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EXECUTIVE SUMMARY

Title of the Project:	Saram Lubricant Factory
Description of project	The proposed project is to establish oil reclamation facility
Location of the project	Chak# 92 J.B, Tehsil Gojra, District Toba Tek Singh
Proponent:	Advocate Muhammad Saram Zafar

Introduction

The executive summary is an outline of the key outcomes in Initial Environmental Examination (IEE) Report. The Proponent intends to establish oil reclamation facility to meet the demands of the vicinity by the title "Saram Lubricant Factory" at Chak# 92 J.B, Tehsil Gojra, and District Toba Tek Sing over an area of 43945Sq.Ft. This project specific IEE (Initial Environmental Examination) presents a detailed account of the foreseeable environmental and social impacts likely to emanate from the installation of oil reclamation facility. In this pre-feasibility study, all calculations have been based on a production capacity of about up to 50,000 liters per month. The IEE (Initial Environmental Examination) report is prepared to assess the potential impacts likely to occur from the project's entire life cycle on the local environmental quality and communities.

The proposed project is the oil reclamation facility, used oil as raw material. It falls under ***Schedule I*** (list of projects requiring an IEE), ***Category B (Manufacturing and processing) and sub sector 5*** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage) of the IEE / EIA Regulations 2000 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012). Details of the process description are given in **Chapter 3** under heading process details.

The assessment came up with a set of impact mitigation measures for the project to pursue in order to minimize the adverse impacts on the environment and nearby communities.

Brief Outline of the Project

Name of the Project:	Saram Lubricant Factory (Oil reclamation facility).
Proponent:	Mr. Muhammad Saram Zafar
Total Area:	43945 Sq.Ft
Product	Reclaimed Oil
Purpose of the Project	Used oil reclamation facility. (Oil Separation, Sludge removal)
Capacity of Project:	50,000 liters per month
Cost of the Project	**Approx. PKR 10 Million**
Site Coordinates	**31.251972N, 72.777889E**
Nature of Area	Agriculture area
Ground Water	100-150ft
Man Power:	Construction: 20-25 Persons
	Operation 80-100 Persons
Power Source	MEPCO (WAPDA) + 1 Standby Generators Of 150 KVA
Water Availability	Tube Wells of depth> 250ft.
Estimated waste water generation	35 liters per day
Period of Construction	Approx. 01 Year
Assessed Environmental issues	Solid and liquid waste will be environmental issues. So, these wastes should be disposed of via EPA approved vendor.
Solid Waste Management	Will manage by EPA approved vendor.
Waste water Management	Waste water will only be generated from Domestic use, after treatment in Septic tanks after that will drain into Dijkot drain.
Consultant Name	Enviro stewards Company (Pvt.) Limited
Compliance	Punjab Environmental Quality Standard (PEQS 2016) and time to time guidelines by EPA and other enforcement Department / Agencies.

Legal and Administrative Framework

The national guidelines and legislations relating to the environment considered for the project include, National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), Punjab Environmental Protection Act (PEPA 1997), amended PEPA, (2000), National Environmental Quality Standards (NEQS), Land Acquisition Act (1894), Cutting of Trees (Prohibition) Act (1975), Punjab Wildlife Act (1974), Punjab Plantation and Maintenance of Trees Act (1974), Antiquities Act (1975) etc.

Current national environmental policy as well as administrative and legal framework of PEPA, 2000 has been reviewed comprehensively which provides an overview of the national policies, laws, guidelines and regulations related to the IEE (Initial Environmental Examination) study of the proposed project. Environment related documents have been reviewed including submission of environmental assessment study report to obtain environmental approval was made mandatory by the Pakistan Environmental Protection Ordinance (PEPO), 1983 and the Pakistan Environmental Protection Act (1997). Section 12(1) of the PEPA (1997) stipulates that no project involving construction or any change in the physical environment can be undertaken unless an IEE or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

This IEE (Initial Environmental Examination) report has been prepared with due consideration of PEPA, 1997, Punjab Environmental Protection (Amendments) Act, 2012 and all other legal requirements of Pakistan and Punjab Government Including LAA, 1894.

Impacts and mitigation Summary

Since that, the project is oil reclamation facility, it is therefore likely to produce effects onto the air quality of the project site unless appropriate mitigation measures are employed for balancing out the identified adverse impacts. Innumerable environmental and social impacts are expected during installation and operation, significant ones of which would be:

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

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

Proposed Monitoring

During Construction ambient air quality for dust quality in particular, vehicle and equipment exhaust, noise level, solid waste management and soil contamination and worker's safety need to be monitored on regular basis.

During operation, ambient air quality for dust level in particular, noise level, solid waste management and soil contamination, and community & workers safety need to be monitored on quarterly basis. Monitoring Plan has been included in **Chapter 05**.

Conclusions and Recommendations

The major positive impacts of the Project include job opportunities and new business opportunities. The Project will raise the people's income, enhance social infrastructure, and improve socioeconomic conditions in the area. The Project is expected to stimulate greatly the local economies around the Project area and to benefit people who have a low standard of living.

Negligible to low negative impacts can be foreseen during Project implementation including Air Quality, Noise, Biodiversity and Dust. Mitigation measures will be implemented to minimize environmental impacts. All the impacts can be managed cost effectively. Careful mitigation and monitoring, specific selection criteria and assessment procedures for subprojects have been specified to ensure that minimal impacts take place.

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

1. INTRODUCTION

1.1. General

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

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

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

1.2. Consultant Details

The proponent has engaged M/s Enviro stewards Company (Pv.t) Limited to conduct the IEE Study of aforesaid project in accordance with guidelines issued by EPA, Punjab. For this purpose, M/ Enviro stewards Company (Pvt.) Limited has engaged the group of professionals which comprises of environmental specialists, environmental engineers and chemical engineer. The details of the consultants are given below:

Sr No.	Consultant Details	
1	Consultant	Enviro Stewards Company (Pvt.) Limited
2	Address	40/8 New Civil Lines Regency Road Behind State Bank of Pakistan Faisalabad.
3	Contact No.	041-2619600
Team leader		
1	Name	Miss Sara Fatima
2	Designation	Senior Environmentalist

3	Contact No.	+92-301-1198600

List of Environmental Experts

Sr. #	Name	Qualification
Team Leader		
1	Miss. Sara Fatima	M.Phil. Environmental Sciences
Environmental Scientist		
3	Mr. Zia ur Rehman Farooqi	Ph.D. Environmental Sciences (Scholar)
4	Hafiz Zeeshan Safder	M.Sc. Analytical Chemistry
5	Mr. Saffi Ahmed	M.Phil. Environmental Sciences
Environmental Engineers		
7	Miss Misbah Ali	B.Sc. Environmental Engineering
8	Engr. Muhammad Bilal	B.Sc. Environmental Engineering
Sociologist		
9	Qazi Muhammad Ahmed Raza	M.Phil Sociology

1.3. Purpose of Report

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

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

The proponent feels its social, moral and legal obligation to protect the environment. It is in this context that the company initiated the process of gaining Environmental Approval from the EPA, Government of Punjab. Accordingly, it on its own approached EPA for guidance in this regard. According to the direction of the EPA, as detailed in the preceding para under "Introduction" this IEE (Initial Environmental Examination) is being submitted for issuance of the said Environmental Approval in compliance with the Punjab Environmental Protection Act - 1997 (Amended 2012) Section 12.

The proponent affirms that environmental management order will prevail both during construction and regular operation in accordance with the Punjab Environment Quality Standards (PEQS).

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

1.4. Identification of proponent

The details of the proponent of said project are as follows,

Sr. #	Proponent Details	
1.	Proponent Name	Muhammad Saram Zafar
2.	Designation	CEO
3.	Address of Proponent	Chak# 220, RB, Jamal pur, Babuwala, Muhallah Jaj wala, Faisalabad, Tehsil Faisalabad, District Faisalabad
4.	Contact #	0333-9939325

1.5. Nature and size of the project

The proposed project is a oil reclamation facility with capacity of about upto per 50,000 liters per month The project will spread over an area of 43945 Sq.Ft. As a result of the project, around 10-15 persons will get jobs during the construction phase and another around 60-65 persons will be engaged during the operation phase of the project.

1.6. Location

The project site is located at Chak# 92 J.B, Tehsil Gojra, District Toba Tek Singh. The coordinates of the project area are 31.251972N, 72.777889E.

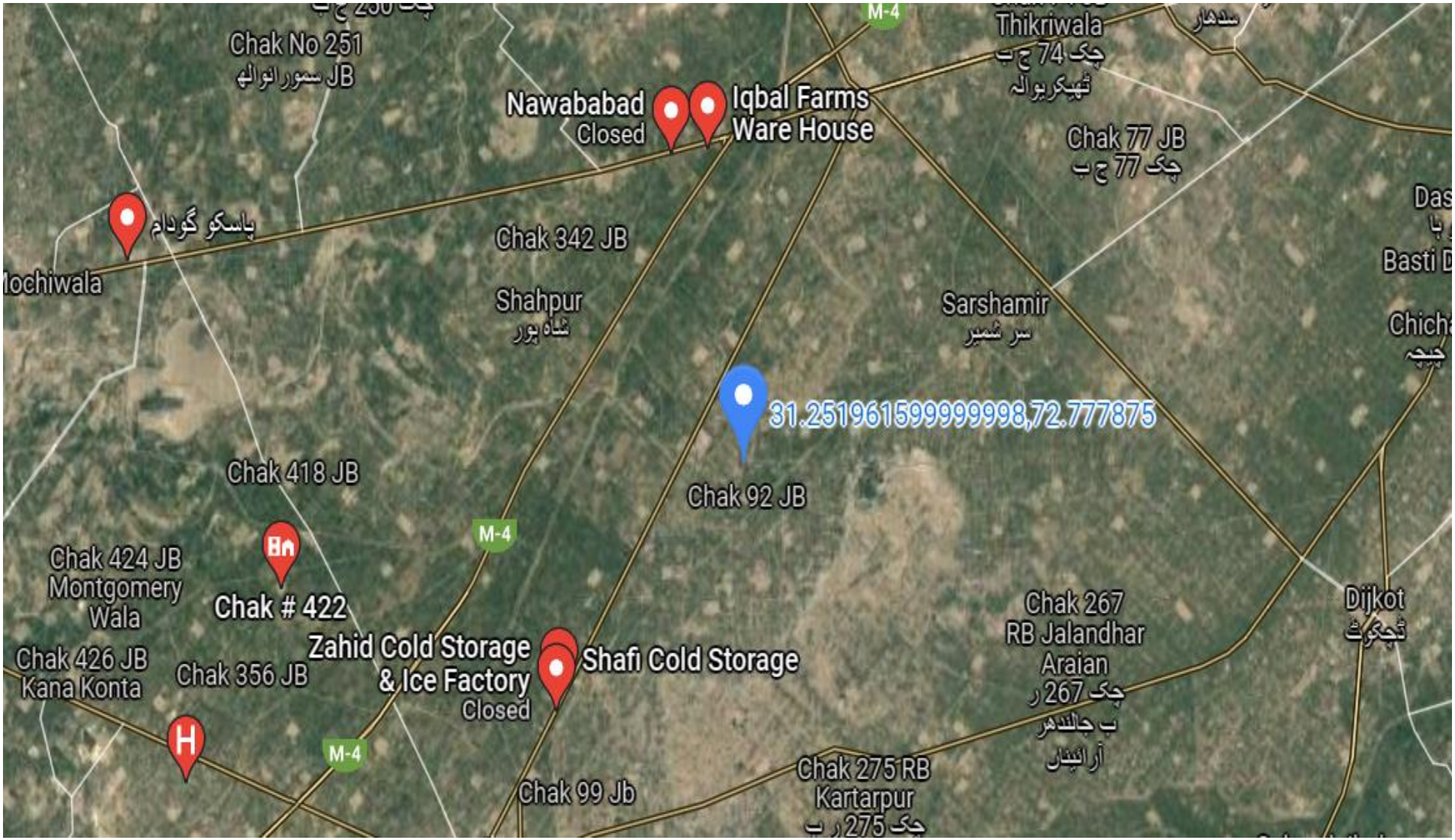

Chak No 251
JB سمور انوالہ
Nawababad
Closed
Iqbal Farms
Ware House
Thikriwala
چک 74 ج ب
ٹھیکریوالہ
Chak 77 JB
چک 77 ج ب
M-4
پاسکو گودام
Chak 342 JB
Shahpur
شاہ پور
Sarshamir
سر شمیر
31.251961599999998,72.777875
Chak 92 JB
Chak 418 JB
M-4
Chak 424 JB
Montgomery
Wala
Chak # 422
Chak 426 JB
Kana Konta
Chak 356 JB
Zahid Cold Storage
& Ice Factory
Closed
Shafi Cold Storage
M-4
Chak 267
RB Jalandhar
Araian
چک 267 ر
ب جالندھر
آرائیاں
Dijkot
ڈجکوٹ
Chak 99 Jb
Chak 275 RB
Kartarpur
چک 275 ر ب



Figure 1-The Project Location

There are no places of historical importance such as ancient monuments, forts, sculpture, etc. and there are no other sensitive land uses such as archeological sites, national parks or wildlife reserves found in or around the project site.

