dust emission, and noise due to project related traffic particularly during the transportation of raw material. As already discussed, two dumpers have hired for services for the movement of raw material; Therefore, accessibility to the project is easier.

3.3.1.4-Availability of water and other utilities

The water and other basic requirements such as telecommunication lines, electricity facilities for the project are available within the premises of the area. The environmental issue regarding the use of water by the project is that it can potentially affect the water availability in the area and make it difficult for the community to fulfill its water requirements.

3.4 Economic Alternatives, Their Selection & Rejection Criteria:

he project specific site geometry is given below as in Figure while photographs showing specific te location and environment in and around the project site are presented thereafter throughout his EIA report. The topographical map of the site showing levels and site layout is given as Figure.

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PROJECT DESCRIPTION

This section of the study renders a detailed account of the project and its salient features, such as location and various phases. Inputs and discharges relevant to different phases of the project, such as electricity & material have also been examined as a response to possible environmental concerns.

The lubricant-to-surface friction is much less than surface-to-surface friction in a system without any lubrication. Thus use of a lubricant reduces the overall system friction. Reduced friction has the benefit of reducing heat generation and reduced formation of wear particles as well as improved efficiency. Lubricants may contain polar additives known as friction modifiers that chemically bind to metal surfaces to reduce surface friction even when there is insufficient bulk lubricant present for hydrodynamic lubrication, e.g. protecting the valve train in a car engine at startup. The base oil itself might also be polar in nature and as a result inherently able to bind to metal surfaces, as with polyolester oils.

Both gas and liquid lubricants can transfer heat. However, liquid lubricants are much more effective on account of their high specific heat capacity. Typically the liquid lubricant is constantly circulated to and from a cooler part of the system, although lubricants may be used to warm as well as to cool when a regulated temperature is required. This circulating flow also determines the amount of heat that is carried away in any given unit of time. High flow systems can carry away a lot of heat and have the additional benefit of reducing the thermal stress on the lubricant. Thus lower cost liquid lubricants may be used. The primary drawback is that high flows typically require larger sumps and bigger cooling units. A secondary drawback is that a high flow system that relies on the flow rate to protect the lubricant from thermal stress is susceptible to catastrophic failure during sudden system shut downs. An automotive oil-cooled turbocharger is a typical example. Turbochargers get red hot during operation and the oil that is cooling them only survives as its residence time in the system is very short (i.e. high flow rate). If the system is shut down suddenly (pulling into a service area after a high-speed drive and stopping the engine) the oil that is in the turbo charger immediately oxidizes and will clog the oil ways with deposits. Over time these deposits can completely block the oil ways, reducing the cooling with the result that the turbo charger experiences total failure, typically with seized bearings. Non-flowing lubricants such as greases and pastes are not

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effective at heat transfer although they do contribute by reducing the generation of heat in the first place.

TYPE AND CATEGORY OF PROJECT

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulation, 2000, the project of Construction of **"Lubricant Plant"** by M/s RYK LUBRICANTS" falls in the A category under serial No.5 in Schedule II.

OBJECTIVE OF THE PROJECT

The objective of the project is to Construction of M/s RYK Lubricants, Chak No.06/NP, KLP Road, Tehsil Sadiqabad, District Rahim Yar Khan in an environment friendly manner.

The objective of the proposed Project are as following;

- Storage and production of Lube Oil / Grease in storage tanks with ensuring safe conditions.
- To provide lube oil / grease and to provide best services to customers
- To provide lube oil / grease in adequate price as compared to market
- To provide the employment to the people
- To change the social life style of the workers
- To upgrade the socio-economic condition of the area

ALTERNATIVES

An open land under undisputed ownership is selected for the Establishment of Lube Oil Reclamation Plant. Selected site is located in the semi agriculture area. The project is for enhancement of production capacity:

- 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 in safe radius

1Technology Alternative

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Lube Oil Reclamation Plant is well positioned to assist developing countries in the transition to modern fuels for the following reasons:

1. **Availability:** there is nothing exotic to invent or improve. The transportation system that moves it is in place, the tank to store it is available, and the appliances and equipment that provide heat and power are "on the shelf".

2. **Infinite shelf Life:** Lube Oil does not deteriorate over time unlike some other liquid fuels that gel, stratify or evaporate and must be protected from weather to prevent deterioration.

3. **High use density:** Compared to traditional lubes in terms of thick equivalency, over lube has ten times efficient.

4. Lube Oil can be transported, stored, and used virtually anywhere in the world. It does not require a fixed network and does not deteriorate over time.

ıe practical, operational and environmental characteristics of all four commercially ailable fuels are summarized in the following Table:

4 LOCATION AND LAYOUT OF THE PROJECT

4.1 Location of the project

Particulars	Details
Location	Chak No.06/NP, KLP Road
Tehsil	Sadiqabad
District	Rahim Yar Khan

5 LAND OWNERSHIP

Land / property documents are attached.

5 GOVERNMENT APPROVALS

Following NOCs are obtained and annexed:

- License from OGRA is attached.
- NOC District Counsel.
- Disposal of Effluent Water from Irrigation Department.
- NOC Rescue 1122.

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- NOC from District Counsel IPWM.
- Firm Registration Certificate.
- Registration Certificate issued by HR Development, GoP.
- Registration Certificate Social Security.

7 LAND USE ON SITE

The project is for proposed Construction. Site is adjacent with existing plant.

8 ROAD ACCESS

KLP Road, access of the proposed project site.

9 RELOCATION AND REHABILITATION PLANS

There exists no human settlement within a safe radius of the selected project site to be displaced owing to the commencement of the Proposed Project. No structure of any significance stands at the site to be relocated or dismantled. Land is already under undisputed ownership, and no fresh land is to be occupied; hence, no relocation and rehabilitation is required.

The proponent of the project aims that standard practices and procedure shall be followed for the restoration of areas disturbed during execution of developmental works.

The proponent has taken necessary measures for the restoration of the relevant areas which are distributed during the construction of infrastructure, like hiring the contractor for transfer of demolished waste and pavement of excavated land. The plants removed during construction phase will be replanted especially around the boundary walls of site and in the open spaces.

10 DESCRIPTION OF PROJECT

Typically lubricants contain 90% base oil (most often petroleum fractions, called mineral oils) and less than 10% additives. Vegetable oils or synthetic liquids such as hydrogenated polyolefins, esters, silicones, fluorocarbons and many others are sometimes used as base oils. Additives deliver reduced friction and wear, increased viscosity, improved viscosity index, resistance to corrosion and oxidation, aging or contamination, etc arrangements.

Non-liquid lubricants include powders (dry graphite, PTFE, molybdenum disulphide, tungsten disulphide, etc.), PTFE tape used in plumbing, air cushion and others. Dry lubricants such as graphite, molybdenum disulphide

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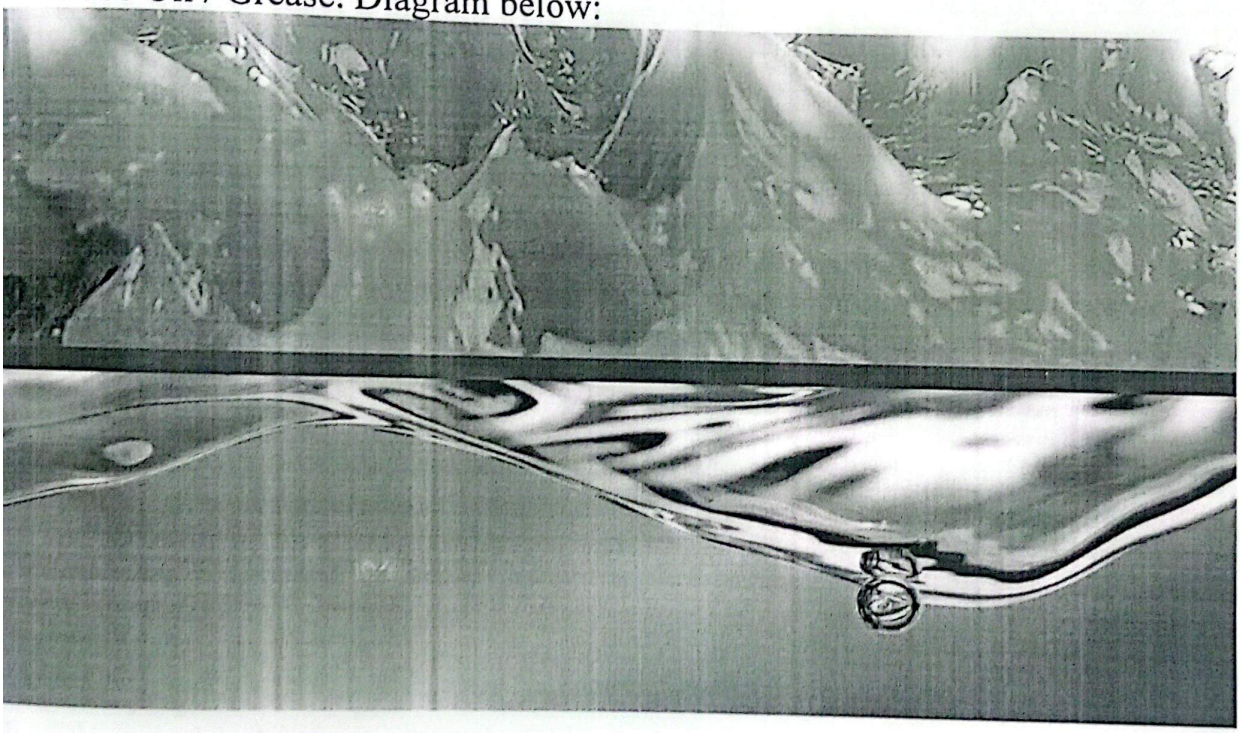
and tungsten disulphide also offer lubrication at temperatures (up to 350 °C) higher than liquid and oil-based lubricants are able to operate. Limited interest has been shown in low friction properties of compacted oxide glaze layers formed at several hundred degrees Celsius in metallic sliding systems, however, practical use is still many years away due to their physically unstable nature

10.1 RAW MATERIALS

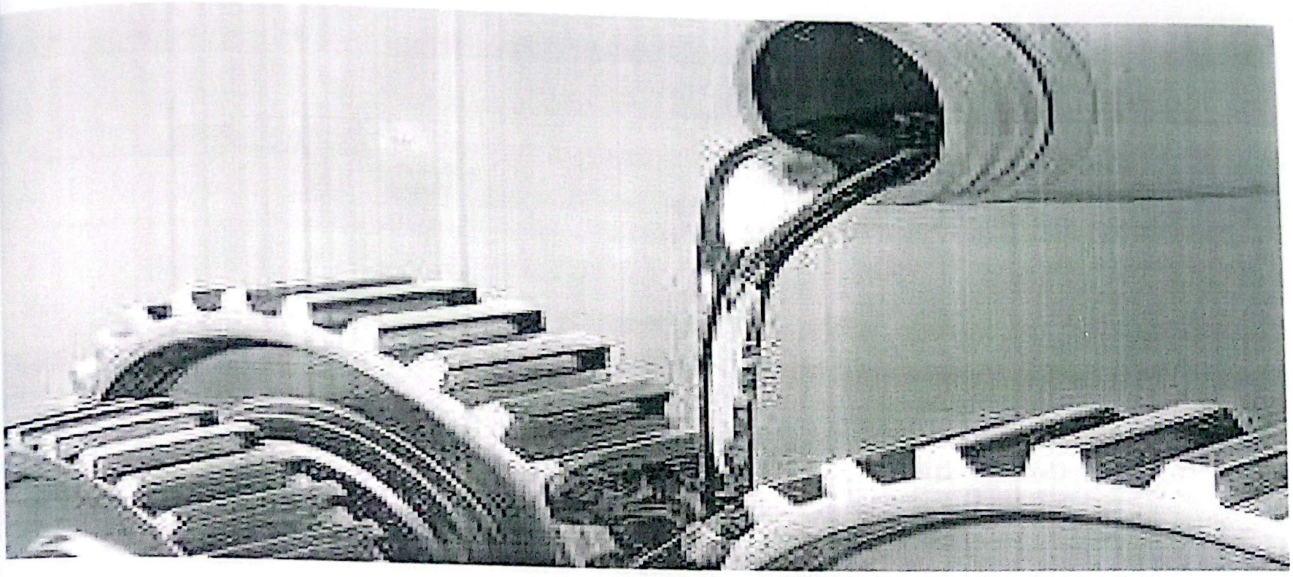
The major raw material for the plant is crude oil which will be transported in tankers to the plan, maintaining safety standards.

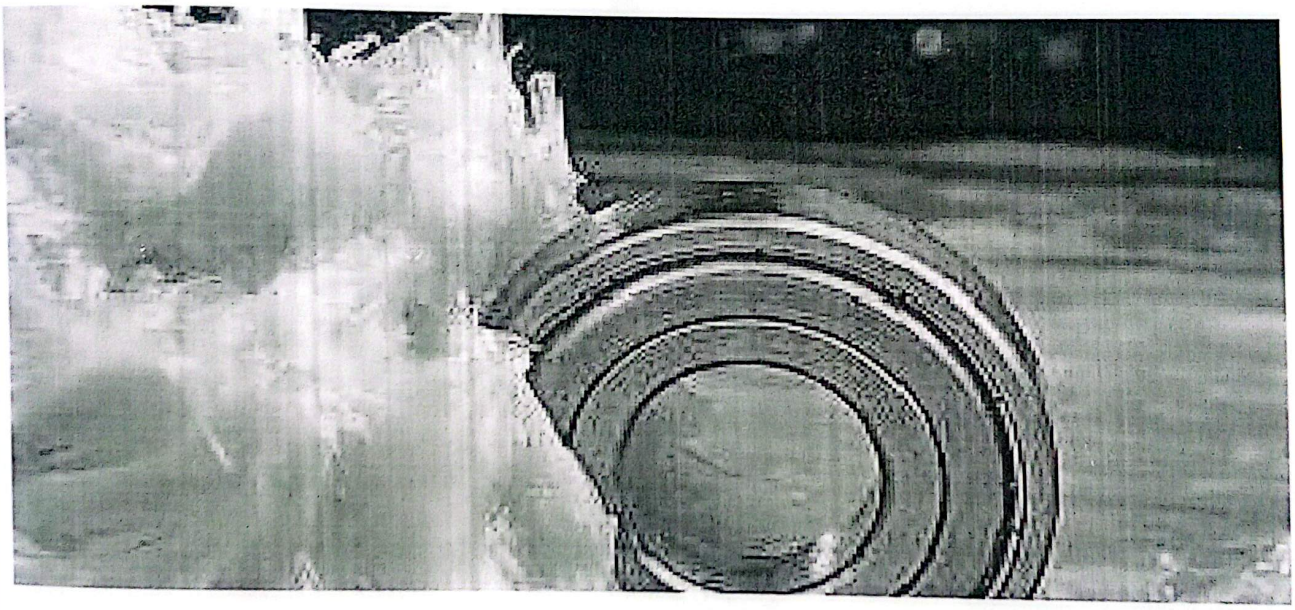
10.2 FINAL PRODUCT

Lube Oil / Grease. Diagram below:



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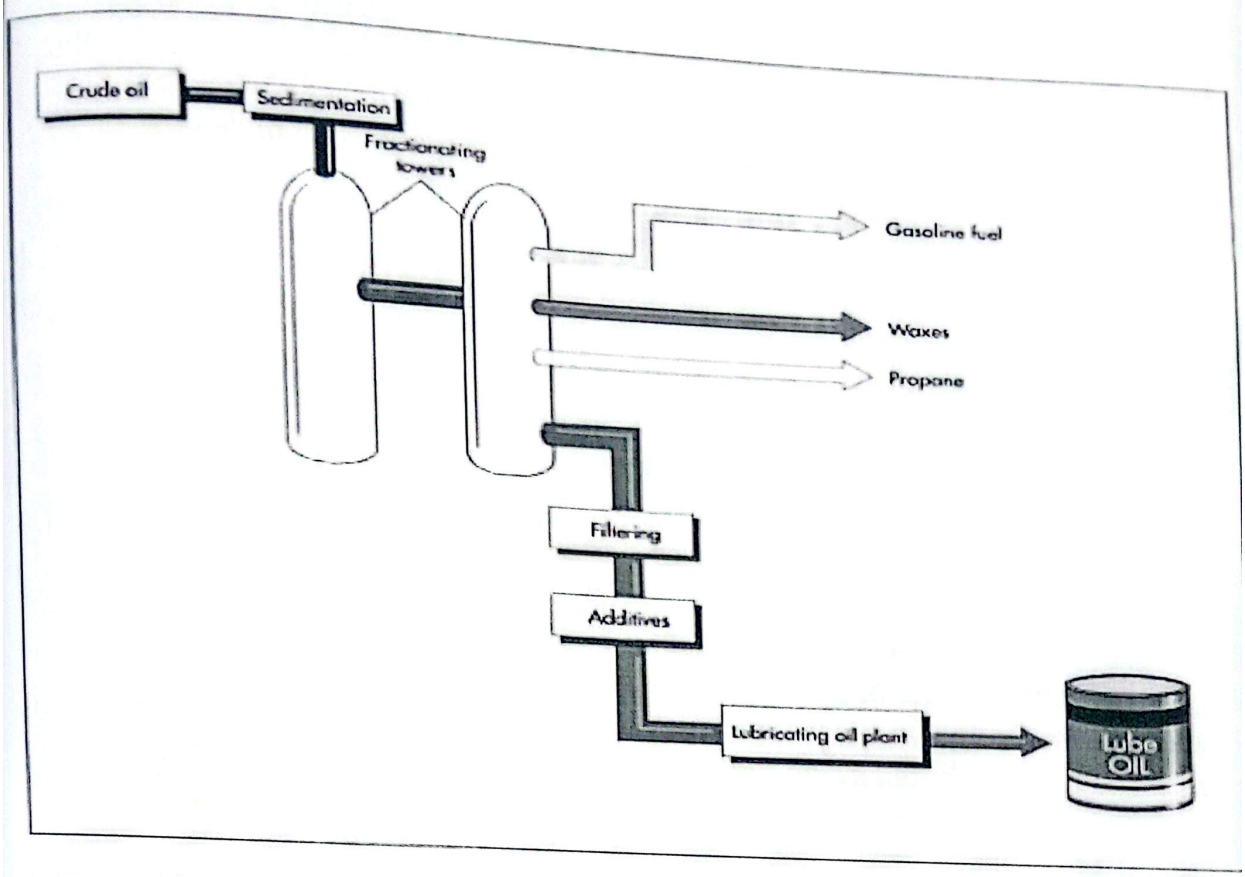
4.10.3 CAPACITY