1.7. Extent of the IEE study, scope of the study, magnitude of the efforts

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

The IEE (Initial Environmental Examination) report covers the examination of the physical, biological and environmental socioeconomic impact of the following:

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

2. POLICY, LEGISLATION, LEGAL & ADMINISTRATIVE FRAMEWORK

2.1. General

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

According to environmental laws of the country development projects have to undergo the process of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) in order to predict and mitigate the impacts of the development at an early stage. Based on nature, size, cost and associated impacts, the project under consideration has been categorized for EIA study according to the regulation 3 of Statutory Notification issued on June 13, 2000 (S.R.O.339 (1) /2001).

2.2. Screening

As per direction of PEPA Act 1997, the initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulation, 2000, the development of Oil Storage Facility falls in the category of Energy mentioned in Schedule I, under the category B (5)

2.3. Existing Regulation and Framework

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

2.4. Relevant Legal / Institutional Framework

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

2.4.1. National Conservation Strategy, 1992

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

2.4.2. PEPO, 1983 and PEPA 1997 (Amended 2012)

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

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

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

2.4.3. National Environmental Policy 2005

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

2.4.4. Review of EIA and IEE Regulations, 2000

The GOP has issued Review of Initial Environmental Examination and Environmental Impact Assessment Regulations 2000, to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

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

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

2.4.6. National Environmental Quality Standards (NEQS)

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

2.4.7. Guidelines for Sensitive and Critical Areas

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

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

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

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

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

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

- National Environmental Quality Standards (NEQS)
- Detailed sectoral guidelines

2.4.10. Punjab Wildlife Protection Act, 1974

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

2.4.11. Forest Act, 1927

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

2.4.12. Explosive Act, 1884

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

2.4.13. Punjab Local Government Ordinance, 2001

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

2.4.14. Pakistan Penal Code, 1860

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

Sec 268: Public Nuisance

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

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

Sec 278: Making atmosphere noxious to health:

Sec 284: Negligent conduct with respect to poisonous substance:

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

Sec. 291: Continuance of nuisance after injunction to discontinue

2.4.15. Punjab Land Use Rules 2009

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

2.4.16. Antiquities Act 1975

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

2.4.17. Solid Waste Management Rules 2005

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

2.4.18. Labor Laws

The labor laws apply on child labor and measuring instruments.

2.4.19. Safety & Civil Defense Laws

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

2.4.20. Guidelines for Critical and Sensitive Area

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

3. PROJECT DESCRIPTION

3.1. Type and category of the project

The capital cost of the project is **PKR 10 million including land.** The project will spread over an area of **43945 Sq.Ft.** The proposed project is **oil reclamation facility** with capacity of **50,000** liters per month. As a result of the project, around 10-15 persons will get jobs during the construction phase and another around 60-65 persons will be engaged during the production phase of the project.

The proposed project is the oil reclamation facility, used oil as raw material. It falls under ***Schedule I*** (list of projects requiring an IEE), ***Category B (Manufacturing and processing) and sub sector 5*** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage) of the IEE / EIA Regulations 2000 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012). Details of the process description are given in **Chapter 3** under heading process details

3.2. Objectives of the project

The objective of aforesaid project i.e., establishment of used oil reclamation facility is to go for forward integration and manufacture high quality dyed fabric with good market potential. The project will encompass modern state-of-the-art facility with the objective of producing superior quality products. The project will have following advantages:

The project will provide additional income and gainful employment to local people.

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

Creation of new job opportunities and promoting income prospects for those engaged in the allied activities associated with operation of project is considered as indirect objectives of the project.

3.3. Project Location and Layout

The site under consideration for the establishment of "used oil reclamation facility" by M/s Saram Lubricant Factory is located at Chak# 92 J.B, Tehsil Gojra, District Toba Tek Singh. The coordinates of site are; **31.251972N, 72.777889E**. The location of aforesaid project is given below and the layout of aforesaid project is attached within file.

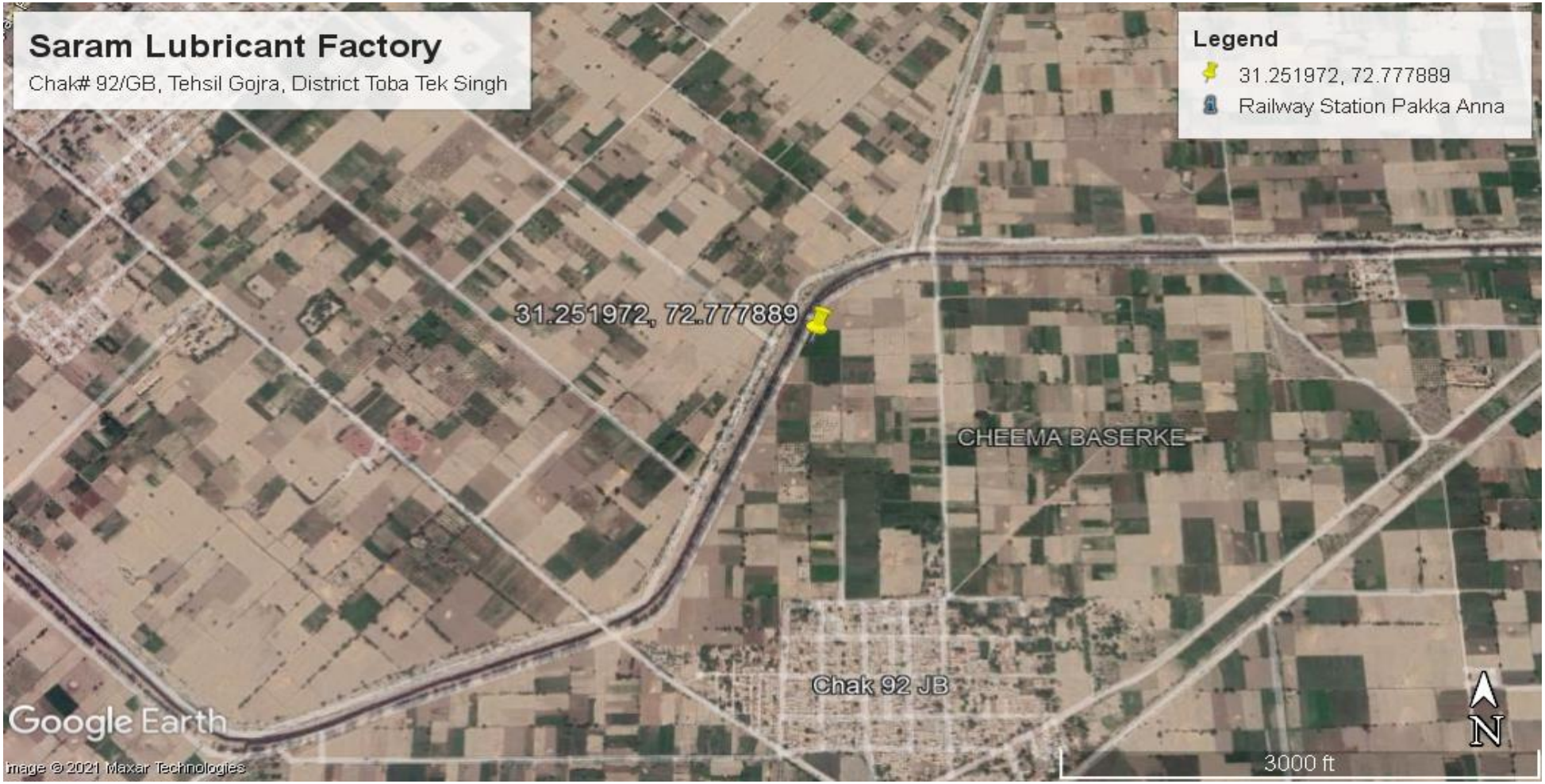


Figure 2-Google Map



Figure 3-Industries nearby Project Site

3.4. Land use of the site

Land selected for the project is industrial in nature. Land use will change from open to industrial

3.5. Magnitude & Cost of the project

The estimated initial capital cost of aforesaid project is **approximately 10 Million** Purchase of raw material, operation and maintenance of production machinery are the costly activities involved in the operation phase of said project. Equipment safety will be assured if these operations are carefully managed. No separate fund allocation is required.

Features	Cost in PKR
1. Land cost	7.5 million
2. Infrastructure development sewerage lines, water supply, boundary walls, electric supply, roads etc.:	01 million
3. Solid waste management:	0.5 million
4. Landscaping, Green belts development, Parks	0.5 million
5. WWT:	0.5 million
Total Cost	10 Million

However, budget will be allocated for purchase and maintenance of standardized PPEs for workers and for waste management and environmental enhancement. Despite these costs, this project was found to be financially feasible in the feasibility report. Magnitude of operations includes:

Applying for and getting all necessary approvals and contracts
Installation of machinery
Installation of firefighting equipment
Marking of emergency exits and assembly points
Tree plantation and landscaping

The allocated environmental budget is **PKR 2 million approx.** as mentioned in project cost breakup. The allocated environmental budget will be spent on landscape/green zone management, solid waste management and construction of septic tank. The proponent will plant indigenous and ornamental plants to increase the aesthetic value of the area. Thus, the project is also a source of employment for locals and would help in economic development activities of the area.

3.6. Vegetative Features of Land

Agricultural crops, bushes and wild grasses are present in the nearby surroundings of project area. During operation phase, green belts will be developed and it will serve as a useful buffer to contain the menace of pollution from different sources. As a control measure of atmospheric pollution, as a barriers noise generated within the premises it is recommended to develop green belt.

3.7. Plantation Plan

Approximately 2000 plants will be planted in and around the project vicinity to enhance the landscape beauty and to make the ambient air quality better. These plants will include ornamental plants as well. But most trees will be shade providing. The funds allocated to the plantation is about PKR 500,000/- and is included in the environmental budget.

3.8. Proposed schedule for implementation (Tentative)

Proposed project will be completes in period of year schedule (tentative) is described here under;

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

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

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

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

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

Figure 4-Schedule of Implementation

3.9. Road Access

The road that will be used for the transportation is known as Painsara-Gojra Road". Following is the Road access map of proposed project site:



Figure 5 Road Access Map

3.10. Description of the project

The proponent has planned to establish a used oil reclamation facility. Raw material of the proposed facility will be used oil. Used oil will be supplied from different vendors. Adding caustic soda, dust particles and other impurities will remove. To get reclaimed oil, after recommended packaging will be sold into nearby market. The product capacity of said project will be 50, 000 liters per month.

The process of oil reclamation consists of following steps;

Raw Material

Following raw material to be used for the production of reclaimed oil is:-
Used engine oil, filter press to seprate oil from sludge, Soil particles.

Process Description

Reclamation of used oil by using caustic soda and clay method. used oil is typically filtered and then heated to remove debris, solid particles and water using tank at different gravity level. The temperature of this circle is kept at 106^0c and water is completely removed. This process requires approximately 0.4 lb of clay and caustic soda 0.2lb per gallon of oil. Dried Sludge cake in the form of mud will be a byproduct of the process. After removal of Sludge from the oil, to attain desired colour of the oil colouring agent will be added. The final product of the said process will be reclaimed oil will be used for energy purpose to the machinery.

Dehydration

Furnace

In this section furnace is used to raise the temperature of the oil. In this way, all suspended particles are removed. Now this has small amount of petrol and diesel oil which is to be separated from the lube oil using specific heat as per raw material charactricts.

Thermal cracking

In this section, oil is introduced and the temperature of the temperature of the oil should be 380, which is helpful for cracking, the main purpose of the cracking is to break the long chain of the oil. And the viscosity of the oil is increased.

Cooling

The temperature of the cracked oil is about 380^{o}c, that is why it is not sent to directly in the cooling section. Firstly, its temperature is decreased by using different coils. In this way the temperature becomes 140^{o}c. fresh water is used for cooling. Fresh water is introduced from one side while hot water is removed from other side.in this way temperature of oil becomes 40 ^{o}c.

Bleaching

Oil is bleached in the section. Fuller earth is used as a bleaching agent to remove the color content of the oil.

Filtration

After bleaching of oil, it is filtered with plate and frame filter press.

Packaging:

After filterationof oil, packaging process will be automatic at different sizes of vessels.

Finishing and Final Product

The final product is packed in plastic bottles of various sizes for consumers and in drum and barrels for industrial users.

Packing & Dispatched

Final product will be packed and will be ready to be shipped in market to fulfill the market demand.

Supplies

Following supplies will be required/utilized for the reclamation of the 50,000 Liters of oil per month.

Firefighting facility,

The firefighting equipment/system that has been designed and implemented in proposed oil reclamation unit is,

Schedule of Firefighting

Sr.#	Nature of firefighting	Quantity
1.	Foam type trolley mounted fire extinguisher 50kg	2
2.	Foam type wall mounted fire extinguisher 100kg	2
3.	Sand buckets	4
4.	Water point	2

Water Supply

The source of water for the proposed site is ground water at the depth of 150-200 ft. The approximate domestic water consumption will be 3-4 liters per day. It includes domestic water consumption.

Electricity

MEPCO (WAPDA) will be the main source of the power. However, two (01) generators will be on standby mode having capacity of 1.5KVA

Manpower

There will be approximately 20-25 workers during construction phase and 80-100 workers on the unit during operational phase.

Personnel Protective Equipment

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

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

Management Plans

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

Wastewater

The wastewater will be generated at the rate of 3-4 gallons per day from the boiler process. This generated wastewater will be treated through septic tank of adequate capacity before disposal.

Air Emissions

The only source of air emissions is from boiler as coal will be used for the generation of steam. It is equipped with wet-scrubber to control the air emissions. Waste heat

recovery boilers will also be installed in which waste heat generated from backup power generators will used.

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

Noise

All the machinery will be installed and operated in a closed hall and from operation of machinery; generator noise will not be a problem as the residential area is at adequate distance. Further, administration of unit it will take the precautionary measures to avoid the noise emissions. There is no possibility of noise pollution from aforesaid activity. Installation activities will however add great to the noise, but that noise will be temporary and will be mitigated by measures as stated in Chapter-08.

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

Solid Waste

Waste generated during construction included mostly construction material (mainly steel and wood), empty cement bags, excavated earth and general packaging waste. Waste will be stored within the facility until transfer to the ultimate waste disposal site. Estimated solid waste generated during operational phase comprise of dust and sticks, empty packages and domestic solid waste and dried sludge. The quantity of solid waste will be generated at the rate 30-40kg drain sludge. Most of process waste will be recyclable while domestic waste will be handled as per practices recommended by EPA.

3.11. Details of restoration and rehabilitation at the end of the project life

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

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

3.12. Government approvals and leases:

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

4. ALTERNATIVES CONSIDERED

Alternatives are recommended and examined to determine the best method of achieving project objectives, while minimizing environmental impacts (WB December 1996). The discussion and analysis of alternatives in an IEE (Initial Environmental Examination) study should consider other practicable strategies that will promote the elimination of negative environmental impacts identified.

This section covers the project alternatives which were examined for the proposed project in Toba Tek Singh. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options will be adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety. In particular it outlines the following options that were considered for this project:

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

4.1. Site Alternative their selection and rejection criteria

The selected site for said project is located at industrial area. The area is developed as an industrial and many industries are in operation in project proximity. The selected project site is ideal from the point of view of compatibility with other land use of the area. The site is also spacious enough to accommodate the proposed facility and its infrastructure. Due to existing infrastructure and its strategic location, it is our considered view that the selected site is ideal and suitable for the proposed development. Additionally, the piece of land is owned by Proponent.

4.2. Design/technology alternatives, their selection and rejection criteria

For Installation of current project state of art technology will be selected to avoid emissions. Proponent is doing heavy investment for this project so latest/state of art technology will be preferred to ensure good quality products.

4.3. Environmental Alternatives, their selection and rejection criteria

After completion of construction, proper landscaping will be done. Moreover, the proponent is very concerned and conscious about the quality and equally about the environmental protection and resource conservation.

4.4. Economic Alternatives, their selection and rejection criteria

- Currently selected technology and design is economically efficient.
- Tree plantation will be done that will reduce temperature of the area and also act as noise barrier.
- Building design will be such that maximum use of day light and LED lights will be installed to minimize electricity consumption.

5. DESCRIPTION OF THE ENVIRONMENT

An environmental baseline study is intended to establish a data base against which potential impacts can be predicted and managed subsequently. The IEE of the proposed project covers a comprehensive description of the project area, including regional resources which are expected to be affected by the project, as well as, those which are not expected to be directly affected by the construction and operation of the project.

Data Collection

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

i. **Physical Environment**
ii. **Ecological Environment**
iii. **Socioeconomic Environment**

5.1. Physical Environment

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

5.1.1. Geological Formation

Soils mean differently for different people. While for a soil scientist it means the upper a few layers created through weather effect in which plants are grown the solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal

materials. Geographically, Pakistan is highly diversified in environment and landscape. Lofty snow-clad mountains, extensive rivers, piedmont plains and vast sandy deserts have resulted in variations of soil forming elements. Accordingly, in order to have a generalized account of various kinds of soils which are available in Pakistan, the country has been divided into nine broad ecological zones. The project area falls in the Western Mountainous Region.



5.1.2. Topography

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

5.1.3. Geology and Soil

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

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

The soil in Tehsil Chicha watni is fertile. The vegetation is short and scrubby. The land supports grasses, shrubs and some forests. Alluvial deposits in Sahiwal are remarkable structural features of Sahiwal Tehsils. No visible signs of soil contamination were observed at the project location during the site visits. There is no sign of soil erosion or landslide anywhere within 500 m of the project site.

5.1.4. Seismicity

Seismic Zoning Map of Pakistan showing Project site area is presented as Figure indicating zones according to the Building Code of Pakistan - 2007. The project area falls in Seismic Zone 2A zone according to the Seismic Zoning Map of Pakistan.

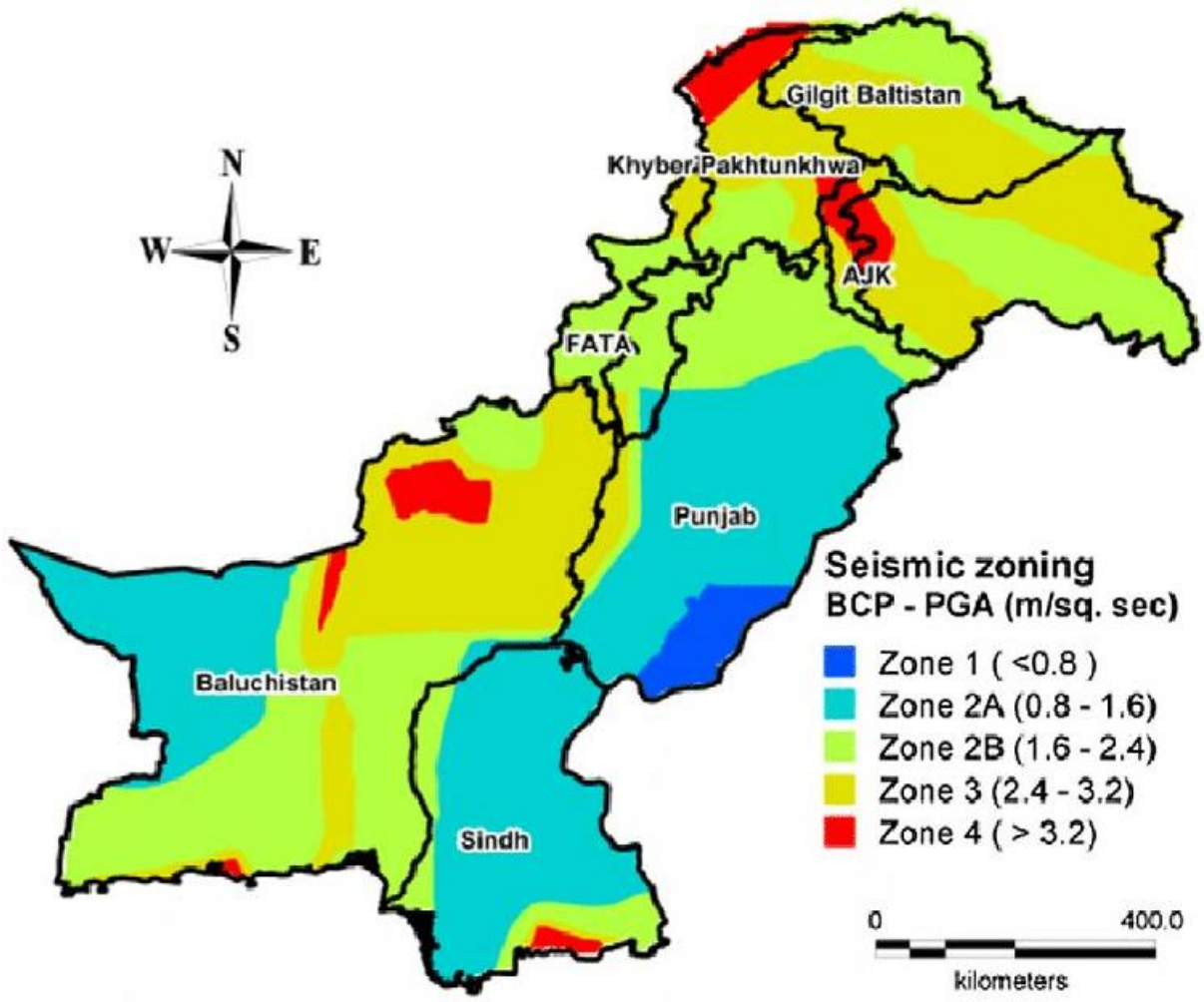


Figure 6 Seismic Zoning Map of Pakistan

5.1.5. Climate

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

Climate of District Toba Tek Singh

Month	Mean temperature Max (Celsius)	Mean temperature min (Celsius)	Precipitation (%)	Relative Humidity (%)
January	19.7	5.0	33.8	66.2

February	21.6	7.7	50.0	60.0
March	26.0	12.5	60.5	53.8
April	33.0	17.7	36.5	41.8
May	38.1	22.0	31.8	32.5
June	40.5	25.8	51.6	37.8
July	35.7	25.8	23.3	67.8
August	34.4	25.3	22.2	70.8
September	35.0	23.0	77.7	65.5
October	33.1	16.6	12.2	55.6
November	27.8	9.9	9.9	62.7
December	21.5	5.7	30.4	68.9
Annual mean	30.6	16.4	36.6	56.4

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

Topography

The soil of the project area is made up of river Alluvia brought down from the Himalayas and deposited during the Pleistocene epoch.

Soils

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

Temperature

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

Rainfall

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

Ambient Air Quality

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

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

presenting the measured parameters of the ambient air look from the center of the project area for assessment of air quality.

Table 1- Ambient Air Quality Monitoring Data

Parameters	CO	SO_2	NO_2	PM10	SPM	O_3
Unit	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Front side	0.1	35.46	16.98	33.89	195	41.51
[illegible]	0.1	35.46	16.98	33.89	195	41.51
[illegible]	0.1	35.46	16.98	33.89	195	41.51
NEQS	5	120	80	150	500	130

Noise Levels

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

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

5.2. Biological Environment

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

5.2.1. Wildlife, Fisheries & Aquatic Biology

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

Table 2-Birds in Project Site

Common English name	Scientific name
Peregrine Falcon	*Falco peregrinus*
Kestrel	*Falco tinnunculus*
Indian sparrow	*Passer domesticus*
crow	*Corvus brachyrhynchos*
kingfisher	*Alcedinidae*
owl	Bubo virginianus



Figure 7 Common Birds in Sahiwal area

Terrestrial Habitats, Forests and Protected Species

5.2.2. Vegetation cover and trees

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

Protected areas / National sanctuaries

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

5.3. Socio Economic Assessment

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

5.3.1. Demographic Profile

The total population of Toba Tek Singh was 905,580 as enumerated in March, 1998. As emerged from 1998 Census the population of Toba Tek Singh District is predominantly Muslim, i.e. 720,601 and 184,979 were non-Muslim. Punjabi is the predominant languages being spoken in the district followed by Urdu, Pushto and Siraiki spoken.

The population of the district consist of self-employed (including farming and trade), private employees and government employees.

The main occupation of women in rural areas of Toba Tek Singh are house-keeping which includes attending to the cattle, extracting butter and ghee from milk, weaving and sewing of family clothes. In addition they generally help their men-folk on farms with the lighter duties like transplanting of seedlings, threshing and winnowing of grains and sometimes they also help in harvesting. In city women are house-wives or work as professionals' doctors, nurses, teaching and in offices.