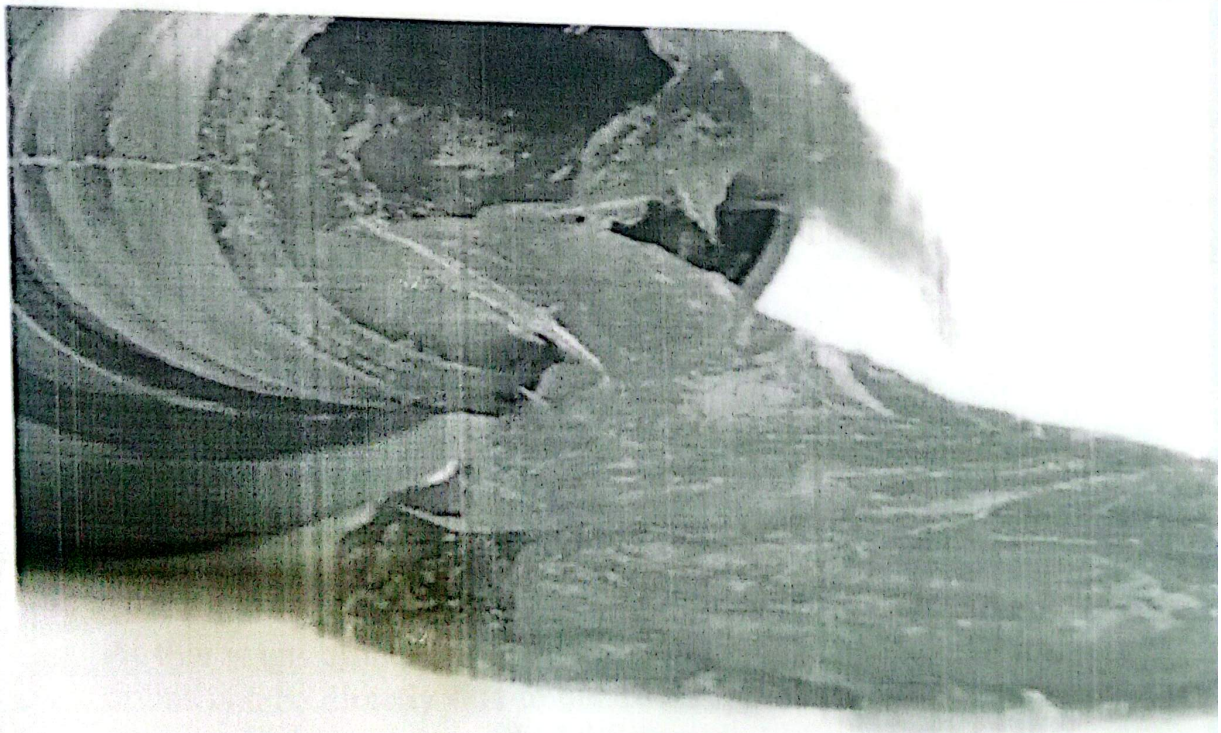
The project envisages at Construction / Construction of Lube Reclamation Plant under the name & style RYK Lubricants which will have a capacity of 7500+MT/Annum. Storage capacity will be 10000-L.

4.10.4 PROCESS DESCRIPTION

Lubricant is transported from production plant where Lubricant is stored in tank and filled into different packing for storage and distribution for various purposes. Transfer operation of Lubricants is not critical, as Lubricant is not a highly inflammable product.

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Crude oil
Sedimentation
Fractionating towers
Gasoline fuel
Waxes
Propane
Filtering
Additives
Lubricating oil plant
Lube OIL



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4.10.4.1 Filling of Storage Tanks:

Lubricant tanks / drums will arrive on site and enter through main gate of plant as well as in main store room. A Tank should of 200-Liters.

4.10.4.2 Transfer of LPG to Filling Plant:

Lubricant pump is used to transfer from storage tank to transfer station via transfer pipes. Transfer pipes are provided with fire water lines in case of emergency fires.

4.10.4.3 Visual Inspection / Segregation of Drums:

Before the Lubricant drums are filled, a pre-fill inspection of the drums will be undertaken to ensure that the drums are safe to fill. The drums that are found to be in good condition will be filled, sealed, weighed and taken back to the factory. Drums found unfit for filling on visual inspection e.g heavily rusted or damage will be separated during visual inspection.

4.10.4.5 Tank / Drum Filling

Valve protection cap will be removed and drum is filled at filling Plant. The filling process will take place in the drum filling area. The plant's filling stock management system will be fully computerized. This will ensure that every single drum will be filled thoroughly and that instances such as over-filling, under-filling, and leakages do not occur.

4.10.4.6 Final Inspection:

Drums are visually inspected to examine their sound condition and presence of valve protection.

4.10.4.7 Storage and Delivery of Filled Drums:

At this stage drums are ready for storage and delivery. If required, the fit drums can be directly sent to the trucks for loading or the drums are sent for stacking in the area earmarked for purpose.

4.11 Schedule of Tank:

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The outside dimensions of a 200-litre drum are typically 584 millimetres (23 in) diameter at the top or bottom rim, 597 millimetres (23.5 in) diameter at the chines (ridges around drum), and 876 millimetres (34.5 in) height.

4.12 SUPPLIERS

4.12.1 Water supply

The surplus water during the construction phase of the whole project will be estimated to meet any unforeseen situation. The water demand will be fulfilled from ground water. Water requirement for maintenance of green belts will be done on daily basis by ground water through pumps and pipes to avoid wastage of water. The water requirement for the construction phase will be 2000 gal/day while during operational phase water requirement will be 800 1/day.

4.12.2 Electricity

Source of power will be WAPDA and a diesel fired generator of 50KVa.

4.12.3 Manpower

A total of 25-30 employees including mechanical, electrical, operators, sweepers and other managerial and office staff shall be working at project site.

4.12.4 Firefighting

The facility will have a comprehensive firefighting system covering all hazardous area and the other areas of the facility. This ensures that any five within the plant is quickly surpassed and extinguished. Firefighting and emergency catering facilities will include:

- Manual call point
- Emergency shutdown
- Fire Alarm hooter
- Fire Extinguishers (12kg)
- Trolley mounted fire extinguishers
- Fire monitor
- Fire hydrant

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Size of fire water pipelines will be

- 3" dia main fire water header
- 2" dia distribution fire water pipelines
- 2" dia secondary distribution pipelines

4.12.5 Health & Safety

For health and safety of workers, 4-First Aid Boxes will be available and workers will be provided with following PPEs

Sr.#	PPEs	Qty.
1	Gloves	15 Pairs
2	Shoes	15 Pairs
3	Mask	15 Pairs
4	Anti-fire suits	15 Suits

First Aid

- If inhaled, move the person to a place where he/she can breathe some fresh air. Let him/her rest in a position that is comfortable, and if necessary, you can administer artificial respiration.
- If there has been skin contact with the gas, immediately remove the contaminated clothing. Rinse the affected skin with plenty of water for more than 20 minutes and seek medical help.
- In case of eye contact rinse the eye and the eyelid immediately with plenty of water for more than 20 minutes. Remove contact lenses, if any. Continue rinsing and seek medical help.