5.3.2. Languages and Major Casts

5.3.3. Religion

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

5.3.4. Dress

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

5.4. Quality of Life Values

5.4.1. Health Facilities

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

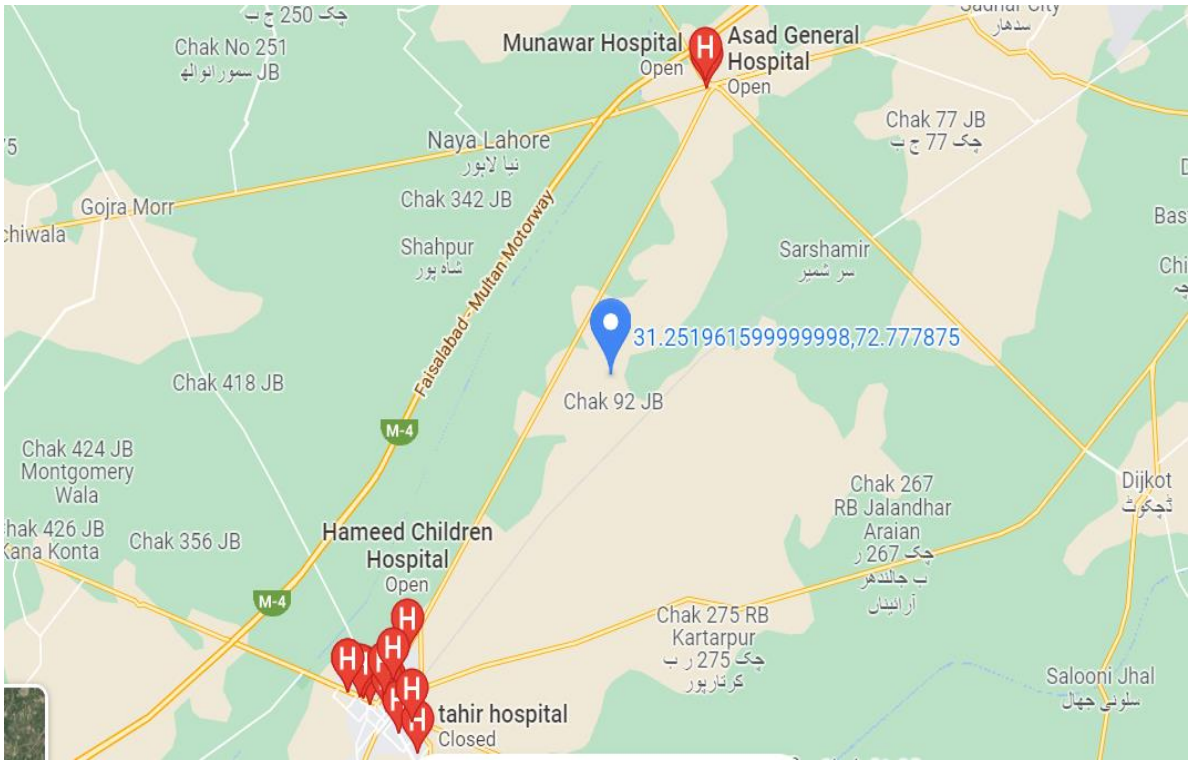


Figure 8-Nearby Hospitals

5.4.2. Customs

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

5.4.3. Electric Supply

MEPCO power supply will be available at the site of 250 KV.

5.4.4. Telephone Facilities

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

5.4.5. Educational Facilities

Various educational institutes are present in the vicinity of the project area. The literacy ratio of both Toba Tek Singh and District is very high and counted amongst top cities of Pakistan. Both the district has number of educational institution, some of the major are shown in the table below:

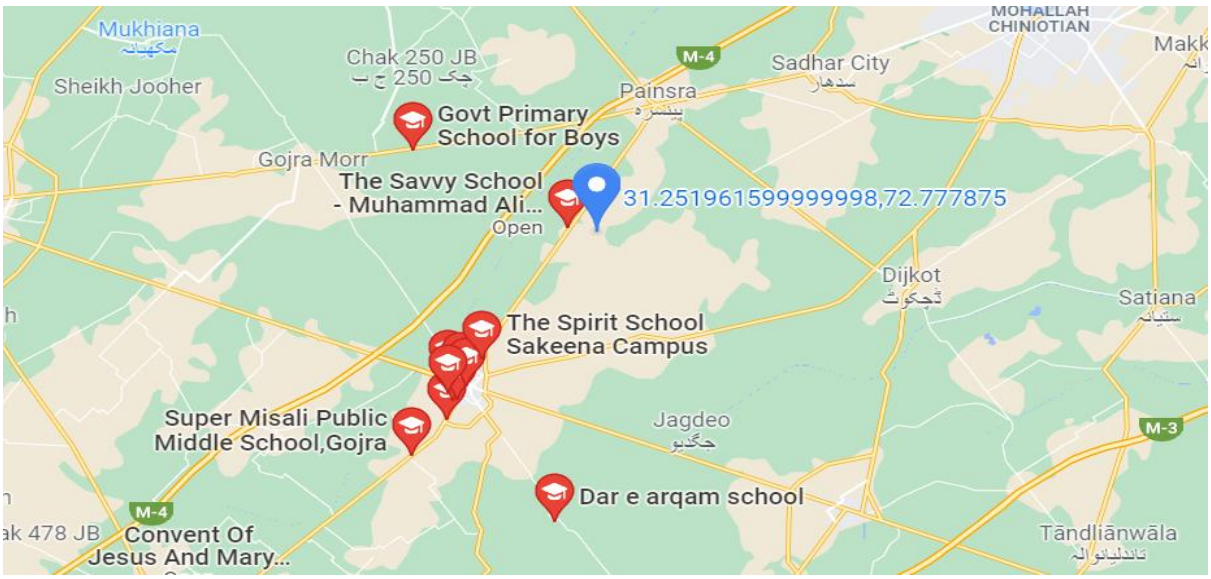


Figure 9-Nearby Educational Institutes

5.4.6. Agriculture

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

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

5.4.7. Site of Physical, Cultural Heritage

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

5.5. Site Suitability

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

Project Response

90% of the respondents were of the opinion that this project should be implemented. In their opinion, construction of the project will create labor opportunities for locals and it will help to improve economic conditions of area. Construction of the used oil reclamation facility will also provide better living facilities to the people. The respondents also provided the mitigation measures like certified contractor must be hired, proper plantation should be done, proper procedures should be followed etc. They said, if mitigation measures will be implemented, they would have no objection.

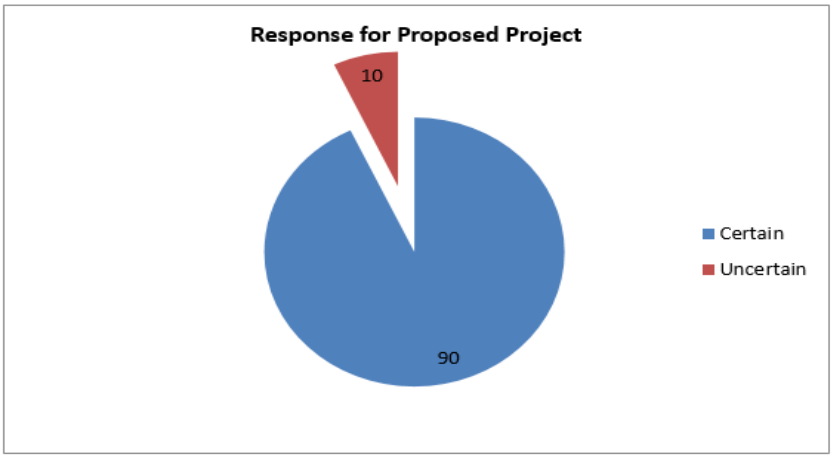


Figure 1: Percentage of people in favour or against the project

Site Suitability

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

Favor of the Project

Almost 87% of the people of the area and vicinity are in the favour of the project. Most people think that will uplift the socio-economic value of the project site.

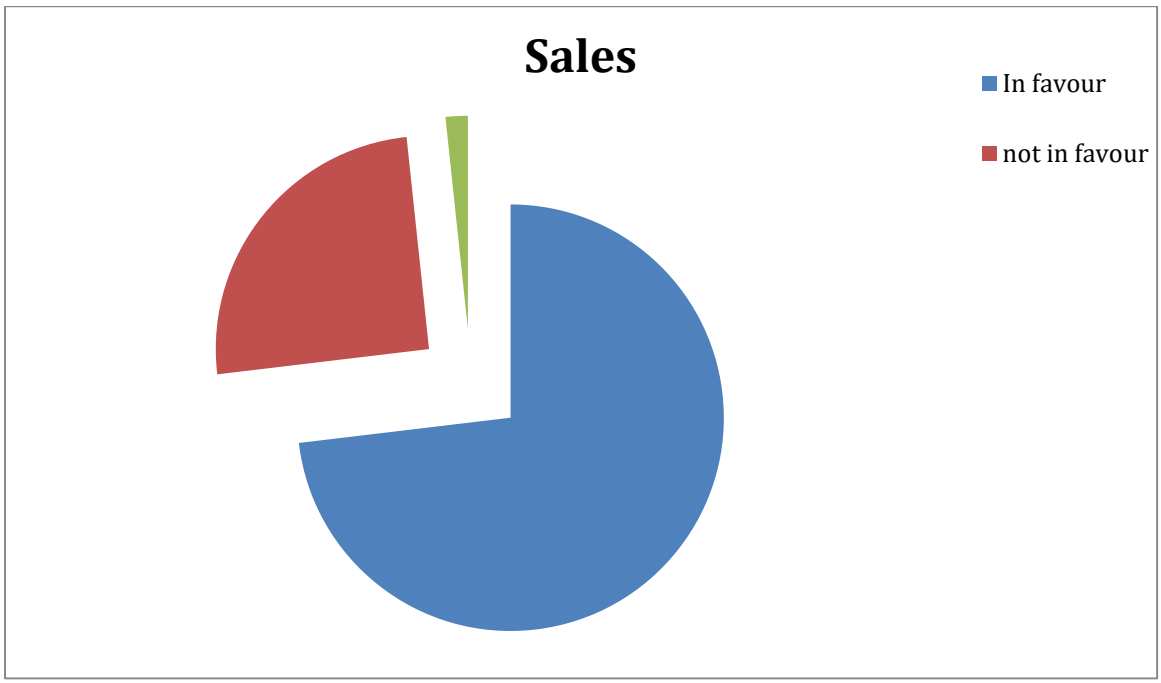


Figure 10-Project Acceptance Level

Common Diseases

Respondents were asked about the common diseases prevailing within their area. Majority of the respondents suffered from diarrhea, cough, diabetes and hypertension. Hepatitis also prevailed in the few communities.

Community Issues

Community was asked about the burning issues they are facing. Majority of the respondents complained about lack of safe drinking water and lack of the job opportunities.

Quality of Life Values

Respondents were inquired about the quality of life values available in their respective areas during socio-economic survey of the study area. Most of the respondents had the basic amenities to sustain life such as; electricity, water supply services, sewerage collection system, gas and transport facilities. Adequate educational facilities such as Government primary Schools, Spirit schools, The Savy Schools. The healthcare facilities include; Munawar Hospital, Hameed Children Hospitals.

6. SCREENING OF IMPACTS AND MITIGATION MEASURES

This chapter provides a review of the potential impacts that could occur as a result of the project activities. These impacts could be both positive and negative in nature and have been classified accordingly by a thorough review of the construction and operational phases of the project. This assessment numerates the magnitude of these impacts with the aid of environmental matrices and also presents effective mitigation measures to counter their adverse nature.

6.1. Purpose of Environmental Mitigation Measures

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 the environment are being used ruthlessly, it results in degradation of the environment to the extent that the environment loses its resilience and the carrying capacity reduces the resources found 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 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 originated. That is at the project location.

4. **How should the problem be addressed?**

Problems can be addressed by using environmentally friendly practices. Such practices can be followed by following mitigation plans.

6.2. Impacts Significance:

The impacts significance has been described in detail in the checklist made for the impacts assessment and analysis on three different environments (i.e. physical, ecological and socio-economic). The further detail is given here under:

6.2.1. Ecological importance:

- **Potential issues:**

Impacts on wildlife may arise from the following project activities:

- Noise generated from project activities;
- Air pollution due to emissions
- Movement of personnel and vehicles;
- Clearing of vegetation;

Likely impacts of these activities can include:

- Temporary migration of mammals and bird from the area;

Assessment of potential impacts:

Wildlife may be disturbed due to sensory disturbance from earthwork, construction; movement of vehicles and crew personnel. This can possibly result in changes in distribution and abundance.

- **Mitigation measures:**

The following mitigation measures will reduce the adverse impact on the wildlife of the project area:

- Vegetation loss will be kept to an absolute minimum. Cutting of large trees will be avoided;
- Fires in the open will not be allowed;
- A ‘no-hunting, no-trapping, no-harassing’ policy will be strictly enforced, unless threatening to human life.
- Uncontrolled discharge of waste of any kind will not take place in the area;
- Discharging firearms will be explicitly prohibited;

- General awareness of the crew will be enhanced regarding the wildlife, through environmental training, notice board postings, tool box talks etc.;
- The project staff will be educated and instructed to avoid killing. Feeding or harassment of wildlife will not be allowed;
- Physical disturbance to areas outside the work corridors will be avoided;
- The total duration of activities will be minimized by good management;
- Food wastes will not be disposed-off in the open;
- Movement of all project personnel will be restricted to work areas and
- Night travelling will be kept to a minimum.

Residual impact:

Once the mitigation measures given above are implemented, it is expected that the project will have lesser significant impacts on the area's wildlife.

7.3.2 Social importance:

- **Potential impacts:**

Potential sources of positive and negative impacts on local communities can include:

- Safety and security
- Mobility and operation
- Project and Community Interface
- Cultural and religious sites
- Archaeological Sites
- Local Economy
- Local Employment

6.3. Assessment of potential positive impacts:

Increase in Employment Opportunities Due to installation of aforesaid project, the employment opportunity will be slightly enhanced. During construction phase, 15-20 workers will be hired from local community include; skilled and un-skilled workers. During operational phase, approximately 500-600 persons will be required. It will include hiring of technical and non-technical staff. Locals will also have the opportunity to diversify their income by being employed. Hence, there will be an increased employment opportunity for the local people which will have a positive impact on the socio-economic status of the area.