4.13 Emissions and effluents

4.13.1 Wastewater

Effluent arising from domestic activities will be treated in septic tank and then will discharged to local drain. Lube Oil Reclamation Plant and storage activities give rise to no waste effluent, hence no waste water treatment system is required. Municipal waste water will generate @ 600-650 per day.

4.13.2 Air Emissions

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No Air emission are expected during process. In case of leakage, broken down pipes, LPG could escaped which will have certain impact on workers. For this, gas detector will be provided. Further PPEs will also provide to workers. Generator emissions will be controlled by proper enclosure, maintenance and tuning.

4.13.3 Noise

During operation, loading and un-loading will the cause of noise. Proper tuning of vehicles being mitigates this problem. Moreover, Tree Plantation along the boundary of Proposed Project and Plantation within the unit will further reduce noise, since plants and tree serve as noise absorbers. Construction activities noise will be temporary, and will be mitigated by measures.

4.13.4 Solid Waste

Solid waste will be municipal in nature and will be handled by solid waste management contractor as per practices of area. Solid waste will be generate @ 25-Kg / day.

4.14 Cost and Magnitude of Operation

The project cost is estimated to be PKR 25-Million.

Activities will include

1. Applying for and getting all necessary approvals and contracts.
2. Construction of boundary wall and other structures.
3. Installation / Construction of tanks and firefighting equipment.
4. Maintenance of Machinery and Tanks

4.15 Schedule of Implementation

a. *Phase-I (Start-up Phase)*
Phase-I is the start-up phase, which involves construction of boundary wall around the entire side. Most of the NOCs required have been taken and this report has been prepared to obtain EA / NOC from EPA.

b. *Phase-II (Main Implementation Phase)*

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In Phase-II, required machinery will be purchased including storage tanks, filling area, transfer pumps, fire pumps for firefighting systems, etc. During this phase machinery will bought on site and installed.

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

4.15.1 Abandonment Plan:

After completed of life, building will be demolished according to regularity standards. The garbage products and debris generated by destructing the civil structure will be disposed of at designated site while metallic and concrete structure may be reused, replaced or solid in the market. Dust / particulate matter to be generated will be minimized by constant sprinkling of water. An Environmental Management Plan will be put in operation for the safe disposal of waste matrix, debris generated and garbage produced after the destruction of assembled structure.

4.16 Vegetation Features

Mostly the land is barren so the project will not cause any major adverse impacts on the surroundings. Land selected for the proposed project is barren only some grasses and shrubs are present in scattered quantity. Fertile land is rare in the study area.

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DESCRIPTION OF ENVIRONMENT

presents information on existing environmental and socioeconomic conditions of the osed project area. It discusses aspects pertaining to geology and soils, climatic litions, hydrology, ambient air quality and noise levels as well as land use. Further, the ter presents details related to flora and fauna as well as socio-economic environment.

Physical Environment / Resources

ironmental Impact Assessment (EIA) report provides details of physical environment.

5.1.1 Topography

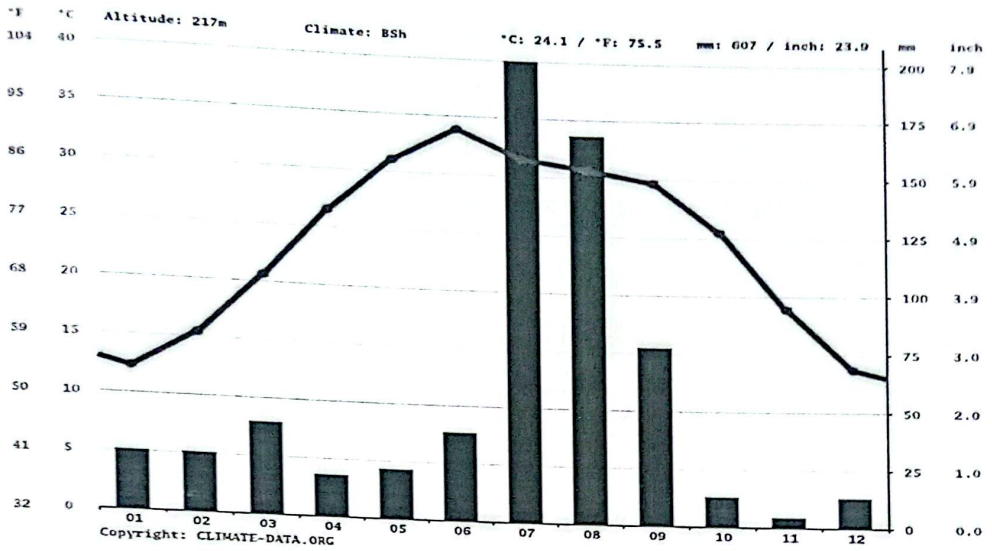
Topographically the project site being in the command of river Indus, exhibits the features typical of alluvial lands of the riverine origin. The wider area is a part of the flat flood plains of Indus basin with a general gradient from north to south and from west to east. The Cholistan desert merges into the eastern side of the district and is a few kilometres from the project site. According to the topographic measurement survey, the elevation of the project site is 112m. Owing to deficiency of surface water channels, the area presents a rather deserted and crusty look. Except the above-mentioned aspects, the project area does not exhibit any special physical, geological and geomorphologic features.

5.1.2 Climate

The site, being part of District Rahimyar Khan, exhibits a hot and dry climate with low rainfall like rest of the district. According to meteorological profile of Rahimyar Khan, summers are generally hot with moderate humidity, whilst winters exhibit extreme cold. Spring and autumn seasons are the most pleasant parts of the year. The mean winter temperature (December/January) ranges between 10.5°C to 14.5°C. The mean summer temperature remains around 35°C to 37°C with spikes crossing 40°C. The mean of the maximum temperature ranges between 29-30°C and mean of the minimum from 15-

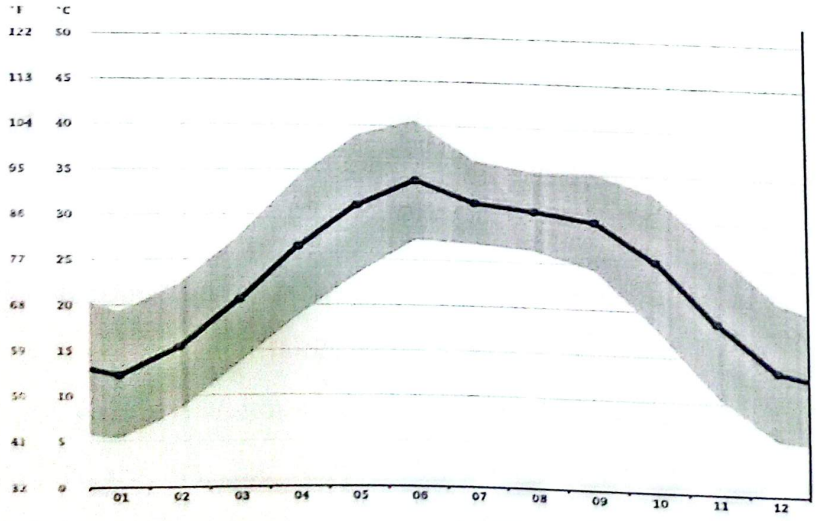
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16°C29. Approximately 50 percent of the average annual rainfall occurs during monsoon in the months of July and August.



5.1.3 Temperature

Over the course of a year, the temperature typically varies from 5°C to 30°C and is rarely below 2°Cor above 42°C. At an average temperature of 30.4°C, June is the hottest month of the year. The lowest average temperatures in the year occur inn January, when it is around 12.5°C.