Tree Plantation At the end of the construction phase, 3-5 times of removed trees or as per condition by EPA mentioned in said case Environmental Approval/NOC will be planted in the designated green areas, this will enhance the aesthetic beauty of the area.

Environmental standards:

All the impacts have been assessed and incorporated in accordance with the Punjab Environmental Quality Standards (PEQS), 2016. All the parameters measured for drinking water, ambient air, noise is within the permissible limits of PEQS.

Adverse Impacts and Mitigation Measures

This section identifies the potentially significant and in-significant adverse environmental and social impacts anticipated during the operation phase of said unit. Appropriate mitigation and management measures, where applicable, have also been suggested to reduce the severity of anticipated impact up to the extent possible.

6.4. Anticipated Environmental Impacts during Pre-Construction Phase

The impacts have been identified using matrix method. Major impacts which have been taken into account while evaluating any environmental impacts caused due proposed project location and design are as under:

6.4.1. Impacts due to project location:

The nearest residential community (Chak 92JB) is located at the distance of **0.60 km**. There is no human settlement, heritage building, social structure, grassland or preserved area in the project vicinity that could be damaged, dislocated or dismantled due to the project activity in proposed area. Hence, the impact of location is considered to be in-significant as the project site is away from the surface water body (within 2.0 km of project area), residential area (Chak 92JB-0.60km) and no protected area (is reported in 5.0 km vicinity of the project area).

Nature of Impact

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

Mitigation Measures

Following mitigation measures has been adopted to reduce the impact of said project location on sensitive receptors:

- The selected site located at adequate distance from the various sensitive receptors.
- The site is accessible through metaled road network; Painsra-Gojra Road.
- The selected site is located in industrial area and due to establishment of aforesaid project no change in the land use of area is being envisaged.
- The site is owned by the proponent and no dispute is associated.
- Air emissions generated from the said will be controlled by adopting pollution abatement technology such as; multi-tube cyclones.
- The wastewater will be treated prior to its disposal in Dijkot Waste Water Drain
- The generated solid waste will be collected by Contractor and it will be disposed off through the standard practices recommended by EPA.

It is envisaged that no mitigation measures will required as the said project had been constructed in agricultural area and no adverse impacts on its surroundings due to significant distances from all sensitive receptors.

6.4.2. Impacts related to the project design:

During designing phase of aforesaid project optimized the use of best available technology in order to prevent or minimize potentially significant environmental impacts associated with the project as well as to ensure high level business and environmental performances were adopted. In pre-construction/design phase, a management system was provided at design level to control all anticipated impacts.

The aforesaid project will adhere to all standards, technical and legal requirements in order to avoid adverse impacts on the socio-environment and human health. Efficient infra-structure has been developed. Construction materials have been procured from approved dealer. The technology adopted for the oil reclamation is the state of the art. This process is employed because of the following reasons

- Construction material has been procured from approved dealers.
- For the protection of workers PPEs (dust masks, gloves & shoes) has been provided during construction and it will be provided during operational phase too.
- The proposed emergency system is semi-automatic which is being control through computerized systems and it is connected with smoke alarms.
- In this process almost 80% of raw-material will be reclaimed into oil.
- Through the selected system high quality of goods will be produced.
- The generated wastewater will be treated through Septic Tank.
- The proponent intends to reduce the environmental and social issues up to practically possible safe limit. The Client had adopted SOPs for Emergency Reponses Plan, Fire Fighting Plan and Disaster Management Plan which are explained in sub-sections below.
- Planning principles and design considerations have been reviewed and incorporated into the site planning process to the extent possible. The concepts considered in the design of the proposed project are:
- No additional land acquisition will be required.
- Substantial reduction of environmental degradation in project area.
- Augmentation in adequacy of sanitation conditions at the user end enhancing the efficiency of existing infrastructure.

Nature of Impact

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

Mitigation

No additional mitigation measure will be required as state of art technology is being adopted for the used oil reclamation facility. For the treatment of the generated wastewater proper wastewater treatment plant will be installed. This generated wastewater will be given primary and secondary treatment before final disposal in nearby Dijkot drains.

6.4.3. Safety of infrastructure:

Impacts

As we already mentioned the project area is an isolated area, consequently, the building structures have been designed in accordance with the requirement of seismic factor as well as after due consideration given to other structural design parameters.

Mitigations

No mitigation is required.

6.4.4. Transportation:

Impacts

There is only one entrance and one exit point provided at the proposed site and the same shall be used in future. Hence, traffic patterns of the area will not be disturbed. Also there is not much traffic in the vicinity. This project is located far from the commercial areas.

Mitigations

No mitigation is required.

6.4.5. Wastewater drainage:

Impact

The development of infrastructure like road network, security wall or any other buffer zone, etc. shall not restrict the natural drainage ways and even alterations in drainage pattern of the project design and construction features shall be implemented after the approval from the EPA and TMA.

Mitigations

Municipal wastewater drainage will be properly handled. After primary treatment in the sedimentation tank, the wastewater will be used for watering the plantation and trees on the project site. Punjab Hospital Waste & Management Rules (PHWMR), 2014 & Punjab Environmental Quality Standards (PEQS) will be compliance for waste management and disposal.

6.4.6. Water availability:

Impact

Ground water will because for the water requirement. But due to increasing demand of water nearby water resources may be affected, however the impact shall be lesser in magnitude.

Mitigations

Water will be handled with great care. Pipes and containers will be used for further usage of water. Water will be saved at maximum possibility during construction.

6.5. Impacts and mitigation during Construction Phase

Project construction phase was of 01 year whose activities will surely show effects on land environment, water, air, noise level, soil quality, socio-economic trend of area, etc. These impacts had been controlled effectively by adopting best management practices.

By the implementation of said project, a positive impact on the socio-economic culture for the people has been observed. The chance for local employment, fabrication, brick masonry, painting and machinery erection works had been increased.

The construction phase of aforesaid project will include activities associated with the site leveling, construction of civil structures, architectural works and building services. The construction phase would bring in immediate but short term changes on various components of environment near the project site. This section explains how aforesaid project will affect different environmental aspects and its mitigation measures to manage the impact. The impacts during construction phase will be temporary and localized. Even though, the measures proposed to minimize such impacts.

6.6. Impacts & Mitigation during Operational Phase

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

6.6.1. Impact on Ecology

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

Nature of Impact

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

Mitigation Measures

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

6.6.2. Impact on Air Environment

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

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

Nature of Impact

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

Mitigation Measures

Following mitigation measures will be adopted:

- For dust suppression regular sprinkling of water will be carried out.
- Vehicles used for transportation of raw material as well as finished product and the utility vehicles will be regularly serviced and maintained in order to keep the environmental impact on account of their exhaust emissions to its minimum level.
- Native tree would be planted along the boundary of project area to keep environment healthy. For removal one tree, 3-5 trees will be planted.

6.6.3. Noise Environment

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

Nature of Impact

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

Mitigation Measures

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

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

All the transporters will be vised to carry out regular maintenance of their vehicles

6.6.4. Solid Waste Management

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

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

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

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

1. Directly re-used by another party
2. Recycled and sale to the market
3. Incinerated by vendor./ Nature of Impact

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

Mitigation

Following mitigations should be adopted to manage generated solid waste

- The recyclable and reusable waste will be sold to the contractor which will include; paper, plastic and non-ferrous material.
- Waste bins will be placed in the facility at the strategic position for the collection of solid waste.
- The installed bins will be covered in order to reduce the chances of the disease vector production.
- Record of generated waste during the project activity should be maintained on the regular basis. Quantity of the waste disposed, recycled or reuse will be logged on a waste tracking register.
- Regular training will be given to the workers dealing with the waste management it will include; identification, segregation and management of waste.
- The ash generated from the boiler will be disposed off through EPA Certified contractor on regular basis. It can be used for the filling of low lying areas**.**
- The dried sludge removed from Septic Tank will be sold to the certified contractor for the management of the generated solid waste.

6.6.5. Water Environment

Wastewater will be generated at rate of approximately at the rate of 2--30 gallons per day. This generated wastewater may impact the surface & ground water quality of area, if not treated. Moreover, the use of chemicals during process may pose threat and cause water pollution. In addition to the use of chemicals, its spillage may deteriorate water quality.

Nature of Impact

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

Mitigation

Following mitigations should be adopted to manage generated wastewater:

- The domestic wastewater will be treated through septic tank prior to disposing off in nearby in Industrial city waste water drain
- For the treatment of wastewater; septic tank of adequate capacity and technology will be installed. It will consist of;
- Screening
- Grid Removal
- Primary Sedimentation
- Aeration
- Secondary Sedimentation
- Aeration
- Sludge drying bed
- Water conservation activities will be adopted for the preservation of water.
- Water conserving methods will be applied by placing taps and toilets.
- All faults will be monitored and fixed.
- Freshwater conservation techniques should be adopted to ensure sustainable development such as; wastewater recycling plant.
- Monitoring of effluents shall be carried out as per requirement of Self-Monitoring and Reporting Tools (SMART) to ensure compliance with the PEQS.
- It will be ensured that no solid waste will be entered in the wastewater.

6.6.6. Health & Safety of Workers

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

Nature of Impact

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

Mitigation

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

- Regular inspection and maintenance of the plant will be carried out to eliminate the risk and associated hazards of any unfortunate incident.
- Workers will be trained on the regular basis regarding personal safety, disaster management physical and chemical hazards.
- Operators operating the plant should be fully trained and equipped.
- Training regarding HSE should be given on the regular basis.
- Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc.
- It should be strictly enforced to wear PPEs while working.
- Incidents should be reported directly to the concerned authority.
- Spillage prevention plan should be adopted and it should be implemented effectively.
- Floor surfaces shall be maintained and cleaned on regular basis.
- Floor should be kept clean and free of oil spills, other slippery fluids or materials and obstructions.
- The effective use of hearing-protection devices shall be ensured.
- Protective measures and emergency rescue procedures should be followed strictly.
- Only authorized persons shall be allowed in the processing and chemical storage areas.
- Unloading of the raw-material and loads of the final products should be controlled, supervised, slow and smooth.

6.6.7. Chemical Hazards

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

Nature of Impact

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

Mitigations

Following mitigation measures will be adopted:

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

6.6.8. Security Risks

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

Nature of Impact

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

Mitigation Measures

Following mitigation measures will be adopted:

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

6.6.9. Emergency Response

Emergency response preparedness committee will be formulated consisted of heads of all the departments. Emergency Response Leader will be the head of the team assisted

by safety team and safety supervisors. Emergency Response Leader along with his team will ensure that in the case of emergency, team is prepared for fire-fighting and the first aid kits will be provided which may include; blankets, hot water bottles, stretchers, benches, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

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

Nature of Impact

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

Mitigation

Following mitigation measure will be adopted:

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

6.7. Socioeconomic Impact

It is envisaged that the adverse impacts associated with the operation of said project includes; local community will be disturbed due to increase in the traffic load (i.e., vehicles carrying raw material and final products), wastewater management, solid waste

management & disposal, soil pollution, etc. The intensity of the aforesaid project will be quite low. The commencement of the aforesaid project will have a beneficial impact on the surrounding community such as; increase in employment opportunity, increase in the wages of the local area employees, increase in revenue generation, provision of social welfare funds of the employees and appreciation of land value.

Impacts

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

Mitigation Measure

No mitigation measures will be required.

6.8. Environmental Enhancement Measures

The said project will be result in following benefits:

- Direct and indirect employment opportunities,
- Gains in the local and national economy,
- Industrial development in region
- Business spin-offs in the factory area,

Tree plantation along boundary of project will act as environmental enhancement measure. Trees including; Shatoot, Jaman, Moor Pankh, Fish Paam, Trysenia, etc. will be grown on all open spaces and along boundary of project.

The environmental budget allocated for tree plantation, installation of wastewater treatment plant and management and disposal of solid waste is approximately **PKR 2 Million** approx.

7. ENVIRONMENTAL MANAGEMENT & MONITORING PLAN (EMMP)

A comprehensive management plan is necessary to implement the recommendations and suggestions for environmental protection included in chapter 7.

The objective of the Environmental Management and Monitoring Plan (EMMP) is to address all the major environmental issues and provide a framework for the implementation of the proposed mitigation measures during the construction and operational phases of the project. The proper implementation of the EMP will ensure that all the adverse environmental impacts identified in the IEE report are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned institutions or regulatory agencies.

The implementation of EMMP should be carefully coordinated with the design and construction program of the project to ensure that relevant mitigation measures are implemented at the appropriate stage and that adequate resources are properly allocated to achieve the desired results. This EMMP has been prepared to satisfy the requirements of the Pakistan Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Review Procedures, 2000.

For effective environmental management, the management of the project should assign the necessary responsibilities to its Health, Safety and Environment team, which should be responsible for environmental monitoring of the project.

7.1. Objectives of Environment Management Program

The EMMP provides a delivery mechanism to address potential impacts of the project activities, to enhance project benefits and to introduce standards of good practice to be adopted for all project works. The EMMP has been prepared with the objectives of:

- Defining roles and responsibilities of the project proponent for the implementation of EMMP and identifying areas where these roles and responsibilities can be shared with other parties involved in the execution and monitoring of the project.
- Outlining mitigation measures required for avoiding or minimizing potential impacts assessed in the IEE report.

- Developing a monitoring mechanism and identifying requisite monitoring parameters to confirm effectiveness of the mitigation measures recommended in the IEE report.
- Defining the requirements for communication, documentation, training and monitoring, management and implementation of the mitigation measures.

7.2. Components of EMMP

Components of EMP are as follows

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

7.3. Proposed Mitigation actions

Table 3-Environment Management Plan

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Construction and Operation Phases					
Land Resource	Solid Waste	Implementation of SW* Management System	Record keeping and timely transfer of SW from bins to the disposal site for composting	Daily	Manager HSE / Project Proponent
	Soil Contamination	Implementation of Management Plans	Visual monitoring and complete soil analysis	Daily and annually	
Air Resource	Air Emission	Dust emissions during construction and operation.	Monitoring of the emissions as per applicable standards Water sprinkling will be done regularly to avoid dust emissions	Once before start of operation and after that as when required during operation	
	Dust				
Ecological	Flora	Uprooting of trees	Inventory of uprooted	During Baseline	
Resource		during construction phase and maintenance of photographic record	trees and vegetation during operation phase	Survey, once in a year and after the completion of the Project	
Noise		Plant operation & material transportation	As per applicable standards	Fortnightly	
**SW= Solid Waste, **EA= Executive Agency*					

ENVIRONMENT MANAGEMENT AND MONITORING PLAN FOR SARAM LUBRICANT FACTORY				
S. #.	**IMPACT**	**MITIGATION MEASURE**	**RESPONSIBILITY**	
			IMPLEMENTATION	**MONITORING**
A.	**CONSTRUCTION STAGE**			
1.	**AIR QUALITY**			
	Dust, SO_2, NO_x& CO emissions from trucks, cause health issues to workers.	Spray by water trucks to minimize the dust. Maintenance of construction machinery should be made mandatory to reduce emissions. Haul-trucks carrying earth, sand, aggregate and other materials will be kept covered with tarpaulin to reduce dust pollution.	Contractor	Proponent through Consultant
2.	**NOISE**			

	The impact of noise generated during construction.	Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels.	Contractor	Proponent through Consultant
3.	**OCCUPATION, HEALTH AND SAFETY**			
	There will always be the possibility regarding hazard to health and safety of workers to occur during construction stage, lying of piles, and machines installation.	First aid facilities should be readily available for the workers at the site. The contractor will ensure the availability of transport and driver to handle any misshape which may occur. Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site. Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE.	Contractor	Proponent through Consultant
4.	**DISPOSAL OF CONSTRUCTION DEBRIS**			

	Each phase of the development shall produce solid waste, disposal of which, if not managed properly could have negative impacts on the site and surrounding area.	A site waste management plan should be made the responsibility of the contractor. The wastes should be properly segregated and separated to encourage recycling of some useful waste materials. Train or educate the involved stakeholders on the importance and means of waste management and handling.	Contractor	Proponent through Consultant
5.	**GROUND WATER QUALITY**			
	No appreciable impacts on the ground water quality are anticipated.	Avoid accidental spills through good work practice.	Contractor	Proponent through Consultant
6.	**SOIL CONTAMINATION**			
	Any improper storage or handling of materials including paints, fuels, solvents, oil, cement, etc. would result in soil contamination.	The contractor should be required to impart proper training to their workforce in the storage and handling of materials.	Contractor	Proponent through Consultant

7.	**FLORA & FAUNA**			
	No negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.	Trees and ornamental plants shall be planted along the project boundary which increase the aesthetic value of the site and will combat pollution. Landscaping is deemed to be a powerful mitigation activity with a positive impact.	Contractor	Proponent through Consultant
8.	**SOCIO-ECONOMIC ENVIRONMENT**			
	Several categories of employees will be required during the construction phase. This would have a positive impact on the local economy and on regional unemployment.	Socially responsible attitude of the project management towards local people and resources can make project people friendly. Awareness and educational programs introduced by the project management or e area can reduce the fear among the people regarding non-local people.	Contractor & Proponent	SIE
B.	**OPERATIONAL STAGE**			
9.	**AIR QUALITY**			

	The slightly increased traffic as a result of project operation will not result in the significant increase in concentrations of emissions of flue gases as the number of visiting vehicles shall be limited for transportation of materials and 4 vehicles for staff per day.	Proper maintenance and tuning of the vehicles done by the proponent.	Proponent	EPA
10.	**NOISE QUALITY**			
	Noise due to movement of vehicles, during traffic of materials.	No Mitigations required except for keeping maintenance of vehicles. Plantation along with boundary will make buffer zone to avoid noise.	Proponent	EPA
11.	**OCCUPATION, HEALTH AND SAFETY**			

	There will always be the possibility regarding hazards to health and safety of workers to occur during the operational phase of the project.	All the workers involved in transport of the materials will be suggested to wear boots, gloves, safety cap to avoid injury Plantation of trees along the boundary walls will help in reducing the noise levels to enough extent. Noise absorbing paint should be used on indoor walls to minimize its impacts on the outer environment. All the vehicles should be properly tuned up and regular maintenance and periodic monitoring must be done. Strict rules should be made by the project administration to control speeds of vehicles.	Proponent	EPA
12.	**SOLID WASTE**			
	The solid/chemical waste may negatively impact the site, the workers, the visitors and the factory surrounding in different ways including aesthetically, occupationally as well as from health, safety and environment point of view. The sludge from the process will be produced	Domestic solid waste will be collected by system, which will be managed by Saram Lubricant Factory management. Recyclable material will be recycled mostly packaging materials.	Proponent	EPA

	and cause solid waste.	The sludge from the process will be removed and sold to EPA certified vendor for incineration.		
13.	**WASTEWATER QUALITY**			
	The sewage effluents shall be discharged after primary treatment into the main sewerage tank.	The system for the primary treatment of the sewage effluent should be appropriately installed and maintained.	Proponent	EPA
14.	**FLORA & FAUNA**			
	Excessive plantation shall be done on the walls. This will act as a buffer zone and bring healthy change in the environment during the operational phase of the project.	The process of plantation should be kept sustainable throughout project life.	Proponent	EPA
15.	**SOCIO-ECONOMIC ENVIRONMENT**			
	A few employees will be required in the operational phase and this would have a positive impact on the local economy and on	The management of the project can capitalize the positive attitude of people of the study area towards this project by offering them	Proponent	EPA

	regional unemployment.	maximum employment opportunities. Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.		

7.4. Institutional Capacity

Following functionaries will be involved in the implementation of EMMP:

- Mr. Muhammad Saram Zafar, as the Proponent of the Project and owner of Environmental Management Plan during construction as well as operation stage.
- Project contractor(s) as executors of the EMMP during the construction phase of the project.
- Operational & Maintenance (O&M) and the Health, Safety and Environment team of the project as an executor of the EMMP during the operational phase of the project.
- Environmental Protection Agency (EPA), Punjab as Government Department to review and monitor the implementation of remedial and mitigation measures as given in IEE.

7.4.1. Responsibilities of functionaries:

Specific responsibilities of key role players are illustrated hereunder:

7.4.2. Responsibilities of management of project:

Management of the project **Saram Lubricant Factory** will be responsible for the environmental management and supervisory affairs during the project activities. Environmental personnel designated by the management of the project will look after the environmental related issues during the project activities. The responsibilities of Environmental personnel are as follows:

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

7.4.3. Responsibilities of project contractor:

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

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

7.4.4. Responsibilities of EPA:

To review and monitor the implementation of remedial and mitigation measures as given in the IEE.

7.5. Training of Workers:

One of the most important mechanisms for the enhancement of the project's overall environmental performance will be the implementation of a program of environmental training for the project personnel and the Contractor's team. Environmental training will form part of the ongoing environmental management of the project. It will help to ensure that Proponent's environmental policies and principles are followed. The Contractor will be expected to implement a formalized training program as to the extent feasible, building on the recommendations supplied in the IEE.

Suggested components of an environmental training program may be as follows:

- Promotion of environmental protection measures in company literature, broadsheets, posters, project updates, etc.
- Provision of guidance notes on environmental protection to Contractor/s.
- Clear signs at worksites highlighting prohibited activities (discarding of wastes, smoking).
- Clear signs indicating sanitary disposal areas, safe drinking water sources, etc.

Adoption of these measures should help Proponent and the Contractor to achieve a high level of environmental awareness in the project team, which should, in turn, promote sound environmental management during project lifespan.

The Table 7-14 provides a summary of various aspects of the environmental and social training.

7.5.1. Training schedule:

A training log will be maintained by the management of the project and contractors. The training log will include:

- Topic

- Date, time and location
- Trainer
- Participants

Important training under the spectrum needs to include:

- Training on fire fighting and safety management;
- Training on environmental safeguards and compliance;
- Staff training on environmental monitoring and reporting;
- Training on occupational health and safety measures.

Table 4-Training Schedule

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

7.6. Equipment Maintenance Details

The proposed project is the installation of Saram Lubricant Factory at, Chak#92, Tehsil Gojra, District Toba Tek singh. Actions necessary for retaining or restoring a piece of equipment, machine, or system to the specified operable condition to achieve its maximum useful life.

All tools, equipment and vehicles must be properly maintained so that workers are not endangered. Construction regulations require inspections of vehicles, tools, machines and equipment before use. We must always be aware that maintenance tasks themselves are potentially hazardous and can result in injury.

The successful maintenance program is:

- well organized and scheduled,
- controls hazards,
- defines operational procedures, and
- Trains key personnel.

The degree of detail to include in your company's program regarding equipment maintenance will depend on the kinds of tools/equipment used. Some construction equipment (cranes) has very specific inspection and maintenance requirements. Passenger Vehicles (company trucks, cars and vans) may require only basic maintenance. Power Tools should be maintained in good working order. This may be limited to ensuring that blades/bits are replaced when needed and that guard or other safety devices are operable, and any damaged electrical cords/plugs are repaired or replaced. Damaged or defective equipment/tools should be tagged and removed from service.

7.7. Proposed Environmental Monitoring

Environmental monitoring can be categorized into two types:

- Compliance Monitoring
- Effects Monitoring

The environmental monitoring will be conducted according to SMART rules and EPA regulation.

7.7.1. Compliance Monitoring

Compliance monitoring will be carried out to ensure compliance with the requirements of the IEE and EMMP. The project staff and contractors will carry out the inspections on a routine basis. This will also include the routine monitoring at the project site as specified in EMMP.

7.7.2. Effects Monitoring

To monitor actual impacts of the project on selected sensitive receptors so that impacts not anticipated in the EIA report or impacts which exceed the levels anticipated in the IEE report can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring.

7.7.3. Monitoring components

Baseline environmental monitoring will be carried out for the following essential parameters.

- Noise Levels
- Ambient Particulate Matter
- Ambient Air Gases
- Ground Water
- Wastewater
- Soil Contamination
- Solid Waste
- Stack Emissions
- Vehicular Monitoring
- Flora & Fauna
- Health & Safety
- Machinery Maintenance

8. PUBLIC CONSULTATION

Stakeholder's consultation is a tool used for communication with a diverse group of stakeholders having multifarious aims such as information dissemination, exchanging views, soliciting feedback and suggestions on issues pertaining to the project, plan future actions. This practice initiates a need assessment and identify areas of concern for all the parties that maybe affected by the project activities.

Stakeholders by definition are all those people and institutions who have an interest in the successful design, implementation and sustainability of the project. This includes those positively and negatively affected by the project.

Project can actively participate in decisions on planning and management. The stakeholders including regulators, government representatives and NGOs were met to appraise and discuss the environmental and social perspective of project activities related to the construction and operation of incineration unit. Their valuable concerns and suggestions were noted and thereafter incorporated in the IEE process and study.

During the field survey for this IEE study, meetings were held with the communities residing within the project area. The objective of these meetings was to solicit and record their views and concerns for inclusion in project design at the planning phase. In the same vein, meetings were held with the members of local and provincial government, NGOs and district government representatives.

All the stakeholders were briefed about the project verbally. Their feedback was noted, and all the concerns voiced in the discussion were relayed to the management team of the project.

8.1. Benefits and Objectives of Stakeholders Consultation

Consultation with stakeholders leads to an overall better understanding of the project on the part of the communities and gives the proponent a clearer understanding of the stakeholders' perspective. Effective public consultation can add substantial value to the IEE process. The information gained through public consultation on the stakeholders' concerns, interests, and their ability to influence decision-making helps identify key cause of environmental problems.

This can be used to evaluate direct and indirect environmental impacts and assess short term and long-term resource use implications. The input from local communities and NGOs can help evaluate alternatives and strengthen the management planning by incorporating local input and know-how.