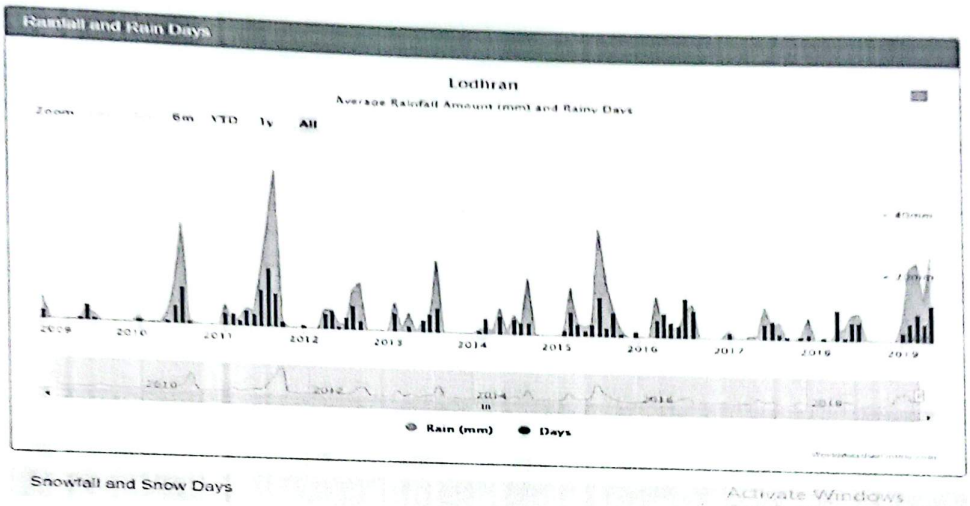


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5.1.4 Precipitation

Precipitation is the lowest in November, with an average of 2.4 mm. The greatest amount of precipitation occurs in July, with an average of 110 to 185 mm.

Between the driest and wettest months, the difference in precipitation is 125 mm. The variation in temperatures throughout the year is 22°C.



Snowfall and Snow Days

Activate Windows

5.1.5 Air Quality

Atmospheric pollution, particularly in industrial areas has a strong impact on daily life. However, the project site is located amidst the open agricultural lands in rural settings. Because of this disposition, the air quality profile is reasonably good with a low level of airborne dust and pollutants. However, fugitive dust levels are a bit higher on and near the highly trafficked roads than the surrounding open lands. There is no contribution of pollutants to the local air from stack emissions from the local industry, brick kilns and other stationary sources, as none exists in the zone of environmental influence of the project site. At the time of visit inspection of the site, the general atmosphere at the project site was clear from particulate dust and was of good

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visibility. Monitoring was conducted at the project site by using Fine Dust Sampler IPM-FDS 2.5/10μ and Ambient Air Analyzer.

To record the baseline ambient air quality of the project area, monitoring was conducted at advised locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide and PM_{10}) in the air.

5.1.6 Noise Level Monitoring

Details as described below

5.1.7 Basic Environmental Conditions

During the measurement following conditions were prevailed in workplace.

5.1.8 Metrological Conditions

During the noise level monitoring weather was dry and sky was clear. Air was blowing at normal speed.

5.1.9 Monitoring Instruments

The description of the instrument used for the noise level monitoring is given below:

Name: Digital sound level meter

Model: AR824

Company: Intel Instruments plus

Frequency Range: 31.5Hz to 8kHz

5.1.10 Methodology Adopted

Noise level was monitored at four points; lab results are attached.

5.1.11 Ground Water

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The Groundwater at the facility sites, like the wider area of the district, is in flux with the recharge occurring from infiltration of the river and the canal waters as well as from the surface precipitation. River Indus flows along the western side of the district and a major source of groundwater recharge in the area, particularly after heavy rainfalls and floods. Owing to the natural east to west topographical gradient, the groundwater of the region and that of the facility site per se exhibits the flow characteristics conformant to area's topography. As per water quality inspection, groundwater is of good potable and irrigable quality with no visible impurities.

.2 Ecological Resources

iodiversity has an important role in the functioning of the ecosystem. Human being is one f the species of the ecosystem and that species is the end user in the food chain. Fauna ıd flora are the important components of the ecosystem. The observed species of fauna ıd flora at the project site are described below.

5.2.1 Flora

Apart from some scanty trees at the project site, there are no large-scale plantations in and around the project site. The predominant species of the flora at the project site include shisham (dalbergia sissoo), eucalyptus, silver oak, kikar (acacia nilotica), jand (prosopis spicigera), karir (capparis aphylla), beri (zizyphus jajaba), van (salvadora abeoides) and akk (calotropois hamiltonit). Additionally, some wild varieties of self-grown grass species are found along some poorly maintained watercourses. There are no horticulture, and or wildlife parks and planned gardens near or around the project site. Some common forms of weed, bush and the self-grown endemic species of plants are found in the open agricultural lands.

5.2.2 Fauna

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There is no specific fauna indigenous either to the project site or even to the wider area within the radius of influence of the project site. Similarly, there are no species of aviary, aqua, or wildlife indigenous, resident or migratory to the project site. As such, the biodiversity features of the site are insignificant. Some common forms of reptiles, mammals, and rodents are seen occasionally in the open countryside. Rarely, wild boar, jackals and fox are seen in thick plantations or sugarcane crops.

5.3 Socioeconomics Environment

"The socioeconomics environment is one the component of the regional ecosystem." The development projects can impact either negatively or positively to the regional socio-economic environment.

5.3.1 Population

According to the govt. statistics and the local / provincial govt. the estimated population of District Rahimyar Khan is approximately 4.814-Million persons.

5.3.2 Profession

Main profession of the area is Business / Trading. However, a few number of people are doing job in different institutes of govt. / private sector.

5.3.3 Education Level

Literacy rate in the area is approximately ranging from 33.1% (source: Bureau of Statistics).

5.3.4 Language

The popular language of the area is "Punjabi / Saraiki"

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5.3.5 Cultural Diversity

The project site being a part of the rural countryside is devoid of any indigenous and endemic culture, customs, tradition, religious practices and the specialties. The people of Rahimyar are predominantly Muslims. Saraiki is the native language and is spoken widely in the district. However, Urdu is gaining popularity and is becoming the lingua franca, particularly amongst the youngsters and the educated youth. People generally respect "chadar" (women headgear symbolic of women respect) and chardewari (privacy), i.e. they do not mingle up with women publically and stay away from others houses and respectfully wait to be called in or the residents to come out from their houses. A reasonable proportion of womenfolk observe the purdah (veil) etiquette, i.e. they remain secluded from outsiders. However, womenfolk do participate in almost all sort of social, cultural, economic, educational, and service activities. Although Joint family system is the predominant mode of social life, yet "nucleus" or small family system is also found because of socio economic compulsions and attitudinal shifts in the youth.

5.4 Quality of Life Values

Quality of life the in the project area is standard as there are proper sanitation system and basic health facilities. Some of the important factors are discussed are below;

5.4.1 Heath and Education

Basic health & education facilities are available in the District. There are 2441 Govt. Schools and a number of private schools and some Govt Hospitals (DHQ, THQ etc) are present. People have to visit the District Rahimyar Khan for the proper health and educational facilities.

5.4.2 Compensation in Money Terms

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As the project has been developed on the land of proponent and people are not getting affected from the project.

5.5 Conclusion

The gathered and assessed data produces the conclusion that commencemen of the project will prove to be beneficial for the inhabitants of the area. The project will provide job opportunities for the local inhabitants, and wil provided basic religious and primary educational facilities to them, henc improving their socio economic status.

The project, overall, does not have major adverse impacts on the existin environment and people with due implantation of the mitigation measures. It i further concluded that project confirms to the local environment.

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(6)
SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

The following chapter describes the overall possible impacts of said project on the physical, biological and socioeconomic environment due to the location, Design, during construction phase, during operation phase of the project and mitigation measures to minimize the significance of the possible impacts. The anticipated impacts related to propose housing have been assessed and mitigation measures are provided accordingly.

6.1 General

Assessment of impacts depends on the nature and magnitude of the activity being undertaken, as well as the type of environmental control measures that are envisaged as part of the project proposal. The potential impacts from the project area are identified and assessed based on the type and scale of the various activities associated with this project.

Several aspects and potential impacts were identified for each phase (Project Location, Construction and Operation) of the development, with impacts evaluated in terms of their nature, occurrence, possibility and severity potential.

6.2 Screening of Potential Impact

Several impacts are likely as a result of the construction and operation of the project. Such impacts may be direct, indirect or ultimate. For the purpose of this EIA, these potential impacts (whether direct, indirect or ultimate), are assessed based on their magnitude (short-term or long-term) and effect (positive or negative). Impacts are also classified in three group: impacts due to project location, impacts as a result of project construction and impacts as a result of project operation.

All the potentially significant environmental impacts from the project are grouped below:

Air Environment

- Impact on ambient air quality

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Noise Environment

- Impact on ambient noise

Water Environment

- Impact on surface and ground water quality

Land Environment

- Impacts on land use

Ecological Impacts

- Impacts on trees/vegetation
- Impacts on forests and wildlife

Socio-Economic Impacts

- Impacts on other infrastructure
- Impacts on employment
- Impacts on public health and safety
- Impacts on cultural resources
- Impacts on aesthetics

6.3 Impacts Due to Project Location

Proposed project will have both socio-economic and environmenta implications as discussed in the sub-sections below.