An informed public will better understand the tradeoffs between project benefits and disadvantages; be able to contribute meaningfully to the project design; and have greater trust with the project proponent and support for the project, says the Asian Development Bank. These factors contribute towards improved project implementation sensitized to the human environment of the area. The objectives of stakeholders' consultation are to:

- Promote better understanding of the proposed operation through explaining its objectives and its potential positive and negative impacts.
- Identify and address concerns of all interested and affected stakeholders.
- Provide a mechanism to resolve issues identified by communities, before project plans are finalized and development begins, thereby, avoiding public outcry and resentment.
- Instill trust between various stakeholders and the proponent to promote cooperation.

8.2. Identification and Classification of Stakeholders

During the field survey, significant efforts were made to identify the possible categories of stakeholders and their stakes. Identification of stakeholders is important for the sustainability of a developmental project and helps to evaluate and envisage the role of stakeholders. The influence or impact of the project on stakeholders can be elaborated in the form of a matrix and the mitigation measures are proposed accordingly.

All the stakeholders had different types of stakes according to their professions. The stakeholders that are likely to be influenced by the project activities or would like to participate in the project include:

- **Industries surrounding the project area.**

Stakeholders can be classified depending on the influence of the project activities on them. The stakeholders for the project are classified as follows:

- Industries: Industries, groups or institutions directly affected by the project and can influence the project outcome.
- Local communities: Residential areas around the project site.

8.3. Views, Concerns and Suggestions of Various Stakeholders

The major socio-economic concerns and problems of the affected persons of various communities have been given in tabulated from along with their main concerns and remarks. Community showed a lot of concerns; a few are being mentioned here:

- Removal of shrubs and trees should be avoided to the extent possible in the case of clearance green zones should be established within the facility.
- Indigenous tress around the facility should be planted to control air pollution and as the compensation of construction activity.
- The project will become the source of income for local to earn their livelihood easily and honorably, so locals should be preferred.
- For the solid waste management and waste disposal, proper disposal techniques should be adopted.
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions.
- Employment opportunities will be generated and locals should be hired on the priority basis.
- The air pollution is one of the major impact from which Punjab is being affected at the large scale. So, ambient air quality should be monitored regularly and air pollution expected to generate from the operation should be mitigated beforehand by installation of wet-scrubber.
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.
- Noise generated activities should be carried out during day hours.

8.4. Methodology for Consultation

Stakeholder consultation is a two-way flow of information and dialogue between the project proponent and stakeholders, specifically aimed at developing ideas that can help shape project

design, resolve conflicts at an early stage assist in implementing solutions and monitor ongoing activities. Various techniques are used worldwide to carry out the stakeholder consultation that includes discussions, meetings and field visits. A series of scoping sessions and informal focus group discussions were carried out with local communities and local government representatives. The meetings were held at various locations.

8.5. Environmental Practitioners and experts

Consultation with Environmental Practitioners and experts was done and following comments and suggestions were noticed.

Table 5-List of Experts

Sr. No	Name	Designation	Comments/Suggestions
1.	Engr. Muhammad Bilal	Environmental Engineer	Following comments are summarized to control the air pollution generation during operational phase • It should be ensured that the pollution abatement technique i.e. bag house filters must be installed on coal fired boiler
2.	Sara Fatima	Environmentalist	• She said that Installation of used oil refining industry will have positive impact on economy but its construction should be done in environmental Friendly way • During construction and operation emissions must be controlled properly • Basic facilities should be provided to local community
3.	Zia ur Rehman Farooqi	Ph.D. Scholar Environmental Sciences	Following mitigation measures should be adopted: • Tree plantation in designated green zones should be carried out • Proper disposal of the solid waste • HSE management measures should be adopted and implemented effectively.
4.	Mr. Saffi Ahmed	Environmentalist	• He said that locals should be preferred for employment. • Value addition of area • In case of outsiders residence must be provided • Proper mitigation measures must be adopted while construction and operation of this project

5.		Environmentalist	• She said that in case of removal of vegetation trees must be planted after construction at designated green areas • Water conservation strategies must be adopted • Solid waste must be collected and dispose off properly
6	Hafiz Zeeshan Safder		• Wastewater should not mix with surface water channels it must be properly dispose off after meeting PEQS. • Avoid groundwater contamination
7	Miss Misbah Ali	Environmental Engineer	According to her following mitigation measures should be adopted during construction • Site re-vegetation must be done • Latest technology must be installed • Residence must be provided to contractors and workers • Locals must be preferred for employment

Table 6-List of People Consulted

Sr.#	Name	CNIC #	Concerns
1	**Kamran Ali Khan**	**36502-1262560-5**	During the survey in the study area following concerns of the local community were noted: • Air pollution should be controlled effectively such as emissions generated from power generating activities. • Chemicals should be stored and handled properly only authorized persons should be allowed near the chemical storage area. • Locals should be preferred for the job opportunities. • Wastewater should be treated prior to final disposal in nearby drain. • Solid waste should be managed effectively by adopting the standard practices of the area. • Cleanliness of the area should be ensured. • An effective EMMP should be designed and enforced with true spirit. • Health of the workers should be ensured. • Planation should be carried out at extensive scale. • Construction activity should be carried out during day hours. **Noisy activities should be confined.**
2	**Muhammad Waqass**	**36502-7182240-9**	
3	**Qaiser Farooq**	**36502-6069520-9**	
4	**Ghulam Mujtaba**	**36502-5623790-1**	
5	**Mehboob Alam Shahid**	**36502-3634737-1**	
6	**Muhammad Latif**	**36502-1306860-5**	
7	**Mazhar Hussain**	**36502-3709815-1**	
8	**Shahbaz Khan**	**36502-9590248-9**	
9	**Waseem Ahmed**	**36401-9470678-1**	
10	**Rab Nawaz**	**36502-7752653-9**	
11	**ALLAH Yar**	**36502-8319926-9**	
12	**Ahmed Saeed**	**36502-1307025-7**	
13	**Muhammad Jabbar**	**36502-3746161-9**	
14	**Muhammad Ramzan**	**36502-2391980-9**	
15	**Kamran Ali Khan**	**36502-1262560-5**	

Pictorial View of Consultation





Figure 11- Consultation with Nearby Community

Figure 12-Consultation with nearby Industries





8.5.1. Study area:

The area of Chak#92 J.B, Tehsil Gojra, District Toba Tek Singh as a whole was the part of our study boundaries but specifically, it included. The land for proposed unit is situated at Chak#92 J.B, Tehsil Gojra, District Toba Tek Singh.

8.5.2. Study schedule:

The composition and schedule to conduct the group discussions and interviews and also impact location profile was prepared using the attached Performa in annexure.

8.5.3. Local community

Concerns of the locals of the project were solicited and collected in the following manner:

- A field visit was arranged to contact the communities within 5km of the project area.
- The team was completely aware of the processes and environmental issues related to the project.
- A brief description of the project was provided verbally to the local community and they were asked to express their concerns regarding the project.
- Concerns, complaints and suggestions were recorded in written form.

8.5.4. Local Communities Concerns

The issues and suggestions raised were recorded in field notes for analysis, and interpretation, by reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, and focus group discussions. The findings of the Community consultations have been addressed in various sections of the IEE report, and the mitigation plans have been incorporated into the EMMP.

8.5.5. Key Findings of Study:

The study findings depict that people perceive overall positive social impacts by development of proposed project. Their attitude towards project development is highly positive with the expectation that locals are provided with jobs especially where unskilled labor is required. Majority of the people is convinced for positive sign for development in area and they correlate this change with the pace of their upward social mobility and progress. However, they want waste water treatment plants to be installed.

Sr. No	Place	Date	No. Of Participants	Main Concerns	Expectations
1	Gojra City	15-10-2021	04	• Community water resources should not be over-exploited. • Increased traffic should not jeopardize the safety of the communities. • Priority for employment should be given to residing communities. • Waste management should be proper managed	• Employment opportunities will be generated for local communities.
	Chak # 92, G.B	15-10-2021	06	• Priority for employment should be given to residing communities. • Waste management should be proper to avoid any mishandling and open dumping/burning of solid waste in project area. • Waste water should be properly treated before discharging.	• Employment opportunities will be generated for local communities • Economy of the area will get a boost.
	Karowal	15-10-2021	02	• Waste effluents should be disposed of after proper treatment so as not to affect the quality of the water in the nearby channels.	• Employment opportunities for the local population • Preference would be given to the locals while hiring unskilled workers for the operational phase of the project.
	Dawakhary	15-01-2021	03	• Emissions from the used oil reclamation facility should be controlled • Noise levels should be controlled so as not to disturb the local residents during their daily activities	• Employment opportunities for the local population • Improvements in the sewerage system and health facilities due to an increase in Industrialization.

8.6. Other department and agencies

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

8.7. Results of Survey

Following are the results of the survey with the local stakeholders:

8.7.1. Occupation of Respondents

Majority of the respondents (**38%**) belongs to the labor class, **16%** associated with their own business, **13%** were daily wagers, **13%** of respondents were associated with agriculture, **7%** were shopkeepers and remaining **7%** were the private employees. During survey, efforts were made to interact with local stakeholders representing all walks of life. The detailed graphic representation of occupational status is given below,

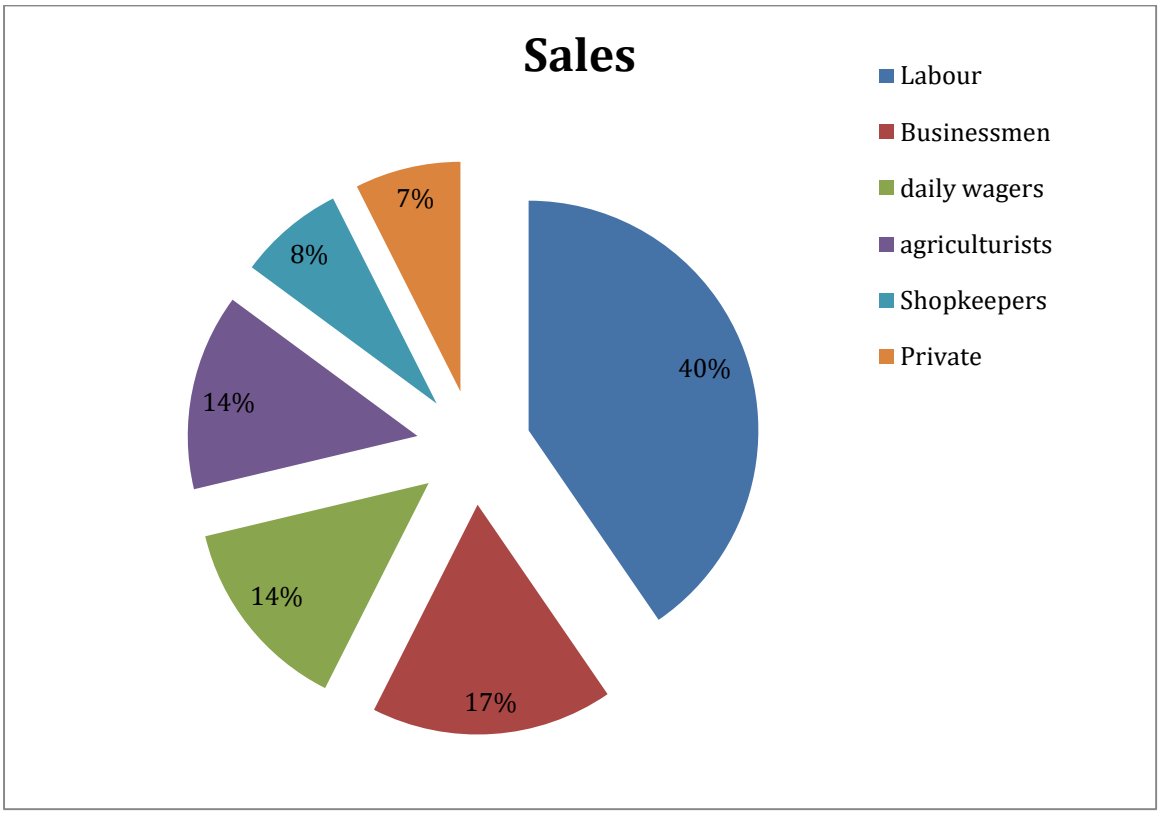


Figure 13-Occupation percentage of consulted people

8.7.2. Personal Income

Based on the sample survey results, as the figure shows that 5% of the respondents were earning less than 20,000 rupees, 24% of respondents fall within the income range of 20,000–25,000, 41% respondents earn 30,001–40,000 while only 16% of the respondents earn within the range of 40,001–45,000 and 14% of respondents were earning more than 45,000 rupees.