6.3.1 Relocation of People

Currently, there are no infringements on the project site that may be affecte therefore relocation exercises are not required.

6.3.2 Loss of Vegetation

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Considering the scale of the project and commonly found flora and fauna within the project influence area, no significant adverse effects are envisaged on the ecology of the area.

6.3.3 Shifting of Utilities

There will not be any shifting of existing utilities such as water supply pipelines, sewers, electrical lines, etc. due to the proposed project.

6.3.4 Impact on Archaeological/Cultural Property

Within the project influence area there are no significant archaeological properties, hence no impact in this area is anticipated.

6.4 Impacts Due To Project Design

Design of the proposed project can have impacts on the environment if it is not prepared accordingly. It is necessary to consider a sustainable project approach. Sustainability is an important issue to consider in design, not only due to environmental concerns but also due to economic and social matters, promoting architectural quality and economic advantages.

6.5 Design Phase

At the design phase, no considerable impact would occur on land, soil topography, ground water, and on people of the area. However, in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the building would adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health. All tanks and piping will be done as per standards.

- Storage tanks and fittings are designed as per prescribed procedure.

The complete design of said project is made as per requirements of OGRA and they have granted NOC to said company so there will be no such impacts due to design of project. Complete details of tanks are given on map.

6.6 Impacts During Construction Phase

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Environmental Aspects	Impacts and Mitigation Measures	
	Impacts	**Mitigation Measures**
Economy Improvement	• During construction Phase, through the use of locally available materials including cement, building blocks, metals, concrete, ceramic tiles, timber, sand, electrical cables etc, the project will continue towards the growth of economy by contributing to the gross domestic product.	• No mitigation measures required.
Employment Opportunities	• With the Implementation of the project, there will be employment opportunities for casual workers from the local community. The exact number of workers to be hired will depend on the magnitude of construction activities during construction.	• No mitigation measures required.
Air Quality	• During construction phase particulate matter will be the main pollutant which will be generated during the site development activities, such as leveling of land, filling activities, transportation of construction material to the project site from various places. • Due to increased vehicular movement increase in NOx and CO concentrations will be observed at the project site. However, the pollution level in the ambient air will be negligible and also it is a temporary Phenomenon. As most of the construction equipment will be mobile, the emissions are likely to be fugitive and not concentrated on a single source or place. As the impacts will be localized in nature, the areas outside the proposed project boundary are not likely to face any significant adverse impacts with respect to ambient air quality.	• Dust emission will be minimized through strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site. • The traffic routes on site will be sprinkled with water regularly to reduce the amount of dust generated by construction vehicles. • Construction machinery will be kept away from walkways and at safe places where the chances of

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		human interventions are relatively less. • Construction machinery will be properly tuned, serviced and monitored on regularly basis. • All vehicles, construction machinery etc will maintained in good working condition in order to minimize pollutant emissions.
Water Quality	• During construction phase, water will be required only for construction of structures, sprinkling on roads for dust suppression, domestic uses of the construction workers, that too only during day time. • Water will be used mainly for concrete mixing, sanitary and washing purposes. • No high water consuming activity is likely to occur during construction so the water usage during development of proposed project would not reduce the water availability for other activities within the area.	• Workers will be trained for water conservation and reuse of water where possible.
Relocation of Utilities	• The construction of the project will not relocate the existing public utilities.	• No mitigation measures required.
Poverty Alleviation	• Construction of the proposed project will generate the employment opportunities. This will be a temporary minor positive impact.	• No mitigation measures required.
Solid Waste Generation	• During excavation of the site for foundation works and landscaping,	• Waste generated

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	solid waste will be generated. The waste will consist of metal cuttings, rejected materials, surplus materials, excavated soil, paper bags, empty cartons, empty cement bags among other types of wastes.	during construction will be recyclable and will be reused during construction. The left over construction materials at the end of construction will be used in other projects rather than being disposed-off (if required). • Recyclable material will be separated at source which will then be handed over to the waste contractor. • Waste bins will be placed at the construction site for waste materials including plastic, paper, and wood. • The cement bags and other such items will be handed over to contractor.
Noise Pollution	• During construction phase, the major sources of noise will be due to operation of construction equipment such as concrete mixers, generators, cranes, pumps, compressors, vibrators etc. the operation of such equipment will generate noise	• Unnecessary blowing of horns will be strictly prohibited. • In order to safeguard the

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		ranging between 70-85 dB. Due to moderate levels of construction activities, the anticipated noise generation during construction phase will be mostly confined to the facility itself and not anticipated to have significant adverse impacts on the surrounding ambient noise levels.	construction workers working at noise generating sources, these personnel will be provided with proper personal protective equipment such as earplugs, earmuffs etc. Hence, no significant impact is envisaged due to the operation of the noise generating equipment at the project site, if suitable mitigation measures are adopted. • In order to have less impact on noise levels in the air, the major works will be carried out during day time as far as possible. • Equipment noise will be reduced at source by proper maintenance and repair of construction

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		machinery and equipment
Ecology	• The proposed project site is devoid of forest or thick vegetation. Only wild grasses or small bushes which have grown due to non-cultivation of the area will be removed during levelling operations. Hence, there will not be any major impact on the terrestrial ecology of the project site due to construction activities.	• After completion of the construction work, the damaged area due to construction works will be restored. • After the project completion, plants and trees will be planted on the proposed site that will in turn enhance the aesthetic value.
Workers Health, Safety and Environment	• The construction activities may pose negative impacts on the health and safety of workers	• The contractor will ensure that the workers and labors are trained in safety procedures for all relevant aspects of construction. • Workers will be provided with proper safety equipment such as helmets, goggles, masks where required. • Formal emergency procedures will be developed. First Aid Kit

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		will be kept available at the site along with list of emergency phones to be contacted in case of any emergency. • Warning signs will be displayed in local language where required.

6.7 Impacts During Operational Phase

6.7.1 Land and Soil

After the end of the construction phase the area will be restored back to its original state; different ornamental plants and native tree species will be planted. This will improve the overall ecology, aesthetic and landscape of the area whereas; the un-paved roads will be converted to metalled roads. This will have positive and significant impact on the land and soil condition of the area.

Nature of Impact

This impact is considered to be positive, long-term and significant.

6.7.2 Solid Waste Management

Solid waste generated from proposed project will be domestic in nature. Solid waste will be organic in nature and it may produce vector which could transfer diseases to humans and can be the cause of public nuisance.

Nature of Impact

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

Mitigation

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Following mitigations should be adopted to reduce the issues related to the solid waste:

- Bins will be provided to collect solid waste; these bins will be emptied by sanitary staff. End disposal and solid waste management will be done as per area practices.
- Solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odour and to reduce public nuisance
- Solid waste should be collected and transported to the waste disposal site on daily basis

6.7.3 Wastewater

There will not be any industrial activity so no wastewater will be generated, domestic wastewater will be treated by passing through septic tanks and then discharged in municipality drain.

6.7.4 Air Pollution

Project only involves storage and filling of cylinders, not any industrial activity so there will be no emissions. Only dust will be generated during floor cleaning that will be controlled by water sprinkling. In case of leakage, broken down pipes, LPG could escape which will have certain impacts on workers. For this, Gas detectors will be provided. Further PPEs will also be provided to workers to cater this situation and ensure safety and health.

Generators will be provided with proper enclosure; proper maintenance and tuning of generator will be ensured to mitigate air emissions due to generator.

6.7.5 Noise and Vibration

Project only involves storage and filling of cylinder, not any industrial activity so there will be no noise generation. Noise will only be generated during transportation, for this only those vehicles will be used that are properly tuned and maintained and are equipped with silencers. Also excessive use of horns will be avoided. Further tree plantation will be done as it acts as noise absorbers.

6.7.6 Traffic Management

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Proper parking area is provided for traffic management. Traffic management plan will be as follows:

Management Plan	**Traffic Management Plan** • Heavy vehicles shall only be to enter and leave the site during day hours. • Speed limit will be ensured • LPG Filling will be on proper places within project boundary • Cars will be parked on proper parking area.	
Monitoring	**Responsible**	**Monitoring Duration**
	Environmental manager	Weekly basis

6.7.7 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. Firefighting equipment details are mentioned on map.

Mitigation

- Fire extinguishers should be properly maintained and checked periodically; and will be installed on key points.
- 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 gauge should be checked monthly.
- Adequate training of workers on use of firefighting system to deal with the situation.

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- 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.

6.7.8 Safety Concerns

Operation of the project may cause some concerns for safety, public health and nuisances within the project area.

Mitigation:

- Personal Protection Equipment (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles and Masks will be provided to the employees to ensure their safety at work place.
- Workers' awareness and safety wall chart showing safety symbols and other necessary information will be displayed at various places.
- First Aid Box will be kept in every department which will be within the approach in case of any injury or mishap.
- To avoid any chance of fire, a comprehensive firefighting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and firefighting Vehicles.
- Basis medical and safety training will be held from time to time to minimize the risk of health and safety issues which can result from ignorance (ergonomic hazards in particular) in the project premises.

.8 Potential Environmental Enhancement Measures

Following are the positive impacts of the Proposed Project that will enhance the overall socio-economic and ecological condition of the Project Area.

6.8.1 Employment/Poverty Alleviation

The employment opportunities in the Project Area will be increased due to the development and operation of the proposed project. During construction and operation of the proposed project unskilled workers will be required as labours, sanitary workers and sweepers as well as for the skilled workers such

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as; accounts and managers to run the administration office. In totality, the overall economic conditions of the area will be improved.

6.8.2 Increased Business Opportunities

For construction of the proposed building a number of raw-material will be required. Many venders can supply the required stuff on daily and weekly basis. This will serve as a new business opportunity and it will enhance the socio-economic status of the people direct linked with it.

6.8.3 Tree Plantation

The tree plantation will be carried out along the boundary of the Project Site, and Open green spaces as the part of the proposed Project. This will include plantation of ornamental as well as indigenous species of the plants. The plantation will improve that overall ecological conditions of the area. Trees height will be between 3-7 ft. Total number of plants and trees will be approximately 50. Spacing between plant to plant will be 6-8m.

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(7)
ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

7.0 GENERAL

This is part of the study discusses the Environmental Management Plan and describes institutional arrangements required for its effective implementation. An Environmental Management Plan renders a delivery mechanism to reduce adverse environmental impacts of a project during its execution, enhance project benefits, and introduce standards of good practices to be adopted for all project works.

It is estimated that about 50% of all lubricants are released into the environment. Common disposal methods include recycling, burning, landfill and discharge into water, though typically disposal in landfill and discharge into water are strictly regulated in most countries, as even small amount of lubricant can contaminate a large amount of water. Most regulations permit a threshold level of lubricant that may be present in waste streams and companies spend hundreds of millions of dollars annually in treating their waste waters to get to acceptable levels.

Burning the lubricant as fuel, typically to generate electricity, is also governed by regulations mainly on account of the relatively high level of additives present. Burning generates both airborne pollutants and ash rich in toxic materials, mainly heavy metal compounds. Thus lubricant burning takes place in specialized facilities that have incorporated special scrubbers to remove airborne pollutants and have access to landfill sites with permits to handle the toxic ash.

Unfortunately, most lubricant that ends up directly in the environment is due to the general public discharging it onto the ground, into drains, and directly into landfills as trash. Other direct contamination sources include runoff from roadways, accidental spillages, natural or man-made disasters, and pipeline leakages.

Improvement in filtration technologies and processes has now made recycling a viable option (with the rising price of base stock and crude oil). Typically various filtration systems remove particulates, additives, and oxidation products and recover the base oil. The oil may get refined during the process. This base oil is then treated much the same as virgin base oil however there i

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considerable reluctance to use recycled oils as they are generally considered inferior. Basestock fractionally vacuum distilled from used lubricants has superior properties to all-natural oils, but cost-effectiveness depends on many factors. Used lubricant may also be used as refinery feedstock to become part of crude oil. Again, there is considerable reluctance to this use as the additives, soot, and wear metals will seriously poison/deactivate the critical catalysts in the process. Cost prohibits carrying out both filtration (soot, additives removal) and re-refining (distilling, isomerization, hydrocrack, etc.) however the primary hindrance to recycling still remains the collection of fluids as refineries need continuous supply in amounts measured in cisterns, rail tanks.

Occasionally, unused lubricant requires disposal. The best course of action in such situations is to return it to the manufacturer where it can be processed as a part of fresh batches.

Environment: Lubricants both fresh and used can cause considerable damage to the environment mainly due to their high potential of serious water pollution. Further, the additives typically contained in lubricant can be toxic to flora and fauna. In used fluids, the oxidation products can be toxic as well. Lubricant persistence in the environment largely depends upon the base fluid, however if very toxic additives are used they may negatively affect the persistence. Lanolin lubricants are non-toxic making them the environmental alternative which is safe for both users and the environment

7.1 PURPOSE OF ENVIRONMENTAL MITIGATION

For the project to be running successfully and compliance with environmental regulations mitigation of impacts caused by the project is required. The purpose of the need of mitigation can be answered by various questions as follows:

1. What is the problem?

When the resources of environment are being used ruthlessly, it results in degradation of the environment to the extent that environment loses its resilience and the carrying capacity reduces the resources are found reduced and the recovery process is too slow or nearly no recovery is possible.

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

The problems that would occur fall within the project premises, and near the boundaries of the project location. The impacts would range up to the distance

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where project related activities are performed or up to the geographical zone where the effects spread.
Impacts would show their presence soon after the project development starts.

3. Where the problem should be addressed?

The problems should be addressed where they are originated. That is at the project location.

4. How the problem should be addressed?

Problem can be addressed by using environmental friendly practices. Such practices can be followed by following mitigation plan.

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Table 21 EMP for construction phase

Environmental aspects	Environmental Impacts of the Activity	Proposed Mitigation Measures	Responsibility
	CONSTRUCTION PHASE		
Noise		In order to avoid the nuisance of noise the project maintenance manager shall ensure the all vehicles, equipment, machineries used during construction phase are in good working condition.	Project Manager
Water Pollution	Unplanned wastewater disposal may contaminate the surface water channels, surface soil and depending upon the quantity of wastewater generated, it has a potential to contaminate the ground water aquifers.	Wastewater generation during construction phase shall be reused again for material making for construction phase and sprinkling of dust on soil. Domestic wastewater will not be there at the site because at site workers will use local/public washrooms	Project Manager
Air Emission	Generation of dust and particulate matters is an issue that could arise due to construction activities. Gaseous emissions including SOx, NOx, CO2, lead and CO during	The construction materials e.g. soil, clay would be covered appropriately. Instead of open and dry dumping, sprinkling of water in a quantity that reduces the chances	Project Manager

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	construction phase. These gases are ozone depleting reagents. Besides, they also pose threat to human health.	of dust generation would be done. The workers would be provided safety gloves, masks and ear buds and wherever necessary goggles to avoid health complications. Good quality fuel shall be used in the machineries, generators to avoid emission. Vehicles, machineries with good conditions which fall on the quality standards shall be used to control the exhaust emission.	
Solid Waste	Unplanned dumping of solid waste generation during construction phase can lead to blockage of roads, waterways and also create unaesthetic sight of the proposed location.	Solid waste generated during construction phase shall be reused in construction activities rather than dumping. The solid waste during construction phase will consist most of soil, packaging materials, plastic bags, iron rods, and food leftovers. The organic portion of solid waste shall be collected by local sanitary workers	Project Manager

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		while other material will be reused in the construction activities.	
Health & safety	Unskilled workers may create issues in attaining the overall health environment and safety policy.	Regular onsite and offsite training of the workers shall be conducted. Impromptu meetings and discussions with the site in-charge and daily wages workers will be done to resolve any issues that may create health safety and environmental problems during construction phase.	Project Manager
Emergency Response	Accidents and / or emergency breakdown of the equipment/machine ries/vehicles involved may create environmental, health and safety hazards.	This situation can be avoided by regular maintenance of the vehicles for quality assurance. Each equipment will be checked prior to operation to avoid accidents and human health danger due to such accidents.	Project Manager

Table 3: EMP for Operation Phase

Sr. No	Environmental aspects	Environmental Impacts of the Activity	Proposed Mitigation Measures	Responsibility
		OPERATIONAL PHASE		
1.	Noise	In the project of storage, during loading and	_Workers should be told and encouraged to	Project Manager

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		unloading noise may be generated.	use PPE's (ear plugs or ear muffs).	
2.	Water Pollution	At the project site, there will be no wastewater generation during operational activity; there will be only domestic wastewater.	_There will be no industrial activity so on wastewater will be generated only the domesticated waste water which will be treated by passing through septic tanks and finally discharged in local drain _Efforts should be made to ensure that water is conserved and that environment-friendly techniques are adopted too.	Project Manager
3.	Air Emission	Source of air pollution during operation phase would only be dust generated	_Proper ventilation can limit the amount of indoor pollutants. _Water spraying should be practiced where required. _Regular monitoring _No waste should be burnt at the premises.	Project Manager

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			_Gas detectors will be installed for LPG leakage detection _Generators will be properly tuned and maintained and proper enclosure will be provided.	
4.	Solid Waste	Solid waste comprise of a domestic waste and waste scrap mainly which would be sold to their respective dealers.	_No waste should be burnt within the premises _Small waste storage bins should be installed.	Project Manager
5.	Health & Safety	Operation of the project may cause some concerns for safety, public health and nuisances within the project area.	_ Providing Personal Protection Equipment (PPEs) such as gloves, masks to the workers. _ Basis medical training should be provided to the specified work staff and basis medical service and suppliers to workers.	Project Manager
6.	Emergency Response	Fire hazard	_ Fire extinguishers should be properly maintained and	Project Manager

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			checked periodically. _Prohibiting flammable materials in the premises. _ Maintaining fire alarm systems for detection and warning of fire. _ Adequate training of workers on use of firefighting system to deal with the situation. _ Gas leakage will be controlled by providing gas detection system _ Safety plan in case of gas leakage will be followed	

2 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.