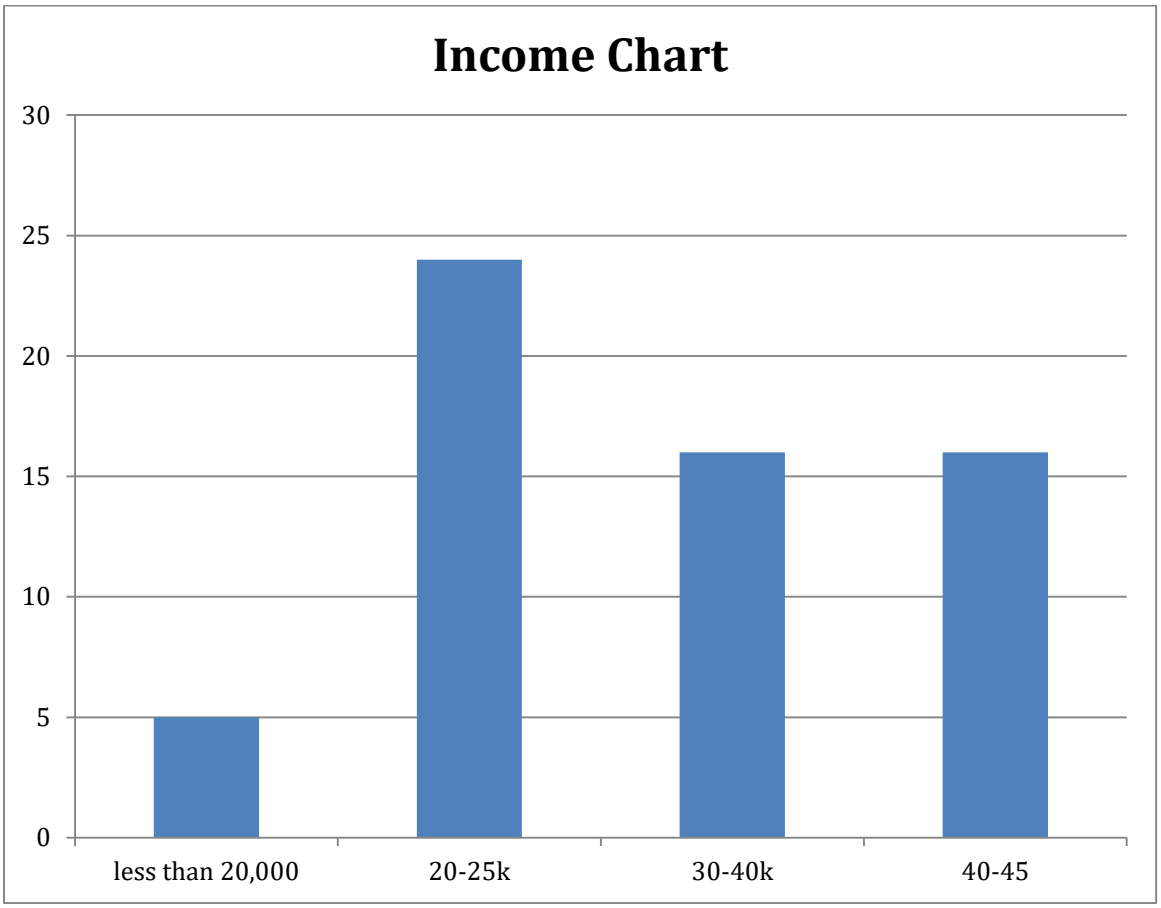


Figure 14-Income Graph Respondents

8.7.3. Facilities Available

Basic facilities available in the study area are depicted here. It shows that electricity, telecommunication, gas supply water supply, sewerage system and every other routine facility is available in study area.

8.7.4. Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (**94%**) of were in favor of aforesaid project. They expect that

establishment of aforesaid project will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities.

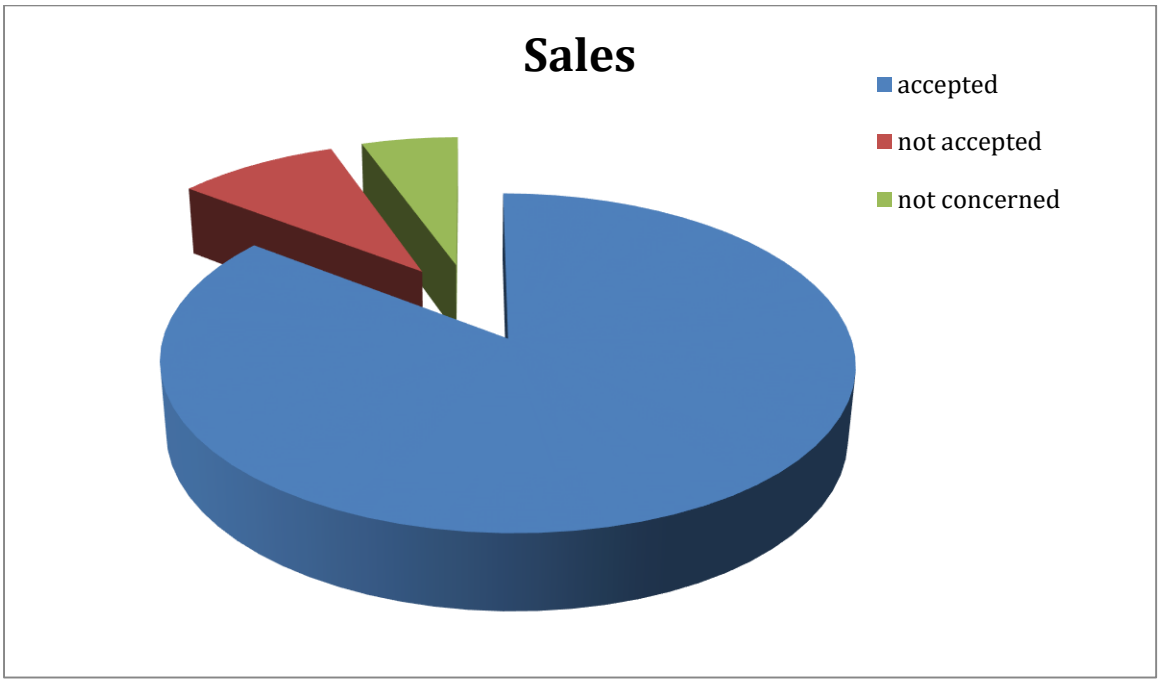


Figure 15-Acceptance Level

10. CONCLUSION

The project is aiming at providing oil reclamation facility for the nearby market to meet. The project falls under the category of the projects requiring Initial Environmental Examination (IEE).

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

- It has also developed ways and means for environmentally sustainable disposal of solid wastes to be generated from the project operations.
- The noise levels will be kept well within the required limiting values of the NEQS Pakistan.
- This project will create job opportunities during construction and operation stages leading towards reduction of poverty.
- Sewage will be passed through septic tanks before final treatment and disposal.
- It will help in improvement of community/social service status in the local area. It will also provide such facilities for people from other places.
- Project site means the development criteria like electricity supply, gas supply, water supply and sewage system.
- There are no sensitive elements/segments of environment around the project site.
- EMP, as recommended in this IEE Report, is to be put in place during all operational stages of the project.
- Environmental monitoring by the project proponent and a third party also ensures that the project will run in accordance with legal requirements,
- Availability of water for the project is ensured from the underground water sources without any effect on the needs of the people around the project area.

Based on these findings of the IEE Report the project merits for issuing of Environmental Approval by the Environmental Protection Agency, Government of Punjab, and Lahore.

Sources of Data

- Punjab Environmental Protection (Amendment) Act 2012 (PEPA)
- Guidelines for the preparation and review of Environmental Reports, October 1997
- Review of IEE/ EIA Regulation, 2000
- The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan
- World Weather Online.com
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- Material Safety Data Sheet (MSDS) of chemicals
- /www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA-Water_Efficiency_on_the_Farm_Booklet_WEB.pdf
- http://www.madehow.com/Volume-2/Lead.html
- https://www.gravitatechnomech.com/Battery-Recycling/Environment-Guidelines.html
- https://www.gravitatechnomech.com/Lead-Metal/Lead-Pollution-Control-Solutions.html
- https://www.ila-lead.org/UserFiles/File/ILA9927%20FS_Recycling_V06.pdf
- http://www.ijirset.com/upload/2013/november/18_Disposal.pdf
- https://www.who.int/news-room/fact-sheets/detail/health-care-waste
- https://www.env.go.jp/recycle/3r/en/asia/02_03-2/04.pdf
- https://www.env.go.jp/recycle/3r/en/asia/02_03-2/04.pdf
- https://www.slideshare.net/DebajyotiBose/dioxin-and-furans-control-from-waste-to-energy-plants

GLOSSARY

Accommodate	(of a building or other area) provide lodging or sufficient space for. "the cottages accommodate up to six people
Assessment	The action of assessing someone or something. "the assessment of educational needs"
Aspects	A distinct feature or element in a problem
Adverse	– Preventing success or development; harmful; unfavorable. "taxes are having an adverse effect on production"
Authorized	– having official permission or approval. "an authorized dealer"
Amendment	a minor change or addition designed to improve a text, piece of legislation, etc. "an amendment to existing bail laws
Ambient Air	Ambient air quality refers to the quality of outdoor air in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution
Archaeological	the scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities
Annunciation	A formal public statement
Baseline	The existing conditions against which impacts of the proposed action and its alternatives can be compared.
Crushing	Deform, pulverize, or force inwards by compressing forcefully. "you can crush a pill between two spoons"
Containers	An object for holding or transporting something. "the cakes will keep for up to two weeks if kept in an airtight container"
Compliance	Acting according to certain accepted standards

Discrepancies	A difference between conflicting fact, claims or opinions
Disposal	the action or process of getting rid of something
Dumped	Deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way
Effluent	Any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor
Environmental impact statement (EIS)	A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.
Emission	The production and discharge of something, especially gas, or radiation.” The effects of lead emission on health”
Evaluated	Estimate or determine the nature, value, quality, ability, extent or significance
Graded	Arranged in a sequence of grades or ranks; "stratified areas of the distribution"
Generation	– The production or creation of something
Incinerator	A furnace or a container for burning waste materials
Inadequate	Not capable or competent; lacking
Implementation	The process of putting a decision or plan into effect; execution
Intends	To have in mind as something to be done or brought about; plan:

	to design or mean for a particular purpose, use, recipient, etc.
Landfill site	for the disposal of solid waste in which refuse is buried between layers of dirt so as to fill in or reclaim low-lying ground
Legislation	Law enacted by a legislative body
Mobilization	To release or make available, as cells or chemical substances
Mitigation	The action of lessening in severity or intensity
Noise	Loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities
Potential	Having or showing the capacity to develop into something in the future
Pedestrian	A person who goes or travels on foot; walker
Proponent	The person who proposes or intends to undertake a project
Sanitary	Relating to the conditions that affect hygiene and health, especially the supply of sewage facilities and clean drinking water
Segregate	Set apart from the rest or from each other; isolate or divide. "disabled people should not be segregated from the rest of society
Settlement	An official agreement intended to resolve a dispute or conflict. "unions succeeded in reaching a pay settlement
Ton	A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2 to 205 pounds
Transportation	The action of transporting someone or something or the process of being transported. "the era of global mass transportation"

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

LIST OFABBREVIATIONS

AA	Ambient Air
APHA	American Public Health Association
AOI	Area Of Influence
BOD_5	Biological Oxygen Demand
CMS	Convention On Migratory Species
COD	Chemical Oxygen Demand
dB(A)	Decibel
EA	Environmental Assessment
EHS	Environmental Health Safety
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
PEPA	Pakistan Environmental Protection Act
EPA	Environmental Protection Agency
ESIA	Environmental And Social Impact Assessment
ESA	Environmental And Social Assessment
ESMP	Environmental/Social Management Plan
EMP	Environmental Management Plan
EC	Electrical Conductivity
GIS	Geographical Information System
GOP	Government Of Pakistan
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HSE	Health Safety & Environment
HWMS	Hazardous Waste Management System
IEE	Initial Environmental Examination
I & D	Irrigation And Drainage
IAIA	International Association For Impact Assessment
IWM	Industrial Waste Management
IUCN	International Union For Conservation Of Nature

KM	Kilometers
LGO	Local Government Ordinance
MW	Mega Watt
MEAS	Multilateral Environmental Agreements
MSDS	Material Safety Data Sheets
NEQS	National Environmental Quality Standards
PMD	Pakistan Meteorological Department
PPE	Personal Protective Equipment
PEQS	Punjab Environmental Quality Standards
NEAP	National Environmental Assessment Plan
NWFP	North West Frontier Province
Q&EHS	Quality, Environment, Health & Safety
O & M	Operation And Maintenance
PKR	Pak Rupees
PPM	Parts Per Millions
PAP	Project Affected People
PEPC	Pakistan Environmental Protection Council/Punjab
PSC	Project Steering Committee
QA/QC	Quality Assurance/Quality Control
RAP	Resettlement Action Plan
ROG	Reactive Organic Gas
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TT	Technology Transfer
UNFCCC	United Nation Frame Work Convention On Climate Change
UNCC	United Nation Convention To Combat Desertification
UNEP	United Nations Environmental Programs
GOP	Government Of Pakistan
WHO	World Health Organization
R&R	Rehabilitation And Resettlement
WWTP	Waste Water Treatment Plant