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Table 4: Environmental Monitoring Plan for construction phase

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	responsibility
Noise Levels	To determine the effectiveness of the noise abatement measures on the sound level	Noise level on the site and adjacent area on dB(A) scale	Noise level reading will be taken	Twice during construction	At least two locations on the unit boundary	Environment Officer / Manager
Waste Collection, Storage and Disposal	To check the availability of Waste Management System and Implementation	Inspection of Waste Generation, collection, Storage and Disposal at site	Visual inspection	Once daily	Construction site	Environment Officer / Manager
Soil contamination	To determine the effectiveness of the control measures taken to minimize the	Inspection of equipment and vehicles	Visual inspection and availability checks	Monthly inspection	All vehicles and equipment in use at construction site	Contractor / Environmental officer

	spillage of oil and chemicals					
Workers safety	*To check and evaluate the effectiveness of the workers' safety plan*	Injuries and accidents	Recording injuries	Daily	Onsite	HSE officer / contractor
Water conservation	To determine the effectiveness of the Water Conservation Techniques in Practice	Leakages, spills and wastages	Visual inspection and record tracking	On monthly basis	At all points of use	Environmental officer / manager

The monitoring of the EMP and the communication and documentation mechanism that will be employed during the operational phase will be based on the Environmental Management System (EMP) of the project proponents and the certification and legal bindings. The management system of the project proponents will be the same as the certified EMS in place at the company. Approximately 50,000 PKR budget will be reserved for the Environmental Monitoring and Measures.

Table 5: Environmental Monitoring Plan for Operation Phase

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility

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

INSTITUTIONAL CAPACITY OF THE UNIT

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

3.1 PRIMARY RESPONSIBILITIES

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

3.2 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.

3.3 SUPERVISION & MONITORING

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

3.4 COMMUNICATIONS AND DOCUMENTATION

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

7.3.4.1 MEETINGS

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

- Kick-off meetings
- Weekly meetings

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

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

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5.4.2 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.

ENVIRONMENTAL TRAINING

Training is an integral part of a preventive strategy. Environmental and disaster management training will be required to ensure proper implementation of effective environmental management and monitoring plan; and disaster management plan. However, training could be organized by Owner involving relevant staff. As a trainer, competent Consultant can be outsourced. Important training under the spectrum needs to include:

- Training on firefighting and safety management;
- Training on environmental safeguards and compliance;
- Staff training on environmental monitoring and reporting;
- Training on occupational health and safety measure.

SUMMARY OF IMPACTS AND THEIR MITIGATION MEASURES

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

- To provide a mechanism to determine whether the project construction contractors are carrying out the project in conformity with the EMP.
- To identify areas where the impacts of the project are exceeding the criteria of significance and therefore, require corrective actions.
- To document the actual project impacts on physical, biological, and socio-economic receptors, quantitatively where possible, in order to design better and more effective mitigation measures.

EQUIPMENT MAINTENANCE DETAILS

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plete inspection and maintenance of tanks, vents and all other auxiliaries will done by 3rd party as and when required. Maintenance plan for firefighting ipment is as follows:

Task	Weekly	Monthly	Semi-Annually	annually
ual Inspection	✓			
sting and Inspection			✓	
eck for Leakage		✓		
charging				✓
e Mains & Nozzles		✓		
ntainers/Gallons			✓	
ntrol and section			✓	
lves				

ENVIRONMENTAL BUDGET

Approximately PKR 50,000 budget will be reserved for the Environmental Monitoring and Measures.

CHANGE MANAGEMENT PLAN

The EIA/IEE recognizes that changes in the operations or the EMP may be required during the operation and therefore a Change Management Plan has been provided to manage such changes. The management of changes is discussed under two separate headings, changes to the EMP and changes to the Operation.

CHANGING IN PLANNING AND DESIGN

The change management system recognizes three orders of changes.

I. **First Order Change**
A first order change is one that leads to a significant departure from the project described or the impacts assessed in the EIA/IEE and consequently require a reassessment of the environmental impacts associated with change. Examples of such change include change in location of the proposed plan.

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In such an instance, the environmental impacts of the proposed change will be reassessed, and the results sent to the Punjab EPA for approval.

II. Second Order Change

A second-order change is one that entails project activities not significantly different from those described in the EIA/IEE, and which may result in project impacts whose overall magnitude would be similar to the assessment made in this report. In case of such changes, the environmental impact of the activity will be reassessed, additional mitigation measures specified if necessary, and the changes reported to the Punjab EPA.

III. Third Order Change

A third-order change is one that is of little consequence to the EIA/IEE findings. This type of change does not result in impact levels exceeding those already assessed in the EIA/IEE; rather these may be made onsite to minimize the impact of an activity. The only action required in this case will be to record the change in the change record register.

10 CHANGING IN MONITORING AND MANAGEMENT PRACTICES

The EIA/IEE and the EMP have been developed based on the best possible information available at the time of the EIA/IEE study. However, it is possible that during the construction and operation phase some aspects of the EMP may need to be changed owing to their non-applicability in a certain area of operation or the need for additional mitigation measures based on the findings of environmental monitoring during the construction and operation phase. In such cases following actions shall be taken.

1. A meeting will be held between management and the concerned contractor. During the meeting the proposed deviation from the EMP, planning and designing will be discussed and agreed upon by all parties
2. Based on the discussion during the meeting, a change report will be produced collectively, which will include the original EMP clause/plan or design, the change that has been agreed upon, and the reasons for the change
3. The report will be signed by all the parties and will be filled at the site office. A copy of the report will be sent to Housing Scheme and contractor head offices.

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4. All relevant project personnel will be informed of the change.

COMPENSATION IN TERMS OF MONEY

Changes in the EMP can be done upto 2% of the total development cost in case the Monitoring of the environment according to the prescribed plan does not render useful.

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STAKEHOLDERS PARTICIPATION

roject proponent engaged an Environmental Expert Team who conducted a survey of oject site and had discussions with stakeholders and consult with the local people to ate the project socioeconomic impacts. People provide the massive information about oject and have positive remarks regarding the project development.

Methodology of Consultation

eam carried out public consultation at various locations around the Project Site. The older's consultation during this phase of the work targeted the project area, istrative and private offices, Govt. offices, shops, etc. near the Project Area:

Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring factory workers, residents, shopkeepers, drivers etc.

Environmental consultations and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

ultation was held with following:

8.1.1 Proponent

Possible impacts and mitigation measures related to the subject project were discussed with the project proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environmental friendly.

8.1.2 The Responsible Authority

Management of the subject project is the responsible authority to take all measures prior to the activity.

8.1.3 Some other Departments & Agencies

For the impact analysis details meetings were held with the management of the subject project, local community, education institutes, health institutes, hospital and NGOs. issues were discussed that may affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultations is to obtain the feedback from the relevant persons. Socioeconomic survey form are annexed.

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Affected & Wider Community

There is no affected community present in the radius of our study area. Team has consulted with the inhabitants of the different villages. They provided positive remarks regarding the subject project and in the favor of the subject activities for the proposed project. Stakeholders participation performer's and socioeconomic questionnaire were get filled by the inhabitants to evaluate the project socioeconomic impact.



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(9)
CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the Proposed Construction of **"Lube Oil Reclamation Plant and storage by M/s RYK LUBRICANTS".**

EIA of Proposed Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baseline, 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 should reduce, if not eliminate, these impacts so that these are within acceptable limits. Moreover, no deterioration, depletion or exploitation of resources is expected to be caused by this project.

Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented.

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

RECOMMENDATIONS

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

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

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- Installation of fire extinguishers in the premises and their monitoring must be ensured.
- Equipment maintenance and efficiency must be checked.
- No compromise no 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.

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